

Table 4-1. Responses to Comments

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290	1	Given the critical moment we are in, we felt it was necessary to join the chorus of the environmental community in advocating for a more robust and equitable Bay-Delta Plan that will give California's riparian biodiversity a fighting chance and do away with the Voluntary Agreements.	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.
290	2	We strongly urge that the Water Board follow its own 2010 Flow Criteria Report and build on a high-flow alternative by striving to dedicate 75% of the unimpaired flow on the Sacramento River and its tributaries and 75% of unimpaired Delta outflow water necessary to protect the Bay-Delta ecosystem.	Please see Common Response 1.1, General Comments, for information on the Delta Flow Criteria Report and for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project. Also see Common Response 1.2, Water Quality Control Planning Process, for information on the reasonable protection of fish and wildlife beneficial uses.
290	3	The Bay Delta Plan must also consider all California stakeholders and protect beneficial uses related to Tribes, fisheries, and recreation. The Bay Delta Plan acknowledges the need for Tribal Beneficial Uses but does lay out an enforceable plan to protect them.	Please refer to Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for responses to comments related to Tribal Beneficial Uses. Please see Common Response 1.2, Water Quality Control Planning Process, for responses to comments related to State Water Board authorities related to water quality control planning and the reasonable protection of fish and wildlife and other beneficial uses.
290	4	Voluntary Agreements are a giveaway of the public trust water and public funding to water agencies legally obligated to keep fish populations in livable conditions. The Bay-Delta Plan could allow for adaptive management that could increase or decrease flow requirements based on whether biological goals are being met. Please do the right thing. Californians are watching, and we ask that you vote for California's biodiversity and future generations.	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project and Common Response 1.2, Water Quality Control Planning Process, for information on public trust.
291	1	We have a strong interest in the continued and improved delivery of refuge water required by section 3406(d) of the federal Central Valley Project Improvement Act (CVPIA). We greatly appreciate that the Staff Report takes multiple opportunities to assure the public that the proposed program of implementation "would include provisions to prioritize water	Please see Common Response 6.1, Sacramento Water Allocation Model and Changes in Hydrology and Water Supply, regarding CVP allocations and obligations. Additionally, based on comments received, a Wildlife Refuge Provision has been added to the 2025 Draft Updates to the Bay-Delta Plan. This provision allows for the Executive Director to

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		supplies deliveries to refuges,” that voluntary implementation plans “also would be required to include provisions to avoid redirected impacts on terrestrial species (including refuges),” and that a suite of mitigation measures would be developed “to ensure adequate water supplies to refuges, including full delivery of CVPIA Level 2 water supplies at the times needed to support refuges and to provide for delivery of CVPIA Level 4 supplies.” [Footnote 1: Staff Report pp. 5-10, 5-12, 5-70, 7.6.1-69 to 70, 7.6.1-84, and 7.6.1-87.] These assurances are very meaningful, and we look forward to providing further input. GWD and two other CVPIA refuge water managers (U.S. Fish & Wildlife Service and California Department of Fish and Wildlife) are environmental beneficial users of water under the Bay Delta Plan. The Board has both the authority and obligation to protect our state’s managed wetlands and the species that depend on them. Our primary concern is that the Staff Report strongly suggests that the U.S. Bureau of Reclamation (Bureau) would have authority to reduce refuge water deliveries in its operation of the CVP under an updated Bay-Delta Plan. Since enactment of the CVPIA, however, courts have repeatedly ruled that refuge water deliveries are mandatory, non-discretionary, baseline environmental obligations for which the Bureau holds adequate state water rights regardless of regulatory or contractual constraints. [Footnote 2: Westlands Water Dist. V. Nat. Res. Def. Council (9th Cir. 1994) 43 F.3d 457, 461 (the Bureau’s water right permits from the Board “provide ample water to implement” the CVPIA).] The Staff Report’s description of the Unimpaired Flow (UIF) alternatives should be changed to reflect this. Particularly in light of reduced and variable flooded rice habitat that will likely result under an updated Bay-Delta Plan alternative, the CVPIA must continue to provide a backbone of habitat for migratory birds and special-status species. The Voluntary Agreements alternative is consistent with the CVPIA and does not propose refuge water reductions, which we support.	approve exceptions to curtailments for wildlife refuges. Updated SacWAM modeling presented in Chapter 13, Revised Proposed Plan Amendments, of the 2025 partially recirculated draft Staff Report reflects this provision and shows very small reductions to refuge supplies. As discussed in Section 13.4, Changes in Hydrology and Water Supply, SacWAM results for average annual Sacramento/Delta water supply to wildlife refuges under the 55 w/WSAs scenario show limited changes for all water year types that would be assumed to be negligible and are within the expected precision of the model. These changes are very similar to those for the flow scenarios generated using SacWAM version 2025.08.28 and presented in Appendix H1a3, Sacramento Water Allocation Model Results for Updated Unimpaired Flow Scenarios, and are less than those generated using SacWAM version 2023.06.12 and evaluated in Chapter 6, Changes in Hydrology and Water Supply, and Chapter 7, Environmental Analysis, for the flow scenarios. As discussed in Section 13.4, refuge priorities were increased relative to other senior demands to reflect provisions of the December 2025 revised draft Bay-Delta Plan intended to prioritize refuge water supplies. However, while the SacWAM results suggest that changes in Sacramento/Delta water supply to wildlife refuges under the 55 w/WSAs scenario and flow scenarios could be negligible, the analysis of impacts resulting from changes in refuge water supplies is complicated by Reclamation’s past practice of reducing water supplies to Central Valley Project Improvement Act (CVPIA) wildlife refuges when it reduces allocations to Sacramento River settlement contractors; therefore, it is possible that reductions in Sacramento/Delta surface water supplies to wildlife refuges could at times be larger than indicated by the modeling. The State Water Board agrees with commenter that Reclamation has certain mandated and non-discretionary obligations toward the wildlife refuges under the CVPIA. As described in Section 7.6.1.3, Regulatory Setting, the CVPIA requires firm water supplies of suitable quality to maintain and improve wetland habitat areas on certain wildlife refuges and wildlife areas in the Central Valley. The CVPIA also created the Refuge Water Supply Program to acquire and deliver water to 19 wetland habitat

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			areas in the Central Valley. The Refuge Water Supply Program refuges are described in Section 7.6.1.2, Environmental Setting, and include 12 federal refuge units managed by USFWS, 6 state WA units managed by CDFW, and 1 privately managed complex within GRCD (Figures 7.6.1-1a and 7.6.1-1b). Overview information about these wildlife refuges is presented in 7.6.1.2, Environmental Setting under Wildlife Refuges and Wildlife Areas.
291	2	The Staff Report Appears to Be Inconsistent with Prior Precedent GWD, GRCD, and the Grassland Fund share a fundamental concern about the Staff Report: that the UIF scenarios improperly presume CVPIA refuge water cutbacks below the statutorily required minimums. This is inconsistent with prior Board decisions, and involves erroneous interpretations of the law, policies, and water allocation processes that govern the CVP. Recognizing that there is not yet a program of implementation, we are nonetheless worried that the Staff Report's analysis sends a dangerous message that could create unnecessary conflict between wetland managers and project operators. The Board should recognize CVPIA refuge water requirements as already-existing mitigation, as stated in the statutory text of the CVPIA, while also including refuge water protections in its implementation and mitigation measures to ward against potential future threats to wetlands. [Footnote 3: CVPIA, Public Law 102-575, Title 34 (Oct. 30, 1992), § 3406(a) ("mitigation for fish and wildlife losses incurred as a result of construction, operation, or maintenance of the Central Valley Project shall be based on the replacement of ecologically equivalent habitat and shall take place in accordance with the provisions of this title").] The Board's prior refuge water decisions GWD faced a major water shortage in the 1980's due to elevated levels of selenium found in agricultural drainage that supplied a large part of its water needs. When it applied to the Board for a temporary permit to use flood waters for wetland habitat instead, the Board ruled that the Grassland area was among the highest priority wetlands remaining for wildlife habitat, and that	Please see the response to comment 291-1 regarding reductions in water supply to refuges analyzed in the draft Staff Report, and updates to the Bay-Delta Plan related to refuge supplies.

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		refuge water was “needed to protect this resource and the public welfare.” [Footnote 4: Board Order No. WR 86-5 (March 20, 1986), “In the Matter of Temporary Permit 19806 (Application 28800) Grassland Water District, Permittee,” p. 2, available at: http://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/1986/wro86-05.pdf.] The state’s wetland crisis worsened, leading the Governor to adopt a “no net loss” policy in 1993, still in effect today, which directs state agencies to conduct their activities with an objective to “ensure no overall net loss and long-term net gain in the quantity, quality, and permanence of wetlands acreage and values in California.” [Footnote 5: Executive Order W-59-93 (Aug. 23, 1993), available at: https://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/wrapp2008/executive_order_w59_93.pdf] The Board adopted a resolution in 2019 acknowledging “the longstanding state policy that the continued protection, restoration, and enhancement of managed wetlands is critical to the State’s public trust wildlife resources.” [Footnote 6: Board Resolution No. 2019-0015 (April 2, 2019), available at: https://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/rs2019_0015.pdf] The Central Valley Regional Water Quality Control Board also referenced the no net loss policy in a 2021 order acknowledging that state water quality regulations should be tailored to avoid further loss of Central Valley wetlands and the essential habitat they provide. [Footnote 7: Central Valley Regional Board Order No. R5-2021-0053 (Oct. 15, 2021), available at: https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2021-0053.pdf] When updating the Bay-Delta Plan in 1999, the Board did not incorporate CVPIA refuge water as part of the “base case,” because “[t]he rules for dedicating water to the environment under the CVPIA have changed during the course of the Bay-Delta Water Rights Hearing. The base case represents the permanent circumstances that would exist in the absence of the current temporary fixes.” [Footnote 8: 8 Board Decision D-1641 (as revised March 16, 2000), p. 135, available at: https://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/decisions/d1600_d1649/wrd1641_1999dec29.	

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		pdf] At that time, the Bureau had not yet finalized its CVPIA rules or executed refuge water supply contracts. The Board did acknowledge that the Bureau “is bound by federal law to operate” in a manner that delivers “certain quantities of water to wildlife refuges and wildlife management areas.” [Footnote 9: 9 Id. At p. 125.] Today, after decades of implementation, it is proper for CVPIA refuge water requirements to be integrated into the Bay-Delta Plan, which will also serve as a safeguard to protect against changes in federal law or policy. By 2004, after CVPIA rules were established and refuge contracts executed, the Board’s Executive Director deemed CVPIA refuge water deliveries to be part of the CVP “base supply”: “The deliveries of Level 2 and Level 4 water for wetland habitat are similar to water bypassed or released to meet water quality standards or prior rights. They are part of the costs of overall project operation. ... [The Bureau] is using the [refuge] contracts to satisfy its own statutory obligation to provide the water to these contractors at no charge. These deliveries basically carry out the same obligation that the [Bureau] satisfies when it releases water from its reservoirs for fish and wildlife protection without having a contract.” [Footnote 10: 10 Board Order No. WRO 2004 -0007- EXEC (March 31, 2004), available at: https://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/2004/wro2004_0007.pdf] On November 9, 2017, GWD submitted comments in response to the Board’s framework of questions requesting input on the Bay-Delta Plan update. GWD urged the Board to acknowledge that CVPIA refuges are wildlife beneficial users of water, and set water quality objectives accordingly. GWD specifically requested a water quality objective requiring refuge water deliveries in accordance with CVPIA requirements. In 2018, the Board issued a Framework for the Sacramento/Delta Update to the Bay-Delta Plan, which stated that the proposed Bay-Delta Plan amendments would include measures to ensure refuge water supplies are provided, including water quality objectives and a plan of implementation that avoid or minimize redirected impacts to refuges. [Footnote 11: Board’s July 2018 Framework for the Sacramento/Delta Update to the Bay-Delta Plan, pp. 23,	

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		27-28, 34, available_at: https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/docs/sed/sac_delta_framework_070618%20.pdf] Over this long course of history, the Board has consistently defended the water supply needs of Central Valley wildlife refuges, in recognition of the law and public trust resources. B. Prior Legal Decisions Courts have aligned with the Board’s position. In response to initial legal challenges after the CVPIA was enacted, federal courts ruled that the refuge water supply requirements are mandatory and nondiscretionary. [Footnote 12: Barcellos and Wolfson, Inc. v. Westlands Water Dist. (E.D. Cal. 1993) 849 F.Supp. 717, 725 (the CVPIA “requires the Bureau to provide water to wildlife refuges”); Westlands Water Dist. V. Nat. Res. Def. Council, 43 F.3d 457, 460, 461 (9th Cir. 1994) (Congress did not give the Secretary discretion whether or not to carry out the duty to deliver refuge water); O’Neill v. U.S. (9th Cir. 1995) 50 F.3d 677, 686 (“CVPIA marks a shift in reclamation law modifying the priority of water uses”).] These early cases were reinforced by the U.S. Supreme Court’s 2007 decision on nondiscretionary agency obligations, [Footnote 13: Nat’l. Assoc. of Home Builders v. Defenders of Wildlife (S. Ct. 2007) 551 U.S. 644, 667 (a federal agency cannot violate a specific mandatory statutory directive even if the agency is also generally directed to comply with other laws that may create a conflict).] and another 2014 California federal court opinion regarding the CVPIA. [Footnote 14: Friant Water Auth. V. Jewell (E.D. Cal. 2014) 23 F.Supp.3d 1130, 1139-1140, 1144-1146 (CVPIA authorizes reductions in refuge water deliveries by no more than 25%; claims that the Bureau cannot deliver refuge water due to senior contractor obligations is without merit).] Together, these precedents form the regulatory landscape in which the Board is undertaking its Bay-Delta Plan update. Despite this framework, the Staff Report repeatedly predicts significant water supply reductions for wildlife refuges under the proposed UIF scenarios.	

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291	3	Unrealistic, Even Catastrophic, Refuge Water Assumptions Incorrect assumptions in the underlying hydrologic model paint a false picture of how CVP water operations actually work. The Staff Report's description of "average" refuge water reductions also obscures drastic multi-year cuts to refuge water supply that the hydrologic model produces. In short, the model assumes, and the Staff Report describes, that the Bureau would be allowed to allocate its water supplies in a way that would eviscerate what little wetland habitat remains in the Central Valley. This is in error and should be corrected. SacWAM makes inaccurate assumptions The Staff Report analysis of the UIF alternatives and related impacts relies on the Sacramento Water Allocation Model (SacWAM). However, this model does not accurately apply legal requirements or CVP water allocation procedures. For example, the SacWAM assumes significant water allocations to junior CVP water service and repayment contractors in years when senior settlement contractors and refuges would receive substantial reductions. The model also assumes that water deliveries to senior settlement contractors and refuges in the Sacramento Valley would be cut back first, before cutbacks in releases for Delta exports. Third, the model does not appear to account for the fact that refuges can take advantage of seasonal changes in water availability due to their fall/winter demand schedule. In reality, CVPIA refuges rarely receive much less than their Level 2 water requirements, which have a statutory minimum of 75% in critically dry years, with the exception of voluntary cutbacks to accommodate rare system-wide crises. Certain refuges also have access to different sources of water, such as Gray Lodge Wildlife Area in the Sacramento Valley, which is served from the Feather River system. SacWAM does not reflect reality.	Please see the response to comment 291-1 regarding reductions in water supply to refuges analyzed in the draft Staff Report, and updates to the Bay-Delta Plan related to refuge supplies.
291	4	Year-by-year modelling spells catastrophe for managed wetlands The Staff Report characterizes "average" refuge water supply reductions, modelled under the 55% UIF alternative, of approximately 47 thousand acre-feet per year (TAF). (E.g. Staff	Please see the response to comment 291-1 regarding reductions in water supply to refuges analyzed in the draft Staff Report, and updates to the Bay-Delta Plan related to refuge supplies.

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		Report p. 7.6.1-62.) When reviewed on a year-by-year basis, which is not captured in the Staff Report, SacWAM predicts water reductions to managed wetlands of more than 100 TAF in numerous multiple consecutive dry years, nearing 140 TAF of cutbacks in the driest of years. This level of reductions is enough to dry up more than 45,000 acres of overwintering wetlands, or prevent critical spring irrigations on over 90,000 acres of wetlands. Using the historic hydrograph, SacWAM predicts one period where refuge water supply reductions of greater than 100 TAF would occur in seven out of ten years. Another historic dryperiod example would result in refuge water reductions of 80 TAF or more (up to 140 TAF) in six consecutive years. Were these scenarios to actually take place, refuge habitats would be irreversibly destroyed. The inability to maintain water on wetlands to produce adequate plant germination conditions, and then to provide irrigations, dramatically reduces seeds, biomass, and invertebrate production, which are all critical to meeting the food needs of migratory birds. The Staff Report goes too far in suggesting that the Bureau would have discretion to undertake such drastic cutbacks, in spite of its statutory mandates. GWD, GRCD, and the Grassland Fund request that Tables 6.4-7, 6.4-23, and 7.6.1-5; Figures 6.4-5 and 6.4-13; and associated text be removed from the Staff Report and replaced with general statements that refuge water deliveries could be made more difficult as a result of decreased CVP water supplies under the UIF scenarios. The numbers shown in these sections of the Staff Report do not reflect the legal or practical realities of the CVP, and strike unneeded fear into the hearts of many.	
291	5	The illusion of replacing wetland water supplies, or wetlands The Staff Report makes unsupported suggestions that decreased deliveries of CVP mitigation water to wildlife refuges could be offset by replacement groundwater pumping, or by restoring wetland habitat elsewhere. (Staff Report pp. 7.6.1-64, 7.6.1-88.) First, regarding groundwater substitution, the National Wildlife Refuges in the Sacramento Valley that receive CVP surface water	Please see the response to comment 291-1 regarding reductions in water supply to refuges analyzed in the draft Staff Report, and updates to the Bay-Delta Plan related to refuge supplies.

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		(Sacramento, Delevan, Sutter, and Colusa) do not have any access to groundwater. The Groundwater Sustainability Plan adopted under the Sustainable Groundwater Management Act in the medium-priority Colusa subbasin was recently deemed “incomplete,” suggesting that sustainability will not necessarily be easy to achieve there. The Gray Lodge State Wildlife Area, also in the Sacramento Valley, frequently pumps up to the Bureau’s maximum cap on groundwater use there, which is used to supplement surface water deliveries under CVPIA. In the San Joaquin Valley, CVPIA refuges are all located in critically overdrafted subbasins where land subsidence and/or over-pumping place real limits on the availability of groundwater. Groundwater quality at the refuges, as well as deep clay soils, do not always support further groundwater development. GWD has established a maximum allowable pumping volume based on its recharge potential, plus water quality thresholds to support wildlife, limiting the amount of water that can be pumped for habitat. Groundwater already supplies a large portion of the water supplies for other CVPIA refuges (Pixley, Kern, and Merced). Put simply, there is no additional “replacement” pumping available. Second, CVPIA refuge water supply goals, and the wildlife areas they support, have been subject to longstanding scientific studies that have persisted through decades of rigorous analysis, energetics modeling, and habitat planning efforts. These water quantities, to be delivered to existing protected wildlife areas in strategic locations, have been incorporated into the Central Valley Joint Venture Implementation Plan, which implements the United States’ obligations under the North American Waterfowl Management Plan and associated international migratory bird treaties. [Footnote 15: Central Valley Joint Venture Implementation Plan, pp. 42-55, available at: https://www.centralvalleyjointventure.org/assets/pdf/CVJV_2020%20Implementation%20Plan.pdf] It is unsound for the Staff Report to suggest that these well-studied, biologically based objectives to meet the energetic needs of the largest continental-scale wildlife migrations on earth could be replaced by smaller-scale, often piecemeal, voluntary wetland restoration efforts.	

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		Hundreds of millions of dollars have been invested by wildlife professionals to restore, maintain, and manage our Central Valley wildlife refuges. Proven moist-soil management techniques, including plant management and the timing of critical irrigations, have been refined for decades to maximize seed and biomass production and provide enough food for the millions of migratory birds that rely on the last remaining Central Valley wetlands. The State risks too much if it turns to unproven, multi-purpose floodplain or other restoration efforts as a substitute.	
292	1	The Bay Delta Plan update, restoration of the salmon, and restoration of water quality in the Bay Delta, and all of its tributaries, is critically important to Save California Salmon and all the tribes, fishermen, drinking water advocates, recreationalists, and front line communities we work with. Save California Salmon has concerns around several topics within the Draft Staff Report. Tribal cultural resources and critical cultural landscapes deserve proper acknowledgement and protections. Language discussing tribes and tribal communities should be reconsidered since the Native American community. Additionally, Tribal Beneficial Uses and Traditional Ecological Knowledge should be fully incorporated into the Draft Staff Report for the benefit of tribes and the Bay Delta ecosystem. Tribes and environmental justice communities face the greatest impacts from environmental degradation and pollution, such as harmful algal blooms, and their concerns should be prioritized.	The revised proposed Plan amendments incorporate Tribal Beneficial Uses, would designate Tribal Tradition and Culture (CUL) beneficial use, and include provisions for tribal outreach and engagement and incorporation of tribal feedback and Traditional Ecological Knowledge into the Bay-Delta Plan update and implementation processes. Please refer to the revised language in final Staff Report Section 11.2, Background and History of Native American Tribes, intended to portray Native American lifeways and culture as existing continuously, not as a culture that only existed in the past. Please refer to Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for responses to comments related to Traditional Ecological Knowledge/tribal knowledge, and Tribal Beneficial Uses. Please refer to Common Response 10.1, Economically Disadvantaged Communities, for responses to comments related to existing environmental conditions and the CEQA analysis. Please refer to Common Response 4.1, Harmful Algal Blooms, for responses to comments related to economically disadvantaged communities and California Native American Tribes and harmful algal blooms.
292	2	Save California Salmon also wishes to express our support for the High Flow Alternative as it is the closest alternative to the initial recommendations of the 2017 Science Report. [Footnote 1: SWRCB, Cal. EPA. Appendix B Scientific Basis Report in Support of New and Modified Requirements for Inflows from the	The 2017 Scientific Basis Report did not determine a proposed range for the inflow requirement. Please see Section 5.2.4 of Appendix B, Scientific Basis Report in Support of New and Modified Requirements for Inflows from the Sacramento River and its Tributaries and Eastside Tributaries to the Delta, Delta

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		Sacramento River and its Tributaries and Eastside Tributaries to the Delta, Delta Outflows, Cold Water Habitat, and Interior Delta Flows. 2017. https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/docs/2023/staff-report/app-b.pdf] On this note, we wish to convey our disappointment regarding the lack of adequate analysis that the Voluntary Agreements have received and urge that they be analyzed on a more serious level, considering their inequitable formation and controversial biological opinion basis. We request the Board rectify this and take a hard look at the benefits of the High Flow Alternative.	Outflows, Cold Water Habitat, and Interior Delta Flows, of the 2023 draft Staff Report for more information. The Voluntary Agreements and all other alternatives were fully analyzed as required by CEQA and other applicable requirements. The Voluntary Agreements were analyzed in Chapter 9 of the 2023 draft Staff Report. See Common Response 1.2, Water Quality Control Planning Process, for information on the reasonable protection of fish and wildlife beneficial uses; Common Response 7.1, General CEQA and Approach to the Analysis, for more information on the CEQA analysis; and Common Response 7.24, Alternatives Analysis, for more information on the analysis of alternatives.
292	3	We also request a serious analysis of the possible impacts to the Trinity River.	Please also see Common Response 1.5, Trinity River, on consideration of the Trinity River watershed.
292	4	General Comments on the Draft Staff Report The San Francisco Bay/Sacramento-San Joaquin Delta Estuary is the largest and most significant estuary on the west coast of the Americas. The protection of this great resource is meant to be protected by state agencies, specifically the State Water Board through the Water Quality Control Plan. The Water Quality Control Plan for the Bay Delta (Bay Delta Plan) is supposed to undergo periodical review and updates to ensure that the vital Bay Delta resources are being protected. Unfortunately, the period of supposed review, three years, has been bypassed many times and the update to the Bay Delta Plan is well past its due date. According to the Draft Staff Report, the update to the Bay Delta Plan is being made “[i]n response to declines of several native aquatic species since the Bay Delta Plan was last comprehensively updated...” [Footnote 2: Draft Staff Report/Substitute Environmental Document in Support of Potential Updates to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary for the Sacramento River and its Tributaries, Delta Eastside Tributaries, and Delta (Draft Staff Report), Executive Summary, 1-1. SWRCB, 2023.] It should not take the severe decline of the ecosystem for the State Water Board to take action.	Section 13240 of the Porter-Cologne Water Quality Control Act and Section 303, subdivision (c)(1) of the Clean Water Act (codified as 33 U.S.C. section 1313, subd. (c)(1)) require that water quality control plans be reviewed at least once every three years. The State Water Board recognizes the importance of this requirement, which ensures that plans are updated regularly to keep pace with changes in regulation, new technologies, policies, and physical changes in the region. The proposed Plan amendments were developed to improve flow and water quality conditions over a large interconnected geographic area, and particularly for fish and wildlife beneficial uses in the Sacramento River watershed, Delta eastside tributaries, and Delta regions (Sacramento/Delta). The State Water Board acknowledges that the update to the Bay-Delta Plan has taken a significant amount of time due to the complexity of providing for the reasonable protection of beneficial uses in this large and complex watershed that is integral to the ecosystem, tribal ways of life, the state’s water supplies, and numerous other uses. The State Water Board is working as expeditiously as possible to complete the update and move on to the critical step of implementation in a manner that provides the needed flexibilities to move from the current more narrow implementation of the Plan through State Water Board Water Right Decision 1641 by few parties to broader implementation over the entire watershed, which has not historically occurred.

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			For these periodic reviews, the State Water Board will conduct a public hearing to discuss progress to date on implementation of the plan, effectiveness at providing for the reasonable protection of beneficial uses, and possible needed changes to the plan and its implementation. Topics will be prioritized and addressed through successive periodic reviews. Staff will identify recommendations for proposed amendments to the plan or its implementation and prepare a report describing proposed changes. This report will undergo a minimum 45-day public comment period and associated procedures including any needed environmental documentation, before being presented to the State Water Board for consideration. This process will help ensure that the Bay-Delta Plan is reviewed more frequently, with necessary changes identified and discussed through a robust public process.
292	5	Save California Salmon has been involved in the Bay Delta Plan update since our creation and many of our board members and staff have been involved in this plan for over a decade. Thousands of people have testified for a science-based update to the Bay Delta Plan within this time. We are extremely disappointed that despite these comments, the Voluntary Agreements are painted as one of the preferred alternatives in this analysis as it is contrary to the best available science and is exclusionary and goes against both the purpose of the plan and the State Water Board's (State Water Board or Board) racial equity and Tribal commitments.	Please see Common Response 3.1, Fish Protection, for information on the use of best available science; Common Response 10.1, Economically Disadvantaged Communities, for information on the racial equity resolution; Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for a discussion of tribal concerns with the VAs; and Staff Report Section 9.7.23, Ability to Achieve Project Purpose and Goals, for a discussion of the ability of the VAs to achieve the project purpose and goals.
292	6	The public process for commenting on the Draft Staff Report has been difficult for tribes and environmental justice communities. The Report is extremely long and technical and for communities that do not have the resources to spend the time or hire experts to review the document, providing comments can be difficult.	Please refer to Common Response 1.1, General Comments, for responses to comments regarding the adequacy of the public process related to the Sacramento/Delta update to the Bay-Delta Plan. Also see Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for responses to comments about tribal outreach and engagement. Please see Staff Report Chapter 12, Public Participation, for a summary of the public participation activities and Chapter 11, Tribal Engagement, Traditional Ecological Knowledge and Tribal Beneficial Uses, for summary of tribal engagement activities related to the Sacramento/Delta Update to the Bay-Delta Plan. The State Water Board has conducted extensive public and tribal

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			related outreach and appreciates the significant input from tribes and environmental justice communities related to the Sacramento/Delta Update to the Bay-Delta Plan. Given the complexities of the Bay-Delta Plan and the science supporting the various alternatives, the State Water Board has made every attempt to present information in plain language as clearly formatted as possible.
292	7	Save California Salmon appreciates that the Board did offer an extension of the comment period which we have been grateful for. We also recognize that the Board made a good faith effort to provide as much information as possible through workshops and presentations that were recorded and uploaded in a timely manner online and a tribal hearing. We also appreciate that several days were reserved for public hearings including panel presentations. However, we believe there are still further opportunities needed for tribal engagement. At the tribal hearing at Shingle Springs Rancheria, there was not enough time to go through the staff presentation with the tribal representatives who were able to attend. It is beneficial to have multiple tribal partners in the room because often they share concerns and have similar questions and it would be helpful if additional meetings were held. The in-person meeting at Shingle Springs was helpful and often the digital platforms can make free flowing conversations harder and it can be easier to communicate in person. There are certain aspects of the Draft Staff Report that could benefit from more tribal involvement. For example, throughout the entire Report, “federally reserved water rights” are only mentioned once and there is no other mention of tribal water rights. [Footnote 3: Draft Staff Report, Ch. 11 Tribal Engagement, p. 11-3.] With more tribal involvement, the Draft Staff Report could benefit greatly.	The State Water Board recognizes the benefits of in-person meetings and staff are available to continue meeting in-person to discuss the Bay-Delta Plan update and implementation processes. To schedule a meeting, please contact the Tribal Coordinator for Bay-Delta Plan Update and Implementation processes. Contact information is available at https://waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/tribal_coordination.html. Please see Common Response 1.1, General Comments, for responses to comments on the adequacy of the public process. Please see Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for responses to comments about tribal outreach and engagement and tribal reserved water rights.
292	8	Cultural Resources Save California Salmon appreciates the State Water Board’s efforts to identify potential impacts, and mitigation measures that could avoid or reduce any potentially significant impacts on cultural and paleontological resources from changes in hydrology and water supply. However, we would like to see an	The 2023 draft Staff Report Section 7.7, Cultural Resources, analyzed the potential for impacts on cultural resources resulting from changes in hydrology and water supply, using methods and criteria consistent with the State Water Board’s environmental checklist (Cal. Code Regs, tit. 23, div. 3, ch. 27 §§ 3720-3781, Appendix A). The checklist refers to the definitions of historic and archeological resources in CEQA Guidelines

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		analysis of and discussion on the benefits of high flows, including the inundation of wetlands and floodplains, and flow restoration as it pertains to cultural resources benefits. The discussion of cultural resources fails to acknowledge that many of the cultural resources being discussed are tribal cultural resources. When there is discussion about people who were in the state prior to colonization, those people are the ancestors of California's Indigenous Peoples. The anthropological language removes the tribal cultural resources from their living relatives when they should be discussed together. The funerary objects are the ancestors of people today and should be addressed with greater respect. Additionally, many of the items that can be found are significant items to tribes, such as mortars and ground stone tools which tribes still use today in processing of acorn. The "non-utilitarian" items described as "charmstones, shell ornaments, and beads" were very likely used in regalia for traditional ceremonies and are likely important religious artifacts for tribes. [Footnote 4: Draft Staff Report, Ch. 7 Cultural Resources, p. 7.7-6.] Cultural resources analysis in the Delta and tributaries should not be relegated to the past, as Tribes still consider the entire Delta as a cultural resource. Many upriver Tribes consider their watersheds, or portions of their watersheds, as a cultural resource, and many impacted species are also considered a cultural resource. In addition, we would like a better discussion of who these resources belong to and how the people involved, especially Tribal people, are working with the Board to protect those resources.	section 15064.5. Those definitions focus on historic "object[s], building[s], structure[s], site[s], area[s], place[s], record[s], or manuscript[s]" (CEQA Guidelines section 15064.5(a)(3) and "archaeological artifact[s], object[s], or site[s]" (CEQA Guidelines section 15064.5(c)(3); Public Resources Code 21083.2(g)), rather than uses, activities, practices, or landscapes. The Staff Report's analysis therefore appropriately focuses on physical items and individual sites in a historic context as described in the checklist and Guidelines. The State Water Board's designation of Tribal Tradition and Culture (CUL) in the Bay-Delta watershed reflects the State Water Board's understanding of the intrinsic connection between salmon, the ecosystem, and tribal culture, both historic and contemporary, based on the testimony provided by tribes in the planning process. The State Water Board is committed to continuing consultation with tribes throughout project implementation on topics that tribes and the State Water Board deem appropriate. Please see Chapter 11, Tribal Engagement, Traditional Ecological Knowledge and Tribal Beneficial Uses, for a discussion of the policies that have guided the State Water Board's outreach and engagement efforts with California Native American Tribes, as well as the discussion of tribal engagement efforts and State Water Board's consideration of tribal input in Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses. As stated in Section 7.7 of the Staff Report, the State Water Board is committed to the State Water Board Tribal Consultation Policy and CalEPA Tribal Consultation Protocol, which guides the agency and its boards, departments, and offices in their daily operations to ensure that they work with tribes in a knowledgeable, sensitive, and respectful manner. The State Water Board actively sought, and continues to seek, consultation with interested California Native American Tribes consistent with Executive Order B-10-11 and its Tribal Consultation Policy.
292	9	According to the Cultural Resource Section findings, the project was found to have potentially significant impacts in the following areas: adverse changes in the significance of a historical resource as defined in Section 15064.5; substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5; and disturbance of any human remains, including those	Section 7.7, Cultural Resources, appropriately defines and considers historical resources consistent with section 15064.5 of the State CEQA Guidelines. The State Water Board appreciates and understands tribal perspective articulated in this comment. The proposed Plan amendments were developed to improve flow and water quality conditions over a large interconnected

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		interred outside of dedicated cemeteries. The Environmental Setting section describes cultural resources as buildings, structures, objects, sites, landscapes, or districts that are important for historical, scientific, or religious reasons and are of concern to cultures, communities, groups, or individuals. Cultural resources may include buildings and architectural remains, archaeological sites, or other artifacts that provide evidence of past human activity. It is important to note that these resources are present in the project area and are irreplaceable, so any sort of project will have irreversible impacts and cannot simply be described as “changes to resources.” In fact it may be more accurately described as “destruction”. As discussed above, many watersheds and species themselves are cultural resources, so these impacts should also be analyzed. For example, inundation of wetlands and floodplains will greatly help restore dwindling tule populations in areas that are of cultural significance to tribes. Inundation would also help restore culturally significant species, such as salmon and willows. (Specifically, willows flourish in high flows due to increase in stalk growth as a result of water flowing over them, causing bent branches, and increased growth.) Restored areas of usable tule and willows would greatly benefit traditional tribal weavers and regalia makers. Further, this type of restoration would improve water quality, allowing Tribal members to access these areas without getting sick.	geographic area, and particularly for fish and wildlife beneficial uses in the Sacramento River watershed, Delta eastside tributaries, and Delta regions (Sacramento/Delta). The project is intended as a restoration action that occurs in a system that has been highly altered. The project would be expected to improve conditions for native fish and wildlife, and associated tribal cultural resources in the Sacramento/Delta watershed over time. Please refer to the response to comment 292-8.
292	10	The Impact Analysis notes that “Changes in hydrology would result in significant reductions in water surface levels at some reservoirs; consequently, there would be the potential for increased exposure and for damage to cultural resources, particularly during critical and dry water years. Significant historic or archeological resources that were previously submerged could be exposed and damaged by erosion or vandalism, causing a substantial adverse change in the significance of the resource. This impact would be potentially significant.” As such, Save California Salmon supports mitigation measure 3.i. to implement standard unanticipated discovery and treatment measures. In addition, we have some specific requests that	The State Water Board appreciates the constructive suggestions to bolster existing mitigation measures for cultural resources. As explained in Section 13.7.1.2, Summary of Revisions, in response to comments on the 2023 draft Staff Report that cited <i>Lotus v. Dept. of Transportation</i> (2014) 223 Cal.App.4th 645, 657-658, the State Water Board has removed cold water habitat objective implementation measures and voluntary implementation plans (now called local cooperative solutions), from the list of mitigation measures in Appendix H3, Mitigation Measures for the Revised Proposed Plan Amendments, as they are properly part of the proposed project. Cold water habitat implementation measures are no longer identified as mitigation for potential temperature impacts on aquatic resources. Additionally, several other corresponding changes have been made to mitigation

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		would bolster this process. Currently for mitigation purposes, the proposed Plan amendments would require reservoir owners and operators in the Sacramento/Delta to develop and implement long-term strategies and annual operations plans for approval by the State Water Board to implement the cold water habitat objective. That process would reduce changes in reservoir levels and would consider other resources such as cultural resources. Save California Salmon urges that operations plans require action for - not consider- cultural resources. In the event that a reservoir or export reservoir is not already subject to a resource management plan that contains cultural resource protection measures for previously recorded sites, as well as procedures to implement for the event of an unanticipated discovery, reservoir and export reservoir operations plans should be created or updated to include these measures as a part of the Bay Delta Plan approval. The Water Board should also require that operations plans ensure the identification of cultural resources at lower water levels in reservoirs and associated streams, and their identification is properly responded to by way of contacting the relevant tribal cultural resource manager and providing archeological support if needed. Additionally, operations plans should require reservoir owners and operators to be trained on processes to implement when archeological resources, including human remains, are discovered within the reservoir or streams below the reservoir. (The California Native American Heritage Commission has requirements and training for these instances. [Footnote 5: California, State of. Tribal Cultural Resources Law Training, California Native American Heritage Commission, nahc.ca.gov/resources/tribal-cultural-resources-law-training/. Accessed 13 Jan. 2024.]])	measures including the reservoir management mitigation for aesthetics, terrestrial biological resources, cultural resources, energy (hydropower generation), surface water, and recreation. It is expected that rim reservoirs all have resource management plans and will adhere to defined and specific laws governing cultural resources outlined in the regulatory setting in Section 7.7.3, Regulatory Setting (see also Section 7.21, Habitat Restoration and Other Ecosystem Projects, and Section 7.22, New or Modified Facilities). The Bay-Delta Plan specifically requires consultation with appropriate California Native American tribes before submitting proposals for local cooperative solutions. Under Section 4.4.2.3 of the Plan, the temperature management strategies will be subject to review and possible modification as needed as directed by the Executive Director after public review and opportunity for comment. Mitigation Measure MM-CUL-a,b: 1.iii has been modified to replace “consider” with “avoid and reduce” to address the commenters concern.
292	11	We also urge the different alternatives to be analyzed as they pertain to benefits for cultural resources such including cultural landscapes and culturally relevant species. Save California Salmon identifies willow, tule, salmon, smelt, and some species of riparian trees and berries as cultural resources. In addition, this analysis should also include species and areas that are identified by local Tribes.	Please refer to the response to comment 292-8.

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292	12	Tribal Engagement The Bay Delta Plan affects over 100 tribes and their traditional homelands, where prior to colonization they resided since time immemorial. While creating the Tribal Engagement section in the Draft Staff Report is beneficial, it is hard to discern if tribal concerns have been adequately addressed in the other sections. Tribal engagement is an interdisciplinary topic that relates to nearly every aspect of the Bay Delta Plan. While there are some references, further inclusion of references to related sections within the Tribal Engagement chapter would be beneficial in analyzing the Bay Delta Plan as a whole.	The State Water Board has conducted extensive public and tribal related outreach and appreciates the significant input from tribes and environmental justice communities related to the Sacramento/Delta Update to the Bay-Delta Plan. Please see Staff Report Chapter 13, Revised Proposed Plan Amendments, for additional information on the State Water Board's efforts to engage more robustly with California Native American Tribes and integrate tribal and Traditional Ecological Knowledge into the Bay-Delta Plan's update and implementation processes moving forward.
292	13	Use of Past Tense When Referring to Native Americans In the introduction of this chapter, there are several linguistic changes that should occur in the Final Staff Report. Often there is a tendency for people to refer to Native Americans and their traditional practices in the past tense, but that is extremely offensive and incorrect. At the very beginning of Chapter 11 Tribal Engagement, the Draft Staff Report begins to refer to Native American tribes and their practice in the past tense. Many California landscapes were traditionally managed to improve yield of fish, wildlife, and plants. Stewardship practices often included fire management for riparian vegetation and food productivity, harvesting fish and other native species sustainably, and tending to the land to prevent the overgrowth of vegetation. [Footnote 6: Draft Staff Report, Ch. 11 Tribal Engagement, p. 11-1.] (emphasis added) There are still landscapes being managed by tribes and with the LandBack movement and the increase of tribal co-management, even more are being managed by tribes every year. Additionally, the stewardship practices that have been passed through generations are still happening today. Tribes still do this, just on a much smaller scale since their traditional homelands were taken from them and their populations decimated. Thankfully these practices are being integrated into mainstream land management practices. Traditional fire management is being used more frequently on tribal land and in partnership with	Multiple references to California Native American Tribes and their traditional practices have been updated in final Staff Report Chapter 11, Tribal Engagement, Traditional Ecological Knowledge and Tribal Beneficial Uses, from past tense to present tense, including in Section 11.2, Background and History of Native American Tribes.

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		state and federal agencies; it is not a practice of the past. Prior to colonization, it was not “many California landscapes” that were cared for by tribes, rather wherever there were Native Americans is where the landscape was being traditionally stewarded. Given the evidence of where tribes traditionally were, that means all of California’s landscapes were likely being taken care of by the local indigenous peoples. [Footnote 7: “Tribal Groups of California” map. Indigenous Peoples Resources (References: Survey of California and Other Indian Languages, Univ. of Cal., Berkeley. Golla, Victor (2011). California Indian Languages. Berkeley, CA: Univ. of Cal. Press 978-0-520-26667-4.) https://indigenouspeoplesresources.com/cdn/shop/products/CaliforniaTribalGroupsMap-IndigenousPeoplesMedia-2048_800x.jpg?v=1615394466] Further, the use of the word “managed” is not exactly correct in this instance. The relationship between indigenous people and the land is a symbiotic relationship, where the people take care of the land and the land takes care of the people. To say that the land was “managed” perpetuates the idea that the people have control over the land which is a westernized perspective. A more accurate word to use would be “tended” because indigenous people have lived and continue to live with the idea that we are caretakers rather than dominant owners of the land.	
292	14	Failed Comparison of Tribal Cultural Beliefs and California’s Water Rights System There is an improper comparison made between traditional ideologies regarding water and the California water rights system. Culturally, individuals or tribes may view themselves as belonging to the water, and as stewards, which is distinct from the western notion of asserting individual ownership and dominion over natural resources (DWR 2009). This is true even in California where water belongs to the people and therefore water rights are considered “usufructuary,” meaning that one has a right to the use and enjoyment of the resource without owning it, destroying it, or wasting its substance (Wat. Code, § 102). [Footnote 8: Draft Staff Report, Ch. 11 Tribal Engagement, p. 11-	Please see Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for responses to comments on tribal outreach and engagement and tribal reserved water rights. In addition, the comparison made in Chapter 11, Tribal Engagement, Traditional Ecological Knowledge and Tribal Beneficial Uses, between traditional ideologies regarding water and the California water rights system has been removed to reflect the changes requested by this commenter.

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		1.] Here, the Draft Staff Report likens the water rights system of California to the relationship that indigenous people have with water, however they are not synonymous. The water rights system of California was established with racist ideologies. When the prior appropriation doctrine was adopted, it was meant to benefit white colonizers at a time when there was an active genocide occurring against the tribes who have lived in California since time immemorial. Addressing the legislator in 1851, the first governor stated, “That a war of extermination will continue to be waged between races, until the Indian race becomes extinct, must be expected.” [Footnote 9: Burnett, Peter, State of the State Address, Jan. 6, 1851. https://governors.library.ca.gov/addresses/s_01-Burnett2.html] That racism is perpetuated today and distribution of water rights is still inequitable as evidenced by the Department of Water Resources’ data sets. [Footnote 10: Fidell, Megan and Paul Shipman. “Who makes decisions about California’s water?” https://www.restorethedelta.org/wp-content/uploads/2023-Fidell-Who-Makes-Decisions-about-Californias-Water.pdf] The data showed that 91% of nearly 14,000 water rights holders are white. [Footnote 11: Id.] The idea that the Draft Staff Report tries to set out here that “water belongs to the people” and “one has a right to the use and enjoyment” of water resources leaves out the fact that most of those who have the right to use the water are white, excluding the original water users of the state, the tribes. ...Indigenous People are intricately linked to the land, including its waters. For Native American peoples, the environment is not just a natural resource but a cultural resource and the struggle against “European colonization can be characterized as a fight to protect the cultural resources Native Americans inherited from their ancestors.” [Footnote 12: Draft Staff Report, Ch. 11 Tribal Engagement, p. 11-3.] This later description of the importance of water to tribes makes it clear that the tribal relationship to water is distinct from the state relates to water, especially under the current water rights system. The exclusionary and antiquated water rights system is nothing like how tribes view water and this comparison is	

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		offensive and disrespectful. Save California Salmon would also like the Board to acknowledge that legally tribes that have had an established reservation or rancheria have a senior water right of either the date of establishment or in many cases time immemorial. This is supported not only by the fish in time, first-in-right system in California, but also by almost a hundred years of case law, including case law in California. [Footnote 13: See <i>Winters v. United States</i>, 207 U.S. 564 (1908); <i>United States v. Adair</i>, 478 F. Supp. 336 (D.Or.1979) (“Adair I”); <i>United States v. Adair</i>, 723 F.2d 1394 (9th Cir. 1983)(“Adair II”); <i>United States v. Adair</i>, 187 F. Supp. 2d 1273 (D. Or. 2002); <i>Agua Caliente Band of Cahuilla Indians v. Coachella Valley Water Dist.</i>, 849 F.3d 1262 (9th Cir. 2017).] Termination of tribes or taking of formally reserved lands does not extinguish this right.	
292	15	“Reclamation” of Traditional Tribal Land There is an additional issue in the introduction of this section regarding the use of the term “reclamation.” We recognize that the use of the term “reclamation” has been ingrained into state and federal policy for generations. However, when using in a context that relates to Native Americans, reclamation is the incorrect term to use. During the “timeframe [when] land reclamation policies swept through California,” the land was not in fact being “reclaimed,” since it did not belong to the settlers, state, or federal government before. Rather, the land was being privatized by primarily white settlers and excluding tribes from their homelands. The land was being sold cheaply to settlers leading to fundamental environmental change, degradation, and destruction of natural landscapes that indigenous people had spent thousands of years cultivating through policies promoted by the state and federal governments. Ultimately, the land was not being reclaimed, it was being colonized. The Draft Staff Report states that “[l]andscape alteration and displacement of communities prevented Native Americans from practices such as shunting, gathering, and participating in culturally significant rituals.” But it was not only the changing landscape and displacement, Native Americans were banned	The use of the term “reclamation” in Staff Report Chapter 11, Tribal Engagement, Traditional Ecological Knowledge and Tribal Beneficial Uses, is not intended to indicate that these policies were not part of greater colonization efforts. The term “reclamation” is intended to refer to the conversion of wetlands and semi-arid scrublands into land for agricultural use. These actions, in conjunction with the California Genocide and the 1850 Act for the Government and Protection of Indians, further separated Native Americans from their ancestral lands and were part of a greater effort to erase Indigenous cultures. The State Water Board has revised the text in Chapter 11 to make the link between these actions clear. Meaningful engagement with California Native American Tribes is fundamental to the mission of the State Water Board. The State Water Board welcomes input and feedback on the Bay-Delta Plan update and implementation processes, including ways to improve how we describe or present the state’s history with California Native American Tribes. To schedule a meeting to discuss this, please contact the Tribal Coordinator for Bay-Delta Plan Update and Implementation processes. Contact information is available at https://waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/tribal_coordination.html.

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		from practicing their religions by federal legislation. [Footnote 14: Teller, Henry M, Rules Governing the Court of Indian Offenses, U.S. Dept. of the Interior (1883).] Tribes today are still trying to get their cultural practices back. Continued alteration and privatization of the land inhibits tribes from practicing their traditions as they once did and they are continually working to sustain and recover after the attempted cultural genocide against them. The removal of the Klamath Dams is an example of modern action being taken that will greatly benefit tribes that have depended on the Klamath River since time immemorial since they will be able to reclaim their cultural places and practices along the free flowing river. Through Executive Order N-15-19, the state issued an apology for the role that California played in the maltreatment and exploitation of Native Americans and from that order the Truth and Healing Council was created. The State Water Board should take guidance from the purpose of the Truth and Healing Council, which is to provide an avenue for Indigenous Peoples to clarify and correct the historical record and provide their own historical perspective on the relationship between tribes and the state. In the State Water Board's development of regulations and projects, like updating the Bay Delta Plan, it should allow tribes to provide their own historical perspective, not one created by non-Native anthropologists and scientists. Additionally, since it has taken so long for the State Water Board to take responsibility for the inequity that exists within the water system, reconciliation with tribes should be prioritized. Tribal concerns should hold more weight given the years of neglect of proper protections and the extensive history of cultural and land deprivation.	Additionally, the Bay-Delta Plan has requirements for annual and periodic reviews to receive feedback from tribes on the Bay-Delta Plan and calls for the development of a Bay-Delta Tribal Advisory Group. Please see Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for more information on tribal outreach and engagement.
292	16	Outreach and Engagement with Tribes Continuous engagement from tribes and cultural stewards is necessary to create an effective Bay Delta Plan that seriously considers all forms of science. Save California Salmon encourages the Board to follow their Racial Equity Action Plan intention to "create a future where we equitably preserve, enhance, and restore California's water resources and drinking water for all California regardless of race" – this project has left	Please see Common Response 10.1, Economically Disadvantaged Communities, for responses to comments related to the State Water Board's Racial Equity Resolution and Racial Equity Action Plan. On January 13, 2023, letters offering formal tribal consultation on the update and implementation of the Bay-Delta Plan were mailed to California Native American Tribes identified within the Bay-Delta and Trinity watersheds. Please see Chapter 11, Tribal

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		out tribes for years and should make up for that now by addressing the concerns tribes have and prioritizing their concerns since everyone else's concerns have been address prior. With regard to consultation letters, how were they mailed? Clearly labeled as consultation opportunities or simply mailed in State Water Board stationary? Because of the distrust and/or lack of desire to engage with state agencies, the letters should be obvious requests for tribal engagement. The language used around the desire to continue consultation should be more carefully chosen. "Considered" and "considering" can be understood by tribes as an empty word when it comes to really caring about what tribes are saying and creates the space for empty promises. There should be more concrete promises and visible actionable steps being taken to address tribal concerns. "Engaging" is another word that can have an empty meaning when it comes to consultations. Tribes want tangible commitments. Not just promises to listen and then not implement the changes that tribes are asking for.	Engagement, Traditional Ecological Knowledge and Tribal Beneficial Uses, for more information about outreach and engagement with tribes, including consultation letters and the Sacramento/Delta update to the Bay-Delta Plan. Please see Staff Report Chapter 13, Revised Proposed Plan Amendments, for additional information on the State Water Board's efforts to engage more robustly with California Native American Tribes and integrate tribal and Traditional Ecological Knowledge into the State Water Board's Bay-Delta Plan update and implementation processes. Please also see Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for responses to comments related to tribal outreach and engagement.
292	17	Tribal Beneficial Uses State Water Resources Control Board should assert its authority and incorporate Tribal Beneficial Uses into the existing Beneficial Uses for the Bay Delta Plan After the Tribal Beneficial Use panel in front of the State Water Board this summer, there was a lot of hope from Save California Salmon and many participants from the public and Board staff that TBUs would be included in the Draft Staff Report. The consideration of TBUs is a great first step but the State Water Board has the authority to provide a guidepost for all of the Regional Boards which are slowly going through the TBU implementation process which has no deadline. Since the State Water Board and Regional Water Boards are supposed to work together to provide comprehensive protections, there should be no issue in the State Water Board taking the lead on protecting TBUs for the Bay Delta. The Board does not need to push the adoption of TBUs out to	As discussed in Chapter 13, Revised Proposed Plan Amendments, the revised proposed Plan amendments incorporate Tribal Beneficial Uses (TBUs), would designate Tribal Tradition and Culture (CUL) beneficial use, and include provisions for tribal outreach and engagement and incorporation of tribal feedback and Traditional Ecological Knowledge (TEK) into the Bay-Delta Plan update and implementation processes. Please see Staff Report Chapter 13, Revised Proposed Plan Amendments, for additional information on incorporation and designation of Tribal Beneficial Uses. Please see Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for responses to comments related to Tribal Beneficial Uses.

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		some unknown date in 2024. [Footnote 15: Draft Staff Report, Ch. 11 Tribal Engagement, p. 11-10.] There is already a system in place for adopting the definitions and beginning designations. Incorporating TBUs into the Bay Delta Plan Update should not be another drawn out process that tribes have to work to participate in. The Board should incorporate TBUs into the Bay Delta Plan now, and formal designations can come later and include the Regional Water Boards. The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) “envisions that most water quality control planning will be accomplished on a regional, hydrologic basis by the regional water boards. (Wat. Code, §§ 13000, 13240–13245.)” [Footnote 16: Draft Staff Report, Ch. 11 Tribal Engagement, p. 11-11.] It states that most water control planning can be done by regional boards, but it does not say all. According to Water Code § 13170, the State Water Board has superseding jurisdiction over the Bay Delta Plan area, even though the watershed falls within two Regional Water Board areas. Since the State Water Board has authority to create its own water control plans that Regional Water Boards must follow, it can bring TBUs into the Bay Delta Plan. There is regulatory space for the State Water Board to have jurisdiction over water quality control plans, as it does for the Bay Delta Plan, and therefore it can incorporate TBUs into the already existing list of beneficial uses for the Bay Delta Plan.	
292	18	The Draft Staff Report states that the State Water Board and San Francisco Bay (Region 2) and Central Valley (Region 5) Regional Water Boards have a comprehensive program for water quality protection that draws on three distinct plans and myriad authorities to implement them. “No one plan provides all the solutions,” and the State Water Board itself has created its own authority to incorporate TBUs into basin plans. “Actions are taken under a variety of authorities to implement the three plans and to protect beneficial uses of water” and one of those actions is TBUs and the State Water Board has the authority to add beneficial uses to the Bay Delta Plan. The Bay Delta Plan is clearly a separate plan from the regional basin plans. The area covered under the Bay Delta overlaps with San Francisco Bay (Region 2) and Central Valley (Region 5) Regional	Please see Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for responses to comments related to Tribal Beneficial Uses. Tables 7.12.1-1a through 7.12.1-1c in Section 7.12.1, Surface Water, of the Staff Report list the currently designated beneficial uses found in the Bay-Delta Plan and the Water Quality Control Plans for the San Francisco Bay Basin and the Sacramento River and San Joaquin River Basins. Currently, none of these plans have designated Tribal Tradition and Culture (CUL), Tribal Subsistence Fishing (T-SUB), or Subsistence Fishing (SUB) beneficial uses for any stream segment or waterbody. The Sacramento/Delta update to the Bay-Delta Plan proposes to incorporate the CUL, SUB, and T-SUB into the Bay-Delta Plan and to designate CUL as they relate to native fish and wildlife,

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		Water Boards. Per the State Water Board’s Resolution No. 2017-0027, the Regional Water Boards are in the process of implementing the TBUs established in 2017. Region 2 has not completed Step 1 of adding the new definitions to the Basin Plan and Step 2, gathering information for designation, is in the progress. Region 5 has completed Step 1 and Step 2 is also in progress. For both ongoing steps of engaging with California Tribes and the public and Prioritizing Tribal Beneficial Uses in triennial reviews, they are ongoing and completed respectively. Region 5 is currently accepting comments on their 2024 Triennial Review for the Water Quality Control Plans for Sacramento River-San Joaquin River Basins and Tulare Lake Basin. The TBU project is considered an “Existing Commitment” in this process because it was approved and prioritized during the 2021 Triennial Review. Per the Porter-Cologne Act, “beneficial uses to be protected” are one factor that must be evaluated when establishing a water quality control plan. [Footnote 17: Cal. Wat. Code § 13050(j).] In the Executive Summary of the Draft Staff Report, Table 7.12.1-1a is identified as a table that “lists the designated beneficial uses of water currently identified in the Bay Delta, which includes past, present, and future beneficial uses of water.” (Draft Staff Report, 1-6) However, notably missing from Tables 7.12.1-1a, -1b, and -1c are Tribal Beneficial Uses. According to the Executive Summary, this table is meant to list “past, present, and future” beneficial uses. Tribal beneficial uses should be added to all of these tables or at the very least Table 7.12.1-1c Designated Beneficial Uses for Waterbodies Identified in the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, which falls under the Central Valley Regional Water Board’s jurisdiction. On September 7, 2022, the State Water Board adopted a resolution to approve adding TBU definitions to the Central Valley Region’s Basin Plans and on December 14, 2023, the Office of Administrative Law approved the TBU Definitions Basin Plan amendments. [Footnote 18: Central Valley Regional Water Board. “Tribal Beneficial Uses Designations.” Cal. EPA. (2024) https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/tribal_beneficial_uses/] The inclusion of TBUs in the Central Valley Basin Plans (and likely the San Francisco Bay	particularly salmon, and these are listed in Chapter 2 of the revised proposed Plan amendments. See also Staff Report Chapter 13, Revised Proposed Plan Amendments, for additional information on incorporation and designation of Tribal Beneficial Uses.

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		Basin Plan) is imminent and therefore should be included in lists and analysis of past, present, and future beneficial uses per the Porter Cologne Act.	
292	19	Method for Tribal Beneficial Uses Designations The State Water Board should recognize that the beneficial use designations should apply to the entire watershed. While this is something that seems to create a conflict of authority between the State and Regional Water Boards, the State Water Board has the opportunity to provide guidance to the Regional Water Boards. A whole watershed designation would greatly relieve tribes, which already have limited resources, of the burden of having to go through each aspect of the watershed to request designations for two different Regional Boards which have different timelines.	Please see Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for responses to comments related to Tribal Beneficial Uses. Please see Staff Report Chapter 13, Revised Proposed Plan Amendments, for additional information on incorporation and designation of Tribal Beneficial Uses.
292	20	Traditional Ecological Knowledge Incorporation of Traditional Ecological Knowledge (TEK) has been an effective scientific tool for tribes since time immemorial. Save California Salmon appreciates the efforts of State Water Board staff to engage with all of the tribes within the Bay Delta watershed including its tributaries. Save California Salmon also understands the difficulty in procedurally dealing with knowledge that has not always been written or documented in tangible forms. We encourage the Board staff to continue to take care in the process of gathering TEK and traditional resource management strategies. With the tribes hesitance towards granting information to the Board staff, one method that may add more security is having the Board staff collect the information but allow the tribes to hold access to the information once it is gathered. Also, ensuring any documents or communications related to the gathered information should be held in confidence and labeled as such so there are not improper disclosures. The Draft Staff Reports' description of TEK seems to be fairly broad and incorporates several different definitions and classifications. It would be helpful for the Board staff to develop a definition of TEK that they can rely on for this document and	Please see Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for responses to comments related to Traditional Ecological Knowledge/tribal knowledge. Please see Staff Report Chapter 11, Tribal Engagement, Traditional Ecological Knowledge and Tribal Beneficial Uses, and Staff Report Chapter 13, Revised Proposed Plan Amendments, for additional information on the State Water Board's efforts to engage more robustly with California Native American Tribes and integrate Traditional Ecological Knowledge/tribal knowledge into the State Water Board's Bay-Delta Plan update and implementation processes.

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		future documents. With TEK and Indigenous Ecological Knowledge that the federal government uses to refer to similar topics, there is the possibility of mixing up the terms, definitions, and uses. It would be beneficial to have a stand alone definition for TEK that the Board can use.	
292	21	It is clear from the examples included in the Draft Staff Report of instances that TEK was beneficial to data gathering for environmental monitoring and assessment. [Footnote 19: Draft Staff Report, Ch. 11 Tribal Engagement, p. 11-14.] This only emphasizes the need for the State Water Board to seriously consider and incorporate TEK into the Bay Delta Plan, and any other projects. The incorporation of TEK will improve the relationship that tribes have with state agencies, including the State Water Board. As seen in the example of the federal agencies collaborating with tribes, the tribes were able to develop analyses that considered the protections of tribal resources. The Draft Staff Report cites Western and Traditional Ecological Knowledge by Joy Zedler and Michelle Stevens several times. [Footnote 20: Zedler J. and M. L. Stevens, Western and Traditional Ecological Knowledge in Ecocultural Restoration, San Francisco Estuary and Watershed Science, 2018. https://doi.org/10.15447/sfews.2018v16iss3art2.] Is the State Water Board considering the plan proposed by Zedler and Stevens for the Bay Delta? It seems like it may be an effective plan for integrating TEK via “ecological restoration” into the management of the Bay Delta or at least is a plan that the Bay Delta Plan can look to for guidance on how to integrate TEK. The Draft Staff Report states that, “TEK is complementary to western ecological knowledge, and the two approaches combined can provide a more holistic and effective approach to adaptive management.” [Footnote 21: Draft Staff Report, Ch. 11 Tribal Engagement, p. 11-15.] Save California Salmon would like to see further incorporation of TEK into the Bay Delta Plan because only then will we be able to use holistic science that would benefit the Bay Delta ecosystem.	The report, Western and Traditional Ecological Knowledge by Joy Zedler and Michelle Stevens, suggests beginning restoration projects by promoting ecocultural restoration, which requires engaging indigenous people in planning and decision-making, as well as learning and teaching about the roles traditionally adopted to manage how ecosystems were structured and how they functioned. As part of the revised proposed Plan amendments, the State Water Board is proposing to form, in conjunction with tribes, a Bay-Delta Tribal Advisory Group to provide input to the State Water Board on Bay-Delta Plan update and implementation issues and related matters, including the effectiveness of habitat restoration efforts. One of the envisioned functions of the Tribal Advisory Group would be to integrate Traditional Ecological Knowledge (TEK) into Bay-Delta Plan update and implementation processes. Please see Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for responses to comments related to Traditional Ecological Knowledge/tribal knowledge. Please see Staff Report Chapter 11, Tribal Engagement, Traditional Ecological Knowledge and Tribal Beneficial Uses and Staff Report Chapter 13, Revised Proposed Plan Amendments, for additional information on the State Water Board’s efforts to engage more robustly with California Native American Tribes and integrate Traditional Ecological Knowledge/tribal knowledge into the State Water Board’s Bay-Delta Plan update and implementation processes.
292	22	Voluntary Agreements The VAs were created in a way that did not allow for Tribal,	The names of all HRL participants can be found within the HRL documents posted to the State Water Board’s website and include the signatories of the MOU Advancing a Term Sheet for

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		environmental justice, or and many other communities, to give any input. They were created by powerful water interests with no interest in preserving Tribal cultural resources and no interest in protecting the health of disadvantaged communities that live near, and depend on the Bay Delta. The parties to the VAs sidestepped the administrative process because they did not want the science and public based process that was occurring to move forward. The Draft Staff Report fails to directly name the Parties to the VAs and for full transparency, the names of each of the “state and federal agencies, local water agencies, private companies, the non-profit mutual benefit corporation, and additional parties” should be included in the Staff Report. The Parties include state and federal agencies, local water agencies, private agricultural companies, and a nonprofit mutual benefit corporation, which turns out is just another organization focused on obtaining water for agriculture. They do not include tribes or tribal interest groups, environmental justice communities, disadvantaged communities, or communities of color, and even fishing interests were excluded. All of these latter groups share similar goals – to maintain high flows, to protect fish and other aquatic species, and to protect the health of the Bay Delta ecosystem and the people who depend on it for clean water. Many California tribes have supported the democratic and science-based Bay Delta Plan updates thus far that would provide more water for salmon. Salmon are a vital part of the culture of the California tribes whose traditional lands surround the waterways that salmon travel. The severe loss of salmon has had extreme health and cultural impacts on California’s native peoples who have already suffered having our land and water rights taken from them through colonization. California’s water rights system was meant to support miners and large landowners, not tribes. Now, voluntary agreements are threatening to further exclude the original water rights holders of the state, which means California tribes must fight harder for their water rights and for the rights of their salmon relatives. The exclusion of Tribal and environmental justice communities has led to the failure to create and implement a suitable Bay Delta Plan. The draft scientific report that was presented in January is a clear example of a situation where including these	the Voluntary Agreements to Update and Implement the Bay-Delta Water Quality Control Plan, and Other Related Actions (MOU). Appendix B.1 of the revised proposed Plan amendments includes lists of water rights proposed to be covered under the VA pathway. Please see Common Response 1.3, Revised Proposed Plan Amendments, for additional information on the VA pathway. Please see Common Response 10.1, Economically Disadvantaged Communities, for responses to comments on the VAs and Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for responses to tribal comments on the VAs. Also see Common Response 10.1 for responses to comments on the State Water Board’s Racial Equity Resolution and Racial Equity Action Plan.

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		communities would have benefited the board. The science report for the VAs did not include Tribal ecological knowledge, used old science, and failed to address climate change which we all know has been impacting tribal and environmental justice communities more severely and at much higher rates. Relying on the VAs would be disastrous for BIPOC communities and the Bay Delta Plan must go through proper administrative channels so that these communities have the opportunity to participate throughout the process rather than being invited to comment at the last stage when the VAs have already been developed. State Water Board should be following Racial Equity Action Plan (REAP) guidelines – specifically Goal 1b: Programs and Policies are evaluated and realigned to address racial injustices. [Footnote 22: SWRCB. State Water Resources Control Board Racial Equity Action Plan. (2023) https://www.waterboards.ca.gov/racial_equity/docs/racial-equity-action-plan-final-en.pdf] Implementing these VAs is counter to the goals of REAP. Why should these privately created VAs dictate the future protection of the Bay Delta when tribes and environmental justice communities are left to suffer the consequences of poor water management? Prioritizing the concerns of these communities, especially tribal communities, should come first. If the Board were truly concerned with “racial equity” then it would not be considering the VAs. The late in the game consultations have resulted in proposals that bypass the public-friendly and equitable regulatory process.	
292	23	At the December 1, 2023, Public Hearing, there was a presentation on the Voluntary Agreements and habitats and restoration. It seems like a lot of the restoration work is already completed, which makes it seem like that there will be back filling of restoration projects. It seems like there are already restoration projects happening without the Vas, so why would they need to be adopted for ecological restoration purposes when that restoration is already being done and flows are clearly needed?	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.
292	24	The Voluntary Agreements propose water flows that are too low to sustain a healthy ecosystem and are based on a questionable biological opinion.	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.

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		The Voluntary Agreements that are being proposed will cause more harm to the Bay Delta ecosystem. The proposed Plan amendments that are based on narrative and numeric objectives must be implemented instead of the Voluntary Agreements. Compared to the Low and High Flow Alternatives, the Voluntary Agreements will provide much less water. This could be catastrophic for aquatic species that are already suffering from low water quality and low flows. To have a sustainable habitat for aquatic species requires higher flows. The Preferred Alternative proposes to “maintain inflows from the Sacramento/Delta Tributaries at 55% of unimpaired flow, within an allowed adaptive range between 45 and 65% unimpaired flow.” [Footnote 23: Draft Staff Report, Ch. 5 Proposed Changes to the Bay-Delta Plan for the Sacramento/Delta, p. 5-17.] However, in low precipitation years and flows are low, 55% is not enough to keep salmon alive. Further, the Voluntary Agreements propose water in blocks of water which does not compare to percentage of flows. The blocks of water that are being proposed are lower than the proposed alternative. The Voluntary Agreement and its proponents claim that this alternative will be good for flows and habitat restoration, but that creates conflicting plans. With the proposed blocks of water, there will not be enough water available for habitat restoration for aquatic species, specifically for threatened and endangered salmon populations which are already suffering. If the Voluntary Agreements are implemented, lower flows will be guaranteed. The water block method that the Voluntary Agreements propose are similar to proposed flows in the Preferred Alternative, but it does not compare as the amount of acre feet will lead to much lower flows. Additionally, the Voluntary Agreements depend on the USFWS and NMFS 2019 Biological Opinion. The State Water Board should not be considering a proposed alternative that relies in any manner on a biological opinion that has “not been fully implemented due to litigation, and...are currently under consultation due in part to the litigation.” [Footnote 24: Draft Staff Report, Ch. 1 Executive Summary, p. 1-16.]	

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292	25	Environmental Justice Impacts and Harmful Algal Blooms There are 300 species that call the Bay Delta home, and many species of bird that use it as a critical stopping point on their migration journey. The Bay Delta relies on an abundance of cool water flows but because of water diversion, now gets trickles of warm water. This leaves the watershed unlivable for many species and turns the ecosystem into a breeding ground for toxic algae blooms. Salmon are a keystone species in California ecosystems—meaning that they play a vital role in the food chain, supply important ocean nutrients to upstream habitats, and indicate a healthy ecosystem. Salmon are one of the species that struggle to survive in warm waters as Salmon eggs are no longer viable when water temps are over 55°Fahrenheit. This is an ecological, but also environmental justice issue, as many tribes and tribal community members have and continue to rely on salmon for food and ceremony. Toxic algal blooms in the Bay Delta disproportionately impact disadvantaged communities. The increase of algal blooms decreases the amount of access to waterways as a form of recreation in these communities but also as a means to cool off in hot summer months. The failure to complete a scientific analysis on how nutrient deposits impact the formation of Harmful Algal Blooms (HABs) in the San Francisco Bay is a decision that erases the concerns, safety, and health of environmental justice and all other communities that depend on the Bay. Similarly, the Bay Delta Plan anticipated that HABs will result from changes in reservoir levels, reduced flows, and increased floodplain inundation. In order to improve these circumstances, an analysis on how nutrients impact the formation of HABs in the Bay, and regulations of those nutrient discharges must be completed by the Water Board to address the concerns, safety, and health of Bay Area environmental justice communities. As mentioned above, the State Water Board should be following the Racial Equity Action Plan. We encourage the Board to follow their REAP intention to “create a future where we equitably preserve, enhance, and restore California’s water resources and	Scientific information on nutrients in the Bay-Delta watershed can be found in Staff Report Section 4.3.1.3, Ammonia/Ammonium. Additionally, information on the effects of nutrients on HABs can be found within Section 4.3.2, Harmful Algal Blooms. There are currently multiple State Water Board supported efforts aimed at understanding effects associated with elevated nutrient concentrations in the Sacramento-San Joaquin Delta and the larger Bay-Delta watershed to determine whether water quality objectives for nutrients are needed in the Delta, including implementation of the Delta Nutrient Research Plan and nutrient special studies in coordination with the Delta Regional Monitoring Program. These efforts are intended to provide additional data and monitoring to inform the possible regulation of nutrient discharges. Recently, the San Francisco Bay Regional Water Quality Control Board adopted the San Francisco Bay Nutrients Watershed Permit which directly requires reductions of nutrient loads into San Francisco Bay. For more information on nutrient discharge and HABs, please see Common Response 4.1, Harmful Algal Blooms. Additionally, please refer to Common Response 4.1, Harmful Algal Blooms, for responses to comments about economically disadvantaged communities and harmful algal bloom formation. Please refer to Common Response 10.1, Economically Disadvantaged Communities, for responses to comments related to racial equity and the State Water Board’s Racial Equity Resolution and Racial Equity Action Plan.

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		drinking water for all California regardless of race.” [Footnote 25: SWRCB. State Water Resources Control Board Racial Equity Action Plan. (2023) https://www.waterboards.ca.gov/racial_equity/docs/racial-equity-action-plan-final-en.pdf] This project has great impacts to environmental justice communities and tribes and the State Water Board should take as many precautions as possible to protect these vulnerable communities.	
292	26	Trinity River The Draft Staff Report relies on Trinity River water and power supplies for California but does nothing to protect the largest tributary of the Klamath River. The success of hundreds of millions being spent by the state on removal of the Klamath Dams and over \$300 million already spent by the federal government on the Trinity River Restoration Program is jeopardized by the State Water Board’s continued neglect of the Trinity River. The Trinity River and Trinity Reservoir are not even shown on your map, yet the Draft Staff Report acknowledges that nearly 700,000 acre feet/year on average has been exported from the Trinity River to the Sacramento River in recent decades. The excessive water exports from the Trinity River to the Central Valley Project during recent drought has resulted in a severe depletion of cold water for spawning, incubating and rearing salmon. Trinity Lake storage is below average, despite a wet 2023.	Please also see Common Response 1.5, Trinity River, on consideration of the Trinity River watershed.
292	27	Water Right Order 90-5 [Footnote 26: SWRCB Order Water Right 90-5. (May 2, 1990) https://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/1990/wro90-05.pdf] doesn’t offer any real temperature protection for the Trinity River, as evidenced in an October 23, 2023 Division of Water Rights response to a complaint by Michael Palmer on violation of Trinity River Protections in Water Right Order 90-5. [Footnote 27: See Attachment 1 [see ATT 1]. “Response to Concerns Regarding Trinity River Water Temperature Issues,” SWRCB, (Oct. 23, 2023).] Trinity River Coho salmon, a federal and state threatened species, suffered 75% egg mortality at Trinity River Hatchery in	Please also see Common Response 1.5, Trinity River, on consideration of the Trinity River watershed and for a discussion of state law, including Order 90-5.

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		November 2021 due to warm water because of low Trinity Lake storage. The 56 °F degree standards/objectives found in Water Right Order 90-5, the North Coast Basin Plan and the Central Valley Basin Plan are inadequate to protect spawning Trinity Coho and Chinook salmon in the Trinity and Sacramento Rivers. For Trinity and Sacramento Chinook, it should be 53.5 °F. For Trinity Coho, it should be 48 °F to 50°F. The 56 °F Trinity River temperature objective kills 100% of Trinity Coho eggs (See Figure 1. Below [see Exhibit 1]). The 56 °F temperature requirement in Water Right Order 90-5 is also killing a good portion of endangered Sacramento Winter Run Chinook and threatened Spring Run Chinook. Meanwhile, the Draft Staff Report Appendix G3 shows negative impacts to Trinity and Shasta cold water storage from the Voluntary Agreements. [Footnote 28: Draft Staff Report, Appendix G3, p. 176-177, 180-181.] Any additional demands on cold water storage from Trinity and Shasta reservoirs will result in additional downstream salmon egg mortality, especially given the inadequate temperature requirements and protections found in Water Right Order 90-5 and the two Basin Plans. Therefore, mitigation must be applied in the form of updated temperature protection for the Trinity and Sacramento Rivers and an enforceable minimum cold-water pool for Trinity and Shasta Reservoirs through a water right order and updated North Coast and Central Valley Basin Plan temperature objectives. There cannot be full reliance on these reservoirs to meet downstream needs, such as increased Delta outflows or Voluntary Agreements, without providing protection for spawning salmon and the cultures, economies, and people who depend on those fish. There is currently no plan or priority by the North Coast or Central Valley Regional Water Boards to update basin plan temperature objectives, nor is there any indication that the State Water Board will revise Water Right Order 90-5 to adequately protect Sacramento and Trinity salmon species and runs, listed or otherwise.	

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292	28	[Exhibit 1: Graph titled Figure 1. Coho salmon egg survival and Trinity River Hatchery water temperatures, 2021]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
292	29	The 2002 Lower Klamath Fish kill, in which over 65,000 adult salmon died from poor water quality, will occur again unless cold water from the Trinity River is available, even with the four Klamath Dams removed. The Trinity River provides necessary cold and clean water to the Lower Klamath River when conditions are unfit for adult salmon to survive under a Bureau of Reclamation 2017 Record of Decision. [Footnote 29: Record of Decision for the Long-Term Plan to Protect Adult Salmon in the Lower Klamath River. U.S. Bureau of Reclamation. (2017) https://www.trrp.net/library/document/?id=2465] Failing to provide temperature protection for the Trinity River will doom Klamath-Trinity salmon restoration to failure and destroying the cultures of the Hoopa Valley and Yurok Tribes, who have federally reserved fishing rights. Additionally, there will be impacts to commercial and sport fishing economies that depend on healthy salmon runs. The State Water Board's failure to protect the Trinity and Sacramento Rivers is evidenced by the total shutdown of commercial and recreational salmon fishing in 2023 and the likely repeat of that closure in 2024.	Please also see Common Response 1.5, Trinity River, on consideration of the Trinity River watershed.
292	30	The State Water Board is already required to protect the Trinity River and the Bay Delta Plan update is the right place to do so. Full Trinity River temperature protection was promised in 1989 in Water Quality Order 89-18, [Footnote 30: SWRCB Order Water Right 89-18. (Oct. 19, 1990)] again in 1990 within Water Right Order 90-5, and we're still waiting. The State Water Board has an obligation to do its job and put the Trinity River back on its map by protecting it. This is a gross environmental injustice whereby the Draft Staff Report is proposing to take even more water from the Trinity River to increase Delta outflows and/or by adopting the Voluntary Agreements. The question is what do the Voluntary Agreements do for the Trinity River? The answer is nothing! Save California Salmon has reviewed the documents and found nothing about the Trinity River, yet it contributes nearly 700,000 AF/year, on average to	Please see Common Response 1.1, General Comments, regarding responses to concerns related to the VA development process. Please also see Common Response 1.5, Trinity River, for a discussion of state law, including Order 90-5.

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		the Sacramento River and Bay Delta system and is considered a Bay Delta tributary under the Water Code. [Footnote 31: California Water Code Section 78647.4(b)] Since both the Hoopa Valley and Yurok Tribes rely on salmon from the Trinity River and have federally reserved fishing rights but were not a part of the initial development of Voluntary Agreements and were not able to voice their concerns over the proposals, the Voluntary Agreements in themselves are unfair and exclusionary.	
292	31	These Voluntary Agreements are outrageously inadequate to protect the Trinity River, let alone the Bay Delta ecosystem. The State Water Board should refuse to adopt them and go back to updating the Bay Delta Plan in a manner that protects the environment through the equitable public process. The current plan will fail, and the Board should reject it. Please don't let the extinction of California salmon be this Board's legacy!	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project; Common Response 1.2, Water Quality Control Planning Process, for information on the reasonable protection of fish and wildlife beneficial uses; and Common Response 1.5, Trinity River, for a discussion of the Trinity River.
292	32	Conclusion In conclusion, Save California Salmon urges the board to make its decision based on the best available science and to take action on the need to right historical wrongs. Irreplaceable tribal cultural resources deserve proper protections from harm in the Bay Delta Plan. Tribes are still active members of the community and deserve adequate outreach and opportunities to engage in agency actions. Tribal Beneficial Uses deserve to be integrated into the already extensive list of beneficial uses. Traditional Ecological Knowledge should also be integrated into the Bay Delta Plan, not just for tribes' benefit but for the benefit of the project as a whole.	The State Water Board appreciates Save California Salmon's active participation in the Bay-Delta Plan update and implementation processes and its constructive comments. Please see Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for responses to comments about tribal outreach and engagement, Tribal Beneficial Uses, and Traditional Ecological Knowledge.
292	33	When the State Water Board considers the possible alternatives, it should not consider the Voluntary Agreements and should prioritize the highest flow alternative for highest ecological benefit.	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project. Also see Common Response 1.2, Water Quality Control Planning Process, for information on the reasonable protection of fish and wildlife beneficial uses

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292	34	Maintaining a healthy Bay Delta and providing a good water quality control plan is an environmental justice issue and should be analyzed as such, including proper analysis of impacts of harmful algal blooms on environmental justice communities.	The Staff Report adequately evaluates the environmental impacts of the flow scenarios, including impacts related to HABs, in multiple resource sections. In addition, Section 10.4, Issues of Concern for DACs, of the Staff Report summarizes the sections and chapters in the Staff Report that discuss issues of concern for DACs, including HABs. Section 10.4.1, Harmful Algal Blooms, has been added to the final Staff Report that discusses HABs and DACs and reinforces the State Water Board's commitment to supporting actions to address HABs. Please also see Common Response 4.1, Harmful Algal Blooms, for responses to comments about harmful algal blooms and DACs.
292	35	Lastly, the Staff Report should incorporate the Trinity River and analysis of the impacts that will affect the river under the proposed alternatives.	Please also see Common Response 1.5 Trinity River, on consideration of the Trinity River watershed.
292	36	Currently, Spring Chinook are facing immediate extinction. This species is incredibly important to California Tribes as many ceremonies are based on this fish. Similarly, critical cultural landscapes are depleted and communities are facing the constant threat of toxic algal blooms. Salmon fishing is now shut down and whole towns are facing serious social and health impacts including hunger and loss of their economy. Not only does the State Water Board have the power, but it is mandated to protect water quality, salmon, and frontline communities. We are asking you to follow the law and to do what is right by restoring flows to the Bay Delta watershed and all of its tributaries.	See Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.
292	37	[ATT 1: Letter from State Water Resources Control Board to Mr. Palmer dated October 23, 2023 Re: Response to Concerns regarding Trinity River Water Temperature Issues]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
293	1	The State Water Board identified the need to comprehensively review and, if necessary, amend flow objectives in response to growing concern over deteriorating aquatic life conditions, climate change, and pelagic organism decline. [Footnote 1: See, State Water Resources Control Board. August 4, 2009. Staff Report on the Periodic Review of the 2006 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary. Adopted by Resolution 2009-0065. EPA notes that water quality standards for the waterbodies covered in this Staff	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.

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		Report were last updated in 1995, despite a Clean Water Act requirement that States consider and as appropriate, make such updates at least once every three years. CWA § 303(c)(1).] This Staff Report is a critical step to provide the State Water Board with the information necessary to make appropriate updates to the Bay-Delta Plan and EPA applauds the State Water Board for its efforts in reaching this milestone. Once the State Water Board concludes this process, EPA will review and act upon any new or revised water quality standards pursuant to Clean Water Act section 303(c), including government-to-government consultation in accordance with EPA Policy on Consultation with Indian Tribes and compliance with Section 7 of the Endangered Species Act, as appropriate.	
293	2	The San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta) is the water hub of California, draining over 40% of California's land area, providing flow, flow-related habitat, and water quality benefits to support millions of acres of farmland as well as drinking water for millions of people, and vital recreational, commercial, and subsistence fisheries. As recognized in the Staff Report, many Native American Tribes are deeply connected to the aquatic life of the Bay-Delta. These Native American Tribes have historical and current reliance on the Bay-Delta ecosystem to provide food and to support cultural and spiritual practices, a profound connection with the watershed that must be taken into account. The Bay-Delta Plan establishes protections for this large, diverse, and singularly important ecosystem. While EPA's attached comments [Attachment 1] focus primarily on potential updates to the Bay-Delta Plan related to flow objectives to support fish and wildlife designated uses, EPA acknowledges the importance of improving water quality throughout the Bay-Delta watershed to protect all uses, including Tribal Beneficial Uses (TBUs). EPA continues to urge the State Water Board to expeditiously adopt and implement long-delayed updates to the Bay Delta Plan to ensure that this important ecosystem can continue to support these uses for future generations. [Footnote 2: See U.S. EPA webpage, "EPA Comments on the SF Bay Delta Water Quality Control Plan" https://www.epa.gov/sfbay-delta/epa-comments-sf-bay-delta-water-quality-control-plan .]	Please see Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for responses to comments on Tribal Beneficial Uses.

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293	3	The Staff Report includes alternatives for both numeric and narrative flow objectives to protect aquatic life uses. While narrative water quality criteria can be appropriate in some cases, in general, narrative criteria are usually established where numeric criteria cannot be established or as supplements to numeric criteria. 40 C.F.R. 131.11(a)(2). Numeric criteria serve as consistent and transparent targets to drive implementation and EPA strongly recommends that the State Water Board include numeric flow objectives in its amendments to the Bay-Delta Plan. Importantly, EPA notes that the State Water Board has completed a significant amount of work to develop the scientific rationale for numeric flow objectives. [Footnote 3: The Staff Report discussion of the Plan Amendment alternative builds on the State Water Board's 2017 Scientific Basis Report and July 2018 Framework for the Sacramento/Delta Update to the Bay-Delta Plan.] EPA supports the regulatory framework outlined in the proposed Plan amendment alternative that would pair numeric flow objectives with a flexible program of implementation.	Please see Common Response 1.2, Water Quality Control Planning Process, for a discussion of narrative and numeric water quality objectives, and Common Response 1.3, Revised Proposed Plan Amendments, for more information on the proposed water quality objectives and the regulatory pathway.
293	4	The Staff Report also assesses a Proposed Voluntary Agreement (VA) Alternative that includes a new narrative objective and a framework to provide a combination of flow and non-flow habitat measures (VA assets). EPA is concerned that the Staff Report does not provide sufficient evidence to demonstrate that the proposed VA assets will protect beneficial uses in the Sacramento River and Delta watersheds. Enclosed [Attachment 1], EPA provides recommendations regarding the information necessary to demonstrate that the VA Alternative will protect beneficial uses.	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.
293	5	EPA strongly supports the State Water Board's proposal to incorporate TBU definitions into the Bay-Delta Plan, as expressed in our June 1, 2023 letter. Adopting TBUs into the Bay-Delta Plan will place these important Tribal cultural and subsistence uses on the same footing as other beneficial uses addressed by the Bay-Delta Plan. Although Native American Tribes have asked the State Water Board to apply TBUs throughout the watershed rather than utilizing the Regional Board-specific designation process, the State Water Board has not identified or discussed a timeline to designate TBUs for specific Bay-Delta waterways. EPA encourages the State Water	Please see Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for responses to comments related to Tribal Beneficial Uses and tribal outreach and engagement. Please see Staff Report Chapter 13, Revised Proposed Plan Amendments, for additional information on incorporation and designation of Tribal Beneficial Uses.

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		Board to consult with affected Tribes to take into consideration tribal cultural practices within the Bay-Delta and expeditiously designate beneficial uses and protective criteria for such waters.	
293	6	EPA supports the State Water Board in its efforts to amend the Bay-Delta Plan, however, the ongoing delays in completing revisions to the Bay-Delta Plan remain a significant concern given the consequences of these delays on Bay-Delta communities. [Footnote 4: In 2016, Delta aquatic resource advocates petitioned EPA to initiate a federal promulgation of new Bay-Delta Plan provisions. In 2022, both EPA and the State Water Board received formal petitions for rulemaking to develop water quality standards that are protective of aquatic life and tribal beneficial uses. EPA also received a Title VI civil rights complaint about, among other issues, the delayed Bay-Delta Plan revisions. The federal complaint and petition are pending.] EPA will continue to provide technical assistance and guidance to the State Water Board, as appropriate to ensure that CWA requirements are fulfilled.	As expressed in the State Water Board's September 7, 2023 letter to the U.S. Environmental Protection Agency in response to the Title VI civil rights complaint about the Bay-Delta Plan update process, the State Water Board disagrees with the allegations made in the Title VI complaint. As discussed in Section 13.3.6, Interior Delta Flows, of the final Staff Report, the revised proposed Plan amendments designate Tribal Tradition and Culture (CUL) as a beneficial use for the Bay-Delta watershed, and incorporate Tribal Subsistence Fishing (T-SUB) and Subsistence Fishing (SUB) in the context of the plan's provisions for the reasonable protection of fish and wildlife.
293	7	[ATT 1:] Introduction EPA's comments are focused on two alternatives described in the Staff Report: the proposed Plan amendment and the proposed Voluntary Agreement (VA) alternatives. EPA will continue to engage as the State Water Board refines amendments to the Bay-Delta Plan. Once the State Water Board concludes this process, EPA will review and act upon any new or revised water quality standards pursuant to Clean Water Act section 303(c). The CWA and its implementing regulations (40 C.F.R § 131.11(a)(1)) require States to develop criteria based on sound scientific rationale and that contain sufficient parameters or constituents to protect all designated uses. Because the Staff Report does not include proposed amendment language, EPA's comments do not address whether the alternatives presented would be consistent with the CWA and its implementing regulations. EPA's comments are intended to assist the State Water Board with developing Bay-Delta Plan amendments that are based on a sound scientific rationale. To comprehensively assess whether any potential Bay-Delta Plan amendment protects all designated uses, comparability is key.	Please see Common Response 7.1, General CEQA and Approach to the Analysis, and Common Response 7.24, Alternatives Analysis, for discussion on the comparison of the impact analysis of the proposed Plan amendments and VA alternative. Also, please refer to Common Response 6.2, Baseline and No Project Alternative, for a discussion on the baseline and evaluation approach.

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		EPA encourages the State Water Board to provide a side- by-side comparison of environmental outcomes across the proposed Plan amendment and the proposed VA alternative that relies on a consistent definition of the baseline flows (including minimum required Delta outflow, or MRDO). This will enhance public understanding of the potential plan amendments and their outcomes and improve public participation in the plan amendment process.	
293	8	[ATT 1:] The Staff Report [Footnote 1: “Flow is commonly regarded as a key driver or master variable governing the environmental processes in riverine and estuarine systems such as the Bay-Delta and its watershed (cites omitted).” Staff Report p. 3-2.] along with previous State Water Board reports in which the State Water Board compiled and analyzed a significant amount of comprehensive scientific information, recognize that substantially more flow is needed in the Delta and Sacramento-San Joaquin watersheds to support aquatic life. [Footnote 2: “The State Water Board further cautions that flow and physical habitat interact in many ways, but they are not interchangeable. The best available science suggests that current flows are insufficient to protect public trust resources.” State Water Resources Control Board. August 3, 2010. Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem, p. 1-2.] Currently, six fish species (Delta smelt, longfin smelt, green sturgeon, Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, Central Valley steelhead) are listed or proposed as threatened or endangered under the Endangered Species Act. Scientific consensus indicates that native fish population abundance is positively associated with flow volumes (e.g., Jassby et al. 1995, Sommer et al. 1997, Mac Nally et al. 2010, Tamburello et al. 2019) and that largescale increases in both flow and habitat restoration are needed to recover and protect these and other native species. The Bay-Delta and its watersheds have also experienced increased frequency of harmful algal blooms (HABs) affecting aquatic life and human health. Restoration of higher flow volumes may address key drivers of HABs, including increased stream temperature and water residence time (Kudela et al. 2023; Berg & Sutula 2015, Lehman et al. 2013). EPA reiterates that swift action is needed to address the imperiled state of the Delta and the species, communities,	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project. Please see Common Response 3.1, Fish Protection, for a discussion of the State Water Board’s use of best available science, including the approach to updating the scientific literature, and the State Water Board’s approach to analyzing the effects of flow on species abundance and life cycle models.

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		and economies that depend on this ecosystem for survival. [Footnote 3: See U.S. EPA webpage, “EPA Comments on the SF Bay Delta Water Quality Control Plan” https://www.epa.gov/sfbay-delta/epa-comments-sf-bay-delta-water-quality-control-plan.] As explained by the State Water Board, the September 28, 2023 Draft Staff Report in support of updates to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan) for the Sacramento River and Delta watersheds (Staff Report): assesses a range of alternatives that may be considered for adoption by the State Water Board. Alternatives include several stand-alone alternatives that are based on flow scenarios evaluated in the State Water Board’s 2017 Scientific Basis Report for potential Sacramento/Delta updates to the Bay-Delta Plan (Scientific Basis Report in Support of New and Modified Requirements for Inflows from the Sacramento River and Its Tributaries and Eastside Tributaries to the Delta, Delta Outflows, Cold Water Habitat, and Interior Delta Flows), as well as a proposed stand-alone voluntary agreements alternative, and several modular alternatives that would add to or modify the stand-alone alternatives. The draft Staff Report includes an alternative that is referred to as the proposed Plan amendments that is based on the State Water Board’s 2018 Framework for a possible Sacramento/Delta Update to the Bay-Delta Plan (2018 Framework) that was identified prior to the Vas proposal. Staff Report at p. 1.2.	
293	9	[ATT 1:] The Proposed Plan Amendment Alternative The proposed Plan amendment alternative includes “new inflow and cold water habitat objectives for the Sacramento/Delta tributaries, new and modified Delta outflow objectives, modified Suisun Marsh objectives, and new and modified interior Delta flow objectives” and a revised program of implementation (Staff Report p. 5-3). Overall, EPA supports a regulatory framework such as that outlined in the proposed Plan amendment alternative that would pair numeric flow objectives with a	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.

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		flexible program of implementation to restore a more natural flow regime in the Bay-Delta watershed to support fish and wildlife designated uses.	
293	10	[ATT 1:] EPA is encouraged by the scientific approach that the State Water Board uses to justify the need for amended flow objectives and to assess the potential impacts of the proposed Plan amendment on fish and wildlife designated uses. The Staff Report leverages empirical evidence to illustrate how the proposed Plan amendment may result in substantial improvements to aquatic life in the Delta and its watersheds. For example, the Staff Report uses empirically derived biological indicators of fish population health to demonstrate that an inflow and inflow-based outflow objective at or above 55% unimpaired flow (UF), in particular, increases the frequency of providing many key flow-related benefits to estuarine and anadromous fish, including improved estuarine habitat conditions (Table 3.14-6) and improved Chinook fall-run and winter-run outmigration (Tables 3.14-4 to 3.14-5). While any improvements in aquatic conditions to benefit imperiled fish and habitat in the Delta are valuable, the State Water Board should include in its impact analyses an indication of conditions (i.e., unimpaired flow percentages and resulting water temperatures) required to protect designated uses, including restoration and full protection for viable native fish populations, and not just indicate improvements from baseline.	Please see Common Response 1.2, Water Quality Control Planning Process, for an explanation of the requirements of the Clean Water Act and Porter-Cologne Act and how the Plan amendments comply with those requirements, including a discussion on reasonable protection of fish and wildlife beneficial uses. See Common Response 3.1, Fish Protection, for an explanation of the scientific basis and the flow benefit analyses. The Plan amendments themselves identify the beneficial uses, and the water quality objectives and program of implementation needed to reasonably protect those uses, as required by the Porter-Cologne Act.
293	11	[ATT 1:] EPA agrees with the State Water Board's ecosystem-wide approach, using new and revised objectives to augment and link tributary inflow, cold water habitat, Delta outflow, and interior Delta flows. Utilizing an ecosystem-wide approach to protect designated uses appropriately recognizes the critical connections that natural, unimpaired flows provide across the watershed and estuary, including habitat for diverse fish and wildlife species, migration corridors for anadromous and migratory fish, and critical food exports and subsidies from productive floodplains to downstream habitats (Jeffres et al. 2020).	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.
293	12	[ATT 1:] EPA strongly supports the use of year-round numeric objectives for unimpaired flows, Delta inflow, and inflow-based-outflows to protect and augment existing flows and water quality characteristics that are impacted by flow, and to provide habitat	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project. Please also see

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		conditions necessary to support native anadromous and estuarine fish species. [Footnote 4: “This Report describes how year-round inflow requirements are needed to provide for ecological processes including continuity of flows and specifically to protect anadromous and other fish and wildlife species that inhabit the Bay-Delta and its tributaries throughout the year as juveniles or adults. Those inflows are needed to provide appropriate habitat conditions for migration and rearing of anadromous fish species (primarily Chinook salmon and steelhead) that have runs that inhabit the Delta and its tributaries all year. Those flows are also needed to contribute to Delta outflows to protect estuarine species. The Report specifically finds that flows are needed that more closely mimic the conditions to which native fish species have adapted, including the frequency, timing, magnitude, and duration of flows, as well as the proportionality of flows from tributaries. These flow attributes are important to protecting native species populations by supporting key functions including floodplain inundation, temperature control, migratory cues, reduced stranding and straying and other functions. Providing appropriate flow conditions throughout the watershed and throughout the year is critical to genetic and life history diversity that allows native species to distribute the risks that disturbances from droughts, fires, disease, food availability, and other natural and humanmade stressors present to populations.” State Water Resources Control Board. 2017. Scientific Basis Report in Support of New and Modified Requirements for Inflows from the Sacramento River and its Tributaries and Eastside Tributaries to the Delta, Delta Outflows, Cold Water Habitat, and Interior Delta Flows, p. 1-18.] Year-round flow objectives based on sound scientific rationale would provide clear water quality goals and transparent regulatory requirements. [Footnote 5: “Existing regulatory minimum Delta outflows would not be protective of the ecosystem, and without additional instream flow protections, existing flows may be reduced in the future, particularly with climate change and additional water development absent additional minimum instream flow requirements that ensure flows are preserved in stream when needed for the reasonable protection of fish and wildlife.” Staff Report p. 1-9.]	Common Response 1.3, Revised Proposed Plan Amendments, for a description of the required flows under the regulatory and VA pathways.

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293	13	[ATT 1:] EPA recommends the State Water Board consider scientific studies published since the State Water Board's 2017 Final Scientific Basis Report was released in the final Staff Report to support draft plan amendments. Studies published after 2017 may refine the State Water Board's identification of critical flow thresholds that benefit native fish species and estuarine habitat. For example, recent studies on flow-survival relationships for Chinook salmon in the Sacramento River and Delta provide scientific support for the positive relationship between flow and outmigration survival and recruitment of Chinook salmon, including for late-fall, fall, and winter-run salmon (Michel, 2019), late-fall run and spring-run smolts (Cordoleani et al., 2018; Henderson et al., 2019; Michel et al., 2021; Perry et al., 2018), wild origin salmon fry (Munsch et al., 2020), and winter-run juveniles (Hassrick et al., 2022). Furthermore, since the 2016 draft Scientific Basis Report and the 2017 Final Scientific Basis Report identified a flow range of 11,400-29,200 cfs as protective of fish and wildlife uses for the February-June period, recent research has demonstrated that even greater flow magnitudes over a period longer than February-June are needed to be protective of zooplankton populations (Hassrick et al. 2023), which are a foundational group in the food web to support species at higher trophic levels, including listed salmonids.	Please see Common Response 3.1, Fish Protection, on use of best available science and updated flow thresholds. The outflow threshold identified of 11,4000 – 29,200 cfs from February to June is from analysis of flow-benefits to native species <i>Neomysis mercedis</i> and <i>Eurytemora affinis</i> in Section 3.11.4, Flow Effects on Zooplankton, of the Staff Report. Hassrick et al. 2023 is a study focused on outflow effects on nonnative species <i>Pseudodiaptomus forbesi</i>. Staff reviewed Hassrick et al. (2023) and updated the nonnative zooplankton discussion in Chapter 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations. However, the flow threshold identified that benefits native species, has not been changed. Please see Common Response 3.1, Fish Protection, on the process for updates to literature in Chapters 3 and 4.
293	14	[ATT 1:] EPA also supports the concept of provisions to allow for flexibility in implementation of unimpaired flow objectives to enable adjustment to real-time and watershed-specific conditions within a specified range. Such provisions primarily involve adjusting the magnitude and/or timing of dedicated flows within a defined range of variation. EPA notes that flexible implementation should be utilized to provide protection for the season-specific needs of fish and wildlife designated uses. Unimpaired flows should not be reduced as part of flexible implementation if it would result in adverse impacts on native aquatic life. The State Water Board has noted in the Staff Report and in related actions [Footnote 6: State Water Resources Control Board. 2017. Scientific Basis Report in Support of New and Modified Requirements for Inflows from the Sacramento River and its Tributaries and Eastside Tributaries to the Delta, Delta Outflows, Cold Water Habitat, and Interior Delta Flows, p. 1-18.] [Footnote 7: State Water Resources Control Board. July	Chapter 6, Changes in Hydrology and Water Supply, and Chapter 13, Revised Proposed Plan Amendments, of the Staff Report provide information on the flows expected to result from the regulatory pathway under the range of hydrological circumstances. As described in Chapter 6 of the 2023 draft Staff Report, every exact permutation of flow is not known; however, for the purpose of the environmental analysis, it was assumed that each tributary provides its proportional share of the numeric inflow requirement so that the range of flow scenarios is sufficient to illustrate the potential changes that may result from the flow scenarios. Please see Common Response 1.3, Revised Proposed Plan Amendments, for information on the flow shaping adaptive implementation provisions for the regulatory pathway inflow requirements.

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		2018 Framework for the Sacramento/Delta Update to the Bay-Delta Plan, p. 25.] that it may choose to adaptively manage unimpaired flows under a “block of water” approach (Staff Report p. 5-20) with flexibility to apply that block of water pursuant to real time management. If this approach is incorporated into the Bay-Delta Plan amendment, the State Water Board should provide estimates of how large that “block of water” would be on each covered tributary under the expected range of hydrological circumstances. This will provide the public with a better understanding of how flows could be distributed across space and time, and of the potential benefits of real-time management using this tool.	
293	15	[ATT 1:] EPA recommends the State Water Board demonstrate how fall flows anticipated under the proposed Plan amendment will be protective of all designated uses, even if implemented under an unimpaired “natural flow regime.” EPA understands the implication that natural flows are generally lower in the Delta and its tributary watersheds during late summer and fall, and thus summer and fall seasonal conditions have the potential to stress aquatic life, particularly during dry conditions. However, within the balance of water resources that the State Water Board is evaluating in the proposed Plan amendment (i.e., unimpaired flow, cold water storage, and water diversion) there may be conditions that could mitigate seasonal impacts on aquatic life during the late summer and fall that are not currently provided in the Staff Report. Therefore, EPA recommends the State Water Board provide a more comprehensive analysis that evaluates sufficient combinations of unimpaired flow and diversion rates with the corresponding effects on year-round reservoir storage and downstream temperatures to enable a complete assessment of potential benefits and impacts of the proposed Plan amendment on designated uses.	The 2023 draft Staff Report included a complete analysis of unimpaired flow alternatives ranging from 35 to 75 percent of unimpaired flow. The effects of these flow scenarios on reservoir storage are evaluated in Section 6.3.2, Reservoir Storage and Elevation, and the effects on temperatures are evaluated in Sections 7.12.1.3, Reservoir Storage and Elevation, and 7.6.2.4, Impact Analysis. Please see Common Response 1.2, Water Quality Control Planning, for information on the consideration of beneficial uses.
293	16	[ATT 1:] The Proposed Voluntary Agreement Alternative The State Water Board is considering a proposed Voluntary Agreement alternative as a possible path forward for updating the Bay-Delta Plan: The VAs include a combination of proposed flow and non-flow habitat restoration measures on a portion of the	Please see Common Response 1.2, Water Quality Control Planning Process, for information on reasonable protection of fish and wildlife and Common Response 1.3, Revised Proposed Plan Amendments, for more information on the water quality objectives for fish and wildlife.

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		Sacramento/Delta tributaries over 8 years (with the intent to extend the term), including varying amounts of increased flows, depending on water year type, and non-flow habitat restoration actions targeted at improving spawning and rearing capacity for juvenile salmonids, estuarine species, and other native fish and wildlife. The proposed VA flows are intended to be additive to the Delta outflows required by State Water Board Decision 1641 (D-1641) and resulting from the 2019 Biological Opinions (collectively “2019 BiOps condition”) though the VAs acknowledge that the BiOps may change. The flow and non-flow habitat actions are proposed as implementation measures for an existing and proposed new water quality objective in the Bay-Delta Plan. Specifically, the VAs propose: 1) a new narrative objective to achieve the viability of native fish populations; and 2) to provide the participating parties’ share, during implementation of the VAs, to contribute to achieving the existing Narrative Salmon Protection Objective, and propose doing so by 2050. The VAs also include proposed governance and science programs to direct flows and habitat restoration, conduct assessments, and develop strategic plans and annual reports. Staff Report at p. 9-1. The proposed VA described in the Staff Report applies to the largest salmon-producing tributaries in the Sacramento River and Delta watershed, including the mainstem Sacramento River, the Feather River, the American River, and the Mokelumne River, which collectively support the largest run of Chinook salmon in California and a significant proportion of recreational and commercial salmon fisheries. Improving flow conditions and habitat in these watersheds is crucial to restore and protect salmon, estuarine species, and other native fish. The proposed VA alternative includes a new narrative objective and a framework to provide a combination of flow and non-flow habitat measures (VA assets) for the major Sacramento River and Delta tributaries to achieve both the new narrative objective and the existing narrative Salmon Protection Objective (salmon doubling goal). The new narrative objective requires the State Water Board to maintain flow conditions in the Delta and its tributaries to “support and maintain the natural production of	

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		viable native fish populations” (Staff Report p. 9-7). EPA notes that under the CWA implementing regulations, States can establish narrative criteria where numeric criteria cannot be established or to supplement numeric criteria (40 C.F.R. § 131.11(b)). Recognizing the difficulties in implementing narrative criteria, EPA recommends the Water Board provides clear definitions of critical terms, including “viable,” that reflect biologically relevant goals (i.e., quantitative metrics) to protect aquatic life to avoid inconsistent interpretation and assessment of the narrative objective.	
293	17	[ATT 1:] As demonstrated in the comments below, EPA is concerned that the Staff Report does not yet include a sound scientific rationale that demonstrates how the proposed VA alternative will provide protections for all designated uses in the Sacramento River and Delta watersheds. EPA notes its previous comments on scientific limitations related to analytical approaches used to support the proposed VA remain applicable to this Staff Report. [Footnote 8: February 8, 2023 EPA Comment Letter to the State Water Board, Re: Comment Letter – Draft Scientific Basis Report Supplement.] Below EPA provides additional comments related to the scientific approach described in the Staff Report regarding the proposed VA alternative. In addition, EPA provides comments related to the implementation structure outlined in the proposed VA alternative. Proposed Flow Assets As cautioned by the State Water Board: “flow and physical habitat interact in many ways, but they are not interchangeable. The best available science suggests that current flows are insufficient to protect public trust resources.” [Footnote 9: State Water Resources Control Board, August 3, 2010, Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem, p. 1-2.] Further, scientific consensus indicates that native fish population abundance is positively associated with increasing flow volumes (e.g., Jassby et al. 1995, Sommer et al. 1997, Mac Nally et al. 2010, Tamburello et al. 2019) and that largescale increases in both flow and habitat restoration are needed to recover and protect these and other native species. Clearly, flow is a critically important driver of the health of the Bay-Delta	Please see Common Response 1.2, Water Quality Control Planning Process, for information on the consideration of beneficial uses.

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		watershed. However, the VA alternatives, as currently proposed, do not provide flow to ensure year-round protection or protection in critical dry years. Rather, flow assets provided by the proposed Vas are concentrated January through June, with priority in April and May, during Dry, Below Normal, and Above Normal water years (Staff Report p. 9-5). As noted in the Staff Report, one or more life stages of native estuarine and anadromous fish, including threatened and endangered Chinook salmon and steelhead, require access to habitats across the entire watershed at all times of the year (Staff Report Table 3.4-1 and footnote 4). For this reason, it is important that the State Water Board include provisions to ensure adequate flow is available for year-round protection of designated uses in its Bay-Delta Plan amendments. Native salmonids are particularly at-risk during drought conditions. [Footnote 10: "Drought and low flows cause water temperatures in river systems to rise, reducing spawning and increasing disease risk for fish and reducing survival for eggs, youth, and adult fish." NOAA Fisheries West Coast Regional Office. 02/03/2023. Available at: https://www.fisheries.noaa.gov/west-coast/climate/drought-west-coast-region#:~:text=Drought%20Impacts,-Drought%20poses%20significant&text=Drought%20and%20low%20flows%20cause,%2C%20youth%2C%20and%20adult%20fish.] However, potential VA flow assets are not required for critical dry years on most tributaries, the Sacramento River, and the Delta (Staff Report Table 9.3-1). Further, the Staff Report indicates that during critical dry years the proposed VA alternative will result in a decrease of flows from baseline (Tables 9.5-2 to 9.5-5). When stream flow protections were inadequate during the 2012-2016 drought, Chinook, coho Salmon, and steelhead experienced widespread negative population-level consequences (Willmes et al. 2018; Williams et al. 2016). In a landscape increasingly defined by climate change impacts, including increased frequency and intensity of drought conditions (Cook et al. 2015, Williams et al. 2015), flow protections in critical years are essential to support fish and wildlife designated uses. For this reason, it is important that the State Water Board include provisions to provide flow to	

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		protect designated uses in the Bay-Delta Plan amendments in critical dry years.	
293	18	[ATT 1:] Currently, key analyses used in the Staff Report to demonstrate aquatic life benefits of the proposed VA alternative suggests that VA flow assets provide only minimal benefits relative to both current baseline conditions and compared to the modeled benefits of the proposed Plan amendment. [Footnote 11: EPA finds it useful to compare benefits of the VA alternative to the baseline and the proposed Plan amendment alternative, given the robust scientific analysis underlying the proposed Plan amendment alternative.] For example, the Staff Report summarizes potential benefits of both alternatives on achieving critical flow thresholds identified in the Staff Report as beneficial to specific estuarine species and to fall-run and winter-run Chinook salmon outmigration. [Footnote 12: Chapter 3 and Chapter 9 of the Staff Report identify ecological flow thresholds for specific native fish and estuarine habitat that, if achieved or exceeded, indicate protection. Therefore, the higher frequency at which flows provided meet or exceed critical flow thresholds, the greater the perceived protective benefit is to a given species or estuarine habitat indicator.] Across all comparable metrics, Delta outflow provided under the proposed Plan amendment is modeled to achieve those critical flow thresholds at a higher frequency than the VA alternative across all UF scenarios 35% and greater, with substantial differences (and perceived benefits) observed at higher UF scenarios (Tables 9.6-4, 3.14-4, and 3.14-6). Delta inflow and outflow anticipated under the VA alternative versus the proposed Plan amendment also results in substantial differences in modeled changes to the median X2 position [Footnote 13: X2 is a physical attribute of the estuary used as a habitat indicator for the location of the low salinity zone. X2 is the location in kilometers from the Golden Gate Bridge where water salinity is 2 ppt (parts per thousand) of isohaline salt. Historically, the low salinity zone was associated with high primary productivity, zooplankton population, and abundance of native species. See https://viewperformance.deltacouncil.ca.gov/pm/salinity] for January through June relative to baseline conditions, where a westward change indicates a perceived benefit to estuarine habitat and species. Under the VA alternative, the median of	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.

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		average January through June X2 position is anticipated to move one km westward of the Baseline (Figure 9.7-1), while that under the proposed Plan amendment is anticipated to move four km westward overall and five km westward during critically dry water-year types at 55% UF (Figure 7.6.2-2).	
293	19	[ATT 1:] Although the flow assets identified in the proposed VA may provide some benefit to aquatic life, EPA is concerned that the total volume and timing of Delta inflow and outflow provided under the proposed VA alternative relative to baseline is not large enough to adequately restore and protect aquatic ecosystems, as described by the State Water Board in analyzing the proposed Plan amendment alternative. Under the proposed VA SacWAM modeling, mean total Delta inflow for all water year types (including Tuolumne River contributions) would provide an additional 119 TAF of Delta inflow over baseline (Tables 9.5-29 and 9.5-31). Notably, this is less than that provided under the proposed Plan amendment at 35% UF (provides an addition of 193 TAF) and five times smaller than that provided at 55% UF (provides an addition of 543 TAF). See Table A1-100. Similarly, mean total Delta outflow for all water year types under the VA alternative (excluding San Joaquin River contributions) is modeled to provide an additional 109 TAF Delta outflow over baseline (Tables 9.5-40 and 9.5-42), which is less than half of the expected Delta outflow at 35% UF and more than 13 times smaller than that provided at 55% UF (1,466 TAF; Table A1-102). This magnitude difference is anticipated to be greatest in Below Normal water year types, when the VA alternative is modeled to provide nearly 40 times less Delta outflow than the proposed Plan amendment at 55% UF.	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project. Please also see Common Response 1.2, Water Quality Control Planning Process, regarding reasonable protection of fish and wildlife.
293	20	[ATT 1:] The State Water Board explains that flows provided under the proposed VA alternative are intended to be additive to minimum Delta outflows required by State Water Board Decision 1641 (D-1641) and resulting from the 2019 Biological Opinions (Staff Report p. 9-1). The Staff Report also notes that current average minimum Delta outflows are not protective of the Bay-Delta ecosystem and that further protections are necessary to protect instream flows for fish and wildlife (e.g., Staff Report p. 1-9 and p. 9-199). Additional depletions, pursuant to either existing but unexercised rights or under newly granted rights, [Footnote 14: For example, the State Water Board currently has	Some of the VA flows will be bypassed by the CVP and SWP as additive Delta Outflows. The increases in Delta outflow that are expected to result from the VAs were presented in Section 9.5.3.9, Delta Inflows, Exports, Interior Delta Flows, and Delta Outflow Results, of the Staff Report. Please see Chapter 13 and Common Response 1.3, Revised Proposed Plan Amendments, for information on the provision to protect the VA flow base applicable to new water supply projects.

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		several large pending applications for diversions out of the watershed, including but not limited to the Sites Project Authority Application A025517X01 for 1.5 MAF; the Turlock I.D./Modesto I.D. Application A033277 for 2.7 MAF, and the Merced Irrigation District Application A033098 for 400kaf. The State Board will evaluate each of these applications on their own merits.] could reduce flows during some times of the year to levels substantially below existing baseline conditions, even if the flow assets provided under the proposed VA are protected. The State Water Board should consider how any such additional potential depletions will impact the range of potential benefits of the proposed VA alternative. Further, the proposed VA alternative indicates that the flow assets would be implemented in three out of eight years on the American River (Staff Report p. 9-4, footnote to Table 9.3-1) but does not describe how that that asset allocation frequency is protective of aquatic life, or what outcomes (i.e., species-specific flow threshold attainment frequency or temperature exceedance probabilities for sensitive salmonid life stages) are expected. The analysis of the proposed VA alternative indicates that peak flows “would generally be similar to baseline” (Staff Report p. 9-109) conditions, which would limit the benefits of higher peak flows above baseline conditions that “maintain channel size, shape, and bed texture” (p. 9-108) and “provide beneficial disturbance to both the channel and its adjacent floodplain and riparian corridor” (Staff Report p. 9-108). It is important to note that high flows can lead to riverbed scour of salmon eggs in redds (Staff Report p. 9-109) and potentially exacerbate habitat degradation in heavily altered rivers with substrate deficits and no consistent sediment supply (Merz and Setka 2004). However, as stated in the literature cited in the proposed Plan amendment (Staff Report Chapter 7.6.2), flood flows are needed to create the geomorphic conditions and water quality in interstitial space within spawning gravels that salmon eggs and embryos need. For example, the Geomorphic Flows section (Staff Report 7.6.2-53) cites peer- reviewed research that supports the need for peak flows that are unhindered by unnaturally low-flow baseline conditions.	

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293	21	[ATT 1:] Proposed Non-Flow Habitat Assets As discussed in EPA's recent technical comments on the draft Scientific Basis Report supplement regarding the proposed VA, [Footnote 15: February 8, 2023 EPA Comment Letter to the State Water Board, Re: Comment Letter – Draft Scientific Basis Report Supplement.] [Footnote 16: California can, within limits of relevant federal law, revise its governance structures for implementing a federal program, as it did in 2015 when the California Legislature transferred federal Safe Drinking Water Act functions from the California Department of Public Health to the State Water Board.]] the State Water Board has not yet provided scientific support for the proposal that that minimal increases in flow and non-flow habitat restoration will provide the benefits needed to protect designated fish and wildlife designated uses. This Staff Report does not demonstrate that suitable habitat area in the Sacramento and Delta watersheds is a limiting factor on estuarine and anadromous fish population growth, nor does the Staff Report provide an adequate scientific rationale to demonstrate that habitat restoration assets will increase fish abundance without meaningful increases in tributary flows protected as Delta outflows. Any improvements in habitat will likely be achieved only if pursued alongside substantial increases in flow rates, because flow is strongly and positively correlated with many indicators of native fish survival, including for salmon survival out-migrating from natal tributaries (Michel, 2019, Henderson et al. 2019), salmon survival in and through the Delta (Perry et al. 2018), and Delta Smelt post-larval survival (Polansky et al. 2021). Targeted habitat restoration with insufficient flow, on the other hand, is associated with low salmonid inhabitation (Munsch et al. 2020). Therefore, the State Water Board will need to provide additional analyses that demonstrate how allocation of non-flow assets, in combination with the flow assets identified in the VA proposal, will be sufficient to protect designated uses.	Appendix G2 (Scientific Basis Report Supplement) of the 2023 draft Staff Report documents the science supporting the proposed VAs and builds on the 2017 Scientific Basis Report, particularly with additional scientific information supporting specific flow and non-flow physical habitat restoration actions in the tributaries, flood bypasses, and Delta outlined in the proposed VAs. Both reports have been peer reviewed and acknowledged by the reviewers to represent sound scientific knowledge, methods, and practices. Additionally, the tributary habitat analysis and the estuary habitat analysis are informative for quantifying expected changes in habitat area, but the results do not fully represent the extent of benefits that would be provided by increased flows. The synergy of flow and physical habitat restoration proposed in the VAs is expected to improve conditions for salmonids and estuarine species toward achieving the proposed new narrative viable native fish population objective and existing salmon protection objective. The models and analyses in the 2023 draft Staff Report that demonstrate benefits of the proposed VAs are appropriate for the purposes in which they are used. The final draft Scientific Basis Report Supplement includes quantitative evaluations of the projected changes in habitat provided for native species from VA proposed flows and physical habitat restoration actions. Suitable habitat for spawning and rearing habitat was defined by velocity, depth, temperature, substrate, and cover criteria. The final draft Scientific Basis Report Supplement also includes quantitative evaluations of projected changes in native species abundance indices and the frequency of ecological flow thresholds with VA proposed flows. The use of life cycle models is complicated as they have their own limitations and may not be compatible with the analyses performed in the 2023 draft Staff Report. Please see Common Response 3.1, Fish Protection, regarding the staff report use of best available science, and the adequacy of modeling to support the benefit analyses, including more detail on the life cycle models. Also see Common Response 1.2, Water Quality Control Planning Process, regarding the reasonable protection of fish and wildlife.

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293	22	[ATT 1:] EPA recommends the State Water Board apply a quantitative analysis to the proposed VA alternative that links changes in flow and non-flow assets to changes in species abundance like the statistical models used in the Plan Amendment based on empirical correlations between changes in flow and changes in species abundance. EPA recognizes that the effects of VA non- flow assets on species abundance are likely complicated due to numerous factors like habitat- flow relationships, temperature dynamics, and predation rates that may affect fishes throughout their life cycle. In addition, the effects of VA non-flow assets will partly depend on assumptions about how asset types or functions limit species recruitment (Hayes et al. 1996). More detail and scientific references on the assumption in the proposed VA analysis that habitat is a primary limiting factor on salmon recruitment in the Sacramento and Delta watersheds, as well as on the assumption that habitat assets will produce and export substantial prey resources to Delta fish, can be found in the Enclosure to EPA's February 8, 2023 Comment Letter to the State Water Board (Re: Comment Letter – Draft Scientific Basis Report Supplement). To provide necessary analytical support for the proposed VA alternative, EPA recommends that the State Water Board use life cycle modeling (e.g., Hendrix et al. 2019, Peterson and Duarte 2020, Smith et al. 2023). Life cycle models may provide similar analytical support for assumed habitat benefits compared to published correlations of flow and abundance of Delta fishes (e.g., Tamburello et al. 2019) and salmonids (e.g., Munsch et al. 2020). More specifically, life-cycle modeling will help demonstrate whether a reliance on habitat restoration in the Delta and Sacramento-San Joaquin watersheds will be equally protective compared to reliance on ecosystem-wide flow augmentation proposed in the Plan amendment alternative.	Please see response to comment 293-21.
293	23	[ATT 1:] Temperature Staff Report analyses of the proposed VA indicate that “changes in temperature associated with the proposed VA alternative on the Sacramento, Feather, and American Rivers are small as shown in Appendix G3e (most monthly 10th, 50th, and 90th percentiles of daily average VA temperatures are within 1°F of	The environmental analysis considers whether implementation of the proposed VAs would cause temperature impacts relative to baseline conditions. The proposed VAs include flexibility in the timing of flow commitments, which could reduce or avoid possible temperature-related effects and provide some temperature benefits. However, due to the uncertainty in the timing of VA flow commitments, and in some cases the location,

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		baseline temperatures)” (p. 9-142). This finding suggests that the proposed VA flow assets will have an insignificant impact on improving temperature conditions. Given that salmon in these rivers are adversely impacted by temperatures that often exceed thermal tolerance thresholds under existing baseline conditions, the proposed VA alternative does not appear to provide protection. The Staff Report analysis of the proposed VA alternative suggests that mitigation measures (reservoir management and habitat restoration) will avoid or reduce temperature impacts on native species in the Sacramento River and Delta. However, any such assertions about reduction in impacts of high temperature should be supported by empirical evidence and analyses.	and associated possible changes in water temperatures, this impact is conservatively considered potentially significant. As indicated by the text on page 9-142, existing water temperature concerns may not be addressed by the proposed VAs alone. In addition, the project is revised as described in Common Response 1.3, Revised Proposed Plan Amendments. The revised proposed Plan amendments include a provision requiring that the VA pathway be implemented in a manner to improve temperatures to the extent possible and avoid redirected impacts to water temperatures. As part of the annual and periodic review processes, the HRL participants will be required to report on measures they have undertaken to address temperature impairments in their stream systems in coordination with HRL implementation measures. Information regarding temperature effects, as well as other effects of the VA pathway on the protection of native fish and wildlife, will inform decisions regarding continuation, modification, or termination of the VA pathway overall and for individual HRL components.
293	24	[ATT 1:] Incomplete Description of VA Alternatives EPA appreciates the State Water Board efforts to model and evaluate a “best guess” as to what a final VA alternative may contain. Nevertheless, the public cannot effectively comment on major elements of the proposal because the proposal is, at this time, uncertain. For example, tables describing the suggested flow assets in the VA Term Sheet (MOU Advancing a Term Sheet for the Vas Staff Report Appendix 1), the Staff Report (p. 9-4 to 9-5), and the Draft Strategic Plan (Staff Report Appendix G1, p. 8) include different descriptions of the asset caveats. Each, however, clarifies that the flow asset tables were still being negotiated at the time of submission or evaluation. Given the critical role these flow assets will play in resource protection, it is important for the State Water Board to provide a consistent and complete description of the VA proposal being offered as an alternative.	The description of the VA pathway in the 2023 draft Staff Report contains sufficient information to inform the analysis and public review. The documents submitted by VA parties do not entirely represent the VA pathway. The operable provisions of the VAs relevant to the analysis were described in the 2023 draft Staff Report. Chapter 9, Proposed Voluntary Agreements, of the 2023 draft Staff Report represents the flows expected to result from the VAs in Section 9.5, Changes in Hydrology and Water Supply. Please refer to Common Response 1.3, Revised Proposed Plan Amendments, for more information on the VA pathway.
293	25	[ATT 1:] Complex Governance Proposals The draft Governance Proposal (Voluntary Agreement Draft Strategic Plan Appendix B, pp. 146 et seq.) is complex, and includes a broad Systemwide Governance Committee consisting	The VA pathway is an alternate implementation pathway for meeting the new proposed objectives for Sacramento/Delta inflow and cold water habitat, inflow-based Delta outflow, and native fish viability and the existing objective for salmon protection (see Staff Report Section 13.3.2, Water Quality

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		of representation from State and Federal Agencies, tribes, water agencies, and environmental groups, as well as individual tributary governance structures, a Program Office, an Executive Director, a Flow Operations Team, and a Science Committee, as well as additional committees established as needed. While it is difficult to understand how this complex system will work at this stage, EPA is concerned that the draft governance proposal may lead to confusion about accountability. EPA notes that the State Water Board is the “federal water pollution control agency” for purposes of the federal CWA, and as such is responsible for all CWA program responsibilities (including requirements for conducting triennial reviews under CWA section 303(c) and complying with financial assistance and accountability provisions). [Footnote 16: California can, within limits of relevant federal law, revise its governance structures for implementing a federal program, as it did in 2015 when the California Legislature transferred federal Safe Drinking Water Act functions from the California Department of Public Health to the State Water Board.] EPA urges the State Water Board to explicitly articulate the anticipated relationship between the State Water Board and any new governance structure to enable both transparency and accountability. Relatedly, the State Water Board frequently requires regulated entities to conduct monitoring and evaluate data and such requirements generate valuable data that can inform assessment of designated use attainment and, where relevant, adaptive management. EPA notes that the California State Legislature considered the issue of coordinating objective scientific monitoring in the Bay-Delta when it established the Independent Science Board in the 2009 Delta Reform Act. We note further that the highly successful Interagency Ecological Program (IEP) has been coordinating monitoring and evaluation activities in the Delta for more than 50 years. The VA alternative proposes that, rather than utilizing the well-established IEP, the VA alternative set up yet another separate and extensive monitoring and science effort. While EPA supports robust data collection, it is important that there is significant coordination around monitoring objectives and science communication.	Objectives for Fish and Wildlife Uses) for the HRL water rights identified in Appendix B.1 of the revised proposed Plan amendments. The VA pathway would allow the HRL participants to meet the flow, habitat, and other required HRL commitments as described further below and in the revised proposed Plan amendments in lieu of meeting the regulatory pathway provisions for a period of 8 years with the possibility of extension. The revised proposed Plan amendments incorporate VA flow and habitat commitments and were informed by the various documents produced by VA participants. However, none of these documents is incorporated into the revised draft Bay-Delta Plan due to the inclusion of other information in VA documents not relevant or appropriate for inclusion in the Plan. The State Water Board is not a party to the VA proposals, nor bound by the VA documents and did not incorporate them by reference. However, the State Water Board considered the VA documents and other comments received and exercised its independent judgment as it developed the VA pathway described in the revised proposed Plan amendments. The State Water Board understands that HRL participants may utilize various documents to organize their internal efforts to implement the VA pathway, including their Governance Plan. However, the State Water Board would retain oversight over implementation of the VA pathway and is not delegating authority to VA governance outside the boundaries defined in the revised proposed Plan amendments. Please refer to Common Response 1.3, Revised Proposed Plan Amendments, for details on VA pathway enforceability, governance, and supplemental science and monitoring.
293	26	[ATT 1:] Tribal Beneficial Uses	The revised proposed Plan amendments incorporate the Tribal Tradition and Culture (CUL), Subsistence Fishing (SUB), and

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		As explained in the Staff Report, California Native American Tribes have a deep and abiding connection to the Bay-Delta watershed and rely on sufficient flow and water quality to support subsistence fishing and other important tribal uses of water (Staff Report Chapter 11). A healthy Bay-Delta watershed is one that provides the water and water-dependent vegetation (e.g. willow and tule) and animals (e.g. native fisheries) to support Tribal spiritual and cultural practices. The Staff Report further asserts that the State Water Board, as the only entity with direct authority to regulate diversions of water, adopted the Bay-Delta Plan because “water diversions from the Bay-Delta watershed’s rivers and streams, including large export diversions from the Delta by the [State and Federal Water Projects] have [...] degraded the ecosystem, contributing to the decline of native fish populations” (Staff Report p. 11-12). EPA appreciates that the State Water Board has clearly identified the importance of meaningful engagement with tribes and the importance of flow for tribal uses of water (Staff Report p, 11-11). EPA strongly supports incorporation of Tribal Beneficial Uses (TBUs) into the Bay-Delta Plan. The Staff Report explains that the State Water Board “is expected to make a decision on the pathway for incorporating, designating, and protecting TBUs [Tribal Beneficial Uses] when Plan amendments are for adoption at a Board Meeting in 2024” (Staff Report p. 11-10). However, the Staff Report also states that “[i]ncorporation of the TBU definitions into the Bay-Delta Plan is not proposed as a formal ‘designation’ of the uses as applying to specific waterbodies or waterbody segments within the Bay-Delta” (Staff Report p. 11-11). While the Staff Report clearly identifies the need for TBUs in the Bay-Delta Plan, the Staff Report stops short of proposing how the State Water Board will address this need in the Bay-Delta Plan. EPA encourages the State Water Board to expeditiously designate appropriate beneficial uses and protective criteria for such waters in the Bay-Delta Plan, based on available data and information including information provided by the Tribes.	Tribal Subsistence Fishing (T-SUB) beneficial uses and designate CUL as they relate to native fish and wildlife, particularly salmon, for the Bay-Delta watershed. See also Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for responses to comments related to Tribal Beneficial Uses.
294	1	We only have one Delta and we must protect it. Years of withdrawing too much water have taken a dangerous toll on important habit for fish and wildlife. It is time to update the Bay	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not

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		Delta Plan with current science and significant public input, including that of local tribes.	raise specific economic effects of the project. Please also see Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for more information on the State Water Board's tribal consultation and incorporation of tribal beneficial uses to the Bay-Delta Plan.
294	2	I write as a concerned resident of California and urge the Board to move forward with a Bay Delta Plan Update that includes an unimpaired flow standard that will provide for recovery of imperiled species and address proliferation of Harmful Algal Blooms. Additionally, I urge the Board NOT to approve the proposed Voluntary Agreements (VAs).	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.
294	3	The VAs were developed without the input of Tribes, Delta communities, EJ, environmental, or fishing groups, through a deficient process that lacked public transparency, and the resulting agreement fails to provide meaningful improvements to instream flows, water quality, and species conditions in the Bay Delta.	Please see Common Response 1.1, General Comments, for a response to comments about the process to develop the VA pathway.
294	4	The Bay Delta watershed serves a critical role as important habitat for imperiled fish and wildlife, the source water supply for more than half of California residents, and supporting numerous industries, including fishing, agriculture, and recreation. It is also important to California native tribes.	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project. Please see Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for more information on the State Water Board's tribal consultation and incorporation of tribal beneficial uses to the Bay-Delta Plan.
294	5	Unsustainable diversions in the Bay-Delta result in inadequate in-stream flows and water quality impacts which are exacerbated during drought. Harmful algal blooms (HABs) in the Delta have worsened substantially in recent years because of high temperatures, stagnant water and inadequate flows through the summer months. HABs are toxic and put human health, animals, and wildlife at risk.	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project. See also Common Response 4.1, Harmful Algal Blooms, for responses to comments related to instream flow and cyanobacteria harmful algal bloom formation in the Delta.
294	6	The goal of updating the Bay Delta Plan is to address long-standing issues driven by an over-appropriated water system, while preparing to meet new challenges brought on by climate change. The Voluntary Agreements do not accomplish this.	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project and Staff Report

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			Section 9.7.23, Ability to Achieve Project Purpose and Goals, for a discussion of the ability of the VAs to achieve the project purpose and goals.
294	7	Moreover, the 2010 Delta Flow Criteria Report found that a 75% unimpaired flow standard was needed to protect imperiled fish, however the Draft Staff Report recommends a 55% unimpaired flow standard. I urge the Board to ensure the Bay Delta Plan update prioritizes a higher unimpaired flow standard so that local communities and wildlife do not continue to bear the burden of unsustainable water diversions, and the Bay Delta ecosystem can recover and remain resilient in the face of climate change.	Please see Common Response 1.1, General Comments, for information on the Delta Flow Criteria Report and for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.
298	2	Climate change impacts have been accelerating in the 21st Century. This report shows how the hydroclimate in California has fundamentally shifted. The Water Board cannot rely on modeling which implicitly assumes the 20th Century hydrology to show that flow and temperatures thresholds needed for survival of species and achievement of Water Quality Control Plan objectives will be met. Increases in temperature and frequency of extremes The past decade has seen a huge increase in extreme weather events across the globe. The Sixth Assessment Report of the Intergovernmental Panel on Climate Change, Working Group I IPCC Working Group I (IPCC AR6 WG1 2021) found: Human-induced climate change is already affecting many weather and climate extremes in every region across the globe. Evidence of observed changes in extremes such as heatwaves, heavy precipitation, droughts, and tropical cyclones, and, in particular, their attribution to human influence, has strengthened since AR5. (p. 25.) In western North America, the Southwest has seen a megadrought, the driest two decades for soil moisture in the last 1200 years (Williams et al. 2020; Williams et al. 2022). California saw the driest four year period in the observational record in	See Common Response 4.2, Drought and Climate Change, for information regarding the consideration of climate change in Staff Report modeling. Also see Section 13.4, Changes in Hydrology and Water Supply, of the Staff Report for information on the updated modeling, which now includes 21st century hydrology.

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		2012-2015 (CDWR 2016). German climate scientist Stefan Rahmstorf published an analysis showing that Germany has warmed over 2°C (3.6 °F) since the 19th century (Figure 1 [see Exhibit 1]) while the linear trends used by the German Weather Service show warming of only 1.6°C (Figure 2 [see Exhibit 2]). Figure from (Rahmstorf 2020). The warming of over 2 °C in Germany is consistent with global trends, which show that warming over land regions has been more rapid than warming of the ocean and warming in the Northern Hemisphere than warming in the Southern Hemisphere. The state of California has similarly been using linear trends to characterize regional temperature increases. See, for example, the OEHHA report, “Indicators of Climate Change in California.” (OEHHA 2022 Nov), which states that California has been warming at a rate of approximately 2 °F per century. However, just as in Germany, using linear trends significantly underestimates the magnitude of recent warming.	
298	3	[Exhibit 1: Graph titled Figure 1 Nonlinear trends in temperature in Germany (Stefan Rahmstorf)]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
298	4	[Exhibit 2: Graph titled Figure 2 Linear trends used by the German Weather Service]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
298	5	NOAA National Centers for Environmental Information provides timeseries of climate data by US Climate Division from 1895 to the present (NOAA NCEI 2023 Dec). A map of the California Climate Divisions is shown in Figure 3 [see Exhibit 3]. The Sacramento and San Joaquin Drainage divisions are the watersheds for the Sacramento and San Joaquin Rivers, respectively. The North Coast drainage includes the watershed for the Trinity River. Figure 4 [see Exhibit 4] shows the increase in mean monthly 2 meter air temperatures for the past decade, compared to the	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.

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		period 1895-1925. Warming in 2013-2023 is as high as 3.6-4.3 °F (2-2.3 °C) in Northern California, and as high as 4.0-5.4 °F (2-3 °C) on the South Coast. Temperature increases in California in 2013-2023 have also been among the highest in the Western US in many months. (See Figure 16 [See Exhibit 16] in the Appendix.) Figure 5 [See Exhibit 5] shows the increase in mean monthly 2 meter air temperatures for the period 1998-2013. 2013-2023 saw a significant increase from 1998-2013, particularly in Northern California and the San Joaquin Valley, where the change from 1895-1925 increased by 100% or more in some months. Figure 6 [See Exhibit 6] shows the nonlinear trend in mean monthly temperatures, compared with the linear trend. The nonlinear trend for the 2013-2023 period is much larger than the linear trend and has been associated with significant drying in California watersheds. Figure 7 [See Exhibit 7] shows the nonlinear trend in anomalies of the Palmer Drought Severity Index, or PDSI. However, there has also been a significant decrease in precipitation in California in the period 2013-2023 and 1998-2023. Figure 8 [See Exhibit 8] shows the nonlinear and linear trends in precipitation. Methods The nonlinear trend was calculated using locally weighted scatterplot smoothing (Lowess) with a 30 year window (Cleveland 1979). (Clarke and Richardson 2021) proposed using the Lowess trend with a 40 year window for IPCC estimates of global temperature. The linear trend was calculated using Sen's slope and pyMannKendall. (Hussain and Mahmud 2019). Sen's slope was chosen over least squares regression because least squares assumes that data is independent and identically distributed, and also that the variance is not changing. California climate data is not identically distributed, and the variance is increasing. Sen's slope is more robust.	

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298	6	[Exhibit 3: Graphic titled Figure 3 Map of California Climate Divisions]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
298	7	[Exhibit 4: Table titled Figure 4 2m Temperature increase from 2013-2023, compared to 1895-1925]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
298	8	[Exhibit 5: Table titled Figure 5 2m Temperature increase from 1998-2013, compared to 1895-1925]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
298	9	[Exhibit 6: Multiple graphs titled Figure 6 Nonlinear vs. linear trends in temperature in California Climate Divisions]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
298	10	[Exhibit 7: Multiple graphs titled Figure 7 Nonlinear vs. linear trends in PDSI in California Climate Divisions]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
298	11	[Exhibit 8: Multiple graphs titled Figure 8 Nonlinear vs. linear trends in precipitation in California Climate Divisions]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
298	12	Discussion Decadal-scale variability in California temperature and precipitation has been associated with sea surface temperatures in the North Pacific. From 1998-2013, there was a pattern of cool sea surface temperatures in the Northeastern Pacific, associated with a predominantly cool phase of the Pacific Decadal Oscillation (PDO). The PDO was first defined by (Mantua et al. 1997), as the dominant pattern in decadal scale variations in monthly sea surface temperatures in the North Pacific.(Power et al. 1999) defined an Interdecadal Pacific Oscillation, which encompasses the entire Pacific. There are a number of other indices which collectively represent Pacific Decadal Variability, but are not	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.

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		independent (IPCC AR6 WG1 2021). Other predominantly cool PDO periods include 1905-1925 and 1947-1976, with predominantly warm periods in between. (Deser, Clara et al. 2022). The warm PDO period of 1977-98 was a wetter period. The period since 2013 has been mixed. Figures 9 and 10 [See Exhibit 9 and Exhibit 10, respectively] show changes in the distribution of precipitation and temperature in California, by Pacific Decadal Oscillation period. While there has been an increase in wet extremes during 1977-98 and also from 2013-2023, there was a significant increase in dry extremes from 2013-2023, and the median of the distribution has shifted. Figures 13 and 14 [See Exhibit 13 and 14, respectively], in the appendix, show similar distributions and shifts in distributions for the North Coast, Sacramento, and San Joaquin Climate Divisions.	
298	13	[Exhibit 9: Two graphs titled Figure 9 Changing distributions of precipitation in California and the Western US]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
298	14	[Exhibit 10: Two graphs titled Figure 10 Changing distributions of temperature in California and the Western US]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
298	15	The shifts in distribution in precipitation in California are also associated with a decline in landfalling atmospheric rivers. (Gershunov et al. 2019) used automated detection methods on reanalysis data from 1951-2000 to find landfalling ARs from January to March. Surprisingly, the supplemental information shows a reduction in the number of landfalling ARs on the West Coast, and an even larger reduction in California, as well as a reduction in duration of ARs. The authors found: a change in the average number of landfalling ARs on the west coast of -1 (1%), and a reduction in duration of 0.27 days (14%) (Table S3) a change in the average number of landfalling ARs in California of -2(15%) and a reduction in duration of 0.21 days (9%) (Table	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.

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		S4) (Gershunov et al. 2019) also found an overall decrease in AR-related precipitation on the west coast of North America, and more in California. a reduction in annual AR precipitation on the west coast of -16 mm (14%), compensated for by an increase in non-AR precipitation of +47 mm (9 %) (Table S6) a reduction in annual AR precipitation in California of -70 mm (32%), compensated for by an increase in non-AR precipitation of +112 mm (28%). (Table S5) Figure 11 [See Exhibit 11] shows the marked decrease in the Standardized Precipitation Index (1 month) in January and February from 2013 to 2023 over the base period of 1901-1980. In contrast, the period from 1977-98 was wetter in most months [see Exhibit 12]. There are similar reductions in precipitation in January and February across the Western US (Appendix, Figure 15. [See Exhibit 15])	
298	16	[Exhibit 11: Table titled Figure 11 Standardized Precipitation Index change, 2013-2023]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
298	17	[Exhibit 12: Table titled Figure 12 Standardized Precipitation Index change 1977-98]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
298	18	Climate adaptation under increasing uncertainty (Dettinger and Culbertson 2008) observed rather presciently that “human-induced climate changes, mostly in the form of long-term trends, are projected to be larger and more sustained than those long-term fluctuations in the historical period, and comparable to—or larger than—natural climate excursions in the past several millennia.” Recent years have seen increasing uncertainty about the causes of reduced precipitation in western North America. A recent	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.

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		study by Seager et al. (2022) significantly undermines the conclusion that the precipitation deficit in recent western droughts was caused by internal variability. The authors used large ensembles to evaluate the ability of climate models to reproduce observation-based trends in Pacific sea surface temperature. The study found that the latest climate models fail to reproduce these trends, leading the authors to conclude that observed trends are “extremely unlikely” to be consistent with model internal variability. (Fasullo et al 2020) also used large ensembles to evaluate the representation of Pacific Decadal Variability (PDV) in the current generation of climate models from the Fifth and Sixth Coupled Model Intercomparison Project (CMIP5 and CMIP6). (IPCC AR6 WG1 2021) found that the observed PDV is “in the tails of the model distributions,” and that "even if one cannot rule out that the observed PDV over the instrumental era represents an exceptional period of variability, it is plausible that the tendency of the CMIP5 models to systematically underestimate the low frequency variance is due to an incomplete representation of decadal-scale mechanisms in these models. This situation is slightly improved in CMIP6 historical simulations but remains a concern..." In the face of such uncertainty, the public trust demands that the Water Board assume that the current climate trends may continue.	
298	19	[Exhibit 13: Three graphs titled Figure 13 Changing distributions of precipitation in the North Coast, Sacramento, and San Joaquin Climate Divisions]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
298	20	[Exhibit 14: Three graphs titled Figure 14 Changing distributions of Temperature in North Coast, Sacramento, and San Joaquin Climate Divisions]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
298	21	[Exhibit 15: Table titled Figure 15 Changes in Standardized Precipitation Index in Western US Climate Regions]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.

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298	22	[Exhibit 16: Table titled Figure 16 Changes in Temperature in Western US Climate Regions]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
299	1	The Nature Conservancy (TNC) has spent decades working in collaboration with partners across California and in the Central Valley in developing science and implementing solutions to balance the water needs of nature and our communities. We have engaged extensively in processes to restore salmon populations and ecological function to rivers throughout the Central Valley, including as a member of the Stanislaus, Tuolumne, and Merced Working Group. We have also spent more than 30 years restoring over 8,000 acres of habitat along the Sacramento River and have worked to restore dry season baseflows through purchase of water rights in Mill Creek. We were pleased to see that this draft Staff Report includes: • An appropriate baseline condition consistently applied across scenarios to facilitate comparison, • A section on functional flows [Footnote 1: Functional flows are key components of the annual hydrograph important to long term river health that provide a distinct geomorphic, ecological, or biogeochemical function as part of a comprehensive flow regime. For California these components are the fall pulse flow, wet-season baseflow, peak flows, spring recession flow, and dry-season baseflow (Yarnell et al. 2020), and all five are needed for river function.] and the incorporation of ecological functions into the discussion of need for additional flows, • Recommendations for environmental flows year-round in the tributaries, • A clear statement that additional flows are needed to support species recovery, and • Clear statements that current flow standards are inadequate to maintain viability of many native fishes.	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.

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		The Nature Conservancy works to find solutions to our most pressing problems through collaborative approaches. The Staff Report and prior planning documents describe that current flow operations are directly contributing to declines of Chinook Salmon, and the scientific literature and analysis provided in the Staff Report also clearly show the need for higher flows for salmon recovery. We support a variety of actions in the Sacramento Valley and Delta that will improve upon the status-quo to provide more of the flows needed to support nature. We have several comments and suggestions for consideration as the State Water Board determines how to proceed with the update to the Water Quality Control Plan. We focus our comments on tributary inflows due to their importance for salmonid spawning and rearing.	
299	2	Functional flows can be used to make the most of available water budgets for the environment. We were pleased to see references to functional flows throughout the Staff Report, given scientific consensus on the importance of protecting ecologically important flow components. Functional flows are key components of the annual hydrograph important to long term river health that provide a distinct geomorphic, ecological, or biogeochemical function as part of a comprehensive flow regime. Functional flows move beyond a species-specific focus to provide a holistic approach to flows that benefit overall ecosystem function and the full suite of aquatic species. However, we have two suggestions to help ensure that fish are able to benefit from efforts to include functional flows: • We recommend more specifically defining functional flows. Although the analysis describes the importance of functional flows and allows for flows to be shaped to provide ecological functions, no definition or guidance on how to provide these is included (e.g., p 5-14). Five functional flow components have been identified for California, and all five need to be addressed to support ecological function (Yarnell et al. 2020). These flows	Please see Section 3.13.4, Holistic Methods for Determining Environmental Flows, of the 2023 draft Staff Report for a discussion of functional flows. The adaptive management flow shaping provisions and voluntary agreements flow flexibility brackets could be used to shape flows using a functional flows approach for the benefit of fish and wildlife. Please see Common Response 1.3, Revised Proposed Plan Amendments, for additional information on these provisions.

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		include the fall pulse flow, winter peak flows, an elevated wet season baseflow, a spring pulse and recession, and a dry season baseflow. To provide ecological functions, functional flows typically must match the timing, duration, magnitude, and frequency of key components of the unimpaired flows that rivers and aquatic species are adapted to. To ensure that functional flows provide function, the document will need a clear definition of functional flows as a holistic approach that addresses species needs throughout the year with natural timing, frequency, duration, rate of change, and flow magnitude. • We recommend more specifically requiring functional flows. We understand that the flows adopted under the Bay Delta Plan will represent balanced flows. In cases such as this where full natural flows are not feasible, science suggests that shaping available water to provide key functional flows can help support ecosystem function. For example, recent research has shown that in dry years, some of the benefits of higher flows may be achievable through hydrograph shaping to achieve functional flows. Hassrick et al. (2022) found that pulse flows improve winter run survival, particularly in years with lower flow. Michel et al. (2021) found that shaping hydrographs to provide adequate spring pulse flows increased juvenile Chinook migration survival by 55-132% in dry and below normal years, without requiring additional water. Munsch et al. (2020) showed that pulse flows and more variable flows increased juvenile salmon use of habitat, particularly when these represented increases from low to moderate flows. Recent research has explored using functional flows to shape blocks of water in the San Joaquin Valley and could be incorporated (e.g., Willis et al. 2022). To make the most of available water, the plan could require that water budgets be shaped to provide functional flows. Functional flows described by the California Environmental Flows Framework could be used to shape the annual water budget in tributary streams [Footnote 2: Reference-based ranges for each of these flows are available at rivers.codefornature.org]. In the Delta, researchers have developed detailed flow-ecology relationships that can be used instead of these predicted functional flow ranges.	

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299	3	Recent publications could help strengthen the Staff Report analysis and inform program implementation. Recent studies in the Central Valley underscore the importance of flow for salmon and suggest some adjustments to thresholds used in the analysis. These studies can be used to update the analysis, which currently only considers literature published before 2018. We reference some of these papers in our comments and provide a list of key recent references at the end of this letter. These papers have expanded scientific understanding of the critical role of flow in supporting Sacramento Valley Chinook Salmon and we recommend they be considered in any plan moving forward. Recent papers have reaffirmed that flow magnitude strongly affects survival for Chinook salmon. For example, Michel (2019) showed that over a third of all variability in the smolt-to-adult ratio could be explained by flow during outmigration for all three Central Valley Chinook populations, and that most interannual variation in smolt-to adult ratio is better predicted by outmigration survival and flow than ocean conditions. Cordoleani et al. (2018) showed that wetter years with higher flows strongly benefited survival of spring run juveniles migrating out from Butte Creek. Notch et al. (2020) documented dramatically higher survival for spring run outmigrants in a year with higher flow. Munsch et al. (2020) found declines of habitat use by juvenile salmon below winter and spring flows of 17,600 – 26,500 cfs (500-750 cms), characteristic of wet years, and that “fry were unlikely to be present...unless spawner counts and flows were high.” Recent studies have also shown that in addition to providing connectivity and access to habitat, as discussed in the Staff Report, flow strongly affects life history diversity, a component of population viability. For example, Hassrick et al. (2022) showed that winter run appear to alter migration patterns depending on flow, and to slow down in the lower reaches of the Sacramento River during dry years, which may contribute to high mortality. In the San Joaquin Valley, Sturrock et al. (2020) found that lower and less variable winter flows were associated with delayed emigration timing and worse outcomes for fall-run Chinook salmon on the Stanislaus River. These findings support the idea that outmigrating juvenile Chinook salmon require higher flows to signal movement.	See Common Response 3.1, Fish Protection, on use of best available science and process for updates to literature in Chapters 3 and 4.

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299	4	Best available science shows that more flows are needed for Chinook Salmon recovery. The proposed Plan amendments require 55% of unimpaired inflow, with a range from 45-65%, which would likely provide important benefits to Chinook Salmon and other native species. However, the analysis does not include evidence that the proposed flows will be adequate to support the Chinook Salmon population doubling objective or population viability. Together with analyses in the Staff Report, recent papers clearly show that more flows will be needed achieve the population viability and doubling goals: • Outmigrating juvenile Chinook salmon benefit from flows that are only rarely available in the 55% scenario. Michel et al. (2021) estimated that optimal spring flows for outmigrants were ~10,700 cfs at Wilkins Slough. Under the 55% of unimpaired inflow scenario, these flows would be available in April and May in fewer than 25% of years (Table A1-72). • Flows through the Delta of 20,000 cfs are not adequate to protect salmon migration. The Staff Report analysis assumes that Sacramento flows through the Delta >20,000 cfs protect salmon migration (see ch 3 and p5-15). We recommend the incorporation of Perry et al. (2018), which found that flows >35,000 cfs (1000 cms) are necessary to protect Chinook Salmon survival and avoid routing fish into the interior Delta. We believe Perry et al. (2018) is the best available science for flow-survival relationships of salmon smolt migrating through the Delta. • Using the 20,000 cfs threshold, the proposed Plan amendments do not consistently provide flows for migration through the Delta. Table 7.6.2-4 shows that under the proposed Plan amendments, Delta outflows would only meet the existing 20,000 cfs target for fall-run in 33% of spring months. • In particular, the analysis does not support including 45% or less of unimpaired inflows in the proposed target range. The Staff Report states that “expected benefits to fish and wildlife are marginal in the 45 [percent of unimpaired] scenario” (5-16), yet 45% is included in the proposed flow range.	Please see Common Response 1.2, Water Quality Control Planning Process, on reasonable protection of fish and wildlife. Please also see Common Response 3.1, Fish Protection, on updated flow thresholds.

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299	5	The flows expected under the various proposals should be presented consistently to enable comparison. All flows should be provided in the same units (such as percent of unimpaired) and summarized at the same timescales. In the current report, the differences in how these data are presented makes comparisons challenging. For example, flows under the proposed Plan amendments are summarized monthly and by exceedance percentage, while the proposed Voluntary Agreements flows are summarized seasonally by water year type.	The results for the unimpaired flow scenarios (Appendix A1, Sacramento Water Allocation Model Methods and Results) and the results for the Voluntary Agreement scenario (Appendix G3a, Sacramento Water Allocation Model Methods and Results for the Proposed Voluntary Agreements) are presented in the same way with monthly box plots and monthly exceedance distributions allowing the reader to compare the modeling results using the same types of data. Additionally, the results in Chapter 6, Changes in Hydrology and Water Supply (unimpaired flow scenarios) and Chapter 9 (VA scenario) both present monthly box plots. Chapter 9, Proposed Voluntary Agreements, includes seasonal summaries because the VA proposal is generally to provide flow commitments in the spring and is less focused on other seasons, so the Staff Report presents the results in this fashion. The final Staff Report presents the results in Chapter 13, Revised Proposed Plan Amendments, side by side in the same units.
299	6	Physical habitat restoration will require adequate flows to provide benefit. TNC is actively engaged in habitat restoration and strongly believes that improved aquatic habitat throughout the Central Valley will be an important part of the effort to sustain a healthy salmon population. However, functional habitat requires functional flows. In particular, • Habitat use is flow dependent. Salmon require adequate flows and appropriate water temperatures to successfully occupy restored physical habitat, as described in the science basis report (G2). In particular, habitat that only functions during wet years will not improve outcomes for salmon in dry years. • Studies have failed to show that physical habitat limits production and recovery of salmon and steelhead at current population levels. For instance, Munsch et al. (2020) demonstrated that habitat use by Chinook Salmon fry in the lower Sacramento River was strongly predicted by spawners and flow, and that juvenile salmon were much more likely to occupy restored shallow water habitats at flows above ~17,700 cfs: these fish required higher flows to use the habitat. Henderson et al. (2019) showed that river flow predicted salmon survival, where reach-scale habitat conditions did not. Multiple studies	Please see Common Response 3.1, Fish Protection, on habitat benefit analysis and process for updates to literature in Chapters 3 and 4.

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		showed strong population-level responses to wet years with higher flows (see e.g., Michel 2019, Sturrock et al. 2020, Hassrick et al. 2022, Sturrock et al. 2019). • Floodplain food export for salmon is flow dependent. A recent study by Sturrock et al. (2022) shows that salmon prey are exported from managed floodplains, but the magnitude and spatial extent of the effect are correlated with river flow volume (i.e., more food, distributed further downstream as flows increase). There is no food produced or exported when the habitat is not inundated. Shallow inundated habitat such as floodplains need adequate flow to produce and distribute that food in order to provide a meaningful food subsidy. • Better understanding is needed of the benefits of managed floodplain rearing habitat for salmon survival. There has been an assumption that rapid growth of fish reared on floodplains leads to better survival and disproportionate contribution of floodplain-reared fish to the fishery and/or escapement. However, several recent studies (Takata et al. 2017, Pope et al 2018, Johnston et al. 2018) failed to find a survival benefit for migrating juvenile Chinook Salmon.	
299	7	Specific science-based objectives and metrics will be essential to the success of this effort. Adaptive management is only effective when there are clear, science-based objectives with metrics to track progress towards those objectives. Quantitative measures of ecological responses – including fish population response – are needed to enable adaptive management and evaluate success. Some of these details may be developed in the forthcoming program of implementation. • Define important terms. The Staff Report needs to clearly define important terms, including “viable” and “doubling” to ensure the achievement of sustainable natural populations of native fish species, including all salmon runs, over time. Viability is defined by National Marine Fisheries Service (NMFS) as follows: “A viable salmonid population (VSP) is an independent population of any Pacific salmonid (genus <i>Oncorhynchus</i>) that has a negligible risk of extinction due to threats from demographic variation (random or directional), local	See Common Response 1.3, Revised Proposed Plan Amendments, on the program of implementation and biological goals. “Doubling” was defined in the prior Bay-Delta Plan and State Water Board Water Right Decision 1641 as a “doubling of natural production of Chinook salmon from average production of 1967-1991, consistent with the provisions of State and Federal law.” Please see Common Response 1.3, Revised Proposed Plan Amendments, for information on the definition of viability and the timeline for developing biological goals.

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		environmental variation, and genetic diversity changes (random or directional) over a 100-year time frame” (McElhany et al. 2000). Similarly, doubling can be clearly defined with reference to the tributary-specific goals within the 2001 Anadromous Fish Restoration Program final plan appendix B-1. Salmon populations are unlikely to support fishing as a beneficial use until they meet the doubling objective. • Prioritize the development of biological goals to inform evaluation of the ability of the proposals to achieve the objectives. The Staff Report does not evaluate how close we would get to the narrative objectives and does not include a timeline for developing biological goals (5-64).	
299	8	In addition, we noted a few issues that were raised but not addressed. Please address these issues in more detail in future documents. • Climate change considerations should be included in planning and are not currently included.	See Common Response 4.2, Drought and Climate Change, for information on the consideration of climate change in the Staff Report.
299	9	In addition, we noted a few issues that were raised but not addressed. Please address these issues in more detail in future documents. • Projected increased groundwater pumping is likely to threaten the ability to meet instream flow targets and is not addressed. The proposed Plan amendments identify that reductions in surface water consumptive use will result in increased demand for groundwater. Recent analysis has documented that groundwater pumping is already affecting surface flows within the Sacramento River Valley (Rohde et al. 2021). The proposed Project does not address how this increased groundwater pumping would be addressed. Long term, changes to water management that do not result in reduced consumptive water use will not protect instream flows.	As discussed in Section 7.12.2, Groundwater, the Staff Report acknowledges that updates to the Sacramento/Delta Bay Delta Plan may affect groundwater in multiple ways as increased groundwater pumping could occur in response to reduced Sacramento/Delta surface water supplies (Impact GW-b, a and f). However, the [regulatory pathway] is a percentage of unimpaired flow that must be met. Increased groundwater pumping does not change the percentage of unimpaired flow that must be met instream. The mitigation measures for groundwater impacts are discussed in Section 7.12.2.4, Mitigation Measures and these measures are largely within the jurisdiction of other local agencies. While the State Water Board can ensure that mitigation is implemented for actions within its authority, other mitigation measures depend on how water users respond to reduced surface water supplies.
299	10	In addition, we noted a few issues that were raised but not addressed. Please address these issues in more detail in future documents. • Refuge water supplies are critical to wetland-dependent migratory birds and the threatened giant garter snake, and water	Water supply, including supplies from the Sacramento/Delta watershed, is evaluated extensively throughout the Staff Report. Chapter 6, Changes in Hydrology and Water Supply, is devoted entirely to describing the changes in hydrology and supply as a result of the proposed Plan amendments. For example, Table 6.4-1 details total annual average water supply to each region in the

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		deliveries to some refuges are required by the Central Valley Project Improvement Act. Potential impacts to this resource are not adequately assessed or quantified.	study area by type of use (agriculture, urban, and refuge). Potential impacts from reduced supply to refuges are further evaluated elsewhere, including in Section 7.6.1, Terrestrial Biological Resources. Based on comments received, a Wildlife Refuge Provision has been added to the 2025 Draft Updates to the Bay-Delta Plan. This provision allows for the Executive Director to approve exceptions to curtailments for wildlife refuges. Updated SacWAM modeling presented in Chapter 13, Revised Proposed Plan Amendments, of the 2025 partially recirculated draft Staff Report reflects this provision and shows very small reductions to refuge supplies.
300	1	We are running out of time to save California's salmon and the salmon families this fishery supports. Winter- and Spring-run salmon are facing a growing extinction risk. The commercially and recreationally critical Central Valley Fall-run is also in decline. The 2023 California salmon fishing season is closed for just the third time in state history and it appears likely that the 2024 fishing season will be closed as well. Simply slowing this rate of decline is unacceptable and would fail to meet the salmon protection objective. In fact, allowing the State's salmon runs to continue their catastrophic downward trajectories amounts to the sanctioned theft of the people's natural resource – a resource that coastal towns, families, river ecosystems, the fishing industry, cultures, and many tens of thousands of jobs in California and Oregon depend on. Additionally, we have witnessed hazardous algal blooms making people sick and killing pets and wildlife, and the listing of six species of fish as threatened or endangered in our Delta. Commercial fishing is now closed in the Bay-Delta for the following species: Green sturgeon, White Sturgeon, Delta Smelt, Longfin Smelt, Starry Flounder, American Shad, Striped Bass, Oysters and Clams. Further, there is now extraordinarily limited commercial fishing for other Bay-Delta species, which were formerly abundant, including Bay shrimp and anchovies. Since the Board is the only agency with legal authority to set flow and temperature protections for Fall-run Chinook, it is imperative	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.

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		that science, not politics, drives a plan to restore salmon...a plan that saves people. The Board must update the current failed standards that were adopted in 1995 to reverse declines of salmon so I strongly urge you to adopt an “unimpaired flow” approach. As we all know, fish need water and flows that are allowed to come down Central Valley rivers and through the Delta directly impact critical salmon issues such as water temperature, water quality and accessible and functional floodplain habitats that baby salmon need to survive and thrive.	
300	2	The unimpaired flow approach would mimic the natural hydrographic of which salmon are adapted. The Board must set a standard requiring a minimum of 65% of unimpaired flow from January to June, combined with temperature protections at major Central Valley reservoirs, if Central Valley salmon are to be restored. Moreover, the Board's 2010 Flow Criteria Report found that 75% of unimpaired flow on the Sacramento River and its tributaries and 75% of unimpaired Delta outflow are needed to protect the Bay-Delta ecosystem. It is also imperative to safeguard beneficial uses pertaining to commercial, recreational, tribal and subsistence fishing. The only way to restore and sustain Central Valley salmon runs is to require flow and temperature protections that enable them to survive.	Please see Common Response 1.1, General Comments, for information on the Delta Flow Criteria Report and for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project. Also see Common Response 1.2, Water Quality Control Planning Process, for information on the consideration of beneficial uses.
301	1	I write as a concerned resident of California and urge the Board to move forward with a Bay Delta Plan Update that includes an unimpaired flow standard that will provide for recovery of imperiled species and address proliferation of Harmful Algal Blooms. Additionally, I urge the Board NOT to approve the proposed Voluntary Agreements (VAs). The VAs were developed without the input of Tribes, Delta communities, EJ, environmental, or fishing groups, through a deficient process that lacked public transparency, and the resulting agreement fails to provide meaningful improvements to in-stream flows, water quality, and species conditions in the Bay Delta.	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.

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		The Bay Delta watershed serves a critical role as important habitat for imperiled fish and wildlife, the source water supply for more than half of California residents, and supporting numerous industries, including fishing, agriculture, and recreation. It is also important to California native tribes. Unsustainable diversions in the Bay-Delta result in inadequate in-stream flows and water quality impacts which are exacerbated during drought. Harmful algal blooms (HABs) in the Delta have worsened substantially in recent years because of high temperatures, stagnant water and inadequate flows through the summer months. HABs are toxic and put human health, animals, and wildlife at risk.	
301	2	The goal of updating the Bay Delta Plan is to address long-standing issues driven by an over-appropriated water system, while preparing to meet new challenges brought on by climate change. The Voluntary Agreements do not accomplish this. Moreover, the 2010 Delta Flow Criteria Report found that a 75% unimpaired flow standard was needed to protect imperiled fish, however the Draft Staff Report recommends a 55% unimpaired flow standard. I urge the Board to ensure the Bay Delta Plan update prioritizes a higher unimpaired flow standard so that local communities and wildlife do not continue to bear the burden of unsustainable water diversions, and the Bay Delta ecosystem can recover and remain resilient in the face of climate change. Thank you for this progress to complete and implement the Bay Delta Plan update and for considering these comments.	Please see Common Response 1.1, General Comments, for information on the Delta Flow Criteria Report and for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project. Also see Common Response 1.2, Water Quality Control Planning Process, for information on the reasonable protection of fish and wildlife beneficial uses; and Common Response 7.24, Alternatives Analysis, for a discussion of project alternatives. The project purpose and goals are listed in Section 7.1.3, Purpose and Goals of the Sacramento/Delta Update to the Bay-Delta Plan, of the 2023 draft Staff Report and the ability of the Voluntary Agreements to achieve the project purpose and goals is discussed in Section 9.7.23, Ability to Achieve Project Purpose and Goals.
302	1	The Nor Rel Muk Wintu Nation strongly opposes the Delta Conveyance Project. We believe DWR did not perform "meaningful consultation". Not only was our Tribe not consulted, CEQA and AB52 was not done adequately nor in good faith. Our Trinity Watershed has been decimated by the Central Valley Water Project & the Delta project. The numbers used for "water release" are more than what is there.	Please see Common Response 1.1, General Comments, regarding comments about other projects.

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		Public comment has been strongly against this project. There is a 76% chance of a 6.7 (or better) earthquake happening if this goes through. This report has been available to everyone. Please reconsider!	
303	1	Buena Vista Rancheria has been involved in the Delta, waterways in its ancestral territory, and in waters across the state since time immemorial. In addition to providing comments, the Tribe writes to request the Board deny finalization of the Bay-Delta Plan, deny the approval of the Voluntary Agreements, and make substantial changes to the Bay-Delta Plan.	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.
303	2	The Water Board should adopt an inflow objective of 70 percent unimpaired flow regime with a reasonable adaptive range and management strategies and implement this within a functional flow regime. Flow is the master or key variable that drives geomorphic, biological, and chemical processes within river and estuarine ecosystems. Yet it is not just the water that is needed to yield environmental improvements within the Bay Delta Watershed. Flow must interact with the environment and physical habitat components to be effective and beneficial for the ecosystem as a whole. Chapter 3 section 3.2 with the proposed plan update quotes Richter et al. (2011) as saying, "alterations greater than 20 percent will likely result in moderate to major changes in the natural structure and ecosystem functions with greater risk associated with greater levels of alterations in daily flow." The same section goes on to discuss studies that have concluded that, "water quality and fish resources deteriorate beyond their ability to recovery when spring and annual water withdrawals exceed 30 and 40 to 50 percent unimpaired flow, respectively (Rozengurt et al. 1987)." The Bay Delta Plan Staff recommendation is for a 55 percent unimpaired flow with an adaptive range of 45 to 65 percent. This value is insufficient in meeting the state's salmon doubling objective and will not reverse or prevent the decline of aquatic life. In fact, the science referenced above from the Bay Delta Plan shows that 55 percent unimpaired flow criteria will perpetuate an ecosystem in collapse. Therefore, a minimum unimpaired flow rate of 70	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project and Common Response 1.2, Water Quality Control Planning Process, for information on the reasonable protection of fish and wildlife beneficial uses. Also see Common Response 1.3, Revised Proposed Plan Amendments, for information on the flow shaping provisions that could allow the required percent of unimpaired flow to be shaped seasonally based on a functional flows approach.

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		percent with an adaptive range of 60 to 80 percent unimpaired flow is recommended and will support increases in aquatic life as well as functional floodplain and flow interaction with the physical habitat. A 70 percent unimpaired flow recommendation could be paired with a functional flow regime that mimics natural flow hydrographs for each river and tributary within the Bay Delta Watershed as this supports the native flora and fauna that evolved with the natural flow regime of its respective riverine or estuarine habitat. Functional flows attempt to reflect the natural flow patterns of a river including the variability within a year and across years. The concept asserts that, "the functional flow regime retains key components of the natural hydrograph that support physical and ecological process across the riverscape" (cite Yarnell et al., 2015). The functional flow concept asserts that you don't necessarily need unimpaired flow, yet enough flow to trigger functional processes such as, sediment movement, floodplain inundation, and biological migration cues) is necessary. Furthermore, the timing of flow events is important and must be timed properly and in sync with the natural occurrence of the flow event. For example, if a reservoir is going to release water for downstream uses it should be timed in such as way to mimic the natural seasonality of such a release such as, fall pulse flows that mimic first season rains or winter peak flows or high spring runoff flows caused by snowmelt (see figure 1 from Yarnell, 2015). Rather than releasing pulse flows in the summer which is out of sync and arbitrarily increases summer baseflows with winter like flow releases or by releasing the same amount of water all year, which "flat lines" a river. Dam operation policies and procedures must be received in order to find opportunities for functional flow releases to meet the multiple objections of reservoir operations as well an unimpaired functional flow regime. Figure 1 [see Exhibit 1]. Natural and functional flow regimes in a Mediterranean-montane climate reflective of the Bay-Delta tributaries. (Yarnell, 2015)	

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303	3	[Exhibit 1: Graph titled Figure 1. Natural and functional flow regimes in a Mediterranean-montane climate reflective of the Bay-Delta tributaries]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
303	4	Bay Delta Plan must recommend and provide guidance on how to integrate flow with an increase in physical habitat and habitat restoration of rivers and streams in order to reap the multiple benefits of unimpaired and functional flows. Rivers are integrated systems that connect habitats in multiple planes: vertically, laterally and longitudinally. The name of this connectivity is referred to as the river continuum concept. Vertical flow integrates surface water with groundwater and connects land with the atmosphere via the evapotranspiration of water through aquatic and terrestrial vegetation. Lateral flow connects water to the riparian habitat, floodplains and connects adjacent wetlands, secondary channels, oxbow pools or other adjacent habitats or geomorphic features. Longitudinal continuity is the movement of water from upstream to downstream which connects habitat types along the entire length of a river system from headwaters to ocean in the case of the Bay Delta Watershed. But flow must be integrated with physical habitat to be effective or meaningful to fish, wildlife, and vegetation through the watershed as a whole. A 2007 paper by Kennard, et al. discusses, "landscape- and local-scale habitat variables (e.g. catchment area and riparian canopy cover) and characteristics of long-term flow regime... were more important predictors of fish assemblages than variables describing short term history of hydrological events." (Kennard, et al., 2007). Meaning an intact long-term flow regime coupled with physical and biological habitat has a significant beneficial effect of fish. Analysis describe in chapter 3.14.2 section on Salmonid Tributary Habitat Analysis of the Bay Delta Plan shows overall improvement in many habitat areas as the flow increases. Areas that show improvement are spawning and rearing habitat, and floodplain inundation, but not all tributaries saw improvement and some cases, no improvement was predicted (see tables 3.14-8, 3.14-9, 3.14-10). This indicates a flow to habitat imbalance meaning that the habitat is already limited in the system and flow is not going to readily improve the habitat without another	Please see Common Response 3.1, Fish Protection, on habitat benefit analyses and Section 4.2, Physical Habitat Loss or Alteration, of the Staff Report for a discussion of physical habitat loss or alteration, including the effects of levees.

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		intervention or restoration prescription. For example, if spawning gravels are absent in a river because an upstream dam is retaining sediment, then flows are not able to transport needed sediment or gravels to build that respective habitat downstream. Flows themselves are not effective alone and a restoration strategy to introduce spawning gravel below the dam would be required. The Lower American River Salmonid Habitat Enhancement Program provides a case study for this. Additionally, where improvements in meaningful floodplain inundation events are low, there may be a lack of floodplain habitat on the landscape. Table 3.14-10 shows no improvement at any flow regime for floodplain inundation in the American River. Could this be related to the robust flood protection system that is in place where levees line the river and therefore restrict flows from acting on a floodplain? Again, habitat restoration projects would be required to make added flows meaningful in the context of floodplain inundation, and to make meaningful use of additional flows into the river for fish and wildlife. This comment should not be taken as a lack of support for the unimpaired flow recommendation.	
303	5	The science described in the staff report indicates that increased flows will benefit estuary conditions, and aquatic species overall as it relates to salinity, water quality and turbidity. This comment should be taken by the Board as a recognition that flow is incredibly important, but it is not the sole solution, therefore the Board must include direct guidelines in the Bay Delta Plan that discuss the importance of habitat restoration and how restoration coupled with increased flow is required in order to improve conditions for fish and wildlife. The mitigation measures in chapter 7.6 (e.g. MM-TER-a numbers 2-5) rely heavily on other agencies and landowners implementing management and restoration projects without a mechanism for the Board to actually enforce those projects. Without a mechanism to ensure these actions occur, the benefits of increased flows will be substantially less because the increased water will not remain in the environment. Therefore, the Board should work on including stronger language to ensure that habitat restoration occurs because flow and habitat are not	Please see Common Response 1.2, Water Quality Control Planning Process, for information on the consideration of non-flow measures and State Water Board's authority to impose non-flow measures. Also see Common Response 7.1, General CEQA and Approach to the Analysis, regarding mitigation measures. The State Water Board has consistently acknowledged and incorporated flow and non-flow measures to comprehensively address Delta aquatic ecosystem and tributary ecosystem needs in all watersheds. The State Water Board's authority to require non-flow actions is somewhat limited; however, the program of implementation identifies actions that other entities should take to address other ecosystem stressors and provides a framework to incorporate both flow and complementary ecosystem projects such as physical habitat restoration into local cooperative solutions (see Bay-Delta Plan, Chapter 4.4.2.4). In addition, some complementary ecosystem projects may also serve as an implementation mechanism for the proposed cold water habitat

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		substitutes for one another but instead go hand in hand in creating conditions conducive for healthy aquatic ecosystems.	objective. In addition, the VA pathway includes implementation of non-flow habitat restoration actions targeted at improving spawning and rearing capacity for juvenile salmonids, estuarine species, and other native fish and wildlife on a portion of the Sacramento/Delta tributaries for an initial 8 years (with the possibility to extend the term).
303	6	Bay Delta Plan analyses of impacts are incomplete and include skewed analysis of impacts to reservoir operations and water users over ecosystem benefits. Chapter 6 of the Bay Delta Plan update discusses the hydrology and water supply impacts that could occur because of the proposed Plan amendment. Some of the main impacts of increased unimpaired flows discussed in the chapter are decreases in reservoir storage and carryover storage, water supply shortages where water is currently supplied to, and increased reliance on groundwater resources to meet water demand. Although these impacts are plausible outcomes of increasing unimpaired flows, the chapter does not discuss in as much detail the changes in hydrology and water supply of where the water may be diverted to if unimpaired flows were to be increased. Due to the focus on reservoirs and current water supply destination impacts, rather than impacts downstream of reservoirs, and within the environment itself, the analysis of the impacts is skewed and the possible positive impacts from unimpaired flows downstream are not given as much attention. The impacts to hydrology below reservoirs from changes in unimpaired flows may be discussed in more detail in other chapters, but it would be helpful to see those impacts further discussed in this chapter, so that impacts to the reservoir, water users, and the areas receiving the unimpaired flows can be analyzed together.	Chapter 6.3.1, Flows, presents the changes in streamflows throughout the study area including downstream of reservoirs. Additional impact analyses for specific resources can be found in Chapter 7, Environmental Analysis, of the draft Staff Report. The benefits of each of the alternatives on fish and wildlife are discussed in detail in Chapter 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations, Chapter 5, Proposed Changes to the Bay-Delta Plan for the Sacramento/Delta, and in the specific and applicable resource sections under changes in hydrology in Section 7.3, Aesthetics through Section 7.20, Utilities and Service Systems, of the draft Staff Report. In addition, Section 7.24, Alternatives Analysis, describes the ability of each alternative to achieve the project purposes and goals of the project.
303	7	Chapter 7.12.2 discusses the Bay Delta Plan amendment's impacts to groundwater hydrology and water quality. In this chapter there is more focus on groundwater changes that will affect current water users, such as farmers and municipalities. There is less focus on groundwater impacts that could affect areas that would receive water from increased unimpaired flows. Increased unimpaired flows could help recharge areas	Chapter 7, Environmental Analysis, and Chapter 9, Proposed Voluntary Agreements, provided a broad range of impact mechanisms and actions including changes in hydrology (flows and reservoir levels), changes in water supply (including for agricultural, municipal, and refuge uses), and actions that may be taken in response to the project. The CEQA impact conclusions are to be understood in the context of the nature of the proposed project, which is intended to be a restoration action. The Staff

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		downstream of reservoirs and decrease saltwater intrusion in aquifers, especially if restoration efforts are implemented in conjunction with increased unimpaired flows. Restoration of areas downstream of reservoirs to maximize benefits to aquifers is not talked about in this section, which could help mitigate some of the impacts to groundwater hydrology and water quality. Because the chapter focuses on impacts to water users, the results of the analysis seem skewed to reflect a net negative impact to groundwater from increased unimpaired flows. The sections also undervalue the impact of the 2014 Sustainable Groundwater Management Act or SOMA, alternative water resources such as recycled water, desalinization, and the transition to less water intensive agriculture as a possible way to offset increased groundwater demand. Another potential impact discussed in this chapter is reduced incidental recharge to aquifers from over-irrigation of crops, resulting from decreased surface water supply to agriculture. This impact seems problematic because over-irrigation and inefficient uses of water by agriculture has an overall negative impact to surface water and groundwater resources. It is confusing to make the argument that the inefficient use of water, which is partly responsible for groundwater over-extraction, would have a net-positive impact to groundwater recharge. Additionally, a potential impact of over-irrigation is increased runoff and contamination to, surface waters and groundwater from pesticides, fertilizers, and other substances used in agriculture.	Report acknowledges that increased flows would be beneficial for groundwater (2023 draft Staff Report Section 7.12.2, Groundwater, p.7.12.-100). The impacts discussed, that could potentially result from implementation, occur in a system that has been highly altered, and the project would be expected to improve conditions for native fish and wildlife in the Sacramento/Delta watershed over time (2023 draft Staff Report Chapter 7, Environmental Analysis, p. 7.1-25). Changes in hydrology and water supply that could have a negative effect on water quality at certain times and in specific locations must be analyzed under CEQA. Therefore, the groundwater analysis identifies and provides discussion that reduced surface water diversions may in turn reduce the overall irrigated acreage in the study area, which could result in a reduction in the incidental recharge that occurs when irrigation exceeds evapotranspiration and cropland consumptive use. It also discusses that reduced surface water availability may also reduce opportunities for managed recharge and the response may be an increase in groundwater pumping and/or result in a reduction from incidental or managed groundwater recharge, which can lead to reductions in groundwater volume. The reduction in groundwater volume has the potential to exacerbate existing poor groundwater water quality conditions, including sources of drinking water (2023 draft Staff Report Section 7.12.2, Groundwater, pp.7.12.2-1 and 7.12.2-2). The comment states that Section 7.12.2, Groundwater, undervalues the impact of the Sustainable Groundwater Management Act (SGMA) and other alternatives to groundwater, such as the use of recycled water. SGMA is discussed in Section 7.12.2.2, Environmental Setting, and is identified as an important mitigation measure for groundwater impacts. In addition, SGMA is discussed in Section 7.23, Cumulative Impacts Analysis, Growth-Inducing Impacts, and Significant Irreversible Environmental Changes, because of its interaction with the update to the Bay-Delta Plan. Water conservation measures and recycled water use actions are part of the diversification of water portfolios (another mitigation measure for groundwater) and are discussed in several chapters of the Staff Report as water management actions that water users can adopt. Nevertheless, since groundwater is likely to be used to substitute for decreased

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			surface water supplies in some cases, the Staff Report concludes that the unimpaired flow alternative will potentially have a negative impact on groundwater levels in certain areas. The primary mitigation for this impact, namely successful SGMA implementation, is largely outside the direct control of the State Water Board. Numerous agencies are implementing groundwater sustainability plans (GSPs) over a very large area that are designed and intended to halt and restore groundwater overdraft. Since the Board is unable to deterministically model the impact to GSPs with changes to the Bay-Delta Plan, and since GSP implementation is largely under the jurisdiction of other agencies, it's difficult to assess whether groundwater impacts can or will be fully mitigated. The comment also states that identifying incidental recharge as a net positive effect is confusing since it requires the application of water in excess of crop evapotranspiration requirements. However, the State Water Board acknowledges that reduced Sacramento/Delta surface water supply for applied irrigation water, no matter how inefficient, would reduce incidental groundwater recharge (2023 draft Staff Report Section 7.12.2, Groundwater, p. 7.12.2-38). Contamination from nitrate, pesticides, VOCs, SVOCs, and emerging contaminants have been identified as an issue in the environmental setting for groundwater (2023 draft Staff Report Section 7.12.2, Groundwater, p.7.12.2-38) and was part of the impact analysis for groundwater quality (Impact GW-f). Please see Section 7.12.2.3, Impact Analysis, for more discussion on how the responses to changes in hydrology and water supply may lead to the identified impacts to groundwater.
303	8	Voluntary Agreement Section. The Water Board should reject the Voluntary Agreements as they are incomplete and insufficient in providing adequate flows and habitat and were created by excluding Tribes and the public. Buena Vista Rancheria does not support the Voluntary Agreements (Vas) as they stand. These agreements were conducted behind closed doors and the staff report does not provide all the documents. Since the VA documents are not	Chapter 9, Proposed Voluntary Agreements, of the 2023 draft Staff Report described the VAs in sufficient detail for the purposes of the analysis. The operable provisions of the VAs are incorporated in the revised proposed Plan amendments, not the VA party documents. Please see Common Response 1.3, Revised Proposed Plan Amendments, for more information on the VA pathway. Also see Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for a discussion of tribal concerns with the VA pathway.

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		complete for review the board must not approve the use of the VAs.	
303	9	The state of California has used public funds, time, and efforts to develop the VA's but have removed the Tribal involvement, collaboration, and consultation from this process. Tribes must be included in the development of better VA's. The board must ask: How will Tribal voices and knowledge inform the VAs. On the Mokelumne there are at minimum 6 Tribes alone. The board must ask how the Tribal Sovereignities and water for their people will be respected and heard. In Appendix G1 Transparency states "of building trust among the Participants and integrity in the VA Governance Program." Tribes have been excluded from the VA negotiation process so far only the end of the process to comment and review the agreements. Tribes should have been included in the discussion much earlier in respect to their sovereignty and how the plans will have an impact on Tribal members. Federal and State agencies, Water districts, Utilities commissions, and Contractors have all been in the process. BVR asks the Board why have tribes not been included in the process?	Please see Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for responses to comments related to tribal comments on the VAs.
303	10	VAs need flow requirements (functional flow concepts with unimpaired flow), habitat restorations, monitoring plan, tribal consultations/engagement, stakeholder/public participation and public comment. For the VAs to be effective monitoring of habitat restoration is not mentioned in the report. How will the board ensure that restoration is being completed during the 8 years.	Please refer to Common Response 1.3, Revised Proposed Plan Amendments, for information on the VA pathway.
303	11	How will tribes be notified of restoration progression if they are not properly engaged with? The Delta Tribal Cultural Landscape and its many Tribal Cultural Resources were not considered for the VAs in the Bay-Delta Plan. Until all documents have been submitted by the VAs and considered by all. Buena Vista Rancheria requests you decline the VAs, separate them from the Bay-Delta Plan, and restart the process regarding voluntary agreements.	The revised proposed Plan amendments require HRL participants to engage with California Native American Tribes and consider their input in decision-making affecting HRL Governance, including but not limited to tribal participation in the HRL science committee. Additionally, HRL participants will be required to develop a tribal engagement plan in coordination with tribes, describing specific tribal engagement opportunities related to VA pathway milestones that must be approved by the Executive Director prior to year one of the initial 8-year term of the VA pathway. Active and productive engagement with tribes on VA pathway implementation has the potential to improve the HRL commitments and processes and increase the likelihood of successful outcomes overall.

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			Please see Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for responses to comments related to tribal comments on the VAs.
303	12	Tribal Engagement Section The Bay Delta Plan will affect over 100 Tribes access, uses, and care for water. Tribal engagement is cited within the Bay Delta Plan, however, there has been little done to meet with Tribes in a meaningful way. State and Federal laws that require consultation are the minimum legal requirements for your agency. You have the obligation to do better than the minimum when are making decisions on a fundamental resource. Within the CalEPA there are guiding principles for Tribal consultation and engagement and within the State Water Resources Control Board has a Tribal Consultation policy. Your guiding principles state: SWRCB Tribal Consultation Policy Guiding Principles 7. Communicate, engage, and, if appropriate or when required by law consult with California Native American Tribes at the initial stage in the decision-making process that may affect tribal cultural resources, lands and or people; 9. Consider the potential impact of the Water Boards' activities or programs on tribal lands and tribal cultural resources; 12. Recognize and respect the tribal cultural resources of California Native American Tribes regardless of where they are located; These three principals have not been followed in the drafting of the Bay Delta Plan. In the absence of legal consultation requirements, a best practice is to consult with tribes out of respect for their status as sovereign governments or based on the unique tribal interests that may be affected by a proposed action, policy, or set of activities.	The State Water Board has conducted extensive public and tribal related outreach and appreciates the significant input from tribes and environmental justice communities related to the Sacramento/Delta Update to the Bay-Delta Plan. Please see Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for responses to comments related to tribal outreach and engagement. Also see Staff Report Chapter 11, Tribal Engagement, Traditional Ecological Knowledge and Tribal Beneficial Uses, and Staff Report Chapter 13, Revised Proposed Plan Amendments, for additional information on the State Water Board's efforts to engage more robustly with California Native American Tribes and integrate tribal and Traditional Ecological Knowledge into the State Water Board's Bay-Delta Plan update and implementation processes.
303	13	BVR asserts that the Delta (delta in the Tribal sense) is a Tribal Cultural Landscape that is made up of TCRs such as water, all native plants and animals, and locations that are particular to	The State Water Board understands and appreciates the perspective articulated in the comment. The State Water Board's designation of Tribal Tradition and Culture (CUL) in the Bay-

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		each tribe or even a single person. Under your own policy's guiding principles, you must consider the information presented to you and recognize the TCR and TCL which have Tribal Beneficial Uses (TBU) qualities. The relations to the delta both tribal and those who live here are connected to collective management of this shared space and resource.	Delta watershed reflects the State Water Board's understanding of the intrinsic connection between salmon, the ecosystem, and tribal culture based on the testimony provided by tribes in the planning process. The proposed Plan amendments were developed to improve flow and water quality conditions over a large interconnected geographic area, and particularly for fish and wildlife beneficial uses in the Sacramento River watershed, Delta eastside tributaries, and Delta regions (Sacramento/Delta). The project is intended as a restoration action that occurs in a system that has been highly altered. The project would be expected to improve conditions for native fish and wildlife, and associated tribal cultural resources in the Sacramento/Delta watershed over time. The State Water Board is committed to continuing consultation with tribes throughout project implementation on topics that tribes and the State Water Board deem appropriate. Please see Chapter 11, Tribal Engagement, Traditional Ecological Knowledge and Tribal Beneficial Uses, for a discussion of the policies that have guided the State Water Board's outreach and engagement efforts with California Native American Tribes, as well as the discussion of tribal engagement efforts and State Water Board's consideration of tribal input in Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses. As stated in Staff Report Section 7.7, Cultural Resources, the State Water Board is committed to the State Water Board Tribal Consultation Policy and CalEPA Tribal Consultation Protocol, which guides the agency and its boards, departments, and offices in their daily operations to ensure that they work with tribes in a knowledgeable, sensitive, and respectful manner. The State Water Board actively sought, and continues to seek, consultation with interested California Native American Tribes consistent with Executive Order B-10-11 and its Tribal Consultation Policy.
303	14	Traditional Ecological Knowledge (TEK) are also Tribal Cultural Resources. TEK and its interweaving into Bay Delta Plan policies is referenced in the staff report as an on-going effort to be documented. This needs to be clarified and as it stands is highly problematic. TEK and the larger Indigenous Knowledge are a part of tribal lifeways. The gathering of TEK must be done in a respectful manner that does not extract this knowledge and then	Please see Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for responses to comments related to Traditional Ecological Knowledge/tribal knowledge. Please see Staff Report Chapter 11, Tribal Engagement, Traditional Ecological Knowledge and Tribal Beneficial Uses, and Staff Report Chapter 13, Revised Proposed Plan Amendments,

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		use it against or in place of tribal engagement. For you to learn and document TEK you must have two main considerations. First, TEK will only be shared when there is continual engagement through discussions, meetings, consultation, co-management, and tribal representatives on your boards in decision making. TEK cannot be extracted by requesting the information and seeking for Tribes to hand over their knowledge. TEK is learned by working with, listening to Tribal concerns, and by implementing Tribal ideas. You will not get TEK by asking me to provide it to you. The first step is proper and respectful Tribal engagement. Second, TEK must be respected. TEK is not something for you to gather, lock away, and detach it from the Lifeways of Tribes. TEK is part of Tribal peoples identity. It is intellectual property, family knowledge of the landscape, and a way of seeing the world. Tribes cannot download or record every perspective, feeling, and story from an elder just for you to take it away and use it for your own means.	for additional information on the State Water Board's efforts to engage more robustly with California Native American Tribes and integrate Traditional Ecological Knowledge/tribal knowledge into the State Water Board's Bay-Delta Plan update and implementation processes.
303	15	Within the Bay Delta plan an example of poor Tribal Engagement is used. In the Tribal engagement Chapter, Section 11.6.4.1 the Basin Plan cites Buena Vista's Water Program Coordinator. First, no State Water Resources Control Board staff reached out to Buena Vista to confirm, clarify, or ask permission for these quotes. Second, the quotation is incorrect in several places. Buena Vista Rancheria has had lines of communication with the Board's staff and BVR staff have repeatedly advised for early, meaningful, and clear communication. This advice was not followed in the preparation of the Bay Delta Plan update. To correct the quotation the word Mokelumne proper translation mean "people of the fish net." Broken down Moke is "fish net" and umne means "people of." Miwok or Me-Wuk is translated to mean "people" and has been used to reference one of the language groups of the Central Valley's indigenous communities. There has been continual failing in Tribal engagement and meaningful communication between the Board and Tribes. Buena Vista Rancheria requests that the Basin Plan in Chapter 11 be corrected, expanded with specific details, and steps for	The misquote referenced in this comment related to the translation of "Mokelumne" has been corrected in Section 11.4.4.1, Importance of Flow and Water Quality to Tribal Uses of Water. Please see response to comment 303-12 for responses related to tribal engagement and outreach.

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		continual, meaningful, and respectful Tribal Engagement that guides Board staff on future relations and projects.	
303	16	Tribal Beneficial Uses for Cultural Uses and Tribal Subsistence fishing must be adopted within the Basin Plan Update and applied to the Bay Delta Watershed. The widespread use of riparian corridors, springs, streams/river and wetlands has been a fact of native lifeways within the Sacramento/ San Joaquin River delta, and its Tributaries since time immemorial. Despite massive changes of indigenous lifeways, these practices continue to this day long after the Public Land Survey system developed in 1785 to enable the survey, sale, and settling of land acquired by the United States, well after the Swamp Lands Act of 1855 led to draining of wetlands for conversion to agricultural land in the Delta. Cultural practices have continued long after the removal of indigenous people from their lands, after the creation of reservations, termination of reservation, and restoration of some reservation lands, Tribal cultural uses of water have continued long after the urbanization of watersheds and the construction of large-scale dams and water diversion infrastructure and canals. Although Tribal cultural uses of water continue today, these uses have been highly altered and modified due to this long history, a steady decline in water quality, and altered hydrology due to overallocation of water, human hydromodification and climate change. The idea of beneficial uses is a concept comes from the Clean Water Act where beneficial uses are the means for identifying goals for various uses of a waterbody (such as recreation, drinking water, fish and wildlife), the designations then trigger the creation of water quality objectives or standards to protect the physical, chemical, and biological integrity of the water for the uses. In other words, the state designates waters with uses, sets water quality standards and then issues discharge permits to limit pollutants to a level that retains adequate water quality. Though Indigenous uses of water have existed since time immemorial, they have not been recognized as a use by the state until recently and still we are arguing for their inclusion into your planning documents. The two TBU definitions one being	Please see Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for responses to comments related to Tribal Beneficial Uses. The revised proposed Plan amendments incorporate Tribal Tradition and Culture (CUL), Subsistence Fishing (SUB), and Tribal Subsistence Fishing (T-SUB) into the Bay-Delta Plan and designate CUL as they relate to native fish and wildlife, particularly salmon, for the Bay-Delta watershed. Please see Chapter 2 of the revised proposed Plan amendments and Section 13.7.2, Environmental Analysis of CUL Tribal Beneficial Use Designation, for more discussion. See also Common Response 4.1, Harmful Algal Blooms, for responses to comments related to harmful algal blooms and California Native American Tribes. Please see Staff Report Chapter 13, Revised Proposed Plan Amendments, for additional information on incorporation and designation of Tribal Beneficial Uses.

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		Tribal cultural use and the other Tribal subsistence fishing have recently been approved by your agency and adopted into plans such as the Central Valley RWQCB's recent basin plan amendments to the Sacramento, San Joaquin, and Tulare Lake Basins; however, no designations have been formally made to date. Tribal Cultural uses are diverse and cannot be fully expressed in writing, but these uses include tangible and intangible elements and ways of relating to a water way. A tribal cultural uses includes not only the physical use of water but also the philosophical way of relating to water, meaning it is valued intrinsically and a particular location may be used not for a physical resource but for an intangible use like prayer or spiritual medicine. Other more physical uses would include the gathering and use of water itself, gathering willow, tules, basket sedge or other aquatic vegetation, the gathering of aquatic fish and wildlife, the use of the waterway for a cultural ceremony or rite of passage, for fishing or as a water supply for the tribe. The natural flow regimes inherent to rivers, give rise to aquatic plant communities, fish and wildlife that live in these waterways or are dependent on water, directly affect whether a tribal cultural use can be practiced in a good way. This means there is adequate flow to support the cultural use, there is a natural flow regime that supports native fish, wildlife, and vegetation populations for fishing and gathering purposes. Meaning there is safe water quality for Tribal immersion, wading or boating for hunting/gathering, ceremonial and other cultural purposes. Meaning that there is safe water quality so that the flora, fauna, fish, shellfish and the water itself, when consumed, are not unfit for subsistence level consumption, or cultural and ceremonial consumption due to pollutant issues such as bacteria contamination, or bioaccumulation of toxins such as mercury, PFAS, or cyanotoxins. In many instances flow is the fundamental variable that sets the stage for cultural uses to be properly exercised, and today we have highly modified flow regimes that do not support wild fish populations. We have water infrastructure that has flooded cultural sites, and entire Tribal villages. Today we have low flow regimes that lead to Harmful Algal blooms and contribute to poor water quality thus	

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		impairing beneficial uses including undesignated Tribal Beneficial uses. Flow is crucial for beneficial use attainment including TBUs within the Bay Delta Watersheds and the Board has a responsibility to uphold its duty to protect flow based Tribal beneficial uses. The draft staff report states that it seeks to adopt the two Tribal Beneficial Uses definitions into the Bay Delta Plan Update. Buena Vista Rancheria urges the State Water Board to do its part of protecting Tribal Beneficial Uses of water by adopting the two Tribal beneficial uses definitions into the Bay Delta Plan update. Buena Vista also urges the State water board to go further and designate waters within the Bay/Delta Watershed with TBUs where TBUs relate to flow. If TBU designations are not applied but only adopt definitions, as the staff report suggests, then a process must be outlined for how Indigenous community members and Tribal Governments can assert their TBU and ensure it is protected when there is a water diversion petition, water right request, water right transfer or change, change in a point of diversion... etc. This process should also ensure that a water diversion or water right change will not impair the TBU or other beneficial use that is linked to a TBU such as fish and wildlife. That said, the Bay Delta Staff report must create guidance for integrating or linking Tribal Beneficial Uses with other beneficial uses related to flow, such as, fish and wildlife, cold, spawn, aquatic life, recreation, or municipal.	
303	17	Additionally, because the Bay Delta plan is intended to overlay and work in conjunction with the Central Valley Regional Water Board's Water Quality Control Plan for the Sacramento-San Joaquin River Basins and the San Francisco Bay Regional Water Boards' Water Quality Control Plan for the San Francisco Bay. The State Water board must provide guidance to the regional water boards to inform them of their responsibility for upholding water quality for the Tribal beneficial uses that occur within their region whether designated or not. Through, again, linking the TBU to a similar pre-existing designated use such as aquatic life or recreation. However, to be clear, Buena Vista Rancheria urges a full designation of Tribal beneficial Uses for the Bay Delta Watershed for flow and water quality by the State and Regional Water boards respectively and expects the state	Please see Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for responses to comments related to Tribal Beneficial Uses. See also Section 13.7.2, Environmental Analysis of CUL Tribal Beneficial Use Designation, for additional discussion about protection of Tribal Beneficial Uses through the regulation of flow and waste discharges.

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		and regional water boards to link flows and water quality in their decision- making processes for water diversion decisions and discharges authorized through CWA Section 402 NPDES permitting procedures.	
303	18	The 2018 Bay Delta Water Quality Control Plan Resolution Number 2018-0059 states on page 1 section 5 that, "the State Water Board has authority over both water quality and water diversion and use." On page 1 of Ch. 1 of the 2018 Bay-Delta Plan Water Quality Control Plan for SF Bay/Sacramento-San Joaquin Delta Estuary says, quote "The State Water Board's measures to implement this plan will consist of the regulation of existing water rights, regulatory measures to protect water quality, and recommendations to other entities." End quote. Yet, water board staff, legal council and board members continue to assert that the state water board only has authority over water diversion and water rights. Buena Vista Rancheria urges the State Water board to consider how flows relate to water quality and develop guidance on how flows and water quality relate.	The State Water Board performs dual functions in both ensuring water quality and allocating water rights. (United States v. State Water Resources Control Bd., (1986) 182 Cal.App.3d 82, 112.) For water quality control efforts in the Bay-Delta, since 1978 the State Water Board has used its combined water quality and water rights authorities to develop and update a water quality control plan and implement the plan's objectives. The relationship between flows and water quality is discussed throughout the 2023 draft Staff Report. Chapter 2, Hydrology and Water Supply, details existing conditions in the Sacramento/Delta watershed compared to unimpaired flow and describes existing water use and supply in the study area. Chapter 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations, examines the role flow plays in ecosystems, as well as various species-specific flow needs. Chapter 4, Other Aquatic Ecosystem Stressors, details non-flow water quality stressors, how they interact with flow, and their effects on water quality. Chapter 5, Proposed Changes to the Bay-Delta Plan for the Sacramento/Delta, details the regulatory pathway and the State Water Board's regulatory responsibilities and authorities as they relate to the water quality control planning process. Please also see Common Response 3.1, Fish Protection, for a discussion of the State Water Board's use of best available science and the relationship between increased flow and fish abundance.
304	1	Sacramento/Delta Draft Staff Report (The Project): Failure to Provide Accurate Baseline, Analyze Impacts to the Trinity River Watershed and Comply with Federal Law and Regulations. The Hoopa Valley Tribe joins in the referenced comments submitted today by the Planning and Conservation and other nongovernmental entities today, and the Comments Association and the Institute for Fisheries Resources.	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project. To the extent that this comment refers to other comments, please see the substantive responses to those comments.
305	1	We write to encourage the SWRCB board members and staff to give careful consideration to the detailed written comments submitted by Yuba Water Agency in response to the Draft Staff	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not

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		Report. Yuba Water Agency's primary mission is to sustainably manage water resources to reduce flood risk and ensure reliable water supplies in an environmentally sustainable manner for the benefit of all Yuba County residents. Yuba Water is an important partner for Enterprise Rancheria. We support Yuba Water Agency's efforts to continue their decades-long efforts to ensure water sustainability through responsible, forward-thinking management of our surface water and groundwater resources. We also support Yuba Water Agency's role as a catalyst for positive change in Yuba County, including efforts to enhance native fish populations in the Yuba River, improve key infrastructure, and promote economic development in Yuba County.	raise specific environmental impacts of the project, or do not raise specific economic effects of the project.
305	2	In addition, we would also like propose for your consideration the following comments regarding Section 7.7.5, subsection 2: This implementation of general and resource management plans for cultural resources on both private and public lands raises important considerations. We need clarity on how inventory, evaluation, research, and interpretation processes will be transparently and sensitively handled. For example, we do not support testing of our cultural resources. Therefore, it is crucial to involve both experts and tribal governments in these processes. Additionally, the approach to public disclosure of discoveries and the safeguarding of sensitive sites warrants further discussion.	The State Water Board is committed to continuing consultation with tribes throughout project implementation on topics that tribes and the State Water Board deem appropriate. As described in Chapter 11, Tribal Engagement, Traditional Ecological Knowledge and Tribal Beneficial Uses, the State Water Board will work with tribes to better understand their concerns and communicate them to the reservoir operators or other entities responsible for establishing plans or procedures in accordance with the mitigation measures. Please see Chapter 11 for a discussion of the policies that have guided the State Water Board's outreach and engagement efforts with California Native American Tribes, as well as the discussion of tribal engagement efforts and State Water Board's consideration of tribal input in Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses. As stated in Staff Report Section 7.7, Cultural Resources, the State Water Board is committed to the State Water Board Tribal Consultation Policy and CalEPA Tribal Consultation Protocol, which guides the agency and its boards, departments, and offices in their daily operations to ensure that they work with tribes in a knowledgeable, sensitive, and respectful manner. The State Water Board actively sought, and continues to seek, consultation with interested California Native American Tribes consistent with Executive Order B-10-11 and its Tribal Consultation Policy.

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306	1	With the release of the Draft Staff Report, it has become clear that if unimpaired flows becomes the preferred alternative, there will be a massive decrease in our imported water supply. This is estimated to be a 28% reduction. Our region cannot easily absorb a 28% decrease in our imported water supply. Our region has already invested hundreds of millions of dollars in recycled water infrastructure to support our regional water portfolio. With a 28% reduction in our imported water supply, we would have to double or triple our existing and anticipated recycled water supply. Due to mandatory discharge requirements for our local streams/creeks, drastically increasing our recycled water supply would be extremely challenging at this point in time. Pass Agency supports Alternative 6, Healthy Rivers and Landscapes Agreements, as this is the only alternative that effectively manages inflows and outflows in the Delta.	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.
307	1	WAPA-SNR anticipates that the updates have direct impacts to the long-term operations of the Central Valley Project (CVP). WAPA-SNR is interested to see the long-term viability of the CVP is assured by ensuring decision-makers have the best information possible when making their decisions. WAPA-SNR markets hydropower produced by the CVP to over 80 power customers, including large cities, small towns, Native American Tribes, rural electric cooperatives, publicly-owned utilities, irrigation districts, universities, and other State and Federal agencies within California. Power customers depend on the CVP power generation for a consistent and dispatchable supply of carbon-free energy, particularly during periods of heightened demand. This enables customers to maintain affordable energy rates and meet decarbonization goals while supporting the constrained grid as the penetration of renewable energy resources increases.	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.
307	2	In addition to providing power to a large portion of northern California, WAPA-SNR and its power customers are one of two primary funding sources (the other being water customers) for the CVPIA Restoration Fund. This fund has provided hundreds of millions of dollars to finance habitat restoration projects and monitoring efforts since its inception in 1992. WAPA-SNR and the power customers are very much interested in the progress	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.

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		toward CVPIA goals such as the increase in anadromous fish populations. The timing and magnitude of energy available to the CVP Power customers is of high consequence to grid emissions in California. These factors directly stem from the operations of the CVP, which is heavily driven by water requirements, especially in the Bay-Delta. WAPA-SNR is a stakeholder in the Bay-Delta Plan and given the plan may alter the operations of the CVP, has made the following comments to ensure repercussions to hydropower generation and grid emissions are thoroughly considered and appropriately mitigated. WAPA-SNR has identified several key hydropower-related items related to the Bay-Delta Plan in the attached detailed comments document. The document and attachments provide background and relevant information on these items. WAPA-SNR has expertise in estimating varying consequences of changes to hydropower operations. In partnership with others in the power community, WAPA-SNR can help estimate how changes to the timing, magnitude, and flexibility to hydropower will have societal impacts. WAPA-SNR is available to coordinate input from the power community and provide data, technical input, and further review related to updates to the Bay-Delta Plan. WAPA-SNR looks forward to opportunities of working with the State Water Board as an interested party in the Bay-Delta Plan.	
307	3	Power and Emission Evaluation Comments Emission Footprint Methodology (how we count it and timing matter) WAPA, in collaboration with hydropower community, seeks to provide input to the methodology to calculate emissions for Long-Term planning of CVP operations. Of particular importance is the timing of the displaced generation as it is related to water year type, time of year, and assumed daily profile. This affects the total level of criteria pollutants emitted each day by causing	Please refer to Common Response 7.10, Greenhouse Gas Emissions and Mitigation, regarding the quantification and analysis of GHG emissions from reduced hydropower generation. See also Common Response 7.8, Energy and Hydropower, for additional information on seasonal variations in hydropower availability and demand, and associated implications for the analysis of changes in hydropower generation under the proposed Plan amendments.

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		more or fewer megawatts of polluting marginal generators to be dispatched, as well as the marginal emissions rates of the generators. Current monthly Long Term Generation Spreadsheet methodology for calculating emissions in planning studies considers solely the cumulative difference in generation and pumping between alternatives and multiplies by a single factor. That is not sufficient to estimate the effects to emissions by the various alternatives. An adequate method should take into account the effects on both the timing and of magnitude of generation. Cumulative net generation differences do not provide an accurate accounting for emissions. Displaced (i.e., reduced) CVP hydropower will be substituted with power from the grid. The grid is a mix of renewable and non-renewable resources with a marginal rate of emissions in flux during each day and season. Therefore, emissions generated because of displaced CVP hydropower is heavily influenced by the flexibility to operate in select hours of the day; and marginal emission rate which is in flux during the day, season, and water year type. Marginal emissions are low during the spring run-off months (especially during the day when solar is generating), while it is significantly higher during the summer especially during peak loads as the sun sets. If hydropower operations shift the timing of generation from high grid emission times to low grid emission times, there will be a significant change to emissions that would not be factored in with the current methodology used with the Long-Term Generation Spreadsheets for CVP planning studies. Methods, utilizing single factors, will only capture long term net magnitude differences and will neglect significant factors related to the timing of generation. An adequate method needs to factor in the timing of generation to calculate emission differences between alternatives. This requires evaluating and utilizing hourly representative emission factors for the pollutants of interest. Representative 24-hour profiles for each calendar month of each water year time can be utilized for this analysis (as described in Post Process of Monthly	

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		Generation Data section below and Attachment A [Attachment 1]: Emission Footprint Methodology).	
307	4	Post Process of Monthly Generation Data for Emissions Modeled monthly generation values can be converted to representative 24-hour generation profiles based on scheduling rules and assumptions about percent utilization of the generators. For example, a Peaker facility like Spring Creek or Carr, with a 25% utilization in a given timestep, would be assumed to generate during the 6 highest value hours (6 hr. derived from the 25% utilization) during that month's representative 24-hour profile. If the percent utilization is 100% then the plant would be expected to operate during all 24 hours of the day. Run of the river facilities would also be expected to operate uniformly for the month. In each case, a post processing (of the Monthly Generation Data from LT Gen) as described here, can be used to generate representative 24-hour profiles and applied to the Emission Factors for a more reasonable calculation of emissions (than the current methodology). Attachment A: Emission Footprint Methodology is provided for more detail on the subject. Similarly, a methodology for determining Project Use emission can be applied to a post process of the monthly results. Post Process of Monthly Generation Data for Economics In a separate but similar analysis (to above), representative 24-hour generation profiles can also be multiplied by 24-hour price profiles to generate an understanding of the economics.	Please refer to Common Response 7.10, Greenhouse Gas Emissions and Mitigation, regarding the quantification and analysis of GHG emissions from reduced hydropower generation. See also Common Response 7.8, Energy and Hydropower, for additional information on seasonal variations in hydropower availability and demand, and associated implications for the analysis of changes in hydropower generation under the proposed Plan amendments.
307	5	Emissions Accounting (what counts) Calculation and applications of Net Gen The concept of net generation has been applied to the calculation of total emissions. Changes to hydropower which reduce CVP marketable energy deliveries to WAPA's customers will be offset from emissions from the Grid and will increase emission. WAPA seeks to ensure offsets to CVP marketable power are accounted for in the emission calculation of the planning studies involving	Please refer to Common Response 7.10, Greenhouse Gas Emissions and Mitigation, regarding the quantification and analysis of GHG emissions from reduced hydropower generation. See also Common Response 7.8, Energy and Hydropower, for additional information on seasonal variations in hydropower availability and demand, and associated implications for the analysis of changes in hydropower generation under the proposed Plan amendments.

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		the CVP. Planning studies have assumed replacement power from reduced net generation would come from reduced curtailments of renewable resources as well as from thermal powerplants. The validity of blanket assumption this assumption is questionable, unless careful consideration is paid to timing of reduced net generation. Transmission is another important consideration. Reports like this curtailment report from the CAISO show the economic system curtailment volumes that could theoretically supply some make up power for lost hydro net generation occur in the sunny hours of just March, April and May. The rest of the year the curtailments are from shortages of sunny area transmission to get the solar power moved to meet the substantial loads depending on fossil fired resources on the margin. Http://www.caiso.com/Documents/Wind_SolarReal-TimeDispatchCurtailmentReportOct08_2023.pdf	
307	6	Economic considerations for power Reduction in the availability of CVP hydropower results in increased cost of federal hydropower to the power customers. This is a major concern for power customers. Moreover, they incur added cost as they have to purchase higher-priced power to replace what would otherwise be available from the CVP and they will also receive less hydropower carbon credits due to reduced CVP generation. The generation and sale of electric energy is a means to financially aid and assist in the undertakings of the CVP's purposes and other beneficial uses. Hence, it is imperative that federal hydropower remains competitive. Besides potential increase to the cost of federal hydropower and direct cost impacts to power customers for replacement power, the assessment of potential impacts of the alternatives should consider how they affect the benefits the power customers derive from several programs, such as Max Peaking, Displacement Program, marketable reserves sales, and participation in the Energy Imbalance Market (EIM). WAPA understands that the EIM has provided a very viable operating paradigm that supports Central Valley Operations' maximization of the value of power for customers while meeting	Multiple CVP hydropower generating facilities would not be affected by the Plan amendments, including New Melones, Lewiston, Trinity, and Judge Francis Carr powerplants. CVP powerplants that might be affected by the Plan amendments include Folsom, Nimbus, Shasta, Keswick, and Spring Creek Powerplants. While the Plan amendments could result in a shift in hydropower generation from summer to spring (the effects of which are considered in Section 7.8, Energy, and Appendix A5, Hydropower, Energy Grid, and Export Energy Analyses), average annual generation would be less affected. The average annual reduction in CVP generation at the listed facilities may range from 1 percent for the 45 scenario to 2 percent for the 65 scenario, based on the evaluation performed for Appendix A5 (Figures A5-17 through A5-19). The effect would be even smaller if considered as a percent of all CVP generating facilities. The effect of reductions in summer hydropower generation on electric grid reliability, which is affected by maximum peaking and availability of alternative energy sources, are considered in Section 7.8, Energy, and Appendix A5, Hydropower, Energy Grid, and Export Energy Analyses, with power flow modeling and consideration of rolling blackout events.

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		water management goals. WAPA would like to see the selection of an alternative that supports continued success in markets – where the flexibility of the CVP EIM resources is maintain or enhanced – both in how much can be offered in EIM as well as capacity required to pass the CAISO’s EIM resource sufficiency tests. Success in markets is also manifested in CVP hydropower’s contribution to the avoidance or reduction of emissions by displacing the dispatch of generation resources that burn fossil fuels. Need to evaluate Monthly CVP Net Generation There needs to be analysis on the effects to CVP marketable power. There should be a at least monthly consideration of CVP Net gen (CVP Generation – CVP Project Use). This can be used as a reference point to better understand effects to First Preference and Base Resource Power Marketed by WAPA. The use of net annual generation will not capture changes to the power that WAPA markets.	Regarding CVP Net Generation: Electrical energy for CVP Project use is considered in the Appendix A5, Hydropower, Energy Grid, and Export Energy Analyses, section titled “Energy Use for SWP and CVP Export Pumping” as well as in the Section 7.8, Energy, description for Impact EN-e, Energy requirements and energy use efficiencies by amount and fuel type for each stage of the project. Impact EN-e includes a section titled “Consideration of Net Energy Effects Associated with Reduction in Sacramento/Delta Water Supply” that ultimately concludes that “Due to uncertainty in the actions that would be taken to replace reduced Sacramento/Delta water supply in each region, it is difficult to know whether the total energy required for these actions would be greater than the total energy savings associated with reduced conveyance and indoor water conservation.” The net effect of reductions in supply on CVP energy use is uncertain due to uncertainty in the response to reduced supplies. Energy required to convey Sacramento/Delta supply as occurs at San Luis and O’Neil pumping plants, will decrease by some amount that depends on the degree to which water transfers compensate for reduction in Sacramento/Delta supply. Although it is difficult to quantify Plan amendment effects on net generation, due to the summer-to-spring shift in hydropower generation that could occur, net CVP generation is expected to increase in the spring. Net CVP generation in the summer is more uncertain because both CVP generation and project use could decrease. The shift in net generation from summer to spring could have a limited economic effect on CVP hydropower revenue. The analysis of the economic effects on hydropower in Common Response 8.1, Economic Analysis and Other Considerations, indicates an average annual revenue reduction of 2.0 to 5.3 percent for the 45 to 65 scenario for the Sacramento/Delta facilities combined, and impacts on CVP hydro facility revenue may be higher or lower than that based on changes in hydropower generation at CVP facilities described above. The modeled change in energy production may be small enough to not impact the benefactors of low-rate power, but instead reduce

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			the residual power made available to WAPA. Energy is derived from multiple sources, including hydropower and other renewable clean energy sources. Energy pricing is complex and accounts for many factors affecting both supply and demand, and it is speculative to assume that any replacement power would be more expensive. In the future, the quantity of renewable sources will increase such that power purchases need not be exclusively from natural gas facilities. Conditions that negatively affect hydropower generation (e.g., less water) are not likely to have a similar effect on other forms of energy production, including wind and solar. These sources may offset lost hydropower production such that the effect on overall energy prices may be muted. Please see Common Response 7.8, Energy and Hydropower, regarding typical and emergency power peaking operations, future demand for carbon-neutral electricity, and consideration of possible energy expenditure to replace surface water supplies. Please also see Common Response 1.2, Water Quality Control Planning Process, for information concerning consideration of all beneficial uses.
307	7	Groundwater Related Comments Groundwater Recharge Offsetting Pumping (for Net gen calculation) Assumption that recognizes all increased water deliveries with a reduction of groundwater pumping should be reevaluated, because a significant portion of the water deliveries will go to recharge the groundwater and will ultimately still be pumped and therefore still have emissions associated with it. There is a significant bias that is introduced by assuming all the water delivered will offset pumping. In reality, a significant portion of that water will be used to secure future pumping. The State Groundwater Management Act (SGMA) required the formation of Groundwater Sustainability Agencies (GSA) to bring California Groundwater basins into a sustainable balance. Water that is pumped will need to be offset by recharge water, and ultimately	The Staff Report, Section 7.10, Greenhouse Gas Emissions, acknowledges that increased groundwater pumping as well as other water management actions, including but not limited to groundwater storage and recovery could generate GHG emissions that were potentially significant (Impact GHG-a and Impact GHG-b). For the analysis of air quality, please see 7.5, Air Quality, of the 2023 draft Staff Report, which describes the potentially significant impacts (Impacts AQ-a, -b, and -c). Section 7.5, Air Quality, evaluates the increased emissions due to changes in hydropower, reservoir operations, land fallowing (which can increase dust emissions), groundwater pumping, storage and recovery. As stated in Section 7.5.3, Impact Analysis, passive groundwater storage, is unlikely to generate additional air quality emissions than what is currently experienced. In addition, equipment used to operate passive and injection

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		that recharge water will be withdrawn from the groundwater reservoir. At the time it is withdrawn, it is pumped, and when it is pumped there are emissions. Therefore, we cannot assume that water used for recharge will reduce groundwater pumping and by extension, reduce emissions (recharge water does not decrease pumping). General estimates for amounts of recharge water should be identified in the various water plans for the GSA's. In addition to the fact that recharge water does not decrease pumping, the process of recharge can create emissions (not just from pumping it later). This is because a significant portion of the recharge water will be actively recharged, meaning it will be actively injected into the ground through the use of aquifer injection wells which create emissions. Not all decreases to deliveries south of delta will result in increased Pumping. An assumption that decreases to deliveries will increase pumping should be reconsidered. In reality, due to SGMA, there will be restrictions to pumping if a groundwater basin is not being withdrawal sustainably. Therefore, reductions to CVP deliveries will not automatically result is increased pumping.	groundwater storage and recovery (including pumping, automatic valves, lighting, etc.) would be powered by an existing power generation facility (already authorized by relevant air quality management districts) and the energy use would be small compared to existing local electrical demand. The comment states that “recharge water does not decrease pumping” as if this is a premise in the Staff Report but does not reference a location in the Staff Report for this statement. The commenter also asserts that “water deliveries will go to recharge the groundwater and will ultimately still be pumped...when it is pumped there are emissions.” However, groundwater is not pumped based on availability, it is modeled based upon demand. The impact analysis for energy was presented in Section 7.8, Energy, and in Chapter 9, Proposed Voluntary Agreements, for the proposed VAs. As stated in 7.8, Energy, groundwater pumping is less likely to occur in areas where groundwater supply is limited. This includes areas that are subject to the Sustainable Groundwater Management Act (SGMA). The estimated energy costs (kWh/AF) associated with delivery of Sacramento/Delta water, groundwater pumping, groundwater storage and recovery/conjunctive use, water recycling for nonpotable reuse, water transfers, agricultural water conservation, municipal water conservation, applicable desalination of seawater, and the average reduction in Sacramento/Delta water supply for the 55 scenario were presented in Table 7.8-5 to evaluate how the proposed Plan amendments would affect energy demand and generation as well as to illustrate how much water may need replacement for each region. In addition, it provides context to show that reduction of Sacramento/Delta water supply would be less or more pronounced in the 45 and 65 scenarios, respectively. While higher energy demand of using injection wells was acknowledged (pp 7.8-35), the draft Staff Report did not establish a correlation between greater surface water availability and decreased groundwater pumping. Furthermore, pursuant to SGMA, Groundwater Sustainability Agencies (GSAs) are responsible for achieving groundwater sustainability for their subbasin. Their Groundwater

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			Sustainability Plans will take into account the most recent planning assumptions and local general plans of jurisdictions overlying the basin (Wat. Code § 10726.9). It is not the State Water Board's responsibility to provide "estimates for amounts of recharge". Please see Common Response, 7.12.2, Groundwater and Sustainable Groundwater Management Act, for information regarding each subbasins' GSA and GSP status.
307	8	Accounting for groundwater losses Recognizing that ground water is not a water source, but is just a water storage system, a water balance needs to be performed and displayed in the tables for each alternative. The more volatile the surface water deliveries are, the more unbanking of stored ground water (Ground Water Pumping) is needed to maintain farming in dry years and the more recharge of ground water banks is needed in average and wet years. There are water losses along the path so those need to be tracked in the models. A hypothetical example is: 50 AF are released into a river for meeting water needs, 20 flow out the delta, 30 get pumped at delta pumps, 5 evaporate and 25 make it, via pumps and canals, to the recharge pond, 10 more evaporate and 15 make it into ground water storage where they are all recoverable with 15 AF of ground water pumping. When the water is lifted out 1 or more years later in a dry year, the 15 AF will have had the emissions of a Delta lift of around 2 AF delta lifted per AF of ground water lifted (30/15) and another ground water lift by either electric or diesel pump. Leaving the 15 AF in the ground means not having to do the 30 AF lift in the Delta plus the 15 AF lift at the well again. That means the 25 AF (mentioned earlier in the canals) are made available as surface water deliveries. The 25 AF only had the 30 AF of delta lift performed to make them available.	Groundwater is analyzed in accordance with the State Water Board's environmental checklist (California Code of Regulations, Title 23, Division 3, Ch. 27, Appendix A, Section IX) and not as "just a water storage system." Please see Section 7.12.2, Groundwater, for a discussion of the potentially significant impact on groundwater levels from changes in hydrology and water supply that may occur under the flow scenarios (Impact GW-b). This section acknowledges that changes in streamflow and reduced incidental recharge can also affect groundwater levels. Mitigation Measure MM-GW-b discusses ways that impacts to groundwater resources can be mitigated. While SacWAM is a mass balance consideration that simulates the entire water balance for the Sacramento watershed and Delta eastside tributaries, it is used as an accounting tool to keep track of the volumes of water within the operational and physical confines of the surface water system. Numerous uncertainties make regional-scale groundwater modeling inherently challenging. These uncertainties include variations in groundwater recharge rates across different regions, differences in stream-aquifer interactions along various reaches, the implementation of groundwater sustainability plans (GSPs) pursuant to the Sustainable Groundwater Management Act (SGMA), which can be modified locally by groundwater sustainability agencies (GSAs), and the ways in which water users may adjust to reduced surface water availability. Please see Common Response 7.12.2, Groundwater and Sustainable Groundwater Management Act for more discussion of the groundwater impact analysis, groundwater recharge, and groundwater-surface water interaction.
307	9	Accurate modeling of Temperature and Flood Bypass is needed Temperature bypass and flood bypass occur more often in reality	The unimpaired flow scenarios would increase reservoir releases during the winter and spring, which would reduce reservoir storage during this time of year. Reduction in storage

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		than they show up in monthly timestep modeling. These bypasses are needed in reality to handle the part of a month that deviates far from the average for the month. For example, Flood Control (FC) releases and similar Safety of Dams (SOD) releases occur during or soon after a storm when the reservoir was near the “flood curve” of allowed storage levels across the days of the year. In real time, the water managers try to increase releases often above generator release capacities to clear out the encroaching water in the reservoir. Accurate modeling of temperature and flood bypasses is needed to address undue overestimation of generation releases in monthly timestep model results.	would lessen the need for large flood control releases or spills that would bypass hydropower turbines. Although use of monthly flows in the hydropower analysis could lead to overestimation of hydropower generation during months with flood-control releases, this overestimation is likely greater for baseline conditions than it is for the flow scenarios. Section 13.7.8.1, Impact Analysis, contains discussion of power bypass for protection of cold water habitat. In general, power bypasses for temperature control are kept to a minimum and are most likely to occur in the early fall, when grid reliability is not as much of a concern compared to the summer. Increased use of power bypass for water temperature purposes under the regulatory pathway is uncertain, but the effects would likely be relatively small overall compared to other changes in hydropower generation associated with the flow scenarios.
307	10	LT Gen Bias for both Flood and Temperature Bypass CalSim and SacWAM have been used to model the operations of the CVP and SWP for the various operation studies. It produces monthly time series of releases at each facility for use in LT Gen. The generation releases are assumed constant throughout each month. Inter-monthly variation can be significant when releases are made during flood and temperature control operations. The assumption of monthly averaged releases results in unaccounted-for power bypass from flood control and temperature control in the model. Varying unaccounted for bypass can be significant (depending on the reservoir) between alternatives, results in varying bias in monthly modeled generation releases and by extension, the final project use and generation energy results from LT Gen. It could be argued that the monthly LT Gen overestimation bias for generation releases (as a result of varying amounts of underestimation bias in power bypass) is not a problem because the results are used in a comparative manner, inferring that it is only the difference in output between the alternatives that matter when evaluating alternatives. However, this logic assumes no differences in the bias of LT Gen modeled generation releases between the alternatives. Unfortunately, there are differences in	The revised proposed Plan amendments do not include higher and lower carryover storage alternatives. The carryover storage target ranges in the December 2025 draft Bay-Delta Plan include substantial flexibility for carryover storage. The largest changes in hydropower generation for the SWP and CVP are expected to occur at Oroville, Shasta, and Folsom Reservoirs. At these reservoirs, the regulatory pathway as exemplified by the 55 w/WSA scenario is generally expected to have carryover storage that is higher than or similar to baseline carryover storage during dry conditions and lower or similar carryover storage during wetter conditions based on SacWAM results described in Section 13.4, Changes in Hydrology and Water Supply, of the 2025 partially recirculated draft Staff Report. Higher carryover storage for the regulatory pathway under dry conditions could reduce the need for power bypass for temperature control purposes and lower carryover storage during wetter conditions could reduce the need for flood-control releases. Please also see response to comment 307-9 for additional information regarding power bypass for large flood-control releases or spills or for protection of cold water habitat.

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		bias between alternatives. These differences are due to the differences in elevations of the CVP reservoirs between alternatives (along with potentially other criteria), which in turn lead to larger amounts of bypass from flood control releases in high carryover alternatives and more temperature control releases in low carryover alternatives or in tighter temperature criteria alternatives being unaccounted for in each of the alternatives, and therefore varying amounts of bias between the alternatives exist.	
307	11	Exploratory modeling and adaptive management WAPA is concerned high quality potential rule sets may be missed during the alternative selection process for Long Term planning, thereby reducing the potential effectiveness of operations to the CVP and SWP for decades. WAPA believes there should be an iterative process to explore potential components of the Long-Term operations; in particular how it relates to adaptive management and the Trinity operations rule set. An iterative modeling approach includes creation of simplified models of proposed changes. For example, the Trinity rule sets to evaluate potential components. Performance metrics are analyzed within time series output such as, but not limited to: Reservoir levels, River Releases, Water Delivery, and Power Generation. The simplified models are then shared with all Trinity River stakeholders to gather input. Adjustments are then made to the models with input from stakeholders, and Trinity rule sets are then reevaluated. The process can proceed iteratively. An iterative modeling approach exploring potential components of Trinity operations rule set would lead to the creation of betterinformed alternatives.	The revised proposed Plan amendments include a requirement that Reclamation operates the Trinity River Division such that it does not result in redirected impacts to the Trinity River system. The flow scenarios presented in Chapter 6, Changes in Hydrology and Water Supply, as well as the VA scenarios presented in Chapter 13, Revised Proposed Plan Amendments, in SacWAM, assumes no increase in imports from the Trinity River, which reflects the Trinity River provision contained in the revised proposed Plan amendments.
307	12	Trinity River Diversions Comments Importance of Trinity Diversions to the Sacramento Trinity River Diversions (TRD) to the Sacramento are of particular importance for CVP hydropower as it offers the most efficient production of generation per ac/foot in the system. Any reductions or changes to the TRD will have significant grid emission impacts and economic effects to the CVP power	Trinity River was not included in the plan area because the new flow requirements would not apply to the Trinity River. The Trinity River watershed was not included in the study area because it does not receive Sacramento/Delta supply, and therefore reductions in Sacramento/Delta supply would not affect the area. However, in response to public comment on this topic, the Trinity River has been added into the defined study area in the revised Staff Report. See the revised map of the study area in Chapter 1, Executive Summary.

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		customers. In addition to the hydropower benefits of the TRD, there are significant water supply and ecological benefits. Water released through the Carr Power Plant generates 545kWh/AF of clean energy and lowers the temperatures in the depths of Whiskeytown lake, and those lower temperatures create fish and wildlife benefits in the successful Clear Creek restoration efforts. Assuming the Clear Creek flows are maintained at their successful levels, net changes in TRD are allowed to flow the cool water through the Spring Creek turbine generating 555kWh/AF more energy, as the water is released into Keswick Reservoir to enhance supplies there and to reduce concentrations of man-made pollutants flowing into Keswick from the prior century's mining operations. The TRD water brings its remaining coolness to help manage and blend temperatures in Keswick reservoir on the Sacramento before passing through the Keswick generators creating an additional 70 kWh/AF of vital baseload electrical power. Given the CVP exists for multiple purposes, full consideration these benefits within both the Sacramento and Trinity basins should be considered when determining the Long-Term operations of the CVP.	The revised proposed Plan amendments do not change the existing Central Valley Project operations on the Trinity River. The revised proposed Plan amendments contain a provision to ensure that implementation of the Bay-Delta Plan, including the VA pathway, does not result in redirected impacts on native fish and wildlife resources in the Trinity River watershed, including temperature and instream flow impacts. Please also see Common Response 1.5, Trinity River, on consideration of the Trinity River watershed.
307	13	Need for combined analysis including the Trinity River Diversion The Trinity River supports the Sacramento for meeting water and environmental goals. The two basins are tied together and need to be analyzed together. The paragraph above explains the large environmental benefits created by each marginal acre-foot of TRD water allowed to flow through Carr, Spring Creek and Keswick power plants, keeping summer and fall water temperatures cool and contributing to healthy conditions in the Sacramento River and the Delta. The TRD water either flows to the bay or is pumped for delivery to enhance water purposes or to reduce ground water overdraft and its associated problems. The tie in between the TRD and the rest of the dependent CVP should be modeled together in a combined analysis so that the benefits and risks to environmental and social justice, as well as the power and the water interests can all be weighed together to make the best decisions possible for maintaining the set of values created.	Please refer to the response to comment 307-12. Please also see Common Response 1.5, Trinity River, on consideration of the Trinity River watershed.

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		We cannot make optimal decisions by separating the analysis. The increasingly stressed environment from climate change and the long run social justice needs long ignored are too important to risk selecting sub-optimal solutions from segregated analyses. Overlooking effects to TRD The Sacramento basin water supply and environmental needs have forced the hand of the State Board to intervene in the operations of the TRD to move water from the Trinity to the Sacramento basin. The result was a drastically lowered Trinity Reservoir with significant effects to the environment down stream of Trinity Reservoir. This is a clear example of the connection of the two basins. Given that changes to the operations of the Sacramento will affect water supply and environmental conditions, it should be acknowledged that there is a connection to the Trinity basin and a need to combine the analysis.	
307	14	River Temperature Management Strategies Affect Power The different timing strategies of pulling water from different reservoirs to manage Sacramento River can have significant impacts on the power value and the power emissions savings of TRD water. In order to reduce the maximum amount of GHGs and criteria air pollutants (Nox, Sox, PM 2.5, CO and particulates often concentrated in disadvantaged communities), a strategy of using more low head Shasta Reservoir water [about 350 kWh/AF released to Sacramento River] during days, weeks, and months when the grid has available clean energy resources, and preserving the use of TRD water [about 1170 kWh/AF] for days, weeks and months when the grid is under more stress, will minimize both GHG pollution and criteria pollutants. This happens because the extra generation per acre foot of TRD water is able to displace dirtier generators higher up the bid stack in those hours than if it was to be released in lower grid stress days, weeks and months. Practically, this calls for operating, and modeling the effects of operating, the TRD more in the summer and late summer when more marginal power plants are called into operation, than in the spring, when only a few power plants	The SacWAM hydrologic model does not include hydropower optimization for air quality. The Bay-Delta Plan amendments will have minimal effect on imports from the Trinity River system (see Common Response 1.3, Revised Proposed Plan Amendments, regarding provisions to avoid redirected impacts on the Trinity River). Additionally, please see Common Response 1.5, Trinity River, for responses to comments that raise issues with impacts on the Trinity River. More Clear Creek water entering Whiskeytown Reservoir would be released to lower Clear Creek instead of passing through the Spring Creek Powerhouse under the unimpaired flow scenarios. This would cause a reduction in energy generation at Spring Creek Powerhouse, primarily in the winter and early spring (Figure 7.8-14). Potential effects of reductions in hydropower are considered in Section 7.8, Energy. Potential effects of increases in greenhouse gases are considered in Section 7.10, Greenhouse Gas Emissions, and potential effects on air quality are considered in Section 7.5, Air Quality.

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		are needed and those are among the cleanest in the fleet. This can be modeled by using different emission factors (lb. per MWh of the different climate and criteria pollutants) from marginal grid load change in each month (see Emission Evaluation section).	
307	15	WAPA seeks to ensure the following are fully analyzed for consideration of hydropower in the of the Long-Term operations of Trinity River Diversion. - considering a 50-50 split of Trinity inflows between the Sacramento and Trinity River systems (in the long-term) to ensure not only equity to the authorized water and power beneficiaries of the CVP, but also to benefit downstream fish and wildlife resources in the Sacramento River system. - Ability to use Record of Decision water to meet cold water storage targets for Trinity - Dam and Reservoir (Carryover ROD water). - Ability to adopt the use of synchronized flows when meeting downstream geomorphic requirements to make more effective use of the water. - Ability to avoid stair-step flow targets over the various water years in order to allow river managers flexibility to respond to in between conditions and to allocate some portion of inflows to rebuilding storage and to return borrowed water to the other river in order to return to the 50/50 split by helping to rebuild the other river's share of storage. - The ability for operators to have flexible downstream releases whenever practicable to mitigate adverse impacts on hydropower operations so the value of CVP hydropower resources can be maximized. - Inclusion of WAPA and the Power Community in any Multiagency consensus planning.	Additional analysis on the Trinity River in the Bay-Delta Plan update is not required. The purposes and goals of the project are to establish water quality control measures and flow requirements needed to provide reasonable protection of beneficial uses in the Bay-Delta watershed, particularly for fish and wildlife beneficial uses in the Sacramento River watershed, Delta eastside tributaries, and Delta regions (Sacramento/Delta). Section 7.1.3, Purpose and Goals of the Sacramento/Delta Update to the Bay-Delta Plan, of the Staff Report lists the purposes and goals of the project. The Trinity River is not in the Bay-Delta watershed and therefore is not included in the plan area, and the new flow requirements would not apply to the Trinity River. Please refer to the response to comment 307-13. Please also see Common Response 1.5, Trinity River, on consideration of the Trinity River watershed.

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		- Assigned minimum Trinity diversions to the Sacramento River (Trinity Diversions) based on water conditions. - Explicit long-term targets for the split between Trinity Diversions and Trinity River Releases. - Accounting for Carryover Diversion Water (Water that is set aside for diversions held in carryover storage). When evaluating impacts, WAPA requests the following: - The use of hourly pricing and emission considerations to properly evaluate impacts the alternatives have on CVP hydropower operations. Power is a market-based product, and its price is contingent on the time of day, time of season, and availability and cost of other alternatives. Using a monthly-based model could negatively understate impacts especially during the spring run-off months and peak summer irrigating season (See attachment A). - For each alternative, assess its impact on the state's ability to meet planning reserve and peaking capacity requirements and determine the impacts on its ability to meet summer peak loads. - Quantify the increase in emissions resulting from the reduction in CVP generation and evaluate the cost of carbon and greenhouse gas emissions and pollutants associated with possible selection of each alternative so the societal cost can be quantified. - Sensitivity analysis during, and after the alternatives are finalized to determine if additional opportunities exist to mitigate the impacts to CVP's authorized vendible functions. - Ensuring equity to the extent practicable for all authorized users of the CVP. - Ensuring equity to the extent practicable for fish and wildlife resources in the Sacramento River system.	

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307	16	[Attachment 1: Document titled Attachment A: Emission Footprint Methodology]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
307	17	[Attachment 1: Document titled Attachment A, Emission Factors]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	1	In summary, neither the proposed project nor the Voluntary Agreement (VA) alternative: - comply with federal and state mandates to restore and maintain the chemical, physical and biological integrity of the nation's waters, reasonably protect fish and wildlife beneficial uses of those waters, and protect the public trust;	Please see Common Response 1.2, Water Quality Control Planning Process, for discussions on the State Water Board's authorities and duties under the Porter-Cologne Water Quality Control Act and the Clean Water Act, reasonable protection of fish and wildlife, the State Water Board's consideration of public trust resources when formulating or amending water quality control plans, and the discretion to achieve objectives over time.
308	2	In summary, neither the proposed project nor the Voluntary Agreement (VA) alternative: - adequately define viability as called for in their respective proposed narrative objectives	Please see the response to comment 308-25 below regarding the definition of fish viability under the proposed narrative objectives.
308	3	In summary, neither the proposed project nor the Voluntary Agreement (VA) alternative: - establish objectives and/or targets relating to fisheries, estuarine habitat, and other beneficial uses;	The revised proposed Plan amendments implement fish and wildlife water quality objectives that are related to fisheries and estuarine habitat. In addition, Sacramento/Delta biological goals will be developed to assess the health of the ecosystem for representative anadromous and estuarine fish species. Please see Common Response 1.3, Revised Proposed Plan Amendments, for more information.
308	4	In summary, neither the proposed project nor the Voluntary Agreement (VA) alternative: - include a detailed program of implementation (POI) capable of attaining Plan objectives;	The 2023 draft Staff Report described what would be contained in the program of implementation in sufficient detail for the purposes of the analysis such that the draft text for specific changes to the Bay-Delta Plan was not necessary. However, drafts of the Bay-Delta Plan were subsequently released for public review and comment in October 2024, July 2025, and December 2025. Please see Common Response 1.3, Revised Proposed Plan Amendments, for responses to comments about the program of implementation and Common Response 7.1, General CEQA and

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			Approach to the Analysis, for more information on the CEQA analysis.
308	5	In summary, neither the proposed project nor the Voluntary Agreement (VA) alternative: - adequately analyze the potential effects of alternatives on fish, wildlife, habitats, and associated beneficial uses, including the effects of climate change;	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project. To the extent that this comment summarizes other comments, please see the substantive responses to those comments.
308	6	In summary, neither the proposed project nor the Voluntary Agreement (VA) alternative: - adequately analyze how alternative water supplies can offset impacts of flow improvements.	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project. To the extent that this comment summarizes other comments, please see the substantive responses to those comments.
308	7	Indeed, under the VA alternative current status quo conditions of species decline towards extinction, fisheries closures, increasing impacts of harmful algae blooms, and ecosystem collapse would not improve and would likely worsen.	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.
308	8	OVERVIEW In the face of a growing and severe ecological crisis, the Board has spent the better part of two decades crafting updates to the Bay-Delta Plan to reasonably protect fish and wildlife beneficial uses. These delayed and too often meager efforts have so far done nothing to reverse the catastrophic path we are on, despite the potential permanent loss of these beneficial uses. The Draft Staff Report's proposed project and the Voluntary Agreement alternatives will not change our course.	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.
308	9	First, the Draft Staff Report does not adequately analyze or describe how the proposed water quality objectives will reasonably protect fish and wildlife beneficial uses. It identifies flows that are necessary to protect entire ecosystems, including six fish species listed under the state and federal Endangered Species Acts, then elects not to act to ensure those flows are protected for the benefit of fish and wildlife.	Please see Common Response 1.2, Water Quality Control Planning Process, for information on reasonable protection of fish and wildlife. Please also see Common Response 1.3, Revised Proposed Plan Amendments, for information on the required flows and the protection of those flows.
308	10	Second, the Draft Staff Report improperly defers a host of legally mandated analyses and requirements. The document lacks any Program of Implementation, defers setting relevant standards,	Please see the response to comment 308-4. Also see Common Response 1.2, Water Quality Control Planning Process, for information on the reasonable protection of fish and wildlife

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		goals, and definitions for what protection of beneficial uses requires, and uses fluctuating baselines.	beneficial uses and Common Response 6.2, Baseline and No Project Alternative, for information on the baseline.
308	11	Third, the proposed VAs are not a serious option for protecting water quality, fish and wildlife, fisheries, communities in the Delta, or for acting as a Program of Implementation for the Bay-Delta plan. The VAs stem from secretive negotiations among powerful interests, not transparency and inclusion of impacted people and organizations. They rely on illusory and incomplete promises with no clear actual requirements, and purport to attain water quality objectives by amending those objectives' (long-overdue) deadlines and relying on scientifically unsupported theories that if only there were more habitat restoration, the negative impacts of too little water in the rivers will somehow vanish. But this Field of Dreams theory of water management through habitat restoration is not consistent with the reality of the causes of the crisis before us as amply demonstrated in the scientific record.	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project. See also Common Response 1.3, Revised Proposed Plan Amendments, for information on the VA pathway, including enforceability.
308	12	Too much coldwater habitat has been made inaccessible behind impassable dams, and too much water is removed from the Sacramento River, the Delta's eastside tributaries, and the Delta. Continuing unchecked, diversions, dams, reservoirs, tunnels, and all manner of other damaging and outdated "infrastructure" will continue to expand and degrade the ecosystems of the Bay-Delta and its tributaries. The proposed project will not adequately reverse the trends we have set in motion. Even worse, the Voluntary Agreements are unlikely to maintain the status quo, let alone improve upon it. And the Draft Staff Report fails to contain the analysis and information necessary to allow the Board to make an informed decision based on the best available science and evidence, nor the public to understand the Board's eventual actions. The Draft Staff Report, like the projects it analyzes, is inconsistent with California law.	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project. Please see Common Response 1.2, Water Quality Control Planning Process, regarding the State Water Board's authorities and compliance with relevant California laws governing the process. Please see Common Response 1.3, Revised Proposed Plan Amendments, for responses to comments that raise issues with the program of implementation or raise concerns about the VA proposal. Please see Common Response 3.1, Fish Protection, regarding the use of the best available science for the draft Staff Report.
308	13	In addition to the analysis in this letter and its supporting materials, SF Baykeeper et al. join in and support the separate comments submitted by the Delta Tribal Environmental Coalition regarding (a) the background of the state's water rights system, (b) the historical transformation of the Bay-Delta hydrology, (c) the impacts of the adoption of the proposed	Please see Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for responses to comments about tribal outreach and engagement and Tribal Beneficial Uses. Please see Common Response 4.1, Harmful Algal Blooms, for responses to comments about harmful algal blooms and

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		project on communities and people in the Delta including the civil rights consequences, (d) the failure of the Board to meaningfully engage in tribal consultation, (e) the need for establishing and protecting Tribal Beneficial Uses, including the failure of existing water quality objectives and beneficial uses to protect those tribal uses, and (f) the emerging public health and environmental dangers posed by Harmful Algal Blooms in the Delta. The Delta Tribal Environmental Coalition provides a necessary perspective that has been historically disregarded by the state in establishing water rights and water quality standards. The Board should ensure that the failures identified by DTEC on these subjects are rectified, not just in this update to the Bay-Delta Water Quality Control Plan, but throughout the Board's obligations to under state and federal law.	California Native American Tribes. Additionally, to the extent that this comment letter raises similar issues or the same issues raised by The Delta Tribal Environmental Coalition, please refer to Comment Letter 458 to review responses to those comments.
308	14	Legal Framework and Requirements for an Adequate Update to the Bay-Delta Water Quality Control Plan California's Water Resources Control Boards have "primary responsibility for the coordination and control of water quality" in the state. (Wat. Code § 13001.) The State Water Resources Control Board (Board) is directly responsible for setting, reviewing, and updating water quality standards for the Bay-Delta through the Bay-Delta Plan Water Quality Control Plan (Bay-Delta Plan). In doing so, the Board must comply with a host of legal mandates under California and federal law. California Environmental Quality Act The Board is subject to the legal requirements of the California Environmental Quality Act (CEQA) in the update process of the Bay-Delta Plan. The purpose of CEQA is to ensure that agencies regulating activities "that may" affect the environment give primary consideration to preventing environmental damages. <i>Ross v. California Coastal Com.</i>, 199 Cal.App.4th 900 (2011). While it is important that the Bay-Delta Plan update process adhere to federal Clean Water Act and Porter Cologne Act requirements, SF Baykeeper et al. also believes that CEQA requirements are important to make sound science-based policy	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project. To the extent that this comment summarizes other comments, please see the substantive responses to those comments.

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		judgments, to encourage public engagement, and ensure accountability for the government's decisions. Here, the Board has chosen to prepare a substitute environmental document (SED) to meet their legal requirements under CEQA to update the Bay-Delta Plan as part of a certified regulatory program. See Pub. Resources Code, § 21080.5(b)(2); Cal. Code Regs., tit. 23, § 3775 et seq.; Pub. Resources Code, § 21080.5; Cal. Code Regs., tit. 14, § 15251(g), § 15252(a). The Board further defines their responsibilities under CEQA, claiming: This entire Draft Staff Report can be considered the SED that fulfills the requirements of CEQA and the State Water Board's CEQA regulations (Cal. Code Regs., tit. 23, § 3775 et seq.) to analyze the environmental effects of the proposed regulatory activity. The majority of the environmental analyses and conclusions are presented in Chapters 7 and 9. The Draft Staff Report will inform the State Water Board's consideration of the Sacramento/Delta updates to the Bay-Delta Plan described within this document. Draft Staff Report at 1-6. The Board is correct to note that an agency may prepare an SED in lieu of an environmental impact report (EIR) for a certified regulatory program if the SED complies with CEQA goals and policies. See Cal. Code Regs., tit. 23, § 3775; see also California Sportfishing Protection Alliance v. State Water Resources Control Bd. 160 Cal.App.4th 1625 (2008). However, the Board also "must comply with all other requirements of CEQA." Mountain Lion Found. V. Fish & Game Com., 16 Cal. 4th 105, 114 (1997); see also Ross v. California Coastal Com., 199 Cal.App.4th 900, 933 (2011). Therefore, like an EIR, the SED must (among a host of other requirements) include a stable and finite project description, analyze a reasonable range of alternatives to the project, avoid adverse impacts, and impose feasible mitigation measures to reduce a project's significant adverse impacts. Cal. Pub. Res. Code § 21080(c), Cal. Code Regs., tit. 14, §§ 15126.6, 15370. As written, the Draft Staff Report does not meet these	

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		requirements. The Draft Staff Report project description is incomplete and misleading by not including a Program of Implementation, piecemealing project alternatives and biasing analysis to the Voluntary Agreement alternative (Vas). Thus, the public cannot ascertain all potential benefits and impacts of the proposed project, nor assess the “whole of the action.” As discussed in more detail below, the Draft Staff Report must be revised and recirculated to comply with CEQA.	
308	15	The Porter-Cologne Act and Clean Water Act The Porter-Cologne Water Quality Control Act is California’s “comprehensive legislative plan” for protecting the quality of California’s waters. (Azusa Land Reclamation Co. v. Main San Gabriel Basin Watermaster (1997) 52 Cal.App.4th 1165, 1180.) It declares it to be state policy “that the quality of all the waters of the state shall be protected for use and enjoyment by the people of the state.” (Wat. Code § 13000.) The Act also declares “that the health, safety and welfare of the people of the state requires [sic] that there be a statewide program for the control of the quality of all the waters of the state; [and] that the state must be prepared to exercise its full power and jurisdiction to protect the quality of waters in the state from degradation originating inside or outside the boundaries of the state . . .” (Ibid.) The Act aims “to attain the highest water quality which is reasonable, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible.” (City of Arcadia v. State Water Res. Control Bd. (2006) 135 Cal. App. 4th 1392, 1405.) Porter-Cologne also implements the federal Clean Water Act of 1977, 33 U.S.C. § 1251 et seq., which prioritizes protection of fish and wildlife, see 33 U.S.C. § 1251(a)(2), and requires states with water quality control plans to have standards in place for fish and wildlife protection. (See 33 U.S.C. § 1313.) With respect to the Bay-Delta in particular, the Board has a “duty to provide water quality protection to the fish and wildlife that make up the delicate ecosystem within the Delta.” (United States v. State Water Resources Control Bd. (1986) 182 Cal.App.3d 82,	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.

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		98.) A water quality control plan “consists of a designation or establishment for the waters within a specified area of all of the following: (1) Beneficial uses to be protected [;] (2) Water quality objectives [; and] (3) A program of implementation needed for achieving water quality objectives.” Wat. Code § 13050(j). “Beneficial uses” of state waters to be protected against water quality degradation include domestic, municipal, agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves, tribal beneficial uses (both fishing and cultural uses), and protection of subsistence, recreational, and commercial fisheries. (See Wat. Code § 13050(f).) The Draft Staff Report purports to analyze the impact on fish and wildlife beneficial uses, and then uses that information as a proxy for protection of other related beneficial uses. See, e.g., Draft Staff Report at 7.2-1.	
308	16	2. The Porter-Cologne Act and Clean Water Act The Porter-Cologne Water Quality Control Act is California’s “comprehensive legislative plan” for protecting the quality of California’s waters. (Azusa Land Reclamation Co. v. Main San Gabriel Basin Watermaster (1997) 52 Cal.App.4th 1165, 1180.) It declares it to be state policy “that the quality of all the waters of the state shall be protected for use and enjoyment by the people of the state.” (Wat. Code § 13000.) The Act also declares “that the health, safety and welfare of the people of the state requires [sic] that there be a statewide program for the control of the quality of all the waters of the state; [and] that the state must be prepared to exercise its full power and jurisdiction to protect the quality of waters in the state from degradation originating inside or outside the boundaries of the state . . .” (Ibid.) The Act aims “to attain the highest water quality which is reasonable,	Please see Common Response 1.2, Water Quality Control Planning Process, for further discussion of the State Water Board’s water quality control planning authorities and duties pursuant to the Clean Water Act and Porter-Cologne Water Quality Control Act, as well as the State Water Board’s consideration of the factors listed in Water Code section 13241 when setting or updating water quality objectives. Please note that the draft Bay-Delta Plan released in October 2024 and the revised drafts released in July and December 2025 contain the regulatory text of a draft updated program of implementation. This program of implementation is further discussed in Chapter 13, Revised Proposed Plan Amendments, of the final Staff Report.

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		considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible.” (City of Arcadia v. State Water Res. Control Bd. (2006) 135 Cal. App. 4th 1392, 1405.) Porter-Cologne also implements the federal Clean Water Act of 1977, 33 U.S.C. § 1251 et seq., which prioritizes protection of fish and wildlife, see 33 U.S.C. § 1251(a)(2), and requires states with water quality control plans to have standards in place for fish and wildlife protection. (See 33 U.S.C. § 1313.) With respect to the Bay-Delta in particular, the Board has a “duty to provide water quality protection to the fish and wildlife that make up the delicate ecosystem within the Delta.” (United States v. State Water Resources Control Bd. (1986) 182 Cal.App.3d 82, 98.) A water quality control plan “consists of a designation or establishment for the waters within a specified area of all of the following: (1) Beneficial uses to be protected [;] (2) Water quality objectives [; and] (3) A program of implementation needed for achieving water quality objectives.” Wat. Code § 13050(j). “Water quality objectives” are “the limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area.” (Wat. Code § 13050(h).) Once the Board has designated beneficial uses for a specified area, it “shall establish such water quality objectives in [the] water quality control plan[] as in its judgment will ensure the reasonable protection of beneficial uses. . . .” (Id. § 13241.) Water quality objectives can be numeric or narrative. In establishing water quality objectives, the Board must consider various factors including: “(a) Past, present, and probable future beneficial uses of water. (b) Environmental characteristics of the	

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		hydrographic unit under consideration, including the quality of water available thereto. (c) Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area. (d) Economic considerations. (e) The need for developing housing within the region. (f) The need to develop and use recycled water.” (Ibid.) The Draft Staff Report proposes a host of new water quality objectives as part of the proposed project and the VAs, and, notwithstanding the lack of a POI, purports to implement the existing narrative protection objective (requiring that the natural production of Chinook Salmon in the Bay-Delta watershed be doubled from a historical baseline)—an objective that was designed to be met over two decades ago.	
308	17	The Porter-Cologne Act and Clean Water Act The Porter-Cologne Water Quality Control Act is California’s “comprehensive legislative plan” for protecting the quality of California’s waters. (Azusa Land Reclamation Co. v. Main San Gabriel Basin Watermaster (1997) 52 Cal.App.4th 1165, 1180.) It declares it to be state policy “that the quality of all the waters of the state shall be protected for use and enjoyment by the people of the state.” (Wat. Code § 13000.) The Act also declares “that the health, safety and welfare of the people of the state requires [sic] that there be a statewide program for the control of the quality of all the waters of the state; [and] that the state must be prepared to exercise its full power and jurisdiction to protect the quality of waters in the state from degradation originating inside or outside the boundaries of the state . . .” (Ibid.) The Act aims “to attain the highest water quality which is reasonable, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible.” (City of Arcadia v. State Water Res. Control Bd. (2006) 135 Cal. App. 4th 1392, 1405.) Porter-Cologne also implements the federal Clean Water Act of 1977, 33 U.S.C. § 1251 et seq., which prioritizes protection of fish and wildlife, see 33 U.S.C. § 1251(a)(2), and requires states with water quality control plans to have standards in place for fish and wildlife protection. (See 33 U.S.C. § 1313.)	Please see Common Response 1.2, Water Quality Control Planning Process, for information on the requirements governing water quality control planning.

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		With respect to the Bay-Delta in particular, the Board has a “duty to provide water quality protection to the fish and wildlife that make up the delicate ecosystem within the Delta.” (United States v. State Water Resources Control Bd. (1986) 182 Cal.App.3d 82, 98.) A water quality control plan “consists of a designation or establishment for the waters within a specified area of all of the following: (1) Beneficial uses to be protected [;] (2) Water quality objectives [; and] (3) A program of implementation needed for achieving water quality objectives.” Wat. Code § 13050(j). Once the Board has established the water quality objectives, it must develop a “program of implementation” that will achieve the objectives. (Wat. Code § 13050(j)(3); United States v. State Water Resources Control Bd. (1986) 182 Cal.App.3d at 119; see also State Water Resources Control Bd. Cases (2006) 136 Cal.App.4th 674, 775 [“Determining what actions were required to achieve the [Salmon Doubling Objective] was part of the Board’s obligation in formulating the 1995 Bay-Delta Plan in the first place.”].) The POI must include, inter alia, “[a] description of the nature of actions which are necessary to achieve the objectives, including recommendations for appropriate action by any entity, public or private” and “[a] time schedule for the actions to be taken.” (Wat. Code § 13242(a)-(b).) Because the POI must achieve the Plan’s objectives, the Board may not consider other factors when establishing the POI—its obligation to the Plan’s objectives is absolute. (San Joaquin River Exchange Contractors Water Authority v. State Water Resources Control Bd. (2010) 183 Cal.App.4th 1110, 1119-1120 [explaining the consideration of Water Code section 13241 factors occurs only when establishing water quality objectives and not with respect to the POI].)	

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308	18	2. The Porter-Cologne Act and Clean Water Act The Porter-Cologne Water Quality Control Act is California's "comprehensive legislative plan" for protecting the quality of California's waters. (Azusa Land Reclamation Co. v. Main San Gabriel Basin Watermaster (1997) 52 Cal.App.4th 1165, 1180.) It declares it to be state policy "that the quality of all the waters of the state shall be protected for use and enjoyment by the people of the state." (Wat. Code § 13000.) The Act also declares "that the health, safety and welfare of the people of the state requires [sic] that there be a statewide program for the control of the quality of all the waters of the state; [and] that the state must be prepared to exercise its full power and jurisdiction to protect the quality of waters in the state from degradation originating inside or outside the boundaries of the state . . ." (Ibid.) The Act aims "to attain the highest water quality which is reasonable, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible." (City of Arcadia v. State Water Res. Control Bd. (2006) 135 Cal. App. 4th 1392, 1405.) Porter-Cologne also implements the federal Clean Water Act of 1977, 33 U.S.C. § 1251 et seq., which prioritizes protection of fish and wildlife, see 33 U.S.C. § 1251(a)(2), and requires states with water quality control plans to have standards in place for fish and wildlife protection. (See 33 U.S.C. § 1313.) With respect to the Bay-Delta in particular, the Board has a "duty to provide water quality protection to the fish and wildlife that make up the delicate ecosystem within the Delta." (United States v. State Water Resources Control Bd. (1986) 182 Cal.App.3d 82, 98.) A water quality control plan "consists of a designation or establishment for the waters within a specified area of all of the following: (1) Beneficial uses to be protected (2) Water quality objectives (3) A program of implementation needed for achieving water	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.

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		quality objectives.” Wat. Code § 13050(j). In short, Porter-Cologne mandates the State Board adopt and “periodically review [],” Wat. Code § 13240, a Bay-Delta Water Quality Control Plan which: (1) identifies relevant beneficial uses of water, (2) contains water quality objectives that reasonably protect those beneficial uses, and (3) creates a program of implementation with the measures that will achieve the water quality objectives. Federal and state law also mandate public participation in the review and update of a water quality control plan. (See, e.g., Wat. Code § 13244; 33 U.S.C. § 1313(c)(1).	
308	19	Public trust The Board must safeguard public trust resources. This includes “an affirmative duty to take the public trust into account in the planning and allocation of water resources, and to protect public trust uses whenever feasible.” (Nat'l Audubon Soc'y v. Superior Court (1983) 33 Cal.3d 419, 446; see also Wat. Code § 1243.5.) “The public trust doctrine, as recognized and developed in California decisions, protects navigable waters from harm caused by diversion of nonnavigable tributaries.” (Audubon, supra, 33 Cal.3d at 437 [footnotes omitted].) This includes groundwater hydrologically connected to navigable surface waters. (Id. At 436-37; see also S.F. Baykeeper, Inc. v. State Lands Com. (2015) 242 Cal.App.4th 202, 233; Env'tl. Law Found. V. State Water Resources Control Bd. (2018) 26 Cal.App.5th 844.) “Wild fish have always been recognized as a species of property the general right and ownership of which is in the people of the state” – they are quintessential public trust resources. (Cal. Trout v. State Wat. Res. Control Bd. (1989) 207 Cal.App.3d 585, 630.) “The title to and property in the fish within the waters of the state are vested in the state of California and held by it in trust for the people of the state.” (Ibid. [quoting People v. Monterey Fish Products Co. (1925) 195 Cal. 548, 563].)	Please see Common Response 1.2, Water Quality Control Planning Process, regarding the State Water Board's consideration of the public trust doctrine when setting water quality objectives. The 2023 draft Staff Report Section 6.6, Other Water Management Actions, considers groundwater storage and recovery and sustainable management projects, water transfers, water recycling, desalinated supplies, and water conservation in the context of the modeled changes in Sacramento/Delta surface water supplies, as acknowledged in the public trust analysis in Section 13.6.1, Public Trust Analysis, of the final Staff Report. The 2023 draft Staff Report Section 7.22, New and Modified Facilities, addresses actions that entities may take that would involve construction to modify or build new facilities and infrastructure to supplement or conserve surface water supplies and other construction projects that may result from the Sacramento/Delta update to the Bay-Delta Plan, including desalination plants.

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		Beyond water and wild fish, the public trust secures a host of other uses and values, including navigation, commerce, fishing, hunting, swimming, and the protection of waters, lands, and wildlife for ecological, aesthetic, and spiritual benefits. (See, e.g., S.F. Baykeeper, 242 Cal.App.4th at 233; Marks v. Whitney (1971) 6 Cal.3d 251, 259-60). The Delta Reform Act noted the “particular[] importan[ce] and applicab[ility]” of the public trust and other constitutional principles to the Bay-Delta. (Wat. Code § 85023.) At minimum, in setting water quality objectives, the Board must consider the availability of water supplies from wastewater recycling, improved water use efficiency, urban stormwater capture, and other sources as it relates to the public trust.	
308	20	Fish and Game Code section 5937 California Fish and Game Code section 5937 is part of the statutory expression of public trust protections for wild fish. As early as 1914, the California Fish and Game Commission documented the impacts of dam operations fish in California, leading the Legislature to pass the 1915 Flow Act, which required dam operators to release water to protect fish populations downstream (Grantham and Moyle 2014). California Fish and Game Code section 5937 provides: The owner of any dam shall allow sufficient water at all times to pass through a fishway, or in the absence of a fishway, allow sufficient water to pass over, around or through the dam, to keep in good condition any fish that may be planted or exist below the dam. Fish and Game Code § 5937. This mandate evolved from a series of statutory protections for instream flows and fisheries, dating from California’s earliest days of statehood. (See Karrigan Bork et al., The Rebirth of California Fish and Game Code § 5937: Water for Fish, 45 U.C.	At the time the 2023 draft Staff Report was released for public comment, an explicit public trust analysis was not included, as the rulemaking process for the Sacramento/Delta update to the Bay-Delta Plan was still at a preliminary stage with numerous options being evaluated for potential inclusion in the plan update. Now that the State Water Board has identified a precise set of revised proposed Plan amendments as the proposed project, as part of the process to revise the 2023 draft Staff Report in response to input from the public, the State Water Board has added a section summarizing the State Water Board’s public trust evaluation for the proposed amendments to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Watershed. Please refer to final Staff Report Section 13.6.1, Public Trust Analysis, for the State Water Board’s public trust analysis of the revised proposed Plan amendments. This public trust analysis includes discussion of FGC § 5937 and how the Staff Report analyzes condition of fish below dams. Please also see Common Response 1.2, Water Quality Control Planning Process, regarding the State Water Board’s consideration of public trust resources when formulating or amending water quality control plans. As described in Chapter 5, Proposed Changes to the Bay-Delta

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		Davis L. Rev. 809 (2012).) These protections pre-date construction and operation of the dams within the Sacramento River and its tributaries, as well as the direct tributaries to the Delta. Academic literature identifies a three-tiered evaluation to determining whether fish are in good condition: (1) the fish community; (2) the fishes' populations; and (3) the health of individual fish. (See Bork, supra, 45 U.C. Davis at 869-872; see also Moyle (1998 [See ATT 1]; 2017 [See ATT 2]). In summary, "in good condition" requires that fish populations below dams be self-sustaining, healthy, and representative of the native species that naturally existed. Similarly, Moyle (2017), explained, "The definition has three tiers, individual, population, and community (Moyle et al. 1998). By this definition, the fish in good condition below the dam should be in good physical health and also be part of self-sustaining populations, supported by extensive habitat for all life history stages. The third level of good condition, community, refers to the presence complex assemblages of native fishes, including runs of salmon and other anadromous fish, as well as fisheries for both native and non-native fishes." Courts have interpreted fish in "good condition" for purposes of Section 5937 to require the maintenance of historic fisheries. (See California Trout, Inc. v. Super. Ct. (1990) 218 Cal.App.3d 187, 210 (1990); see also NRDC v. Patterson (E.D. Cal. Aug. 27, 2004) 333 F. Supp. 2d 906, 924; Bork, supra, 45 U.C. Davis at 860-869.) And "sufficient water" has been held to require maintaining the "prediversion carrying capacity of fish" in streams, rivers, or creeks. (California Trout, Inc. v. Super. Ct., 218 Cal.App.3d 187, 210 (1990).) The Bay-Delta Plan and Draft Staff Report must explain how the flow requirements will ensure compliance with the Fish and Game Code by ensuring sufficient flows are provided to maintain fish in good condition. The Draft Staff Report fails to analyze or meet these standards.	Plan for the Sacramento/Delta, and Section 7.1, Introduction, Project Description, and Approach to Environmental Analysis, of the 2023 draft Staff Report, the proposed Plan amendments include a new narrative cold water objective for the Sacramento/Delta tributaries as a complementary measure to the inflow objective to further protect salmonids and other native species in the tributaries and to ensure that there are not redirected impacts on cold water habitat from the new inflow and Delta outflow objectives. Final Staff Report Section 13.3.3.3, Cold Water Habitat, further discusses the role of the revised proposed Plan amendments' narrative cold water habitat objective in requiring cold water storage, releases, and other measures to protect fish below dams. Certain water right holders and reservoir owners/operators would be required to develop long-term temperature management strategies, which would include proposed carryover storage levels and evaluation of other measures to improve temperature management, including fish passage, temperature control device measures, riparian habitat improvements, and other measures to contribute to meeting the narrative cold water habitat objective. Additional information on water temperature requirements and potential impacts on fish is contained in Section 7.6.2, Aquatic Biological Resources, of the 2023 draft Staff Report, and Section 13.7.6.2, Aquatic Biological Resources, of the final Staff Report.
308	21	Delta Protection Act	The Delta Protection Act (Wat. Code, §§ 12200-12220) was enacted in 1959, when the State Water Project was authorized.

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		The Board and the Bay-Delta Plan update process are also subject to the requirements of the Delta Protection Act. (Cal. Water Code §§ 12200-12205). The Delta Protection Act gives the Board authority to consider water conservation, water recycling, and other alternative water supplies which are available to municipal, industrial, and agricultural water users in determining the feasibility of protecting public trust resources and the reasonability of water quality objectives that protect instream beneficial uses. (See Board Decision 1485 at 16-17). The Draft Staff Report fails to include these elements that are necessary to meet the purposes of the Delta Protection Act. The court in the State Water Res. Control Bd. Cases summarized the Delta Protection Act's fundamental purpose, stating: ...the Delta Protection Act recognizes the importance of providing salinity control and an adequate water supply in the Delta to serve dual goals: (1) maintaining and expanding agriculture, industry, urban, and recreational development in the Delta; and (2) providing fresh water for export to areas of water deficiency. As between these two goals, however, the Delta Protection Act gives preference to the first. Thus, no one may divert water from the Delta that is necessary for salinity control or to provide an adequate water supply for users within the Delta. 136 Cal. App. 4th 674, 768 (2006) (emphasis added). Specifically, the legislative intent of the Act specifies the Delta Protection Act addresses the need "for the protection, conservation, development, control and use of the waters in the Delta for the public good." (Cal. Water Code §§ 12200). The Draft Staff Report, and more specifically the Program of Implementation once developed, must address these requirements.	The Act recognizes the unique water problems in the Delta, particularly salinity intrusion, and requires the State Water Project, in coordination with the federally-operated Central Valley Project, to control salinity within the Delta and provide an adequate water supply for users of water within the Delta. (United States v. State Water Resources Control Bd. (1986) 182 Cal.App.3d 82, 139; Wat. Code, § 12202.) However, the Delta Protection Act neither limits nor modifies the State Water Board's responsibilities under the Porter-Cologne Water Quality Control Act. Please also see response to comment 308-19 regarding consideration of other water supplies and water conservation. Potential shifts in municipal water supply sources are discussed in Section 7.20, Utilities and Service Systems, as well as Sections 8.2.3, Municipal Water Use and 8.5, Municipal Water Supply Economic Effects, of the 2023 draft Staff Report, and in Section 13.7.20, Utilities and Service Systems, of the final Staff Report. The revised proposed Plan amendments' program of implementation, as discussed in Chapter 13, Revised Proposed Plan Amendments, of the final Staff Report, contains provisions for local cooperative solutions (also referred to as "voluntary implementation plans" in Chapter 5 of the Staff Report) allowing flow shaping, and provisions allowing the Board to adjust flow requirements along an adaptive range between 45 and 65 percent of unimpaired flow, inclusive, with or without water supply adjustments. These plan flexibilities provide the State Water Board with the ability to make adjustments in flow requirements as necessary to protect public trust resources. Further, in the event that the regulatory pathway, the VA pathway, or both pathways require modification to ensure the reasonable protection of beneficial uses, including public trust uses, in the Bay-Delta watershed, the State Water Board has the ability to make adjustments via the annual and periodic review processes, as discussed in Common Response 1.3, Revised Proposed Plan Amendments. As detailed in Section 4.4.10.5 of the December 2025 revised draft Plan, the State Water Board will support efforts to diversify

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			water supply portfolios in an environmentally responsible manner, including through water conservation and efficiency upgrades and increased use of recycled water, to the extent feasible. The State Water Board will continue to encourage and promote water recycling projects, including projects involving the use of recycled water for groundwater recharge, through expediting permit processes and providing funding opportunities. Refer also to final Staff Report Section 13.6.1, Public Trust Analysis, for the State Water Board's public trust analysis of the revised proposed Plan amendments, and Common Response 1.2, Water Quality Control Planning Process, regarding the State Water Board's consideration of public trust resources when formulating or amending water quality control plans.
308	22	6. Requirements to account for regional climate change Addressing regional climate change is required by Resolution No. 2017-0012, which requires a "comprehensive response to climate change in all Board actions." Draft Staff Report at 4-37. Climate change is not included in the SacWAM modeling at this time because of "the uncertainty and lack of detailed climate change information required to produce inputs to the model." Draft Staff Report at 6-8. This omission limits the usability of the analysis of water supply impacts, and of how shifting unimpaired flow might change the outcomes of the Plan. Discussions of climate change in Chapter 2, 4.6, and in the environmental analyses do not amount to a "comprehensive response to climate change." Nonetheless, such uncertainties do not change the urgency of securing significantly higher flows to the estuary to protect fish and wildlife beneficial uses. Section 5.6.2.3 states that in accordance with Resolution 2017-0012, climate effects will be addressed in the proposed objectives and implementation measures. New objectives and a POI based on the percentage of unimpaired flows approach and the application of coldwater habitat criteria are the best way to accommodate climate change.	Please see Common Response 4.2, Drought and Climate Change, for information on the consideration of climate change in Staff Report modeling and consistency with regulatory requirements and other policies.
308	23	The Degradation and Potential Loss of Identified Fish, Wildlife, and Estuarine Habitat Beneficial Uses Violates Porter Cologne,	Please see Common Response 3.1, Fish Protection, for a discussion of the State Water Board's use of best available

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		the Clean Water Act, the Public Trust Doctrine, California Fish and Game Code §5937, and Other Statutory Requirements Approving the continued degradation and potential loss of identified fish, wildlife, and estuarine habitat beneficial uses violates the Board's legal obligations. Both native fish and wildlife populations, and the estuarine habitats and ecological processes that support them are collapsing in the Bay-Delta and in danger of irreparable damage. Based on review of data and analyses presented in the Draft Staff Report, it is clear that flows under the proposed project cannot support any science-based definition of viability for several key species. Nor is the proposed project likely to sustain commercial and recreational fisheries, protect estuarine habitat, or attain the Plan's narrative salmon protection objective. Moreover, without defining the biological outcomes that represent reasonable protection of fish and wildlife beneficial uses and attainment of the Plan's objectives, the Board cannot demonstrate that the proposed project and its program of implementation (when it is developed) will satisfy various legal requirements including preservation of existing fish and wildlife beneficial uses and the ability to actually achieve its narrative water quality objectives. This violates at least the Porter Cologne Act, the Clean Water Act, the Public Trust doctrine, and California Fish and Game Code section 5937.	science, the State Water Board's approach to analyzing the effects of flow on species abundance and life cycle models, and the need to update flow thresholds for protection of fish species, including salmon. See also Section 8.6 of the final Staff Report, Fisheries Economic Analysis, for an analysis of economic impacts on commercial and recreational fishing and Common Response 1.2, Water Quality Control Planning Process, regarding the Board's authorities and obligations under the Porter-Cologne Water Quality Control Act, the Clean Water Act, and the Public Trust doctrine. Lastly, please refer to final Staff Report Section 13.6.1, Public Trust Analysis, for the State Water Board's public trust analysis of the revised proposed Plan amendments, including a discussion of Fish and Game Code section 5937.
308	24	The status quo of native fish populations in the Bay-Delta estuary and its watershed is decline (SWRCB 2010; SWRCB 2017). Existing flow requirements contained in the Bay-Delta Plan, federal Endangered Species Act biological opinions, and state Endangered Species Act incidental take permit are inadequate to maintain native species viability, fisheries, or the estuarine habitat upon which fisheries and imperiled fishes rely (SWRCB 2010, 2017; CDFW 2010). Further, as the Board notes, much of the flow into and through the Delta is unregulated—above the Board's requirements but beyond the capacity of current infrastructure to capture. Yet neither required flows nor the higher actual ones have been sufficient to prevent widespread declines in fish and wildlife populations. As the Draft Staff Report states: Native species have continued to experience declines in	Please refer to Staff Report Chapter 3, Section 3.4, Chinook Salmon (<i>Oncorhynchus tshawytscha</i>) and Central Valley Steelhead (<i>Oncorhynchus mykiss</i>), for a discussion of salmonid species decline and flow effects on salmonids. Please also refer to Staff Report Section 7.1.3, Purpose and Goals of the Sacramento/Delta Update to the Bay-Delta Plan, for a discussion of the purpose and goals of the Sacramento/Delta Update to the Bay-Delta Plan. Please refer to Common Response 1.2, Water Quality Control Planning Process, for a discussion on reasonable protection of fish and wildlife, and the State Water Board's consideration of beneficial uses. Please also refer to Common Response 3.1, Fish Protection, for a discussion of the State Water Board's use of best available science and the Board's approach to analyzing the effects of flow on species abundance and life cycle models.

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		abundance since implementation of Water Right Decision 1641 (D-1641) in 2000, including several species that are protected under the federal Endangered Species Act (ESA) and California Endangered Species Act (CESA). The impaired hydrology of the Bay-Delta watershed has acted through a number of mechanisms to decrease reproductive output and survival of young, including the magnitude and timing of flows needed for adult attraction, transport of larval fish to estuarine rearing habitats, inundation of floodplain spawning and rearing habitat, and maintenance of low-salinity rearing habitat in Suisun Bay and Marsh. Historically, the Delta exhibited higher outflow in winter and spring than in recent years... Reductions in flows during winter and spring have reduced potential recruitment opportunities and the viability of the estuarine-dependent community. Anadromous salmonids, which use habitat in the Bay-Delta estuary and upstream tributaries, have also exhibited substantial declines in population abundance in recent decades. Draft Staff Report at 7.6.2-4. The situation has worsened since publication of the Final Scientific Basis Report (SWRCB 2017) upon which the Draft Staff Report's assessment is based. The Board recently acknowledged that "risks of extirpation for multiple fish species are high" (Order Conditionally Approving a Petition for Temporary Urgency Changes, State Water Board, June 1, 2021, at 7, available at https://www.waterboards.ca.gov/drought/tucp/docs/2021/20210601_swb_tuco.pdf). Current water quality objectives and regulations have failed to maintain viability of numerous native Bay-Delta fish species. Six native fish populations are listed as threatened or endangered under either CESA, the federal ESA, or both, and petitions to list others are pending state and federal review (See Attachment: White Sturgeon CESA petition [See ATT 3 and ATT 85]). Numerous other fish species native to the Bay-Delta are listed by the California Department of Fish and Wildlife (CDFW) as species of special management concern (CDFW 2015 [See ATT 4]). Even among fishes that are not officially imperiled, various fisheries have been closed or severely restricted in recent years.	

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		The common denominator for these impacts is the reduction and alteration of Central Valley river flow into and through the Delta to San Francisco Bay. This is the primary driver of their decline. Central Valley Steelhead and Chinook Salmon are additionally plagued by water released from impassable dams that is too warm to support spawning, egg incubation, or juvenile rearing (Moyle et al. 2017 [See ATT 2]; SWFSC 2021 [See ATT 5], 2023 [See ATT 6]). These outcomes demonstrate that neither the maintenance of existing flow requirements, even assuming the additional unregulated flows that currently exist, nor the maintenance of these requirements plus unregulated flows nor current temperature requirements will prevent the continued decline of native fish populations, much less restore viability, or reasonably protect beneficial uses, including estuarine habitat, commercial, recreational, and subsistence fisheries, or tribal beneficial uses. Furthermore, the marginal increases in the frequency of critical flow levels projected to occur under some alternatives reviewed in the Draft Staff Report is not evidence that these alternatives are sufficient to increase population abundance for target species (as the Draft Staff Report claims at 7.6.2-38), much less attain the Bay-Delta Plan's objectives or reasonably protect fish and wildlife and other beneficial uses.	
308	25	C. The Draft Staff Report Fails to Analyze Whether the Proposed Project will Reasonably Protect Beneficial Uses or is Likely to Achieve the Bay-Delta Plan's Objectives Because it Fails to Define Key Terms, Outcomes, and Thresholds Consistent with the Best Available Science 1. The Board must define "viability" in the context of its proposed new narrative objective SF Baykeeper et al. supports the Board's goal to restore and support population viability of native aquatic organisms, especially given that numerous fish species in the Bay-Delta and its watershed are not currently viable. In order to determine whether the proposed project is likely to protect beneficial uses and achieve the Bay-Delta Plan's objectives, the Board must define precisely what "viability" and related terms mean. The	Please see Common Response 1.2, Water Quality Control Planning Process, for information on reasonable protection of fish and wildlife. Quantitative targets for species populations would be included in the Sacramento/Delta biological goals, which would be developed after adoption of the Plan amendments. Biological goals for anadromous salmonids would be based on viable salmonid population parameters. These biological goals would be used to inform future changes to the Bay-Delta Plan and its implementation. Please see Common Response 1.3, Revised Proposed Plan Amendments, for more information on biological goals and the water quality objectives for fish and wildlife.

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		Board must also articulate what biological outcomes would reflect viability for populations of a broad array of native aquatic species that are indicators of the status of the estuarine habitat ("EST") beneficial use, or are rare ("RARE"), or support commercial and recreational fisheries ("COMM"), or are related to other critical ecosystem services and designated fish and wildlife beneficial uses. Similarly, the Board must describe what other ecological outcomes (e.g., status, extent, and connectivity of habitats and ecological processes) would represent reasonable protection for these and other identified beneficial uses that are not adequately protected by existing water quality objectives. The proposed narrative objectives for inflow, outflow, and interior Delta flow all seek to support natural production and maintenance of "viable" native fish populations, as does the proposed VAs' narrative viability objective. However, the Draft Staff Report does not define this term. In ecological parlance, "viability" refers to a low likelihood of population extirpation within a relatively long time-frame. For example, NMFS provides the following definition of viability for Pacific Salmon populations: "...a negligible risk of extinction due to threats from demographic variation, local environmental variation, and genetic diversity changes over a 100-year time frame." (McElhaney et al. 2000 at 2). Similarly, in the field of conservation biology, the term "minimum viable population" refers to "the smallest isolated population size that has a specified percent chance of remaining extant for a specified period of time in the face of foreseeable demographic, genetic, and environmental [variability], plus natural catastrophes." (Meffe and Carroll 1994 at 562). The Board must define "viability" and, where relevant scientific information is available, should parameterize its definition of viability for each target species identified in Chapter 3 of the Draft Staff Report and the 2017 Scientific Basis Report. The best available scientific evidence is more than sufficient to establish quantitative viability parameters for these species. Indeed, in many cases the Board should not only identify specific quantitative targets for viable populations but consider directly adopting them as Table 3 water quality objectives in the form of biocriteria. Furthermore, parameterizing viability means establishing	

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		numeric flow objectives that are quantified on the basis of achieving thresholds and targets for viability. In contrast, the Board's previous descriptions of the flows that support "viability" during the Phase 1 court proceedings included not causing harm, providing opportunities for survival, avoiding lethal temperatures, or otherwise affirming the Board's independent obligations not to violate state and national laws such as CESA and the federal ESA.	
308	26	The Board must clarify and demonstrate the level of reasonable protection the Bay-Delta Plan will provide to commercial, recreational, and subsistence fisheries Current water quality objectives do not support Bay-Delta fisheries. For example, the Draft Staff Report states: Excluding the near full closure of the ocean salmon fishery from 2008 through 2009, California commercial Chinook salmon catch between 1976 and 2022 varied from approximately 14.4 million pounds (dressed weight) in 1988 to a low of 228 thousand pounds in 2010. Since 2010, average harvests from 2011 through 2022 were 1.8 million pounds, less than one quarter of the 1986–1990 average annual harvest, and less than half of the 1996–2005 average (PFMC 2023a). Draft Staff Report at 8-105. Other fisheries in the Bay-Delta have faced similar or worse impacts from inadequate flow and water temperature management (SWRCB 2017 Table 4.5-1 at 4-27; see below). The Board must clarify and demonstrate how those beneficial uses will be reasonably protected by Plan updates. However, the Board's narrative and numeric flow objectives do not necessarily support reasonable protection of commercial and recreational fisheries (collectively, COMM), subsistence fisheries, or tribal subsistence fisheries (T-SUB). Maintaining fishing beneficial uses necessarily involves factoring in the permitted occurrence of additional mortality for target fish species, which a minimally	The State Water Board is considering amendments to the Sacramento/Delta portions of the Bay-Delta Plan for the reasonable protection of fish and wildlife beneficial uses. Chapter 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations, provides a review and summary of the best available science on flow needs for the protection of fish and wildlife beneficial uses. Chapter 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations, includes an analysis of the benefits of the 35 through 75 flow scenarios and other components of the proposed Plan amendments described in Chapter 5, Proposed Changes to the Bay-Delta Plan for the Sacramento/Delta. Chapter 9, Proposed Voluntary Agreements, includes an analysis of the benefits of the HRL commitments. Section 13.5, Beneficial Environmental Effects, contains benefit analyses for the revised proposed Plan amendments. In particular, Section 13.5, Beneficial Environmental Effects, provides analysis that includes scenarios representative of the regulatory pathway and the VA pathway. See Common Response 3.1, Fish Protection, for a description of revisions made to Chapter 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations, to update flow thresholds and flow-benefits analyses. See also Common Response 1.2, Water Quality Control Planning Process, for a discussion of reasonable protection of fish and wildlife beneficial uses and consideration of other beneficial uses, and Common Response 1.3, Revised Proposed Plan Amendments, regarding the water quality objectives for fish and wildlife.

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		viable population would not be able to withstand (i.e., harvest would make the fished populations non-viable). For example, populations of several of the Bay-Delta's endangered species once supported fisheries, but fishing for these species is now prohibited in order to prevent further declines and allow their return to viability. The Draft Staff Report fails to analyze the long history of lost commercial fisheries for many species in the Bay-Delta (see below). This analysis is critical to demonstrating the Board's failure to protect commercial fishing, and to appropriately balance protection of fishing and other beneficial uses. Fisheries that are closed cannot represent reasonable protection of these identified beneficial uses, nor can fisheries that are maintained at minimal levels and constantly at risk of closure and permanent loss. Again, the Board must identify its desired outcomes for beneficial uses – without such a description, it is not possible to determine whether proposed new flow objectives and the yet-to-be-developed program of implementation can support those outcomes.	
308	27	3. The Board must clarify and demonstrate how Bay-Delta Plan updates will reasonably protect estuarine habitat Current water quality objectives and regulations have clearly failed to reasonably protect estuarine habitat (EST). Evidence of this failure includes (but is not limited to) the low production of native invertebrates on which fish and wildlife species feed and the increasing number of invasive invertebrate species (Kimmerer et al. 2002; Winder et al. 2011 [See ATT 7]), as well as the proliferation of toxic algal blooms in the Delta (Berg and Sutula 2015; Kudela et al. 2023 [See ATT 8]). Protection of estuarine habitat requires, among other things, levels of food web productivity beyond the levels required to support minimally viable populations of fish and wildlife. Populations of prey items respond positively to freshwater flows into and through the Delta to San Francisco Bay (Kimmerer 2002; Hennessy and Burris 2017a,b [See ATT 9 and ATT 10, respectively]; see below); invasion by nonnative species is more likely during periods of low Delta outflows (Winder et al. 2011), and the Delta's toxic algal blooms respond negatively (improving	As described in Section 7.1.3, Purpose and Goals of the Sacramento/Delta Update to the Bay-Delta Plan, of the Staff Report, the underlying fundamental purpose of the project is to establish water quality objectives, a program of implementation, and monitoring and special study measures for the reasonable protection of fish and wildlife beneficial uses in the Sacramento/Delta. Estuarine habitat is included as a fish and wildlife beneficial use in the Bay-Delta Plan. In addition, the proposed narrative flow objective would protect not only the native fish species but also their habitat and food resources. Please see Common Response 1.3, Revised Proposed Plan Amendments, for more information on the proposed objectives. The Staff Report includes a discussion of Harmful Algal Blooms in Section 4.3.2, Harmful Algal Blooms. The positive relationships between flow and food web productivity are described in Section 3.11, Zooplankton (<i>Neomysis mercedis</i> and <i>Eurytemora affinis</i>).

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		estuarine conditions) when river flows are well above what current regulations require (Berg and Sutula 2015; Lehman 2020 [See ATT 11]). For purposes of this Plan update, the Board should revise its proposed narrative flow objective such that “viable” includes reasonable protection of estuarine habitat, and it should modify the proposed numeric flow objectives and include additional objectives as necessary to ensure that the estuarine habitat beneficial use is protected.	
308	28	The Board must clarify and demonstrate how Bay-Delta Plan updates will maintain fish “in good condition,” per the requirements of Fish and Game Code §5937 The Draft Staff Report fails to analyze whether the proposed project will maintain fish in good condition, as required under §5937. In order to evaluate the effect of proposed water quality updates, and resulting changes in reservoir operations, the Board must describe what outcomes will represent “fish in good condition” for purposes of the Plan. As early as 1914, the California Fish and Game Commission documented the impacts of dam operations fish in California, leading the Legislature to pass the 1915 Flow Act, which required dam operators to release water to protect fish populations downstream (Grantham and Moyle 2014). This law eventually became §5937 of the state Fish and Game Code, which states: The owner of any dam shall allow sufficient water at all times to pass through a fishway, or in the absence of a fishway, allow sufficient water to pass over, around, or through the dam, to keep in good condition any fish that may be planted or exist below the dam. Courts have adopted a three-tiered definition of “in good condition” offered by Moyle (1998 [See ATT 1]; 2017 [See ATT 2]), which requires that fish populations below dams be self-sustaining and comprised of healthy individuals and representative of an assemblage dominated by native species	As the commentor explains, Fish and Game Code section 5937 (section 5937) is an independent statutory requirement that requires reservoir operators to keep fish in good condition below their dams. Compliance with section 5937 is neither a CEQA requirement nor a requirement of the Porter-Cologne Act, although it is one of the authorities that the State Water Board may rely on for implementation of the cold water habitat objective. The Staff Report discusses section 5973 in conjunction with the cold water habitat objective in Section 5.4.3, Cold Water Habitat; as part of the Regulatory Setting for Aquatic Biological Resources in Section 7.6.2.3, Regulatory Setting; and as mitigation measures by other entities for a variety of potential impacts (see, e.g., Section 7.6.2.5, Mitigation Measures, Mitigation Measure MM-AQUA-a,d i.). The proposed Plan amendments to reasonably protect fish and wildlife beneficial uses are consistent with the State Water Board’s public trust obligations to protect public trust resources such as fisheries. See Common Response 1.2, Water Quality Control Planning Process, for more information on State Water Board authorities related to the water quality control planning process. Additionally, as explained throughout the 2023 draft Staff Report, the improved flow and operational requirements (including the cold water habitat objective) under the proposed Plan amendments are intended to ensure the reasonable protection of fish and wildlife beneficial uses and to address the significant species declines that has occurred since the Bay-Delta Plan was last updated and implemented. As explained in Section

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		that persist over time. Moyle (2017) summarized his definition this way: The definition has three tiers, individual, population, and community (Moyle et al. 1998). By this definition, the fish in good condition below the dam should be in good physical health and also be part of self-sustaining populations, supported by extensive habitat for all life history stages. The third level of good condition, community, refers to the presence complex assemblages of native fishes, including runs of salmon and other anadromous fish, as well as fisheries for both native and non-native fishes.	7.6.2, Aquatic Biological Resources, in the Staff Report, most of the potential impacts of the Plan amendments on fish species are expected to be either beneficial or less than significant. See Common Response 1.3, Revised Proposed Plan Amendments, regarding the VA pathway, and Common Response 1.2, Water Quality Control Planning Process, regarding Fish and Game Code section 5937.
308	29	5. The Board should use empirical relationships between freshwater flow and attributes of species viability and between flow and estuarine habitat, as available, to identify a flow regime that reasonably protects beneficial uses and achieves Bay-Delta Plan objectives To evaluate the effect of different flow regimes on native fish species, the Board has identified flow thresholds that affect attributes of viability for each of several target species (SWRCB 2017; Draft Staff Report Chapter 3). For some key species, the flow thresholds previously identified by the Board are out of date and no longer consistent with the best available science. These outdated flow thresholds must be revised to reflect the best available science. SF Baykeeper et al. identifies needed corrections below. To understand the effect of a given flow regime, the Board needs to evaluate how frequently these flow thresholds are attained and compare these “return frequencies” for each alternative to the frequency needed to reasonably protect beneficial uses and to achieve Plan objectives. Although the Board has analyzed the return frequency of its previously identified threshold flows, the Draft Staff Report fails to describe how frequently these threshold flows must be attained in order to reasonably protect fish and wildlife beneficial uses or to attain plan objectives. Below, we provide science-based guidance for the desired frequency of threshold flows for a variety of species. In addition, the Board must account for the fact that several flow-viability	Please see Common Response 3.1, Fish Protection, regarding the flow benefit analyses. Chapter 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations, Section 3.14, Evaluation of Bay-Delta Environmental Flow Effects, includes an analysis of how often the ecological thresholds are achieved, compared to baseline conditions with the flow scenarios. Please also see Section 13.5, Beneficial Environmental Effects, for an updated flow threshold analysis.

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		relationships are continuous, meaning that benefits accrue above and below threshold levels (e.g., by limiting declines in viability, or by increasing resilience beyond minimum thresholds). One of the benefits of the Board's percentage of unimpaired flow approach is that it automatically shifts the range of flows, increasing the frequency of higher flows and increasing the magnitude of the lowest flows in the flow range. The Board should document the return frequency of the lowest flows (i.e., in the driest years) that can still be deemed protective for species with linear flow-viability relationships.	
308	30	D. Current Flow Standards are Inadequate to Maintain Viability of, or Fisheries for, Native Fish Species or Maintain Estuarine Habitat 1. Species status The Draft Staff Report (Chapter 3; see also SWRCB 2017) provides ample evidence that fish and wildlife beneficial uses and water quality are not protected adequately by current Bay-Delta Plan objectives. The Draft Staff Report also demonstrates that substantial increases in river flow into and through the Delta to San Francisco Bay will be necessary to provide reasonable protection of fish and wildlife beneficial uses. The Board acknowledges, "[f]low is commonly regarded as a key driver or "master variable" governing the environmental processes in riverine and estuarine systems such as the Bay-Delta and its watershed" (SWRCB 2017 at 3-2). However, Chapter 3 should be updated to reflect the current status of key fish and wildlife species and the abundant new research concerning critical relationships between flow and viability attributes that has emerged with respect to some of the target species evaluated previously by the Board. Below, SF Baykeeper et al. provides a brief description, status update, and review of relevant literature (with an emphasis on literature published since SWRCB 2017) connecting freshwater flow to metrics of viability and fisheries of several target species and Bay-Delta estuarine habitat. We then review how the proposed project and proposed Voluntary Agreements can be expected to affect fish viability and fish and wildlife beneficial uses.	Please see Common Response 3.1, Fish Protection, for a discussion of the flow-benefits analyses, process for updates to literature in Chapters 3 and 4, and entrainment. Staff have evaluated and included a new summer outflow threshold for Delta smelt from research from Polansky et al. (2024) in Chapter 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations and Chapter 13, Revised Proposed Plan Amendments, Section 13.5, Beneficial Environmental Effects. Management of the Old and Middle River (OMR) flows is established through the federal Endangered Species Act (ESA) and California Endangered Species Act (CESA) requirements for the long-term operations of the State Water Project (SWP) and Central Valley Project (CVP) (collectively, Projects). Section 3.2.4, Interior Delta Flows and Entrainment, of the Staff Report evaluates effects of interior Delta flows, including Old and Middle River flows on entrainment and native estuarine fish species, and Section 7.6.2, Aquatic Biological Resources, evaluates the effects of the proposed Plan amendments on Old and Middle River flows and their effects on native estuarine fish species. See Common Response 1.3, Revised Proposed Plan Amendments, for a discussion of interior Delta flows.

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		A) Delta Smelt Although they were formerly abundant, Delta Smelt are nearly undetectable in the wild. Recent research confirms strong relationships of Delta outflow with survival and/or recruitment of larvae. Because they live only one year and then die, Delta Smelt viability relies on flow and estuarine habitat conditions that support population growth in almost all years. The Board must identify flow targets for the protection of Delta Smelt in spring and revise its flow targets for summer and fall to reflect levels that will protect this species across the full range of annual hydrologies. Specifically, a wealth of recent research demonstrates that in order to prevent extinction of Delta Smelt, flow improvements are urgently needed in the summer and fall [Footnote 2: Summer and fall flow levels that are protective of Delta Smelt may exceed unimpaired flows at times, because of physical and biological modifications that frequently make the Delta inhospitable during those seasons (Feyrer et al. 2011)]. In addition, the Board must evaluate levels of water export/Old and Middle River flow rates that are reasonably protective of Delta Smelt given recent findings that the population is nearly undetectable in the wild and cannot withstand any additional loss to entrainment in the CVP and SWP south Delta export facilities (Smith et al. 2001)	
308	31	(1) Description Delta Smelt are small fish, endemic to the San Francisco Bay estuary – they live nowhere else on Earth. These fish usually live just one year and die after spawning (i.e., they are “semelparous”), making it essential that spawning and rearing conditions necessary to support a viable population occur every year. Their persistence in the San Francisco Bay estuary for thousands of generations demonstrates that historically these fish found adequate food and spawning and rearing habitat every year despite highly variable hydrologic conditions (Moyle 2002). (2) Status	Please see Section 3.8, Delta Smelt (<i>Hypomesus transpacificus</i>), of the Staff Report for information on Delta smelt life history, population abundance trends over time and flow effects. The Staff Report does include an analysis of winter, spring and fall outflow effects on Delta smelt populations in Sections 3.8.4.1, Winter and Spring Delta Outflow, and 3.8.4.3, Fall Outflow. Table 3.8-1 (see Section 3.8.4.3) indicates the Summer and Fall X2 positions, and Old and Middle River flow levels that are protective of Delta smelt. Table 3.8-1 contains the same information as is presented in the 2017 Scientific Basis Report on page 3-76. The first threshold of 7,100 cfs Delta outflow was identified for Above Normal years and the threshold for X2 as <80 km (7,500 cfs) is for all water year types in the summer. The two different thresholds are derived from different lines of evidence from the 2017 Scientific Basis Report and Staff Report

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		Viability Once among the most numerous resident fish in the northern San Francisco Bay estuary (CDFW 2001; Moyle 2002), Delta Smelt are now among the most severely endangered fish species in the world. They were first listed as “threatened” under the federal and state Endangered Species Acts (ESAs) in 1993; the species’ conservation status was revised to “endangered” under the California ESA in 2009., Delta Smelt are now rarely detected in various fish community sampling programs. Abundance indices have declined by > 99% since the species was first listed under the ESA. Indeed, since 2017, no Delta Smelt have been caught at index-stations of CDFW’s Fall Midwater Trawl (Figure 1) [See Exhibit 1], which was formerly the index of record for this fish, or the Interagency Ecological Program’s Bay Study. Fishery CDFW (2001 at 472) reports “In the 19th century, delta smelt (<i>Hypomesus transpacificus</i>) and longfin smelt were the object of a commercial fishery that supplied markets in San Francisco. Much of the market seems to have been for dried fish for the Chinese community.” The fish remained abundant into the late 1960s, but its current status as an extremely rare and protected fish prevent this species from supporting a fishery currently. (3) Relationship to flow Delta Smelt population viability benefits from increased flows into and through the Delta. USFWS (2016 at 2) reported that in most months, higher levels of Delta Outflow were associated with a greater likelihood of Delta Smelt population growth from one year to the next, stating: “We find that increasing outflows through the San Francisco Bay-Delta increases the likelihood of Delta Smelt, a fish that only lives one year, surviving to propagate the species ... the results provide strong support for a role of Delta outflow on the population trend of Delta Smelt when its abundance the year prior has been accounted for.”	analyses, representing thresholds in different water year types. Please see Common Response 3.1, Fish Protection, for a discussion of the flow benefit analyses conducted for fall flow effects on Delta smelt and a discussion of OMR flows and entrainment. Staff have evaluated and included a new summer outflow threshold for Delta smelt from research from Polansky et al. (2024) in Chapter 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations and Chapter 13, Revised Proposed Plan Amendments, Section 13.5, Beneficial Environmental Effects. Life-cycle modeling by Polansky et al. (2024) identifies that flows during the summer have the largest effect of the variables considered on population growth of Delta smelt. In addition, the discussion of zooplankton subsidies in Chapter 3 was expanded by adding Hassrick et al. (2023). Please also see Common Response 3.1, Fish Protection, for a discussion on process for updates to literature in Chapters 3 and 4.

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		The effect of Delta outflow on Delta Smelt population productivity results from positive effect of flow on survival in various life stages and on recruitment from the adult to the larval phase (see below). In addition, Delta outflow is known to affect the distribution of the Delta Smelt population (USFWS 2019 at 162) and USFWS notes: “...even very modest differences in the assumption about [Delta Smelt] spawning distribution can have a large effect on predictions of proportional entrainment.” (USFWS 2019 at 153) – entrainment mortality is a significant factor undermining the viability of Delta Smelt. Thus, Delta outflow levels affect at least three attributes of Delta Smelt viability – abundance, productivity, and spatial distribution. The Board previously determined, based on research from the fisheries agencies (IEP 2015; CDFW 2016; USFWS 2016) that Delta Smelt survival increases with increases in summer Delta outflow (SWRCB 2017 at 3-75). More recently, Polansky et al. (2021) [See ATT 12] reported strong evidence for an effect of summer Delta Outflow on post-larval survival of Delta Smelt. Other Delta flow variables were significant predictors of survival of different Delta Smelt life stages. In particular, Polansky et al. (2021) found strong evidence for the effect of fall X2 (a proxy for Delta outflow in the fall) on subsequent Delta Smelt recruitment and Delta. This is consistent with recent findings that abundance of one of the Delta Smelt’s chief prey items – the copepod, <i>Psuedodiaptomous forbesi</i> – responds positively to Delta outflow in summer (Hennessy and Burris 2017a,b [See ATT 9 and ATT 10, respectively]; Kimmerer et al. 2018) and fall (Hassrick et al. 2022 [See ATT 13]). Furthermore, the Interagency Ecological Program (IEP) found a very strong linear relationship between X2 during Feb-June and abundance of larval Delta Smelt, especially after accounting for the effect of adult abundance (IEP 2015; SWRCB 2017). The Board fails to identify key Delta outflows necessary to protect Delta Smelt that are consistent with the science showing strong correlations between Delta Smelt viability and Delta outflow in various seasons. The Board documents a very strong linear relationship between winter-spring X2 (a proxy for Delta outflow) and larval abundance (SWRCB 2017 3.8-2 at 3-74) and Kimmerer and Rose (2018) found that increasing Delta outflow	

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		(reducing X2) increased recruitment of early Delta Smelt life stages such that population growth rate (a key metric of viability) increased substantially. Nevertheless, the Board fails to identify winter-spring flows levels that would restore and be protective of Delta Smelt viability. Also, although the summer flow-survival relationship is continuous (i.e., within the range of flows studied, each increment of increase in flows produces an increase in Delta Smelt survival) and highly significant statistically (SWRCB 2017 Figure 3.8-3 at 3-75), the Board inexplicably identifies as protective only the highest value of X2 (equivalent to the lowest Delta outflows) associated with this relationship, corresponding to Delta outflow of ~7,500 cfs. This level of flow is at the low end of the flow-abundance relationship for Delta Smelt's primary summer prey species (<i>P. forbesi</i>; Hennessy and Burris 2017a,b; Kimmerer et al. 2018). To be consistent with the best available science, the Board should identify higher Delta outflows during June through September as necessary to protect Delta Smelt in almost all water years. Similarly, the Board identifies fall outflow thresholds consistent with fall X2 values from the USFWS Biological Opinion (USFWS 2008) for Delta Smelt.[Footnote 3: Curiously, the "Fall X2" flow value identified for September of Above Normal years is just 7,100 cfs, which is less than the "Summer" flow recommendation for September (7,500 cfs) for all year types (SWRCB 2017 at 3-76). The Board should correct or clarify this internal inconsistency.] The fall outflow thresholds are the minimum values previously considered to be protective of Delta Smelt developed in the context of the ESA requirement to avoid "jeopardy"; they are not values of X2 that are expected to produce population growth and recovery. Even these minimally protective fall flow levels apply only following Wet or Above Normal water years and the Board recommends no fall flow protections in other water year types. Recent studies indicate that fall flow augmentations would likely have a positive effect on availability of <i>P. forbesi</i> – a key Delta Smelt prey item – in drier year types as well (Hennessy and Burris 2017a,b; Kimmerer et al. 2018; Hassrick et al. 2023). The Board should identify fall flows protective of the Delta Smelt food supply and	

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		its estuarine habitat in fall months of each year type. Entrainment and “salvage” of Delta Smelt is strongly and exponentially correlated with the magnitude of (tidally averaged) “reverse” or negative flows in the Old and Middle River channels of the San Joaquin River (OMR); i.e., flows away from the Bay. Such flows are caused by high levels of water export at the State Water Project (SWP) and federal Central Valley Project (CVP) export facilities in the south Delta (USFWS 2008; SWRCB 2017 at 3-77 through 3-80). Smith et al. (2021) found that entrainment-related mortality (including, salvage and prescreen mortality) was a major threat to Delta Smelt viability and that any additional mortality from entrainment/salvage was inconsistent with maintaining the Delta Smelt population in the wild (they also noted that controlling this source of mortality alone would not be sufficient to restore the population). The finding of grave impacts to Delta Smelt from entrainment-related mortality caused by CVP and SWP export operations in the south Delta is consistent with the findings of other research efforts (Kimmerer 2008, 2011). Similarly, Polansky et al. (2021) found that OMR flows were among the most powerful predictors of survival for sub-adult Delta Smelt. These results are consistent with earlier studies that found statistically significant negative correlations between Delta Smelt abundance and winter-spring water exports by the CVP and SWP pumps in the south Delta (Thomson et al. 2010; Mac Nally et al. 2010) and with modeling studies that showed very large increases in population growth rate (a key to viability) arose from eliminating entrainment mortality (Kimmerer and Rose 2018). Recognizing the importance of salvage mortality and other entrainment-related mortality on Delta Smelt viability, the Board found that OMR flows more negative than -1,250 cfs to -5,000 cfs during December-June of all water years would not be protective of Delta Smelt (SWRCB 2017 at 3-76). The 2019 federal ESA Biological Opinion for Delta Smelt (USFWS 2019 BiOp) and 2020 CESA Incidental Take Permit for SWP operations (ITP) allow for OMR flows more negative than what the Board has recommended for these moths (e.g., via the “storm flex” provision; ITP §8.7; at 92). There is no scientific evidence indicating that these more negative OMR flows are protective of	

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		Delta Smelt. The Board should specify that OMR flows must be no more negative than -1,500 cfs during Mar-Jun of Dry and Critically Dry water years, as it did previously (SWRCB 2010 at 76-78). Despite their near absence in fish sampling programs since 2017, Delta Smelt are still detected in “salvage” facilities of the CVP and SWP water export facilities in the south Delta. Estimated “salvage” was over 50 fish in 2023 (See Attachment: Smelt Salvage Table 2017 thru 2023 [See ATT 14]). Because the number of fish believed to die in the infrastructure leading to the “salvage” facility screens is far greater than the number detected in salvage (Castillo et al. 2012), the true number of Delta Smelt killed as a result of entrainment in 2023 may have been in the hundreds or thousands. Much of the Delta Smelt “salvaged” in 2023 were detected when OMR flows were more negative than -5,000 cfs. This finding, combined with evidence that OMR restrictions of the 2008/2009 BiOps played a critical role in limiting entrainment-related mortality (though not continued decline) of Delta Smelt (Smith et al. 2021) demonstrates the urgent need for increased restrictions on negative OMR flows caused by high levels of water export.	
308	32	[Exhibit 1: Graph titled Figure 1: Delta Smelt abundance through time measured by CDFW's Fall Midwater Trawl]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
308	33A	The Board fails to analyze the effect of alternative flow regimes on water temperatures in the estuarine habitat of Delta Smelt. A mounting body of evidence shows that the volume of water flowing into, through, and out of the Delta affect temperatures in ways that would be expected to benefit Delta Smelt and other native fish species, particularly in the spring and early summer (Vroom et al. 2017 [See ATT 18; Bashevkin and Mahardja 2022 [See ATT 19]; see also Nobriga et al. 2021 [See ATT 20]; Michel et al. 2023 [See ATT 21]. This failure to analyze potential temperature differences among alternatives that differ primarily, and to a great degree, in the volume of flow obscures the likely benefits of higher flow alternatives. The Board should analyze the potential effect of higher flow volumes in improving the	Please see pages 7.6.2-90 through 7.6.2-92 of the 2023 draft Staff Report for an analysis of the possible effects of the flow scenarios on water temperatures in the Delta with implications for fishes including Delta smelt. The analysis was qualitative because there is no readily available methodology for translating water temperature effects in the Sacramento/Delta tributaries through the Delta. As described in Section 7.6.2, Aquatic Biological Resources, overall, it is important to note that water temperature-related effects on aquatic species associated with changes in Delta inflow are expected to be very minor because water from upstream reservoirs approaches equilibrium with atmospheric conditions by the time it reaches the Delta.

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		quality or quantity of Delta Smelt habitat during spring and summer.	
308	33	1. Species status The Draft Staff Report (Chapter 3; see also SWRCB 2017) provides ample evidence that fish and wildlife beneficial uses and water quality are not protected adequately by current Bay-Delta Plan objectives. The Draft Staff Report also demonstrates that substantial increases in river flow into and through the Delta to San Francisco Bay will be necessary to provide reasonable protection of fish and wildlife beneficial uses. The Board acknowledges, “[f]low is commonly regarded as a key driver or “master variable” governing the environmental processes in riverine and estuarine systems such as the Bay-Delta and its watershed” (SWRCB 2017 at 3-2). However, Chapter 3 should be updated to reflect the current status of key fish and wildlife species and the abundant new research concerning critical relationships between flow and viability attributes that has emerged with respect to some of the target species evaluated previously by the Board. Below, SF Baykeeper et al. provides a brief description, status update, and review of relevant literature (with an emphasis on literature published since SWRCB 2017) connecting freshwater flow to metrics of viability and fisheries of several target species and Bay- Delta estuarine habitat. We then review how the proposed project and proposed Voluntary Agreements can be expected to affect fish viability and fish and wildlife beneficial uses. (4) Effect of “other stressors” In addition to flow, declining density of prey items, loss of shallow water environments that putatively serve as habitat, predation, and increasing water temperatures have been suggested as drivers of the Delta Smelt’s decline (SWRCB 2017). Given the extraordinarily low numbers of Delta Smelt over the past several decades (and particularly since 2017) relative to its prior abundance, it is highly unlikely that they are currently limited by the volume of shallow water environments available in their range (Kimmerer and Rose 2018). However, recent	The 2023 draft Staff Report discusses food limitations on Delta smelt in Section 3.8.2, Life History, and includes information on Delta smelt temperature tolerances in Section 4.6, Climate Change. The attachments and citations provided by the commenter include literature discussing the availability and benefits of shallow water habitats for Delta smelt, including limitations on food availability, as well as Delta outflow impacts on Delta smelt prey items and temperature impacts on Delta smelt. The 2023 draft Staff Report acknowledges the potential for increased predation in restored shallow-water floodplain habitats in Section 7.21.2.4, Biological Resources. Associated mitigation for this issue can be found under Mitigation Measure 7.21 MM-BIO-a-f: C7. Discussion on the effects of temperature on Delta smelt can be found in Section 3.8, Delta Smelt, with citations indicating that water temperature may impact Delta smelt habitat availability and may contribute to their overall decline. Staff Report Chapter 4, Other Aquatic Ecosystem Stressors, has been revised to include additional discussion about the uncertainty in the food web benefits of wetland and floodplain restoration.

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		studies provide some evidence that Delta Smelt recruitment is food limited (Kimmerer and Rose 2018; Polanski et al. 2021 [See ATT 12]), particularly with respect to large food items including shrimp and larval fish, and it has been suggested that restored shallow water habitats may increase supplies of Delta Smelt prey items. Hammock et al. (2019a) found that, although Delta Smelt foraging was more successful in the vicinity of shallow water marshes, this was not because food was more abundant in the vicinity of the marshes – these researchers hypothesized that Delta Smelt foraging behavior made them more effective predators in the vicinity of tidal marshes. Thus, the trophic benefits for Delta Smelt of shallow water environments like tidal wetlands are expected to be highly localized (and may be outweighed by negative effects of the same environments, such as the habitat they provide for predators of Delta Smelt). Indeed, with respect to the proposition that restored tidal marshes can supplement food supplies for fish in pelagic waters, Yelton et al. (2022 at 1743 [See ATT 15]) conclude: “...there is little evidence of persistent subsidies of zooplankton from tidal wetlands to open water...” (see also Herbold et al. 2014 [See ATT 16] and Kimmerer and Rose 2018). Hartmann et al. (2022) [See ATT 17] similarly found lower abundances of zooplankton in shallow water, in contradiction to the conceptual model that restoring shallow tidal wetlands will increase food supplies for imperiled fishes. On the other hand, the density and distribution (i.e., the availability) of key prey items for Delta Smelt respond strongly and positively to increased freshwater Delta outflow during the winter-spring (Kimmerer 2002; Hennessy and Burris 2017a,b [See ATT 9 and ATT 10, respectively) and summer-fall (Hennessy and Burris 2017a,b; Kimmerer et al. 2018; Hassrick et al. 2023). High water temperatures are likely to reduce Delta Smelt productivity via reductions in recruitment and survival (Polanski et al. 2021). By extension, it is likely that high temperatures limit the geographic range of Delta Smelt in the Delta during late spring and early summer or that they will do so in a future with warmer climates.	
308	34	b) Longfin Smelt Once among the most abundant fishes in the Bay-Delta, the San	Please see Common Response 3.1, Fish Protection, for a discussion on the flow benefit analyses and process for updates to literature in Chapters 3 and 4.

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		Francisco Bay estuary Longfin Smelt population remains far below levels consistent with viability. The population has been CESA-listed since 2009. The federal government proposed to list the population as “endangered” under the ESA and has found that existing regulatory mechanisms (including federal and state requirements under ESA and CESA, respectively) are inadequate to protect future declines and extirpation. The Board has identified the January-June Delta outflow threshold above which the Longfin Smelt population is more likely to grow than decline (i.e., positive productivity). Population growth must occur more frequently than the status quo in order to restore and maintain the viability of this species. Because the flow-productivity relationship is continuous (log-log linear), the Board should also emphasize the importance of shifting the entire flow range to increase flows in most years (i.e., increasing the frequency of flows above the threshold for population growth and increasing the magnitude of minimum flows that occur below the threshold), as it did in its Flow Criteria Report (SWRCB 2010 Table 8 at 69). In addition, the Board must clarify that its current range of OMR flows represents different minima to be applied in different year types. In other words, -1,250 cfs is not a maximum protective OMR; rather, it is a minimum to be applied under certain specific conditions. The Board should also explain why the Draft Staff Report’s OMR criteria for protecting Longfin Smelt (found in SWRCB 2017) differ from those of its earlier flow criteria report (SWRCB 2010; Table 8 at 69) and why the former are deemed to be reasonably protective of Longfin Smelt.	Common Response 1.1, General Comments, discusses the differences between recommendations in the Staff Report and the 2010 Delta Flow Criteria Report. The proposed Old and Middle River Flow Objective was not developed to prescribe a maximum protective OMR flow of -1,250 cfs. As discussed in Chapter 5, Proposed Changes to the Bay-Delta Plan for the Sacramento/Delta, OMR provisions consistent with the 2019 BiOps and 2020 ITP were proposed to be added to the Bay-Delta Plan. The proposed language in Chapter 5 indicates that the OMR flow limits were proposed as a minimum limit to protect estuarine species. “For SWP and CVP exports greater than 1,500 cfs, Old and Middle River flows shall be no more negative than between 1,250 and -5000 cfs at times when sensitive native fish species may be impacted...” (page 5-40). Alternative 4c, described in Section 7.2, Description of Alternatives, proposed an Alternative for consideration by the Board that would have required more stringent export constraints. Please see Section 13.3.2.4, Interior Delta Flows, for a discussion of changes to Interior Delta Flows provisions in the revised proposed Plan amendments.
308	35	(1) Description Longfin Smelt are small forage fish, with populations patchily distributed in estuaries along the Pacific Coast of North America as far north as Prince William Sound. The San Francisco Bay estuary population is the southernmost and one of the largest populations in the species range; the US Fish and Wildlife Service has determined that it is a distinct population segment (DPS) for endangered species act-listing purposes. Gene flow between the Bay-Delta Longfin Smelt DPS and other populations is limited and largely unidirectional, indicating migration from San Francisco Bay to more northerly populations, but not vice-versa (Sağlam et al. 2021). These fish usually spawn and die after two	See Common Response 3.1, Fish Protection, for process of updates to literature in Chapters 3 and 4, flow-benefit analyses, and frequency of flows. Please also see Common Response 1.2, Water Quality Control Planning Process, on reasonable protection of fish and wildlife beneficial uses.

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		years. As with its distant cousin, the Delta Smelt, the Longfin Smelt's semelparous life history necessitates that spawning and rearing conditions are reliably good. Their persistence in the San Francisco Bay estuary for thousands of generations demonstrates that these fish found adequate food and habitat in most years despite highly variable hydrologic conditions. (2) Status Viability Longfin Smelt have experienced a dramatic population decline since community fish sampling programs began to index their abundance, in the late 1960's (Figure 2) [See Exhibit 2]. The US Fish and Wildlife Service recently observed that Bay-Delta Longfin Smelt DPS "...has plausibly been declining for over 50 years and that decline is presently at circa 3-4 orders of magnitude" (USFWS 2022a at 37 [See ATT 22]). The population was listed under the California endangered species act in 2009 (CDFW 2009) and as "warranted but precluded" by the USFWS since 2012. In 2022, the USFWS proposed to list the population as "endangered" (Federal Register Vol. 87, No. 194 (Friday, October 7, 2022) at pp. 60957-60974) [See ATT 23]; however, this listing has not yet been finalized. The Bay-Delta Longfin Smelt DPS is not currently viable. In their evaluation of extinction risk for this population, USFWS (2022 at 87) found: "the probability of quasi-extinction for the Bay-Delta DPS exceeds 20% for all survey time series over the next five years and reaches 50% by 2040. Applying the same assumptions over a longer time horizon (i.e., 2050-2065), the suite of surveys predicts that the probability of extinction for the Bay-Delta DPS under current conditions is roughly 50-80%." Furthermore, in their proposed rule to list this DPS as endangered, USFWS considered numerous efforts to conserve and regulate biological resources of the San Francisco Bay estuary, including through multiagency collaborations, endangered species listings and incidental take permits under both ESA and CESA, and the Board's current water quality standards. Their conclusion was that "... despite efforts such as those identified above, the current condition of the estuary and continued threats facing the estuary	

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		and Bay-Delta longfin smelt, such as reduced freshwater inflow, severe declines in population size, and disruptions to the DPS's food resources have not been ameliorated." (Federal Register Vol. 87, No. 194 (Friday, October 7, 2022) at 60970). Fishery CDFW (2001 at 476) reports "Longfin smelt ... were once harvested along with delta smelt in the Sacramento-San Joaquin estuary for Chinese markets in San Francisco. There is currently no longfin smelt fishery in California...". Given its current extremely low abundance and persistent decline in productivity (Nobriga and Rosenfield 2016), the Longfin Smelt population clearly cannot support the additional mortality associated with a fishery. (3) Population response to flow The strong positive relationship between Longfin Smelt abundance and Delta outflow during the spring and summer is extremely well-documented and durable through time (CDFW 2010; Nobriga and Rosenfield 2016; SWRCB 2010, 2017; for an update, see Figure 3 [See Exhibit 3]). Most recently, in proposing to list Longfin Smelt as endangered, the US Fish and Wildlife Service declared: We consider reduced and altered freshwater flows resulting from human activities and impacts associated from current climate change conditions (increased magnitude and duration of drought and associated increased temperatures) as the main threat facing the Bay-Delta longfin smelt due to the importance of freshwater flows to maintaining the life-history functions and species needs of the DPS. However, because the Bay-Delta longfin smelt is an aquatic species and the needs of the species are closely tied to freshwater input into the estuary, the impact of many of the other threats identified above are influenced by the amount of freshwater inflow into the system (i.e., reduced freshwater inflows reduce food availability, increase water temperatures, and increase entrainment potential). Federal Register Vol. 87, No. 194 (Friday, October 7, 2022) at	

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		60963. The Board identifies a flow threshold associated with Longfin Smelt protection (42,800 cfs average Delta Outflow from January-June; SWRCB 2017 3-60). However, the Board fails to specify how frequently such flows must be achieved to restore viability and the Longfin Smelt fishery. Because the flow-productivity and flow-abundance relationships are continuous (log-log linear), it is also critical to the restoration and maintenance of Longfin Smelt population viability that the entire distribution of Delta outflows shift towards higher Delta outflows for any given natural hydrological condition. The Board represented such a shift towards increased flows in all water year types in its Flow Criteria Report (SWRCB 2010 Table 8 at 69) by providing protective flow ranges within water year hydrological types. Because water year types recur with a known frequency, that presentation identified both flow ranges and the frequency with which different flow levels would recur. The Board should revise the Draft Staff Report to identify the minimum flows and the frequency of flow in certain ranges that would be required to reasonably protect beneficial uses associated with the Bay-Delta Longfin Smelt population.	
308	36	[Exhibit 2: Graph titled Figure 2: Abundance of Bay-Delta Longfin Smelt through time as measured by CDFW's Fall Midwater Trawl sampling program]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
308	37	[Exhibit 3: Two graphs titled Figure 3: Relationship between metrics of Longfin Smelt viability and winter-spring Delta outflow]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
308	38	The magnitude of flow reversal in the south Delta caused by CVP and SWP south Delta water exports is strongly correlated with entrainment of pelagic fishes (USFWS 2008; Grimaldo et al. 2009; CDWR 2019a [See ATT 24]) and has been implicated as an important factor in the demise of other endangered species in the SFE, including Delta Smelt (Kimmerer 2008, 2011; Smith et al. 2021). Longfin Smelt behavior and distribution differ from those of Delta Smelt such that the region affected by export-related reverse flows typically hosts a small proportion of the Bay-Delta Longfin Smelt population. As a result, Longfin Smelt	See Common Response 3.1, Fish Protection, on use of best available science, for process of updates to literature in Chapters 3 and 4, the flow-benefit analyses, and entrainment.

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		are expected to be less susceptible to population level impacts of entertainment mortality than Delta Smelt, in most years. However, entrainment of Longfin Smelt adults and juveniles has been high episodically, particularly in years when spring Delta outflows are low or the magnitude of reverse flows is relatively high (Grimaldo et al. 2009; Rosenfield 2010 [See ATT 25]; see also Attachment: Smelt Salvage Table 2017 thru 2023 [See ATT 14]). This pattern probably reflects the effect of Delta outflow on Longfin Smelt distribution – as net Delta outflow decreases, the low salinity zone and Longfin Smelt spawning and early rearing also shift to the east, towards the pumps (Dege and Brown 2004; CDFW 2009a; Rosenfield 2010). Elevated direct mortality via entrainment during drier years likely depresses Longfin Smelt productivity in a way that re-enforces the overall flow-abundance relationship (CDFW 2009a; Rosenfield 2010). Given the timing of maximum detection of both adult and juvenile Longfin Smelt at the export facilities, it is highly likely that larval entrainment is elevated during dry years too (Rosenfield 2010). Kimmerer and Gross (2022) downplay the likely effect of Delta water exports on long-term abundance trends; however, their modeling results likely underestimate the problem in several respects. For example, by assuming that larval Longfin Smelt were only susceptible to entrainment for approximately 7-13 days post hatching, Kimmerer and Gross (2022) understated the period during which water exports may result in direct mortality of larval Longfin Smelt. Otolith data reveal that larval many Longfin Smelt remain in low salinity habitats, which are often within the area affected by water exports, for 100-150 days (Lewis et al. 2019 at 9 and at 48-83 of the PDF [See ATT 26]). Also, Kimmerer and Gross estimated direct entrainment only during January-March, but larvae remain in the upper estuary through at least May (SWRCB 2010 Table 2 at 45, citing CDFW 2010) and likely into June (Rosenfield 2010; Lewis et al. 2019 at 48-83 of the PDF). The salinity field moves east as the spring progresses because outflows tend to decline during these months, increasing X2 and likely drawing rearing larvae closer to the export facilities. Furthermore, Kimmerer and Gross (2022) modelled flow and operational conditions based on rules established in the 2008/	

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		2009 BiOps, but those rules have now changed in ways that California state agencies expect to increase entrainment-related mortality of Longfin Smelt. Of particular concern, recent revisions to the operation of the SWP (CDWR 2019a) will increase water exports in every year, including in every April and every May, relative to conditions analyzed by Kimmerer and Gross (CDWR 2019a at 4-15 thru 4-16; Figure 4.4-24 at 4-147; CDWR 2019b Table 3.1 at 284 of the PDF [See ATT 27]; Draft Staff Report Table 9.3.2 at 9-15). As a result, new operational rules for the SWP export facilities are expected to result in very large increases in juvenile Longfin Smelt entrainment (56% to 576%), in most year types (CDFW 2019a Table 4.4-13 at 4-185; Figure 4 [See Exhibit 4]). And, modeling of the new SWP operating rules likely overestimates any reduction in salvage during Critically Dry years, as it does not account for frequent waivers of Delta outflow requirements granted by the Board via Temporary Urgency Change Orders (TUCOs). Similarly, under SWP operations permitted by the new CESA ITP, CDWR expects large increases in entrainment of larval Longfin Smelt (based on the results of particle tracking studies) in January-March of years with Below Normal, Dry, and Critically Dry hydrology (CDWR 2019a Table 4.4-12a at 4-183). Inexplicably, potential entrainment of larval Longfin Smelt during April-June was not studied during the state's analysis of SWP operational impacts; however, particle tracking studies in the EIR suggest huge increases in entrainment of larval Longfin Smelt are likely during these months (CDWR 2019a Table 4.4-8a at 4-173). Moreover, Kimmerer and Gross (2022) ignore entirely the indirect effects of Delta exports, via their effect on Delta outflow, on larval Longfin smelt success. In drier years, Delta exports during April-June range between 5% and 13% of unimpaired Delta outflow (G. Reis, The Bay Institute, pers. Comm). Evaluating the effect of direct entrainment mortality on Longfin Smelt population dynamics will require improved understanding of larval Longfin Smelt distribution and behavior, mapping of potential spawning habitats, and development of a life cycle population model. The indirect effect of water exports on Longfin Smelt larval success, via reduction of outflow, must not be overlooked.	

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		Kimmerer and Gross's (2022) results are consistent with the expectation that Longfin Smelt entrainment increases as Delta outflow decreases, showing a >5-fold increase in maximum estimated daily loss of Longfin Smelt larvae as X2 moves ~15km eastward (i.e., as Delta outflow decreases). Thus, Kimmerer and Gross (2022) lends support to the Board's recommendation that negative OMR flows be >-1,500 cfs (or >0, when the FMWT population abundance index is very low) in Dry and Critically Dry years (SWRCB 2010 Table 8 at 69).	
308	39	[Exhibit 4: Graph titled Figure 4: Projected change in salvage of Longfin Smelt during two months (April and May) of water export operations of the CVP and SWP under the state's CESA Incidental Take Permit as compared to previous endangered species act constraints on water exports]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
308	40	(4) Effect of "other stressors" The relationship between net Delta outflow and Longfin Smelt juvenile recruitment has not changed through time (Nobriga and Rosenfield 2016), suggesting that any change in the relationship between flow and larval abundance or survival did not affect abundance at the Longfin Smelt juvenile life stage. However, there is also an unexplained time trend in survival of juvenile Longfin Smelt to subsequent life stages (Nobriga and Rosenfield 2016). Longfin Smelt juveniles are found predominantly in deep, open water habitats, downstream of the Delta (Moyle 2002; Rosenfield and Baxter 2007; Rosenfield 2010 [See ATT 25]; Lewis et al. 2019 at 48-83 of the PDF [See ATT 26]). Because the transition from juvenile to adult life stages occurs in pelagic waters downstream of the upper estuary, it is highly likely that the force driving declining survival also occurs far downstream of the Delta. Evidence that Longfin Smelt juvenile survival is limited by a declining food web is scant. Kimmerer (2002) suggested that a step-decline in Longfin Smelt abundance may have been due to grazing of primary productivity by the invasive Amur Clam (<i>Corbula amurensis</i>). This suggestion was based only on the observation that Longfin Smelt abundance indices were lower for any given flow after the clam invaded than before the invasion – no other years were investigated as markers of the	Information on longfin smelt abundance and flow can be found in the 2023 draft Staff Report in Section 3.5.4, Flow Effects on Longfin Smelt. Staff Report Chapter 4, Other Aquatic Ecosystem Stressors, has been revised to include additional discussion about the uncertainty in the food web benefits of wetland and floodplain restoration. Please see Common Response 3.1, Fish Protection, for a discussion of habitat and flow benefits.

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		Longfin Smelt decline and neither was the possibility of a continuous decline in juvenile survival, such as that documented by Nobriga and Rosenfield (2016). We are aware of no subsequent study showing a significant positive relationship between Longfin Smelt population size and measures of food availability (Thomson et al. 2010). In fact, MacNally et al. (2010) found a weak, but significant, negative association between Longfin Smelt abundance and their calanoid copepod prey, as compared to a very strong association with spring X2. There has been increasing interest in the value of restoring shallow sub-tidal environments for Longfin Smelt. However, the value of restored shallow subtidal habitats remains unknown. Similarly, there is no evidence that tidal marsh restoration activities in south San Francisco Bay generate a net positive effect for Longfin Smelt Lewis et al. (2019 at 7 of the PDF). Lewis et al (2020 at 3 [See ATT 28]) describe their findings as “...previously undescribed aggregations of Longfin Smelt that were attempting to spawn in restored and underexplored tidal wetlands of South San Francisco Bay.” (emphasis added). In fact, Longfin Smelt occupancy of and recruitment in the restored shallow marsh habitats in southernmost San Francisco Bay appears to be dependent on seasonal hydrology across the region. Lewis et al (2019 at 44-45 of the PDF) observed successful recruitment of Longfin Smelt larvae in these marshes only in years of locally high freshwater flow into the Bay. During other years, adult Longfin Smelt returning to and spawning in the vicinity of the South Bay Salt Ponds may have represented an ecological sink. And, regarding their detections of substantial numbers of Longfin Smelt west of Suisun Bay, which occurred primarily during the wet years 2017 and 2019 (and, for restored South Bay salt ponds, only during those two years), they state: “... it is valuable to consider whether, with high Delta outflows, it is feasible and probable that larval and juvenile Longfin Smelt found in high numbers in San Pablo Bay, and even Lower South San Francisco Bay, could have been transported from Delta and Suisun Bay spawning sites by currents, tides, and winds” (Lewis et al. 2019 at 7 of the PDF). USFWS (2022 at 56 [See ATT 22]) summarized the empirical support for loss of shallow water environments as a driver of Longfin Smelt decline this way:	

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		The loss of tidal marsh habitats may have hampered [Longfin Smelt] productivity, but to date, there are no indications that restoration has been sufficient to stem the decline. Therefore, we cannot conclude whether or not the species has lost resilience due to landscape changes that occurred in the 19th and 20th centuries.	
308	41	High water temperatures may also impact Longfin Smelt survival from juvenile to adult life stages. During late spring through the summer, temperatures in large portions of their freshwater habitat may exceed thermal limits of post-larval Longfin Smelt (Jeffries et al. 2016) [See ATT 29]. Maunder et al. (2015) [See ATT 30] found some indication that average April-June temperature was a significant covariate of Longfin Smelt population dynamics; however, Nobriga and Rosenfield (2016) did not detect an effect of temperature (modeled as a principal component of February-May temperatures) on Longfin Smelt recruitment success. Although it has long been assumed that Central Valley river temperatures have no effect on water temperature in the Delta, recent modeling and analyses of field data reveals that increased river flows into the Delta result in cooler temperatures in large portions of the upper estuary from late winter into the summer (Vroom et al. 2017 [See ATT 18]; Bashevkin and Mahardja 2022 [See ATT 19]). This effect is believed to be related to reduced residence time and increased salinity stratification associated with higher Delta inflow (Vroom et al. 2017). The Board fails to analyze the effect of alternative flow regimes on temperatures in the estuarine habitat of Longfin Smelt. This failure to analyze potential temperature differences among alternatives that differ primarily and to a great degree in the volume of flow obscures the likely benefits of higher flow alternatives. The Board should analyze the potential effect of higher flow volumes in improving the quality or quantity of Longfin Smelt habitat during spring and early summer.	Please see response to comment 308-33A, regarding Delta water temperature. In addition, while Chapter 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations, does not evaluate temperature benefits for longfin smelt, it does include a flow-benefit analysis for longfin smelt, which indirectly includes the effect of flow-related temperature effects on longfin smelt to the extent they affect the abundance indices underlying the flow-abundance relationships. Please see also Common Response 3.1, Fish Protection, regarding use of best available science and the flow-benefit analyses for longfin smelt.
308	42	C) Chinook Salmon Each Sacramento Valley Chinook Salmon population once numbered in the tens or hundreds of thousands of adults. (Yoshiyama et al. 1998 [See ATT 31]) The massive decline and extremely low abundance of all Chinook Salmon life-stages relative to their historic abundance (CDFW 2010; 2015 [See ATT	See Common Response 3.1, Fish Protection, on use of best available science, process for updates to literature in Chapters 3 and 4, and flow-benefit analyses. Section 3.4, Chinook Salmon (<i>Oncorhynchus tshawytscha</i>) and Central Valley Steelhead (<i>Oncorhynchus mykiss</i>), of the Staff Report discusses the population trajectory and viability of

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		4]; SWRCB 2010, 2017; Moyle et al. 2017 [See ATT 2]; SWFSC 2023 [See ATT 6]) represents significant impacts to commercial, recreational, subsistence, and tribal fishing and the fish assemblage in the Sacramento River, the Delta, and San Francisco Bay. In recent years, the viability and condition of Central Valley Chinook Salmon runs has continued to decline due to low flows and high river temperatures leading to low egg and juvenile survival. The fall-run Chinook Salmon fishery was closed in 2023, for only the third time in the State's history, and it will likely be closed again in 2024. A wealth of new published research documents strong flow-survival relationships for juvenile life stages of different Chinook Salmon runs in the Sacramento Valley. Several of these studies indicate that the threshold flow for protection of juvenile Chinook Salmon is much greater than that previously identified by the Board. To be consistent with the best available scientific studies, the Board must update the flow thresholds (including flows on mainstem rivers, in-Delta flows and OMR flows) determined to be protective of migrating Chinook Salmon juveniles.	Central Valley Chinook Salmon. Updated flow thresholds for the protection of Chinook salmon have been identified, and the frequency of achieving these flow thresholds under the flow scenarios has been evaluated in Chapters 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations, and Chapter 13, Revised Proposed Plan Amendments, of the Staff Report.
308	43	In addition, Central Valley Chinook Salmon eggs, juveniles, and spawning adults are exposed to lethally high water temperatures because dams block access to cold water habitats at higher elevation and because reservoir operations frequently release hot water into salmon spawning and rearing habitats. Temperature-related mortality was probably exceedingly rare historically for these fish. Major advances in the understanding of the relationship between water temperatures, flow, and Chinook Salmon mortality have occurred since 2017. The Board must update the temperature thresholds deemed to be protective of Chinook Salmon eggs and apply these criteria consistently to all Central Valley Chinook Salmon runs (Attachment: PFMC 2022 letter on Central Valley temperature management [See ATT 32]). In order to restore and maintain viability of Chinook Salmon runs, temperature dependent egg mortality should be close to zero in almost all years. Flows and river temperatures that are consistent with the Chinook Salmon species-wide average egg-smolt survival of ~10% (Quinn 2015) are necessary to restore and maintain Chinook Salmon fisheries.	See Common Response 3.1, Fish Protection, regarding use of best available science, the flow benefit analysis, and water temperature effects on salmonid fish including a discussion of USEPA guidance. For more information about the suites of water temperature index values used in the impact analysis, please refer to the fish assessment methods section in Appendix H1b, Water Temperature Modeling and Fish Assessment for the Sacramento, Feather, American, and Yuba Rivers. These are the same suites of water temperature index values used for the impact analysis for the 2023 draft Staff Report presented in Appendix A6, Water Temperature Modeling and Fish Assessment for the Sacramento, Feather, and American Rivers, except they also include index values for the Yuba River, which was modeled for the 2025 partially recirculated draft Staff Report.
308	44	(1) Description	See Common Response 3.1, Fish Protection, on use of best available science, process for updates to literature in Chapters 3

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		The San Francisco Bay estuary watershed is home to four unique runs of Chinook Salmon – winter, spring, fall, and late-fall. The runs are named according to the season in which adults begin to return to freshwater from the ocean in preparation for spawning. All four runs currently spawn in the Sacramento River Valley. Both winter-run Chinook Salmon and Central Valley spring-run Chinook Salmon are listed under CESA and ESA. The fall-run and late-fall run are listed as a species of special concern by California Department of Fish and Wildlife (CDFW 2015 [See ATT 4]) and also form the backbone of the California ocean fishery for Chinook Salmon. (2) Status Viability The viability of Central Valley Chinook Salmon runs is extremely precarious (Lindley et al. 2007; NMFS 2014); winter-run Chinook Salmon and Central Valley spring-run Chinook Salmon are now at high risk of extinction in the near-term (SWFSC 2023 [See ATT 6]). Both populations exhibit very low abundance, low productivity, and constricted geographic ranges; high-genetic influence from hatchery-reared fish and degraded life-history diversity also degrade the viability of these species. Fall-run Chinook Salmon have declined precipitously and their productivity and population genetics are increasingly influenced by hatchery production (Johnson et al. 2012; Willmes et al. 2017 [See ATT 33]; Moyle et al. 2017 [See ATT 2]). The decline in each of these runs is related to degradation of their freshwater environment, including: (1) loss of habitat behind dams and levees; (2) declining suitability of spawning and incubation habitat downstream of dams due to elevated water temperatures that result from impoundment of water and reservoir operations; (3) decreased suitability of juvenile migration and rearing habitat due to reduced flow levels and reduced variability in river flow, which are attributable in large part to operations of Central Valley reservoirs; and (4) altered flow patterns in the Delta – resulting from the combined operations of reservoir operations and the CVP and SWP export facilities in the south Delta – which reduce migratory survival	and 4, and flow-benefit analyses. Section 3.4, Chinook Salmon (<i>Oncorhynchus tshawytscha</i>) and Central Valley Steelhead (<i>Oncorhynchus mykiss</i>), of the Staff Report discusses the population trajectory and viability of Central Valley Chinook salmon, including effects of water temperature and flows. See Common Response 1.3, Revised Proposed Plan Amendments, for a discussion of cold water habitat and Sacramento/Delta tributary flows.

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		including through direct mortality (NMFS 2009; CDFW 2015; Moyle et al. 2017; SWFSC 2023 [See ATT 6]). The decline in winter-run Chinook Salmon viability has continued despite existing water quality requirements and CESA/ESA provisions intended to maintain this unique population. In NMFS's most recent viability assessment of endangered salmonids, the agency concluded: Until additional [winter-run Chinook Salmon] populations are established, the ESU will remain in the "High" biological extinction risk category. The overall viability of the [winter-run Chinook Salmon] ESU has continued to decline since the 2015 viability assessment (Johnson and Lindley 2016), with the single spawning population on the mainstem Sacramento River no longer at a low/moderate risk of extinction (Table 5.4). SWFSC 2023 at 141. Moyle et al. (2017) considers winter-run Chinook Salmon and spring-run Chinook Salmon to be of "critical concern" which means they are at "[h]igh risk of extinction in the wild; abundance critically low or declining; current threats projected to push species to extinction in the wild in 10-15 generations." (Moyle et al. 2017 at 10) Moreover, the risk of extirpation of spring-run and winter-run Chinook Salmon has increased dramatically since publication of Moyle's report or the Board's Final Scientific Basis Report (SWRCB 2017). For example, during 2021, winter-run Chinook Salmon experienced extraordinarily poor spawning and incubation conditions, largely as a result of high river temperatures throughout their spawning range during most of the incubation period for their eggs. These river temperatures were largely under control of the US Bureau of Reclamation and resulted from failure to store adequate water behind Shasta Dam to preserve the reservoir's coldwater pool. NMFS's hindcast mean estimate of temperature-dependent mortality of winter-run Chinook Salmon eggs in 2021 was 75% (Attachment: SWFSC 2021a Water Year 2021 Winter-Run Chinook Temperature-Dependent Mortality Estimate [See ATT 5]). In 2022, winter-run	

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		Chinook Salmon eggs suffered ~17% temperature dependent egg mortality and overall egg-fry survival was estimated to be only 2.17% (Attachment: NMFS Brood Year 2022 JPE Letter. Available at: https://www.fisheries.noaa.gov/s3/2023-01/jpe-letter-2022.pdf [See ATT 34]) This high level of egg and fry mortality resulted in the smallest outmigrant class of surviving juveniles on record and NMFS acknowledges that, “[t]he low production and survival of [winter-run Chinook Salmon] juveniles will likely lead to meager returns of adults in 2025 following their typical 3 years in the ocean” (Attachment: NMFS 2022 Survival of winter-run Chinook Salmon. Available at: https://www.fisheries.noaa.gov/west-coast/climate/survival-endangered-california-winter-runchinook-salmon-2022 [See ATT 35]). Similarly, spring-run Chinook Salmon have been devastated in recent years by high river temperatures that killed adults and eggs and low flows that are associated with low survival of migrating juvenile spring-run Chinook Salmon. The remaining populations of Sacramento Valley spring-run Chinook Salmon are declining more than 10% each year and face high risk of extinction, according to NOAA Fisheries’ Southwest Fisheries Science Center (SWFSC 2023) [See ATT 6]. Federal and state fisheries management agencies are scrambling to save spring-run Chinook Salmon from extinction after a “cohort collapse” resulted in the fewest returning adults on record. Although final numbers are not available for 2023, CDFW reports: “Mill and Deer Creek — two of the three streams that hold the remaining independent spring-run populations — each saw fewer than 25 returning adults this year. Returns to Butte Creek — the third independent population — were the lowest since 1991 and adults further suffered impacts of a canal failure in the watershed” and NMFS declared “We are running out of options. We want this species to thrive in the wild, but right now we are worried about losing them” (Attachment: CDFW News 2023. Available at: https://wildlife.ca.gov/News/Archive/state-and-federal-fishagencies-take-urgent-actions-to-save-spring-run-chinook-salmon#gsc.tab=0) [See ATT 36]. Fall-run Chinook Salmon and late-fall run Chinook Salmon are considered by CDFW to be species of special management	

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		concern (CDFW 2015). Despite its status as the largest run in the Central Valley, Moyle et al. (2017) consider fall-run to be of “high concern” (meaning its trajectory is towards extinction in 15-20 generations if no remedial actions are taken) because the spawning population consists mainly of hatchery-origin fish. Moyle et al. (2017) consider Central Valley late-fall run Chinook Salmon to be at even greater risk of extinction than fall-run Chinook Salmon. The historic and more recent catastrophic decline of winter-run and spring-run Chinook Salmon and the near replacement of naturally spawned fall-run Chinook Salmon by hatchery fish (Johnson et al. 2012; Willmes et al. 2017; Moyle et al. 2017) clearly demonstrate the need for the Board to adopt and implement much stronger protections than currently exist for coldwater habitat below Central Valley dams and river flows in Sacramento Valley rivers and through the Delta– cold water and adequate river flows are both essential to the persistence and eventual recovery of these imperiled species (NMFS 2014; SWRCB 2017; SWFSC 2023).	
308	45	Fishery Fall-run Chinook Salmon have also been devastated by high river temperatures and poor flow conditions for eggs and rearing and migrating juveniles (Friedman et al. 2019) [See ATT 37]. In fact, over the 2002-2020 time period, average egg-to-fry survival of fall-run Chinook salmon in the Sacramento River has been significantly worse (13.4%) than average egg-to-fry survival of winter-run Chinook salmon (23.4%; see Attachment: USFWS 2022b Red Bluff Diversion Dam rotary trap abundance estimates) [See ATT 38, ATT 83, and ATT 95]. As a result of extremely low egg-to-fry survival (8.1% [Footnote 4: Average egg-to-fry survival for Chinook Salmon across their range is ~38% (Quinn 2005), thus both runs are regularly experiencing egg-to-fry survival rates that are not consistent with population viability.]) in brood year 2020 (USFWS 2022b [See ATT 38, ATT 83 and ATT 95]) and persistent decline in freshwater conditions (Lindley et al. 2009), the fishery was closed in 2023, for only the third time in state history; poor adult returns in 2023, despite a complete shutdown of the ocean fishery, suggest it is extremely	See Common Response 3.1, Fish Protection, for process of updates to literature in Chapters 3 and 4. Section 3.4, Chinook Salmon (<i>Oncorhynchus tshawytscha</i>) and Central Valley Steelhead (<i>Oncorhynchus mykiss</i>), of the Staff Report discusses the population trajectory of fall-run Chinook salmon and the effects of hatchery influence on viability. Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.

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		likely that the California Chinook Salmon fishery will be closed in 2024 as well. It is important to note that these disastrous returns occurred despite the closure of commercial and recreational fishing in 2023. When the California fishery for Chinook Salmon is open, it is increasingly supported by fish that originate in salmon hatcheries, rather than naturally produced (wild-spawned) fish (Johnson et al. 2012; Willmes et al. 2017 [See ATT 33]). This means the population is even further from attainment of the existing salmon protection objective than indicated by the declining returns of Chinook Salmon because the Plan objective calls for doubling the natural production of Central Valley Chinook Salmon. Hatchery influence is also a major threat to the viability of Central Valley Chinook Salmon (Lindley et al. 2007; SEP 2019 [See ATT 39]).	
308	46	It is important to remember that both the spring and winter runs of Chinook Salmon once supported commercial, recreational, subsistence, and tribal subsistence fishing (Yoshiyama et al. 1998 [See ATT 31]). These populations no longer support fisheries because they are currently imperiled and ESA-protected. The historic and ongoing decline of Central Valley-dependent Chinook Salmon fisheries represents a massive failure of trustee agencies to protect beneficial uses and the public trust. The Draft Staff Report understates the economic impacts to the salmon fishing industry caused by excessive water diversions and ineffective regulation. The economic analysis (Chapter 8) does not adequately analyze the decline of the California recreational salmon fishing industry. For example, the average Chinook Salmon harvest in California from 1991-1995 was 215,996 fish (PFMC 2022 at 154 [See ATT 32]). More salmon were harvested in Oregon. Although the Draft Staff Report depicts the decline in Chinook Salmon harvest through 2014 (Chapter 3 figure 3.4-1), it fails to document declines that have occurred since then. The recreational harvest in 2023 and the likely harvest in 2024 are both zero. The Draft Staff Report (at 8-105) states that “in the period 2018 through 2022, approximately \$65.6 million in personal income	The requested changes have been made to Chapter 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations. See Common Response 3.1, Fish Protection, for a description of revisions made to Chapter 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations, to update references to the scientific literature, update the information about Endangered Species Act listings, and update flow thresholds and flow-benefits analyses. Section 8.6.1, Recreational and Commercial Fisheries, in the 2023 draft Staff Report (Section 8.6.2, Commercial Fisheries, and Section 8.6.3, Recreational Fishing, in the final Staff Report) addresses potential economic effects concerning commercial and recreational sport fisheries, with an emphasis on Chinook salmon. Section 13.8.4, Fisheries Economic Effects, provides supplemental economic information relevant to recreational and commercial fisheries and discusses fisheries economic effects under the revised proposed Plan amendments. In addition, in response to comments received on the economic analysis presented in the Staff Report, Chapter 8, Economic Analysis and Other Considerations, has been updated to include a new Section 8.6, Fisheries Economic Analysis, that addresses potential economic benefits from implementation of the flow scenarios and subsequent aquatic ecosystem improvements and benefits

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		annually and 1,283 jobs in California were associated with commercial salmon harvesting and processing and derived from recreational fisheries.” This understates economic impacts in three ways: - Commercial and recreational landings from 2018-2022 were dramatically reduced in comparison with previous decades. The 2018-2022 period understates the value of a fully functional salmon fishing industry. A more accurate analysis of the economic value of the salmon fishing industry should be based on years in which salmon runs and landings were robust.	for native fish species, including subsistence fishing and tribal uses of fish. This new section also provides a discussion on economic losses resulting from recent ocean salmon fishery closures and the benefits of increased instream flow. This new section provides additional context and information concerning beneficial fisheries and ecosystem economic effects but does not change the conclusions of the Staff Report’s economic analysis.
308	47	- The Draft Staff Report fails to analyze economic impacts in Oregon. The majority of Chinook Salmon caught off the Oregon coast are from the Bay-Delta ecosystem. In 2023, recreational and commercial Chinook Salmon fishing seasons on the Oregon coast were largely closed from Cape Falcon to the California/Oregon border.	Please see response to Comment 308-46. In addition, the geographic scope of the economic analysis presented in the Staff Report is adequate under the Porter-Cologne Water Quality Control Act. Please see Common Response 1.2, Water Quality Control Planning Process, for further discussion on consideration of factors under Water Code section 13241.
308	48	The Draft Staff Report (Chapter 3; see also SWRCB 2017) provides ample evidence that fish and wildlife beneficial uses and water quality are not protected adequately by current Bay-Delta Plan objectives. The Draft Staff Report also demonstrates that substantial increases in river flow into and through the Delta to San Francisco Bay will be necessary to provide reasonable protection of fish and wildlife beneficial uses. The Board acknowledges, “[f]low is commonly regarded as a key driver or “master variable” governing the environmental processes in riverine and estuarine systems such as the Bay-Delta and its watershed” (SWRCB 2017 at 3-2). However, Chapter 3 should be updated to reflect the current status of key fish and wildlife species and the abundant new research concerning critical relationships between flow and viability attributes that has emerged with respect to some of the target species evaluated previously by the Board. Below, SF Baykeeper et al. provides a brief description, status update, and review of relevant literature (with an emphasis on literature published since SWRCB 2017) connecting freshwater flow to metrics of viability and fisheries of several target species and Bay- Delta estuarine habitat. We then review how the proposed project and proposed Voluntary Agreements can be expected to	Please see response to Comment 308-46.

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		affect fish viability and fish and wildlife beneficial uses. It is important to remember that both the spring and winter runs of Chinook Salmon once supported commercial, recreational, subsistence, and tribal subsistence fishing (Yoshiyama et al. 1998 [See ATT 31]). These populations no longer support fisheries because they are currently imperiled and ESA-protected. The historic and ongoing decline of Central Valley-dependent Chinook Salmon fisheries represents a massive failure of trustee agencies to protect beneficial uses and the public trust. The Draft Staff Report understates the economic impacts to the salmon fishing industry caused by excessive water diversions and ineffective regulation. The economic analysis (Chapter 8) does not adequately analyze the decline of the California recreational salmon fishing industry. For example, the average Chinook Salmon harvest in California from 1991-1995 was 215,996 fish (PFMC 2022 at 154 [See ATT 32]). More salmon were harvested in Oregon. Although the Draft Staff Report depicts the decline in Chinook Salmon harvest through 2014 (Chapter 3 figure 3.4-1), it fails to document declines that have occurred since then. The recreational harvest in 2023 and the likely harvest in 2024 are both zero. The Draft Staff Report (at 8-105) states that “in the period 2018 through 2022, approximately \$65.6 million in personal income annually and 1,283 jobs in California were associated with commercial salmon harvesting and processing and derived from recreational fisheries.” This understates economic impacts in three ways: - The analysis does not reflect the full economic value of salmon fishing-related jobs off the water. Marina operators, equipment manufacturers and retailers, fish brokers and other off the water jobs are dependent on the salmon fishing industry. These parts of the salmon fishing economy have suffered enormous impacts from the decline and closures of salmon fishing in California.	
308	49	The true economic impact of excessive water diversions in the Bay-Delta is, therefore, far greater than is reflected in the Draft Staff Report. One economic analysis (Southwick and Associates	Please see response to Comment 308-46.

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		2012) concludes that, a fully functional California salmon fishing industry produces \$1.4 billion in annual economic activity and 23,000 jobs. The economic value of Oregon salmon fishing is additive to this amount. The total economic impact of fisheries closures also does not capture the depth of the effect on fishing businesses; fishing closures mean that individual fishing businesses are completely closed, sometimes for more than a year. Maintaining businesses (e.g., fishing boat, bait shop, ice manufacturing and distributing) that are occasionally closed completely, and severely constrained in years when operations are possible, is very difficult and distressing for the individual businesspeople who run the many small businesses that depend on California's coastal salmon fishery.	
308	50	(3) Relationship to flow Since publication of the Final Scientific Basis Report (SWRCB 2017) on which the analyses of the Draft Staff Report are based, numerous research papers have been published that document strong, statistically significant relationships between flow and survival of migrating Chinook Salmon juveniles. Several of these studies also find little evidence that shallow water environments (a.k.a. "habitat"), such as those the proposed Voluntary Agreements promise to create, lead to increased survival of Chinook Salmon in the Bay-Delta watershed or that any lack of such "habitat" limits Chinook Salmon survival currently. These new studies represent the best available science on flow levels necessary to protect and restore Sacramento Valley Chinook Salmon runs. A few of these studies are summarized below and others are described briefly in an attached matrix (see Attachment: Salmon Flow Literature Matrix [See ATT 40]). The analysis of salmon response to flow alternatives described in the Draft Staff Report must be revised to account for science developed over the past seven years, including (but not limited to) the following studies: -- Hassrick et al. (2022) [See ATT 13] found that pulse flows contributed significantly to migrating juvenile winter-run Chinook Salmon survival until base flows in the Sacramento River at Bend Bridge reached approximately 24,720 cubic feet per second (cfs); survival increased as baseflows increased	See Common Response 3.1, Fish Protection, on use of best available science, process of updates to literature in Chapters 3 and 4, and the flow-benefit analyses. The papers cited by the commenter have been reviewed and summarized in Common Response 3.1 and information contained therein has been added as appropriate to Chapters 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations, and Chapter 13, Revised Proposed Plan Amendments, of the Staff Report. In addition, new flow thresholds for the protection of Chinook salmon have been identified, and the frequency of achieving these flow thresholds under the flow scenarios have been evaluated in Chapters 3 and 13.

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		above 24,720 cfs as well. -- Hance et al. (2021) [See ATT 41] found Chinook Salmon survival was strongly correlated with flows at Freeport in the nine reaches for which Freeport flow was used as a predictor of survival, including through the interior Delta. Results suggest that Freeport flows >1,000 to 1,500 m³/s are needed to optimize survival (see Hance et al. 2021 panels 7a, 8a, and 8d). -- Michel et al. (2021) [See ATT 42] determined that a step-function described the flow-survival relationship for fall-run Chinook Salmon smolt in one reach of the Sacramento River above the Feather River confluence. Survival in this one segment of river varied by flow threshold with survival of 3.0% at flows below <4,259 cfs; 18.9% between 4,259 cfs and <10,712 cfs); 50.8% between 10,712 cfs and 22,872 cfs; and 35.3% at flows above >22,872 cfs. [Footnote 5: All flow thresholds have error bounds; thus, the certainty of achieving any effect of threshold flows increases as flows approach and exceed the high end of these error bounds. For example, achieving levels of survival associated with the 10,712 flow threshold identified by Michel et al. (2021) is much more certain when flows are above 11,030 cfs (C. Michel, UC Santa Cruz, pers. Comm.) The study also notes that the 22,872 cfs flow threshold is the minimum for overtopping Tisdale Weir and that the paper's estimate of lower survival rates above this threshold may be "an artifact of lower detection efficiencies associated with fish utilizing additional high flow migration routes with less receiver coverage." Also, the available data was not sufficient to distinguish the effects of flows on survival between the thresholds of 10,712 cfs and 22,872 cfs.] -- Munsch et al. (2020) [See ATT 43] found that not all shallow water environments in the Delta that they studied were even occupied by wild-spawned Chinook Salmon fry until flows exceeded ~500 m³/s (=~17,660 cfs). Fry density in occupied habitat increased dramatically with Sacramento River flows up to ~750 m³/s (=~26,486 cfs) and continued to increase to flows of ~1,500 m³/s (=~152,970 cfs). -- Michel (2018) [See ATT 44] determined that streamflow had an outsized effect on survival to the adult stage of juvenile fall-	

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		run, late-fall run, and winter-run Chinook Salmon relative to conditions in the marine environment, where these fish spend a much larger fraction of their lifecycle (Figure 5) [See Exhibit 5]. -- Perry et al. (2018) [See ATT 45] found that "...survival decreases sharply and routing into the interior Delta (where survival is low) increases sharply as Delta inflows decline below approximately 1,000 m³/s [~35,000 cfs]." -- Henderson et al. (2018) [See ATT 46] documented that survival of radio-tagged late-fall run Chinook Salmon migrating through the Sacramento River was most strongly predicted by interannual and inter-reach (segment of a river) flow rates and that habitat availability was not a significant factor for predicting survival of migrating juvenile salmon. -- Pope et al. (2018) [See ATT 47] detected no significant difference in survival between juvenile Chinook Salmon survival in the mainstem Sacramento River as compared to fish migrating through the inundated floodplains of Yolo Bypass. Whereas, in-river survival increased with increasing flows, survival on floodplain did not increase with flow, but survival on the floodplain was "on par" with in-river survival for the flow range at which the floodplain inundates. -- Takata et al. (2017: Abstract) found "Survival to the ocean fishery was not significantly different between hatchery fish that reared in the Yolo Bypass [inundated floodplain] versus those that reared in the main stem Sacramento River."	
308	51	[Exhibit 5: Nine graphs titled Figure 5: The relationship of flow during outmigration and SAR (smolt-to-adult survival; panels a,d,g) and between two measures of marine conditions and SAR (panels b,e,h and c,f,i, respectively) for three Sacramento River Chinook Salmon runs]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
308	52	The Board has identified 20,000 cfs average flows at Rio Vista between February and June as protective of emigrating smolt of the four runs of Central Valley Chinook Salmon (SWRCB 2017 at 3-48) and 17,000 cfs as potentially protective of other migrating juvenile Chinook Salmon (at 3-98). However, the scientific studies identified above (see also, Attachment: Salmon Flow	See the response to comment 308-50.

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		Literature Matrix [See ATT 40]] demonstrate that these flow thresholds will not protect migrating juvenile Chinook Salmon. Flows at Freeport of at least ~35,000 cfs are more likely to be the minimum flows protective of Chinook Salmon smolt emigrating through the Delta.[Footnote 6: For sake of comparison, this translates to roughly flows at Rio Vista of ~32k to 38k cfs. The Bay Institute, unpublished data.] Given that Central Valley Chinook Salmon typically have a 3-year life span (after which they spawn and die), protective flows should occur in at least 1 of 3 years, on average, to support and maintain population viability. Higher flows at Fremont are also necessary to enable Chinook Salmon fry to even occupy most existing restored Delta shallow water habitats (~17,660 cfs) and to populate them at relatively high densities (~26,486 cfs; Munsch et al. 2020 [See ATT 43]). In order to support attainment and maintenance of the salmon protection objective, Delta rearing habitats should be relatively well-stocked with developing Chinook Salmon fry in approximately half of years. These criteria and additional flow criteria on the Sacramento River mainstem should be used to evaluate the benefits of any particular flow regime to Central Valley Chinook Salmon.	
308	53	In addition, the time frame for flow to protect Chinook Salmon should begin in January, not February as indicated. Almost half of winter-run Chinook Salmon juvenile migrants enter the Delta before the end of January (SWRCB 2017 Table 3.4-2 at 3-18) and it is common for >5% of these fish to have migrated out of the Delta before the end of January (2019 NMFS Biological Opinion Figure 14 at 73). South Delta water export operations of the CVP and SWP lead to direct entrainment-related mortality of salmon via pre-screen losses and salvage losses and to reduced survival (indirect mortality) of juvenile Chinook Salmon attempting to migrate through and rear in the Delta. According to the Board (2017 at 3-49): “Statistical analyses have also shown that salvage of juvenile salmonids at CVP and SWP export facilities increases with water exports (Kimmerer 2008; NMFS 2009a at 368–371; Zeug and Cavallo 2014).” In the NMFS 2009 Biological Opinion, the agency reported results of CDWR modeling which revealed that monthly loss of juvenile salmon at the CVP and SWP pumping facilities increased exponentially with increasingly negative OMR flows (reverse flows) between December and	See the response to comment 308-50. Table 3.4-7, Sacramento River and Interior Delta Flows to Increase the Abundance and Survival of Chinook Salmon Populations, includes flow recommendations at the Sacramento River at Georgiana Slough during January through May in addition to the flows for juvenile salmon emigration during February-June.

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		April. These analyses showed that Chinook Salmon loss accelerated as OMR flows became more negative than -5,000 cfs (SWRCB 2017 Figures 2.4-15 and 3.4-16 at 3-40). Estimates of salvage and related direct-mortality impacts on salmonid populations indicate that they can be severe, at least periodically (Kimmerer 2008; NMFS 2009 at 341-352).	
308	54	Moreover, negative OMR flow rates lead to additional, undefined levels of mortality for fish that are not entrained, because of altered Delta flow patterns that lead fish to Delta environments where survival is low (e.g., due to predation or poor water quality). The Board wrote: “More important than direct entrainment effects, however, may be the indirect effects caused by export operations increasing the amount of time salmon spend in channelized habitats where predation is high (USDOI 2010, 29)” (SWRCB 2017 at 3-47). The Board must ensure water exports of the SWP and CVP do not alter Delta hydrodynamics in ways that continue to impair the viability of Central Valley Chinook Salmon, or that prevent attainment of the Plan’s narrative salmon protection objective. Constraints on SWP and CVP exports related to Delta hydrodynamics found in federal and state ESAs have been weakened since 2009. And, like all provisions of federal biological opinions, they are designed only to prevent jeopardy to the endangered species; they are not intended to protect fall-run or late-fall run Chinook Salmon, nor are they intended to support recovery of endangered runs or attainment of the Board’s salmon doubling objective. For example, under both the 2019 Biological Opinions and the CESA ITP, the -5,000 OMR limit may be relaxed (allowing more negative OMR flows) during poorly-defined “storm related events.” Similarly, the 2009 NMFS BiOp provision that limited combined SWP/CVP water exports to a fraction of San Joaquin River inflow (the “San Joaquin I:E ratio”) does not appear in the CESA ITP or the (now abandoned) 2019 biological opinions. As a result of these changes, Chinook Salmon and other native fish migrating through the Delta are at greater risk of entrainment-related mortality than they were under the 2008/2009 BiOps.	See the response to comment 308-50. See Common Response 3.1, Fish Protection, for a discussion of entrainment. Please also see Common Response 1.3, Revised Proposed Plan Amendments, on interior Delta flows.
308	55a	(4) Effect of “other stressors”	Information on optimal water temperatures for Chinook salmon egg incubation, including relevant conclusions from Martin et al.

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		Temperature – Improved protection of coldwater habitat upstream is essential to the persistence and eventual recovery of Central Valley Chinook Salmon populations. High river temperatures related to impoundment and heating of water behind Central Valley dams, frequently lead to high levels of mortality for incubating Chinook Salmon eggs and fry (NMFS 2009; Martin et al. 2016 [See ATT 48]; SWRCB 2017; Friedman et al. 2019 [See ATT 37]; SWFSC 2023 [See ATT 6]). High levels of temperature-dependent egg mortality (TDM) and temperature stress to early-stage juvenile fish severely impact winter-run, spring-run, and fall-run Chinook Salmon in the Sacramento River (see above) and fall-run and spring-run Chinook Salmon on the Feather River. Salmon spawning in other Central Valley rivers also frequently experience high levels of mortality and stress caused by warm water released from reservoirs (SEP 2019 [See ATT 39]). The Board's water temperature standard for Central Valley Chinook Salmon spawning (enshrined in the Central Valley Basin Plan and Water Rights Decisions 90-5 and 91-1) is based on an outdated and erroneous understanding of temperature impacts on incubating Chinook Salmon eggs and larvae – very simply, the Board's temperature standard is not protective of the Chinook Salmon. Furthermore, the Board's failure to require the US Bureau of Reclamation (Reclamation) to meet even this inadequate standard, or to take enforcement action when the standard is violated (even with respect to weakened interim requirements that the Board approves) has led to repeated destruction of several spawning populations of Chinook Salmon. Science-based temperature standards, and enforcement of those standards, will be needed to ensure the viability of Central Valley Chinook Salmon populations going forward. Recent research clarifies and explains the functional relationship between water temperature, river flow, and Chinook Salmon egg survival. Martin et al. (2016) found strong evidence that significant thermal mortality occurs at temperatures greater than 53.5°F and explained why in- river temperatures that are protective of Chinook Salmon incubation are lower in the river than they are in laboratory studies. The Draft Staff Report applies these findings inconsistently; for example, Chapter 3	2016, can be found in Section 3.4.2.1, Chinook Salmon, of the 2023 draft Staff Report. The lethal and sub-lethal negative effects of water temperature in the downstream Sacramento River on Chinook salmon are discussed in Section 4.3.5, Temperature, citing the 2014-2015 and 2021-2022 conditions resulting in extremely limited survival for winter-run Chinook salmon. Additionally, see Section 4.3.5 for a discussion on the interaction between flow and temperature and how low flows have contributed to increasing water temperature and negative effects on the health of the Bay-Delta ecosystem. Please see pages 7.6.2-90 through 7.6.2-92 of the 2023 draft Staff Report for an analysis of the possible effects of the flow scenarios on water temperatures in the Delta with implications for fishes including Chinook salmon. The analysis was qualitative because there is no readily available methodology for translating water temperature effects in the Sacramento/Delta tributaries through the Delta. Section 4.3.5 has been revised to include additional information on water temperatures in the Delta and their interaction with inflows. Please see Common Response 3.1, Fish Protection, for information on the addition of updated literature to the Staff Report and for further information on temperature thresholds as they relate to fish protections in the Bay-Delta system. The cold water habitat objective is intended to improve existing temperature conditions. Please also see Common Response 1.3, Revised Proposed Plan Amendments, and Common Response 7.6.2, Aquatic Biological Resources and Cold Water Habitat for information on the cold water habitat objective.

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		describes an outdated temperature threshold for Sacramento River Chinook Salmon egg mortality. Temperature modeling for the Feather River also seems to apply an outdated standard. Martin et al. (2020) [See ATT 49] developed a biophysical model, which they corroborated with laboratory studies, that reinforced and expanded their earlier results to all Chinook Salmon and other fishes. The Draft Staff Report must be updated to incorporate Martin et al. (2016, 2020), which provide the best available science on temperatures that lead to Chinook Salmon TDM. Reservoir management decisions have a significant effect on river temperatures throughout the freshwater habitat of Central Valley Chinook Salmon. How reservoir releases modify temperatures for Chinook Salmon depends on location in the river. Daniels and Danner (2020) demonstrated that upstream (where salmon spawn, incubate, and begin to rear) the temperature of water released from the dam is more important than the volume of water released in determining the water temperature in salmon habitat. However, as salmon migrate downstream, the volume of flow becomes more important in determining local water temperature. Recent studies show that during the winter-spring, when juvenile salmon migrate into and through the Delta, water temperatures in the lower Sacramento River and Delta (a) can cause lethal and sublethal negative effects for juvenile Chinook Salmon as waters warm later in the spring (Munsch et al. 2020 [See ATT 43]; Hance et al. 2021 [See ATT 41]; Nobriga et al. 2021 [See ATT 20]) and (b) are negatively correlated with flow volume, such that higher flows can lead to longer duration of tolerable temperatures, extended rearing opportunities, and larger size prior to ocean entry (Munsch et al. 2020; Nobriga et al. 2021; Michel et al. 2023 [See ATT 21]; see also Vroom et al. 2017 [See ATT 18]; Bashevkin and Mahardja 2022 [See ATT 19]).	
308	55b	As it compares flow alternatives that differ in requirements for both the volume of river flow and protection of coldwater habitats, the Board should account for both upstream and downstream effects of flow on temperature. It is likely that the effect of high river flows on temperatures in the lower rivers and estuary are captured as part of the strong and statistically	Please see Common Response 7.6.2, Aquatic Biological Resources and Cold Water Habitat, for a discussion of water temperature modeling in the Staff Report and Common Response 3.1, Fish Protection, for a discussion of the effects of flow on temperature. Also see Appendix A6, Water Temperature Modeling and Fish Assessment for the Sacramento, Feather and

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		significant flowsurvival relationships described above. Nevertheless, the Board should account for this additional mechanism by which high river flows improve migratory, spawning, and estuarine conditions in its evaluation of the effect of flow alternatives on salmon habitat, in general.	American Rivers, and Section 7.6.2, Aquatic Biological Resources, and Section 13.7.6.2, Aquatic Biological Resources, of the Staff Report for analysis of the flow scenarios and temperature.
308	56	Shallow water environments (physical “habitat”) – It should go without saying that river flow is the principal habitat element for riverine life stages of fish species and estuarine flow is the principal habitat element for estuarine life stages of pelagic and anadromous fishes. Nevertheless, Chinook Salmon can benefit from the interaction of water and earthen substrate in shallow water environments during short periods of their juvenile life-stage. These shallow water environments (e.g., inundated floodplains, tidal marshes) have been labelled “habitat,” but this use of this term is over-general, simplistic, and laden with many assumptions about the functional benefit of such environments. In general, we support reconnection of historical and newly created shallow-water environments with rivers and tidal waters of the estuary; these environments provide actual habitat for a range of bird and mammal species. However, the benefits to native fish species must be demonstrated on a case-by-case basis, not assumed. For example, it is commonly assumed that restoring shallow water environments will benefit native salmon populations by supporting juvenile growth and survival. It is not clear that Central Valley Chinook Salmon survival is limited by lack of shallow water environments. Henderson et al. (2018) [See ATT 46] found that habitat availability along the Sacramento River was not a strong predictor of Chinook Salmon juvenile survival. Munsch et al. (2020) [See ATT 43] found that shallow tidal environments in the Delta were not even occupied, much less densely occupied) at current typical Sacramento River flow levels; in other words, shallow sub-tidal environments in the Delta are not currently limiting to Central Valley Chinook Salmon populations; adding more of this “habitat” would not provide benefit to Chinook Salmon juveniles until salmon abundance (i.e., number of salmon juveniles) and river flows increase substantially (Munsch et al. 2020).	Information on the relationship between flow and habitat within the Delta, including the importance of a natural flow regime in maintaining habitat connectivity and suitable water quality conditions for spawning and rearing of salmon, is included in the 2023 draft Staff Report in Section 3.2, Flow and the Ecosystem. Please see Common Response 3.1, Fish Protection, for a discussion of physical habitat. Staff Report Chapter 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations, has been updated to include recent literature as described in Common Response 3.1, Fish Protection. Please also see Common Response 3.1, Fish Protection, for a discussion of habitat as a limiting factor.

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308	57	As described above for Delta Smelt (see also NRDC et al. 2023 [See ATT 50 and ATT 93]), there is no evidence that restored tidal marshes export food to the open-water environments used by outmigrating salmon smolts. Although salmon have been shown to grow faster on inundated floodplains, at this time there is scant evidence that the growth effect translates into improved survival on large floodplains, such as the Yolo Bypass, as compared to in-river environments at the equivalent flow levels (Takata et al. 2017; Pope et al. 2018 [See ATT 47]; Johnston et al. 2018). Whereas Sturrock et al. (2022) found that inundated floodplains can export salmon prey to the river environment, the magnitude of that effect was directly related to duration of floodplain inundation and the area in which salmon prey density increased was strongly correlated by river flow. In other words, the effect of floodplain inundation on food availability for salmon is inextricably and positively related to river flow levels. Thus, while SF Baykeeper et al. support further efforts to restore shallow water environments (for many reasons) and to study their potential benefits and potential negative effects on abundance, growth, and subsequent survival of juvenile Chinook Salmon, there is currently no evidence that restoration of these habitats will affect Central Valley salmon viability or attainment of the Board's doubling objective in the near term. We note that "habitat restoration" for Chinook Salmon and other species has been a key focus of major, well-funded management programs like CalFed, the Central Valley Project Improvement Act, and the requirements of various federal biological opinions. Despite these decades-long, multi-million dollar efforts, Chinook Salmon populations continue to decline, likely because river flows have been insufficient to activate restored or remaining historical habitats or to support adequate survival through the riverine migration corridor that connects juvenile Chinook Salmon to the restored shallow water environments.	See the response to comment 308-50. Chapter 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations, of the Staff Report, Section 3.4.5.2, Juvenile Rearing and Emigration, has been updated to include reference to findings in Sturrock et al. (2022). Please see Common Response 3.1, Fish Protection, for a discussion of the habitat benefit analyses.
308	58	d) Central Valley Steelhead Central Valley Steelhead are an imperiled anadromous life-history form of <i>Oncorhynchus mykiss</i>; the resident form is known as Rainbow Trout. Both forms of this fish require protection of coldwater habitat and both have in the past	See the response to comment 308-50. Please see Section 3.4, Chinook Salmon (<i>Oncorhynchus tshawytscha</i>) and Central Valley Steelhead (<i>Oncorhynchus mykiss</i>), of the Staff Report for a discussion on their decline and flow effects on salmonids.

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		provided beneficial uses in the form of recreational fishing. The Board should consider both life history forms as it develops, adopts, and implements new flow standards and coldwater habitat protections for the Bay-Delta and its watershed. (1) Description Central Valley Steelhead are indistinguishable from resident O. mykiss until they complete smoltification, the metamorphosis that allows freshwater salmonids to survive in brackish and marine habitats. Prior to smoltification, they live in the river environment for at least one summer and fall; they require coldwater habitat to successfully over-summer in freshwater. Smoltification requires prolonged exposure to even colder temperatures than those that are suitable for non-migratory juveniles (Myrick and Cech 2004, 2005 [See ATT 51 and ATT 52, respectively]; US EPA 2003). As a result, Central Valley Steelhead are an excellent representative of the status of coldwater habitats. (2) Status Viability The Central Valley Steelhead distinct population segment has been listed as threatened under the federal endangered species act since 1998. The National Marine Fisheries Service considers it to be “stable”, at “moderate” risk of extinction (SWFSC 2023 [See ATT 6]). Specifically, the agency states: “... the majority (11 of 16) of populations for which there are data are at a high risk of extinction based on abundance and/or hatchery influence, with no population considered to be at a low risk of extinction.” In addition, NMFS notes “ [t]he lack of improved natural production ... [and] low abundances coupled with large hatchery influence in the Southern Sierra Nevada diversity group are causes for continued concern.” (SWFSC 2023 at 156). The population’s reliance on hatchery production is of particular relevance to Plan updates as the proposed viability objective relates to “natural production” of native fishes (i.e., not hatchery production). Fishery	

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		Where they are not officially protected as imperiled species, Steelhead support recreationally and economically valuable sport fisheries. Due to low numbers and their imperiled status, California prohibits retention of natural origin Central Valley Steelhead. Harvest of hatchery-origin steelhead (which are marked for identification) is limited to 1 fish per angler per day. (3) Relationship with Flow Migration success of Central Valley Steelhead from the San Joaquin Valley is strongly correlated with river flow rates during their outmigration (Buchanan 2018 [See ATT 53]; Buchanan et al. 2021 [See ATT 54]) and the same is likely true of Central Valley Steelhead from the Sacramento River basin. Because of their low numbers, complex and plastic life histories, and the difficulty of monitoring their seasonal migrations, little is known about the specific flow needs of Central Valley Steelhead. CVP/SWP water export operations in the south Delta also have a negative effect on Central Valley Steelhead populations, both through the direct effect of salvage mortality (as expanded to account for pre-screen mortality) and indirectly via alterations to Delta hydrodynamics that disorient juvenile fish during their seaward migrations (NMFS 2009 BiOp; 2019 NMFS Biological Opinion). A recent publication explained: The prevailing conceptual model of how water project operations and river conditions influence [Central Valley Steelhead] survival through the Delta is that survival is higher during periods of higher Delta inflow, lower export rates, higher I:E, and lower water temperatures (SST 2017). The survival estimates from the 2016 six-year study support the conceptual model regarding Delta inflow, exports, and the [San Joaquin Inflow to export] I:E ratio. Buchanan 2018 at 76	
308	59a	The Board should revise its temperature threshold for Steelhead smoltification to reflect the best available science regarding the needs of Central Valley Steelhead; failure to do so may result in unreliable estimates of Steelhead habitat suitability under	As presented in Appendix A6, Water Temperature Modeling and Fish Assessment for the Sacramento, Feather, and American Rivers, and Appendix H1b, Water Temperature Modeling and Fish Assessment for the Sacramento, Feather, American, and

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		different water management alternatives. Steelhead are particularly sensitive to high temperatures during smoltification. Central Valley Steelhead require exposure to temperatures <11°C (51.8°F) to successfully complete this metamorphosis (Myrick and Cech 2005); this is colder than temperatures US EPA (2003 at 16) identifies as impairing Steelhead smoltification. Thus, Board staff should reconsider applying the USEPA (2003) 14oC 7DADM criteria (7-day average of daily maxima; see Draft Staff Report at 7.6.2-22), which is based on a US EPA's 12oC daily average threshold. Instead, the Board should apply a 7DADM temperature value consistent with 11oC daily average that is the known threshold for Central Valley Steelhead metamorphosis.	Yuba Rivers, the analysis relied on Hoar 1988, Adams et al. 1975, Zaugg and Wagner 1973, and Zaugg 1981, from which we calculated an average temperature above which smoltification can be impaired is 54°F (~12.5°C). Research results provided in Myrick and Cech (2005) did not find 11°C as a requirement for Central Valley steelhead to successfully complete metamorphosis. They instead cite other studies on steelhead/rainbow trout (one of which, Adams et al. 1975, was also relied on in the Staff Report), but none of these focused on the Central Valley steelhead DPS. For more information about the water temperature index values used in the analysis, please refer to Table A6-48 through Table A6-50 in Appendix A6, Water Temperature Modeling and Fish Assessment for the Sacramento, Feather, and American Rivers. For more information about use of the best available science, please see Common Response 3.1, Fish Protection.
308	59	(4) Effect of “other stressors” The main stressors on Central Valley Steelhead, in addition to flow levels, are high temperatures and high levels of genetic influence from hatchery produced fish. The latter problem is likely to be a byproduct of poor water quality conditions (temperatures and flows) experienced by wildspawned fish (i.e., differential selection favors hatchery-reared fish). Protection of coldwater habitat below Central Valley dams is critical to production and maintenance of life history diversity in <i>O. mykiss</i>, and the viability of the Central Valley Steelhead population in particular. Compared to Chinook Salmon, <i>O. mykiss</i> require colder temperatures for spawning and incubation; juvenile <i>O. mykiss</i> have higher temperatures tolerances than Chinook Salmon (Marine and Cech 2004 [See ATT 55], Myrick and Cech 2004, 2005 [See ATT 51 and ATT 52, respectively]) although there is some evidence that variable and elevated water temperatures in the right season promote the anadromous Steelhead life-history pathway over the resident Rainbow Trout life-history strategy (Kendall et al 2014).	The 2023 draft Staff Report contains information on the genetic influence of habitat modification and hatchery and stocking practices as they relate to the Central Valley steelhead population in Section 3.4.2.2, Central Valley Steelhead. Additionally, information on water temperatures and cold water pool issues for salmon and steelhead populations can be found in Sections 3.4.4, Dam and Reservoir Effects on Salmonids, and 4.3.5, Temperature. The commenter includes attachments and citations which describe the effects of water temperature on juvenile salmon and steelhead and raises minor suggestions for additional information to be included in the final Staff Report that are not significant to the Staff Report analyses or the conclusions regarding impacts. Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project, and Common Response 3.1, Fish Protection, for the process used to consider updates to literature in the Staff Report.

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308	60	e) White Sturgeon The San Francisco Bay-Delta White Sturgeon population is imperiled and its viability is declining. Petitions to list this species under CESA and ESA have been submitted. The fishery has been repeatedly constrained by declining White Sturgeon abundance and will almost certainly be severely restricted in future years. A complete description of the life history, conservation status, and environmental needs of White Sturgeon in the Bay-Delta watershed can be found in the recent CESA listing petition to the California Fish and Game Commission (see Attachment: White Surgeon CESA petition [See ATT 3 and ATT 85]). Bay-Delta White Sturgeon only reproduce successfully when Sacramento River inflow to the Delta and Delta outflow are relatively high during spring and early summer (Figures 6 [See Exhibit 6]). Flows that support successful reproduction occur less frequently now than they did just a few decades ago because of diversions and reservoir operations that capture rain and snowmelt runoff in the late spring and summer. As a result, the size of White Sturgeon cohorts has decreased and the time between successful cohorts has increased. Given the reproductive life-history of female White Sturgeon, flows that support spawning, incubation and larval recruitment should recur at least 1 out of 4 years to restore and support viability; and more frequent exceedance of critical flow thresholds may be necessary to restore and maintain harvest in a fishery. Entrainment in the CVP and SWP south Delta water export infrastructure also impairs the Bay-Delta White Sturgeon population's viability, as does fishing pressure and harmful algal blooms in both the Bay and, separately, in the Delta. Each of these problems must be resolved in order to guarantee the population's persistence, at a minimum, and restoration of the White Sturgeon fishery.	Please see Common Response 3.1, Fish Protection, for a discussion of entrainment, flow-benefit analyses, and process for updates to literature in Chapters 3 and 4. The general description of white sturgeon, its life history and its viability (population abundance over time is discussed in Section 3.6, Green Sturgeon (<i>Acipenser medirostris</i>) and White Sturgeon (<i>Acipenser transmontanus</i>), of the Staff Report. Chapter 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations, has been updated to reflect the most recent information on the petition for listing white sturgeon. See Common Response 4.1, Harmful Algal Blooms, on State Water Board commitments to address HABs in the Delta.
308	61	(1) Description White Sturgeon (<i>Acipenser transmontanus</i>) is the largest freshwater fish species in North America. The species as a whole	See the response to comment 308-60.

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		is considered to be “endangered” by the American Fisheries Society (AFS 2008 [See ATT 56]). The only known reproducing population White Sturgeon in California occurs in the Sacramento River and San Joaquin River watersheds. These fish may grow to 6 m fork length (FL), live more than 100 years, and weigh over 600 kg. In California, the largest individual on record – caught in Lake Shasta in 1963 – measured 2.9 m and 225 kg, and was at least 67 years old (CDFW 2015 at 225 [See ATT 4]). White Sturgeon are iteroparous and facultatively anadromous; they spawn only in freshwater and juveniles soon migrate to brackish water, but true marine migrations are variable among individuals. A small proportion of adults spawn in any given year. Successful reproduction occurs episodically, when spring-summer river flows are high enough to support incubation and early rearing success. In the San Francisco Bay-Delta, females may mature reproductively as early as age 10, but more commonly between ages 12-16 – 50% of females mature by age 14 and all mature by age 19 (CDFW 2015; Blackburn et al. 2019 [See ATT 57]; CDFW 2023 [See ATT 58]). Males mature earlier, generally between 10-12 years of age (75-105 cm FL), and appear to spawn more frequently than females (Willis et al. 2022). Adult White Sturgeon prepare to spawn by moving into the lower reaches of Central Valley rivers during the winter months and migrate upstream into spawning areas. Following maturation, males may spawn every 1-2 years. Females are physiologically capable of spawning every 2-3 years (Hildebrand et al. 2016); they typically wait at least 2-4 years between reproductive events (Moyle 2002) In the Central Valley, White Sturgeon spawning has been detected during wet and dry years in both the San Joaquin River and the Sacramento River, indicating that adults will attempt to spawn even when flows are low (Jackson et al. 2016). The fact that juvenile recruitment appears to be successful only in years when elevated river flows occur during larval dispersal and early juvenile rearing (i.e., between April and July) suggests that flows during the spring and early summer are essential (SWRCB 2017). CDFW (2015 at 227) states: “The first few months of life are considered to be critical for sustaining populations [of White Sturgeon].”	

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		(2) Status Viability White Sturgeon that spawn in the Central Valley and rear and/or migrate through the San Francisco Bay-Delta are regarded as a species of “High” management concern by California Department of Fish and Wildlife (CDFW 2015). Studies indicate that annual recruitment of Bay-Delta White Sturgeon has decreased since the early 1980s. Recent evidence indicates that this decline is continuing (Blackburn et al. 2019; Ulaski et al. 2022; CDFW 2023; California Fish and Game Commission 2023; Figures 6, 7 [See ATT 59]), leading White Sturgeon exports to state recently: “Action needs to be taken now to protect California white sturgeon to assure this ancient population survives long into the future” (Schreier et al. 2022 [See ATT 60]). Several data sets reveal a decline in White Sturgeon abundance in the Bay-Delta watershed over the past 25 years. For example, catches of Age 0 (YOY) White Sturgeon by the CDFW/IEP’s Bay Study reveal a decreasing trend in juvenile abundance over the past 40 years, punctuated by increases in years with high spring-summer freshwater flows out of the Delta and into San Francisco Bay (Figure 6 [See Exhibit 6]; see also Fish 2010 [See ATT 61]). Similarly, over the past 25 years, CDFW’s mark-recapture studies of sub-adult and adult White Sturgeon reveals a significant population decline. For such a long-lived species, a decline of this magnitude in less than three decades is concerning. CDFW’s most recent estimate of the 5-year average of the harvestable (slot-sized) population (33,000 fish; CDFW 2023) does not account for catastrophic losses to the White Sturgeon population resulting from harmful algal blooms in 2022 and 2023. CDFW’s Adult Sturgeon Study confirms a substantial decline in Bay-Delta White Sturgeon density from levels commonly observed in the latter half of the 20th century to those observed over the last decade (Figure 7) [See Exhibit 7]; CDFW reports that, “2022 represented the most survey days with zero catch since the onset of [CDFW’s Adult Sturgeon Study]” (California Fish and Game Commission 2023 at PDF p. 49).	

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308	62	[Exhibit 6: Graph titled Figure 6: Relationship of spring-summer Delta outflow and White Sturgeon juvenile recruitment in the San Francisco Bay-Delta]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
308	63	[Exhibit 7: Graph titled Figure 7: Catch-per-unit-effort (CPUE) of legal-sized White Sturgeon caught in the CDFW's Adult Sturgeon Study (trammel net gear) in the San Francisco Estuary, 1968 to 2022]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
308	64	Environmental conditions necessary to support Bay-Delta White Sturgeon population viability are deteriorating (SWRCB 2017; CDFW 2023 [See ATT 36]; California Fish and Game Commission 2023 [See ATT 59]). High levels of water diversion combined with adverse reservoir storage operations generate extremely altered hydrographs throughout the Bay-Delta watershed (TBI 2016; SWRCB 2016, 2017; Reis et al. 2019 [See ATT 62]) – where California White Sturgeon spawn and rear – impairing successful reproduction. The population also suffers from overharvest in the recreational fishery (Blackburn et al. 2019 [See ATT 57]; CDFW 2023; California Fish and Game Commission 2023). Furthermore, a massive harmful algal bloom in San Francisco Bay and San Pablo Bay in 2022 and a smaller bloom that occurred in summer 2023 killed large numbers of adult California White Sturgeon, demonstrating the population's vulnerability to future algal blooms (CDFW 2023; California Fish and Game Commission 2023). Persistent low Dissolved oxygen in the Stockton Deepwater Ship Channel and toxic algae blooms in the Delta are also likely to impede Bay-Delta White Sturgeon migration to and from their spawning grounds in the San Joaquin River watershed. Existing environmental regulations are inadequate to prevent further decline of Bay-Delta White Sturgeon. The Board has acknowledged that current regulation of river flow and water quality conditions in the Bay-Delta watershed are inadequate to support native fish viability and fisheries, including White Sturgeon (SWRCB 2010, 2017; see also CDFW 2010). Several planned water development projects in the Bay-Delta watershed are likely to increase the frequency and severity of inadequate river flow conditions in the future. Meanwhile, water quality conditions in the Delta including low dissolved oxygen and toxic algal blooms, particularly in the San Joaquin River near Stockton, likely impair migration of adult and	See the response to comment 308-60. See Section 4.3.3, Dissolved Oxygen, of the Staff Report for a discussion of the approved dissolved oxygen TMDL for the Stockton Deep water Ship Channel. See Common Response 4.1, Harmful Algal Blooms, for State Water Board commitments to address HABs in the Delta. Please also see Common Response 1.3, Revised Proposed Plan Amendments, for a discussion of Sacramento/Delta tributary flows.

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		juvenile White Sturgeon to and from spawning grounds in the San Joaquin basin (CBDA and CVWRQCB 2006). Each of the major impacts to the Bay-Delta White Sturgeon population — inadequate river flow and water quality conditions, overharvest, and the loss of habitat and potential for catastrophic mortality due to harmful algal blooms — represent a grave threat. These problems are independent of each other – addressing just one or two of these major problems will not eliminate the high risk that White Sturgeon in the Bay-Delta watershed become endangered – that is, experience further declines in viability such that it is in danger of extinction – in the near future.	
308	65	Fishery White Sturgeon once supported a commercial fishery in San Francisco Bay (Skinner 1962; Moyle 2002; Attachment: White Surgeon CESA petition [See ATT 3 and ATT 85]). The commercial fishery was closed by the state legislature after 1917 and all possession of White Sturgeon was prohibited until 1953. A recreational Bay-Delta White Sturgeon fishery was opened in 1954 and continues to this day. Because of long-term declines in the Bay-Delta White Sturgeon population and the massive harmful algae bloom-related fish kill in 2022, CDFW staff recently recommended that the fishery be restricted to catch-and-release fishing temporarily (California Fish and Game Commission 2023 [See ATT 59]), however, the Fish and Game Commission rejected CDFW's staff recommendation and adopted emergency fishing regulations that would allow harvest at levels higher than those specified by Blackburn (2019) [See ATT 57] as necessary to stabilize the population.	See the response to comment 308-60.
308	66	(3) Relationship to flow Recruitment of juvenile California White Sturgeon is positively correlated with high river flows and Delta Outflow during spring and early summer months (Israel et al. 2009 [See ATT 63]; CDFW 2015, 2023 [See ATT 4 and ATT 58, respectively]; SWRCB 2017; see also Parsley and Beckman 1994 [See ATT 64]; AFRP 2001 [See ATT 65]; Moyle 2002; Willis 2022). CDFW's conceptual model for California White Sturgeon life history	See the response to comment 308-60. The Staff Report includes a discussion of exceeding the 37,000 cfs threshold. Section 3.14, Evaluation of Bay-Delta Environmental Flow Effects included analysis of frequency of achieving ecological flow thresholds under baseline, minimum required daily outflows, and the flow scenarios. Section 13.5, Beneficial Environmental Effects, contains the updated analysis for frequency of achieving these flow thresholds under revised

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		states: The dispersal of larval white sturgeon is dependent on high spring river flows, which optimally consists of multiple large flow pulses and a relationship between the mean monthly outflow from April–July and white sturgeon [young-of-year] has been developed (Kohlhorst et al. 1991). Reduced seasonal flows or flows mismatched ecologically with sensitive early life stages may reduce dispersal of these life stages when they are most vulnerable to native and nonnative predation. Flow reductions may serve to reduce or eliminate [young-of-year] survival even if spawning was successful. Israel et al. 2009 at 17. Chronically low river flows and reductions in Delta outflow resulting from water diversion and storage operations have been implicated in the decline of White Sturgeon in the Bay-Delta watershed (Fish 2010 [See ATT 61]; CDFW 2015 [See ATT 4]; Jackson et al. 2016; SWRCB 2017). As a result, successful cohort formation is infrequent for California White Sturgeon, corresponding to years of high spring-summer river flows into and out of the Delta (Figure 6 [See Exhibit 6]; Moyle 2002; Fish 2010; CDFW 2015; SWRCB 2017). CDFW (2015 at 224) states “Annual recruitment of white sturgeon in California appears to have decreased since the early 1980s.” Similarly, Blackburn et al. (2019 at pp. 897-898 [See ATT 57]) observed that “Few age-0 and age-1 White Sturgeon have been sampled since 1998, and only two strong year-classes (2006 and 2011) have been documented in the last 19 years [through 2016]” and concluded that, “Continued poor recruitment has the potential to put the population at risk.” The Board analyzed the relationship between average freshwater Delta outflow in March-July and recruitment of juvenile White Sturgeon and found that recruitment of juvenile White Sturgeon did not occur when March-July average flows were below certain thresholds (SWRCB 2017 Figures 3.6-2 and 3.6-3 at 3-65). The Board determined that monthly average Delta outflows > 37,000 cfs during this period were sufficiently protective of Bay-Delta White Sturgeon. From 1980-1999, average March-July Delta	proposed Plan amendments. Please see Common Response 3.1, Fish Protection, on the flow-benefit analyses and frequency of flows. The data in the commenter’s analysis in Figure 8 does not directly represent “reproductive success”. The population in the analysis is represented by “the index of age-0 sturgeon” from the Bay Study. The Bay Study’s age-0 index is equal to the mean age-0 catch per unit effort multiplied by the area weighting factor for the embayment. The number is an estimate of young juveniles present in the study area. A zero value does not indicate that there is no reproductive success at lower than 30,000 cfs, but that no juveniles were found at survey stations. This index is part of the year-class indices, calculated by CDFW, which is used in the white sturgeon analyses in the Staff Report. Please also see Common Response 1.2, Water Quality Control Planning Process, on reasonable protection of fish and wildlife and consideration of beneficial uses.

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		outflows > 37,000 cfs occurred 30% of the time (6 out of 20 years). However, since 1999, flows of this magnitude have occurred only 17.4% of the time (4 out of 23 years). Using an analytical approach similar to that of the Board, we determined that recruitment of YOY White Sturgeon is very low or zero when Sacramento River flows ("SAC" + "YOLO" variables in Dayflow) average < 30,000 cfs between April and July (Figure 8). From 1980-1999, flows of this magnitude occurred in 30% of years; however, since 2000 April-July average Delta inflows from the Sacramento River have exceeded 30,000 cfs in only 17% of years. Unlike many other flow-viability relationships for Bay-Delta fishes, the relationship between flow and reproductive success for Bay-Delta White Sturgeon is not continuously linear; rather, it takes the form of a "hockey stick" with no response till a threshold is reached and linear response above the threshold. This means there is no benefit to Bay-Delta White Sturgeon reproduction as Delta inflow from the Sacramento River increases but remains < 30,000 cfs (or total Delta Outflow remains < 37,000 cfs) and flows above that threshold produce increasing benefits (Figure 8 [See Exhibit 8]). Because White Sturgeon females spawn every 2-4 years (Hilderbrand et al. 2016; Moyle 2002), river flows associated with reproductive success should occur on approximately the same time step. Average total April-July Sacramento River inflows to the Delta likely must exceed 30,000 cfs, and March-July Delta outflows must exceed 37,000 cfs in 1 out of 4 years, at a minimum, to maintain population viability.	
308	67	[Exhibit 8: Graph titled Figure 8: Recruitment of Age 0 Bay-Delta White Sturgeon to the CDFW/Interagency Ecological Program's Bay Study Otter Trawl as a function of Sacramento River flow]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
308	68	(4) Effect of "other stressors" As described above, Bay-Delta White Sturgeon are also impacted by harvest levels and by harmful algal blooms (HABs) in the Bay and Delta. The HABs in the Delta, which likely block migration to and from White Sturgeon spawning and early-rearing grounds in the San Joaquin River valley, co-occur with low dissolved oxygen	The 2023 draft Staff Report contains information on the relationship between flow and white sturgeon abundance in Section 3.6.4, Flow Effects on Green and White Sturgeon. Additionally, Section 4.3.2, Harmful Algal Blooms, of the 2023 draft Staff Report discusses impacts from harmful algal blooms (HABs) and associated drivers, such as flows. Please see Common Response 4.1, Harmful Algal Blooms, for information

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		levels – both of these problems are a function of low flows into the Delta (Berg and Sutula 2015; Lehman et al. 2020 [See ATT 11]; Kudela et al. 2023 [See ATT 8]). HABs in San Francisco Bay-proper are the topic of expected updates to the San Francisco Bay Regional Water Quality Control Board's Nutrient Watershed Permit, but attaining significant nutrient load reductions may take a decade or more. Limiting harvest of White Sturgeon is the subject of forthcoming proposed fishing regulations; however, those regulations are targeted to allow harvest of ~4% of the population, which is more than the "less than 3%" called for by Blackburn et al. (2019 [See ATT 57]) to stabilize, not recover, the population. Blackburn et al.'s analysis and recommendation came prior to catastrophic White Sturgeon die offs in 2022 and 2023, which were associated with "red tide" algal blooms in the Bay (CDFW 2023 [See ATT 58]; California Fish and Game Commission 2023 [See ATT 59]). Whether and when fishing and harmful algal bloom impacts to the White Sturgeon population are resolved, improving the magnitude of juvenile recruitment and frequency of cohort formation will be necessary to stabilize and recover the population. Without increases in the frequency of river flows and Delta outflows that support their reproduction and recruitment, the Bay-Delta's White Sturgeon population will continue to decline, becoming increasingly less viable and increasingly unable to sustain a recreational fishery.	on nutrient discharge and HABs and State Water Board commitments to address HABs in the Delta. The recently adopted San Francisco Bay Nutrients Watershed Permit, in addition to other mitigation measures identified in Section 7.12.1.4, may help to address HAB effects on native fish and wildlife. Please see Common Response 1.3, Revised Proposed Plan Amendments, for information on the special study requirement for effects on native fish species included within the HAB provisions of the revised proposed Plan amendments. The commenter raises minor suggestions for additional information to be included in the final Staff Report that are not significant to the Staff Report analyses or its conclusions. Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project, and Common Response 3.1, Fish Protection, for the process used to consider updates to literature in the Staff Report.aradf
308	69	F) Green Sturgeon The southern distinct population segment of North American Green Sturgeon (Green Sturgeon) remains imperiled in the Bay-Delta and its watershed (NMFS 2021 [See ATT 66]). A widespread, long-lasting harmful algae bloom in San Francisco Bay killed numerous Green Sturgeon in 2022 – the exact number of fish lost in this catastrophic fish kill is unknown and unknowable (CDFW 2023 [See ATT 58]). Freshwater flow needs of Green Sturgeon are assumed to be similar to those of White Sturgeon (SWRCB 2017). Like White Sturgeon, the reproductive ecology of female Green Sturgeon indicates that flows which support spawning, incubation, and recruitment of larvae must occur on the order of once in four years in order to maintain	See the response to comment 308-60.

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		population viability. (1) Description Green Sturgeon (<i>Acipenser medirostris</i>) are smaller than White Sturgeon. Females reach ~5 feet at maturity, are iteroparous, and can spawn every 3-4 years. In the San Francisco Bay-Delta, Green Sturgeon spawn primarily in the Sacramento River, although spawning has also been documented recently in the Feather and Yuba Rivers. Until recently, it was believed that they have been extirpated from the San Joaquin River (Moyle 2002; CBDA CVRWQCB 2006; NMFS 2006); however, since publication of the Final Scientific Basis Report (SWRCB 2017), two Green Sturgeon have been confirmed from rivers in the San Joaquin basin (NMFS 2022 [See ATT 66]). Information presented below describing Green Sturgeon ecology is drawn from the most recent Green Sturgeon status review (NMFS 2022). Green Sturgeon are completely anadromous – all individuals migrate to the ocean prior to spawning for the first time and in-between spawning events. Adults enter San Francisco Bay in late winter through early spring, migrate upstream, and spawn from April through early July. Most Green Sturgeon spawning is believed to occur in deep pool in the upper parts of the Sacramento River, below Keswick Dam. River flow cues spawning migrations. After spawning, adults may remain in the river environment for several months, outmigrating in the fall or winter, migrate out of the river immediately after spawning in the spring or summer. Green Sturgeon eggs primarily develop on the gravel or cobble substrates to which they adhere. Optimal egg development occurs in a temperature range between 14-17°C. Optimal growth of Green Sturgeon larvae occurs at 15°C, while temperatures less than 11°C and temperatures greater than 19°C decreased growth rate. Green Sturgeon remain in their natal river for 6-24 months before migrating to the estuary – this is much longer freshwater duration than most White Sturgeon. Subadult and adult Green Sturgeon spend most of their life in the coastal ocean and are	

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		found in high concentrations in coastal bays and estuaries along the west coast of North America during the summer and autumn. (2) Status Viability The Bay-Delta watershed's population of Green Sturgeon is part of the Southern Distinct Population Segment (DPS) of this species. The DPS was listed as ESA threatened in 2006. NMFS inferred an ongoing decline in abundance of this imperiled fish based on the decline in the number of juvenile Green Sturgeon salvaged annually at the SWP and CVP water export facilities in the South Delta (NMFS 2009). The most recent five-year review indicated no change in the threatened status of this DPS; none of the recovery criteria have been met (NMFS 2022). In other words, the viability is precarious and they continue to be in danger of becoming "endangered" or going extinct in the near future. Furthermore, NMFS considers existing regulatory mechanisms to be inadequate to protect the species, stating (NMFS 2021 at 8): Continued improvements are needed to regulatory mechanisms associated with ... modification of impoundment operations or facilities to address flow, water temperature, and sediment impacts (e.g., Oroville-Thermalito Complex) [and] screening criteria and regulation for agriculture, municipalities, and industrial water diversions. These needs reflect, in part, the inadequacy of existing Plan water quality standards and operation of the SWP under the state's 2020 CESA ITP. Fishery Although Green Sturgeon are not prized as a game fish or food item like White Sturgeon, there was historically a fishery for Green Sturgeon in the Bay-Delta watershed. In addition, Moyle (2002) points out that the commercial, sport, and tribal fisheries for Green Sturgeon in the Columbia River estuary were likely dependent on fish that migrated from California, as there is no evidence of Green Sturgeon spawning near the Columbia River. Fishing for Green Sturgeon is now prohibited because of its	

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		“threatened” listing and its imperiled status. (3) Relationship to flow Because so little is known about Green Sturgeon, they are generally assumed to require similar habitat and flow conditions as White Sturgeon (SWRCB 2017).	
308	70	(4) Effect of “other stressors” Population viability of this Green Sturgeon DPS is impacted by many of the same factors that now jeopardize White Sturgeon, including chronically impaired river flows that limit opportunities for successful reproduction (NMFS 2006). Green Sturgeon were also killed by the “red tide” in San Francisco Bay during the summer of 2022 (CDFW 2023 [See ATT 58]; California Fish and Game Commission 2023 [See ATT 59]) and their range within the watershed is likely limited by migration barriers related to physical impediments and/or poor water quality conditions, including low dissolved oxygen (CBDA and CV RWQB 2006) and toxic algal blooms.	The 2023 draft Staff Report includes information on the flow needs of green sturgeon in Section 3.6.4, Flow Effects on Green and White Sturgeon. It also discusses harmful algal blooms in Section 4.3.2, Harmful Algal Blooms, dissolved oxygen in Section 4.3.3, Dissolved Oxygen, and fish passage barriers in Section 4.5.3, Fish Passage Barriers. The commenter provides citations of scientific literature and then raises minor suggestions for additional information to be included in the final Staff Report that are not significant to the Staff Report analyses or its conclusions. Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project, and Common Response 3.1, Fish Protection, for the process used to consider updates to literature in the Staff Report.
308	71	G) Starry Flounder Starry Flounder, which contribute to the ocean flatfish fishery, have experienced significant population declines in recent decades. Their abundance as juveniles rearing in the estuary is strongly correlated with freshwater outflow from the Delta. And, the abundance of juvenile Starry Flounder rearing in the estuary is positively correlated to subsequent catches in the ocean fishery. These two statistically significant relationships demonstrate that freshwater Delta outflow during the winter-spring has an important effect on the subsequent ocean fishery for Starry Flounder. Unfortunately, the Draft Staff Report uses a demonstrably inadequate flow threshold to evaluate the effect of the proposed project on Starry Flounder. This flow threshold contradicts and defeats the purpose of the flow criteria established in the Board’s Public Trust Flow Criteria Report (SWRCB 2010). Furthermore, the Board must identify how	Please see Common Response 3.1, Fish Protection, for a discussion of use of best available science, the process for updates to literature in Chapters 3 and 4, and the flow-benefit analyses. Please see Common Response 1.1, General Comments, for more information on the Delta Flow Criteria Report. In the Delta Flow Criteria Report, California Department of Fish and Game (now CDFW) recommended outflows between 11,400 to 26,815 cfs. The peer-reviewed 2017 Scientific Basis Report and Staff Report recommend an average outflow of 21,000 cfs, which is within this range. This outflow level is associated with periods when median annual Bay Study index of age-1 starry flounder was close to the population abundance goal expressed in the 2010 Delta Flow Criteria Report. Nevertheless, the 2010 Delta Flow Criteria Report states that the

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		frequently protective flows must recur to reasonably protect beneficial uses associated with Starry Flounder populations.	recommendations for longfin smelt and delta smelt and California bay shrimp would also protect starry flounder due to similar timing in their life cycles. See Common Response 1.2, Water Quality Control Planning Process, for a discussion on reasonable protection of fish and wildlife beneficial uses.
308	72	(1) Description Starry Flounder (<i>Platyichthys stellatus</i>) is the only flatfish found in freshwater on a regular basis. They are primarily marine, but many of their young-of-year migrate (probably carried by currents) into estuaries, where they rear for one or more years. Young-of-year fish are typically found on sandy bottoms of brackish pelagic waters. They gradually migrate to saltier water as they age. The CDFW/Interagency Ecological Program's Bay Study otter trawl catches Age 1+ fish efficiently, so the Bay-Delta Starry Flounder abundance index reflects catches of Age 1+ fish. (2) Status As indexed by the CDFW/IEP's Bay Study Otter Trawl, abundance of Age 1+ Starry Flounder rearing in the estuary has declined by >95% since the early 1980's (5-year average 1980-84 (1608) vs. 2018-2022 (76); Figure 9 [See Exhibit 9]). Fishery In the ocean, thousands to tens of thousands of metric tons of Starry Flounder are harvested as part of the California coastal flatfish fishery, but catch has been declining precipitously (Ralston 2005; Figure 10) [See Exhibit 10]. (3) Relationship to flow Delta outflow affects two important aspects of viability of Starry Flounder – abundance and spatial distribution – in San Francisco Bay. Abundance of Age 1+ Starry Flounder in the San Francisco Bay-Delta is well correlated with Delta outflow in the prior year during the months of March through June (Kimmerer 2002;	See the response to comment 308-71. See Chapter 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations, Section 3.9, Starry Flounder (<i>Platichthys stellatus</i>), of the Staff Report for information on the starry flounder, including life history, population abundance trends over time, and flow effects. Section 3.9.2, Life History, has been updated to describe additional information on spatial distribution of starry flounder from ^Moyle (2002).

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		Figure 9). Abundance of Starry Flounder in the estuary is correlated with catch of Starry Flounder in the ocean during subsequent years (Ralston 2005; Figure 11) [Exhibit 11], indicating that San Francisco Bay serves as an important nursery for this fish and that conditions in the Bay affect the population as a whole. Also, juveniles occur further up the axis of the estuary (closer to the Delta) under drier conditions. This makes Starry Flounder more vulnerable to entrainment in the CVP and SWP south Delta water export infrastructure and, indeed, more of these fish are salvaged in drier years compared to wet years, even though abundance of Starry Flounder in the estuary is higher in wet years (Moyle 2002).	
308	73	[Exhibit 9: Graph titled Figure 9: Abundance of Age 1+ Starry Flounder in San Francisco Bay versus Delta Outflow one year earlier]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
308	74	[Exhibit 10: Graph titled Figure 10: Landings of Starry Flounder to the Port of San Francisco from the ocean fishery; 1983-2015]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
308	75	[Exhibit 11: Two graphs titled Figure 11: Landings of Starry Flounder to the Port of San Francisco from the ocean fishery (1983-2015; natural logarithm scale) as a function of the natural logarithm of juvenile (Age 1+) Starry Flounder rearing in San Francisco Bay one year earlier (left panel; $r = 0.539$, $p < 0.01$) and two years earlier (right panel; $r = 0.529$, $p < 0.01$)]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
308	76	The Draft Staff Report's threshold flow for protection of Starry Flounder is much lower than the flow criteria it previously identified (SWRCB 2010 at 83). As we noted in our comments on the 2017 Scientific Basis Report (see Attachment: TBI et al. 2017 comments on final Phase 2 Scientific Basis Report [See ATT 67]), the Draft Staff Report threshold is based on flawed analysis of Starry Flounder population dynamics and response to flows. The Board's analysis assumes, contrary to the evidence, that recent historic flow levels will result in a stable population. And, the Board's 2017 analysis also incorporates a shifting baseline under which the continued decline of the population begets continued lowering of expectations for protection of this population.	See the response to comment 308-71. Chapter 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations, of the Staff Report includes an updated analysis to document flow-abundance relationships and to estimate the ranges of flow predicted to be protective of starry flounder. Staff followed methods from ^Kimmerer (2002b) to estimate the relationship between the logarithm of seasonal average Delta outflow and the respective species abundance indices using the most recent data available. The Staff Report acknowledges that there was a statistical decline in abundance before 1994 in Sections 3.9.3, Population

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		In 2010, the Board set a goal for protection of Starry Flounder equal to the median abundance index for this species from 1980-2009 and identified flow in each year-type that would enable attainment of this goal (SWRCB 2010). In 2017, the Board used a different methodology to estimate flows needed to attain the 2010 goal, basing its new single protective threshold on the median March-June flows during 1994-2013. The Board does not explain why the flows needed to protect Starry Flounder would have declined between its 2010 and 2017 analyses. Identifying the median flow during 1994-2013 as the target for protection ignores (a) that Starry Flounder abundance had already declined significantly by 1994, and (b) the Board's repeated findings that current flow levels during this period were inadequate to maintain native fish populations (SWRCB 2010, 2017, 2018). The assumption that the median abundance of Starry Flounder could be attained by maintaining median flow conditions during a period when the Starry Flounder population was declining denies the evidence that status quo flows between 1994-2013 were associated with and contributed to the ongoing decline of juvenile Starry Flounder abundance in the Bay-Delta and, later, the ocean fishery. Indeed, the time period the Board selected for determination of the critical flow in its 2017 Scientific Basis Report overlaps with the entire period between the adoption and implementation of the Board's current flow objectives and the Board's decision to revise those objectives to be more protective. The Draft Staff Report's flow threshold erroneously suggests that beneficial uses associated with Starry Flounder can be adequately protected by maintaining the same flow regime that contributed to the ongoing decline of this population.	Abundance and Trends over Time, and 3.9.4, Flow Effects on Starry Flounder. The rate of decline has remained similar since the implementation of D-1641 in 2000. Currently the frequency of exceeding 21,000 cfs under the minimum required delta outflow or baseline conditions is lower than 50%. Therefore, the threshold at 21,000 cfs cannot represent recent historic flow levels that are regularly occurring.
308	77	Finally, although the Board's original goal for protecting Starry Flounder was to maintain the Age 1+ Starry Flounder abundance index above 293, the 1980-2008 median index value (SWRCB 2010 at 82-83), the flows identified with Starry Flounder protection in the Draft Staff Report (Delta Outflow 21,000 cfs on average from March-Jun) are consistent with a population that is ~5% lower than this goal (SWRCB 2017 at 3-83 and 3-84). In other words, even if we ignored the fact that Starry Flounder abundance has been declining under the current flow regime, the Board's 2017 flow target flow for Starry Flounder would still be somewhat less than the flows needed to achieve its stated goal.	Please see the responses to comments 308-71 and 308-76.

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		The Draft Staff Report should be revised to analyze the frequency and magnitude of flows that the best available science indicates will be protective of Starry Flounder. The flow regime previously identified by the Board as protective of Starry Flounder (SWRCB 2010 Table 13 at 83) reflect the best available science on the magnitude and frequency of flows necessary to attain the Board's (somewhat anemic) abundance target for this fish.	
308	78	D. Current Flow Standards are Inadequate to Maintain Viability of, or Fisheries for, Native Fish Species or Maintain Estuarine Habitat 1. Species status The Draft Staff Report (Chapter 3; see also SWRCB 2017) provides ample evidence that fish and wildlife beneficial uses and water quality are not protected adequately by current Bay-Delta Plan objectives. The Draft Staff Report also demonstrates that substantial increases in river flow into and through the Delta to San Francisco Bay will be necessary to provide reasonable protection of fish and wildlife beneficial uses. The Board acknowledges, "[f]low is commonly regarded as a key driver or "master variable" governing the environmental processes in riverine and estuarine systems such as the Bay-Delta and its watershed" (SWRCB 2017 at 3-2). However, Chapter 3 should be updated to reflect the current status of key fish and wildlife species and the abundant new research concerning critical relationships between flow and viability attributes that has emerged with respect to some of the target species evaluated previously by the Board. Below, SF Baykeeper et al. provides a brief description, status update, and review of relevant literature (with an emphasis on literature published since SWRCB 2017) connecting freshwater flow to metrics of viability and fisheries of several target species and Bay- Delta estuarine habitat. We then review how the proposed project and proposed Voluntary Agreements can be expected to affect fish viability and fish and wildlife beneficial uses. 4) Effect of "other stressors"	The potential response of starry flounder populations to the Staff Report alternatives was analyzed as a function of flow and presented in Table 3.14-7 and Figure 9.6-4 of the 2023 draft Staff Report. Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.

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		This population would not be expected to respond to restoration of shallow water environments in the Delta as they are very uncommon in the Delta or in tidal wetland habitats.	
308	79	2. Estuarine habitat a) Food web Phytoplankton productivity and densities of common and widespread zooplankton species have declined in the Bay-Delta, particularly in the low salinity zone that serves as a critical nursery area for larvae and juveniles of many native fish species. Although the hypothesis that declines in estuarine food web productivity have caused declines in Bay-Delta fish populations has little empirical support (and no support, in the case of most native fish species), reduced productivity of the estuarine food web is strong evidence that estuarine habitat conditions are deteriorating. Impaired inflow to the estuary is a major factor. Declines in phytoplankton productivity in the low salinity zone are strongly linked to the synergistic effect of invasive benthic species and increased freshwater exports (Hammock et al 2019b). Abundance of key zooplankton species in the low salinity zone of the estuary respond positively and strongly to increases in seasonal Delta outflow (Orsi and Mecum 1996; Kimmerer 2002; Mac Nally et al. 2010; Kimmerer et al. 2018; Hassrick et al. 2023) indicating that improvements in seasonal Delta outflow during spring, summer, and fall are essential to protecting and maintaining Bay-Delta estuarine habitat. Clearly flows that stimulate estuarine habitat are needed more frequently than what occurs under current requirements. Most of the Bay-Delta's estuarine fish species rely on zooplankton prey during at least part of their life-cycle. As a result, many Bay-Delta observers have postulated that the concurrent declines of key zooplankton prey species in the Bay-Delta estuary and the native fish species that prey upon them is evidence of a mechanistic linkage between estuarine food web	Please see Common Response 3.1, Fish Protection, for process for updates to literature in Chapters 3 and 4 and a discussion on habitat benefit analyses. The Staff Report makes no definitive claims that declines in estuarine food web productivity are the primary cause of declining native fish populations. ^Kimmerer's (2002b) study results on declining zooplankton were included in the 2023 Staff Report. Chapters 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations, and 4, Other Aquatic Ecosystem Stressors, of the Staff Report acknowledge that the food web has been impacted by the invasive overbite clam and reduced outflow. A multifaceted approach is needed to improve ecosystem conditions and address aquatic resource stressors as discussed in Chapter 4. The Staff Report includes an analysis of winter, spring and fall outflow effects on zooplankton abundance indices in Section 3.11, Zooplankton (Neomysis mercedis and Eurytemora affinis). The relationships between outflow and abundance from ^Hennessey and Buris (2017), including their graphical representations, are incorporated in Section 3.11.4, Flow Effects on Zooplankton, of the Staff Report. Staff have also added more discussion in Section 3.11.4.3, Nonnative Zooplankton, of the relationship between the nonnative species, P.forbesi and Delta outflow analyzed in Hassrick et al. 2023. The Staff Report includes analysis of the frequency of achieving ecological flow thresholds from the revised proposed Plan amendments in Section 13.5, Beneficial Environmental Effects, of the Staff Report. Frequency of achieving ecological flow thresholds would generally increase under the flow scenarios of the proposed Plan amendments or the regulatory pathway of the revised proposed Plan amendments compared to baseline. Please see Common Response 1.2, Water Quality Control Planning Process, for a discussion of reasonable protection of

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		productivity and native fish abundance (e.g., Sommer et al. 2007). There is little evidence to support this hypothesis. For instance, although Kimmerer (2002) documented declines in phytoplankton and several zooplankton populations, he found scant evidence that reduced food supplies translated into declines in the abundance or survival rates of various pelagic fish species – indeed, Kimmerer found: ...rather consistent declines in the late 1980s among the lower trophic levels, particularly in summer. Although the specific temporal pattern varied among responses, chl a [phytoplankton] and abundance of 4 zooplankton taxa were lower after 1987 than before. This contrasts with the overall pattern among fish and shrimp. Few of these showed a pattern of annual abundance or survival index that was consistently lower after 1987 than before... Kimmerer 2002 at 45. Regardless of their direct effect on pelagic fish species, estuarine zooplankton populations are sensitive indicators of the condition of estuarine habitat. For this reason, the steep decline in density of formerly widespread and abundant zooplankton, such as <i>Eurytemora affinis</i>, <i>Pseudodiaptomus forbesi</i>, <i>Acartia</i> spp., and native mysid shrimp indicates that Bay-Delta estuarine habitat conditions have deteriorated. Abundance of each of these species in the estuarine low salinity zone responds strongly and positively to Delta outflow (or inversely to X2; Kimmerer 2002; Mac Nally et al. 2010; Hennessy and Burris 2017a,b [See ATT 9 and ATT 10, respectively]). For example, increasing Delta outflows transport increasing numbers <i>P. forbesi</i> to areas of the Delta and Suisun Bay where they are available to Delta Smelt and other native predators (Kimmerer et al. 2018; Hassrick et al. 2023). By contrast, there is almost no evidence that abundance of estuarine zooplankton available to Bay-Delta pelagic fish can be significantly increased by restoring shallow sub-tidal environments in the Delta (see NRDC et al. 2023 [See ATT 50 and ATT 93] and above). Zooplankton abundance in the estuary's pelagic waters responds positively to increases in Delta outflow during the spring,	fish and wildlife beneficial uses. See Common Response 1.3, Revised Proposed Plan Amendments, for a discussion of water quality objectives for fish and wildlife beneficial uses, the regulatory pathway, and general provisions, including biological goals.

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		summer and fall. Research by Hennessy and Burris (2017a,b) demonstrates that populations of key zooplankton indicators of estuarine habitat are extremely low in the spring when average March-June Delta outflow is < ~30,000 cfs (<i>E. affinis</i>) or average March-May flows are < ~40,000 cfs (mysid shrimp) and in the summer when Delta outflow is < ~6,500 cfs (<i>P. forbesi</i>) (Figure 12 [See Exhibit 12]). Kimmerer et al. (2018) and Hassrick et al. (2023) confirm the importance of elevated summer and fall flows on abundance of <i>P. forbesi</i> in the estuarine low salinity zone. These results suggest that the Delta outflow thresholds identified by the Board as protective of Bay-Delta Zooplankton (20,000 cfs in spring months) will not protect estuarine habitat during spring. Given the results of Hennessy and Burris (2017a,b), Kimmerer et al. (2018), and Hassrick et al. (2023), the Board must revise the spring flow thresholds identified as protective of zooplankton and rectify its failure to identify summer and fall flow levels needed to protect estuarine zooplankton and their estuarine habitat. Finally, the Board must define biocriteria for the reasonable protection of estuarine habitat, including the frequency with which key zooplankton populations will attain target densities. Absent such a definition, it not possible for the Board or the general public to determine whether its proposed project (or any update to Plan objectives and the POI) will provide reasonable protection for estuarine habitat.	
308	80	[Exhibit 12: Three graphs titled Figure 12: Relationship of Delta outflow to density of three different key zooplankton populations in the low salinity zone of Suisun Bay, in different seasonal periods]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
308	81	Harmful Algae Blooms (HABs) Declines in the productivity of the estuarine foodweb are not the only indicator of the catastrophic deterioration of estuarine habitat in the Bay-Delta. The emergence of persistent harmful algal blooms (HABs), particularly in the Delta, indicates that the freshwater and low salinity parts of the estuary are becoming inhospitable to aquatic life – i.e., the value of estuarine habitat in the Bay-Delta is greatly diminished. Seasonal blooms of harmful and toxic algal species in the Delta are increasingly common, long-lasting, and widespread. These HABs impair estuarine	See Common Response, 3.1, Fish Protection, for a discussion of updates to literature in Chapter 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations, and use of best available science. Staff Report Section 7.12.1, Surface Water, evaluated the potential flow effects on cyanobacterial harmful algal bloom (HAB) formation in the Delta due to the proposed Plan amendments and associated alternatives. As described in Section 7.12.1, flow changes that could occur during the summer under the flow scenarios are more likely to affect HABs in channels that

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		habitat by killing fish and planktonic organisms, recreational uses of water, and even public health. To form a bloom, HAB-forming organisms require adequate light, water temperatures, nitrogen and phosphorous (e.g., nutrient) concentrations, and low flow (high residence time, low suspended sediment levels). Light levels and water temperatures are almost always adequate to support blooms in the Delta between late spring to mid-fall; nutrient loads are always high enough to support a bloom (Berg and Sutula 2015) despite expensive upgrades to the region's largest water treatment facilities. Flows are inadequate to repress HABs in the Delta in all but the wettest years – flow levels that can impede formation, duration, and extent of HABs can be restored by reducing water diversions upstream. Under the right conditions – including nutrient levels, water temperature, light levels/turbidity, and residence time – several photosynthetic microorganisms can form HABs (Berg and Sutula 2015). In the Delta, the main HAB-forming organisms —cyanobacteria in the genus <i>Microcystis</i>— are toxic to aquatic life, including zooplankton, fish, and mammals, and to people. Toxins from additional bloom-forming algae taxa have been detected more recently (Kudela et al. 2023 [See ATT 8]). The toxins produced by <i>Microcystis</i> – microcystins – are found in Delta waters, throughout the Delta food web (Lehman et al. 2010 [See ATT 68]), and in shellfish that live in habitats more saline than <i>Microcystis</i> can tolerate (Peacock et al. 2018 [See ATT 69]), and even in the air above water where a bloom has formed (Plaas and Paerl 2022 [See ATT 70]). Other toxic bloom forming algal taxa can have similar or more dramatic negative effects (Kudela et al. 2023). Thus, harmful algal blooms in the Delta compromise numerous beneficial uses of the Bay-Delta, including EST, COMM, SHELL, MIGR, REC-1, REC-2, and tribal beneficial uses. Although it acknowledges the critical role of river flows on the formation of HABs (Draft Staff Report at 7.12.1-38), the Draft Staff Report fails to analyze the effect of alternative flow regimes on HABs in the Delta. Freshwater flow rates into the Delta are known to have a negative effect on <i>Microcystis</i> bloom formation, cell density, as well as total toxin concentration and toxin concentration per cell (Lehman et al. 2008, 2020 [See ATT 71 and ATT 11, respectively]). Freshwater flows into the estuary	convey water to the export pumps. Travel times through Victoria Canal were estimated using DSM2 results for baseline conditions and the 35, 45, 55, 65, and 75 flow scenarios (see Appendix A2, Delta Simulation Model II (DSM2) Methods and Results). The 35 and 75 scenarios capture the low-end and high-end effects associated with the Low Flow Alternative (Alternative 2) and High Flow Alternative (Alternative 3), respectively. Victoria Canal was selected as a representative large channel that could be affected by changes in Delta exports and that already has experienced some limited formation of HABs. Appendix A2, includes results of DSM2 modeling of the effects of the flow scenarios (35, 45, 55, 65, and 75 percent of unimpaired flow) on channel flow in the San Joaquin River near Stockton (Figure A2-14) and a discussion of possible effects on HABs. The analysis found that the flow scenarios would be unlikely to affect flows in the turning basin, where HABs regularly occur. Please see Common Response 4.1, Harmful Algal Blooms, for responses to comments related to instream flow (including summertime flow thresholds) and Delta HABs.

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		control residence time of algal cells (higher flows help disperse the cells before a HAB can form) and also mediate turbidity (faster flows carry higher sediment loads), stratification/mixing of the water column, and water temperatures where blooms typically form (Bashevkin and Mahardja 2022 [See ATT 19]) in ways that impede bloom formation and growth [Footnote 7: Two of the major dischargers of nitrogen and phosphorous into the Delta (the Stockton and Sacramento Sanitation wastewater treatment plants) have been upgraded in recent years –at great expense– in order to reduce nutrient loading into the Delta (Draft Staff Report at 7.12.1-39). Thus, major and expensive “non-flow” mitigations for HABs in the Delta have already been implemented.]. Kudela et al. (2023 at 14) summarized the effect of flow on Microcystis, as follows: When mixing is weak, conditions are ideal for the development of Microcystis blooms because of their high degree of buoyancy. Conversely, if mixing is relatively strong, Microcystis blooms tend not to develop; most likely because they will then have to compete with other, faster-growing, non-cyanobacterial taxa (chlorophytes, diatoms). Lehman et al. (2013 [See ATT 72], 2020) identified summertime flows $\geq \sim 2,825$ cfs (80 cms) at Vernalis on the San Joaquin River and Sacramento flow at Rio Vista $\geq \sim 10,600$ cfs (300 cms) as associated with reduced HAB activity in the Delta. The Draft Staff Report should be revised to analyze the frequency of these flow levels during the relevant months for HAB formation in the Delta. Furthermore, the Draft Staff Report fails to acknowledge the persistence of HABs in the southern Delta, downstream of Vernalis (Draft Staff Report at 7.12.1-33). Although HAB formation in this area is affected by flows from the San Joaquin River, which were covered in Phase I of the Board’s Bay-Delta Plan update, that update did not address HABs at all. Therefore, the Draft Staff Report must analyze the effect of the Bay-Delta Plan updates on HABs that form persistently downstream of Vernalis. B) Harmful Algae Blooms (HABs)	

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		Declines in the productivity of the estuarine foodweb are not the only indicator of the catastrophic deterioration of estuarine habitat in the Bay-Delta. The emergence of persistent harmful algal blooms (HABs), particularly in the Delta, indicates that the freshwater and low salinity parts of the estuary are becoming inhospitable to aquatic life – i.e., the value of estuarine habitat in the Bay-Delta is greatly diminished. Seasonal blooms of harmful and toxic algal species in the Delta are increasingly common, long-lasting, and widespread. These HABs impair estuarine habitat by killing fish and planktonic organisms, recreational uses of water, and even public health. To form a bloom, HAB-forming organisms require adequate light, water temperatures, nitrogen and phosphorous (e.g., nutrient) concentrations, and low flow (high residence time, low suspended sediment levels). Light levels and water temperatures are almost always adequate to support blooms in the Delta between late spring to mid-fall; nutrient loads are always high enough to support a bloom (Berg and Sutula 2015) despite expensive upgrades to the region's largest water treatment facilities. Flows are inadequate to repress HABs in the Delta in all but the wettest years – flow levels that can impede formation, duration, and extent of HABs can be restored by reducing water diversions upstream. Under the right conditions – including nutrient levels, water temperature, light levels/turbidity, and residence time – several photosynthetic microorganisms can form HABs (Berg and Sutula 2015). In the Delta, the main HAB-forming organisms —cyano-bacteria in the genus <i>Microcystis</i>— are toxic to aquatic life, including zooplankton, fish, and mammals, and to people. Toxins from additional bloom-forming algae taxa have been detected more recently (Kudela et al. 2023 [See ATT 8]). The toxins produced by <i>Microcystis</i> – microcystins – are found in Delta waters, throughout the Delta food web (Lehman et al. 2010 [See ATT 68]), and in shellfish that live in habitats more saline than <i>Microcystis</i> can tolerate (Peacock et al. 2018 [See ATT 69]), and even in the air above water where a bloom has formed (Plaas and Paerl 2022 [See ATT 70]). Other toxic bloom forming algal taxa can have similar or more dramatic negative effects (Kudela et al. 2023). Thus, harmful algal blooms in the Delta compromise numerous beneficial uses of the Bay-Delta, including EST, COMM, SHELL, MIGR, REC-1, REC-2, and tribal beneficial uses.	

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		Although it acknowledges the critical role of river flows on the formation of HABs (Draft Staff Report at 7.12.1-38), the Draft Staff Report fails to analyze the effect of alternative flow regimes on HABs in the Delta. Freshwater flow rates into the Delta are known to have a negative effect on Microcystis bloom formation, cell density, as well as total toxin concentration and toxin concentration per cell (Lehman et al. 2008, 2020 [See ATT 71 and ATT 11, respectively]). Freshwater flows into the estuary control residence time of algal cells (higher flows help disperse the cells before a HAB can form) and also mediate turbidity (faster flows carry higher sediment loads), stratification/mixing of the water column, and water temperatures where blooms typically form (Bashevkin and Mahardja 2022 [See ATT 19]) in ways that impede bloom formation and growth [Footnote 7: Two of the major dischargers of nitrogen and phosphorous into the Delta (the Stockton and Sacramento Sanitation wastewater treatment plants) have been upgraded in recent years –at great expense– in order to reduce nutrient loading into the Delta (Draft Staff Report at 7.12.1-39). Thus, major and expensive “non-flow” mitigations for HABs in the Delta have already been implemented.]. Kudela et al. (2023 at 14) summarized the effect of flow on Microcystis, as follows: When mixing is weak, conditions are ideal for the development of Microcystis blooms because of their high degree of buoyancy. Conversely, if mixing is relatively strong, Microcystis blooms tend not to develop; most likely because they will then have to compete with other, faster-growing, non-cyanobacterial taxa (chlorophytes, diatoms). Lehman et al. (2013 [See ATT 72], 2020) identified summertime flows $\geq \sim 2,825$ cfs (80 cms) at Vernalis on the San Joaquin River and Sacramento flow at Rio Vista $\geq \sim 10,600$ cfs (300 cms) as associated with reduced HAB activity in the Delta. The Draft Staff Report should be revised to analyze the frequency of these flow levels during the relevant months for HAB formation in the Delta. Furthermore, the Draft Staff Report fails to acknowledge the persistence of HABs in the southern Delta, downstream of Vernalis (Draft Staff Report at 7.12.1-33). Although HAB	

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		formation in this area is affected by flows from the San Joaquin River, which were covered in Phase I of the Board's Bay-Delta Plan update, that update did not address HABs at all. Therefore, the Draft Staff Report must analyze the effect of the Bay-Delta Plan updates on HABs that form persistently downstream of Vernalis.	
308	82	3. Other ecological values Numerous other fish and wildlife species, habitats and ecological processes of the estuary have been adversely impacted by the reduction and alteration of flow amounts and timing. The effect of reduced peak flows on sediment transport has contributed to the degradation and loss of floodplain, wetland and beach habitats throughout the estuary. Coastal populations of forage fish, sea birds, and marine mammals have likely been decreasing due in part to reduced inflow to the estuary and nearshore coastal waters and associated flow-induced changes to the food web. For instance, numerous studies have documented the effect of declining availability of salmon prey on population growth in southern resident orca whale populations (Wasser et al 2017; Hanson et al 2021). Increasing rates of introduction and successful colonization by invasive non-native species are also linked to reduced inflow to the estuary (Winder et al. 2011 [See ATT 7]). Furthermore, water quality conditions in the Bay-Delta have deteriorated such that direct human uses are severely impaired. For a review of a broad range of impacts associated with flow changes, see TBI 2016.	The relationship between riverine flow and sediment transport/habitat processes can be found in Chapter 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations, Section 3.2.1, Riverine Flows, and Chapter 4, Other Aquatic Ecosystem Stressors, Section 4.2, Physical Habitat Loss or Alteration. Two studies are cited in Chapter 3 describing the relationship between prey and orca whale abundance: Ward et al. 2009 and Ford et al. 2010. Staff have updated this discussion to include Hanson et al. (2021). Please see Common Response 3.1, Fish Protection, for process for updates to literature in Chapter 3 and 4 and flow-benefit analyses. Nonnative species are discussed in Chapter 4, Section 4.4, Nonnative Species.
308	83	Current Flow Standards are Inadequate to Maintain Fish in Good Condition, per the Requirements of Fish and Game Code § 5937 As described above, native fish in the estuary and its watershed are not presently in good condition with respect to any of the three tiers of the definition presented by Moyle (2017). Indeed, several species in the native fish assemblage are at risk of being extinguished permanently. Loss of native fish populations is not consistent with any definition of fish "in good condition." Failure to attain population viability also indicates that individual fish are not being maintained in good physical health, as required by the Tier 1 of the definition of "fish in good	As discussed in Section 5.4.3.3, Proposed Cold Water Habitat Objective, of the 2023 draft Staff Report, a cold water habitat objective is proposed as a complementary measure to the inflow objective to ensure there are no redirected impacts on cold water habitat from the new flow objectives and to address other existing and potential future temperature management concerns for salmonids and other native species. As reiterated in Section 13.3.3.3, Cold Water Habitat, of the final Staff Report, the cold water habitat objective would be implemented through requirements for management of cold water storage and releases and/or alternative protection measures to ensure that fish below dams are kept in good condition consistent with Fish and Game Code section 5937 and the cold water habitat

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		condition” provided by Moyle (2017 [See ATT 2]). In addition, there is direct evidence that individual fish are being stressed and/or killed by high river temperatures and low flows. For example, SWFSC 2023 [See ATT 6] (at 150) describes direct mortality to adult spring-run Chinook Salmon as a result of high water temperatures in Sacramento River tributaries. In another example, during April and May of 2021, Reclamation released very warm water into the Sacramento River that killed migrating winterrun Chinook Salmon, as part of a disastrous bid to conserve cold water for release later in the incubation season (Reclamation 2021 at 3). CDFW reported high levels of pre-spawn mortality among migrating adult winter-run early in 2021, stating: Crews continue to observe live fish that are exhibiting unusual swimming behavior, fish covered with fungus patches, and unspawned fish drifting downstream while still alive but moribund and presumed to die shortly after observation. CDFW 2023a, “Discussion” tab, Row 24 By the end of the spawning season, CDFW recovered carcasses of approximately 95 winter-run females that had died prior to spawning–5.5% of total female carcass recoveries (CDFW 2021, “winter-run data table” tab, Row 47 available at: https://www.calfish.org/ProgramsData/ConservationandManagement/CDFWUpperSacRiverBasinS%20almonidMonitoring/tabid/357/Agg2208_SelectTab/4/Default.aspx) There is no biological justification for exposing adult Chinook Salmon to temperatures that reduce or eliminate their reproductive success in order to save cold water for later use to protect the eggs of these same fish. Killing adult salmon by releasing hot water from dams is a stark example of failure to maintain fish in good condition and the need for coldwater habitat requirements below Central Valley dams. The Board must adopt, implement, and then enforce water temperature protections for Central Valley Chinook Salmon, consistent with the best available science. Furthermore, the decline in numerous native fish species, and in	objective. Please see Common Response 3.1, Fish Protection, for a discussion of the State Water Board’s use of best available science, including the approach to updating the scientific literature, and the State Water Board’s approach to analyzing the effects of flow on species abundance and life cycle models. See also Common Response 1.3, Revised Proposed Plan Amendments, for an overview of the cold water habitat objective and the program of implementation with Biological Goals, and Common Response 1.2, Water Quality Control Planning Process, for a discussion of the reasonable protection of fish at all life stages. Lastly, see also final Staff Report Section 13.6.1, Public Trust Analysis, for a discussion of Fish and Game Code section 5937 and how its requirement that fish below dams be kept in good condition relates to the public trust doctrine.

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		particular anadromous salmonids, means that the status of the fish assemblage does not represent “fish in good condition” (per Tier 3 of Moyle’s (2017) definition). Restoring the Bay-Delta’s fish assemblage to good condition will require changes to dam operations such that flow levels are sufficient to allow native fish to complete their life cycle and reproduce successfully in most years and so that the full assemblage of native species is maintained. Without such changes to operations, the species assemblage will not regain its resilience to myriad other man-made and natural disturbances that this ecosystem faces now and in the future.	
308	84	F. Pending Projects to Divert More Water from the Bay-Delta Estuary and Watershed will Further Reduce Flows to the Estuary and Accelerate Declines in Native Fish and Wildlife Populations and Water Quality The proportion of unimpaired runoff from the Central Valley that makes it to and through the Delta to San Francisco Bay has declined dramatically over the past century and over the past 25 years (Hutton et al. 2017 [See ATT 73]; Reis et al. 2019 [See ATT 72]; Figure 13 [See Exhibit 13]). One reason this trend persists is that the Plan’s existing river and estuarine flow objectives are minimum requirements that do not address changes in the water management system’s capacity to divert unregulated flows above the minima. This trend will only be exacerbated by the entirely foreseeable – indeed, imminently pending –increase in diversion of unregulated flows by proposed projects (SWRCB 2017 at pp. 5-22 through 5-23). As the Draft Staff Report explains (at 1-9): Total average annual unimpaired (without diversions and dams under current channel and infrastructure conditions) outflows from the Bay-Delta watershed are about 28.5 million acre-feet (MAF). Annual average outflows with diversions are a little more than half this amount at about 15.5 MAF, and outflows during the winter and spring from January through June are less than half. However, average regulatory minimum Delta outflows are only about 5 MAF, or about a third of current average outflows and less than 20 percent of average unimpaired outflows. Existing	Please see Section 7.24.2.1, Changes in Hydrology, for an analysis of the potential effects on hydrology of several proposed water infrastructure projects and Common Response 1.2, Water Quality Control Planning Process, for information on the reasonable protection of fish and wildlife beneficial uses.

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		regulatory minimum Delta outflows would not be protective of the ecosystem, and without additional instream flow protections, existing flows may be reduced in the future, particularly with climate change and additional water development absent additional minimum instream flow requirements that ensure flows are preserved in stream when needed for the reasonable protection of fish and wildlife. Absent Bay-Delta Plan updates that both adopt the percent unimpaired flow approach which allows for more natural flow patterns and set that percentage at levels that reasonably protects fish and wildlife beneficial uses, flows to the estuary will continue to be reduced in volume and altered in timing by several major water development projects that are currently moving forward. This includes ensuring that more than the minimum is required and that currently unregulated flows are protected.	
308	85	[Exhibit 13 “Figure 13: Trends in actual Delta outflow (below) relative to Central Valley unimpaired runoff (above). Coloring of bars represent water year types based on quintiles of unimpaired flow from 1922-2016. The percentage of unimpaired flow reaching San Francisco Bay (line in lower panel; right y-axis) declined significantly during this time-period (Kendall’s tau = -0.36, p < 0.001), including since 1995 (Kendall’s tau = -0.29, p < 0.05). Copied from Reis et al. 2019 [See ATT 62].”]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
308	86	Sites Reservoir is a proposed new off-channel reservoir that would divert water from the Sacramento River during October-June for later delivery to agricultural and urban users. If approved, Sites Reservoir diversion operations are expected to reduce winter-spring flows that many Bay-Delta species rely on to complete their life cycles (e.g., Sites RDEIR/SDEIS Table 5c- 9-1c). The Delta Conveyance Project is also designed to capture and divert river flows that are not protected by water quality standards. In this project, CDWR proposes to route Sacramento River flow through an underground tunnel to existing export infrastructure in the southern delta. Operation of the Delta Conveyance Project would substantially reduce flows in the lower Sacramento River (CDWR 2023, Appendix 05C Table 5C-42 at 5c-43). These two projects – operating alone or in tandem – and/or other new diversions will divert flows in a way that	The 2023 draft Staff Report acknowledges that existing Delta outflow requirements are far below existing Delta outflow levels and are likely to be reduced over time without additional instream flow protection. The proposed plan amendments would require implementation of unimpaired flow within a range of 45-65 with a starting point at 55. The flow scenarios would protect Delta outflows currently not protected by any regulation or order needed for the reasonable protection of aquatic beneficial uses. Under the revised proposed Plan amendments, water supply adjustments would apply for existing water rights that would not necessarily apply to new water right projects or change petitions. The revised proposed Plan amendments also include a provision for the protection of the VA baseflows applicable to new water supply projects. See Staff Report Section 13.5.5, Range of Possible Benefits, for a discussion of the range of

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		negatively affects spawning and recruitment of juvenile White Sturgeon and Green Sturgeon, migration of juvenile Chinook Salmon and Steelhead, and recruitment of Longfin Smelt and Delta Smelt, among other species. Both projects are also likely to further degrade estuarine habitat conditions by denying flows to the Bay that repress HABs and foster productivity of the estuarine food web. Therefore, it is critical that Bay-Delta Plan updates be based on the analysis of the flows that will actually occur in future because they are protected by the Plan's flow objectives (and the associated benefits), as opposed to the supposed benefits that would accrue from flows that would be surplus to updated Plan objectives but subject to capture as a result of future changes in storage, diversion and conveyance capacity. This is not an academic issue: as demonstrated since the last Bay-Delta Plan update, flows that are not protected by regulation are likely to be diverted or stored in the future. The probable effect on native fish species and estuarine habitat of failure to protect unregulated flows can be seen by comparing the projected frequency with which different flow regimes will achieve the Board's estimate of relevant threshold flows when unregulated flows are not included (SWRCB 2017) versus when unregulated flows are assumed to continue in the future, as in the Draft Staff Report (Figure 14 [Exhibit 14]).	possible benefits. Please see Common Response 1.3, Revised Proposed Plan Amendments, for information on the voluntary agreement provisions, including protection of base flows, and regarding comments on other water supply projects. Please see Common Response 4.1, Harmful Algal Blooms, for a discussion of HABs. See Common Response 7.23, Cumulative Impact Analysis, for responses to comments related to the consideration and analysis of cumulative impacts associated with Sites Reservoir and the Delta Conveyance Project.
308	87	The Proposed Project is Incomplete and the Available Evidence Indicates that it will Not Provide Reasonable Protection of Fish and Wildlife Beneficial Uses or Achieve Plan Objectives The Draft Staff Report Fails to Provide a Stable Project Description for the Proposed Project The Draft Staff Report fails to provide a stable and finite project description for the proposed project as required by CEQA. Cal. Code Regs., tit. 23, § 3775 et seq. "An accurate, stable and finite project description is the sine qua non of an informative and legally sufficient EIR." County of Inyo v. City of Los Angeles, 71 Cal.App.3d 185, 193 (1977). CEQA requires a clear explanation of the nature and scope of a proposed project, otherwise the required environmental review "is fundamentally inadequate	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project. To the extent that this comment summarizes other comments, please see the substantive responses to those comments. Please refer to Common Response 7.1, General CEQA and Approach to the Analysis, regarding the adequacy of the project description and approach to the analysis.

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		and misleading.” <i>Communities for a Better Environment v. City of Richmond</i> , 184 Cal.App.4th 70, 84-85 (2010).	
308	88	The Draft Staff Report’s analysis and description of the proposed project is critically deficient due to the missing Program of Implementation (POI). (Draft Staff Report at 5-1; Cal. Water Code § 13242.) [Footnote 8: “...the State Water Board will provide additional opportunity for comment on the specific regulatory text changes to the Bay-Delta Plan, including the specific changes to the program of implementation text, which has not yet been developed.” Draft Staff Report at 5-1 (emphasis added).] Unlike the SED in Phase 1 of the Bay-Delta Plan, the public cannot review the POI for this Draft Staff Report to understand exactly what “actions the State Water Board will take to implement the objectives and protect beneficial uses and the actions that others should take to do so [Footnote 9: In addition to the SED for Phase I of this Bay-Delta Plan update process, there are other examples of Water Quality Control Plan drafts that included Programs of Implementations in CEQA documents: Water Quality Control Plan for the San Diego Basin (Chapters 4 and 5), Water Quality Control Plan for the North Coast Region (Sections 4 and 5).]” (Draft Staff Report at 5-2; see also Attachment: NRDC et al. 2017 Phase 1 SED Comments). The POI for Phase 2 is fundamental to understanding both the true “nature” and “scope” of the proposed project, and its absence “subverts full consideration of the actual impacts” of the proposed project. (See <i>Communities for a Better Env’t v. S. Coast Air Quality Mgmt. Dist.</i> , 48 Cal. 4th 310 (2010)).	Please see the response to comment 308-4.
308	89	The failure to provide a POI for the Proposed Project is particularly egregious given the years of delay in this Plan update process. It appears the Draft Staff Report was essentially complete in 2017. The Board noted that the Draft Staff Report was nearing completion over a year ago in Fall of 2022 but was delayed once again by the Voluntary Agreement proposal submission. Draft Staff Report at 7.24-1. Rather than publicly releasing a defined and enforceable POI, the SWRCB instead took another year to produce a deficient Draft Staff Report and legally inadequate Voluntary Agreement proposal, risking further catastrophic damage to the Bay- Delta’s rare species, fisheries, and other identified beneficial uses as status quo conditions continue without action from the Board.	Please see the response to comment 308-4.

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308	90	Additionally, the Draft Staff Report changes the “nature and scope” of the proposed project by adopting new narrative objectives for flows needed to support and maintain native fish viability, retaining the existing narrative salmon protection objectives but not including an accompanying POI. The proposed Plan updates do not articulate these objectives sufficiently to determine whether a hypothetical POI could attain them or to evaluate progress towards the attainment in subsequent, required triennial review processes. CEQA defines a “project” as “the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment...” (Cal.Code Regs., tit. 14, § 15378(a) (emphasis added), see also Tuolumne Cnty. Citizens for Responsible Growth, Inc. v. City of Sonora, 155 Cal.App.4th 1214, 1221-1222 (2007)). Here, the narrative objectives are fundamental to the proposed project and the proposed amendments and there is critical information missing that prevents adequate review. For example, the Board does not define the biological outcomes that represent the attainment of its narrative objectives, nor does it set a timeframe for attainment of them. Without such biological outcomes and time-bound attainment criteria must be included in a POI, the public is unable to evaluate the adequacy or environmental impacts of purported improvement to salmon habitat conditions under the proposed project. In other words, the public is unable to truly evaluate the “whole of the action”, as required by CEQA. Cal.Code Regs., tit. 14, § 15378(a).	The draft text of the proposed objectives was included in the 2023 draft Staff Report. The draft text of the proposed Narrative Viability Objective was included in Section 9.3.2, Narrative Viability Objective and Narrative Salmon Objective, of the 2023 draft Staff Report. Please see the response to comment 308-4. Also see Common Response 1.3, Revised Proposed Plan Amendments, and Common Response 1.2, Water Quality Control Planning Process, for more information on the objectives. The comment does not raise any particular potentially significant environmental impact. The environmental analysis covered a broad range of potential outcomes and was adequate for the purposes of evaluating the project. Also see Common Response 7.1, General CEQA and Approach to the Analysis, for information on the scope of the analysis.
308	91	The Proposed Project Lacks a Program of Implementation The Board’s mandate under Porter-Cologne includes not only establishing water quality objectives that reasonably protect beneficial uses but also a program of implementation (POI) that describes the actions necessary to achieve those objectives. The POI must adequately consider all factors relevant to the objectives and establish a rational connection between those factors and the actions included in the POI, ensuring that the actions in the POI are sufficient to achieve the objectives. (See Western States Petroleum Assn, supra, 9 Cal.4th at 577; Wat.	Please see the response to comment 308-4.

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		Code §13242(a), see also State Water Resources Control Bd. Cases, supra, 136 Cal.App.4th at 775 (citing Wat. Code § 13050(j)(3).) Because “the specific changes to the Bay-Delta Plan, and specifically the program of implementation, have not been developed yet” (Draft Staff Report at 1-6), the draft is incomplete, and, as discussed above, can neither be “considered as the SED that fulfills the requirements of CEQA” nor as an adequate document to “inform the State Water Board’s consideration of the Sacramento/Delta updates to the Bay-Delta Plan” (Draft Staff Report at 1- 6).	
308	92	The Draft Staff Report must be revised to include a POI that contains clear, specific and enforceable criteria to (a) govern potential variations within the permitted adaptive range for the numeric flow objectives and to manage in-Delta hydrodynamics, (b) reduce or eliminate potential conflicts between the implementation of particular objectives, and (c) protect the most sensitive beneficial uses when balancing among competing uses. The proposed numeric flow objectives include an adaptive range within which flows may be adjusted up or down. We agree with the use of an adaptive flow range, although both the proposed starting point and range of the flow objective must be revised so that the Bay-Delta Plan and its POI can support and maintain the viability of native fishes (which must be defined for all relevant fish) and reasonably protect fish and wildlife and other beneficial uses. Flow variations should only be authorized in order to better achieve specific measurable (quantitative, unless infeasible) biological and ecological targets that define attainment of the fish and wildlife objectives in Table 3. (There is more than sufficient information available to establish targets for almost all aquatic species and other ecological values, and some of these targets can be adopted as enforceable biocriteria in Table 3 itself. Our comments describe in detail specific desired biological and ecological outcomes and thresholds that can and should be used to inform the adoption of both Table 3 biocriteria and POI targets.). Without specific guidance regarding adjustment within the	Please see the response to comment 308-4. The inflow-based Delta outflow objective would require that required inflows in the Bay-Delta Plan be provided as outflows and thus changes to ESA requirements would not affect the required outflows from the inflow-based Delta outflow objective. Also see Common Response 1.2, Water Quality Control Planning Process, for information on reasonable protection of fish and wildlife beneficial uses and Common Response 1.3, Revised Proposed Plan Amendments, for information on the regulatory pathway implementation of the inflow and inflow-based Delta outflow objectives.

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		adaptive flow range, there is a significant danger that discretion in permitting flow variations will be exercised for purposes inconsistent with attainment of the Table 3 objectives. Therefore, the POI must include a complete set of relevant targets for achieving fish and wildlife objectives and a mechanism for ensuring that flow variations are authorized based on the best available scientific evidence for how to better meet these targets, reasonably protect beneficial uses, and achieve Plan objectives. The POI must also ensure that flow variations in the permitted range for the numeric inflowbased outflow objectives are made on the basis of better meeting outflow needs related to fish and wildlife beneficial uses and not on the basis of proposed changes to inflow objectives unless clearly triggered by specific criteria (see below for discussion of coldwater habitat triggers). Delta outflows must be responsive to estuarine needs, now and in the future. The inflow-based approach to setting Delta outflow requirements will require careful attention in the POI. Future changes to regulations, operational criteria and other factors that apply to areas upstream of the Delta could all reduce flows to the estuary and negatively impact fish and wildlife beneficial uses. The POI must provide safeguards to protect needed levels of Delta outflow associated with expected outcomes for estuary-dependent species, habitats, and processes from flow reductions that are based on changing tributary needs, non-estuarine considerations, and changes in upstream regulations and operational criteria. Changes in ESA protections for endangered species upstream should not automatically trigger reductions in the permitted range, because Porter-Cologne and the federal Clean Water Act hold the Board to a higher standard than the federal or state ESAs.	
308	93	Similarly, the POI should include relevant biological and ecological targets that will govern implementation of the Plan's narrative and numeric objectives for in-Delta hydrodynamics. (The objectives governing OMR flows and other in-Delta channel flows must be revised to provide and maintain a level of protection above and beyond that under ESA and CESA permit requirements; rather, these objectives should be designed to achieve reasonable protection of fish and wildlife beneficial uses and to achieve the Plan's objectives). The POI should also	Biological goals would provide the biological and ecological targets referred to by the commenter. Biological goals would be established after Plan adoption and would be used to inform the continued update and implementation of the Bay-Delta Plan. Please see the responses to other more specific comments on the OMR objectives from Letter 308. The general provisions proposed for drought in the program of implementation are described in Section 5.6.2.3, Climate Change, Drought, and Public Safety, of the 2023 draft Staff Report. The proposed program of

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		describe the mechanism for adjusting OMR flows and other in-Delta channel flows based on the best scientific evidence available regarding how to better meet the targets and achieve the objectives. During extended drought cycles, all beneficial uses are likely to suffer. These drought cycles are reasonably foreseeable and the POI must specify how Bay-Delta Plan implementation will adapt during extended dry periods. The POI must establish a hierarchy of priorities for beneficial use of water, ensuring that uses are impacted in inverse proportion to the risk of life- or ecosystem-threatening effects and to the potential for lasting and irreversible impacts. The POI must prioritize the protection of those most sensitive uses when there is a need to balance impacts on the full range of beneficial uses. Clearly, beneficial uses directly related to public health and safety (including subsistence and ceremonial uses of water and fish and wildlife) and to aquatic life and ecosystems health must be among the highest priorities. The POI must include mechanisms to address the potential impacts of extended drought cycles on these beneficial uses and Plan objectives and to reduce conflict between competing beneficial uses. The occurrence of extended drought cycles underscores the need for the POI to include actions to navigate potential conflicts in certain years between the coldwater habitat objective, the flow objectives, and consumptive uses. As discussed above, a broad array of species, habitats, and ecological processes are often reliant on reservoir releases to implement requirements for river flow to and through the estuary. Decisions regarding reservoir releases made early in the calendar year regarding both flow objectives and deliveries for consumptive uses affect cold water storage and thus, the ability of reservoir managers to provide adequate coldwater habitat below the dams later in the year. Premature release of reservoir storage represents an irrevocable decision that can lead to high water temperatures and lethal conditions for incubating salmonids during the summer and fall. Therefore, it is essential that reservoir operators plan in the winter and spring and account for coldwater storage needs in the coming summer and fall before making water supply allocation decisions.	implementation would include actions to protect cold water supplies as described in Section 5.4.3, Cold Water Habitat, of the 2023 draft Staff Report. Please see Common Response 1.3, Revised Proposed Plan Amendments, for more information on biological goals and requirements for cold water habitat and inflow, and Common Response 4.2, Drought and Climate Change, for more information on drought.

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		Because survival and abundance of numerous species (including migrating juvenile Chinook Salmon) improves significantly at higher river flows into and through the Delta (see above; Attachment: Salmon Flow Literature Matrix [See ATT 40]), these flows should be required, except when their impact on summer and fall river temperatures is outside of bounds that the Board sets in advance. Fortunately, temperature management upstream is amenable to decisions that reflect actual conditions (reservoir storage and snowpack) in the late-winter and spring. Therefore, the POI must establish reservoir carryover storage requirements and specific management triggers for adapting with the range of flow requirements in order to minimize temperature impacts, while maximizing the ability to meet relevant biological and ecological targets. In doing so, the Board can ensure that planning occurs in advance for reasonably foreseeable scenarios, thereby optimizing the effects of the Plan's flow and coldwater habitat requirements, while avoiding situations where stored water necessary for complying with water quality objectives is instead used for for less sensitive consumptive uses.	
308	94	Finally, the Board should consider requiring physical habitat restoration in the POI as a complement to the flow objectives in Table 3 (rather than as a substitute for meaningful flows, as in the VA alternative). The physical solution doctrine empowers the Board to require physical habitat restoration in order to promoting maximum beneficial use of the State's water resources. In D-1631 the Board applied the physical solution of compelling the appropriator to restore degraded streams and fisheries: In resolving disputes involving competing uses of water, California courts have frequently considered whether there is a "physical solution" available by which competing needs can best be served. (Peabody v. Vallejo, 2 Cal.2d 351, 383-384 [40 P.2d 4861 (1935); City of Lodi v. East Bay Municipal Util. Dist., 7 Cal.2d 316 [60 P.2d 4391 (1936).] Adoption of a physical solution is consistent with the constitutional goal of promoting maximum beneficial use of the State's water resources.	Please see Common Response 1.2, Water Quality Control Planning Process, for information on the consideration of non-flow measures and the State Water Board's authority to impose non-flow measures. In addition, please see Chapter 5, Proposed Changes to the Bay-Delta Plan for the Sacramento/Delta, and Chapter 13, Revised Proposed Plan Amendments, of the Staff Report and Common Response 1.3, Revised Proposed Plan Amendments, for information on the habitat restoration activities included in the revised proposed Plan amendments.

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		SWRCB Decision 1631 at 10.	
308	95	C. The Narrative Salmon Protection Objective Should be Revised to Remove Confusing Language The existing narrative salmon protection objective states that “[w]ater quality conditions shall be maintained, along with other measures in the watershed...”. The phrase “along with other measures in the watershed” has been the source of much confusion, and the proposed narrative flow objectives rightly do not replicate this poor drafting. Certainly there are measures other than those in Table 3 of the Bay-Delta Plan that can help protect salmon. However, in setting water quality objectives the Board must focus on those water quality parameters, including flow, that are properly included as Bay-Delta Plan objectives in Table 3. The Board can and should include additional actions in the POI that also contribute to salmon protection, including actions that the Board has separate authority to require. Unfortunately, some parties, including at times the Board itself, have used this phrase to confuse and conflate direct implementation of the water quality objective itself with actions in the POI to complement the objective, to the detriment of both.	No changes are proposed to the text of the narrative salmon protection objectives as part of this update to the Bay-Delta Plan. See Staff Report Chapter 4, Other Aquatic Ecosystem Stressors, for a discussion of the benefits of habitat restoration and other measures that could contribute to increasing salmon populations.
308	96	D. The Proposed Narrative Flow Objectives are Not Adequate to Protect Commercial, Recreational, and Subsistence Fisheries, Tribal Subsistence Fisheries, or Estuarine Habitat; Objectives Should Be Modified or Added to Reasonably Protect these Beneficial Uses The proposed narrative flow objectives for Delta Inflow, Delta Outflow, Interior Delta Flow, require that that inflow, streamflow, and outflow be “sufficient to support and maintain the natural production of viable native fish populations.” But the Board does not describe what a “viable” population is. As described elsewhere, this means that the Board cannot determine whether those narrative water quality objectives (a) reasonably protect fish and wildlife beneficial uses, or (b) whether those objectives are being met and achieved. But beyond this basic problem, viability as the Board has previously used the term does not ensure that the fisheries	As described in Section 7.1.3, Purpose and Goals of the Sacramento/Delta Update to the Bay-Delta Plan, of the 2023 draft Staff Report, the underlying fundamental purpose of the project is to establish water quality objectives, a program of implementation, and monitoring and special study measures for the reasonable protection of fish and wildlife beneficial uses in the Sacramento/Delta. In addition, as described in the Bay-Delta Plan, protection of fish and wildlife beneficial uses also provides protection for the commercial and sport fishing beneficial uses. Please see Common Response 1.3, Revised Proposed Plan Amendments, for information on the water quality objectives for fish and wildlife. Environmental impacts on fish species were evaluated in Section 7.6.2, Aquatic Biological Resources, of the 2023 draft Staff Report. Economic impacts to fisheries were evaluated in Section 8.6.1, Recreation, of the 2023 draft Staff Report, (Section 8.7.1

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		(commercial, recreational, tribal, or subsistence) would be reasonably protected. These other beneficial uses are identified for the watershed, and historically, the native fish that thrived in the Bay-Delta supported a host of different fisheries uses. If viability means, as the Board seems to understand the term, the minimum necessary to avoid decline to extirpation or extinction, this definition necessarily forecloses the existence of a sustainable fishery. Pursuing viability as barely avoiding the brink of catastrophe leaves no room for fisheries to exist and be protected. At simplest, viability requires some assessment, which is absent from the Draft Staff Report, of the abundance and other features of viability that must exist in order for a species to be considered “viable.” If, in that assessment, the science demonstrates that abundance estimates for species X need to be 1,000 fish at a certain location, achieving the viability objective would require (at least) meeting that abundance threshold. If the existence of a recreational fishery requires an additional 100 fish in those same measurements, and a commercial fishery would require 250 more, then reasonably protecting fishery uses would require meeting abundance targets that exceed baseline viability. The Draft Staff Report does not even acknowledge this reality as a possibility. It does not grapple with the relationship between viability and protection of historic fisheries, nor assess the impacts of alternatives analyzed in the Draft Staff Report on those fisheries. The reality demonstrates that fisheries beneficial uses (commercial, subsistence, tribal, and recreational) are (a) no longer in existence (e.g., Delta Smelt), (b) greatly limited from their historic analog (i.e. Sturgeon), (c) currently closed (e.g., Chinook Salmon), and/or (d) have been wholly ignored historically and in the Draft Staff Report (tribal fisheries and related cultural interests). The Draft Staff Report does not see this as a problem, but as a virtue. In comparing the alternatives, the Draft Staff Report explains that the same beneficial uses are at play, but that protection of the “fish and wildlife” beneficial uses (i.e., RARE, MIGR, COLD, etc.) necessarily protects the fisheries beneficial uses (SHELL, COMM, NAV) and tribal or subsistence beneficial uses (CUL, T-SUB, SUB). (Draft Staff Report at 7.2-1.) But the Draft Staff Report does not support this	Recreation, in the final Staff Report), which also explains how the Sacramento/Delta update to the Bay-Delta Plan is expected to have positive economic effects on California’s commercial and recreational fishing industries. The fisheries economic analysis has been expanded, including a section on tribal uses of fish, in Section 8.6, Fisheries Economic Analysis, of the final Staff Report. Section 11.5, Tribal Beneficial Uses, of the 2023 draft Staff Report discusses tribal beneficial uses (TBUs) including an explanation of how TBUs may be supported by implementation measures for the reasonable protection of fish and wildlife. Section 11.6, Traditional Ecological Knowledge, of the 2023 draft Staff Report discusses tribal uses of water, including as it relates to fish. Chapter 11, Tribal Engagement, Traditional Ecological Knowledge and Tribal Beneficial Uses, in the final Staff Report includes an expanded discussion of tribal beneficial uses. Please see Common Response 11.1, Tribal Engagement and Tribal Beneficial Uses, for more information. As described in the Bay-Delta Plan, the water quality objectives for fish and wildlife beneficial uses provide reasonable protection for a number of fish and wildlife beneficial uses in the Bay-Delta estuary including estuarine habitat. Estuarine habitat is analyzed in Chapter 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations, of the 2023 draft Staff Report, for example in Table 3.14-1. Adding additional objectives for reasonable protection of commercial and sport fishing beneficial uses would be outside the scope of this project. Please see Common Response 1.2, Water Quality Control Planning Process, for a discussion of reasonable protection of beneficial uses.

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		assumption, nor does it even begin to analyze whether it is justifiable, under what definitions of viability it would be true, or how the existing water quality objectives and proposed flows will ensure that these uses are reasonably protected. Thus, the Board must (a) analyze the impact of the various proposals on fisheries and fishery beneficial uses, and then either (b) amend the narrative flow objectives so that they ensure fisheries are protected (i.e. maintain the natural production of viable populations after accounting for the impact of historic or existing commercial, recreational, tribal, and subsistence fishing practices”), or (c) establish additional water quality objectives that will protect fishery beneficial uses that go beyond minimum viability. The Draft Staff Report does none of those. It fails to define viability, it fails to analyze the impact of the various proposals and alternatives on fisheries, it fails to assess whether the fisheries will be protected, it fails to adopt narrative or numeric water quality objectives that would reasonably protect fisheries, and it fails to offer any POI that would ensure that these beneficial uses do not continue to be ignored. Finally, the same problems exist with respect to estuarine habitat. Because the narrative objective is targeted only on viability as understood by the Board, it does not necessarily protect estuarine habitat beneficial uses absent some analysis of the impacts of flows on estuarine habitat or targeted metrics that serve as a proxy for habitat quantity and quality. The Draft Staff Report does not adequately consider or analyze how native fish population viability and estuarine habitat are (or are not) related and does not demonstrate that the proposed water quality objectives, including the inflow, streamflow, and outflow requirements, will reasonably protect estuarine habitat. The same remedy as for fisheries should be pursued here as well.	
308	97	E. The Proposed Project Fails to Incorporate the Impacts of Climate Change As the Draft Staff Report acknowledges (in Chapters 2, 4, and 6), climate change is already modifying temperatures, sea level,	Please see Common Response 4.2, Drought and Climate Change, for further information regarding the consideration of climate change in Staff Report modeling. The Bay-Delta Plan will go through future annual and periodic review processes to discuss, among other things, the effectiveness of the Plan at providing for

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		water demands, and the magnitude and timing of flows in the Bay-Delta watershed, and those effects will continue to be magnified in the future. Draft Staff Report Section 6.2.3 acknowledges the necessity of considering climate change in updating the Bay-Delta Plan, and discloses that the downscaled Coupled Model Intercomparison Project Phase 6 global climate projections will be available to incorporate into SacWAM input files in early 2024. More accurate modeling will be helpful in anticipating future water supply impacts and needed changes to operations. However, anticipated changes to hydrology and temperature do not change the flows that the Board needs to provide to the ecosystem today, and the Board must not allow updated analyses and modeling to further delay Plan implementation. The Board should tie flow requirements to the best available science regarding the needs of Bay-Delta fish and wildlife, estuarine habitat, and other identified beneficial uses. For example, the flow-X2 relationship is likely to change due to sea level rise. The Board should anticipate the need for periodically updating flow thresholds based on current relationships to ensure the beneficial uses tied to river flows remain protected as the climate shifts.	the reasonable protection of beneficial uses and possible needed changes to the Plan and its implementation. This process can serve as an opportunity to consider the latest best available science regarding Bay-Delta fish and wildlife, habitat, flow, and climate change. Future periodic or triennial reviews of the Plan may consider incorporating climate change scenarios. These reviews will consider any changes in science which may affect relationships between the protection of beneficial uses and flow thresholds, including new climate science. Based on periodic reviews like the triennial review, the Bay-Delta Plan may be updated to reflect these changes. Please see Common Response 1.3, Revised Proposed Plan Amendments, for more information on annual and periodic review.
308	98	Similarly, the unimpaired flow-based alternatives are expected to provide species benefits based on an expected recurrence of flows. However as unimpaired flow timing and magnitude become more impaired by climate change, current exceedance frequencies may shift and no longer provide the same protection to beneficial uses at each percentage of unimpaired flow. The Board must periodically update flow requirements based on exceedance analysis when those exceedances shift due to climate change. These updates will be needed regularly; there is no excuse for them to delay Plan updates or their implementation.	Please see the response to comment 308-97.
308	99	A distinct advantage of the Board's flow alternatives is that they are largely immune to errors in runoff forecasting because they do not depend on forecasts—they simply leave undiverted a fixed proportion of the available flow. Errors in runoff forecasting have been larger in recent multi-year droughts (Avanzi et al. 2020). These droughts are expected to become more frequent and intense under climate change. Investments in	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.

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		newer technologies such as Airborne Snow Observatory, and modifications to runoff forecasting techniques have some potential for maintaining forecast accuracy in the future, however in a rapidly-changing climate, flow requirements reliant on forecasting are inferior to an unimpaired-flows-based approach.	
308	100	Where unimpaired flows may not provide for all the attributes of natural flow functions that would be protective of the ecosystem, adaptive management provisions are proposed. A flow requirement based on a percent of unimpaired flow is intended to ensure that a minimum amount of available supply from a watershed is allocated for the reasonable protection of native fish and wildlife beneficial uses. Adaptive management provisions, including any necessary sculpting of that flow, would provide specific functional flows to improve fish and wildlife protection. Biological goals would be used to help inform adaptive management decisions by informing proposed adaptive management measures and assessing how well they worked. (Draft Staff Report at 3-100 & 3-101). The adaptive management provisions are designed to mitigate temperature impacts and strategically use stored water at different times to maximize ecosystem benefits. These approaches are likely to be triggered by runoff-forecast-based assessments and year-type designations. This is a necessary basis for real-time decision-making, however the Board should heed the following cautions in using D1641's Sacramento Valley Index and San Joaquin Index]. ...if current WYT thresholds are maintained (Figure 7), then the burden of climate-driven water scarcity falls entirely on environmental outflow through the Bay Delta (-16%), while the percentage of average annual flow to exports (+2%) and out-of-stream uses (+4%) increase somewhat to preserve relatively constant deliveries in drier years... The WYT framework, and how it could be altered to reflect climate change, directly affects water winners and losers in the state. Null & Viers 2013 [See ATT 75].	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.

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		PPIC 2022 also recommended getting away from year types: One central change needed is to pivot from a system based on water year types— where regulatory requirements can change abruptly with subtle changes in conditions—to a system that operates on a continuum based on month-to-month hydrology. PPIC 2022 at 5. The unimpaired flow alternatives are structured in a way that achieves these needs. If forecasting and year-types are used in adaptive management, then they must be properly resourced and kept up-to-date as the climate shifts. This means the SVI and SJI must be periodically updated based on recent and forecasted climate in order to maintain the same proportion of years in each year type so that exceedances associated with beneficial uses are maintained.	
308	101	F. The Draft Staff Report Fails to Utilize Scientifically Sound Analyses Regarding the Effects of Unimpaired Flow Alternatives on Fish and Wildlife Viability, Fisheries, and Estuarine Habitat. The Draft Staff Report fails to utilize the best available science to analyze the effect of its unimpaired flow alternatives on various native fish and wildlife populations, fisheries, or estuarine habitat. Chapter 3 of the draft report is out of date because it is based on the Scientific Basis Report (SWRCB 2017) which must be updated to reflect relevant and actionable scientific findings from the past 7 years. In particular, the Draft Staff Report fails to incorporate the best available science related to: • decline and current population status of numerous fish and wildlife populations (e.g., USFWS 2022a [See ATT 22]; SWFSC 2023 [See ATT 6]; Attachment: White Sturgeon CESA petition [See ATT 3 and ATT 85]); • flow-viability relationships of Central Valley Chinook Salmon populations and temperature impacts on incubating Chinook Salmon eggs (e.g., Attachment: Salmon Flow Literature Matrix [See ATT 40]);	Please see Common Response 3.1, Fish Protection, for a discussion of the use of best available science and process for updates to literature in Chapters 3 and 4 of the Staff Report. See Common Response 4.1, Harmful Algal Blooms, for a discussion of the effects of freshwater flow on harmful algal blooms in the Delta.

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		• flow-viability relationships and water management impacts on Delta Smelt viability (e.g., Kimmerer and Rose 2018; Polansky et al. 2021 [See ATT 12]; Smith et al. 2021) • flow-abundance relationships and targets for maintenance of Starry Flounder abundance in the Bay-Delta (see above; SWRCB 2010) • effects of different flow regimes on estuarine temperature conditions that limit Chinook Salmon, Longfin Smelt, Delta Smelt, and other native fish and wildlife species (e.g., Vroom et al. 2017 [See ATT 18]; Munsch et al. 2019 [See ATT 76]; Nobriga et al. 2021 [See ATT 20]; Bashevkin and Mahardja 2022 [See ATT 19]; Michel et al. 2023 [See ATT 23]) • effect of freshwater flow on productivity of the Bay-Delta estuarine food web (e.g., Hennessy and Burris 2017a,b [See ATT 9 and ATT 10, respectively]; Kimmerer et al. 2018; Hassrick et al. 2023) • status and impacts of harmful algal blooms in the Delta and the effect of freshwater flow rates on formation, persistence, magnitude, and toxicity of HABs (e.g., Peacock et al. 2018 [See ATT 69]; Lehman et al. 2020 [See ATT 11]; Plaas and Paerl 2020 [See ATT 70]; Kudela et al. 2023 [See ATT 8]). This non-exhaustive list demonstrates that the Draft Staff Report's analysis of flow impacts must be revised to use the best available science. Failure to incorporate these and other recent findings into the scientific basis for analyzing alternative updates to Plan standards and the POI will severely and systematically underestimate the beneficial effects of higher flow requirements on fish and wildlife and related beneficial uses.	
308	102	G. Flows Under the Proposed Project are Not Adequate to Reasonably Protect Fish and Wildlife Beneficial Uses and Achieve Bay-Delta Plan Objectives 1. The Draft Staff Report fails to define the narrative objectives and/or set numeric criteria that would complement or replace the narrative objectives The proposed project would adopt new	Please see the response to comment 308-96. The salmon doubling objective outcome is defined in the text of the objective as a "doubling of natural production of Chinook salmon from the average production of 1967–1991, consistent with the provisions of State and federal law." The Bay-Delta Plan will be regularly reviewed, including consideration of needed changes, during annual and periodic reviews. In addition,

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		narrative objectives for flows needed to support and maintain native fish viability and retain the existing narrative salmon protection objectives. However, the proposed Plan updates do not articulate these objectives sufficiently to determine whether the POI will attain them or to evaluate progress towards the attainment in subsequent, required triennial review processes. For example, the Board does not define the biological outcomes that represent the attainment of its narrative salmon doubling objective, even though the inter-agency Anadromous Fish Restoration Program defined run-by-watershed salmon production targets that satisfy the “salmon doubling” target of the federal Central Valley Project Implementation Act, PL 102-575 (HR429), in 2001 (AFRP 2001 [See ATT 65]). Furthermore, the proposed project does not define a timeframe for attainment of the narrative salmon doubling objective; without such a time bound, evaluating the adequacy of purported improvements to salmon habitat conditions under the proposed project is not possible.	Sacramento/Delta biological goals would be developed to assess the health of the ecosystem for representative anadromous and estuarine fish species, including measures to assess the abundance, productivity, genetic and life history diversity; and the population spatial extent, distribution, and structure for native species.
308	103	The proposed Bay-Delta Plan updates do not define “viability” with enough specificity to evaluate whether the proposed project can attain this objective for any of a variety of native fishes. It is possible to articulate the biological outcomes that reflect population viability (McElhaney et al. 2000); in fact, specific, measurable, achievable, and relevant definitions of viability have already been developed for Central Valley salmonids (Lindley et al. 2007; NMFS 2014; SEP 2019 [See ATT 39]) and for native pelagic species (USFWS 1995). The Board may adopt these specific descriptions of viability or define them differently, but it cannot refuse to say what biological outcomes constitute attainment of the narrative viability objective.	Please see Common Response 1.3, Revised Proposed Plan Amendments, for information on the water quality objectives for fish and wildlife.
308	104	The Board must describe whether its definition of “viability” includes the maintenance of fisheries for various species, encompasses maintenance of estuarine habitat, and/or incorporates all elements of the definition of fish “in good condition”, as per Fish and Game Code §5937. For instance, if the Board’s definition of viability does not anticipate additional mortality related to maintenance of Bay-Delta commercial, recreational, subsistence, and tribal subsistence fisheries, then one or more additional objectives that ensure reasonable protection of those beneficial uses may be necessary. In any case,	Please see the response to comment 308-96.

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		the Board cannot claim to have analyzed whether flows under the proposed project are adequate to reasonably protect the range of fish and wildlife beneficial uses, achieve Plan objectives, and satisfy the requirements of Fish and Game Code §5937 until it defines biological outcomes associated with success of the Plan. The Board must have benchmarks for attainment, tell the public what it hopes to achieve, and describe the basis for its decisions, and then measure whether the water quality objectives are meeting those benchmarks.	
308	105	2. The proposed project will not restore native fish viability, reasonably protect beneficial uses, or maintain fish in good condition The Draft Staff Report claims that the proposed project will improve populations of native fish species based on its comparison of flows projected under the proposed project versus flow thresholds identified in Chapter 3 and the Scientific Basis Report (SWRCB 2017). Regarding the flow thresholds, the Draft Staff Report states: All of these flows occur at a greater frequency under the proposed Plan amendments compared with baseline conditions and should contribute to increased population abundance for bay shrimp, green and white sturgeon, longfin smelt, Sacramento splittail, and starry flounder. Draft Staff Report at 7.6.2-38. This claim is untrue or misleading for at least the following reasons. First, under current flow conditions, the status quo for native fish species is decline. Simply increasing flows by tiny increments does not demonstrate that the widespread decline of native fish populations and estuarine habitat conditions will be reversed. Moreover, the Draft Staff Report's assertion that flows under the proposed project will contribute to increased population abundance is not the same as finding that the proposed project provides reasonable protection to beneficial uses or is likely to attain Plan objectives. Marginal improvement	Please see Common Response 1.2, Water Quality Control Planning Process, on reasonable protection of beneficial uses.

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		in the status of native fish species and estuarine habitat conditions (including simply slowing their decline) is not the standard for determining adequacy of Bay-Delta Plan updates under Porter-Cologne. Rather, the Plan updates must identify beneficial uses, craft water quality standards that will reasonably protect those beneficial uses based upon the best available scientific evidence, and then put forth a POI which will necessarily meet those objectives.	
308	106	Second, as described above, several of the species/habitat-specific flow thresholds identified in Chapter 3 do not represent the best available science and are very likely to underestimate the flows needed to protect the relevant species or habitats. Thus, thresholds that reflect the best available science are likely to be exceeded less frequently than Table 7.6.2-5 reveals.	See the response to comment 308-66. See also Common Response 3.1, Fish Protection, on updates to literature in Chapters 3 and 4, use of best available science, and the flow-benefit analyses. Additionally, see Common Response 1.2, Water Quality Control Planning Process, for a discussion on reasonable protection of fish and wildlife beneficial uses.
308	107	The proposed project will not restore native fish viability, reasonably protect beneficial uses, or maintain fish in good condition The Draft Staff Report claims that the proposed project will improve populations of native fish species based on its comparison of flows projected under the proposed project versus flow thresholds identified in Chapter 3 and the Scientific Basis Report (SWRCB 2017). Regarding the flow thresholds, the Draft Staff Report states: All of these flows occur at a greater frequency under the proposed Plan amendments compared with baseline conditions and should contribute to increased population abundance for bay shrimp, green and white sturgeon, longfin smelt, Sacramento splittail, and starry flounder. Draft Staff Report at 7.6.2-38. This claim is untrue or misleading for at least the following reasons. Third, the flows projected under the Draft Staff Report's modeling of the proposed project assume that unregulated flows continue to reach the Delta and San Francisco Bay to the benefit of native fishes and estuarine habitat. However, the Board	As described in Section 3.14.1.1, Achievement of Flow Thresholds, of the 2023 draft Staff Report, the flows used in the analyses in Chapter 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations, of the 2023 draft Staff Report include expected uncaptured flows while analyses in the 2017 Scientific Basis Report did not include other uncaptured flows. The analyses of expected flows show greater benefits than the results for the flow levels presented in the 2017 Scientific Basis Report due to these other flow contributions from flood control releases, other regulatory requirements, and other purposes. However, because there may be additional water diversions in the future that reduce the amount of other uncaptured flows, the range of expected benefits of the different flow levels is also informative to development of the proposed Plan amendments (see Sections 5.2.3, Discussion, and 5.3.3.2, Benefits of Increased Delta Outflow, of the 2017 Scientific Basis Report), though those results are not repeated in Chapter 3 of the 2023 draft Staff Report. Please see Common Response 1.2, Water Quality Control Planning Process, for information on reasonable protection of fish and wildlife. Please also see Common Response 1.3, Revised Proposed Plan Amendments, for information on the provisions for future water supply projects.

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		acknowledges that unprotected flows are likely to be diverted in the future, and several planned water development projects promise to do exactly that (see above). Comparing threshold flow exceedances projected in the Draft Staff Report to the Scientific Basis Report's estimated exceedance of the same flow thresholds (SWRCB 2017 Table 5.3-3 at 5-31; Figure 14 [See Exhibit 14]) demonstrates that flows that are protective of beneficial uses (to the extent that these are accurately described) will be much less frequent under the proposed project if unregulated flows are diverted. Indeed, unless Delta outflows >55% are protected from diversion and storage, flows deemed to be protective of estuarine habitat, Green Sturgeon, White Sturgeon, Longfin Smelt, and Sacramento Splittail ("high") are likely to occur less frequently in the future than they do currently (Figure 14). Current flow conditions have led to multiple native Bay-Delta fish species to the brink of extinction, extreme degradation of estuarine habitat, and closure or severe restriction of various commercial, recreational, and subsistence fisheries. The very real prospect that those flow conditions could degrade further under the proposed project is inconsistent with the Bay-Delta Plan's requirement to reasonably protect beneficial uses and achieve water quality objectives, and with the Board's overarching requirement to protect the public trust.	
308	108	[Exhibit 14: Two tables titled Figure 14: Comparison of tables in the Draft Staff Report (left; at 7.6.2-38) and Scientific Basis Report (right; SWRCB 2017 at 5-31) showing frequency with which different flow regimes would achieve flow targets that the Board considers to be protective of fish and wildlife beneficial uses]	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.
308	109	a) Delta Smelt The Draft Staff Report claims that the proposed project will benefit Delta Smelt, stating (at 7.6.2-40): Modeled outflows over the range of flow scenarios indicate that average summer and fall X2 positions would be equal to or lower (more westward) than the baseline condition in most years (Figure 7.6.2-4 and Figure 7.6.2-5). Overall, these changes in Delta outflows would benefit Delta smelt during summer (July through September) and fall (September through December).	As the comment points out, Figures 7.6.2-4 and 7.6.2-5 in Section 7.6.2, Aquatic Biological Resources, of the Staff Report show SacWAM results for average X2 positions for baseline and 35 to 75 scenarios that support the conclusion that "Modeled outflows over the range of flow scenarios indicate that average summer and fall X2 positions would be equal to or lower (more westward) than the baseline condition in most years." This does not contradict the flow modeling presented in Appendix A1, Sacramento Water Allocation Model Methods and Results, because while the Delta outflow in summer months is at times lower in the flow scenarios than baseline, X2 is a function of

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		This finding is contradicted by flow modeling in the Draft Staff Report showing that summer flows will be less than baseline under the proposed project on average during July-Sept, including in July of all but Wet years. Conditions will be even worse under the 45% of unimpaired flow regime (Draft Staff Report Appendix A1 Table A1-103). Because Delta Smelt live just one year and have declined to the point where they are nearly undetectable by fish assemblage sampling programs, failure to provide suitable habitat conditions in almost all years will further devastate the population and severely impair any chance of recovery. Analysis of SacWAM modeling for the Draft Staff Report shows that conditions the Board previously determined to be protective of Delta Smelt during the summer (X2= 80km; SWRCB 2017 at 3-100) will not occur in ~62% of years under the proposed project (Table 1 [See Exhibit 15]; see also Draft Staff Report at 7.6.2-40). Thus, whether or not the proposed project “improves” Delta outflow conditions for Delta Smelt, the Draft Staff Report’s modeling demonstrates that conditions under the proposed project will not support Delta Smelt habitat or population growth (i.e., its viability) in most years. Thus, it is likely that Delta Smelt’s population will continue to decline under the proposed project.	Delta outflow in the current month as well as previous months. Delta outflow is much higher in the spring months in the flow scenarios as shown in Section 6.3.1.3, Sacramento-San Joaquin Delta, of the Staff Report. The antecedent Delta outflow in the spring is sufficient to maintain more westward X2 positions throughout the summer. Chapter 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations, of the Staff Report acknowledges the importance of spring outflow and Delta outflow in summer and fall for Delta smelt. Please see Section 3.8.4, Flow Effects on Delta Smelt, for more information. Staff have also evaluated and included a new summer outflow threshold for Delta smelt from research from Polansky et al. (2024) in Chapter 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations and Chapter 13, Revised Proposed Plan Amendments, Section 13.5, Beneficial Environmental Effects. The draft Staff Report also discusses that habitat areas for estuarine species, including Delta smelt, are expected to increase in the Bay-Delta, contributing toward the narrative fish viability objective. See also Common Response 1.2, Water Quality Control Planning Process, regarding the reasonable protection of fish and wildlife and consideration of other beneficial uses.
308	110	The Board should analyze and adopt OMR/export requirements that are more protective of Delta Smelt than those found in the 2019 federal Biological Opinion and 2020 CESA ITP. It is well-established that water exports and entrainment mortality represent grave risks for Delta Smelt (Mac Nally et al. 2010; Thomson et al. 2010; SWRCB 2017; Kimmerer and Rose 2018; Smith et al. 2021). Yet, several provisions of the 2008/2009 BiOps that reduced (but did not eliminate) the threat to Delta Smelt viability posed by SWP/CVP water exports (Smith et al. 2021) were terminated by the 2019 Biological Opinions and 2020 CESA ITP. [Footnote 10: For example, the 2008/2009 BiOps required OMR to be less than -5,000 cfs under certain conditions (2008 USFWS BiOp at 353-354) and set salvage triggers for various species, including for Delta Smelt (2008 USFWS BiOp at	Please see Common Response 1.1, General Comments, for information on the Delta Flow Criteria Report. Impacts of the 55 scenario to fish species were analyzed in Section 7.6.2, Aquatic Biological Resources, of the 2023 draft Staff Report. Please see Common Response 7.24, Alternatives Analysis, for a response to comments on the Interior Flows/Fall Delta Outflow Alternatives and the range of reasonable alternatives. Please also see Common Response 1.3, Revised Proposed Plan Amendments, for information on the proposed interior Delta flows objectives.

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		145), that would lead to reduced exports, but the ESA-requirements modeled in the Draft Staff Report models contain no such protections. Furthermore, the 2019 Biological Opinion and 2020 CESA ITP allow for exports to produce OMR < -5,000 cfs under a Storm-Related OMR Flexibility” provision (2019 USFWS Biological Opinion at 47-48; 2019 NMFS Biological Opinion at 479).] As a result, SWP and CVP exports are predicted to increase relative to the regime that existed under the 2008/2009 BiOps (Draft Staff Report Appendix g.3.a, for example, at G3a-11). In 2010, the Board identified OMR flows > -1,500 cfs in March-June as necessary to protect Delta Smelt in Critically Dry and Dry years (SWRCB 2010 at 78). Under the proposed project, OMR flows will remain more negative than -1500 cfs in March of both year types (Draft Staff Report Appendix A1 at A1-175). In general, the proposed project is not expected to substantially improve OMR flow conditions (i.e., make them more positive) during January-May when spawning and early larval Delta Smelt are most vulnerable to entrainment. Under some conditions (e.g., during April) the 55% unimpaired flow alternative would produce OMR flows more negative than the baseline scenario (Draft Staff Report Appendix A1 at A1-173 through A1-175) increasing the risk and magnitude of Delta Smelt mortality resulting from entrainment in the CVP and SWP south Delta export infrastructure.	
308	111	[Exhibit 15: Table titled Table 1: Frequency of flows identified as protective of fish, wildlife, and estuarine habitat when unregulated flows are included]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
308	112	Longfin Smelt There is no evidence that the proposed project will halt the precipitous decline of the Bay-Delta’s endangered Longfin Smelt population. Delta outflows that the Board has identified as protective of Longfin Smelt (i.e., those associated with a $\geq 50\%$ chance of inter-generation population growth) are expected to occur with just 2% greater frequency relative to the baseline under the proposed project (1% more frequently under the 45% of unimpaired flow regime), and that is if unregulated flows	Increased Delta outflow during winter and spring months would benefit estuarine species, including longfin smelt, that use the Bay-Delta estuary for migrating, spawning, and rearing. The increased Delta outflow pushes X2 downstream into the broad, shallow, cool channels of Suisun Marsh and Suisun Bay, and out of the confined deep channels of the Sacramento and San Joaquin Rivers near the confluence of the Delta. For more information see Staff Report Section 3.2.2, Freshwater Flow and Estuarine Resources. Additionally, in Section 7.6.2, Aquatic Biological Resources, analysis results show that flows associated with

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		remain undiverted in the future (Figure 14, left panel [See Exhibit 14]; Table 1, “Longfin Smelt – median” [See Exhibit 15]). On the other hand, as unregulated flows are captured by new infrastructure or water diversion operations in the future, the frequency of flows associated with Longfin Smelt population growth will decrease substantially compared with conditions that have led to the population being endangered (i.e., the baseline, Figure 14, right panel). The flow-population productivity relationship and flow-abundance relationship for Longfin Smelt are log-log linear, meaning that increasing minimum flows and increasing frequency of high flows will also benefit the species. We assessed the flow alternatives by comparing the frequency with which they exceeded flows that the Board indicated would be protective of Longfin Smelt in Critically Dry years. We analyzed exceedance of the mid-point of the Board’s Critically dry year flow range for January-June (SWRCB 2010 at 69). The mid-point of the range for Critically Dry years (~14,000 cfs) should be exceeded in half of Critically Dry years. Given that ~16% of years are Critically Dry, this minimum threshold flow should be exceeded ~92% of the time. Flows under the proposed project would exceed this minimum threshold in 87% of years (Table 1) meaning they would be less frequent (less protective) than the frequency implied by the Critically Dry year flow criteria the Board presented in 2010. The 65% and 75% flow alternatives would exceed the mid-point of the Critical Year type flow range in 92% of years or more. Increased Delta outflows anticipated under the proposed project are far too meager to halt the catastrophic decline of this native pelagic fish species, much less restore its viability, much less restore the historic fishery for Longfin Smelt. Even under the optimistic, but unsupported, assumption that unregulated flows will continue to contribute to winter-spring Delta outflow, it is simply not credible to assert that increasing the frequency flows associated with Longfin Smelt population growth by 2 out of 100 years is adequate to protect this species. We note that the incremental change in the frequency of threshold flows under the 65% flow alternative is double the improvement projected under the proposed project, assuming no increase in the capture	positive population growth for longfin smelt occur at a greater frequency under the proposed Plan amendments when compared to baseline which should contribute to increased population abundance (see Table 7.6.2-5). In the Staff Report, the identified flow needs for the protection of fish and wildlife are based on the best available science and build upon the relationships in the 2010 Delta Flow Criteria Report, which was limited to considering only fish needs and not other competing uses of water or tributary-specific needs for cold water and other purposes. Staff Report Section 3.14.1, Summary of Flow Thresholds for Species Protection, describes the analysis of the Delta outflow needed to achieve population abundance goals for restoring some estuarine species and/or a 50-percent probability of positive population growth. Population abundance increases for all the native estuarine species with increasing Delta outflow in winter and spring resulting in higher abundance of fish in the fall. Please see the responses to comments 308-86 and 308-107 regarding unregulated flows. See Common Response 1.2, Water Quality Control Planning Process, regarding the reasonable protection of fish and wildlife and consideration of other beneficial uses. Additionally, see Common Response 3.1, Fish Protection, regarding the adequacy of modeling to support the benefit analyses.

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		of unregulated flows (Figure 14, left panel) – protecting 65-75% of unimpaired flows would be necessary to guarantee that the current frequency of Longfin Smelt threshold flows are maintained in the face of new water diversion or storage capacity (Figure 14, right panel).	
308	113	The Board should analyze and adopt constraints on south Delta water exports that provide better protection for Longfin Smelt than those modelled in the Draft Staff Report. As modeled, the Board’s proposed Old and Middle River Flow Objective would implement export constraints described in the 2019 federal Biological Opinions and the 2020 CESA ITP. These requirements provide less protection from entrainment-related mortality for Longfin Smelt than those identified in prior CESA ITPs and incidentally through the 2008/2009 BiOps. In its recent draft listing decision, USFWS identified existing regulatory mechanisms, including the 2019 Biological Opinions, CESA ITP, and existing Plan objectives, as inadequate to prevent further decline of Longfin Smelt (Federal Register Vol. 87, No. 194 (Friday, October 7, 2022) at pp. 60957-60974 [See ATT 23]). Indeed, modeling of SWP operations permitted under the CESA ITP shows that they will result in dramatic increases in Longfin Smelt entrainment/salvage in most years (CDWR 2019a at 4-185 to 4-186 [See ATT 24]). The Draft Staff Report’s modeling of OMR flows reveals that the proposed project will not substantially improve conditions that lead to episodically high Longfin Smelt entrainment and are not likely to approach OMR flow conditions the Board previously identified as protective of Longfin Smelt (SWRCB 2010; 2017). Therefore, it is likely that the more protective constraints on water exports will be needed to reasonably protect Longfin Smelt. The Board identified protective OMR requirements for Longfin Smelt in its flow criteria report (SWRCB 2010 at 69), specifying that OMR should be positive or >-1,500 cfs (depending on the previous fall midwater trawl abundance index of this population) during April-May of Critically Dry and Dry years. The Scientific Basis Report indicates that OMR flows should be no more negative than -1,250 cfs during January-June, under certain unspecified conditions. The Board should clarify the conditions	As described in Chapter 5, Proposed Changes to the Bay-Delta Plan for the Sacramento/Delta, the proposed program of implementation calls for the State Water Board to regularly review and assess the actions to implement the Plan amendments over time in coordination with the appropriate entities. During these reviews, the status and trends of fish species would be evaluated and the State Water Board could consider possible needed changes to the objectives or implementation measures to provide for the reasonable protection of beneficial uses. Please see Common Response 1.3, Revised Proposed Plan Amendments, for information on the interior Delta flow requirements and the annual and periodic review provisions in the revised proposed Plan amendments. Please also see Common Response 1.2, Water Quality Control Planning Process, for information on the reasonable protection of fish and wildlife and Common Response 3.1, Fish Protection, for information on fish entrainment in the Delta.

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		under which OMR levels > -5,000 cfs (as identified in SWRCB 2010, 2017) will be required.	
308	114	Chinook Salmon The Staff Report provides evidence that the proposed project will not halt the decline of Central Valley Chinook Salmon runs, support and maintain their viability, or restore populations to levels required under the Bay-Delta Plan's narrative salmon protection objective. As described above, the flows previously identified by the Board as protective of juvenile Chinook Salmon migrating into and through the Delta do not reflect the best available science and are likely to provide inadequate protection for juvenile salmon as they migrate to the Delta, Bay, and Pacific Ocean. Therefore, the Draft Staff Report's analysis of the frequency of protective flows for Chinook Salmon (Draft Staff Report Table 7.6.2-4 at 7.6.2-37) must be redone and should reflect flow necessary to protect different life stages (e.g., rearing fry versus ocean-ready smolts) and different Chinook Salmon runs. We analyzed the Board's SacWam model outputs (Table 1 [See Exhibit 15]) and found that average January-June flows $\geq$ 35,000 cfs at Freeport will occur in less than one-third of years and only marginally more frequently under the proposed project than under the current baseline (four more years out of 100). In flow alternatives $\geq$ 65%, these flows occur in one-third of years or more, which is more consistent with maintaining viability of a species with a generation length of $\sim$3 years. Because juveniles of the four runs of Chinook Salmon migrate in different months in the winter-spring, we also evaluated at the frequency of flows > 35,000 cfs during the months when most spring-run and fall-run Chinook Salmon smolt migrate through the Delta (April-May). In these months, only the 75% flow regime produced protective flows in one-third of years (Table 1). The 55% flow alternative resulted in protective flows in less than on quarter of years (Table 1). Thus, the proposed project is not likely to provide adequate protection for Chinook Salmon smolt migrating into and through the Delta, particularly for spring-run and fall-run Chinook Salmon.	Table 7.6.2-4 in Section 7.6.2, Aquatic Biological Resources, has been updated in the final Staff Report. The effects of flow on species were evaluated with a variety of analytical methods as described in the Staff Report in Section 3.3, Species-Specific Analyses. When possible, multiple methods were used and thus, in many cases, the conclusions were supported by multiple lines of evidence. See Common Response 3.1, Fish Protection, regarding the adequacy of modeling to support the benefit analyses, and the Staff Report use of best available science. Also see Common Response 1.2, Water Quality Control Planning Process, regarding the reasonable protection of fish and wildlife and consideration of other beneficial uses.
308	115	The Board's evaluation of flows that increase juvenile Chinook Salmon survival and the frequency with which they occur should be set in the context of survival rates necessary to support and	See the response to comment 308-114.

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		maintain viability and those necessary to attain the salmon protection objective in a reasonable time frame. Despite the decline in salmon populations since adoption of the Plan's salmon protection objective, doubling of the natural production of Chinook Salmon remains achievable in just a few salmon generations (an average Central Valley Chinook Salmon generation is ~3 years). Chinook Salmon population growth is explosive when conditions are suitable in their freshwater environment; Quinn (2005 at 254) found that the average freshwater survival of various Chinook Salmon populations across the species' range was approximately 10%; resulting in an estimated average of between 6.4 to 17.5 adults returning to spawn per female spawner in the previous generation. Thus, it is very possible for Chinook Salmon to attain the targets implied by the salmon protection objective (AFRP 2001 [See ATT 65]) in less than a decade, if conditions are suitable throughout their freshwater life-cycle.	
308	116	The best available science supports the Board's proposal to adopt water quality objectives for interior Delta hydrodynamics as part of the Plan update; however, the specific restrictions contemplated in the proposed project are not likely to provide adequate protection. Restrictions on altered Delta hydrodynamics caused by combined SWP and CVP water exports are obviously needed to protect imperiled species (e.g., NMFS 2008; USFWS 2009; Kimmerer 2008, 2011; Kimmerer and Rose 2018; Polanski et al. 2021 [See ATT 12]; Smith et al. 2021; Attachment: White Sturgeon CESA Petition [See ATT 3 and ATT 85]), non-imperiled fishes (Grimaldo et al. 2009), and large fractions of estuarine primary productivity (phytoplankton; Cloern and Jassby 2012), which form the prey base for native fishes. However, basing these new flow objectives on requirements of existing or past biological opinions and CESA ITPs does not necessarily satisfy the Board's independent obligation to reasonably protect fish, wildlife, estuarine habitat, and associated beneficial uses. As described above, existing ESA-related hydrodynamic criteria are less protective than criteria from the 2008/2009 Biological Opinions and previous state incidental take permits, which themselves were clearly inadequate to prevent further decline of the imperiled species. Moreover, the ESA provisions modeled as part of the proposed	In the process to update the Bay-Delta Plan, the State Water Board considers multiple factors and makes an independent evaluation of reasonable protection of fish and wildlife beneficial uses. The information to support this evaluation is contained in the Staff Report. The use of information or provisions from Biological Opinions or Incidental Take Permits does not alter the independence of that evaluation. Please see Common Response 1.2, Water Quality Control Planning Process, for more information on reasonable protection of fish and wildlife and Common Response 3.1, Fish Protection, for information on fish entrainment in the Delta. In addition, the project has been revised. Please see Common Response 1.3, Revised Proposed Plan Amendments, for information on the interior Delta flow provisions.

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		project were never intended to protect non-listed species. Furthermore, the ESA-related hydrodynamic provisions were designed only to prevent extinction of imperiled fish populations; they were not intended to restore, support, and maintain fisheries and estuarine habitat conditions. Indeed, it is hard to see how allowing Delta tributary rivers to flow away from the Bay (i.e., negative values of OMR) at high average rates, can represent reasonable protection of estuarine habitat and ecosystem functions.	
308	117	The Draft Staff Report provides no basis for concluding that the proposed interior Delta flow objectives will provide reasonable protection to Central Valley Chinook Salmon populations, restore them to viability, or allow them to attain levels indicated by the narrative salmon protection objective. As described above for the smelt species, recent revisions to state and federal ESA requirements for in-Delta flow (i.e., the 2019 federal Biological Opinion and 2020 CESA ITP) represent less protection from entrainment-related mortality for fish migrating in or through the Delta than provisions of the 2008/2009 Biological Opinions (and requirements of those Biological Opinions were deemed to be inadequate to protect imperiled smelt and salmon (CDFW 2010; USDOJ 2016 [See ATT 77]; SWRCB 2017)). For example, with respect to the “storm-flex” provision that is now part of CVP and SWP operations, NMFS (2019 NMFS Biological Opinion at 531) found: ...modeling shows that salvage and associated loss increases with exports during months when listed salmonids are present in the Delta. Therefore, if fish are present in the vicinity of the export facilities in the south Delta during a time that storm flex export operations are implemented, NMFS concludes there will be an increase in the number of fish entrained into the salvage facilities above that which would have been seen with no increases in exports. Furthermore, since listed salmonids tend to start migrating downstream in response to elevated flows in the Sacramento River basin and San Joaquin River basin waterways, there is a high probability that more fish will be present in the Delta exactly when the CVP and SWP increase their exports. Besides the fish entering the Delta on the elevated storm flows, listed salmonids (especially winter-run Chinook salmon) may	Please see the responses to comments 308-113 and 308-116.

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		already be present in the Delta due to migration earlier in the year. This overlap in fish presence and the potential for combined exports to reach 14,900 cfs can result in increased entrainment risk as a result of the potentially very negative Old and Middle River flows. Even without accounting for storm-flex and other ESA-related provisions incorporated into the proposed project (some of which are difficult to model because of their ephemeral nature), modeling conducted for the 2020 CESA ITP found that entrainment mortality increased dramatically for spring-run Chinook Salmon (CDFW 2019a at 214-217), fall-run Chinook Salmon (CDFW 2019a at 4-230 through 4-232), and late-fall run Chinook Salmon (CDFW 2019a at 243-246) under the SWP operations permitted by the ITP. The Board acknowledges that entrainment, salvage, and loss of Chinook Salmon is strongly and exponentially correlated with increasingly negative OMR flows (SWRCB 2017 Figures 3.4-15 and 3.4-16 at 3-40). Furthermore, the Board acknowledges that negative OMR flow rates lead to additional, undefined levels of mortality for fish that are not entrained, because of altered Delta flow patterns resulting from exports from salmon habitat in the Delta. Referencing testimony by the US Department of Interior, the Board stated: More important than direct entrainment effects, however, may be the indirect effects caused by export operations increasing the amount of time salmon spend in channelized habitats where predation is high (USDOI 2010, p. 29). SWRCB 2017 at 3-47. Nevertheless, OMR flows under the proposed project are barely different from baseline conditions during January through May, a time period when most Chinook Salmon juveniles are rearing in or migrating through the Delta (Draft Staff Report Appendix A1 Figure A1-54). Average OMR will be worse under the proposed project than the baseline during April (Draft Staff Report Appendix A1 at A1-175). By contrast, the 65% and 75% unimpaired flow alternatives are projected to produce OMR flows that are	

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		substantially less negative than those under the baseline or the proposed project throughout the entire Chinook Salmon migration window– such reductions in negative OMR flows would be expected to dramatically reduce mortality associated with CVP and SWP water exports from the South Delta.	
308	118	The best available science indicates that survival of migrating juvenile Chinook Salmon increases with increasing flows in both river and estuary environments (see above). However, in some years there is an obvious tension between high river flows and reservoir storage upstream. Historically, this tension has been between prioritization of consumptive use demands versus both coldwater habitat and downstream flow needs; as environmental flow needs increase, the tension between coldwater habitat and downstream flow needs emerges under dry conditions. River flow regimes that require increased bypass of reservoir inflow or releases of stored water can reduce reservoir storage which can lead to loss of the ability to control water temperatures downstream of dams during the summer. High water temperatures below Central Valley dams kill Chinook Salmon eggs and juveniles in the late spring through early fall. On the other hand, increased river flows can lead to cooler river temperatures further downstream, along the migratory path of Chinook Salmon to and through the Delta (Daniels and Danner 2020; Michel et al. 2023 [See ATT 21]), which can dramatically improve juvenile salmon survival and rearing success (Munsch et al. 2019 [See ATT 76]; Nobriga et al. 2020 [See ATT 20]). The Draft Staff Report’s modeling of temperature suitability for Chinook Salmon in various river segments reveals some of the complex temperature effects associated with different flow alternatives. For example, the Board’s modeling shows that, under reservoir storage and water delivery assumptions employed in the Draft Staff Report, different flow regimes have a mix of month-by-water year types in which they produce better or worse temperature outcomes for different Chinook Salmon life-stages at different locations in the Sacramento River (Draft Staff Report Appendix a.6, Table A6-190). Each alternative flow regime results in projected temperature improvements over current conditions in some month-by-water year type combinations, and	Please see response to comment 308-33A regarding water temperature in the Delta. Please also see Common Response 3.1, Fish Protection, regarding the methods for evaluating fish benefits. The lumping of results to summarize the Chinook salmon temperature analysis provides a simplified view of complex results; its purpose was to convey a high-level effects summary in a straightforward yet brief way. For more information on the monthly results by water year type, the text of Section 7.6.2, Aquatic Biological Resources, refers to the full suite of results found in Appendix A6, Water Temperature Modeling and Fish Assessment for the Sacramento, Feather, and American Rivers. Similarly, the text of Section 13.7.6.2, Aquatic Biological Resources, refers to the full suite of results found in Appendix H1b, Water Temperature Modeling and Fish Assessment for the Sacramento, Feather, American, and Yuba Rivers. The lower flow scenarios tend to result in water temperatures that are closer to baseline conditions, which generally can mean less reduction in temperature in the winter and spring and less increase in temperature during the summer and fall. Partly because of these opposite effects, implementation of the flow requirements and the cold water habitat objective is complex. Please see Common Response 7.6.2, Aquatic Biological Resources and Cold Water Habitat, regarding how considering these complexities would be part of the implementation process for the cold water habitat objective. Methodologies proposed by the commenter can be considered during development of long-term strategies for implementation of the cold water habitat objective.

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		each results in worse temperature conditions in other month-by-water year type combinations. The Draft Staff Report synthesizes of the temperature results found in Appendix a.6 (e.g., Tables 7.6.2- 13, 7.6.2-15, 7.6.2-17, 7.6.2-19, 7.6.2-21) obscure important information by lumping together all results across the life-cycle and migratory path of the species and treat all negative and positive temperature results as though they will have equal effects – this presents a misleading summary of the analysis. In some cases, the 65% and 75% unimpaired flow alternatives outperform alternatives with lower flows for some species life stages in some river locations [Footnote 11: For example, the 65% and 75% flow alternatives are expected to produce much better temperature results than lower flow alternatives in a substantial percentage of month-by-water year type combinations for spring -run Chinook Salmon, fall-run Chinook Salmon, and late-fall run Chinook Salmon juveniles migrating past Hamilton City (at pp. A6-338, A6-339, A6-340, respectively). Similarly, temperatures favorable for spawning and incubating Steelhead (53oF) are expected to occur much more frequently under the 65% and 75% flow regimes, as modelled in this appendix.] with respect to temperature (the opposite is also true); this demonstrates that flow requirements $\leq 55\%$ of unimpaired flow are not universally better at producing favorable temperature regimes for egg and juvenile salmon – for some species-by-life stage combinations, higher flow alternatives will produce more favorable temperature results. Note that the Board’s temperature analysis only shows the projected effect of flow regimes on temperatures that affect Chinook Salmon success (and only as modeled under the suite of assumptions adopted for this modeling). The Draft Staff Report does not model river temperatures near or in the Delta, where high flows have been shown to produce meaningfully cooler temperatures that can benefit migrating Chinook Salmon (Munsch et al. 2019 [See ATT 76]; Nobriga et al. 2020 [See ATT 20]; see also Vroom et al. 2017 [See ATT 18]; Bashevkin and Mahardja 2022 [See ATT 19]). Furthermore, the Board fails to analyze expected differences in survival of juvenile Chinook Salmon juveniles related to different river flow regimes, as documented in numerous studies published since 2017. The Draft Staff Report should be revised to compare projected	

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		changes in survival across Chinook Salmon freshwater life stages under different flow regimes, accounting for the well-documented flowsurvival benefits described in the research presented in Attachment: Salmon Flow Literature Matrix [See ATT 40]. Nevertheless, according to the Board's temperature modeling, high proportions of unimpaired flows will lead to less beneficial, or even harmful, temperature conditions for egg and juvenile life stages of Chinook Salmon upstream in some month-by-water year type combinations, even as these higher flows generally benefit migrating juvenile Chinook Salmon and the native estuarine pelagic species of concern downstream. Fortunately, as it updates water quality objectives in the Bay-Delta Plan and the POI, the Board does not need to choose between flows that benefit Chinook Salmon incubation (via maintaining adequate coldwater pool in upstream reservoirs) and those that benefit migrating juvenile Chinook Salmon and most other native fish species downstream. Instead, in its POI, the Board must develop and describe mechanisms for resolving tensions between its objectives that may arise in some years, based on the Board's priorities for protecting different beneficial uses. Because of the impairments to migration and river temperatures caused by Central Valley dams, no single percent of unimpaired flow regime will support and maintain viability of Chinook Salmon runs in all years, much less lead to attainment of the salmon protection objective. In this way, the Board's analysis of flow alternatives, and its range of alternatives, are arbitrary. Indeed, the Board has already acknowledged that it will need to adjust nominal percentage of unimpaired flow rates from year to year (and potentially within years) regardless of what adaptive flow range it chooses. The Draft Staff Report (at 7.6.2-103) states: Annual operations plans would be required to be developed each year in coordination with the State Water Board and fisheries agencies identifying how temperature protection and related operations for the protection of salmonids and other native species will be achieved each year, including provisions for reservoir carryover storage levels; minimum and maximum flow releases and ramping rates to provide appropriate temperature protection, preserve cold water supplies, and avoid stranding	

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		and dewatering concerns; reservoir TCD operations; adaptive management; and other relevant provisions, as well as the technical basis for those provisions. The annual plans would be subject to approval and potential modification by the Executive Director. What is missing from this description of annual planning for flow and temperature management under the Plan is a description of the priorities that will govern inevitable choices, in some years, between maintaining coldwater habitat upstream and providing river flows downriver to maintain viability and protect other beneficial uses. The Board can and must provide such an explicit hierarchy and decision pathways in its POI (regardless of which flow alternative is chosen) to ensure that the Bay-Delta Plan reasonably protects all identified fish and wildlife beneficial uses and to guide implementation towards attainment of Bay-Delta Plan objectives. SF Baykeeper et al. refers the Board to an example of such a hierarchy and decision path, developed in the ESA reconsultation for the Long-term Operations of the CVP; some of our organizations helped develop Alternative 3 in the Bureau of Reclamation's forthcoming Biological Assessment (Attachment: Reclamation 2023. Cooperating Agencies Draft Environmental Impact Statement Chapter 3 [See ATT 78]) [Footnote 12: The Board should review drafts of Reclamation's Biological Assessments for both aquatic and terrestrial resources to inform the Bay-Delta Plan update process. Please see Reclamation's website for other associated documents published in 2021 and 2022: https://www.usbr.gov/mp/bdo/lto/index.html.] . Alternative 3 presents a simple hierarchy to guide modeling and management decisions regarding water allocation under a variety of different hydrological conditions (at 3- 62). Although the hierarchy in the Plan POI would necessarily be different than that employed for Alternative 3 (e.g., because the Bay-Delta Plan has a wider scope and broader legal requirements than the ESA section 7 reconsultation process), this alternative demonstrates that simple rules, developed in advance, can be used to implement operational plans that are protective of spawning and incubating salmonids upstream and migrating salmonids and estuarine pelagic species downstream. Developing and analyzing flow alternatives that have a realistic chance of attaining Bay-Delta	

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		Plan objectives and protecting identified beneficial uses requires a POI that describes explicitly how the Plan will adapt to changing annual hydrology and navigate tensions between coldwater habitat upstream and other beneficial uses downstream. SF Baykeeper et al. encourages the Board to review this new information and future updates of the environmental documentation for the ESA reconsultation on CVP Long Term Operations with Reclamation, NMFS, and USFWS when revising the Draft Staff Report.	
308	119	Central Valley Steelhead The Draft Staff Report fails to demonstrate that the proposed project will halt the decline of Central Valley Steelhead, support and maintain their viability, or restore populations to levels that can support a recreational fishery for wild Steelhead. Temperature modeling indicates improved conditions may benefit incubating and early rearing of Steelhead below Shasta Dam and that these benefits are higher under the 65% alternative than under lower flow alternatives (Draft Staff Report Appendix A6 Table A6-190). Spawning, egg incubation, larval rearing are the only life stages that experience significant temperature effects under the baseline (Table 7.6.2-20, Table 7.6.2-37). As noted above, the Draft Staff Report's analysis of smoltification temperature exceedances should be revised to incorporate a temperature threshold that reflects the best available science regarding Central Valley Steelhead (i.e., 11oC daily average, Myrick and Cech 2004 [See ATT 51]) or equivalent 7DADM).	Myrick and Cech 2004 does not provide 11°C as a value above which smoltification is impaired in Central Valley steelhead. The analysis instead relied on Hoar 1988, Adams et al 1975, Zaugg and Wagner 1973, and Zaugg 1981, from which we calculated an average temperature above which smoltification can be impaired to be 54°F (~12.5°C). For more information about the water temperature index values used in the analysis, please refer to Table A6-48 through Table A6-50 in Appendix A6, Water Temperature Modeling and Fish Assessment for the Sacramento, Feather, and American Rivers. For more information about use of the best available science, please see Common Response 3.1, Fish Protection.
308	120	The proposed project's OMR flow requirements, which are based in part on the NMFS 2019 Biological Opinion, will provide less protection for Central Valley Steelhead than they received under the 2009 NMFS Biological Opinion. Although modeled OMR rates project improvements under the proposed plan in some months of some year types, this is because of additional inflow to the Delta (which is not reasonably certain to continue into the future as new diversions are approved and operated) not because of improved OMR requirements under the proposed project. [Because Central Valley Steelhead are not listed under CESA, the ITP's OMR provisions are not intended to protect Steelhead].	See Common Response 1.3, Revised Proposed Plan Amendments, on Interior Delta Flows. Management of Old and Middle River (OMR) flows is established through the federal Endangered Species Act and California Endangered Species Act processes for the long-term operations of State Water Project (SWP) and Central Valley Project (CVP). Additionally, the OMR flow requirements are implemented by Reclamation and Department of Water Resources for the CVP and SWP, respectively, under the requirements of Biological

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		Specifically, the 2019 NMFS Biological Opinion admits (at 528): ... the loss density trigger proposed by Reclamation and DWR is less protective of [Central Valley] steelhead in general and particularly for the populations originating in the San Joaquin River basin. The triggers will be dominated by [Central Valley] steelhead from the Sacramento River basin and typically occur earlier in the season when these fish are present in the Delta system. The higher threshold for the loss density trigger means that the implementation of the Old and Middle River protective actions will only occur about half as frequently (54 percent) as compared to the current protective actions implemented in the current operating scenario conditions. Since it is unlikely that any reductions in exports will occur due to the proposed loss density trigger for CCV steelhead, exports are likely to continue at a rate that manages to an Old and Middle River of no more negative than -5,000 cfs during the spring. In other words, this OMR management action is unlikely to occur, and is unlikely to be protective of key sub-populations of Central Valley Steelhead (the “southern Sierra Diversity group,” NMFS 2014) even if it did occur.	Opinions for the SWP and CVP and the Incidental Take Permit for the SWP.
308	121	Furthermore, the baseline and proposed project incorporate a San Joaquin River inflow to export ratio (I:E ratio) provision that is less protective than the original I:E ratio from the 2009 NMFS Biological Opinion. Instead, the Board proposes an I:E ratio that is similar to that described in the 2020 CESA ITP, which regulates the total volume of water exported during April-May as a function of the total Delta inflow of water from the San Joaquin River during that period. The original I:E ratio was measured on a finer time-step, as a multi-day moving average. This approach had the intended effect of regulating exports consistently throughout the April-May migration window for Central Valley Steelhead from the San Joaquin basing. By contrast, the I:E ratio variant the Board proposes would allow exports to exceed the governing requirement on individual days, so long as total flows and exports averaged out over the period (see, Conditions 8.17 and 8.18 CESA ITP at 120 available at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/State-Water-Project/Files/ITP/ITP-ASR-2021-FINAL-COMPLIANT.pdf). This	Please see the responses to comments 308-113 and 308-116. Please also see Section 7.24.5.1, Exclusion of Interior Delta Flow and Fall Delta Outflow Related Amendments Alternative (Alternative 4a), of the 2023 draft Staff Report for an analysis of the impacts of Modular Alternative 4a and specifically the effects of eliminating the 2009 Biological Opinion and 2020 Incidental Take Permit I:E requirements.

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		exposes migrating fish to greater risk of entrainment, on a daily, weekly or even monthly basis. Moreover, the Board is contemplating excluding proposed interior Delta flow amendments from the proposed project (Alternative 4a). If this alternative is adopted, then future changes to the Biological Opinions and CESA ITP may eliminate entirely the significant protections that the I:E ratio provides to migrating Central Valley Steelhead (Buchanan 2018 [See ATT 14]; Buchanan et al. 2021 [See ATT 15]), and incidentally to Delta Smelt and other Bay-Delta fish species. This outcome is reasonably foreseeable, given that the 2019 Biological Opinion already eliminated the I:E ratio entirely, and the 2020 CESA ITP weakened it significantly.	
308	122	White Sturgeon and Green Sturgeon The Draft Staff Report provides evidence that the proposed project will not halt the decline of White Sturgeon or Green Sturgeon, will fail to support and maintain their viability, and will not restore populations to levels required to support fisheries for either species. Assuming that unregulated flows continue to appear as modeled in the Draft Staff Report Draft Staff Report, the frequency of Delta outflows the Board determined to be protective of both sturgeon species will increase relative to baseline by a small amount under the proposed project (to 19% of years, Figure 14 left panel [See Exhibit 14], Table 1 [See Exhibit 15]), but will still fail to occur with the frequency needed to maintain viability (at a minimum, approximately one in every four years, see above). In contrast, if flows that are currently unregulated are diverted in the future [Footnote 13: Increased capture of unregulated flows is reasonably likely to occur in the future as a result of proposed water development projects, like Sites Reservoir, the Delta Conveyance Project, and others, that specifically target diversion of high river flows.], then the frequency of flows that support sturgeon productivity are expected to decline under the proposed project's 55% of unimpaired flow alternative (Figure 14, right panel). Because sturgeon productivity is negligible in years with flows below the levels identified by the Board, there is no known benefit to the sturgeon species from increases in flows	Please see the responses to comments 308-86 and 308-107 regarding unregulated flows. The 2023 draft Staff Report, Section 3.14.1.1, Achievement of Flow Thresholds, shows that flows associated with positive population growth for sturgeon species occur at a greater frequency under the proposed Plan amendments when compared to baseline which should contribute to increased population abundance (see Table 3.14-6). See Common Response 1.2, Water Quality Control Planning Process, regarding the reasonable protection of fish and wildlife and consideration of other beneficial uses.

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		(e.g., in below normal or drier year types) that remain below the threshold. Flows in the 65-75% of unimpaired range provide the frequency of threshold flows that would support and maintain Green Sturgeon and White Sturgeon populations, assuming continuation of unregulated flows (Figure 14 left panel, Table 1).	
308	123	Direct mortality of sturgeon resulting from combined SWP/CVP water exports in the Delta are also expected to increase under the proposed project relative to requirements that were in place under the 2008/2009 Biological Opinions. Salvage of White Sturgeon and Green Sturgeon are projected to increase under conditions permitted by the state CESA ITP and 2019 Biological Opinion, which are the basis for the in-Delta hydrodynamic and water export restrictions of the proposed project. For example, modeling conducted for the 2020 CESA ITP indicates that White Sturgeon salvage and related mortality will increase dramatically under combined CVP/SWP operations (CDWR 2019a at 4-261 [See ATT 24]). Similarly, entrainment of Green Sturgeon is expected to increase under combined export operations modeled for the 2019 Biological Opinion (NMFS 2019 at 519). Modeling indicates that the proposed project would result in less negative OMR during the summer and fall months (Draft Staff Report Appendix A1 Table A1-54 at A1-173) which might limit entrainment of juvenile sturgeon at those times; however, this is likely due to flow changes under the proposed project that are not reasonably certain to be maintained, not due to changes in OMR requirements. Modeling of the 65% and 75% of unimpaired flow regimes shows much greater improvement in OMR conditions, in many more months, indicating that those flow regimes would be substantially more protective of larval and juvenile sturgeon.	The Staff Report Section 7.6.2, Aquatic Biological Resources, presents results for interior Delta flows and the entrainment potential with implementation of the proposed Plan amendments. The Staff Report acknowledges that, overall, the Plan amendments would be unlikely to reduce the potential for entrainment into the interior Delta except possibly in April and May of some years. Additionally, the USFWS and NMFS BiOps and CDFW ITP are projects considered in the cumulative impact analysis in Section 7.23, Cumulative Impact Analysis, Growth-Inducing Impacts, and Significant Irreversible Environmental Changes. These projects may reduce water supply which could interact with the proposed Plan amendments, resulting in cumulative impacts on biological resources due to lowered groundwater levels. See Common Response 1.2, Water Quality Control Planning Process, regarding the reasonable protection of fish and wildlife and consideration of other beneficial uses.
308	124	SF Baykeeper et al. notes that White Sturgeon and Green Sturgeon are expected to be less resilient to poor flow and water quality conditions in the Bay-Delta and its tributary rivers than they were when the Board last evaluated their status (SWRCB 2017). Indices of White Sturgeon population abundance have continued to decline (see above; Attachment: White Sturgeon CESA Petition [See ATT 3 and ATT 85]), and NMFS (2021 [See ATT 66]) found no evidence that the conservation status of Green Sturgeon had improved between 2015 and 2020 – i.e., they remain at high risk of becoming endangered with	See the response to comment 308-60.

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		extinction. Both populations were heavily impacted by catastrophic mortality related to summer red tides in San Francisco Bay during 2022 and 2023 (CDFW 2023b [See ATT 58]; California Fish and Game Commission 2023 [See ATT 59]). As a result, maintenance of currently inadequate conditions or degradation of those conditions represents a greater threat to viability of both Bay-Delta sturgeon populations than previously understood.	
308	125	Starry Flounder The Draft Staff Report's modeling suggests that Delta outflows under the proposed project will improve conditions for the Bay-Delta Starry Flounder population; however, as described above, the Board's target flows for Starry Flounder are not those actually needed to achieve the Board's goal for protecting this species. SF Baykeeper et al. analyzed the frequency of protective flows for Starry Flounder using the mid-point of the range the Board identified as protective for Below Normal Years (SWRCB 2010 at 83) – this approximates the conditions the Board previously determined would be protective in the median year. SacWAM modeling indicates that April-May flows the Board previously identified as protective of Starry Flounder occur in only 22% of years under the baseline, and would increase to 35-48% of years under the 65% and 75% flow alternatives, respectively. As elsewhere, to evaluate the efficacy of alternative flow regimes, the Board must declare what level of protection it considers reasonable for Starry Flounder and associated beneficial uses.	Please see Common Response 3.1, Fish Protection, regarding the adequacy of modeling to support the benefit analyses. Also see Staff Report Section 3.9.4, Flow Effects on Starry Flounder, for a description of how the population abundance goal for starry flounder in the State Water Board's 2010 Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem report informed the identified flows protective of starry flounder. Also see the response to comment 308-112 regarding flows from the 2010 Delta Flow Criteria Report.
308	126	Estuarine habitat As described above, the Draft Staff Report fails to identify flow thresholds for protection of the estuarine food web or repression of harmful algal blooms that are consistent with the best available science. However, the analysis indicates that the proposed project will fail to maintain decent estuarine habitat conditions in most years. Modeling produced for the Draft Staff Report reveals that flows needed to maintain abundant populations of the key zooplankton, <i>E. affinis</i> (Hennessy and Burris 2017a,b [See ATT 9	See Common Response 4.1, Harmful Algal Blooms, regarding instream flows and HABs. Staff Report Section 3.11, Zooplankton (<i>Neomysis mercedis</i> and <i>Eurytemora affinis</i>), identifies Delta outflows between February and June for the benefit of the zooplankton community. Additionally, Table 3.14-2 identifies the months needed for Delta outflows for specific species including zooplankton. Increased Delta outflow during February through June (as would occur under the proposed Plan amendments) would benefit zooplankton species, and as an essential food resource for fish, would provide improved nursery habitat for fishes including

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		and ATT 10, respectively]], will occur less in less than half of years under the proposed project in roughly four out of 10 years, even assuming that currently unregulated flows continue to reach San Francisco Bay in the future (Table 1 [See Exhibit 15]). If unregulated flows are captured by dams and diversions in the future, the frequency of this key flow threshold will decrease (Figure 14 [See Exhibit 14], compare left panel to right panel). The 65% and 75% flow alternatives will be protective of the estuarine food web much more frequently than the proposed project (Table 1). Similarly, flows needed to produce high levels of zooplankton that are key to the estuarine food web in general, and Delta Smelt in particular, during the late spring and summer (> 6500 cfs June-September, see above) occur much more frequently under the 65% and 75% flow alternatives than they would under the proposed project's flow regime (Table 1). Given that Delta Smelt live only one year and that there is little, if any, overlap between generations, and that this population is nearly extirpated in the wild, it is essential for their continued viability that their chief summer prey item (<i>P. forbesi</i>) be relatively abundant in Delta Smelt habitat in as many years as possible. Again, the Board should identify biocriteria for protection of estuarine habitat so that flow alternatives can be evaluated against, and implemented to attain, that benchmark.	Delta smelt. See Common Response 1.2, Water Quality Control Planning Process, regarding the reasonable protection of fish and wildlife and consideration of other beneficial uses. Please see the responses to comments 308-86 and 308-107 regarding unregulated flows.
308	127	With respect to HABs, the Draft Staff Report finds a potentially significant impact because “[l]ower summer and fall flows in some Delta channels could result in incremental increased production of HABs and invasive aquatic plants” (at 7.1-40). The related mitigation measures (MM-SW-a,f at 7.1-39-40) deal solely with nutrient discharges into receiving waters. But this directly contradicts the Draft Staff Report’s acknowledgement (at 7.12.1-39) of expert reviews conducted by the Central Valley Regional Water Board, which states: The Central Valley Water Board assembled panels of HAB and invasive aquatic plant experts to prepare white papers ... [which] concluded that nutrient concentrations were not responsible for variability in HAB occurrence and growth of invasive aquatic vegetation in the Delta, although nutrient supply may affect	As discussed in Section 7.12.1, Hydrology and Water Quality, although many studies have indicated that low flows through the Delta are associated with increased formation of cyanobacterial harmful algal blooms (HABs), high-flow conditions through the Delta do not necessarily prevent the formation of HABs given other environmental variables that influence HAB formation like water temperature (Lehman et al. 2022) and high inflow to the Delta would not ensure high flows through all Delta channels. Further, Berg and Sutula (2015) noted that although nutrient reduction may not limit the onset or frequency of bloom occurrence, it will limit bloom duration, intensity, and potentially geographical extent. Please see Common Response 4.1, Harmful Algal Blooms, for response to comments related to instream flow and HABs in the

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		duration and severity of HABs. For both HABs and invasive aquatic vegetation, the experts cautioned, based on their experience elsewhere, that nutrient management might not decrease the impairments and recommended follow-up studies to confirm their hypotheses (Boyer and Sutula 2015; Berg and Sutula 2015). The Draft Staff Report relies on HAB mitigations that are unlikely to work, while ignoring the need for flow regimes that can protect estuarine habitat from widespread and persistent toxic algal blooms in the Delta. This deficiency must be corrected in the revised final Staff Report.	Delta. Chapter 13, Revised Proposed Plan Amendments, of the final Staff Report includes a revised list of mitigation measures to address the potential impacts of the revised proposed Plan amendments on HABs in the Delta under MM-SW-a,f: 4. Avoid or Reduce Harmful Algal Blooms and Invasive Aquatic Weeds (see Appendix H3, Mitigation Measures for the Revised Proposed Plan Amendments). In addition, Section 13.3.9.2, Harmful Algal Blooms, describes provisions included in the revised proposed Plan amendments for addressing HABs in the Delta.
308	128	The Draft Staff Report fails to analyze potential adverse environmental impacts of waiving instream flow requirements in future drought emergencies, as under the proposed project By definition, granting temporary urgency change petitions (TUCPs) reduces flows below the requirements of existing objectives—objectives that have been widely acknowledged to be inadequate. (Draft Staff Report at 7.24-6). TUCP approvals occurred in six out of 10 years in the last decade: 2014, 2015, 2016, 2021, 2022, and 2023. (Draft Staff Report at 7.24-4). Analyses by state and federal agencies have demonstrated that these recent TUC Orders – which reduced flows into and through the Delta to San Francisco Bay below the minimums required by the 2006 Water Quality Control Plan and Water Rights Decision 1641 – have caused significant harm to fish species, further reducing the survival and abundance of species including Delta Smelt, Longfin Smelt, winter-run Chinook Salmon, spring-run Chinook Salmon, and fall-run Chinook Salmon, depending upon the time of year when such TUCPs were granted. (See, e.g., SWRCB 2014, 2016, 2022; Reclamation & CDWR 2021.) Implementation of TUC Orders has also contributed to and exacerbated Harmful Algal Blooms in the Delta, and peer reviewed research has concluded that reduced Delta outflow (shifting X2 upstream) significantly contributes to the abundance of toxic cyanobacteria in the genus <i>Microcystis</i> (Lehman et al 2020 [See Exhibit 11], Lehman et al 2022, SWRCB 2021). Following implementation of several TUC orders in 2014 and 2015, the Board found that changes in drought planning	Please see Common Response 1.3, Revised Proposed Plan Amendments, for a discussion of TUCPs. The draft Staff Report's analysis of the revised proposed Plan amendments addresses the full range of predicted hydrological conditions and does not assume the use of TUCPs.

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		were needed: ...the status quo of the past two years is not sustainable for fish and wildlife and that changes to the drought planning and response process are needed to ensure that fish and wildlife are not unreasonably impacted in the future and to ensure that various species do not go extinct. SWRCB 2016 at 39. The Projects then petitioned for and received permission to reduce Delta outflows relative to those specified in D-1641 for June and July 2021 (SWRCB 2021). In granting the 2021 TUCP, the Board stated: “The effects of reduced Delta outflow are expected to negatively impact survival of juvenile Delta smelt June through August [2021]” (Ibid. at 19). The 2022 TUCP also acknowledged that reduction in Delta outflows would harm Delta Smelt (Reclamation and DWR 2021). The Board acknowledged that TUC Orders were a mistake, and that better drought planning is needed. It is incumbent on the Board to exercise the due diligence required to not repeat that mistake. Part of that due diligence is recognizing droughts are a normal part of the California climate, and consecutive dry years can be planned for as readily as single ones. “California law identifies TUCPs as limited to urgencies that cannot otherwise be avoided through the exercise of due diligence (Wat. Code § 1435, subd. (c)).” (Draft Staff Report at 7.24-4). Extraordinary drought measures – defined here as changes to water quality objectives, through TUC Orders or other mechanisms – should not be necessary, as the Board should evaluate the effects of the full range of hydrologic conditions and adopt water quality objectives that address that full range. Thresholds should be precisely and quantitatively defined in order to minimize the need for “drought measures” and should have a predefined hydrologic trigger proportional to water availability so that “temporary” violations of water quality objectives are not necessary unless conditions are truly off the scale.	
308	129	The Modular Drought Alternatives are a starting point for responsible water management in the Bay-Delta. Alternative 5a,	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not

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		the Instream Flow Protection Provision, would apply Term 91 to all water rights holders, instead of applying it to less than 1% of water right holders, as is done now. This type of drought curtailment could avoid TUC Orders and maintain cold water storage. Alternative 5b, the Shared Water Shortage provision, would require all water users to share in the responsibility of contributing to instream flows by conserving water. This also avoids TUC Orders and maintains cold water storage. Alternative 5b could also be applied in non-drought conditions in over-allocated watersheds, so that the burden of new flow requirements is shared equitably among all users. Both of these alternatives should be included in the updated Bay- Delta Plan.	raise specific environmental impacts of the project, or do not raise specific economic effects of the project. See also Common Response 7.24, Alternatives Analysis, for more information on the description and analysis of alternatives.
308	130	Although broader distribution of responsibility for flow and water quality standards under the flow alternatives will make the conditions leading to TUCPs less frequent, there will still be times when flow and upstream temperature objectives will be in conflict. Water Rights Order 90- 5 (WR 90-5) illustrates a mechanism for addressing the tension between flow conflict, although the Board's implementation of WR 90-5 has been abysmal –failing to reasonably protect either coldwater habitat for spawning salmonids or rare species, or estuarine habitat (see above; Attachment: PPMC 2022 Letter on CV Temperature Management [See ATT 32]) – because the Board failed to prioritize protection of the most sensitive beneficial uses.	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.
308	131	The Board must describe explicitly how it will protect the most sensitive beneficial uses during drought sequences and other crises. While differing from the Bay-Delta Plan in the scope of fish and wildlife beneficial uses and associated thresholds of protection, the LTO Biological Assessment's (LTO BA) Alternative 3 modeling approach provides a template for such a description (see Attachment: Reclamation 2023. Cooperating Agencies Draft Environmental Impact Statement LTO BA Chapter 3 [See ATT 78]). In Alternative 3 of the LTO BA (at p. 3-62), existing water quality, instream flow requirements, and human health and safety are the highest priorities, after which carryover storage targets designed to maintain coldwater habitat are prioritized. Higher river flows are required when storage targets are likely to be met, but before certain deliveries are made to CVP contractors. This approach generated improved frequency of coldwater habitat protection and major improvements in	This comment was made on the 2023 draft Staff Report. Following which, State Water Board staff met with the commenters to discuss this suggestion. The regulatory pathway for the revised proposed Plan amendments includes provisions with similar purposes as Alternative 3 that are designed to protect cold water resources while providing for increased instream flows without impacting critical health and safety water supplies and other critical supplies. Specifically, as described in common response 1.3, the revised proposed Plan amendments include water supply adjustments upon initial implementation to preserve water in storage in drier conditions and reduce water supply impacts; provisions of temperature management strategies and annual temperature management plans that include provisions for carryover storage; and curtailment exceptions for health and safety and other critical purposes. However, the planning and regulatory processes differ

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		viability of target species in the estuary, including Delta Smelt. An analogous approach in the Plan POI would not only better protect fish and wildlife beneficial uses and water quality but would provide clarity for managers and water diverters regarding the likely impacts to water supply that would occur under an extended drought.	between the LTO process and the Bay-Delta Plan update and implementation process that limit the ability for the specific provisions of LTO alternative 3 to be integrated into the regulatory pathway of the Bay-Delta Plan without significant additional analysis and planning. Specifically, the LTO process is focused narrowly on CVP and SWP operations relative to the federal and state Endangered Species Acts and does not address other water users in the system; the water right priorities of all of the users and their relative responsibilities for bypass flows given those priorities; methods for integrating required inflows with required inflow-based Delta outflows and required reservoir management conditions consistent with water right priorities; and other considerations. Further, LTO alternative 3 was also not carried forward by Reclamation in their proposed project for the LTO. Accordingly, for the Board to incorporate these requirements in the regulatory pathway of the Bay-Delta Plan it would need to ensure that the measures were implementable by the Board under its regulatory authorities consistent with water right priorities and other applicable requirements. These issues were not able to be resolved during the discussions with the commenters in order to develop a viable alternative for the Board's consideration as part of the current update to the Bay-Delta Plan. With further development to resolve the issues identified above, similar alternatives can be considered in the future as part of the Board's periodic review processes.. Please see Common Response 7.24, Alternatives Analysis, on the range of reasonable alternatives. See also Common Response 4.2, Drought and Climate Change, for responses to comments that raise issues with drought response measures.
308	132	4. The Draft Staff Report fails to consider the Board's legal authority to require water rights holders to invest in habitat restoration and other non-flow measures As discussed in prior comments, the Board has the legal authority to require water rights holders to invest in habitat restoration and other non-flow measures under the physical solution doctrine (TBI et al. 2013 at 85-86 [See ATT 79]; NRDC et al. 2017 at 40-41 [See ATT 74 and ATT 92]). The physical	All of the alternatives include non-flow measures as described in Section 7.2, Description of Alternatives. As described in Chapter 5, Proposed Changes to the Bay-Delta Plan for the Sacramento/Delta, of the 2023 draft Staff Report, implementation of the proposed Plan amendments includes physical habitat restoration and other complementary ecosystem measures. The cold water habitat measures could be implemented through non-flow measures, and voluntary implementation plans (now referred to as local cooperative

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		solution doctrine has been adopted numerous times by the Board where “there is a ‘physical solution’ available by which competing needs can best be served.” Decision 1631 at 10; see Board Water Rights Order 98-05 (approving habitat restoration measures implementing Decision 1631).[Footnote 14: See also Water Rights Order 90-16 (holding that under the physical solution doctrine and section 5937 of the Fish and Game Code, the Board can require releases from a reservoir greater than unimpaired inflow during certain times of the year, in order to keep fish in good condition); Decision 1630 (discussing the physical solution doctrine in the context of the Board’s decision finding waste and unreasonable use and mandating water conservation measures in the Imperial Irrigation District); City of Barstow v. Mojave Water Agency, 23 Cal.4th 1224, 1249-51 (2000).] SF Baykeeper et al. supports improvements in both physical habitat and flow because the best available science shows both are important for recovery of a broad range of fish and wildlife species and the general health of the estuary and its watershed – provided there is sufficient flow to make habitat functional and support the estuary’s many flow-dependent species. As discussed more in Section III, the habitat restoration that has been occurring for the last three decades should continue under the proposed project. Unfortunately, the Board is inconsistent in its application of the physical solution doctrine in the Draft Staff Report and the Proposed Project alternatives. For example, the Board separates flow alternatives from modular alternatives (Table 2 [See Exhibit 16]). In “modular” Alternative 4b, the Board is considering requiring replacement of the Head of Old River Barrier (HORB), a specific non-flow action in a modular alternative that could be paired with one of the three standalone “flow” alternatives. (Draft Staff Report at 7.2-3). The Board applies the physical solution doctrine in Alternative 4b, but fails to include non-flow measures in most of the other alternatives (Table 2). Because the Board separates non-flow actions unnecessarily, it forces the public to interpret the alternatives as an a la carte menu rather than a comprehensive plan. The separation also limits comprehensive analysis of combined flow and non-flow measures to only the Voluntary Agreements Alternative [Footnote 15: There is limited discussion and analysis of the	solutions) could propose non-flow measures. Please see Common Response 1.2, Water Quality Control Planning Process, on State Water Board’s consideration of non-flow measures. Also see Common Response 1.3, Revised Proposed Plan Amendments, for more information on habitat restoration activities included in the revised proposed Plan amendments, and Common Response 7.24, Alternatives Analysis, regarding the range of reasonable alternatives and non-flow measures.

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		modular alternatives “in combination with the proposed Plan amendments, other flow alternatives, and proposed VAs” in Draft Staff Report Chapter 7.24.], and with no accompanying POI to determine other comparative combinations of actions, both the Board and the public have no way to compare and assess how non-flow and flow measures together impact the estuary. This renders the Draft Staff Report deficient under both CEQA and the Porter-Cologne Act.	
308	133	Additionally, the Board undermines its authority to enforce the physical solution doctrine by relying on voluntary implementation plans to implement non-flow measures in the future POI. (Draft Staff Report at 5-9).[Footnote 16: Baykeeper et al. recognizes that the voluntary implementation plans are different than the Voluntary Agreement proposal discussed in the SED’s Chapter 9. Draft Staff Report at 5-9.] While Baykeeper et al. agrees that “additional tools to improve ecological conditions can be brought to bear through voluntary measures” (Draft Staff Report at 5-9), relying on such voluntary implementation plans as the primary implementation method to protect beneficial uses is premature, biased towards the Voluntary Agreements Alternative and undermines the Board’s clear legal authority to require physical solutions to achieve the Plan’s narrative and numeric objectives. It is appropriate to include habitat restoration and other non-flow measures in the future POI “to protect fish and wildlife and contribute toward implementation of the new and existing narrative objectives.” (See Draft Staff Report at 5-70). However, we urge the Board to revise the Draft Staff Report to require habitat restoration and non-flow measures across all alternatives as part of the Bay-Delta Plan update in order to meet CEQA and Porter-Cologne requirements and give the public the opportunity to fairly assess the impacts of all flow and non-flow measures on the San Francisco Bay-Delta estuary.	Please see the response to comment 308-94. In addition, local cooperative solutions (previously referred to as voluntary implementation plans) are not relied on “as the primary implementation method to protect beneficial uses.” The impacts of the combination of flow and non-flow measures are evaluated in the Staff Report. For example, habitat restoration and other ecosystem projects are evaluated in Section 7.21, Habitat Restoration and Other Ecosystem Projects, of the Staff Report.
308	134	[Exhibit 16: Table titled Table 2: Alternatives Non-Flow Measures Table]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
308	135	5. The Draft Staff Report fails to adequately consider improvements in water use efficiency and alternative water	Please see 2023 draft Staff Report Section 6.6, Other Water Management Actions, and Common Response 6.3, Water Supply

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		supplies Native aquatic organisms and other public trust resources in the Bay-Delta must rely exclusively on the waters of the estuary for their existence. In contrast, there are cost-effective, more reliable, environmentally superior alternative water supplies available for municipal, industrial, and agricultural beneficial users of water from the estuary and its watershed. These alternative water supplies come in the form of agricultural water use efficiency, urban water use efficiency, groundwater, recycled water, and urban stormwater capture (also referred to as low impact development), and in many cases can be more cost effective and more reliable in the long term than water diverted from the Bay-Delta system. In addition, many water users have the flexibility to secure water supplies from alternative sources; and/or switch to different activities to maintain economic viability. The Board must take these potential alternative water supplies and strategies into account when balancing competing beneficial uses and determining what level of public trust protection is feasible. Alternative water supplies and water use efficiency could conservatively result in over 6 million acre-feet of water per year, statewide, by the year 2030. In other words, alternative water supplies could produce significantly more water than current average diversions from the Sacramento-San Joaquin Delta (NRDC/TBI 2012; NRDC/Pacific Institute 2014a, b, c, d). Investment in alternative water supplies to reduce reliance on the Delta is also State policy, briefly acknowledged in the Draft Staff Report at 7.2-44. In order to provide a more reliable water supply, the Legislature mandated: The policy of the State of California is to reduce reliance on the Delta in meeting California's future water supply needs through a statewide strategy of investing in improved regional supplies, conservation, and water use efficiency. Each region that depends on water from the Delta watershed shall improve its regional self-reliance for water through investment in water use efficiency, water recycling, advanced water technologies, local and regional water supply projects, and improved regional coordination of local and regional water supply efforts.	and Other Water Management Actions, on alternative water supplies and strategies, including State efforts to promote water use efficiency and water conservation. Also see Common Response 1.2, Water Quality Control Planning Process, regarding the consideration of beneficial uses, and Common Response 7.24, Alternatives Analysis, regarding non-flow measures in the reasonable range of alternatives.

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		Cal. Water Code § 85021. While the Draft Staff Report acknowledges alternative water supplies, it stops short of the water code mandate, failing to require affordable and sustainable strategies as components of alternatives and as mitigation measures to offset impacts, claiming: While the project cannot be considered the driving impetus for sustainable management and water supply diversification efforts, including the need to develop and use recycled water, the project may accelerate and increase the need for such efforts to manage water sustainably and may promote development of recycled water. Draft Staff Report at 1-7. Some mitigation activities are within the State Water Board's jurisdiction. However, other mitigation measures are largely within the jurisdiction and control of other agencies or depend on how water users respond to the project. Accordingly, the State Water Board cannot guarantee that measures will always be adopted or applied fully to mitigate potentially significant impacts." Draft Staff Report at 1-19. It is not possible to quantify exactly how the various water users that may experience reduced Sacramento/Delta supplies will manage their water supply portfolios in response to reduced supplies, and this type of quantification is beyond the scope of detail required in this planning process. Draft Staff Report at 6-83. Nevertheless, it is within the Board's jurisdiction to require development of alternative water supplies. Not only the Water Code, but also the physical solution doctrine compels the Board to consider alternative water supplies a "driving impetus" in promoting maximum beneficial use of the State's water	

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		resources (see Board Decision 1631 at 10). In D-1631 the Board applied the physical solution of compelling the appropriator to restore degraded streams and fisheries. The physical solution doctrine should also include consideration of the development of alternative water supplies, such as conservation and recycling, where such a physical solution can be used to reasonably and feasibly advance balancing protection of public trust resources with consumptive uses for water. The Board has broad authority to require the development of alternative water supplies as a physical solution to reduce conflicts between such uses of water. But even if the Board did not directly require physical water supply solutions, it can and should assume that consumptive water users have both the ability and the incentive to develop alternative water supplies pursuant to state policy, as well as a rational and likely growing response to climate change challenges and emerging technologies for more efficient water use. Thus, state policy compels the Board to consider these alternative supplies in balancing between competing beneficial uses, in determining what measures are feasible to protect public trust resources, in considering the many ways in which alternative supplies can mitigate the impacts of taking action to protect public trust resources and fish and wildlife beneficial uses of water, and in directly (in the POI) or indirectly (in its analytical assumptions) factoring in alternative supplies into its evaluation of water supply impacts and mitigation opportunities. Unfortunately, the analysis in the Draft Staff Report is cursory, providing neither the necessary detail nor requiring implementation of physical alternative supply projects. Instead, it describes ongoing efforts and focuses on voluntary efforts, funding, and efforts to “encourage and promote” these supplies (Draft Staff Report at 7.4-97). While goals are important, simply setting goals without detailed plans is a strategy that is destined to fail. For example, the Board’s goal to increase the use of recycled water in California from 714,000 AF in 2015 to 1.5 MAF in 2020 and 2.5 MAF in 2030 (Draft Staff Report at 7.20-45) appears to be behind schedule, with only 732,000 AF being recycled in 2021 (Draft Staff Report at 6-90)—less than half of	

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		the 2020 goal, contrary to the outdated assertion based on 2015 data that projections have held true (Draft Staff Report at 7.4-90). To reach these goals, the Board either needs to consider requiring alternative water supply solutions as part of the POI or needs to assume that progress toward implementing these projects is not a constraint on the Bay-Delta Plan update but rather a default responsibility of consumptive water users.	
308	136	The following are examples of policies and mandatory requirements the Board should consider requiring of water right holders: • Funding of water efficiency programs should focus on conversion of land and water intensive agriculture to less intensive and more sustainable practices. For example, the Netherlands uses only 7% as much water as the U.S. to produce a pound of tomatoes, on far less land (Viviano, 2017). The Draft Staff Report states, “On the basis of a review of previous efficiency studies, Pacific Institute and Natural Resources Defense Council (2014) estimated that agricultural water use could be reduced by 5.6 million to 6.6 MAF/yr, or by about 17 to 22 percent, while maintaining productivity and total irrigated acreage.” (Draft Staff Report at 6-95.) • The South and Central Delta diversion reduction program in 2015 was an example of a successful voluntary program. (See https://www.waterboards.ca.gov/water_issues/programs/delta_watermaster/docs/diversion_reduction15.pdf.) Modeled after this success, the Board should develop a long-term fallowing program that is invoked when needed. • A 2017 study showed that media coverage of drought was an important driver of urban water conservation efforts. (See https://news.stanford.edu/2017/10/25/media-attentiondrought-produced-water-savings/.) The Board should continue to release information on each urban water agency’s level of conservation effort, with more frequent updates during droughts. • The success and prominence of the urban water conservation programs are a marked contrast with the absence (with few	Please see Common Response 7.24, Alternatives Analysis, regarding the range of alternatives.

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		exceptions) of either voluntary or mandatory agricultural water conservation standards. Given the overwhelming proportion of California's water that is used for agriculture, it is a high priority to implement voluntary and mandatory conservation standards for agriculture, modeled on successful urban programs.	
308	137	6. The Draft Staff Report's analysis of water supply impacts is flawed and overestimates likely impacts a) Projected reductions in water supply are not unreasonable, let alone unable to be mitigated for Simply by adopting new, more protective flow objectives, the Board will incentivize creative voluntary measures for anyone that would experience a potential reduction in water supply. Table 7.20-8 in the Draft Staff Report shows the estimated reductions in municipal supplies by region for the flow alternatives. These reductions (maximum 27% reduction for the Bay Area under the 75% UIF scenario and 22% under the 65% scenario, and less for all other regions, with costs of municipal response 0.03% and 0.02% of economic output, respectively, and 0.05% and 0.04% in Southern California) are not unreasonable, given similar or greater reductions in water use were observed during the 2012-2016 drought and given the largely untapped potential for alternative water supplies discussed above. (Draft Staff Report at 8-97 to 8-101). For agriculture, Table 8.4-4 shows only a 4.7% reduction in crop revenue under the 65% scenario and 8.2% reduction under the 75% scenario. A less-than-10% reduction of revenue, while likely an overestimate for reasons described below, is not unreasonable, given the leading role of agricultural water diversions in degrading fish and wildlife beneficial uses and the ability of agricultural water users to shift crops and adopt other adaptive approaches. Table 8.4-27 shows a decrease of 9,504 jobs under the 65% scenario and 15,554 under the 75% scenario—compare these reductions to the 23,000 California jobs (not even counting Oregon) supported by a healthy salmon fishery that are at risk if the high-flow alternative is not implemented (Southwick Associates 2012). Compare these numbers also to the rapidly-expanding number of warehouse jobs on former farmland in the San Joaquin Valley—Kern County alone experienced a fivefold increase over	The Staff Report's analysis of environmental impacts and economic effects is appropriate for the large scope of the project and wide range of possible response actions. Section 7.1, Introduction, Project Description, and Approach to Environmental Analysis, describes the approach to the analysis and describes reasonably foreseeable methods of compliance and response actions. As described in Section 7.1, Introduction, Project Description, and Approach to Environmental Analysis, it is uncertain how water users may respond to changes in Sacramento/Delta supplies, and the water supply reductions could be distributed somewhat differently than modeled. The environmental analysis often considers a range of potential outcomes, including the most conservative for evaluating potentially significant effects on the physical environment. In many cases, there may be no impact. For each resource area, the analysis assumes a worst-case scenario. Some impacts are inversely proportional, and it is not possible for a worst-case scenario to occur for every environmental resource area. Given the inherent uncertainties involved in modeling agricultural impacts, the Staff Report uses a reasonable and conservative approach to evaluating potential agricultural impacts of the flow scenarios. As discussed in Section 7.4, Agriculture and Forest Resources, a conservative threshold of significance for conversion is used that captures the importance of agriculture as a resource in California. All irrigated agriculture is used as a proxy for important farmland. In addition, the analysis assumes that any reduction in irrigated crop acreage is important farmland converted to non-agricultural use. This conversion to nonagricultural use would be a significant impact. Projecting the specific ways that water users may respond to reduced surface water supply would require undue speculation. As a result, the analysis of agricultural impacts is general in nature and uses an appropriately conservative threshold of significance.

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		the 2009-2019 period to 22,000 jobs. (Los Angeles Times, December 19, 2023, Kern County is poised to become warehousing's next frontier). The Board's economic modeling fails to consider this broader context, in which alternative water supplies and alternative economic activities may largely or entirely offset the impacts of higher flow alternatives. The broader context should be used to guide the Plan update.	The Staff Report adequately analyzes the economic effects of the project as required by the Porter-Cologne Water Quality Control Act. Staff Report Chapter 8, Economic Analysis and Other Considerations, estimates changes in crop revenue based on results from the SWAP model. While the SWAP model does not explicitly incorporate these other water management actions, these actions are appropriately considered in the analysis of potential agricultural economic effects. As discussed in Section 8.4, Agricultural Water Supply Economic Effects, the SWAP model allows for some efficiency improvements and deficit irrigation, but does not capture the full set of other water management actions that farmers may pursue in response to reduced water supplies. This combination of factors is an indicator that the SWAP model results should be considered an indicator of the change in crop acreage and agricultural economic effects that could occur under the proposed Plan amendments and other flow scenarios, but the actual outcome on crop acreage and revenue may vary to some degree from the model results. Please see Common Response 8.1, Economic Analysis and Other Considerations, for additional discussion on the SWAP model and other water management actions. See also Common Response 6.3, Water Supply and Other Water Management Actions for a general discussion of water supply and other water management actions.
308	138	b) The water supply and economic effects modeling significantly overestimates impacts Over the longer term, because of availability of alternative supply tools (and greater price elasticity of water in the longer term), estimates of employment and economic consequences of reduced Bay-Delta diversions will likely be overestimated. This is consistent with observed behavior during drought and in prior proceedings, where water users have utilized water transfers, improved efficiency, and other alternative supplies when diversions were reduced. The use of the SacWAM-driven CALVIN model is an improvement over previous efforts because it incorporates the response of water users to reduced diversions from the Bay-Delta, including investments in conservation, water recycling, and other alternative water supply tools, as well as	Please refer to response to Comment 308-137 regarding the approach to the environmental and economic analyses, and the SWAP model and its use in the analyses.

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		increased water transfers. However, the model-estimated impacts are still overestimates for the following reasons. (1) Land fallowing assumptions are unrealistic and misdirected The Draft Staff Report uses an overly conservative threshold of significance related to land conversion by assuming any reduction in irrigated crop acreage would result in permanent conversion of important farmland to nonagricultural use, resulting in a potentially significant impact. The Draft Staff Report acknowledges this is unlikely to occur: Also, the management decisions of individual agricultural producers are more sophisticated and driven by more variables than can be accounted for in modeling. For example, land with less access to irrigation could still remain in agricultural production due to one or more factors, including water conservation efficiency improvements that reduce water demand, crop category, or agricultural use changes to less water-intensive applications, dryland farming, or increased crop rotation. Draft Staff report at 7.4-53. In addition, the assumption that all irrigated agriculture is important farmland is incorrect. A significant portion of the state's 8.5 million acres of farmland is unsustainably irrigated, has poor drainage, is flood-prone, or experiences other soil or groundwater conditions that make irrigated agriculture an unsustainable use in the long term. Many of these areas would naturally be wetlands or floodplains and could be restored, and should not be included in the restriction in Mitigation Measure MM-AG-a,e (Draft Staff Report at 7.4-99, item 6) on converting farmland to non-agricultural uses. Restoring floodways with setback levees and floodplain restoration often results in multiple benefits to water supply, flood management, and riverine ecological functions. The application of irrigation water to inappropriate lands and soil types has resulted in great ecological harm, including mobilization and discharge of toxins in drainwater, land subsidence, and limitations on needed flows in rivers in order to protect floodplain crops from naturally high levels of groundwater and seepage. Land fallowing should be focused on these areas where irrigated agriculture is	

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		unsustainable and alternative land use would result in public benefits. This type of regional land use planning is long-overdue in the Central Valley, and the Plan update can be a vehicle for promoting these win-win solutions.	
308	139	(2) Groundwater impacts are overstated The discussion concerning impacts to Disadvantaged Communities in the Draft Staff Report from groundwater impacts (at 7.20-29; see also section 7.12-2) is irrelevant because it describes impacts that are unlikely to occur because they would be unlawful under SGMA. GSAs have a duty to manage groundwater sustainably and avoid significant and unreasonable undesirable results, and if they fail to adopt adequate GSPs, the State Board has the duty to step in and ensure undesirable results are avoided. Because significant and unreasonable impacts to groundwater sustainability indicators (including lowering of groundwater levels and degradation of water quality) are prohibited under SGMA (DWR 2017), any Board analysis that shows significant and unreasonable impacts relies on assumptions inconsistent with state law. Assuming that water users shift to groundwater may be an appropriate model assumption that allows the model to function, however this assumption must be corrected in post-processing, and acknowledged to be purely a modeling construct that would not occur in reality. Any increases in groundwater pumping in the model that would result in undesirable impacts would in reality likely be met through efficiency or alternative supplies. Projected unreasonable impacts to groundwater and Disadvantaged Communities simply would not occur due to Bay-Delta Plan updates unless the state fails to enforce SGMA.	Chapter 8, Economic Analysis and Other Considerations, covers the economic considerations applicable to all project alternatives, including the estimated costs of compliance and response actions that may result from the project. The economic analysis is required under the Porter-Cologne Water Quality Control Act and fulfills the program cost estimate requirement of Water Code section 13141. Chapter 6, Changes in Hydrology and Water Supply, describes the changes in hydrology and water supply that may occur from the plan update. The Sacramento Water Allocation Model (SacWAM) was used to provide the best estimate of potential changes to hydrology and water supply that could occur as a result of project and VA alternatives. Modeled scenarios were compared to baseline conditions to inform Chapter 7, Environmental Analysis, of the Staff Report. The impact analysis for Section 7.12.2, Groundwater, is presented qualitatively, with modeling results from the Statewide Agricultural Production (SWAP) model used for context in the discussion and conclusions. As stated in Section 7.12.2 the State Water Board has authorities related to groundwater diversion, use, and quality that are independent of, and in addition to, SGMA. Groundwater quality and levels are identified impacts that can occur from water users' responses to changes in hydrology and water supply. The Staff Report acknowledges that effective and successful SGMA implementation would prevent impacts to groundwater and disadvantaged communities dependent on groundwater resources. However, SGMA implementation is a non-static process and requires a methodical and periodic review process to evaluate if groundwater impacts are being mitigated. Please see Common Response 7.1, General CEQA and Approach to the Analysis, for more information regarding the appropriate level of CEQA analysis for the draft Staff Report. Please see Common Response 7.12.2, Groundwater and Sustainable Groundwater Management Act, for a status report on SGMA implementation and more information regarding state intervention.

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308	140	The 5th consecutive dry year analysis is based on unreliable data Appendix D displays Urban Water Management Plan (UWMP) data for the 5th consecutive dry year. These self-reported demand projections are quite variable in quality, with many agencies taking a conservative approach and overestimating future demand. Los Angeles Department of Water and Power (LADWP), for example, shows an estimated supply and demand of 673,600 acre-feet (Table D-7 at D-6), however LADWP's UWMP shows that the city's water use only reached this high once since 1989, in 2004 (LADWP Urban Water Management Plan, available at https://ladwp.com/cs/groups/ladwp/documents/pdf/mdaw/nzyy/~edisp/opladwpccb762836.pdf), and the average demand has been less than 500,000 acre-feet over the last decade (SWRCB Water Conservation Portal, available at http://www.waterboards.ca.gov/water_issues/programs/conservation_portal/conservation_reporting.shtml). According to a recent analysis, the San Diego County Water Authority “has repeatedly overestimated demand since 1995 — initially predicting regionwide water use would reach 970,000 acre feet by 2020. Today, the region is using about half that, around 450,000 acre feet, down from a peak of roughly 740,000 acre feet in 2007” (San Diego Union-Tribune 2022 [See Exhibit 7]). An SFPUC report (SFPUC letter dated July 5, 2022 [See ATT 80]) shows that overestimated future demand is a problem in other UWMPs. The following graph, produced by Tuolumne River Trust from the data in the SFPUC report, shows the Finance Plan projections (dotted lines) were more conservative than the UWMP projections (dashed lines) and more accurate [See Exhibit 81]. (see Attachment: TRT July 11, 2022 letter re: – Water Enterprise and Finance Bureau Water Demand Projections [See ATT 81].). SFPUC stated regarding the UWMP projections: ...the projections represent an outside bound of whatever demand will occur in the next 25 years. These demands will likely always be greater than actual demands because not all developments materialize, or they materialize slower than	The Staff Report makes clear that its impact conclusions represent the worst-case scenarios and in many cases impacts will be less than significant. California water resource management involves a myriad of individual and collective decisions, and range of foreseeable compliance actions and potential responses to the project is wide reaching and inherently cumulative in many regards. In response to reduced Sacramento/Delta surface water supplies, water users may choose to modify their water supply portfolios by increasing the use of other sources of water and maximizing the use of existing water supplies. Other water management actions, including groundwater storage and recovery, water transfers, water recycling, and water conservation affect the overall analysis in two ways. First, environmental impacts and economic effects from reduced Sacramento/Delta surface water supplies likely would be less given these efforts. Second, other water management actions may result in their own environmental impacts that must be disclosed and analyzed. Environmental impact conclusions from reduced Sacramento/Delta supply do not rely on implementation of other water management actions even though these actions could reduce supply impacts at certain times and locations. It is not possible to quantify exactly how the various water users that may experience reduced Sacramento/Delta supplies will manage their water supply portfolios in response to reduced supplies, and this type of quantification is beyond the scope of detail required in this planning process. As described in Appendix D, Supplemental Municipal Supply Analysis Information, Section D.3, Municipal Supply Economic Effects Analysis, the amount of replacement supply needed was estimated in Sacramento Water Allocation Model (SacWAM) based on the results for existing conditions and the modeled flow scenarios; these estimates are not based on UWMP data. Replacement costs for the modeled reductions in water supply are accounted for in the analysis in Section 8.5, Municipal Water Supply Economic Effects of the Staff Report. The UWMP-based analysis in Appendix D Section D.2, Municipal Demand and Supply Projections for the 5th Consecutive Dry Year, provides information about water service reliability assessments

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		projected. SFPUC 2022. Because the UWMP demand data used in the Draft Staff Report (Appendix D) are not representative of likely future demand, the use of UWMP-based analysis should be limited to an upper bound and not characterized as a likely water supply impact, as is found in Draft Staff Report (Chapter 7; e.g., “expected surplus or shortage” in Table 7.20-16 at 7.20-38).	as a context for potential impacts of and response to the reduced Sacramento/Delta water supplies. The Staff Report relies on information from municipal water supplier planning documents as a proxy for service providers' ability to use existing alternative supplies, develop alternative water supplies, or manage demand, and conservatively considers shortage or surplus after 5 consecutive dry years. While it is likely that at least some municipalities may need to obtain new water supplies, the analysis indicates that communities with surplus water supplies and those that are less reliant on Sacramento/Delta water supply may experience little to no impacts. Please refer to the response to Comment 308-137 regarding potential water supply economic effects and the approach that was adopted to estimate the effects.
308	141	[Exhibit 17: Graph titled Water Authority repeatedly overestimated water demand]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
308	142	[Exhibit 18: Graph titled SFPUC Combined Retail and Wholesale Projections Comparison]	This exhibit was included in the comment letter. The exhibit does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing exhibits.
308	143	(4) Replacement water cost analysis overestimates costs and is based on unreliable data The assumption that municipal suppliers would replace reduced deliveries with an unprioritized list of the most-likely options self-reported by agencies overestimates costs because it ignores likely prioritization based on cost within these options. Providers would prioritize least cost options (Draft Staff Report at 8-94).	Please refer to response to Comment 308-137 regarding potential water supply economic effects. The analysis relied on the best available information and reasonable assumptions. The Staff Report identified that the assumption about the unprioritized list of options is likely conservative. The availability and cost of various alternative supplies vary among water agencies, and projecting the specific ways that water users may respond to reduced surface water supply would require undue speculation. As a result, the analysis relies on a conservative assumption of each replacement source being equally likely. See Section 8.5.1, Approach to Analysis.
308	144	c) Cuts to refuges as modeled in SacWAM are not accurate or lawful The Central Valley Project Improvement Act (CVPIA), Pub. L. No.	In response to comments received expressing concerns related to water supply for wildlife refuges, SacWAM assumptions for CVP refuges have been updated. Please see Common Response 6.1, Sacramento Water Allocation Model and Changes in

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		102-575, makes clear that Congress’s purpose in dedicating a permanent water supply for refuges was to provide an “ecologically equivalent habitat” to replace what was destroyed when the CVP was constructed and continued to be operated primarily for the purpose of providing water to agricultural users, including settlement and exchange contractors. (CVPIA § 3406(a)(3).) The CVPIA Level 2 refuge water allocation, which is set forth in § 3406(d)(1), can be reduced by no more than 25%, even in critically dry years. (See CVPIA §3406(d)(4)). Unfortunately, the SacWAM model results presented in Chapter 6 assume that CVPIA Level 2 deliveries to wildlife refuges have the same priority as CVP senior agricultural contractors. Draft Staff Report Table A1-7 shows that the minimum 75% of contract allocation was reduced to as low as 40% under the 65% and 75% scenarios. This results in average reductions in refuge supplies of 47 TAF under the 55% scenario, 89 TAF under the 65% scenario, and 188 TAF under the 75% scenario (Draft Staff Report Table 7.6.1-5). In Critical years these modeled reductions average 114 TAF, 162 TAF, and 229 TAF, respectively. (Draft Staff Report Tables 6.4-7 and 6.4-23). Despite statements in Chapters 5 and 7 promising to prioritize refuge deliveries through either mitigation or in the POI [Footnote 17: See Draft Staff Report 5-10, 5-12, 5-70, 7.6.1-69 to 70, 7.6.1-84, and 7.6.1-87 (Mitigation Measure MM-TER-a).], the Board is not properly prioritizing legally-mandated refuge deliveries as required by the CVPIA in the foundational analysis of the Draft Staff Report. (See CVPIA §§3406(b), 3406(d), 3404(c)(2); see also Tehama-Colusa Canal Auth. v. U.S. Dep’t of the Interior, 721 F.3d 1086, 1091 (9th Cir. 2013) (the CVPIA “reallocated priorities for use of CVP water”)).	Hydrology and Water Supply, for a discussion of SacWAM assumptions regarding CVP refuge allocations and deliveries.
308	145	In addition to prioritizing exports for critical health and safety needs, the Board should ensure that Level 2 refuge water supplies are prioritized over agricultural exports and M&I exports. [Footnote 18: See also Friant Water Auth. v. Jewell (E.D. Cal. 2014) 23 F.Supp.3d 1130, 1139-1140, 1144-1146 (Court ruled that CVPIA authorizes reductions in refuge water deliveries by no more than 25% and claims that the Bureau of Reclamation cannot deliver refuge water due to senior contractor rights is without merit).] SF Baykeeper et al. thanks the Board for including refuge supplies as a designated beneficial	Section 7.6.1, Terrestrial Biological Resources, includes a detailed discussion of wildlife refuges and legal obligations under the CVPIA. As stated on pages 7.6.1-69 and 7.6.1-70, the program of implementation includes "specific provisions related to water supplies provided to refuges, including refuge supplies provided pursuant to the CVPIA. The proposed program of implementation would prioritize refuge water supplies and would direct State Water Board staff to take measures to implement that prioritization. Specific measures include potentially reducing fees and expediting processing for water

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		use in the Bay-Delta Plan, as shown in Draft Staff Report Table 7.12.1-1c (BIOL). Level 2 water supplies are essential for supporting wetland habitat, for listed species like the threatened giant garter snake, and for millions of birds migrating along the Pacific Flyway. In fact, it is “the longstanding state policy that the continued protection, restoration, and enhancement of managed wetlands is critical to the State’s public trust wildlife resources.” [Footnote 19: See Board Resolution No. 2019-0015 (April 2, 2019), available online at: https://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/rs2019_0015.pdf] This wildlife beneficial use of Delta water must be protected in all years and under all alternatives. The Draft Staff Report should be revised to acknowledge CVPIA legal mandates consistently across all chapters, mitigation and the future POI.	transfers to refuges, funding mechanisms, and water right or other regulatory requirements to ensure adequate water supply to refuges, including measures to ensure the delivery of Level 2 water supply at the times needed to support refuges and to provide for full delivery of Level 4 supply.” Section 5.6.2.6, Refuge Water Supplies and Other Wildlife Protection Measures, also includes a discussion of water supplies for refuges.
308	146	d) The Draft Staff Report’s analysis of refuge impacts of the staff flow alternatives vs. the VA alternative is flawed Both the staff flow alternatives and the voluntary alternative include mitigation of impacts and prioritization of water for refuges, however only the voluntary alternative presents modeling results and impact analysis consistent with those guarantees. This inconsistent approach to impact analysis is misleading. Chapter 5 contains assurances about the VAs’ ability to mitigate impacts and prioritize refuge supplies: The proposed Plan amendments would include measures to reduce or minimize these effects. The proposed program of implementation would require voluntary implementation plans to include provisions for addressing potential impacts on terrestrial species and refuges that may be affected by those plans. ...In addition, the proposed program of implementation would include provisions to prioritize water supplies deliveries to refuges. Draft Staff Report at 5-70.	The project is revised as described in Common Response 1.3, Revised Proposed Plan Amendments. The revised proposed Plan amendments remain part of the project as the regulatory pathway. The revised proposed Plan amendments also provide for a VA pathway for an eight-year term with the possibility of extension that reduces the required flow contributions for VA water rights. Commenter may be conflating Plan provisions for voluntary implementation plans (now called local cooperative solutions) that are still included for the regulatory pathway with the proposed VAs. These are not the same as the VA pathway, although the proposed VAs do not include any reduced supply to refuges. Based on comments received, a Wildlife Refuge Provision has been added to the 2025 Draft Updates to the Bay-Delta Plan for the regulatory pathway. This provision allows for the Executive Director to approve exceptions to curtailments for wildlife refuges. Updated SacWAM modeling presented in Chapter 13, Revised Proposed Plan Amendments, of the 2025 partially recirculated draft Staff Report reflects this provision and shows very small reductions to refuge supplies. As discussed in Section 13.4, Changes in Hydrology and Water Supply, SacWAM results for average annual Sacramento/Delta water supply to wildlife refuges under the 55 w/WSAs scenario

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		These guarantees are reflected in the model results showing no reduction in refuge supplies under the VAs, and Chapter 9 concludes there would be no impacts from the voluntary alternative: "...no anticipated change in water supply for wildlife refuges" from the VA (Draft Staff Report at 9-167.) The flow alternatives take a similar approach to mitigation and prioritization. The Draft Staff Report states: Implementation of Mitigation Measures MM-SW-a,f: 6 and MM-SW-a,f: 7 can reduce or avoid water quality impacts on managed wetlands. The proposed program of implementation includes measures to prioritize refuge water supplies. Draft Staff Report at 7.12.1-100. Curiously, the VA approach (deferring prioritization to the POI with voluntary implementation plans) results in no modeled refuge supply impacts, but when the flow alternatives address this impact (in mitigation measures and by deferring the prioritization to the POI), the Draft Staff Report shows impacts to refuge supplies. Predicting refuge supply impacts only in the flow alternatives is inappropriate and misleading, given that both approaches are providing similar guarantees.	show limited changes for all water year types that would be assumed to be negligible and are within the expected precision of the model. As discussed in Section 13.4, refuge priorities were increased relative to other senior demands to reflect provisions of the December 2025 revised draft Bay-Delta Plan intended to prioritize refuge water supplies. However, while the SacWAM results suggest that changes in Sacramento/Delta water supply to wildlife refuges under the 55 w/WSAs scenario and flow scenarios could be negligible, the analysis of impacts resulting from changes in refuge water supplies is complicated by Reclamation's past practice of reducing water supplies to Central Valley Project Improvement Act (CVPIA) wildlife refuges when it reduces allocations to Sacramento River settlement contractors; therefore, it is possible that reductions in Sacramento/Delta surface water supplies to wildlife refuges could at times be larger than indicated by the modeling.
308	147	7. Other issues a) SacWAM modeling indicates that some instream flow requirements will not be met under any alternative The Draft Staff Report lists unmet instream flow requirements (IFRs) under each alternative (at A1-461). The SacWAM model fails to meet IFRs under every alternative, and some IFRs are not met under any alternative. This indicates conflicting requirements or flawed modeling, since the alternatives and the model should be designed to meet all IFRs. More context on	Tables A1-554 and A1-555 in Appendix A1, Sacramento Water Allocation Model Methods and Results, of the Staff Report present the unmet flow requirements for baseline and the flow scenarios. If instream flow requirements are not included in the tables, that means that there are no instances of unmet instream flow requirements for that location. Such is the case for the Delta outflow requirements, such as REG X2, REG MRDO and SWRCB Delta. Unmet instream flow requirements can occur for two main reasons related to reservoir operations; extremely low storage or

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		these failures should be provided in the Draft Staff Report, since all flow alternatives should satisfy IFRs. It must be made clear where the model is unable to effectively simulate the proposed alternatives, or where conflicting requirements need resolution. Delta outflow is conspicuously absent from the list of unmet requirements in Table A1-55. Is this because there is no IFR for Delta outflow? The Board must develop a metric that evaluates whether Delta outflow needs are being met, independent of whether upstream IFRs are met, along the lines of Alternative 6A.	modeling constraints. During dry periods in the baseline and lower flow scenarios, some reservoirs are occasionally drawn down to the point when they are unable to release enough water to meet downstream flow requirements, such as on Stony Creek. In the higher flow scenarios, extremely low storage occurs in more reservoirs and more frequently. In other locations, such as on Clear Creek, Kellogg Creek, and Cache Creek, constraints on the operations of the reservoirs do not allow for higher releases to meet the downstream flow requirements. Some small reservoirs such as Los Vaqueros and Whiskeytown have simplified representation in SacWAM.
308	148	The Draft Staff Report fails to adequately analyze the effect of agricultural trends on water scarcity for other beneficial uses The Draft Staff Report does not adequately analyze the changes in agriculture over time, particularly the hardening of demand for water supplies related to overplanting of nut tree crops. For example, the Draft Staff Report presents a summary of agricultural revenue from 2011-2016 (Draft Staff Report Figures 8.4-1 and 8.4-4), but that summary is not focused on irrigated acres or total water use. In particular, the Draft Staff Report fails to analyze changes in Central Valley agriculture crop patterns over the past three decades, since the Board last updated Bay-Delta standards in 1995. For example, according to the USDA, in 1995, there were 483,700 total acres of almond orchards in California. By 2022, the most recent year in which complete numbers are available, that number had increased to 1,630,000 – 336% of the acreage in 1995 (USDA 2022). Virtually all of California's almond orchards are in the Central Valley. Similar dramatic growth can be seen in other permanent crops, such as pistachios. Some of the more than 1 million new acres of almonds over the past three decades were planted on land formerly farmed in annual crops. In other areas, new acres of almonds were planted on land that was not formerly irrigated. This growth in the acreage of permanent crops stands in stark contrast with the impacts discussed above to the environment and to the commercial and recreational fishing industry. The growth in almond acreage has had two impacts on water management. First, total water use	The 2023 draft Staff Report, Section 7.24.2.2, Changes in Water Supply, discusses California's changing agricultural practices, including a shift from annual to permanent crops and their effects on surface water supply. Section 7.4, Agriculture and Forest Resources, discusses how certain permanent crops have increased significantly in acreage in recent years, and certain annual crops have declined in acreage during the same period. Appendix A3, Agricultural Economic Analysis: SWAP Methodology, Section A3.3.1, SWAP Modeling Approach, specifically discusses the changes in cropping patterns since 2010 within the Central Valley and the "hardening" of irrigation demand following the increasing trend toward permanent crops such as almonds and pistachios. This section also cites The Congressional Research Service's 2015, California Agricultural Production and Irrigated Water Use report, which analyzes the applied water use, harvested acreage, and production of selected California crops, including permanent crops, between 2004 and 2013 (Congressional Research Service 2015).

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		has been increased as a result of the conversion to nut tree crops. Second, unlike annual crops, almonds and other permanent crops cannot be fallowed during droughts. The increase in water use and decrease in the ability to respond to annual variations in water supply has increased pressure on beneficial uses related to fish and wildlife. The hardening of demand for surface water supplies fueled calls for relaxation of existing water quality requirements throughout the Bay-Delta watershed.	
308	149	The Proposed Voluntary Agreement is Incomplete and the Best Available Evidence Indicates that it Will Not Provide Reasonable Protection of Fish and Wildlife Beneficial Uses or Achieve Plan Objectives The Draft Staff Report Fails to Provide a Stable Project Description by Including the Proposed Voluntary Agreements (Vas) The Board's inclusion of the proposed Voluntary Agreement (VA or Vas) alternative fundamentally changes the Draft Staff Report's project description. As discussed above, CEQA requires a clear explanation of the nature and scope of the proposed project, otherwise it "is fundamentally inadequate and misleading." (See <i>Communities for a Better Environment v. City of Richmond</i>, 184 Cal.App.4th 70, 84-85 (2010)).	Chapter 9, Proposed Voluntary Agreements, adequately discussed the Voluntary Agreements as they were proposed at that time. The operative provisions of the Voluntary Agreements are incorporated in the VA pathway that is described and analyzed in Chapter 13, Revised Proposed Plan Amendments. Please see Chapter 13 and Common Response 1.3, Revised Proposed Plan Amendments, regarding the VA pathway. See Common Response 7.1, General CEQA and Approach to the Analysis, regarding the adequacy of the project description.
308	150	First, the VAs change the nature and scope of the project description by proposing new objectives. The Draft Staff Report explicitly states that the VA proposes "1) a new narrative objective to achieve the viability of native fish populations; and 2) [provides] the participating parties' share, during implementation of the VAs, to contribute to achieving the existing Narrative Salmon Protection Objective, and propose doing so by 2050." (Draft Staff Report at 9- 1 (emphasis added)). The Bay-Delta Plan's objectives are the foundation of the document and this update process. CEQA Guidelines state that an EIR or SED "shall describe a range of reasonable alternatives to the project . . . which would feasibly attain most of the basic objectives of the project..." (Cal. Code Regs. tit. 14, § 15126.6 (emphasis added)). As discussed elsewhere in these comments, the best available science clearly demonstrates that the VA's proposed changes to the objectives will fail to protect beneficial	Chapter 9, Proposed Voluntary Agreements, of the 2023 draft Staff Report adequately discussed the Voluntary Agreements as they were proposed at that time. The operative provisions of the Voluntary Agreements are incorporated in the VA pathway that is described and analyzed in Chapter 13, Revised Proposed Plan Amendments. Please see Chapter 13 and Common Response 1.3, Revised Proposed Plan Amendments, regarding the VA pathway.

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		uses of the Bay-Delta estuary, including viability of fisheries. By including the VA Alternative in the Draft Staff Report, the Board changes the most “basic” of the project objectives, impermissibly changing the project description and misleading the public. Id.	
308	151	Second, the proposed VA alternative is so drastically different and inconsistent with the proposed project and other project alternatives that it changes the fundamental project purpose and nature of an already unstable project description, which is “an obstacle to informed public participation.” (Washoe Meadows Cmty. v. Dep’t of Parks & Recreation, 17 Cal.App.5th 277, 290 (2017) (the court found the DEIR to be lacking a stable project description because there were five very different alternative projects in the DEIR and therefore was an obstacle to informed public engagement)). For example, overall, the VA is fundamentally inconsistent with the 2017 Scientific Basis Report, which is the foundation of the Draft Staff Report and the larger Plan update. The 2017 Scientific Basis Report provides ample evidence that fish and wildlife beneficial uses and water quality are not adequately protected by current Bay-Delta Plan objectives and regulations. The report also demonstrates that substantial increases in river flow into and through the Delta to San Francisco Bay will be necessary to provide reasonable protection of fish and wildlife beneficial uses, because, as the Board acknowledges, “[f]low is commonly regarded as a key driver or “master variable” governing the environmental processes in riverine and estuarine systems such as the Bay-Delta and its watershed” (SWRCB 2017 at 3-2). As discussed elsewhere in these comments, the best available science clearly demonstrates that the habitat restoration benefits of the VAs would not overcome the lack of significant flow improvements. In fact, multiple analyses of related restoration efforts confirm that this reliance on habitat, rather than significant flow improvements, would fail. For example, in 2020, the National Marine Fisheries Service commissioned a peer review of quantitative models prepared by the SFPUC, MID and TID to describe salmon and steelhead population response to flow and habitat actions on the	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project. To the extent that this comment summarizes other comments, please see the substantive responses to those comments. Chapter 9, Proposed Voluntary Agreements, adequately discusses the proposed Voluntary Agreements as they were proposed at that time. The operative provisions of the Voluntary Agreements are incorporated in the VA pathway that described and analyzed in Chapter 13, Revised Proposed Plan Amendments. The scientific basis for the benefits of the VA pathway, including the habitat commitments, is provided in the Scientific Basis Report Supplement, provided as Appendix G2 of the 2023 draft Staff Report. See Common Response 3.1, Fish Protection, for more information on the benefit analyses and the scientific basis reports.

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		Tuolumne River. That review concluded that: The model, as configured, indicates that the status of the Chinook salmon population is extremely precarious and bold actions will be needed to prevent extirpation. This need, according to the model, would best be met by very substantial increases in flow releases during spring (the period of active smolt outmigration from the river). The model suggests that management actions with the most certainty in providing real benefits would involve increases in flows during smolt outmigration. Other actions would be expected to provide relatively low benefits compared to spring flow increases. These include reductions in predation rates (unless those reductions could be of a significant magnitude) and increases in spawning habitat through gravel augmentation (even if those increases were large). Anchor QEA 2020. These models were used to produce the current Tuolumne River VA proposal. This analysis confirms that, on the Tuolumne River, the VA approach of focusing on habitat restoration rather than significant flow improvements would fail. Although this model and the third-party review are for a river addressed in Phase 1, rather than Phase 2 of the Board's Bay-Delta Plan update process, it nevertheless reveals this flaw in the overall VA approach in both Phases 1 and 2. Furthermore, an evaluation of the benefits of habitat restoration on the Tuolumne River concluded that a major restoration project benefitted salmon only under relatively high flow conditions (McBain and Trush 2016). Thus, even to the extent that restored habitat can provide environmental benefits, the Draft Staff Report fails to adequately analyze the improved flow conditions that are needed to secure those benefits.	
308	152	Finally, the VA proposal itself is still incomplete and may change in significant ways that will impact the Board's analysis. The VA process has set and failed to meet ten deadlines for releasing a complete VA package, beginning in 2014 (Golden State Salmon Association et al. 2022). The VA process continues to lack	The description of the VA pathway in the 2023 draft Staff Report contains sufficient information to inform the CEQA analysis. The commenter has not provided information on which specific details are missing relevant to the CEQA analysis and what effect they would have on the conclusions of the CEQA analysis. In

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		essential components, including: • A global agreement. An implementation program, including comprehensive SMART biological goals to make adaptive management decisions regarding the block of water. • A quantitative flow accounting approach for VA environmental water. • An enforcement program. • A funding plan. • A systemwide governance committee charter. • A clear and timely proposal to replace the VAs in the event that they fail. • A clear proposal regarding the requirements that would be in place at the end of the VA term. The Draft Staff Report established a new, end-of-2023 deadline for a complete package (Draft Staff Report at 9.3.1); as of this writing, we are unaware whether this package was presented to the Board. In any case, this package has not been made available for review by the public. This is par for the course. The Draft Staff Report fails to discuss the long history of the VA process in failing to meet deadlines, or the fact that a “complete package” is needed for adequate CEQA analysis as well as ensure feasibility and enforceability, as discussed more below. (Cal. Pub. Res. Code § 21002). The Board must not delay action to wait for a complete VA package that may never be released. For all these reasons, in order to comply with CEQA, the Board must revise and recirculate the Draft Staff Report without a VA Alternative.	addition, the documents submitted by VA parties do not entirely represent the VA pathway. The operable provisions of the VAs relevant to the CEQA analysis were described in the 2023 draft Staff Report. Please see Common Response 7.1, General CEQA and Approach to the Analysis, for information on CEQA requirements; Common Response 7.24, Alternatives Analysis, for information on the feasibility of alternatives; and Common Response 1.3, Revised Proposed Plan Amendments, for information on the VA pathway, including enforceability. Further, the Staff Report was subject to a limited recirculation in December of 2025 (following submitted of this comment on the 2023 draft Staff Report) following additional development of the VAs as reflected in the revised proposed Plan amendments.

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308	153	The VAs do not propose reasonably certain or feasible mitigation as required by CEQA. When imposing mitigation, the Board must ensure there is a “nexus” and “rough proportionality” between the measure and the significant impacts of the proposed project. (CEQA Guidelines § 15126.4(a)(4)(A)–(B), citing <i>Nollan v. Ca. Coastal Commission</i>, 483 U.S. 825 (1987), <i>Dolan v. City of Tigard</i>, 512 U.S. 374 (1994)). Additionally, all mitigation must be feasible and fully enforceable. (Cal. Pub. Res. Code § 21002; Cal. Code Regs. tit. 14, § 15041). 1. The VA measures are not enforceable because they are uncertain to occur. The VA measures are not enforceable because they are unlikely to occur. A CEQA lead agency, such as the Board, “shall provide that measures to mitigate or avoid significant effects on the environment are fully enforceable through permit conditions, agreements, or other measures” in order to “ensure that feasible mitigation measures will actually be implemented as a condition of development, and not merely adopted and then neglected or disregarded.” (<i>Fed’n of Hillside & Canyon Associations v. City of Los Angeles</i>, 83 Cal.App.4th 1252, 1261 (2000) (citing Cal. Pub. Res. Code §§ 21081.6 (b), 21002.1 (b))). In this case, the Staff Report does not analyze the likelihood that the VAs will fail to provide the flows anticipated by the Board staff analysis and VA advocates. For example, the VAs could fail to provide anticipated flow assets if anticipated water transfers do not materialize due to a lack of funds, high water transfer prices, unwilling sellers or other factors. Further, the VA could finalize accounting rules that would undermine anticipated ecosystem flows. Both of these risks have been experienced in similar environmental blocks of water in the past (<i>Defenders of Wildlife</i> 2022). The idea of creating an environmental block of water is not new. In fact, there have been many attempts to create environmental blocks of water, including many in the Bay-Delta watershed (e.g., CVPIA (b)(2), the Environmental Water Account [EWA] and	The purpose of an analysis pursuant to the California Environmental Quality Act (CEQA) is to disclose potential environmental effects of proposed project and to minimize significant, avoidable environmental damage. This comment misconstrues the VA proposal to constitute mitigation measures under CEQA, which is incorrect. The environmental analyses evaluate the VAs and potential impacts compared to the existing conditions, which include existing flow that is currently not regulated. The effects of the flows expected to result from the VAs are evaluated in Chapter 9, Proposed Voluntary Agreements, Chapter 13, Revised Proposed Plan Amendments, and the cumulative impact analyses. Please see Common Response 7.1, General CEQA and Approach to the Analysis, regarding the use of the Staff Report to meet CEQA requirements and the State Water Board’s role in mitigation measures. The environmental impacts of the Protection of Voluntary Agreement Flows Alternative (modular alternative 6a) are evaluated in Section 9.9, Modular Alternatives for Proposed VAs. The Board may modify or terminate the VA pathway if the flow, non-flow habitat, and other commitments are not provided or if the VA pathway is not reasonably protecting beneficial uses. Please also see Common Response 1.3, Revised Proposed Plan Amendments, for information on the VA pathway, the provision to protect base flows, and the interaction with other projects and regulatory processes.

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		CVPIA Level 4 refuge supplies). All of the examples examined by Defenders of Wildlife (2022) have encountered major implementation challenges, including reduced environmental benefits that arise as a result of accounting methodologies that are not robust (e.g., CVPIA(b)(2), the EWA), water transfers that fail to materialize (e.g., CVPIA Level 4 refuge supplies), and other problems. In a water management setting as complex as the Bay-Delta, many questions must be addressed by any accounting methodology for environmental water. Only when these questions are answered can the Board determine if an environmental block of water, including the proposal in the Vas, would provide significant environmental benefits. The VA term sheet includes general language calling for the Board to protect new environmental water from diversion. Further, the Draft Staff Report states that “[i]t is expected that the accounting developed for the Vas that is required to be approved by the State Water Board will provide for these flows to be bypassed by the SWP and CVP and contribute to Delta outflows.” (Draft Staff Report at 9-199). The VA Term Sheet, however, does not clarify the detailed position of the VA parties regarding the diversion of environmental water or VA baseline flows. Defenders of Wildlife (2022) discusses a wide range of key questions related to water accounting that have not been answered by the Vas. Among many others, these questions include: • Does the program require detailed baseline operations plans by major water users – or all water users – within its geographic scope? • Does the baseline include all or only some of the different types of in-stream water flowing through the project area, such as flows to meet regulatory requirements, nonregulatory environmental water dedications, flows from unregulated streams, uncontrolled water releases from storage such as flood management releases, water supply deliveries, navigation flows, flood management and dam safety releases and salinity control releases?	

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		• Does the program incorporate into the baseline existing agreements to modify or constrain water project operations that may not represent formal regulatory requirements? • What will happen if the baseline changes during the term of the program? • Would the baseline account for waivers of regulatory requirements during droughts? If so, how? • How does the baseline address surplus or unscheduled water deliveries? • In settings where multiple projects make releases to meet downstream regulatory requirements or water needs, how would the program prevent environmental water releases from one facility from being “captured” by another water project or user through a corresponding reduction in releases? The VA proposal does not include specific mechanisms to address these and other questions to ensure that anticipated environmental benefits would be realized. The risk presented by the possible diversion of environmental and baseline flows, and therefore the failure of the VA's proposed mitigation, is clearly implied by the inclusion in the Draft Staff Report of Alternative 6a. Alternative 6a was specifically designed and included in the Draft Staff Report to prevent the diversion of VA baseline flows. (Draft Staff Report at 9-199.) However, it is worth noting that this attempted solution is not paired with an adequate description of the problem in the Draft Staff Report analysis of the VA. Furthermore, the potential impacts of the risk of the diversion of environmental water under the VA approach is not analyzed in the Draft Staff Report. These deficiencies, paired with the existence of Alternative 6a, send a clear message to the public that there is a risk any VA mitigation measures will be “adopted and then abandoned.” (Fed’n of Hillside & Canyon Associations, 83 Cal.App.4th at 1261; see also Anderson First Coal. V. City of Anderson, 130 Cal.App.4th 1173, 1186–87 (2005)).	

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308	154	2. The VA proposal unlawfully delays mitigation. In addition to delaying attainment of the salmon protection objective as discussed above, the Draft Staff Report also fails to analyze the risk to the Bay-Delta under the VA approach given the lack of a timely program of evaluation and adaptation. Generally, CEQA requires that the formulation of mitigation measures not be deferred until some future time unless under specific circumstances. (Cal. Code Regs. Tit. 14, § 15126.4(a)(1)(B)). The VA term sheet delays any evaluation of the effectiveness of the VA program until year 6 (see, VA Term Sheet, Section 7.4.). This delay is also not consistent with the Board's obligation to review implementation of Bay-Delta Plan objectives every three years (per Sections 13240 of the Porter-Cologne Act and 303(c)(1) of the Clean Water Act, respectively). Given the complexity of the proposed VA and the lengthy delays that have plagued the VA process and at the Board's Bay-Delta Plan updates thus far, it is likely that a full evaluation of the VA might not be completed during the VA program's eight-year timeline. As the court found in <i>Sacramento Old City Assn. v. City Council</i>, "[t]his deferral of environmental assessment until after project approval [will violate] CEQA's policy that impacts must be identified before project momentum reduces or eliminates the agency's flexibility to subsequently change its course of action." (229 Cal.App.3d 1011, 1028 (1991)). Clearly, without a timely and complete evaluation program, it would be impossible for the Board to act to address shortcomings in the VA approach in a timely manner. [Footnote 20: This may prevent the Board from satisfying its legal obligations under both the Clean Water Act and the Porter Cologne Act, rendering the VA alternative and its associated mitigation measures legally infeasible. CEQA Guidelines note that alternatives that conflict with obligations are legally infeasible and need not be analyzed. See § 15126.6(a)); see also <i>Tiburon Open Space Comm. V. Cnty. Of Marin</i>, 78 Cal.App.5th 700, 732 (2022) (court found when conducting environmental review, county properly excluded, as legally infeasible, certain mitigation measures or alternatives).] The risk related to a lack of timely evaluation is exacerbated by the lack of a VA enforcement program.	The VA pathway would be regularly reviewed through annual and periodic reviews. The Staff Report fully and adequately evaluates the environmental impacts of the VA pathway in Sections 9.7 and 13.7. Please see the response to comment 308-153.

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		Again, SF Baykeeper et al. requests the Board revise and recirculate the Staff Report without a VA Alternative, in order to comply with CEQA.	
308	155	The VA Is Not Acceptable as a POI for the Bay-Delta Plan The VA is proposed as an alternative to the proposed project and would serve as the POI for a Bay-Delta Plan with different water quality objectives than included in the proposed project. This proposal is simply not credible on either legal or scientific grounds. Prima facie, the VA does not purport to attempt to achieve the proposed Table 3 objectives in the staff alternative, but is predicated on eliminating the numeric flow objectives and modifying the narrative objectives (see below for further discussion). In doing so, the VA will utterly fail as a POI that is sufficient to provide reasonable protection of fish and wildlife beneficial uses, as required under Porter- Cologne. See below for a detailed discussion of why the proposed VA elements will fail to protect these uses. The VA also lacks many of the critical elements identified earlier as necessary components of the Draft Staff Report's missing POI, including specific, enforceable criteria for varying flow amounts and timing and in-Delta hydrodynamic conditions based on attainment of relevant biological targets, carryover storage and other criteria for protecting coldwater habitat, criteria for addressing impacts during extended drought periods, and mechanisms for accounting for flow contributions.	In the revised proposed Plan amendments, the VA and regulatory pathways would implement the same set of water quality objectives. The VA pathway was described in adequate detail for the purposes of the analysis in the 2023 draft Staff Report. Please see Common Response 1.3, Revised Proposed Plan Amendments, for more information on the objectives and the VA pathway.
308	156	D. The VAs Narrative Salmon Protection Objective Is Not Consistent with the Existing Narrative Salmon Protection Objective, and the VA Program of Implementation is Not Likely to Achieve that Objective 1. The VAs change to the salmon protection objective is inconsistent with that objective and with California law The existing narrative salmon protection (doubling) objective requires that: "Water quality conditions shall be maintained, together with other measures in the watershed, sufficient to achieve a doubling of natural production of chinook salmon from the average production of 1967–1991, consistent with	Please see Common Response 1.2, Water Quality Control Planning Process, for information on the reasonable protection of fish and wildlife beneficial uses. Also see Staff Report Chapter 13, Revised Proposed Plan Amendments, and Common Response 1.3, Revised Proposed Plan Amendments, for information on the objectives and the VA pathway, including enforceability and the requirements that would apply to VA parties if the VAs are terminated. The revised proposed Plan amendments include implementation measures for the regulatory pathway that would apply to non-VA water rights and in the absence of an approved VA.

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		provisions of State and federal law.” The VA states that it will represent participating parties’ share, during implementation of the VAs, to contribute to achieving the existing Narrative Salmon Protection Objective (Box ES-1), and propose doing so by 2050. This is not consistent with federal law. Section 3406, Fish, Wildlife, Improved Water Management & Conservation (b)(1) requires the Secretary of Interior “to implement a program which makes all reasonable efforts to ensure that, by the year 2002, natural production of anadromous fish in Central Valley rivers and streams will be sustainable, on a long-term basis, at levels not less than twice the average levels attained during the period of 1967-1991.” Extending the time frame for attaining the salmon doubling objective for 48 years past the date identified in the statute, itself already two decades past due, is inconsistent with current law and would allow the degradation of flows and water quality to delay achieving the salmon protection objective in ways that are would be harmful and inconsistent with Porter-Cologne and the Clean Water Act. The VA’s target for “contributing” to attainment of the salmon protection objective over its 8- year term violates state law. A legal water quality control plan must both describe objectives that reasonably protect beneficial uses AND contain a POI that identifies exactly how those objectives will be met. The VA’s amended salmon protection objective does neither. First, it is not “reasonable protection” of the beneficial uses served by the salmon protection objective to postpone achievement of that goal by 30 years. And second, the VAs, and by necessity the POI for the VAs, contain a description of measures that will occur only during the next eight years, not through 2050 when the VAs assert the objective would be met. That is inconsistent with the requirements of a POI under the law.	
308	157	2. The Draft Staff Report reveals that the VAs fail to attain even their inadequate “contribution” to the salmon protection objective The VAs acknowledge that they are intended to be the	Please see the response to comment 308-156.

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		implementation of the salmon protection objective (VA Term Sheet, March 29, 2022. Section 1.2). Yet the flows that would be provided under the VA proposal would clearly be inadequate to achieve the existing narrative salmon protection objective. Flows provided in all year types would be inadequate to meet multiple ecosystem needs. In critically dry years, the VAs would provide virtually no new environmental water north of the American River. In particular, under the VAs, critical year flow during January-June would be worse than baseline (Draft Staff Report Table 9.5-2). The VA proposal has an eight-year timeline. The 2050 deadline would not be reached until far after the expiration of the VA proposal. The VA proposal fails to include any requirement or interim milestone to ensure any progress toward the salmon protection objective within the VA Winter and spring-run Chinook Salmon are facing a growing extinction risk. The commercially and recreationally important Central Valley fall run is also in decline. The 2023 California salmon fishing season is closed for just the third time in state history. It also appears highly likely that the 2024 fishing season will be closed as well. Simply slowing this rate of decline would fail to meet the narrative salmon protection objective. Even, assuming for the sake of argument, that the Board were to agree to the water user request to extend the salmon doubling date to 2050, given that the VA proposal is more likely to result in extinction, that alternative would obviously preclude the achievement of the salmon protection objective by the proposed 2050 date. For these reasons the VA proposal to extend the target date for the salmon protection objective to 2050 would be unlawful.	
308	158	E. The VAs' proposed narrative viability objective is not adequate to protect fish and wildlife uses and would weaken the Board's proposed objective. The VA's proposed narrative viability objective is inadequate for the same reasons that apply to the Board's proposed narrative flow objectives, as discussed extensively above. Specifically, both	Please see the response to comment 308-96.

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		versions fail to adequately define viability in a measurable way or ensure that viability is achieved for commercial, recreational, and subsistence fisheries, estuarine habitat, or other fish and wildlife and tribal beneficial uses. Furthermore, the VA would weaken the Board’s proposed objective by adding the phrase “together with other measures in the watershed.” As discussed above, the inclusion of this phrase in the existing narrative salmon protection objective has been the cause of much confusion, served as an impediment to the attainment of the objective, and is inconsistent with the Board’s mandate to regulate flow and water quality conditions to achieve reasonable protection of beneficial uses by establishing Table 3 objectives governing specific flow and water quality parameters.	
308	159	F. The VA alternative fails to incorporate effects of climate change Errors in runoff forecasting have been larger in recent multi-year droughts (Avanzi et al. 2020), which are expected to become more frequent and intense under climate change. Investments in newer technologies such as the Airborne Snow Observatory and modifying runoff forecasting techniques have some potential for maintaining forecast accuracy in the future, however in a rapidly-changing climate, flow requirements reliant on forecasting are inferior to an unimpaired flows- based approach. Runoff-forecast-based-problems like the “missing water” in spring 2021 are likely to plague regulatory or voluntary schemes that rely on year-type forecasts. An approach that releases a percentage of unimpaired flow in real-time is far superior to forecast-based approaches where the total volume automatically adjusts based on available flow. In a rapidly changing climate, a distinct advantage of the flow alternatives is that they are largely immune to errors in runoff forecasting because they do not depend on runoff forecasts—they simply leave undiverted a fixed proportion of the available flow. The forecasting errors to which the VA alternative is prone would be exacerbated if it relies on using D-1641’s Sacramento Valley Index and San Joaquin Index, which inequitably distributes climate change impacts. Null and Viers cautioned:	Please refer to Common Response 4.2, Drought and Climate Change, for details regarding the inclusion of a climate change analysis in the Staff Report.

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		...if current WYT thresholds are maintained (Figure 7), then the burden of climate-driven water scarcity falls entirely on environmental outflow through the Bay Delta (-16%), while the percentage of average annual flow to exports (+2%) and out-of-stream uses (+4%) increase somewhat to preserve relatively constant deliveries in drier years... The WYT framework, and how it could be altered to reflect climate change, directly affects water winners and losers in the state. Null and Viers 2013 [See ATT 75].	
308	160	G. The Draft Staff Report Fails to Utilize Scientifically Sound Analyses Regarding the Effects of the VAs on Fisheries and Ecosystems Problems with modeling of the VAs include: The multiple Biological Opinion/ITP conditions used in the modeling are noted in multiple places in Chapter 9 of the Staff Report (9-45, 9-117, 9-165), including cautions that the VA would not change exports or OMR: ...any increases in exports and associated changes in interior Delta flows under the proposed VAs relative to baseline would be the result of differences in the assumed BiOp and ITP constraints under the VAs and baseline and not as a result of the addition of proposed VAs to the Bay-Delta Plan since adding the VAs to the Bay-Delta Plan will not change the existing export or other interior Delta flow constraints in the plan. Staff Report at 9-165. The South of Delta Exports section (beginning at 9-44) acknowledges this, and presents the complexity of multiple baselines and multiple VA options, but then goes on to describe how exports might change in 5 paragraphs and 6 tables. This inconsistent, unclear, and confusing presentation of whether exports and Delta hydrodynamics might change does not promote a clear understanding of the likely effects. Even the modelers do not fully understand the complexity, and	The different analyses of export effects were included to quantify the uncertainty of the various VA components. In addition to the project baseline, other points of comparison are used in the Staff Report for describing and analyzing the effects of the VA pathway. Please see Common Response 6.2, Baseline and No Project Alternative, for information on the project baseline and points of comparison for VA analyses. The VA would change exports, that is part of the VA proposal and since OMR is a function of exports, OMR would also change under the VA. Changes in exports and OMR are discussed in Section 9.5.3.9, Delta Inflows, Exports, Interior Delta Flows, and Delta Outflow Results, of the 2023 draft Staff Report and 13.4, Changes in Hydrology and Water Supply, of the 2025 partially recirculated draft Staff Report. Please see Common Response 7.1, General CEQA and Approach to the Analysis, for responses to comments that raise issues with the project description under CEQA.

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		thus the bias correction applied to SacWAM results in order to get it to better-match CalSim II may not be appropriate. G3a-11 states: "The differing responses to changed BiOp assumptions observed in SacWAM and CalSim II result from multiple differences between the models that are not fully understood at the time of this writing." It is understandable that the VA modeling is incomplete, since "... changes in hydrology and supply associated with the proposed Vas are relatively small compared with the volume of water in the system, and some details of the VAs such as which reservoirs may be reoperated, which fields will be fallowed, when reservoirs can refill, and when groundwater substitution will occur, have not been fully specified." (Draft Staff Report at G3a-1). The VA modeling and model analysis is incomplete because the project description is incomplete.	
308	161	In addition, the Staff Report provides a misleading comparison of likely flows under the flow scenarios vs. the VA. The modeling of Delta outflow under the VA includes the 2018 San Joaquin River inflow amendments to the Plan in a higher bookend scenario (Staff Report at G3a- 10), however there is no such scenario provided for the flow alternatives. This improperly inflates Delta outflow in the VAs compared to the flow alternatives.	The analysis of Delta outflow in Chapter 13, Revised Proposed Plan Amendments, was updated to separate the effect of changes in Lower San Joaquin River tributary flows from the VA postprocessing, so that the range of potential effects could be considered for both VA and regulatory pathways. These ranges were included in the analysis of the benefits of each pathway in Sections 13.5.3.2, Regulatory Pathway, and 13.5.4.2, Voluntary Agreement Pathway.
308	162	Flow and Habitat Assets of the Proposed VAs are Not Adequate to Reasonably Protect Beneficial Uses and Achieve Bay-Delta Plan Objectives The VA fails to define fish in good condition in a way that permits evaluation of the plan's ability to comply with state law As with the proposed project, the Draft Staff Report fails to analyze whether the proposed Vas comply with Fish and Game Code §5937. Given that conditions below Central Valley dams currently do not maintain fish good condition, and that the status of many native fish populations is declining, and that flow and habitat assets pledged in the proposed VA are wholly inadequate to halt the decline in native fish populations, much less reverse that decline (see below), it is extremely unlikely that the Vas will result in reservoir operations that support maintenance of fish in good condition.	Please see response to comment 308-28.

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308	163	The Draft Staff Report demonstrates that flows under the VA will not halt the decline of native fishes and estuarine habitat, restore viability, reasonably protect fisheries, or maintain fish in good condition The flow and habitat assets promised in the VA term sheet represent meager improvements over the status quo, even if we assumed that they are reasonably likely to materialize (which we do not), and even if the habitat assets are as beneficial for native fishes as purported by VA proponents (which they are not), and even if the habitat assets are delivered at the outset of the VA term (which is not physically possible). Indeed, the Draft Staff Report analyses demonstrate that the VA habitat and flow assets will, in many cases, make conditions worse than the conditions that led the Board to conclude that its current water quality standards were “insufficient to protect fish and wildlife” (SWRCB 2017 at 1-5; see also, SWRCB 2010 at 2, CDFW 2010). Simply put, it is not plausible and not consistent with the best available science, that the Vas will succeed in halting the decline of native fish species and Bay-Delta water quality conditions, let alone support and maintain the viability of those species, much less reasonably protect identified environmental beneficial uses of water.	The tributary habitat analysis and the estuary habitat analysis (which also includes salmonids; see Staff Report Section 9.6, Beneficial Environmental Effects of Proposed VAs) are informative for quantifying expected changes in habitat area but the results do not fully represent the extent of benefits that would be provided by increased flows. The synergy of flow and physical habitat restoration proposed in the proposed VAs is expected to improve conditions for salmonids toward achieving the proposed new narrative viable native fish population objective and existing salmon protection objective. Please see Section 3.2.1, Riverine Flows, and Section 3.2.2, Freshwater Flows and Estuarine Resources, for a description of the significance of naturally variable flow conditions to supporting biological and ecosystem processes necessary to support and protect fish and wildlife beneficial uses. Also see Common Response 3.1, Fish Protection, regarding the Staff Report use of best available science, and interpreting the quantitative habitat benefit analyses. See Common Response 1.2, Water Quality Control Planning Process, regarding the reasonable protection of fish and wildlife.
308	164	Delta Smelt The VAs are not likely to recover or reasonably protect Delta Smelt; in fact, the Draft Staff Report indicates that the project may be harmful to this imperiled species. Delta outflow conditions under the VA will be worse for Delta Smelt than conditions it previously experienced under the 2008/2009 BiOps. Average Delta outflows under the VA are predicted to be lower during April and May (Draft Staff Report Table G3a-76 at G3a-102), despite the scientific evidence that Delta outflow is the strongest predictor of Delta Smelt survival from the post-larval to the juvenile stage (Polansky et al. 2019 [See ATT 12]). Similarly, Delta outflows during the early fall are projected to decline substantially under the VA relative to the 2008/2009 BiOps and the Draft Staff Report’s baseline (particularly during wetter years; Draft Staff Report Table G3a-76 at G3a-102), despite the scientific evidence that fall outflows from the Delta	Chapter 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations, of the 2023 draft Staff Report acknowledges the importance of spring outflow and Delta outflow in summer and fall for Delta smelt. Please see Section 3.8.4, Flow Effects on Delta Smelt, for more information. The draft Staff Report also discusses that habitat areas for estuarine species, including Delta smelt, are expected to increase in the Bay-Delta, contributing toward the narrative objective for viable native fish populations proposed in the VAs (Figure 9.6-3 and Table 9.6-3). Also see response to comment 308-163. See Common Response 1.2, Water Quality Control Planning Process, regarding the reasonable protection of fish and wildlife.

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		(as indexed by X2) have a strong positive effect on Delta Smelt recruitment in the subsequent spring (Polanski 2019).	
308	165	Moreover, it is reasonably foreseeable that flows projected to occur under the VAs will decline over time as “unregulated flows” are captured by other water development projects and storage/diversion operations. The potential for future degradation of Delta Smelt habitat is made clear by the Draft Staff Report’s description of Modular Alternative 6A, which would protect some of the unregulated flows under the proposed VAs. Without provisions similar to those in Alternative 6A, unregulated flows that contribute to protection of fish and wildlife can and likely will be diverted in the future under the VAs.	Please see 2023 draft Staff Report Section 7.24.2.1, Changes in Hydrology, regarding an analysis of the potential effects on hydrology of several currently proposed water infrastructure projects. Additionally, the revised proposed Plan amendments include a provision for the protection of the VA baseflows applicable to new water supply projects. See Common Response 1.3, Revised Proposed Plan Amendments, regarding the provision for the protection of base flows and other water supply projects.
308	166	The VAs also rely on non-flow projects to increase the availability of shallow water environments (floodplains and tidal marshes) intended to protect native fish and wildlife like Delta Smelt. SF Baykeeper et al. and others have commented extensively elsewhere that the benefits of such so-called “habitat restoration” are speculative, at best, and not borne out by the best available science in most cases (NRDC et al. 2023 [See ATT 50 and ATT 93]). To the extent that such “habitat restoration” is relevant to protection of Delta Smelt, the Draft Staff Report’s analysis makes clear that the proposed VA are not likely to significantly increase habitat available to Delta Smelt. In fact, the Draft Staff Report finds that “habitat” for Delta Smelt larvae may decrease by as much as 11% under the proposed VA relative to the 2008/2009 BiOp reference condition (Draft Staff Report Table 9.6-3 at 9-79). [Footnote 21: Although the analysis also suggests the possibility that Delta Smelt “habitat” will increase, the potential reduction in acreage is much greater than the potential gain in habitat (the column on the far right of table 9.6-3, which reports symmetrical potential habitat change in percentage terms, seems to reflect a calculation error). Available habitat for Delta Smelt under the Vas is likely to decrease in the future faster than it will under the proposed project or “high flow” alternatives (particularly if baseline flows continue to degrade, see above). Under climate change, the areal extent of habitat estimated to result from the Vas is likely to decrease in the future (Draft Staff Report Appendix G.2 at 2-23)	Please see Section 7.6.2, Aquatic Biological Resources, of the 2023 draft Staff Report for an analysis of the effects of changes in hydrology on water temperatures in the estuary. In general, there is only a limited influence of Delta inflow on Delta water temperatures because water generally approaches equilibrium with atmospheric conditions by the time it reaches the Delta. Of the limited influence, Delta water temperature generally increases as Delta inflow declines, although this varies by time of year and location within the Delta. Effects of the slight changes in temperature on adult Delta smelt immigrating to and spawning in the Delta during December through May would vary by month, but are generally minor. Also see Common Response 3.1, Fish Protection, regarding habitat benefit analyses and flow effects on temperature and Common Response 1.2, Water Quality Control Planning Process, regarding reasonable protection of fish and wildlife and consideration of beneficial uses.

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		because Delta Smelt habitat is believed to be increasingly constrained by high water temperatures (Draft Staff Report App G.2 at 2-23). The Draft Staff Report does not evaluate the effect of increasing flows on water temperatures in the estuary, even though higher flows under the proposed project and “high flow” alternative would be expected to mitigate increased temperatures (Vroom et al. 2017 [See ATT 18]; Bashevkin and Mahardja 2022 [See ATT 19]) in a way that the Vas –which promise relatively low Delta inflow and outflow– will not.	
308	167	Baykeeper et al. also note that the VA analysis provides no estimate of Delta Smelt population growth under the Vas, as it does for select other species (Draft Staff Report Figure 9.6-4). Our analysis of SacWam modeling indicates that summer flows the Board has identified as protective for this species will occur 56% of the time under the proposed project, and much more frequently (63-76%) under higher flow alternatives (Table 1 [See Exhibit 15]). We encourage Board staff to evaluate Delta Smelt population response under the Vas, proposed project, and other unimpaired flow alternatives (with and without proposed interior Delta hydrodynamic requirements) using the USFWS Delta Smelt Life Cycle Model (Polansky et al. 2021 [See ATT 12]; Smith et al. 2021).	The use of life cycle models is complicated as they have their own limitations and may not be compatible with the analyses performed in the 2023 draft Staff Report. Additionally, the results from Polanski et al. 2021 and ^Smith et al. 2021 support the summer and fall outflow relationships in the 2023 draft Staff Report. See Common Response 3.1, Fish Protection, regarding the adequacy of modeling to support the benefit analyses.
308	168	Longfin Smelt The Draft Staff Report demonstrates that the proposed VA will continue or even accelerate the decline of the Bay-Delta’s endangered Longfin Smelt population. The frequency of seasonal flows that promote Longfin Smelt population growth is projected to decline under the VAs relative to both the baseline and conditions under the 2008/2009 BiOps (Draft Staff Report Table 9.6-4 at 9-80; see also Table 1 [See Exhibit 15]). Furthermore, the Vas are likely to eliminate conditions that currently produce the highest population growth rates because the Vas are expected to result in lower flows during the Wet year-type (Draft Staff Report Tables 9.5-40, 9.5-41). Because the flow-productivity and flow-abundance relationships are log-log linear (Rosenfield and Baxter 2007; SWRCB 2017), flows in Wet years are critically important to the population; high productivity during these years provides some buffer against extirpation in subsequent years with low Delta outflows. We emphasize that	The 2023 draft Staff Report shows there are expected benefits from the proposed VAs to estuarine species, including longfin smelt. Table 9.6-3 and Figure 9.6-3 in Section 9.6, Beneficial Environmental Effects of Proposed VAs, show that habitat areas are expected to increase. Considering all water year types, the abundance indices based on flow under the proposed VAs are expected to increase as well (Figure 9.6-4). Additionally, Chapter 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations, examines the science regarding flow needs of a suite of native Bay-Delta aquatic species, including longfin smelt (Section 3.5.4, Flow Effects on Longfin Smelt), and incorporates the findings of ^Rosenfield and Baxter 2007.

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		the current flow regime is associated with the long-term and catastrophic decline of Longfin Smelt. Decreasing the frequency of flows that promote any population growth and truncating the higher end of the winter-spring Delta outflow (and Longfin Smelt population growth) spectrum can only accelerate their trajectory towards extirpation.	
308	169	Old and Middle River flow rates are projected to become much more negative under the VAs relative to the 2008/2009 Biological Opinion and the Board's baseline during April and May (Draft Staff Report Appendix G3a Figure G3a-36 at G3a-1113) the two months in which Longfin Smelt are most vulnerable to entrainment and death in the infrastructure of the CVP/SWP export facilities (Grimaldo et al. 2009). Thus, the impact of entrainment and salvage on Longfin Smelt is likely to increase under the Vas. This effect is not accounted for in the Draft Staff Report's effort to model population response to implementation of the Vas.	The 2023 draft Staff Report Section 9.5.3.9, Delta Inflows, Exports, Interior Delta Flows, and Delta Outflow Results, includes analyses of changes in interior Delta flows, including Old and Middle River (OMR) flows and the net flow measured in the lower San Joaquin River at Jersey Point (QWEST) and acknowledges that net negative OMR flows between 0 and -2,500 cfs could occur with greater frequency under the VA scenario compared with baseline and the 2008 and 2009 BiOps condition, primarily due to the possibility for greater exports in April and May relative to the baseline scenario. Section 9.7.6.2, Aquatic Biological Resources, discussed possible negative ecological consequences including how net reverse flows draw fish within the influence of the changes in flow patterns, especially the weaker swimming larval and juvenile forms, into the SWP and CVP export facilities. Please also see Common Response 3.1, Fish Protection, regarding the adequacy of modeling to support the benefit analyses.
308	170	VA "habitat" restoration actions are not expected to substantially benefit Longfin Smelt. This is because (a) there is no evidence that the extent of shallow water environments or even the volume of the pelagic habitat currently limits the population (Lewis et al. 2019 at 7 and 44-45 of the PDF [See ATT 26]; Kimmerer et al. 2009, respectively) and (b) because the VAs are expected to produce only meager increases in presumed "habitat," including potential reductions in the habitat available to juvenile Longfin Smelt (Draft Staff Report Table 9.6-3 at 9-79).	The synergy of flow and physical habitat restoration proposed in the VAs is expected to improve conditions for estuarine species, including longfin smelt. The 2023 draft Staff Report Table 9.6-3 and Figure 9.6-3 in Section 9.6, Beneficial Environmental Effects of Proposed VAs, show that habitat areas are expected to increase. Table 9.6-3 shows that, under the VA scenario, habitat is projected to increase by 2 to 5 percent for larval longfin smelt and 0 to 7 percent for juvenile longfin smelt. See also response to comment 308-163. In the Delta watershed there has been a dramatic loss of physical habitat. The majority of historical tidal marshes which provide critical habitat for native species, including longfin smelt, have been converted to diked seasonal wetlands. See Section 4.2.2, Tidal Marsh Habitat, for more information. However, the Scientific Basis Report Supplement (Appendix G2 to the Staff

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			Report) discusses uncertainty related to the benefits of habitat restoration, including whether habitat is limiting to populations. Please also see Common Response 3.1, Fish Protection, regarding interpreting the quantitative habitat benefit analyses.
308	171	Given the Draft Staff Report’s projection of decreasing frequency and magnitude of flows that benefit Longfin Smelt, increasingly negative OMR flows that entrain and kill Longfin Smelt, and declines or tiny increases in presumed “habitat” (which is unlikely to be limiting the population and unlikely to materialize during the VA term), it is likely that the Longfin Smelt population’s slide towards extinction will accelerate if the proposed Vas are adopted and implemented.	See responses to comments 308-168 through 308-170.
308	172	Chinook Salmon The Draft Staff Report provides no evidence that the VAs will halt the decline of Central Valley Chinook Salmon runs, restore their viability, or increase populations to necessary to satisfy the VAs’ revised salmon protection objective. As noted with respect to our review of the proposed project, the Draft Staff Report fails to analyze flow criteria consistent with the best available science regarding what is needed to protect migrating juvenile Chinook Salmon. In general, the VAs are expected to increase Sacramento River inflows to the Delta during Chinook Salmon migration seasons by about 2.2% on average (range: 0.2%-7% depending on year type; Table 9.5-6 at 9-25); this is unlikely to result in a significant change in the frequency or magnitude of Chinook Salmon population growth. Our analysis of flows that recent research demonstrates would be protective of outmigrating Chinook Salmon smolt shows that the VAs will not improve conditions – the frequency of these flows is low and identical when comparing the VA to the Board’s baseline (Table 1 [See Exhibit 15]). In addition, OMR rates during April and May are projected to be significantly more negative under the Vas than under the 2008/2009 BiOp and the Board’s baseline (Draft Staff Report Appendix G3a Figure G3a-36 at G3a-1113)The increase in flows headed towards the export pumps (“reverse flows” or negative OMR) would be expected to increase mortality of juvenile spring-	The 2023 draft Staff Report includes substantial evidence of the environmental impacts and benefits of the proposed VAs. The Scientific Basis Report Supplement (Appendix G2) includes quantitative evaluations of the projected changes in habitat provided for native species, including Chinook salmon, from VA proposed flows and physical habitat restoration actions. Suitable habitat for spawning and rearing habitat was defined by velocity, depth, temperature, substrate, and cover criteria. The final draft Scientific Basis Report Supplement also includes quantitative evaluations of projected changes in native species abundance indices and the frequency of ecological flow thresholds with VA proposed flows. In addition, a qualitative literature review was conducted to evaluate possible benefits of the proposed VAs where no quantitative models exist. These analyses are also described in Section 9.6, Beneficial Environmental Effects of Proposed VAs. The synergy of flow and physical habitat restoration proposed in the VAs is expected to improve conditions for salmonids toward achieving the proposed new narrative viable native fish population objective and existing salmon protection objective. See response to comment 308-163. Also see Common Response 3.1, Fish Protection, regarding the staff report use of best available science. See response to comment 308-169 regarding OMR flows.

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		run and fall-run Chinook Salmon attempting to transit the Delta, via direct salvage loss and the indirect negative effects of altered Delta hydrodynamics on Chinook Salmon survival.	
308	173	Even if the VAs non-flow “habitat” restoration projects materialize during the proposed 8-year term (which we doubt), and even if they provide as much benefit to Chinook Salmon as VA proponents contend (an assertion that is not supported by the scientific record; see NRDC 2023 [See ATT 50 and ATT 93]) the VAs simply do not plan to substantially increase available Chinook Salmon habitat. Specifically, the VAs will not accomplish their own stated goal – to surpass 25% of the habitat presumed necessary in each relevant river basin to support salmon populations targeted by the salmon protection objective (i.e., natural production that is double the 1967-1991 average; AFRP 2001 [See ATT 65]). Of the six river-by-salmon spawning population combinations studied in the Draft Staff Report’s analysis of spawning habitat availability under the VA, all but one (the American River) already exceeds the VAs’ habitat target, and that river will not attain the 25% spawning habitat target under the VAs (Figure 9.61. at 9.75). With respect to in-channel and floodplain rearing “habitat” restoration, the Draft Staff Report analysis shows that the VAs will not accomplish their goal. The analysis shows that VA assets will fail to attain even 25% of the estimated rearing habitat need for fall-run Chinook Salmon in the Sacramento River or the American River (Draft Staff Report Table 9.6-2 at 9-76). Only the Feather River is projected to attain the VAs’ goal for rearing habitat as a result of implementing the VA assets. Meanwhile, according to this analysis, the Yuba River and Mokelumne River VAs are expected to add more habitat than is needed for Chinook Salmon populations to attain the narrative salmon protection objective (Figure 9.6-2 at 9-76).	The synergy of flow and physical habitat restoration proposed in the VAs is expected to improve conditions for salmonids toward achieving the proposed new narrative viable native fish population objective and existing salmon protection objective. Please see response to comment 308-163. The tributary habitat analysis does not suggest a habitat area threshold beyond which additional habitat would not be needed. The analysis is a tool used to quantitatively compare suitable habitat under different scenarios. The 2023 draft Staff Report acknowledges that many stressors other than flow, including physical habitat affect ecosystem processes. Section 4.2, Other Aquatic Ecosystem Stressors, and Section 5.5, Habitat Restoration and Other Complementary Ecosystem Measures, discuss stressors on salmonids and other natives such as the loss of riparian habitat and floodplains. The dynamic nature of flow interacts with the physical environment to produce aquatic habitats suitable for native fish and wildlife. The function and ability of ecosystems to support these species can be reduced by stressors. One cannot substitute for another; flow improvements, stressor reduction, and habitat restoration are all essential for protecting fish and wildlife resources. Also see Common Response 3.1, Fish Protection, regarding the adequacy of the modeling to support the benefit analyses.
308	174	Even though the Draft Staff Report discloses that the VAs will not attain their own goal of ensuring that the relevant tributaries have at least 25% of the physical spawning and rearing habitat needed to support Chinook Salmon populations, the report still overstates the impact of this contribution to attainment of the proposed salmon protection objective. The VAs take credit for non-flow habitat projects that the analysis shows are not needed	The 2023 draft Staff Report Chapter 3, Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations, analyzes the flow needs of many species, including Chinook salmon. The final Staff Report incorporates new flow thresholds for Chinook salmon (fall, winter and spring-runs) based on Munsch et al. 2020.

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		to attain the salmon protection objective. Table 9.6-3 of the Draft Staff Report indicates that salmon rearing habitat will increase by just 2-3% when all of the VAs proposed habitat restoration is completed. But this includes habitat restoration in river basins where more than the total estimated need already exists. For example, the VAs propose to increase available from 204% of the estimated need to 215% of that need (Table 9.6-2 at 9-76). Similarly, on the Yuba River, the VAs propose to increase available physical spawning habitat beyond the existing 291% of the total needed to support the targeted population of salmon (Table 9.6-1 at 9-75). This raises at least two questions: - Why are the VAs proposing to spend money on non-flow habitat restoration projects on rivers where that habitat is plainly not needed (and failing to create the habitat where it arguably is needed)? - If more than the target habitat already exists on certain rivers, why have the Chinook Salmon populations on these rivers never attained the population targets required to achieve the salmon protection objective? The simple answer is that the VA parties did not systematically analyze the habitat and flow needs of Chinook Salmon before setting the terms of their agreement. Indeed, neither the Draft Staff Report nor VA proponents provide evidence to suggest that spawning habitat limits Chinook Salmon populations. Nor do they acknowledge recent scientific evidence that rearing habitat in the Delta currently exceeds the amount necessary to sustain typical current salmon populations under the current flow regime (Munsch et al. 2020 [See ATT 43]) – an inadequate flow regime that the Vas would largely perpetuate. Given the certainty and magnitude of the relationships between juvenile Chinook Salmon survival and flow (see above; and Attachment: Salmon Flow Literature Matrix [See ATT 40]), it is not plausible that the Vas' tiny (and uncertain) non-flow actions can compensate for the lack of adequate flows under this proposal. The projected tiny contribution to overall habitat availability –which includes added habitat that is not assumed to be needed on other rivers – cannot plausibly reverse salmon	See response to comment 308-173.

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		decline or restore viability of the four Chinook Salmon runs, much less double their populations to attain the Plan's narrative salmon protection objective.	
308	175	Central Valley Steelhead Central Valley Steelhead will be harmed by the proposed VAs. Specifically, the substantial increase in negative OMR flows under the VAs during April and May (Draft Staff Report Appendix G3a Figure G3a-36 at G3a-113) is expected to reduce survival of emigrating juvenile Steelhead, particularly those from the San Joaquin River basin, which is critically important to the recovery of this species (NMFS 2014). The increasingly negative OMR flows under the VAs results from elimination of the San Joaquin I:E ratio. The 2019 NMFS Biological Opinion projected that the greatest increase in loss of Central Valley Steelhead under the operations it permitted would occur during April and May (at 774, and 509–10), the very months when the San Joaquin I:E ratio would be in effect under the 2009 NMFS BiOp. Specifically, the 2019 NMFS Biological Opinion estimated that adverse Delta hydrodynamics resulting from the elimination of the I:E ratio would "...lead to lower survival of steelhead juveniles emigrating from the San Joaquin River basin by up to 20 percent" (id. At 776) and that "[d]uring years in which spring-time Vernalis flows do not exceed 5,000 cfs, Reclamation's proposed action could create conditions that would reduce steelhead survival to Chipps Island for the Southern Sierra Nevada Diversity Group, further exacerbating the already diminished status of this diversity group" (id. At 777). Old and Middle River flows under the VAs are projected to improve as compared to the 2019 Biological Opinion, but they will remain far more negative than the relevant points of comparison – the 2008/2009 Biological Opinions and the Board's baseline. For this reason alone, the VAs are likely to further degrade viability of Central Valley Steelhead and prevent restoration of the fishery for this storied sportfish.	Please see response to comment 308-169 regarding OMR flows. Also, see Common Response 6.2, Baseline and No Project Alternative, for information on the project baseline and points of comparison for VA analyses.
308	176	White Sturgeon and Green Sturgeon The Draft Staff Report demonstrates that the flow regime under the VAs reduce the frequency of flows associated with successful White Sturgeon reproduction (Draft Staff Report Table 9.6-4 at 9-80; Table 1 [See Exhibit 15]). The VAs are projected to reduce	In the 2023 draft Staff Report, Table 9.6-4, the frequency of exceeding ecological flow thresholds does not change for any of the scenarios for the green and white sturgeon analysis. However, while the estuary habitat analysis is informative for quantifying expected changes in habitat area, the results do not fully represent the extent of benefits that would be provided by

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		Delta outflows during Wet years (Draft Staff Report Tables 9.5-40, 9.5-41) when reproductive success now occurs. As a result, the VAs are likely to further impair the reproductive success and viability of both sturgeon species and accelerate their decline towards extinction. SF Baykeeper et al. reiterate our concern that the flows promised under the Vas (as modeled in the Draft Staff Report) are likely to diminish over time as new dams and diversions capture more of the flow that is not regulated by the 2019 Biological Opinions and the Board's current regulations (D-1641).	increased flows. Please see response to comment 308-163. Also see response to comment 308-165 regarding unregulated flows.
308	177	Starry Flounder As discussed above, flows that the Board (SWRCB 2017) has identified as "protective" of Starry Flounder replicate flows during the period when abundance of this commercially important fish declined dramatically; this flow regime is unlikely to prevent further declines of Starry Flounder. Our analysis shows that the Vas are projected to increase the frequency of the Board's 2017 target flow by a tiny amount (Table 1 [See Exhibit 15]; see also Draft Staff Report at Table 9.6-4 at 9-80). Increasing the potential for population growth by 4 years out of every 100 is very unlikely to restore the historic productivity of the Starry Flounder fishery. Furthermore, our analysis (Table 1) shows that the Vas will result in a decrease in the level of flows the Board previously identified as protective of Starry Flounder (SWRCB 2010). Board staff should re-analyze the frequency of flows necessary to support and protect Starry Flounder using the flow thresholds the Board identified in its 2010 Public Trust Flow Criteria report, as these remain the best available science on the topic.	The results for starry flounder in Table 9.6-4 in the 2023 draft Staff Report show an increase of 2 percent in the frequency of exceeding flows thresholds under the VA scenario when compared to baseline. While the estuary habitat analysis is informative for quantifying expected changes in habitat area, the results do not fully represent the extent of benefits that would be provided by increased flows. Please see response to comment 308-163. Also see response to comment 308-112 regarding flows from the 2010 Delta Flow Criteria report.
308	178	Estuarine habitat The Draft Staff Report indicates that the VAs will fail to improve estuarine habitat, including stimulation of the estuarine food web and repression of persistent harmful algal blooms, in most years. Much like the flow-productivity relationship for White Sturgeon and Green Sturgeon, stimulation of the food web in the estuary's pelagic zone does not occur below certain Delta outflow thresholds, which vary by season (Hennessy and Burris 2017a,b [see ATT 9 and ATT 10, respectively]; Kimmerer et al.	In Section 3.11, Zooplankton (Neomysis mercedis and Eurytemora affinis), of the 2023 draft Staff Report, zooplankton are identified as an important food resource for juvenile fish and for small adult pelagic fish and Delta outflows are identified between February and June for the benefit of the zooplankton community. In Table 9.6-4 the identified flow thresholds protective of zooplankton species (11,400 cubic feet per second [cfs] at Chipps Island and 29,200 cfs at Port Chicago) are expected to increase by 6 and 2 percent respectively under the VA scenario. However, while the estuary habitat analysis is

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		2018). Thus, Delta outflows projected under the Vas in the spring of Wet years and in the summer and fall during all year types (Draft Staff Report Table 9.5-41 and 9.5-43 at 9-55) are not likely to improve the estuarine food web and the estuarine habitat it represents. The Draft Staff Report's analysis (Draft Staff Report at Table 9.6-4 at 9-80) and our analysis (Table 1 [see Exhibit 15]) show that the frequency of flows associated with increasing zooplankton abundance in the estuary's pelagic waters will decrease or increase by negligible amounts (-1 to 2%) under the Vas. Moreover, reduction in summer and fall flows under the Vas relative to the 2008/2009 Biological Opinion strongly indicates that the Vas will exacerbate impairment of the estuarine food web, and the incidence of HABs in the Delta in those seasons (Draft Staff Report Table 9.5-43 at 9-55).	informative for quantifying expected changes in habitat area, the results do not fully represent the extent of benefits that would be provided by increased flows. Please see response to comment 308-163. See Common Response 4.1, Harmful Algal Blooms, regarding instream flows and HABs. Also see response to comment 308-79 regarding the zooplankton analysis.
308	179	The Draft Staff Report Fails to Analyze Potential Adverse Environmental Impacts of Waiving Instream Flow Requirements in Future Drought Emergencies, under the Vas. The VA Alternative fails to update existing inadequate water quality standards, and fails to include any mechanisms for avoiding Temporary Urgency Change Orders, which have often been triggered by the inequitable distribution of responsibility for current standards. See our additional comments on TUCPs and TUC Orders above in Section H.3.	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.
308	180	J. The VA Alternative Fails to Consider the Board's Legal Authority to Require Water Rights Holders to Invest in Habitat Restoration and Other Non-Flow Measures in a VA As discussed with regard to the proposed project, the physical solution doctrine empowers the Board to require physical habitat restoration in order to promoting maximum beneficial use of the State's water resources. In D-1631, the Board applied the physical solution of compelling the appropriator to restore degraded streams and fisheries: In resolving disputes involving competing uses of water, California courts have frequently considered whether there is a "physical solution" available by which competing needs can best be served. (Peabody v. Vallejo, 2 Cal.2d 351, 383-384 [40 P.2d 4861 (1935); City of Lodi v. East Bay Municipal Util. Dist., 7	Please see Common Response 1.2, Water Quality Control Planning Process, for information on the consideration of non-flow measures and the State Water Board's authority to impose non-flow measures.

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		Cal.2d 316 [60 P.2d 4391 (1936).] Adoption of a physical solution is consistent with the constitutional goal of promoting maximum beneficial use of the State's water resources. SWRCB Decision 1631 at 10. Indeed, the consideration of a physical solution approach is not limited solely to the VA but should be considered as part of the POI for a flow alternative-based approach. The Board does not have to rely solely on voluntary implementation for nonflow measures, and by doing so undermines their authority under the physical solution doctrine. Please see above for more detailed analysis.	
308	181	The Draft Staff Report Fails to Adequately Analyze and Contextualize the Impacts of Completed Habitat Restoration in its evaluation of the Vas The Draft Staff Report's analysis of the VA's habitat restoration proposal lacks critical context. The Vas propose to construct 22,203.65 acres of new spawning, instream rearing and floodplain habitat on upstream tributaries, and an additional 5,227.5 acres of tidal wetlands and floodplain habitat in the Delta (Draft Staff Report at 9-9, 9-10, 9-12.) The Draft Staff Report rightly points out that this represents a very small increase in available habitat compared to the status quo (Draft Staff Report Figure 9.6-1 at 9-74-75). Unfortunately, the Draft Staff Report fails to place the VA's restoration pledges in the context of the past 30 years of habitat restoration efforts. For the last three decades, there have been ongoing programs to restore spawning, instream and floodplain habitat in the Bay-Delta ecosystem. For example, the expenditure of hundreds of millions of dollars from the CVPIA Restoration Fund has been significantly focused on salmon habitat restoration. [Footnote 22: See Title 34, Central Valley Project Improvement Act (CVPIA) of Public Law 102-575 Section 3406 - Fish, Wildlife and Habitat Restoration; see also U.S. Department of the Interior Bureau of Reclamation Region 10 CVPCP/HRP projects database, available online: https://www.usbr.gov/mp/cvpcp/cvpcp_query.php. For a summary of recent habitat restoration projects, please also see	The expected benefits of the VAs, and the uncertainty in those benefits, were described in Appendix G2, Final Draft Scientific Basis Report Supplement in Support of Proposed Voluntary Agreements for the Sacramento River, Delta, and Tributaries Update to the San Francisco Bay/Sacramento-San Joaquin Delta Water Quality Control Plan, of the 2023 draft Staff Report. This appendix also reviews past literature on the effectiveness of habitat restoration, which is further described in Chapter 4, Other Aquatic Ecosystem Stressors, of the 2023 draft Staff Report. Please also see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.

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		U.S. Department of the Interior Bureau of Reclamation Region 10 CVP Habitat Restoration Fact Sheet, February 2022, available online: https://www.usbr.gov/mp/mprnews/docs/factsheets/habitat-restoration.pdf.] Additionally, the 2008-2009 CVP/SWP Biological Opinions required 8,000 acres of Bay-Delta intertidal and subtidal habitat. [Footnote 23: See California Department of Fish and Wildlife Fish Restoration Program Agreement (FRPA) website, available online: https://wildlife.ca.gov/Regions/3/FRPA.] The Draft Staff Report presents no analysis of the extent of habitat restoration in the Bay-Delta watershed over this period, or its results. Such an analysis would reveal extensive habitat restoration over the past three decades, and that these efforts have not led to the restoration of Bay-Delta native fish species or commercial, recreational, and subsistence fisheries. This raises additional questions about the effectiveness of the Vas' modest proposed restoration of habitat. The Draft Staff Report analysis gives no reason why the VA habitat-based approach would succeed, given that it has failed for 30 years without adequate flows.	
308	182	It is also unclear how many of the VA's proposed restoration acres are already destined to be restored under other existing legal obligations. This further calls into question the actual benefits the VAs will provide the Bay-Delta estuary. It is more than likely that projects for which the VA takes credit will be completed under other programs, with other sources of funding, such as the CVPIA Habitat Restoration Program, the 2020 Central Valley Joint Venture (CVJV) Implementation Plan, DWR's Tidal Wetlands Enhancement Program and/or the Delta Stewardship Council's Delta Plan. [Footnote 24: To be more specific, the 2020 CVJV Implementation Plan calls for an additional 500,337 acres of habitat area, 33,332 acres of that being riparian habitat, which is 6,000 acres more than the VA alternative in even the wettest years. The Plan is available online for reference: https://www.centralvalleyjointventure.org/assets/pdf/CVJV_2020_Implementation_Plan.pdf.]	As described in the revised proposed Plan amendments, all VA habitat should be additive to the physical conditions and regulatory requirements existing as of December 2018. Please see Common Response 1.3, Revised Proposed Plan Amendments, for more information on the VA pathway.
308	183	Furthermore, the Draft Staff Report fails to analyze how long it would take to provide the habitat benefits proposed by the VAs. In the past, there have been significant delays in providing habitat restoration related to Bay-Delta regulatory requirements.	As described in the revised proposed Plan amendments, the VAs will only receive credit for habitat restoration completed by the end of 8 years, and any non-completion of VA commitments will be considered in the decision about continuing, modifying, or

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		One example is the long delay in completing habitat restoration requirement in the 2008 and 2009 NMFS and FWS Biological Opinions for the CVP and SWP Operating Criteria and Plan. In fact, realistic delays in achieving the full promised VA habitat restoration could extend beyond the eight-year life of the VA. Without acknowledgment of these potential delays, the Draft Staff Report is missing critical analysis that is essential for a full evaluation of the proposed VAs. The potential delays in the VA proposal providing habitat benefits, in combination with the lack of adequate VA flow benefits, could easily mean continued devastation of the salmon fishing industry, extinction of CESA and ESA-listed species, and irreversible damage to the Bay-Delta estuary. Given the dire status of the ecosystem, such a delay in delivering benefits is unacceptable. In contrast, improved ecosystem flows could be implemented far more rapidly, and their environmental benefits could be achieved more rapidly and reliably. The Draft Staff Report must be revised and recirculated to include proper context of ongoing and completed habitat restoration and analyze the risks and impacts of lengthy delays in achieving future habitat restoration without an adequate flow regime.	terminating the VAs. In addition, as stated in Chapter 5, Analytical Approach to Evaluating Assets, of Appendix G2, Final Draft Scientific Basis Report Supplement in Support of Proposed Voluntary Agreements for the Sacramento River, Delta, and Tributaries Update to the San Francisco Bay/Sacramento-San Joaquin Delta Water Quality Control Plan, of the 2023 draft Staff Report, the benefit analysis results reflect expected benefits at a date when all restoration projects are completed. Please see Common Response 1.3, Revised Proposed Plan Amendments, for more information on the VA pathway. The State Water Board has adopted CEQA regulations applicable to certified regulatory programs and preparation of an SED. (Cal. Code Regs., tit. 23, §§ 3720–3781.) These regulations provide the State Water Board’s exclusive procedural requirements for the Board’s certified regulatory programs, including the contents of the SED and the procedures for receiving and responding to comments. (Id., §§ 3777, 3779, 3779.5.) The Board’s certified regulatory program is “subject to the broad policy goals and substantive standards of CEQA.” (City of Arcadia v. State Water Resources Control Bd. (2006) 135 Cal.App.4th 1392, 1422; Cal. Code Regs., tit. 23, § 3720, subd. (c)(2).) The Staff Report also cites the State CEQA Guidelines where appropriate and relevant to help guide or inform the CEQA analysis consistent with CEQA’s goals and standards. CEQA Guideline section 15088.5 discusses the need for recirculation of an EIR prior to certification when “significant new information” is added after notice and public comments, such as a previously undisclosed environmental impact, a substantial increase in the severity of an impact, or a feasible alternative or mitigation measure that would substantially lessen an impact that is not adopted. An alleged delay in project benefits does not require recirculation under CEQA.
308	184	The SED’s Analysis of Changes in CVP/SWP Water Exports in the Vas is Flawed The Board’s analysis of the potential changes in CVP/SWP water exports and other diversions under the VA fails to analyze the very real potential that the modest proposed additional	Some of the VA flows will be bypassed by the CVP and SWP as additive Delta outflows. The increases in Delta outflow expected to result from the VAs were presented in Section 9.5.3.9, Delta Inflows, Exports, Interior Delta Flows, and Delta Outflow Results, of the 2023 draft Staff Report. Please see Chapter 13 and

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		upstream environmental water releases would be diverted downstream. The VA does not include a detailed set of Delta environmental protections. Instead, the VA proposes to manage a block of environmental water to improve Delta health. Therefore, the rules governing the management of that block of water are critical to determining whether or not that block of water would provide significant environmental benefits in the Delta. One key question – among many regarding a VA accounting methodology – is whether environmental water released upstream would become Delta outflow, or whether it would be diverted by the CVP, SWP or other existing water projects. The VA proposal also does not include provisions to ensure that the proposed VA baseline flows are not diverted by existing water projects in the future. Further, the proposed VA does not include provisions to ensure that the baseline flows and the VA's "new environmental water" are not diverted by future water development projects, such as Sites Reservoir or the Delta Conveyance Project. For example, Sites Reservoir's VA Analysis Tool (Attachment: 20230616B_Sites Historical WAA Tool&VA Analysis.xlsm) shows that the VA flows in some months are equal to proposed Sites Reservoir diversions. Sites Reservoir would nullify any Delta outflow benefit of the VA in these months, and the VA would simply maintain the status quo. Alternative 6A highlights the need to protect unregulated flows, but it does nothing to ensure that flow promised in the VA term sheet actually materialize. Provisions to prevent the diversion of environmental water could include, for example, Section 1707 protections for all new environmental water through the Delta.	Common Response 1.3, Revised Proposed Plan Amendments, for information on the provision to protect the VA flow base.
308	185	Friant contribution: foregone exports of water from the Delta (released from Friant Dam under the San Joaquin River Restoration Program to meet settlement requirements) on behalf of Friant water users is included as a potential element of the VA. Whether restoration water can be recaptured in the Delta is uncertain given that the environmental documentation for the proposed recapture has not yet been completed and that Delta recapture may be inconsistent with paragraph 16(a)1 of the San Joaquin River Restoration Settlement Agreement and with Plan	The Friant VA is included as a voluntary contribution to Delta outflow in the VA pathway and not for the purposes of determining flow requirements for the Upper San Joaquin River. As such, the water rights for the U.S. Bureau of Reclamation's Friant Division are not listed as covered HRL water rights in Appendix B.1 of the Bay-Delta Plan. The current updates to the Bay-Delta Plan are focused on the Sacramento River and Delta and tributaries. The State Water Board updated the Lower San Joaquin River (LSJR) components of the Plan in 2018. The LSJR

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		updates as discussed in these comments. Furthermore, even assuming Friant's contribution were to be counted as part of the VA, it cannot be counted as fulfilling any obligation Friant water users have to comply with state or federal law but as a voluntary contribution to the VA parties (and this interpretation is consistent with the view of the Friant Water Authority as we understand it). The restoration flows in the settlement were never intended to represent compliance with the Bay-Delta Plan, the Board has not previously considered flow contributions from the San Joaquin River above its confluence with the Merced, and it would need to evaluate a reasonable range of alternatives in order to do so. Finally, nothing in a Plan update involving the VA can or should limit the ability to fully implement the San Joaquin River Restoration Program, to modify flows commencing in 2026 under paragraph 20 of the settlement, or otherwise limit or change settlement obligations or preempt federal law (again, this statement is consistent with Friant's view).	updates to the Plan were focused on the salmon bearing tributaries to the LSJR and did not extend to the Upper San Joaquin River given that the San Joaquin Restoration Program was in the beginning stages of being implemented in this reach and salmon were not supported in this reach at the time. Instead, the Plan identified that "The State Water Board may consider water quality objectives for the stream system above the San Joaquin River's confluence with the Merced River in future updates to this Plan." This is something that will be considered during the periodic review process as described in Section 4.6, Annual Periodic Review, of the Plan. The inclusion of the Friant HRL flow contributions in the VA pathway does not prevent the Board from considering Bay-Delta requirements for the Upper San Joaquin River in the future. Please see Common Response 1.3, Revised Proposed Plan Amendments, for information on the VA pathway.
308	186	The Draft Staff Report Fails to Adequately Consider the Feasibility of Reasonably Protecting Fish and Wildlife Beneficial Uses and Related Other Beneficial Uses Because it Fails to Adequately Consider Improvements in Water Use Efficiency and Alternative Water Supplies in the Vas The Draft Staff Report's analysis of the VA suffers from the same flaws in methodology as the proposed project with respect to water efficiency and alternative water supplies. See comments above in Part II.	Please see the responses to comments 308-135 and 308-136.
308	187	Potential for Abuse of Public Funds for the Vas The Draft Staff Report does not reveal how much of the public funds proposed by the Vas would be directed to VA participants. The VA term sheet suggests that hundreds of millions in public funds would be used to pay for water purchases from senior agricultural contractors (but not urban users). Most or all of the recipients of public funding would likely be VA signatory agencies or water users who are represented by VA signatories. The concern that an ineffective environmental block of water could be used to enrich some of the architects of the VA is not theoretical. This problem was seen a decade and a half ago in the	Appendix G1, Voluntary Agreement Proposal, in the 2023 draft Staff Report contains the MOU proposing HRL commitments and related documentation that provide funding information. The specific documents in Appendix G1, Voluntary Agreement Proposal, have been removed and replaced with references to the State Water Board's website and the California Natural Resources Agency website where current and prior VA documents can be found. The State Water Board is not a signatory to the MOU proposing HRL commitments and is not bound by its terms. See Common Response, 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.

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		CALFED Environmental Water Account (EWA). The EWA proved to be a failure as a tool to protect the Delta environment. However, it did enrich State Water Project agricultural contractors. Those contractors received SWP water at a highly discounted price and then sold that water back to CDWR at highly inflated prices through the EWA (Contra Costa Times 2009). It is worth noting that these SWP contractors are now VA participants. Given the clear evidence that the VA package would not produce adequate environmental benefits, this proposed use of hundreds of millions in public funds raises significant concerns, heightened by the closed nature of the VA negotiations – which have excluded all of the parties who are directly affected by the decline in ecosystem health. The Board should analyze and disclose how much public funding would go to VA participants.	
308	188	As a recent study of the Voluntary Agreements finds, “In sum, leading with Vas as a solution for balancing human and environmental needs for water in the Bay-Delta watershed—rather than first, or simultaneously, pursuing a regulatory pathway to achieve key biological goals—is a perilous strategy that risks continued environmental degradation and legal noncompliance” (CLEE 2024 at 7).	Please see the response to comment letter 217.
308	189	IV. CONCLUSION For the foregoing reasons, the Draft Staff Report, the proposed project, and the Voluntary Agreements, fail to meet the requirements applicable to them under state and federal law. The Board should reject these inadequate proposals and ensure that appropriate fish and wildlife and other beneficial uses are identified and their attainment defined, that science-based water quality objectives are set to reasonably protect all of those uses, and that a Program of Implementation containing sufficient information and requirements be prepared to ensure that water quality objectives are met. Specifically, in order to describe how it will reasonably protect fish and wildlife and other beneficial uses and achieve Bay-Delta Plan objectives, the Board must revise and recirculate the Draft Staff Report to include:	Please see the responses to comments 308-1 through 308-188.

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		1) a scientifically sound and enforceable Program of Implementation, 2) definitions of key terms in the narrative objectives such as viability, 3) numeric thresholds, targets and biocriteria consistent with the best available science, 4) adequate analysis of the effects of alternatives on fish and wildlife beneficial uses 5) a proposed project that requires nonflow measures, including alternative water supplies and habitat restoration actions 6) SacWam analysis that adheres to CVPIA and other legal requirements, 7) a stable project description, 8) the impacts of climate change, 9) protections for all fish species that are in catastrophic decline, and 10) all other components required to meet legal obligations under CEQA, the Porter-Cologne Act, the Clean Water Act, the public trust doctrine, Fish and Game Code section 5937 and the Delta Protection Act.	
308	190	Finally, the Board must revise and recirculate the Draft Staff Report without the legally and scientifically inadequate VA Alternative. Thank you for considering these comments. We look forward to working with you to remedy the deficiencies of the Draft Staff Report and proceed expeditiously toward the adoption of Bay-Delta Plan updates that protect and restore the Bay-Delta estuary's waters.	Please see Common Response 1.1, General Comments, for responses to comments that make general comments, do not raise specific environmental impacts of the project, or do not raise specific economic effects of the project.

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308	191	[ATT 36: Article titled State and Federal Fish Agencies Take Urgent Actions to Save Spring-run Chinook Salmon]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	192	[ATT 35: Document titled Survival of Endangered California Winter-Run Chinook Salmon in 2022]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	193	[ATT 34: Letter from National Marine Fisheries Service to Bureau of Reclamation dated January 20, 2023 Re: the estimated number of juvenile Sacramento River winter-run Chinook salmon (<i>Oncorhynchus tshawytscha</i>) from brood year (BY) 2022 expected to enter the Sacramento-San Joaquin Delta (Delta) during water year (WY) 2023]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	194	[ATT 40: Table titled Salmon Flow Literature for SWRCB Comments]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	195	[ATT 74: Letter from Natural Resources Defense Council et al. to State Water Resources Control Board dated March 16, 2017 Re: Comments on the Revised Draft Substitute Environmental Document for Phase 1 of the Update of the Bay-Delta Water Quality Control Plan]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	196	[ATT 32: Letter from Pacific Fishery Management Council to National Marine Fisheries Service, Bureau of Reclamation, and California State Water Resources Control Board dated September 12, 2022 Re: Sacramento River Temperature Targets]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	197	[ATT 78: Bureau of Reclamation Long Term Operation of the Central Valley Project - Cooperating Agencies Draft Environmental Impact Statement. Dated September 2023.]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	198	[ATT 38: Document titled 2020 Red Bluff Diversion Dam Rotary Trap Juvenile Anadromous Fish Abundance Estimates]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or

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			economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	199	[ATT 79: Letter from The Bay Institute et al. to State Water Resources Control Board dated April 18, 2013 Re: Corrected and Reformatted Version of March 29, 2013, Comments of TBI et al. regarding Draft SED on Changes To Bay-Delta WQCP San Joaquin River Flows and Southern Delta Water Quality]	Please see Common Response 1.1, General Comments, regarding comments on other projects.
308	200	[ATT 67: Letter from The Bay Institute et al. to State Water Resources Control Board dated November 9, 2017 Re: Comments on the Final Phase 2 Scientific Basis Report]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	201	[ATT 81: Letter from Tuolumne River Trust to San Francisco Public Utilities Commission dated July 11, 2022 Re: Item 6g on the July 12, 2022 SFPUC agenda – Water Enterprise and Finance Bureau Water Demand Projections]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	202	[ATT 83: Duplicate copy of ATT 38—Document titled 2020 Red Bluff Diversion Dam Rotary Trap Juvenile Anadromous Fish Abundance Estimates]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	203	[ATT 3: Document titled A Petition to the State of California Fish and Game Commission to List The California White Sturgeon (<i>Acipenser transmontanus</i>) as Threatened under the California Endangered Species Act (CESA)]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	204	[ATT 14: Tables titled Delta Smelt and Longfin Smelt - Daily Summary Table]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	205	[ATT 84: Excel workbook containing numerous spreadsheets, which detail observations and analyses of Winter-run Chinook Salmon adult carcasses, spawning, and juveniles]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or environmental effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.

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308	206	[ATT 82: Excel workbook containing eight spreadsheets, which detail river flow and diversion data relevant to the Sacramento-San Joaquin Delta and its watersheds]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	207	[ATT 80: Letter from San Francisco Public Utilities Commission to Commissioner Anson Moran et al. dated July 5, 2022 Re: Water Enterprise and Finance Bureau Water Demand Projections]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	208	[ATT 65: Document titled Final Restoration Plan for the Anadromous Fish Restoration Program]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	209	[ATT 56: Article titled Conservation Status of Imperiled North American Freshwater and Diadromous Fishes]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	210	[ATT 19: Article titled Seasonally variable relationships between surface water temperature and inflow in the upper San Francisco Estuary]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	211	[ATT 57: Article titled Population Dynamics and Evaluation of Management Scenarios for White Sturgeon in the Sacramento-San Joaquin River Basin]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	212	[ATT 53: Article titled 2016 Six-Year Acoustic Telemetry Steelhead Study: Statistical Methods and Results]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	213	[ATT 54: Article titled Outmigration survival of a threatened steelhead population through a tidal estuary]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1,

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			General Comments, for the approach to addressing attachments to comments.
308	214	[ATT 59: Document titled Staff Summary for October 11-12, 2023 White Sturgeon Emergency Regulation]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	215	[ATT 4: Document titled Fish Species of Special Concern in California]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	216	[ATT 58: Edited and annotated copy of PowerPoint titled White Sturgeon Recreational Fishery: Virtual Public Meeting]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	217a	[ATT 24: Document titled Part III Revisions to the DEIR]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	217b	[ATT 25: Article titled "Life History Conceptual Model and Sub-Models for Longfin Smelt, San Francisco Estuary Population." Authored by Jonathan Rosenfield. Dated May 2010.]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	218	[ATT 27: Letter from California Department of Fish and Wildlife to California Department of Water Resources dated March 31, 2020 Re: Incidental Take Permit for Long-Term Operation of the State Water Project in the Sacramento-San Joaquin Delta (2081-2019-066-00)]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	219	[ATT 85: Duplicate copy of ATT 3—Document titled A Petition to the State of California Fish and Game Commission to List The California White Sturgeon (<i>Acipenser transmontanus</i>) as Threatened under the California Endangered Species Act (CESA)]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.

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308	220	[ATT 86: Article titled Migration Patterns of Juvenile Winter-run-sized Chinook Salmon (<i>Oncorhynchus tshawytscha</i>) through the Sacramento-San Joaquin Delta]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	221	[ATT 50: Comments from Natural Resources Defense Council et al. to State Water Resources Control Board dated February 8, 2023 Re: Comment Letter – Draft Scientific Basis Report Supplement]	See Common Response 3.1, Fish Protection, on the 2026 Scientific Basis Report Supplement and Common Response 1.1, General Comments for comments on other projects.
308	222	[ATT 61: Articles from IEP Newsletter Volume 23, Number 2, Spring 2010]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	223	[ATT 37: Article titled Modeling composite effects of marine and freshwater processes on migratory species]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	224	[ATT 41: Article titled From drought to deluge: spatiotemporal variation in migration routing, survival, travel time and floodplain use of an endangered migratory fish]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	225	[ATT 17: Article titled I'm Not that Shallow - Different Zooplankton Abundance but Similar Community Composition Between Habitats in the San Francisco Estuary]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	226	[ATT 13: Article titled Factors Affecting Spatiotemporal Variation in Survival of Endangered Winter-Run Chinook Salmon Out-migrating from the Sacramento River]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	227	[ATT 46: Article titled Estimating spatial-temporal differences in Chinook salmon outmigration survival with habitat- and predation-related covariates]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1,

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			General Comments, for the approach to addressing attachments to comments.
308	228	[ATT 9: Memorandum Re: Preliminary analysis of current relationships between zooplankton abundance and freshwater outflow in the upper San Francisco Estuary]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	229	[ATT 10: PowerPoint titled Preliminary analysis of recent relationships between zooplankton densities and freshwater outflow in the upper San Francisco Estuary]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	230	[ATT 16: Article titled The Role of Tidal Marsh Restoration in the Fish Management in the San Francisco Estuary]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	231	[ATT 73: Article titled Freshwater flow to the San Francisco Bay-Delta estuary over nine decades (Part 1): Trend evaluation]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	232	[ATT 63: Document titled Sacramento-San Joaquin Delta Regional Ecosystem Restoration Implementation Plan Life History Conceptual Model White Sturgeon]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	233	[ATT 29: Article titled Effects of high temperatures on threatened estuarine fishes during periods of extreme drought]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	234	[ATT 87: Article titled Effects of freshwater flow and phytoplankton biomass on growth, reproduction, and spatial subsidies of the estuarine copepod <i>Pseudodiaptomus forbesi</i>]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.

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308	235	[ATT 8: Article titled Status, Trends, and Drivers of Harmful Algal Blooms Along the Freshwater-to-Marine Gradient in the San Francisco Bay-Delta System]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	236	[ATT 72: Article titled Long-term trends and causal factors associated with Microcystis abundance and toxicity in San Francisco Estuary and implications for climate change impacts]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	237	[ATT 71: Article titled The influence of environmental conditions on seasonal variation of Microcystis abundance and microcystins concentration in San Francisco Estuary]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	238	[ATT 68: Article titled Initial impacts of Microcystis aeruginosa blooms on the aquatic food web in the San Francisco Estuary]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	239	[ATT 11: Article titled Impact of extreme wet and dry years on the persistence of Microcystis harmful algal blooms in San Francisco Estuary]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	240	[ATT 26: Document titled Interdisciplinary Studies on Longfin Smelt in the San Francisco Estuary]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	241	[ATT 28: Article titled Newly discovered spawning and recruitment of threatened Longfin Smelt in restored and under-explored tidal wetlands]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	242	[ATT 23: Federal Register Proposed Rule by the U.S. DOI Fish and Wildlife Service titled Endangered and Threatened Wildlife and	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1,

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		Plants; Endangered Species Status for the San Francisco Bay-Delta Distinct Population Segment of the Longfin Smelt]	General Comments, for the approach to addressing attachments to comments.
308	243	[ATT 55: Article titled "Effects of High Water Temperature on Growth, Smoltification, and Predator Avoidance in Juvenile Sacramento River Chinook Salmon]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	244	[ATT 48: Article titled Phenomenological vs. biophysical models of thermal stress in aquatic eggs]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	245	[ATT 49: Article titled The biophysical basis of thermal tolerance in fish eggs]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	246	[ATT 30: Article titled Use of state-space population dynamics models in hypothesis testing: advantages over simple log-linear regressions for modeling survival, illustrated with application to longfin smelt (<i>Spirinchus thaleichthys</i>)]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	247	[ATT 77: Memorandum Re: Update on California Water Issues]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	248	[ATT 44: Article in Canadian Journal of Fisheries and Aquatic Sciences titled "Decoupling outmigration from marine survival indicates outsized influence of streamflow on cohort success for California's Chinook salmon populations." Authored by Cyril Michel. Accepted October 2018 and published 2019.]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	249	[ATT 21: Article titled Discharge Mediated Temperature Management in a Large, Regulated River, With Implications for Management of Endangered Fish]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.

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308	250	[ATT 88: Article titled Limitations of active removal to manage predatory fish populations]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	251	[ATT 89: Article titled Chinook salmon outmigration survival in wet and dry years in California's Sacramento River]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	252	[ATT 42: Article titled Nonlinear survival of imperiled fish informs managed flows in a highly modified river]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	253	[ATT 90: Article titled Monster Fish: Lessons for Sturgeon Management in California]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	254	[ATT 1: Article titled Fish Health and Diversity: Justifying Flows for a California Stream]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	255	[ATT 2: Report titled State of the Salmonids: Status of California's Emblematic Fishes 2017]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	256	[ATT 76: Article titled Warm, dry winters truncate timing and size distribution of seaward-migrating salmon across a large, regulated watershed]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	257a	[ATT 43: Article titled Science for integrative management of a diadromous fish stock: interdependencies of fisheries, flow, and habitat restoration]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1,

Letter No.	Comment No.	Comment	Response
			General Comments, for the approach to addressing attachments to comments.
308	257b	[ATT 44: Article in Canadian Journal of Fisheries and Aquatic Sciences titled "Decoupling outmigration from marine survival indicates outsized influence of streamflow on cohort success for California's Chinook salmon populations." Authored by Cyril Michel. Accepted October 2018 and published 2019.]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	258	[ATT 51: Article titled Temperature effects on juvenile anadromous salmonids in California's central valley: what don't we know]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	259	[ATT 52: Article titled Effects of Temperature on the Growth, Food Consumption, and Thermal Tolerance of Age-0 Nimbus-Strain Steelhead]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	260	[ATT 66: Document titled Southern Distinct Population Segment of North American Green Sturgeon (<i>Acipenser medirostris</i>) 5-Year Review: Summary and Evaluation]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	261	[ATT 20: Article titled Coldwater fish in a warm water world: Implications for predation of salmon smolts during estuary transit]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	262	[ATT 91: Article titled Outmigration survival of wild Chinook salmon smolts through the Sacramento River during historic drought and high water conditions]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	263	[ATT 92: Duplicate copy of ATT 74—Letter from Natural Resources Defense Council et al. to State Water Resources Control Board dated March 16, 2017 Re: Comments on the Revised Draft Substitute Environmental Document for Phase 1 of the Update of the Bay-Delta Water Quality Control Plan]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.

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308	264	[ATT 93: Duplicate copy of ATT 50—Comments from Natural Resources Defense Council et al. to State Water Resources Control Board dated February 8, 2023 Re: Comment Letter – Draft Scientific Basis Report Supplement]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	265	[ATT 75: Article titled In bad waters: Water year classification in nonstationary climates]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	266	[ATT 64: Article titled White Sturgeon Spawning and Rearing Habitat in the Lower Columbia River]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	267	[ATT 69: Article titled Blurred lines: Multiple freshwater and marine algal toxins at the land-sea interface of San Francisco Bay, California-NC-ND license]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	268	[ATT 45: Article titled Flow-mediated effects on travel time, routing, and survival of juvenile Chinook salmon in a spatially complex, tidally forced river delta]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	269	[ATT 70: Article titled Toxic Cyanobacteria: A Growing Threat to Water and Air Quality]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	270	[ATT 12: Article titled Improving inference for nonlinear state-space models of animal population dynamics given biased sequential life stage data]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	271	[ATT 47: Document titled Survival, Travel Time, and Utilization of Yolo Bypass, California, by Outmigrating Acoustic-Tagged Late-Fall Chinook Salmon]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1,

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			General Comments, for the approach to addressing attachments to comments.
308	272	[ATT 62: Article titled Clarifying Effects of Environmental Protections on Freshwater Flows to—and Water Exports from—the San Francisco Bay Estuary]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	273	[ATT 25: Article titled "Life History Conceptual Model and Sub-Models for Longfin Smelt, San Francisco Estuary Population." Authored by Jonathan Rosenfield. Dated May 2010.]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	274	[ATT 60: Article titled White sturgeon: is an ancient survivor facing extinction in California?]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	275	[ATT 39: Document titled Conservation Planning Foundation for Restoring Chinook Salmon (<i>Oncorhynchus Tshawytscha</i>) and <i>O. mykiss</i> in the Stanislaus River]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	276	[ATT 6: Memorandum titled Viability Assessment for Pacific Salmon and Steelhead Listed under the Endangered Species Act: Southwest]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	277	[ATT 94: Article titled Unnatural selection of salmon life histories in a modified riverscape]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	278	[ATT 22: Document titled Special Status Assessment for the San Francisco Bay-Delta Distinct Population Segment of the Longfin Smelt]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.

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308	279	[ATT 95: Duplicate copy of ATT 38—Document titled 2020 Red Bluff Diversion Dam Rotary Trap Juvenile Anadromous Fish Abundance Estimates]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	280	[ATT 18: Article titled What Determines Water Temperature Dynamics in the San Francisco Bay-Delta System?]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	281	[ATT 33: Article titled Fishery collapse, recovery, and the cryptic decline of wild salmon on a major California river]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	282	[ATT 7: Article titled Synergies between climate anomalies and hydrological modifications facilitate estuarine biotic invasions]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	283	[ATT 5: Document titled Water Year 2021 Winter-Run Chinook Temperature-Dependent Mortality Estimate]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	284	[ATT 15: Article titled "Diel Behaviors of Zooplankton Interact with Tidal Patterns to Drive Spatial Subsidies in the Northern San Francisco Estuary]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	285	[ATT 31: Article titled "Historical Abundance and Decline of Chinook Salmon in the Central Valley Region of California]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1, General Comments, for the approach to addressing attachments to comments.
308	286	[ATT 96: Article titled Response of juvenile Chinook salmon to managed flow: lessons learned from a population at the southern extent of their range in North America]	This attachment was included with the comment letter. The attachment does not raise a specific environmental impact or economic effect of the project. Refer to Common Response 1.1,

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			General Comments, for the approach to addressing attachments to comments.