September 9, 2024

Mr. Karl Stock
Bureau of Reclamation, Bay-Delta Office
801 I Street, Suite 140
Sacramento, CA 95814–2536

Sent via email to sha-MPR-BDO@usbr.gov

RE: 2024 DEIS Regarding the Reinitiation of Consultation on Long-Term Operations of the Central Valley Project and State Water Project

Dear Mr. Stock:

This letter is submitted as the comments of the California Sportfishing Protection Alliance, California Water Impact Network, Friends of the River, Golden State Salmon Association, Institute for Fisheries Resources, Pacific Coast Federation of Fishermen's Associations, Restore the Delta, San Francisco Baykeeper, Save California Salmon, and Water Climate Trust regarding the 2024 Draft Environmental Impact Statement ("DEIS") regarding the reinitiation of consultation on long-term operations of the Central Valley Project ("CVP") and State Water Project ("SWP"). These comments address both the Bureau of Reclamation's ("BOR" or "Reclamation") compliance with the National Environmental Policy Act ("NEPA") and compliance with the Endangered Species Act ("ESA"). These comments are being transmitted to the National Marine Fisheries Service ("NMFS") and U.S. Fish and Wildlife Service ("USFWS") and should be included in all three agencies' administrative records.

In summary:

- The DEIS Purpose and Need statement must be modified to:
    - make clear that meeting water supply contract commitments is a secondary project purpose after compliance with the ESA,
    - emphasize the need to strengthen ESA protections, and
    - ensure that alternatives that reduce water diversions or deliveries are not precluded by definition.
- Reclamation's use of the 2020 Record of Decision as the environmental baseline is misleading and inappropriate.
- Apart from Alternative 3, all the DEIS alternatives, including the Proposed Action, are as bad as or worse than the No Action Alternative ("NAA"), and would jeopardize the continued existence of listed species, in violation of the Endangered Species Act ("ESA"). This is according to Reclamation's own analysis in the DEIS.[1]
- Reclamation's own analysis in the DEIS does not appear to have informed the agency's findings or selection of the preferred alternative. Indeed, the quantitative results of the analyses are not reflected in the main body of the DEIS. Instead, the results of the analyses – which clearly show that all the alternatives except Alternative 3 will result in continued decline and extinction of listed species – need to be disclosed in a clear and accessible form.
- The potential adverse impacts of the Proposed Action and other alternatives (except Alternative 3) are actually likely to be far worse than indicated in the DEIS. There are serious problems with the DEIS's analysis, including, but not limited to:
    - a deeply flawed and unreliable analysis of temperature effects on juvenile Chinook Salmon;
    - a failure to acknowledge or incorporate into its modeling analysis the best available science from recent studies on the effect of river flows on survival of different runs of Chinook Salmon upstream, into and through the Delta;
    - a failure to consider both the current unsustainable levels of entrainment-related mortality of larval and juvenile Longfin Smelt and the increase in mortality for these life stages expected under the Proposed Action; and
    - a failure to consider the current status of the San Francisco Bay estuary's White Sturgeon population or to properly analyze the Proposed Action's effect on this species and the threatened Green Sturgeon DPS.
- The Voluntary Agreements are not reasonably certain to occur, and therefore the VAs should not be included as a component of the alternatives in the DEIS. In addition, the purported magnitude and benefits of VA-associated flows are incorrectly described, and, even if implemented, the VAs would be likely to be short-term in duration.

[1] Given the short time window to review this extensive document and engage in the larger reconsultation process, we have attached, and incorporate by reference, more detailed comments previously submitted to the Bureau on the Proposed Action. *See* Attachments 1 and 2.

- The DEIS also overlooks the fact that the US Environmental Protection Agency is investigating a Title 6 complaint against the State Water Resources Control Board over its improper consideration of the VAs in the Bay-Delta Water Quality Control Plan update.
- The DEIS's treatment of drought management relies in large part on a voluntary, largely qualitative Drought Toolkit without current authorization or funding for its implementation. Because this Toolkit is not reasonably certain to occur, the DEIS must be revised to identify specific actions that Reclamation will commit to mitigate the highly foreseeable and largely avoidable conditions of drought and avoid the reliance on temporary urgency changes that have characterized drought management in the past fifteen years.
- Although the DEIS purports to address the long-term operations of both the CVP and the SWP, the DEIS's Proposed Action does not match up with the Proposed Project in the California Department of Water Resources 2024 Draft Environmental Impact Report for the SWP. Both documents and their preferred alternatives are deeply flawed and must be revised to comply with state and federal law.
- Alternative 3 is the only alternative that adequately protects endangered species as required by law and should have been identified as the Preferred Alternative. It is also the only alternative that significantly reduces greenhouse gas emissions of the CVP, and therefore supports meeting state and federal climate policy targets. The DEIS is also deficient in failing to provide an adequate range of alternatives, i.e., one that includes more than one alternative that actually achieves the necessary level of protection for endangered species. In contrast, Alternatives 1 and 4 are properly rejected as noncompliant with ESA requirements.
- The DEIS improperly assumes that groundwater impacts of implementing Alternative 3 will be large and unmitigated, rather than understanding that implementation of and compliance with the Sustainable Groundwater Management Act will prohibit such impacts. The DEIS also overlooks the immense water savings potential of water conservation measures to offset water supply impacts.
- The DEIS fails to include an adequate historical analysis of Indian Tribal Assets and cultural resources, and the Proposed Action fails to mitigate impacts to water quality of federally reserved rights or to fishery resources protected by tribally reserved fishing rights, and to take necessary actions to preserve and protect cultural resources.
- The DEIS fails to adequately analyze or mitigate for the impacts of the Proposed Action on environmental justice communities in the Delta, including increased exposure to bioaccumulating toxins in subsistence fisheries and loss of access and increased economic costs associated with the increased occurrence of Harmful Algal Blooms and other water quality impacts. The DEIS also fails to address Justice 40 criteria.
- The DEIS violates NEPA both by including the proposed Sites Reservoir and Delta Conveyance Project at the programmatic level, even though these projects are not

reasonably certain to occur, and by failing to include them in the DEIR's analysis of potential cumulative impacts.

- The DEIS improperly excludes consideration of how impacts to the Trinity River system should be mitigated.

These findings are discussed in detail below, as well as numerous other concerns we have identified regarding the adequacy of the DEIS.

In 2021, the Biden Administration appropriately reinitiated consultation in order to **significantly revise and replace** the Trump Administration's highly flawed and insufficiently protective 2019 biological opinions ("2019 BOs"). The 2019 BOs were subject to political interference and scientific misconduct, and violated federal law.

In addition, we note that reinitiation of consultation was required as a matter of law because operations of the CVP and SWP have repeatedly exceeded the incidental take limits set in those biological opinions over the past several years. These exceedances include the incidental take limit in the 2019 NMFS BO regarding egg-to-fry survival of winter-run Chinook salmon. Most recently, the CVP and SWP exceeded the incidental take limits in the 2019 NMFS BO for salvage of protected steelhead and winter-run Chinook Salmon. (50 C.F.R. § 402.16; *see also* Defenders et al. Letter to BOR, DWR, USFWS, CDFW and NMFS on ITL exceedance March 2024, Attachment 5).

Given the alarming declines in the abundance of spring-run Chinook salmon, the complete closure of the salmon fishery in 2023 and 2024 due to low abundance of fall-run Chinook salmon, the Service's listing of Longfin Smelt under the Endangered Species Act (ESA) and its finding that existing regulatory mechanisms are inadequate to prevent extinction of this species[2], it is clear that significant changes in water project operations are necessary and appropriate to comply with State and Federal law.

Unfortunately, review of the DEIS shows that those significant revisions have not occurred. As we go into more detail below, Reclamation must revise and recirculate the DEIS.

I. The DEIS Purpose and Need Statement Must be Revised.

We appreciate the fact that Reclamation has not included the unlawful Purpose and Need statement that was used in the prior consultation. Regrettably, the Purpose and Need statement still fails to comply with federal law and must be revised.

[2] *See Endangered and Threatened Wildlife and Plants; Endangered Species Status for the San Francisco Bay-Delta Distinct Population segment of the Longfin Smelt*, 89 Fed. Reg. 61209 (July 30, 2024). Available online: https://www.regulations.gov/ by searching for Docket No. FWS–R8–ES–2022–0082; *see also* 50 CFR 17.11(h).

First, as we noted in our Notice of Preparation ("NOP") comments, we appreciate that Reclamation's proposed Purpose and Need statement does not include the unlawful directive to "maximize water deliveries" that was included in the Trump Administration's unlawful section 7 consultation. The prior consultation's Purpose and Need was contrary to state and federal law, and that project purpose was a primary reason why threatened and endangered fish species are facing potential extinction in recent years, as water project operators maximized water deliveries instead of preserving water in storage to meet water supply and environmental obligations if the next year was dry. Under the 1992 Central Valley Project Improvement Act ("CVPIA"), protecting fish and wildlife. This program specifically has a goal to double the natural production of anadromous fishes (AFRP 2001), including sturgeon, smelt, steelhead, and all four runs of Central Valley Chinook Salmon, which are the backbone of the State's salmon fishery that supports thousands of fishing jobs in California, Oregon, and parts of Washington. We appreciate that Reclamation specifically references CVPIA in the Purpose and Need statement. (DEIS, Chapter 2, p. 2-1).[3]

However, the DEIS's Purpose and Need statement still retains the description that one of the "purposes" is operating the CVP and SWP in a manner that "Satisfies Reclamation contractual obligations and agreements." (DEIS, Chapter 2, p. 2-1). The CVP and SWP's obligations to fulfill the terms and conditions of water supply contracts are subservient to Reclamation's obligation to ensure that the coordinated operations of the CVP and SWP comply with the ESA. The Purpose and Need statement must be revised to make clear that meeting water supply contracts is a secondary project purpose after compliance with the ESA[4].

In addition, we strongly encourage Reclamation to revise the Purpose and Need statement to more explicitly recognize that protections for ESA-listed species must be *strengthened* to avoid jeopardizing the continued existence and recovery of the species.

[3] However, we are still concerned about the DEIS's larger treatment of CVPIA legal obligations. The Proposed Action is still expected to reduce congressionally mandated CVPIA Level 2 water deliveries to wildlife refuges, yet there is no analysis for how those reductions will impact listed species on those wetland refuges (e.g., Giant Garter Snake), no indication for how CVPIA Level 4 deliveries will be treated under the Proposed Action and there is no listed mitigation for those impacts or an explanation for how Reclamation still intends to satisfy its legal obligations under CVPIA. We urge Reclamation to consider clarifying these issues in the revised and recirculated DEIS.

[3] The legality of the Trump Administration's 2019 Salmon BiOp was also challenged in the U.S. District Court of California, Eastern District in two parallel cases: *PCFFA*, *et al*. *vs. Raimondo*, *et al*. (No. 1:20-cv-00431) in which several of the signatories to these comments participated, and the *California Natural Resources Agency, et al. vs. Raimondo, et al.* (No. 1:20-cv-00426), two cases which led directly to the Biden Administration calling for ESA Sec. 7 reconsultation to which this DEIS is related.

[4] The legality of the Trump Administration's 2019 Salmon BiOp was also challenged in the U.S. District Court of California, Eastern District in two parallel cases: PCFFA, *et al*. vs. Raimondo, *et al*. (No. 1:20-cv-00431) in which several of the signatories to these comments participated, and the California Natural Resources Agency, et al. vs. Raimondo, *et al.* (No. 1:20-cv-00426), two cases which led directly to the Biden Administration calling for ESA Sec. 7 reconsultation to which this DEIS is related.

The best available science continues to demonstrate that substantially greater protections for affected endangered species are required. Necessary protections include actions that will likely reduce water diversions, as the Secretary of the Interior concluded in 2016 (US Department of Interior 2016), actions which were not included as part of the prior, unlawful consultation. The State of California, as well as the Plaintiffs in *PCFFA v. Raimondo* (including the Court testimony provided by Dr. Jonathan Rosenfield in 2020 and 2021), have demonstrated that significantly improved protections beyond those included in the 2020 Record of Decision are necessary to ensure that the operations of the CVP and SWP do not jeopardize listed species and violate state and federal law.

Finally, we remind Reclamation that the Purpose and Need statement cannot be interpreted to exclude consideration of alternatives that would reduce water deliveries, water allocations and/or water diversions by the CVP and SWP and its contractors. Coordinated operations of the CVP and SWP that reduce water diversions are consistent with Reclamation's legal obligations, and defining the Purpose and Need so narrowly as to exclude these reasonable alternatives is unlawful. *See, e.g., Environmental Protection Information Center v. U.S. Forest Service*, 234 Fed. Appx. 440 (9th Cir. 2007). As discussed below, adverse impacts on water contractors from rebalancing Project water allocations can be minimized or mitigated in a variety of ways, many of which signatories to these comments could support. Extinctions, on the other hand, are permanent and cannot be mitigated.

II. The DEIS Applies an Inappropriate Environmental Baseline.

The DEIS improperly identifies the No Action Alternative as continued operations pursuant to the 2020 Record of Decision. (DEIS, Executive Summary, p. 0-2; *see also* Appendix E). However, Reclamation is not implementing the operations exactly as authorized in the Record of Decision; rather, the coordinated operations of the CVP and SWP are currently governed by the Interim Operations Plan approved by the federal court, which differs from the operations in the Record of Decision in key ways.[5] Reclamation has operated under an Interim Operations Plan since 2022. Because the 2020 Record of Decision is not the current management direction, it is inappropriate and misleading to use it as the environmental baseline. *See, e.g.*, Council on Environmental Quality, Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, 46 Fed. Reg. 18026 (March 23, 1981) ("In these cases 'no action' is 'no change' from current management direction or level of management intensity."); *accord*, 43 C.F.R. §46.30 (definition of No Action Alternative).

Moreover, coordinated operations of the CVP and SWP have violated and are continuing to violate the terms of the 2019 Biological Opinions and Record of Decision. These violations include: (1) exceeding the incidental take statement for Central Valley Steelhead on the

[5] In addition, the SWP's operations are also governed by its CESA incidental take permit, which is not explicitly accounted for under this proposed No Action Alternative.

American River in 2021 and 2022; (2) exceeding the incidental take statement for winter-run Chinook Salmon in 2022, 2023 and 2024; (3) exceeding the incidental take statement for Central Valley Steelhead at the Project pumps in 2024; and (4) violating D-1641 water quality objectives that were part of the proposed action in 2021, 2022, and 2023 in a manner that causes additional impacts to listed species that were not considered in the 2019 biological opinions or Record of Decision. (50 C.F.R. § 402.16; *see also* Defenders et al. Letter to BOR, DWR, USFWS, CDFW and NMFS on ITL exceedance March 2024, Attachment 5).

Continued operations under the 2020 Record of Decision would jeopardize listed species in violation of the ESA.[6] As a result, and because BOR is not currently implementing the Record of Decision, **using the coordinated operations of the CVP and SWP pursuant to the 2020 Record of Decision as the environmental baseline would subvert the purposes of NEPA and would be plainly misleading to the public and decisionmakers**.

III. The DEIS's Proposed Action is Legally Deficient.

The Proposed Action, otherwise referred to hereinafter as the Preferred Alternative or Alternative 2, is legally deficient under NEPA as well as the federal and state ESAs. **According to the DEIS's own analysis, the Proposed Action would jeopardize the continued existence of listed species, in violation of the ESA and NEPA**. Indeed, this is true of all the alternatives except Alternative 3. In a recent rule, the Council on Environmental Quality opined,

> "[NEPA] establishes a framework for agencies to ground decisions in science, *by requiring professional and scientific integrity, and recognizes that the public may have important ideas and information on how Federal actions can occur in a manner that reduces potential harms* and enhances ecological, social, and economic well-being. *See, e.g.*, 42 U.S.C. 4332." (*See* Council on Environmental Quality, National Environmental Policy Act Implementing Regulations Revisions Phase 2, 89 Fed. Reg. 35442 (July 1, 2024) (emphasis added)).

The DEIS at issue here does not meet the intent of that rule. The potential adverse impacts from the Proposed Action are even worse than predicted, given flaws in the DEIS's analysis of impacts to listed species.

The entire analysis of effects of temperature on juvenile Chinook Salmon is deeply flawed and unreliable. The DEIS also overlooks the best available science from recent studies on the effect of river flows on survival of different runs of Chinook Salmon upstream, into and through the

[6] Plaintiffs in *PCFFA v. Raimondo* demonstrated that water project operations under the Interim Operations Plan have and would violate certain aspects of the incidental take statement in the 2019 biological opinions and would jeopardize listed species.

Delta, and fails to use that information to update its modeling analyses. In addition, the DEIS fails to acknowledge that its own modeling shows winter-run Chinook Salmon juvenile production would decrease relative to the No Action alternative, and temperature impacts to migrating adults would increase under the Proposed Action. The DEIS fails to acknowledge the beneficial effects of enhancing fall outflows for Delta Smelt or to acknowledge the findings of its own Delta Smelt Lifecycle Model analysis that Delta Smelt will go extinct under the Proposed Action. The DEIS likewise fails to disclose what its own analysis of Longfin Smelt clearly shows: that the species will go extinct under the Proposed Action (as well as the alternatives other than Alternative 3) and that in contrast Alternative 3 is highly beneficial for the species. Furthermore, the DEIS fails to consider both the current unsustainable levels of entrainment-related mortality of larval and juvenile Longfin Smelt and the increase in mortality for these life stages expected under the Proposed Action. Additionally, the DEIS fails to adequately consider the current status of White Sturgeon or the Proposed Action's effect on the species, or to use appropriate methodology to address the non-linear flow-recruitment relationship for this species. Similarly, the DEIS fails to adequately consider expected negative impacts to threatened Green Sturgeon under the Proposed Action.

A. The DEIS's Proposed Action has Unreasonable Impacts to Listed Species.

The DEIS fails to apply the best available science to analysis of impacts to endangered species and other biological outcomes. Its interpretation of modeling results fails to disclose the significance of impacts to listed species. To the extent that the analyses adequately compare the NAA with alternatives, the DEIS demonstrates that Alternative 3 – the modified natural hydrograph – performs far better than the Proposed Action (also known as Alternative 2) and its variants. Furthermore, the analyses reveal that incorporating the Voluntary Agreements (VAs) into Alternative 2 does little or nothing to improve protections for endangered species, and in some cases the VAs would exacerbate negative outcomes. Indeed, **several analyses reveal that the Proposed Action/Alternative 2 variants are worse for listed species than the NAA. Thus, operations proposed under the Proposed Action are not consistent with NEPA or the federal or state Endangered Species Acts and cannot be the preferred alternative.**

The DEIS fails to adequately describe or disclose the context for the proposed changes in CVP operations and revision of the Biological Opinions, which violates one of the purposes of a DEIS under NEPA. (40 C.F.R. §§ 1502.1 (b)-(c); *see also Columbia Basin Land Protection v. Schlesinger,* 643 F.2d 585, 594 (9th Cir. 1981) (A DEIS must ensure "full disclosure of the environmental consequences of a project.")) Fish and wildlife populations of San Francisco Bay and its watershed are experiencing an ecological crisis that has led to listing of six native fish species under state and/or federal Endangered Species Acts (SWRCB 2010, 2017, 2018; CDFW

2010).[7] Declining production of Central Valley Chinook Salmon has led to closure of California's ocean fishery for the past two years and severe constraints on Tribal fisheries, and has also contributed to food shortages for federally listed Southern Resident Killer Whales in the Pacific Ocean. The U.S. Environmental Protection Agency ("EPA") recently stated the problem succinctly:

> "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. …The Bay-Delta and its watersheds have also experienced increased frequency of harmful algal blooms (HABs) affecting aquatic life and human health. … EPA reiterates that swift action is needed to address the imperiled state of the Delta and the species, communities, and economies that depend on this ecosystem for survival." USEPA 2024 enclosure at 1 and 2 (Pages 4-5 of the PDF).

The conservation status of these imperiled species continues to deteriorate. For example, in its recent evaluation of endangered winter-run Chinook Salmon, NOAA-Fisheries' Southwest Fisheries Science Center stated:

> "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 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).

Longfin Smelt were recently listed as "endangered" by the U.S. Fish and Wildlife Service (USFWS 2024a). Moreover, the State of California recently declared California White Sturgeon as a candidate for listing under the California ESA, listing as threatened (CDFW 2024). Candidate species receive full protection under CESA immediate upon listing, making White Sturgeon the seventh native fish species protected under state and/or federal ESAs.

It is well-understood that water management, including particularly operations of the CVP and SWP, is a principal driver in the demise of native fish and wildlife species and water quality in the Bay-Delta estuary and its Central Valley watershed (SWRCB 2010, 2017, 2018; CDFW 2010). Again, the U.S. EPA is clear on this point, stating:

[7] In June 2024, the California Fish and Game Commission made California White Sturgeon, whose only known spawning population is in the San Francisco Bay watershed, a "candidate" for California endangered species act listing as threatened. Candidate species receive full protection under the California Endangered Species Act (CESA), making White Sturgeon the seventh native fish species protected under state and/or federal ESAs.

> "[Several] 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. …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. … 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)." USEPA 2024 enclosure at 1 and 2 (Pages 4-5 of the PDF).

Furthermore, it is clear that existing regulations are not adequate to halt the decline of native species and water quality. For example, USFWS recently concluded that listing of Longfin Smelt was necessary because:

> "Despite efforts such as those identified above [including existing requirements for the protection of other state and federal endangered species], the current condition of the estuary and continued threats facing the estuary 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." (USFWS 2024a).

Specifically, the 2019 Biological Opinions are inadequate to protect the endangered species from further harm from combined operations of the SWP and CVP. Indeed, by its own terms the NMFS 2019 Biological Opinions has failed to adequately protect endangered species[8] For example, in 2022, Reclamation exceeded even the excessively high incidental take limit of the 2019 NMFS BO regarding winter-run Chinook Salmon egg to fry survival, which is only triggered after three years in a row of exceedingly low egg to fry survival. Most recently in 2024, the incidental take limits for salvage were exceeded for both winter-run Chinook Salmon and Central Valley Steelhead. (50 C.F.R. § 402.16; *see also* Defenders et al. Letter to BOR, DWR, USFWS, CDFW and NMFS on ITL exceedance March 2024, Attachment 5).

The DEIS fails to transparently disclose this crucial context and thus denies decision makers and the public information needed to evaluate proposed changes to CVP operations and alternatives. *See* 40 C.F.R. § 1502.14 ("consider a reasonable range of alternatives that will foster *informed decision making*") (emphasis added). Analyses that indicate "no change" from existing conditions do not necessarily indicate compliance with federal or state ESA requirements.

[8] This failure comes despite court-ordered changes to the Biological Opinions that were intended to improve protections.

Because of the dire plight of the ESA-listed species, operational proposals that do not significantly improve status quo conditions are likely to lead to extinction and are thus inconsistent with state and federal Endangered Species Acts.

Reclamation's Proposed Action would jeopardize the continued existence of listed species, in violation of state and federal ESA requirements. The baseline for the Proposed Action is measurably worse for imperiled fish species than the conditions that preceded the 2019 Biological Opinion (i.e., the 2008/2009 Biological Opinions) and those conditions were known to be inadequate to protect the Bay estuary and watershed's endangered fish species (*See* US Department of Interior 2016). Similarly, SWP operations authorized under the state's 2020 CESA incidental Take Permit are less protective than those that preceded that update. These project impacts are not adequately mitigated. As described below, combined CVP/SWP operations under the Proposed Action would exacerbate the risk of extinction for six native Bay-Delta fish species and one marine mammal that are protected under the ESA compared to baseline conditions that are leading to extinction. As a result, the Proposed Action is wholly inadequate for use by the USFWS and NMFS in their consideration of incidental take permits under the ESA.[9]

Comments on the analyses for different species, their scientific basis, and the adequacy of the interpretation in the DEIS are below.

1. Chinook Salmon.

The DEIS frequently fails to apply the best available science to analysis of impacts of the Proposed Action to Chinook Salmon in general, and the listed winter-run and spring-run in particular. The interpretation of modeling results fails to disclose the significance of impacts to the endangered species or fisheries. To the extent that the analyses adequately compare the NAA with alternatives, the DEIS demonstrates that Alternative 3 performs better than all other alternatives, including the Proposed Action (Alternative 2b and its variants). Furthermore, the analyses reveal that incorporating the Voluntary Agreements (VAs) into Alternative 2 does little or nothing to improve protections for winter-run Chinook Salmon or spring-run Chinook salmon, and in some cases the VAs would exacerbate negative outcomes that are driving these ESA-listed species to extinction.

Several of the DEIS's analyses clearly indicate that the Proposed Action will continue the trend towards extinction for listed salmonids or even exacerbate their decline. For example, the

[9] We would also like to highlight that despite NMFS and USFWS agreeing on the Proposed Action as the "coordinated" alternative to base their Biological Opinions on, both NMFS and USFWS have used different versions of the Proposed Action in each of their incomplete, draft Opinions as of September 9, 2024 and the BOR has subsequently released a third version of the Proposed Action "Alternative 2B" in the DEIS at issue here. Therefore, there are three versions of the proposed, supposedly coordinated, operations to be reviewed for environmental compliance both under NEPA and the state and federal ESAs.

"CVPIA SIT winter-run life-cycle model" (DEIS Appendix F, Modeling Attachment F, at 2) predicts that Alternative 2 variants will result in population growth rates that are as low or lower than the NAA in most cases. (DEIS, Table F.2-9). Addition of the VAs to Alternative 2 leads to the worst population declines (Table F.2-10). Alternative 3 is the only set of operational criteria expected to produce population growth over the model's 19-year study period. (DEIS, Table F.2-10). In addition, the DEIS's Oncorhynchus Bayesian Analysis (OBAN) model finds that all Alternative 2 variants and the NAA have a high probability of extinction for winter-run Chinook Salmon. As the DEIS appendix reports[10]:

> "Under all Alternative 2 components and the NAA, median abundances dropped to below the quasi-extinction threshold within 10 years and to a value of less than 1.0 within 14 years. Median abundance was less than 9.0 for the remainder of the time series across all Alternative 2 components and the NAA. The pattern in abundance across components was due to low levels of egg to fry survival and delta survival throughout the model. In all components the median egg to fry survival was less than the median historical estimated egg to fry survival (median = 0.212, 95% Credible Interval (0.083, 0.501)) and the median delta survival (median = 1.23 x 10-2, 95% Credible Interval 5.60 x 10-3, 3.39 x 10-2)) . The historical estimated survival rates were estimated from escapements in 1967 – 2011, which was a period of winter-run Chinook population decline. Thus, median survival rates that are below the historical values would result in modeled abundance declines over the 98-year time series." (DEIS, Appendix F, Modeling Attachment F.6 Oncorhynchus Bayesian Analysis Model at F.6-21).

Similarly, the DEIS's modeling of spring-run Chinook Salmon population dynamics shows that Alternative 2 will result in the same mean population growth rate as the NAA (Appendix F, Modeling Attachment F.3 Tables F.3-5 and F.3-6). The status quo is not a good outcome for spring-run Chinook Salmon as this unique population is severely imperiled and its abundance and productivity continue to decline precipitously under current operations. Referring to spring-run Chinook Salmon, the NOAA-Fisheries Regional Administrator was recently quoted as saying: "We are running out of options. We want this species to thrive in the wild, but right now we are worried about losing them." (CDFW 2023a). Furthermore, the DEIS fails to disclose that spring-run Chinook Salmon viability is now even further impaired by catastrophic wildfires that burned through their few remaining watersheds in 2024; the destruction of forests threatens to degrade habitats used for holding, spawning, incubation, and early rearing (see, for instance, https://www.latimes.com/environment/story/2024-08-06/park-fire-threatens-critical-california-salmon-habitat#:~:text=California's%20spring%2Drun%20Chinook%20salmon,that%20provide%20criti

[10] Reference to OBAN (or other models) does not indicate that we believe the model represents the best available science. Here the reference simply indicates that this model provides no evidence that the Proposed Action is likely to prevent further jeopardy to endangered species or that it is a meaningful improvement over the NAA.

cal%20spawning%20habitat). It is in this context that the DEIS must interpret its modeling results; they reveal that spring-run Chinook Salmon will continue to decline under the Proposed Action as they are doing under the unacceptable status quo.

Below we critique and interpret other analyses in the DEIS that deal with specific stressors and salmonid life-stages. Collectively, these results reinforce the finding of the life cycle modeling – operations under the Proposed Action will produce biological outcomes for listed salmonids that are worse or only marginally better than the NAA.

Temperature Impacts

The DEIS (Appendix AB-L Attachment L.1 Table L.1-1 at L-3)) and BA (Table 5-1 at 5-4) assume temperature thresholds for Chinook Salmon that are incorrect according to the best available science. [11] In addition, the DEIS fails to disclose the time-step for its temperature metrics and modeled results (*e.g.,* whether they represent daily averages, daily maxima, multi-day averages, or multi-day averages of maximum temperatures). The absolute effect of the results in the DEIS are difficult to interpret without such specifics.

With respect to egg incubation, the best available science reveals that temperature dependent egg mortality (TDM) increases rapidly at daily average temperatures above 53.5ºF (Martin et al. 2016, 2020). The Martin studies demonstrate this temperature threshold using field data, laboratory studies, and computer models. They collectively and convincingly explain (a) the mechanisms driving TDM in winter-run Chinook Salmon; (b) why earlier, laboratory studies consistently overestimated the upper temperature threshold for Central Valley Chinook Salmon eggs, and (c) the temperature tolerances for teleost fishes in general. Furthermore, Martin et al.'s results are consistent with recent literature reviews specific to Chinook Salmon in the Central Valley (Myrick and Cech 2004; SEP 2019) and well-documented syntheses of range-wide temperature tolerances (US EPA 2003). Thus, there is no justification for the assumption that temperatures above 53.5ºF are suitable for Chinook Salmon or for relying on old, laboratory-based studies (*e.g.,* Slater 1963) as a basis for temperature sensitivity of Chinook Salmon eggs. Indeed, SEP (2019, Table 36 at 137) identifies daily average temperatures 53.6°F to 55.9°F as "stressful" and temperatures greater than or equal to 56ºF as "detrimental" to incubating Chinook Salmon eggs.[12] The optimal temperature range for Steelhead eggs is even lower than the upper end of the optimal range for Chinook Salmon (Myrick and Cech 2004; SEP 2019).

Similarly, the DEIS and BA assertions about temperature ranges suitable for juvenile Chinook Salmon rearing, migration, and smoltification (metamorphosis from freshwater to ocean-going

[11] The dissolved oxygen threshold presented in BA Table 5.1 is also incorrect, as the best available science indicates that 5 mg/L of DO is detrimental for all life stages of Chinook Salmon and Steelhead (SEP 2019 at 110, 121, 126, 139, 151). The DEIS should be corrected to reflect this fact. Because effects of alternatives on DO are not analyzed in the DEIS, we make no further comment on this error.

[12] As defined by the SEP (2019 at p. 103), detrimental conditions are: "[a]ssociated with a significant level of harm at the individual or population level."

juveniles) are entirely incorrect. Far from being "optimal," 68°F (20°C) as a 7-day average of daily *maxima* (7DADM) is the boundary between "stressful" and "detrimental" conditions for Chinook Salmon juveniles in river channel environments where food is typically limiting (Table 1; SEP 2019).[13] [14] Although the time step of results for the DEIS and BA are not clearly stated, we suspect that they report daily average or monthly average temperature results. Because averages are less than maxima, even daily average temperatures of 68°F represent even higher maximum temperatures. **The DEIS's failure to apply the correct numeric temperature threshold (and associated time-step) for harm to juvenile Chinook Salmon biases its analysis of absolute effects of temperature on juvenile Chinook Salmon survival, rendering them deeply flawed and unreliable.**

Table 1: Temperature thresholds for Central Valley salmonids identified in a recent literature review (SEP 2019). The upper three rows apply to fall-run and spring-run Chinook Salmon (which are believed to have the same temperature requirements as other Chinook Salmon runs) in river channel environments, where food is usually limited. The lower 7 rows apply to Central Valley Steelhead (*O. mykiss*). Copied from SEP 2019 (Table 42).

[13] Juvenile Chinook Salmon optimal temperatures are higher in inundated floodplain habitats because of the *ad libitum* availability of food (SEP 2019), but the 68°F 7DADM threshold for detrimental conditions still applies (Table 1).

14 Despite a wealth of recent "performance based" studies of different Chinook Salmon juvenile responses to temperature, there is no convincing evidence that juveniles of the different Chinook Salmon runs differ materially in their temperature tolerances. The authors of several of those studies state:

> "Performance-based studies, such as this one, typically evaluate only short-term, peak physiologic performance, in a controlled setting and free of ecological stress, and therefore may not reflect true capacity to tolerate high temperatures in a natural setting. In identifying temperature thresholds, including site-specific targets, it is critical to also consider how factors in the ecological setting (e.g., diet, competition, predators, disease, duration, and habitat quality) impact fish response to temperature.
>
> ... Further, directly equating the results of performance-based, site-specific tests to the thresholds in EPA 2003 would be inappropriate; such tests typically do not incorporate ecological factors to the extent of EPA 2003." (Zillig et al. 2020).

Their caveat regarding US EPA 2003 would also apply to Myrick and Cech 2004 and SEP 2019, which considered empirical field results and ecological analyses in addition to laboratory studies in identifying key thermal thresholds.

Table 42
Temperature Objectives for Chinook Salmon and *O. mykiss* Juvenile Rearing, Migration, and Smoltification

Habitat Type	Temporal Extent	Condition	Range (Metric)
Channel	Fall-run: Last week of January to second week of June	Supportive	6°C to 16°C (42.8°F to 60.8°F) (7DADM)
		Stressful	16°C to 20°C (60.8°F to 68°F) (7DADM)
		Detrimental	> 20°C (> 68°F) (7DADM)
Floodplain – Short Inundation	Spring-run: Last week of December to second week of June	Supportive	10°C to 18°C (50°F to 64.4°F) (7DADM)
		Stressful	18°C to 20°C (64.4°F to 68°F) (7DADM)
		Detrimental	> 20°C (> 68°F) (7DADM)
Mainstem	*O. mykiss*: January to December (year-round)	Supportive	15°C to 19°C (59°F to 66.2°F) (Daily Average)
			16.5°C to 21.5°C (61.7°F to 70.7°F) (7DADM)
		Stressful	20°C to 25°C (68°F to 77°F) (Daily Average)
			21.5°C to 26.5°C (70.7°F to 79.7°F) (7DADM)
		Detrimental	> 25°C (> 77°F) (Daily Average)
			26.5°C (79.7°F) (7DADM)
			> 27.5°C (> 81.5°F) (Instantaneous)

Prolonged exposure to average daily maximum temperatures above 60.8°F (16°C) is sub-optimal for Central Valley juvenile Chinook Salmon when food is limited (Table 1; US EPA 2003; SEP 2019). Increases in temperature between 60.8°F and 68°F are associated with decreasing performance. Based on numerous review papers, US EPA (2003) identified several negative impacts on juvenile Chinook Salmon of temperatures less than 68°F (20°C) and this is consistent with field studies from the Central Valley that found steady declines in survival above ~60.8°F (~ 16°C; Kjelson and Brandes 1989). Recent studies also indicate that negative effects on juvenile Chinook Salmon increase in severity as temperatures approach 68°F (20°C). For example, Nobriga et al. (2021) conclude:

> "[s]urvival was nearly zero for two smolt release groups exposed to water temperatures closest to 20°C and two others exposed to slightly warmer water. Qualitatively, this abrupt decline in survival coincides with declining swimming capacity and increasing predation risk. This synthesis… reinforces earlier studies that similarly indicated young Chinook Salmon must emigrate through the Delta before water temperature reaches 20°C."

Similarly, Lehman et al. (2017) (at their Figure 3) showed that performance of Chinook Salmon declined at temperatures above 18°C. Furthermore, Munsch et al. (2019) found that cold water in the lower rivers and estuarine habitats promotes juvenile rearing such that size and duration of freshwater rearing increased measurably for every 1°C decrease in April water temperatures.

There is no suggestion in the relevant literature that 68°F is a suitable temperature for Chinook Salmon or Steelhead smoltification, as asserted by the DEIS. In fact, USEPA (2003) indicates that smoltification for both species may be impaired at temperatures above 53.6°F (12°C). Richter and Kolmes (2005) indicate that Steelhead smoltification may be inhibited at

temperatures as low as 11°C to 14°C (51.8°F to 57.2°F). (*See also* USEPA (1999)). Myrick and Cech (2005) cautioned that smolting Steelhead in the Central Valley must experience temperatures less than 51.8°F (11°C) to successfully complete this metamorphosis.

Finally, the DEIS thresholds of 37.9-68ºF for adult Chinook Salmon migration are also not supported by the best available science. USEPA (2003) identifies constant temperatures in this range (greater than 64.4-68ºF (>18 - 20°C)) as associated with "high" risk of disease outbreaks. Even the DEIS alternative temperature "index value" of 59.9ºF is too high to reflect suitable conditions. SEP (2019 Table 19 at 108) finds daily average temperatures 57.2°F to 66.2°F (14°C to 19°C) are "stressful" to migrating adult Chinook Salmon and Steelhead, and temperatures above 66.2ºF are detrimental.

The temperature thresholds applied in the DEIS affect the veracity of analysis for each of the Chinook Salmon runs (and Steelhead). The net result of these erroneous temperature thresholds is to underestimate and misrepresent the impacts of the Proposed Action and alternatives to each Chinook Salmon run. For example, Tables L.1-3 through 1-8 and Tables L.1-9 through 1-14 (Appendix AB-L, Attachment L.1 Sacramento River Water Temperature Analysis) are likely to underestimate the frequency of impacts to adult Chinook Salmon from high water temperatures because the DEIS's definitions of "optimal" or suitable temperatures are egregiously high.

In another example of how incorrect temperature thresholds obscure the effects of the Proposed Action and its alternatives, the DEIS analysis that purports to show how alternatives increase or decrease the number of month-water year type combinations with favorable and unfavorable temperature results (DEIS Appendix O Table O-32) is very likely to be incorrect in absolute terms. The table's defined range for temperatures "favorable" for juvenile growth, migration, and smoltification (55.4°F–68°F) is distinctly unfavorable for Chinook Salmon and Steelhead, with the high end of the range being well above the upper optimal thresholds for those two species identified[15].[16] **As a result, the DEIS does not disclose how frequently project alternatives cause warm water temperatures that are harmful to juvenile Chinook Salmon and Steelhead.**

[16] As elsewhere in the DEIS, this analysis is further confused by the failure to provide temporal units for the temperature thresholds. The table title implies that it reflects monthly average temperatures in or out of its (incorrect) temperature range. Chinook Salmon temperature thresholds are typically expressed as daily averages or 7DADM (USEPA 2003) because these are timesteps that are relevant to the species' biology. Monthly average temperatures have little value for evaluating absolute impacts of project operations as they almost certainly incorporate daily average and daily maximum temperatures (and associated impacts) that are much higher. Even if daily average (or maximum) temperatures cannot be calculated using existing models, the DEIS must acknowledge the implications of using monthly average outputs to evaluate impacts that occur at a daily (or shorter) timestep.

Furthermore, the low end of the range in Table O-32 is much higher than the minimum optimal temperature for juvenile Chinook Salmon (it is also inconsistent with the optimal range identified in Appendix AB-L.1). As a result, operations that result in temperatures colder than the DEIS's (incorrect) lower temperature bound would be scored as "unfavorable" in Table O-32 when in fact they have no detrimental effect on juvenile Chinook Salmon. This is likely to be the case for some of the "unfavorable" results alleged in Table O-32, including those for "Below Keswick Dam" and "Red Bluff Diversion Dam" (compare Table O-32 to Appendix AB-L.1 Table L.1-4). Similarly, the results relating to temperature impacts for migrating juveniles (Appendix AB-L.1 Table L.1-30) are uninformative and misleading. For example, it is highly unlikely that river temperatures at Red Bluff are in excess of 68°F in December of all year types as the table portrays. Instead, it is likely that this analysis shows that temperatures will be below 55.4°F in December; however, that water temperature is not known to have significant negative effects on juvenile Chinook Salmon.

The temperature standards used to assess project alternatives in the DEIS must be based on the best available science. The errors in analysis and interpretation of temperature impacts caused by the DEIS's use of erroneous temperature indicators must be corrected. In that vein, the DEIS must also indicate the temporal units of index temperatures and its modeled temperature results. The revised DEIS then must be recirculated for public review.

To the extent that comparisons between alternatives using the temperature thresholds above still represent the relative impacts of the Proposed Action, it is clear that Alternative 3 is the superior alternative. The NAA frequently generates the worst temperature outcomes of the alternatives considered. Most variants of Alternative 2 represent little to no improvement over the inadequate NAA.

Results for TDM are key to evaluating performance of alternatives relative to the 2019 Biological Opinion, which failed to maintain even its own wholly inadequate requirements regarding egg and fry survival. The sheer number of studies of egg temperature tolerance thresholds (*reviewed in* Myrick and Cech 2004; Richter and Kolmes 2005; SEP 2019) illustrates the unquestionable importance for Central Valley Chinook Salmon of preventing high levels of TDM. For this reason, tables comparing TDM under all alternatives should appear in the main body of the EIS and/or in the Appendix dedicated to fish impacts. The figures related to TDM in DEIS Chapter 12 (Figures 12-28, 12-29, and 12-30) are not informative and fail to disclose that Alternative 3 will result in TDM that is less than half of that expected under the NAA (Appendix AB-L attachment L.2[17]Table L.2-2). TDM in Critical years, during which high levels of TDM

have occurred in the past, and on average across all years, is lowest for Alternative 3.[18] Of the Alternative 2 variants, the version without VAs and with TUCPs performed best. Other Alternative 2 variants performed remarkably worse (each is projected to produce >50% TDM in Critical years and >10% TDM on average); there is no evidence that Alternative 2 variants adequately mitigate temperature impacts of the NAA. Alternative 1 displayed the worst performance, increasing TDM over the unacceptable status quo in all drier years and causing high levels of TDM even in Wet and Below Normal years when TDM is generally low. Alternative 4 was the second worst scenario among the alternatives.

As described above, the DEIS fails to use the best available science with respect to adult migration temperature thresholds.[19] Thus, Tables L.1-3 through L.1-8 (Appendix AB attachment L.1) do not provide reliable information about the magnitude of temperature impacts on migrating adult Chinook Salmon. Furthermore, the analysis ignores the fact that winter-run Chinook Salmon migration is not evenly distributed across the January-June period. According to the BA, over 90% of winter-run have migrated past Red Bluff by the first week of June, and only 10% of the annual run migrates past this location in January (BA Appendix AB-C Table C-1). **A revised DEIS should indicate the relative impact of temperature exceedances on winter-run Chinook Salmon (and other species) in different months, as weighted by the portion of the population expected to be exposed to these temperatures.**

To the extent that this analysis provides relevant information on relative impacts across the different alternatives, we note that Alternative 3 outperforms all other alternatives in May of Wet years, eliminating temperature impacts at Hamilton City; this alternative also performs best (lower temperatures) in May across all years (Table L.1-8). Projected increases in temperature impacts in June (of any water year type) are unlikely to occur because almost all winter-run Chinook Salmon are upstream of Hamilton City (and even upstream of Red Bluff) by June; thus, the results that combine "all" months within year-types at Hamilton City are erroneous and misleading.

Similarly, although the DEIS arbitrarily uses 59.9°F as an indicator of suitable temperatures for Chinook Salmon adults, the relative differences between alternatives may provide some useful information. Again, temperatures in different months and locations are differentially important to winter-run Chinook Salmon; no temperature impacts are projected under any alternative far

[18] The DEIS estimates TDM based on two different models – the "Anderson Model" and the "Martin Model," based on Martin et al. 2016, 2020. As noted above, the model developed by Martin et al. is the gold-standard for estimating temperature impacts on incubating Chinook Salmon. There is no reason to present the "Anderson" alternative, especially since it produces qualitatively similar results. For the sake of clarity and scientific accuracy, the final EIS should omit reference to the "Anderson Model" estimates.

[19] This impact is not hypothetical. Reclamation's operations of Shasta in April-May 2021 led to 6% pre-spawning mortality of winter-run Chinook Salmon upstream of Red Bluff (CDFW 2021, "Discussion" tab, Row 5, available from https://www.calfish.org/ProgramsData/ConservationandManagement/CDFWUpperSacRiverBasinSalmonidMonitoring/tabid/357/Agg2208_SelectTab/4/Default.aspx)

upstream at Keswick and temperatures downstream of Red Bluff are not relevant to winter-run Chinook Salmon in June. At Red Bluff, Alternative 1 performs best (Table L.1-12). Alternative 3 performs second best in May, when most winter-run Chinook Salmon would be exposed to high temperatures expected under the NAA at this location.[20]

With respect to holding temperatures for winter-run Chinook Salmon adults, the temperature range used for analysis appears to match that supported by the best available science (SEP 2019 Table 26 at p. 120); therefore, the DEIS's results for this analysis may reflect absolute as well as relative impacts of the Proposed Action and Alternatives. The analysis indicates that Alternative 3 produces the most suitable temperatures in Critical years and (along with Alternative 1) across all years (Table L.1-16). Of the Alternative 2 variants, Alt2wTUCPwoVA produces the best holding temperatures on average, but it is only the third best alternative.

JPI Calculation

The DEIS attempts to predict the annual production of juvenile winter-run Chinook Salmon that migrate past Red Bluff each year – a "juvenile production index" ("JPI"). The JPI is used to determine allowable take limits, such as winter-run Chinook Salmon loss limits at the CVP and SWP export facilities in the south Delta. However, the statistical prediction of JPI developed in the DEIS is not peer-reviewed, not credible, and not based in the best available science.

First, the model does not do a good job of predicting the data from which it was developed, and it is not tested against data from other years. (DEIS, Appendix AB-L attachment L.3, Winter-run Chinook Salmon Juvenile Production Index Model, Figure L.3-2). Thus, there is no evidence that this model is a reasonably good predictor of egg-to-to fry survival rates, which is the key to JPI calculation.

Second, the model underestimates the importance of high water temperature, one of the most important drivers of poor Chinook Salmon egg, larval, and fry survival. The DEIS reports that the one temperature variable included in the JPI predictive model, mean water temperature at Highway 44 during winter-run Chinook Salmon incubation and emergence, was not well supported statistically. (DEIS, Appendix AB-L). As a result, the model downplays or ignores the known effect of temperature impacts on winter-run Chinook Salmon egg-to-fry survival.

A wealth of published studies makes the unassailable case that water temperature is a key factor in reproductive success of Chinook Salmon (*e.g.*, USEPA 1999, 2003; Myrick and Cech 2004; Richter and Kolmes 2005; Martin et al. 2016, 2021). In fact, the DEIS uses models of TDM as its only means of estimating egg-fry-survival. (Appendix AB-L Attachment L.2 Egg-to-fry Survival and Temperature-Dependent Mortality). The DEIS states: "The Martin et al. (2017) or Anderson

[20] It is not clear what the data/units are for values in the "NAA" column represent given that the Table is said to reflect "Percent (difference in percent relative to NAA) of months…" This should be clarified in a revised DEIS.

et al. (2022) models can be used to predict egg-to-fry survival for winter-run Chinook salmon as a function of temperature-dependent egg mortality, background mortality, and density-dependent mortality." (DEIS, Appendix AB-L Attachment L.2 Egg-to-fry Survival and Temperature-Dependent Mortality at L.2-1). Furthermore, the State Water Resources Control Board ("State Water Board" or "SWRCB") states:

> "Exposure of Chinook salmon and steelhead populations to elevated water temperature is a major factor contributing to their decline (see Section 3.4; Myrick and Cech 2001). Reductions in cold water storage impede reservoirs from meeting their downstream water temperature requirements, especially during critically dry years (NMFS 2009a, 2014a)." (SWRCB 2017 at p. 4-18).

Moreover, the draft NMFS BiOp lists water temperature and storage, egg Incubation and emergence temperature as a "primary stressor" for the listed Chinook Salmon runs, and Central Valley Steelhead (Draft NMFS Biological Opinion Table C, p. 4). Elsewhere, it reports a "high" weight of evidence that TDM is a "high" magnitude stressor for winter-run Chinook Salmon eggs that occurs with "medium" frequency affecting a "large" portion of the population (Draft NMFS BiOp, Table KK at p. 71).

Failure to include a variable that effectively captures the effect of high water temperature on Chinook Salmon egg, larvae, and fry success in the final JPI predictive model likely reflects inadequacy of candidate variables chosen to represent temperature effects rather than a lack of such an effect. Each of the temperature variables assumes a linear effect of temperature on winter-run Chinook Salmon JPI, but the effect of temperature on Chinook Salmon eggs, larvae, and fry is non-linear (Myrick and Cech 2004; Martin et al. 2017). Below a critical threshold, temperature has no effect on egg survival (water that is too cold for egg development is not a concern for winter-run) and above that threshold, increases in temperature and exposure time produce very rapid increases in mortality. Thus, the candidate variables (average temperature during key incubation period, "Temp_SAC_I" and cumulative degrees per day above 11.67C during incubation period at Hwy 44 "CD_above_11.67_I") would not be expected to correlate with JPI in a linear fashion. For example, the average temperature indicator ("Temp_Sac_I") assumes that every increment of temperature has the same effect on egg, larvae, and juvenile success – this is not true. Similarly, the cumulative temperature variable ("CD_above_11.67_I") assumes that repeated small temperature exceedances (e.g., 0.2^{o}C exceedance per day for 30 days) have the same effect on egg success as large exceedances over a short term (e.g., 6^{o}C exceedance for one day) – this is not the case. Also, the "CD_above_11.67_I "variable would begin to increase before the critical temperature threshold had been exceeded for the bulk of the winter-run Chinook Salmon eggs. Because the vast majority of winter-run spawning occurs well-upstream of Highway 44 and water warms as it flows downstream in the summer, temperatures equal to and a little above 11.67^{o}C at Highway 44 correspond to *optimal* temperatures upstream, where the vast majority of eggs are incubating. This kind of flawed construction of candidate

variable explains in part the DEIS's failure to detect significant temperature effects on JPI. But this failure is not an excuse for the DEIS to reject the overwhelming body of literature showing negative effects of high water temperature on incubating Chinook Salmon eggs and the subsequent size of the juvenile cohort.

Moreover, the flow variables included in the DEIS's statistical model of JPI are not independent of river temperature.[21] Winter-run survival is likely to be good during high flow years exactly because there is ample cold water behind Shasta Dam, in addition to any other benefits provided by river flow. Shasta releases are liable to be low in years when coldwater pool is limited, resulting in high TDM and poor JPIs. High summer Sacramento River flows are most likely in years when reservoir releases are not constrained by coldwater pool management. As an example, the data set used to create the DEIS's JPI model includes 2014, 2015, 2021, and 2022, years when the Bureau and DWR requested and received waivers from Delta flow standards (also referred to as Temporary Urgency Change Orders) with the explicit intent of preserving cold water upstream behind Shasta Dam for the benefit of winter-run Chinook Salmon[22]. Despite those waivers, temperature impacts on winter-run Chinook Salmon eggs were extraordinarily high and egg-to-fry survival exceptionally low during most of those years (DEIS, BA, Appendix AB, Chapter 5 Table 5-13 at 5-45 and 5-46). In other words, reservoir releases and flows in the incubation habitat of winter-run Chinook Salmon eggs were artificially low in those years in which temperature impacts were expected to be, and eventually were, high. The relatively strong negative correlation between both discharge and mean flow at Red Bluff and the two temperature variables demonstrates that the JPI model's flow variables represent temperature effects, at least in part. (DEIS, Appendix L.3 Table L.3-2 at p. L.3-4.)

Finally, TDM does not necessarily correlate with JPI in a linear fashion. Instead, TDM constrains JPI -- high or low reproductive success (egg-to-fry survival) are possible when TDM is low, but only low egg-to-fry survival rates (and relatively low JPIs) are possible when TDM is high. The mechanism is clear: eggs that die due to exposure to high temperature do not contribute to juvenile production. This does not mean that TDM is unimportant (even at moderate levels), it simply means that TDM and the forces that produce it should not be expected to show up in the kind of statistical modeling attempted in the DEIS.

The DEIS must be revised and recirculated without the current JPI model. Either a new, valid predictor of JPI that accurately reflects the known role of river temperature on

[21] By contrast, within the range of winter-run Chinook Salmon spawning, river temperatures are not significantly affected by reservoir release volume; Danner and Daniels (2020) found that reservoir release temperature dominates the effect of river flow rate on river temperatures in the winter-run Chinook Salmon spawning reach.
[22] For example, see SWRCB orders in 2014, 2015, and 2022 specifically referencing preservation of upstream coldwater storage at:
http://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/2014/wro2014_0029.pdf;
https://www.waterboards.ca.gov/drought/docs/tucp/2015/tucp_order020315.pdf; and
https://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/2022/wro2022_0095.pdf

survival of Chinook Salmon egg, larvae, and fry must be developed or the revised DEIS must omit such a predictor and rely on estimates of TDM to gage the effect of alternatives on juvenile production. The revised DEIS should analyze the effects of alternative operations on winter-run Chinook Salmon using a version of the NMFS winter-run Life Cycle Model (https://oceanview.pfeg.noaa.gov/wrlcm/) updated to incorporate the best available science regarding the effects of river flow on winter-run juvenile survival (including Michel 2018; Henderson et al. 2019; Hance et al. 2021; Hassrick et al. 2022).

If, despite the flaws described above, the DEIS's JPI estimate represents the relative effects of operational alternatives, then this model predicts that all Alternative 2 variants will produce lower numbers of juvenile winter-run Chinook Salmon passing Red Bluff than the NAA (*See* Table 2 below). Furthermore, the Alternative 2 variant that includes watershed-wide VAs ("Alt2woTUCPAllVA") performs worse than other Alternative 2 variants in the vast majority of years. **If the final EIS maintains use of the DEIS's JPI prediction model, then it must disclose the negative impact to winter-run Chinook Salmon population viability of reduced juvenile production expected under the Proposed Action relative to the current, unacceptable status quo, the NAA.**

Table 2: Predicted juvenile winter-run Chinook Salmon production indices for variants of Alternative 2 relative to the NAA. Copied from Appendix AB-L, Shasta Coldwater Pool Management Attachment L.3 "Winter-run Chinook Salmon Juvenile Production Index Model".

Table L.3-5. JPI observed and mean predicted values under BA scenarios from 2002 to 2022 by water year type.

Water Year Type	Observed JPI	NAA	EXP1	EXP3	Alt2 wTUCP woVA	Alt2 woTUCP woVA	Alt2 woTUCP DeltaVA	Alt2 woTUCP AllVA
Above Normal	6,652,583	4,166,909	938,222	1,767,935	4,064,905	4,064,717	4,080,225	3,927,614
Below Normal	3,743,451	2,903,175	898,043	1,595,262	2,792,077	2,792,278	2,814,852	2,761,983
Critical	799,585	1,413,014	221,555	1,326,659	1,084,428	1,250,915	1,215,117	1,163,048
Dry	3,820,593	1,903,154	211,001	1,055,059	1,750,491	1,751,186	1,788,049	1,675,850
Wet	4,776,674	2,874,042	1,311,624	1,344,053	2,864,663	2,864,578	2,864,874	2,864,352

In-stream flow effect on survival

The DEIS fails to acknowledge findings of recent peer-reviewed literature which reveals the positive effect of river flow into the Delta on habitat use in, and survival beyond, the Delta (Michel 2018; Munsch et al. 2020). Similarly, the DEIS fails to disclose the effect of flow on juvenile Chinook Salmon as they migrate downriver from Red Bluff to the Delta, despite recent peer-reviewed research that shows that flow is the dominant variable affecting in-stream migration success (Henderson et al. 2019; Sturrock et al. 2019; Friedman 2019; Notch et al.

2020; Hassrick et al. 2022)). **The DEIS must be updated to incorporate the findings of these recent studies and others that represent the best available science on the effect of river flow upstream and into and through the Delta on survival of each run of Central Valley Chinook Salmon.**

Through-Delta Survival Impacts

The DEIS states: "The survival of juveniles in the Sacramento River downstream of Red Bluff Diversion Dam is addressed primarily under the outmigration cues stressor while the survival of juveniles in the Delta is addressed primarily by entrainment risk." (BA, Appendix AB Chapter 5 –Winter-Run Chinook Salmon at 5-56). This is misleading. Whereas entrainment of listed Chinook Salmon at the CVP and SWP pumps is an important indicator of the impact of water exports, it is far from the only impact of CVP/SWP operation on through-Delta survival. Citing the U.S. Department of Interior, the State Water Board notes: "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 p. 3-47). In fact, the DEIS employs several models to estimate through-Delta survival of Chinook Salmon that incorporate flow, including the STARS model and Delta Passage Model (*see below*), particle tracking models, the CVPIA SIT models for winter-run Chinook Salmon and spring-run Chinook Salmon, the Interactive Object-oriented Simulation (IOS) Model, etc.

STARS Model

The DEIS employs the Survival, Travel Time, and Routing Simulation ("STARS") model to evaluate the effect of flows in Delta channels on the routing and ultimate success of migrating Chinook Salmon juveniles. The results of Perry et al. (2018), upon which the STARS model is based, have been largely corroborated for other runs of Chinook Salmon migrating in different seasons (Hance et al. 2021). The STARS model should be updated to incorporate the more recent results from Hance et al. Also, the DEIS should acknowledge that the STARS model is relevant to routing and survival of Chinook Salmon smolt only, not fry that rear in the Delta before migrating to the ocean. Munsch et al. (2020) document the effect of flow on occupancy and density of wild-spawned Chinook Salmon fry in shallow tidal rearing habitats in the Delta. **The DEIS must be revised to analyze the effect of different operational alternatives on juvenile Chinook Salmon survival in-river, to the Delta. In addition, the DEIS should investigate how each operational alternative affects use of shallow tidal habitats by emigrating fry Chinook Salmon; this is especially relevant given that mitigation for combined project operations has emphasized restoration of this type of "habitat."**

Using the STARS model, the DEIS compares through-Delta survival of Chinook Salmon smolt from December-April under each of the project alternatives. (DEIS, Appendix AB-I, Attachment I.5 Table I.5-3). This time-period is most relevant to winter-run Chinook Salmon smolt

migration. It is not clear why the model was not applied in *each month* that Chinook Salmon smolt migrate so that readers could easily understand impacts to other runs, including the listed spring-run Chinook Salmon and economically, ecologically, and culturally important fall-run Chinook Salmon. **The DEIS must be revised so that the STARS model is used to investigate the success of migrating smolt of each Central Valley Chinook Salmon run.**

In each month studied, the DEIS projects that the greatest modeled increase in survival of winter-run smolt will occur under operations specified in Alternative 3. Effects of other alternatives vary from month to month, and the DEIS does not summarize them. However, it is clear that Alternative 1 performs worse than the other runs (with through-Delta survival declining 7.6% in December and 2.6% in January versus NAA). Alternative 4 is nearly identical to the NAA. The Alternative 2 variants are barely different from NAA in most cases, with each variant expected to result in survival less than or equal to the NAA in at least one month. Table I.5-4 presents a different view of the same output from the STARS model, this time binning the data by categories of Sacramento and San Joaquin inflow to the Delta. Not surprisingly, Alternative 3 is again the superior operational approach, with through-Delta survival exceeding that of other operational alternatives in nearly every "inflow group" combination (DEIS, DEIS, Appendix AB-I, Attachment I.5 Figure I.5-4). Figure 1.5-10 clearly displays the substantial effect of increasing river flow on through-Delta survival under all alternatives. The BA's "takeaways" do not disclose these results, focusing instead on the range of Delta survivals estimated for the NAA and the Alternative 2 variants alone. **The DEIS must be revised to disclose that Alternative 3 is expected to result in higher Delta survival than any of the Alternative 2 variants and that the latter are only marginally different and sometimes worse than the NAA.**

Delta Passage Model

The DEIS also applies the Delta Passage Model (DPM) to study through-Delta survival. As elsewhere in the DEIS and BA where different models are used to analyze the same outcomes, the DEIS must identify the purpose of applying different models and the specific benefits and shortcomings of the models applied. Otherwise, application of different models to the same phenomenon generates confusion and obscures the best available science.

Like the STARS model, DPM relies on data from tagged smolt to estimate routing and survival of smolt through the Delta; neither model addresses survival probabilities of smaller fish that migrate into and attempt to rear in the Delta. Because they are weaker swimmers than smolt, and because they reside in the Delta longer, Chinook Salmon fry and parr are likely to be more susceptible to differences in Delta hydrodynamics caused by operational alternatives for the CVP/SWP. **The DEIS should be revised to acknowledge that survival of the very large portion of juvenile Chinook Salmon that enter the Delta as fry or parr is not modeled by either the STARS model or DPM.**

Figures depicting survival under the alternatives analyzed (*e.g.*, Appendix AB-I, Attachment I.6 Delta Passage Model: A Simulation Model of Chinook Salmon Survival, Routing, and Travel Time in the Sacramento–San Joaquin Delta Figures I.6-12 & 6-14) obscure actual differences between the alternatives by depicting variance that has nothing to do with the alternatives. River flow conditions that effect through-Delta survival of Chinook Salmon (and other fish) are affected by underlying annual hydrology. Within a water year-type, the wettest years may be many-fold wetter than the driest years. This variance in underlying conditions will affect river flows in each alternative, but much of the resulting variance in annual hydrology within water year types has nothing to do with the alternatives themselves. Each alternative will experience the same underlying (unimpaired) hydrology in each year. Thus, plotting the variance (box and whiskers) of survival outcomes for each alternative expands the y-axis and tends to make the alternatives look similar, or even indistinguishable, and it implies that the relative differences between alternatives in any given year is uncertain because they are "variable". But this is not the case. Studying the *differences* between alternatives would focus the analyses on the variation that results from the alternatives themselves. **The DEIS must be revised to visualize differences between alternatives by plotting the average *differences* and variation in *differences*, rather than average outcome and variation in those outcomes for each alternative.**

Because the DEIS uses STARS only to evaluate winter-run Chinook Salmon smolt survival through the Delta, we are left with the DPM results to evaluate survival for the other runs. Table I.6-6 (Appendix AB-I, Attachment I.6**)** corroborates the STARS model projections for winter-run Chinook Salmon smolt under each alternative relative to the NAA. Alternative 3 displays substantially higher survival for smolt of each run than any of the other alternatives; winter-run smolt survival is projected to increase by up to 7.73 percent relative to the NAA and improvements are substantial in every year type. Depending on year-type, survival of listed spring-run Chinook Salmon smolt is expected to increase by 5.16-9.31 percent under Alternative 3 operations versus the NAA. Each of the Alternative 2 variants results in worse survival for spring-run Chinook Salmon smolts than the NAA in at least one water year type. Alternative 1 results in declines in winter-run Chinook Salmon smolt survival compared to the NAA in all water year types and in all but Critical years for spring-run Chinook Salmon smolt.

Alternative 3 is also projected to result in substantial increases in survival of fall-run and late-fall run smolts, relative to the NAA. In fact, survival for these runs under Alternative 3 is superior to all other alternatives, in the vast majority of years. By contrast, Alternative 1 results in survival worse than the NAA in all water year types for late-fall run Chinook Salmon. Three of the Alternative 2 variants (wTUCPwoVA; woTUCPwoVA; woTUCP; DeltaVA) result in fall-run smolt survival that is worse than the NAA in most years. **The DEIS must disclose the likely negative effects on Central Valley and marine Chinook Salmon fisheries of the reduced fall-run and late-fall run smolt survival in some water year types under certain operational alternatives.**

2. Delta Smelt.

The DEIS applies the USFWS Delta Smelt Life Cycle Model (Delta Smelt LCM) to analyze CVP operational alternatives. This model represents the best available science. However, as applied in the DEIS, the Delta Smelt LCM does not consider supplemental fall outflow (the "Fall X2" action) to be a benefit to Delta Smelt, despite the fact that many papers (including research that informs the Delta Smelt LCM) indicate that fall outflow has a significant positive effect on Delta Smelt abundance, probably via its effect on larval recruitment (USFWS 2008; Rose et al. 2013a,b; Polansky et al. 2021; CSAMP 2024). Other research demonstrates that increased fall Delta outflow corresponds to improved habitat for Delta Smelt, including increased availability of *Pseudodiaptomus forbesi,* the principal prey for sub-adult Delta Smelt (Hassrick et al. 2023; Kimmerer et al. 2018) and reduced temperatures in October (Bashevkin and Mahardja 2022).

The DEIS fails to apply the peer-reviewed Delta Smelt life cycle by Rose et al. (2013a,b), which uses an individual based-mechanistic approach to analyze Delta Smelt population response to management alternatives. However, another recent study (Compass 2024) used the Rose et al. (2013a.b) model and showed positive population growth for Delta Smelt when fall outflow was set to month-specific locations < 80Km following Wet and Above Normal year-types. The Compass (2024) results also indicated that Delta Smelt populations would have declined more rapidly than observed over the 1994-2014 period if fall outflow had been set to month-specific locations of > 80 km in those same year-types (Compass 2024, Table 8 at p. 25). **Because research continues to indicate that supplemental fall outflow may have a beneficial effect on Delta Smelt, the DEIS should consider the sensitivity of the Delta Smelt population to differences in fall outflow among the modeled operational alternatives.**

The Delta Smelt LCM analysis clearly demonstrates that Alternative 3 substantially outperforms all other alternatives with respect to estimated future population growth rates (DEIS, Figure 1; Attachment F.4**,** Table F.4-5 and Figure F.4-9). In fact, Alternative 3 is the only alternative that produces positive Delta Smelt population growth rates on average. Negative average population growth rates shown in all other alternatives are consistent with inviable populations and extinction (McElhaney et al. 2002). Alternative 2 variants produce negative growth rates that are, on average, nearly indistinguishable from or worse than the NAA and empirical growth rates that have led to the near disappearance of this once abundant endemic fish species. Furthermore, all Alternative 2 variants perform worse than NAA or empirical results in Wet and Above Normal Years. The DEIS provides some insight into this result, explaining:

> "Meanwhile, NAA and the PA components may have produced lower λ [population growth rate] than the empirical data during wetter years because of the lower June-August Delta Outflow values and more negative OMR values for some months. NAA and the PA components did not produce higher λ despite

> OMR restrictions that should reduce entrainment of Delta smelt. This may be due to the apparent trade-off between OMR flow and summer Delta outflow that somehow occurred between PA components and the empirical data." (DEIS, Appendix F, Attachment F.4 Delta Smelt Life Cycle Model with Entrainment at F.4-21).

This demonstrates that Alternative 2 is not consistent with requirements of the ESA (especially given that Alternative 3 and non-alternative scenarios ("EXP1" and "EXP3") demonstrate that operations that result in positive population growth are possible). Alternative 1 performs far worse than the NAA (Figure 1 below; *see also* DEIS, Attachment F.4 at Table F.4-5).

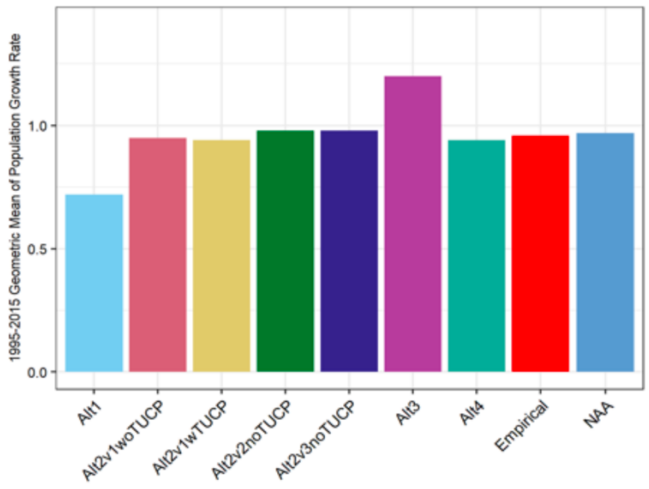


Figure 12-4. Mean population growth rates aggregated across the years. Bar plot demonstrating the geometric mean of population growth rate (lambda) from 1995 to 2015 for the various alternatives.

> **Figure 1:** Graphic showing mean Delta Smelt population growth rates projected under each project alternative across years, as compared to empirical estimates of Delta Smelt population growth from 1995-2015. Population growth rates of 1.0 represent a stable population (no growth or decline, on average); growth rates less than 1.0 indicate long-term decline in population abundance over time. Persistent negative growth rates eventually lead to population extirpation.

Other DEIS analyses are consistent with the finding that the Proposed Action will not improve conditions for Delta Smelt relative to the unacceptable NAA and that conditions under the Proposed Action may be worse than the NAA at times. For example, another Delta Smelt population model shows that the No Action Alternative is worse than the baseline, that Alternative 2 variants are roughly equivalent to or worse than the NAA, and that Alternative 3 vastly outperforms the other alternatives (Appendix F Attachment F.1 Tables F.1-5 and F.1-6). Similarly, the DEIS analysis of summer and fall Delta outflow and habitat concludes:

> "… HSI [habitat suitability index] values across the Alternative 2 components were similar to those of the NAA at all levels of spatial organization (Delta, summer and fall habitat subregions together, individual subregions; Table K.1-7, Table K.1-8). For the Delta and summer and fall habitat subregions, percent differences were slightly negative; for each subregion, percent changes generally ranged between -3 to 2, except in the Confluence during the critical water year and in some of the Suisun Bay subregions during the wet, below normal, and critical water year types (Table K.1-7, Table K.1-8)." (DEIS, Appendix K, Attachment K.1at p. K.1-42).

The DEIS must acknowledge and emphasize the clear implications of its Delta Smelt Life Cycle Model analysis. This species will go extinct under the No Action Alternative and may go extinct more rapidly under the Proposed Action. Meanwhile, alternative operational scenarios exist that could potentially prevent extinction and enable recovery.

3. Longfin Smelt.

As with other listed fish species in San Francisco Bay Delta and its watershed, operations that do not improve conditions relative to the status quo for this estuary's Longfin Smelt population are inconsistent with the requirements of the ESA. The USFWS 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 below initial observations." (USFWS 2024b at p. 36). In its final listing decision, USFWS found that despite numerous efforts regarding conservation and regulation of the San Francisco Bay estuary and its resources, including the 2019 Biological Opinions, 2020 CESA ITP, and existing water quality requirements, "…the current condition of the estuary and continued threats facing the estuary 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" (USFWS 2024a; *see also,* Federal Register Vol. 87, No. 194 [Friday, October 7, 2022] at pp. 60957-60974). Furthermore, USFWS's analysis revealed that: "[f]orecasts of population size using vital rates estimated by the model indicate that it is likely that Longfin Smelt population sizes will dip below recoverable levels within a decade if these recent levels of reproduction and survival continue" and "[b]ased on the meta-analysis, the mean quasi-extinction value for the population is 33% (25%, 41%) over 20 years and rises to 50% (42%, 58%) in 30 years…" (USFWS 2024b at p. 195 and p. 115) (emphasis added).

Despite the extremely precarious state of the Longfin Smelt population, the proposed combined operations of the CVP and SWP analyzed in the DEIS would not only fail to improve conditions for the Bay-Delta Longfin Smelt population, often they would make those conditions worse.

Delta Outflow model

The DEIS employs flawed modeling to estimate the impacts of the Proposed Action and fails to disclose the harm to Longfin Smelt revealed by its modeled results. The DEIS employs a novel statistical approach, which has not been peer-reviewed, to combine multiple models of Longfin Smelt population dynamics[23] into a single predictive model. This model indicates that the Longfin Smelt population is likely to decline versus the unacceptable NAA in all years for Alternative 1 and almost all years for Alternative 4 (DEIS, Appendix AB-J, Winter and Spring

[23] These models are not likely to produce credible estimates of absolute abundance or abundance index values for this population. First, the modeling relies on incorrect assumptions about the nature of the Longfin Smelt-flow abundance relationship. Specifically, the models incorporate different Longfin Smelt flow-abundance relationships during multi-year periods that it identifies as "ecological regimes," citing Nobriga and Rosenfield (2016) as the source of these different categories. In fact, Nobriga and Rosenfield provide no support for the "ecological regimes" used in the DEIS' modeling approach and neither does Thomson et al. (2010 at 1439-140 and Figure 6 at 1442).

Second, the modeling employs non-traditional approaches. For example, the DEIS generates multiple models whose "distributions were combined as a weighted average across models" in a process called "stacking". The DEIS explains (at Appendix AB-J Attachment J.1 at J.1-2):

> "Compared to more traditional model averaging approaches, stacking differs in terms of how model weights are assigned. *Instead of calculating model weights based on the relative predictive ability for each individual model—where the best model for prediction would be given the highest weight—the model weights estimated through stacking minimize the LOO mean squared error of the resulting averaged posterior predictive distribution across models*. In other words, stacking was used to estimate the optimal linear combination of model weights for averaging predictive distributions across the model set (Yao et al. 2018).
> Hence, *the model with the largest stacking weight does not necessarily have the highest predictive score compared to other models in the set*." (emphasis added).

Thus, the DEIS's predictions of Longfin Smelt response to different operational alternatives is based on a weighted average of multiple models, where the weights applied do not correspond to the predictive ability of the relevant model. Furthermore, the final "stacked" model includes models where the flow variable is measured from December-May Delta outflow (as per CDFW 2010; *see also*, Nobriga and Rosenfield 2016) and other models where outflow is measured from March-May. This means that flow during the months of March, April, and May are differentially represented in the final model – the DEIS provides no explanation of, or justification for, this emphasis on March-May flows.

Third, the models rely on randomization procedures, used to generate "probability distributions" for the modeled results. (DEIS Appendix 6B at 6B-395 thru 6B-403). These randomizations confound variability from multiple sources, including those that have nothing to do with the effect of project alternatives. These "probability distributions" for model predictions are then inappropriately compared to the differences in means for several water year types across different alternatives; these water year-types include such as variation in abundance over the entire Longfin Smelt data series. The resulting analysis is used to imply that differences between alternatives are small compared to the variability in population estimates – this is highly misleading.

These overwrought statistical machinations obscure very simple facts – (1) Delta outflow is the only *known* variable affecting changes in Longfin Smelt abundance from year to year that is affected by combined CVP/SWP operations (USFWS 2024b and sources cited therein), and (2) the effect of Delta outflow on the Longfin Smelt population is most likely due to its relationship with recruitment of young-of-year fish, a relationship that has not changed in five decades of sampling data (Nobriga and Rosenfield 2016).

Pulses and Delta Outflow Attachment J.1 Table J.1-3). Three of the four Alternative 2 variants are estimated to result in Longfin Smelt abundance less than or equal to the NAA in the vast majority of years. **Only Alternative 3 is expected to produce substantial increases in the Longfin Smelt population overall and it accomplishes this in every water year type.** Figure 2 below illustrates the mean difference between each alternative and the NAA by water year type.

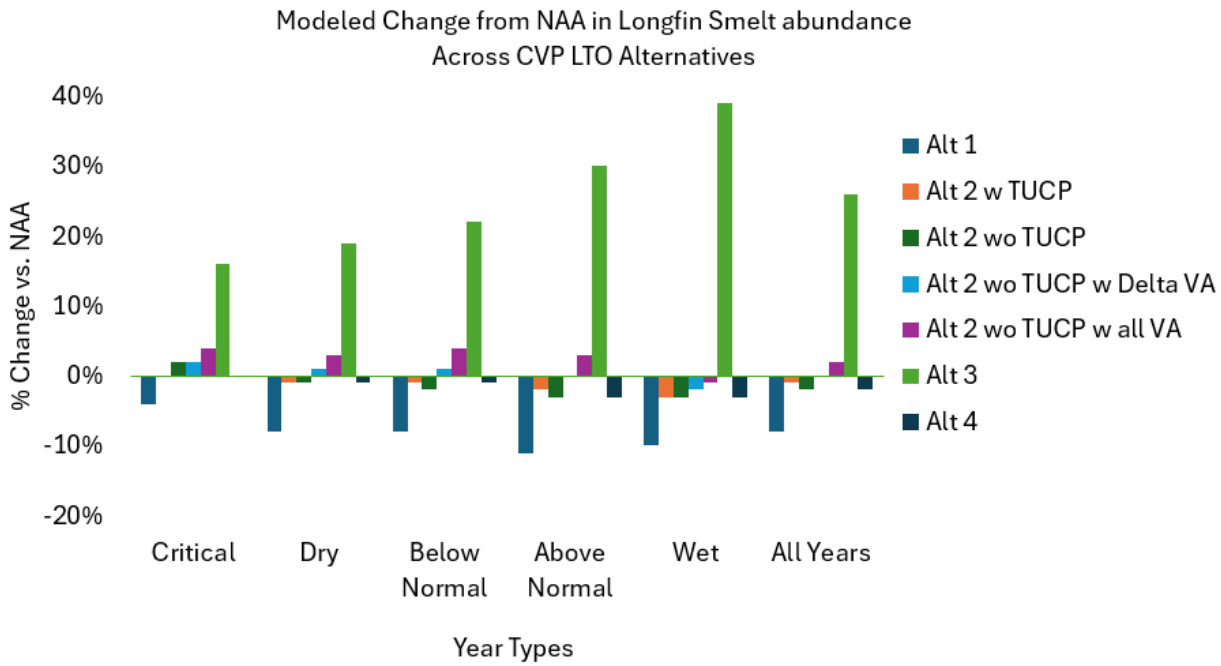


Figure 2: The mean percentage difference between estimated annual Longfin Smelt Fall Midwater Trawl abundance indices and the NAA in each water-year type. Positive values indicate that an alternative is expected to produce more Longfin Smelt in a given water year type than the NAA, on average. Source data from DEIS Appendix AB-J attachment J.1, provided by the U.S. Bureau of Reclamation.

Moreover, a proper comparison of alternatives (i.e., comparing the *differences* in predicted annual Longfin Smelt abundance indices among alternatives) shows that the relative performance of different alternatives is very consistent. The fact that the Longfin Smelt population displays high variance (and that the 3-4 order of magnitude decline over time adds to this variance) does not mean that there is any uncertainty regarding the relative performance of Alternative 3 as compared to NAA. Notwithstanding the DEIS's statistically inappropriate efforts to minimize the different effects of the alternatives by comparing them to the variance within alternatives (*e.g.*, as in DEIS Appendix AB-J attachment J, Figure J.1-2), Alternative 3 is superior to the NAA in *every year* modeled (Figure 3). The other alternatives are barely different

from the NAA during drier years (Figure 2) and when the estimated population is low (Figure 3), and their performance decreases relative to NAA as conditions become wetter and/or as the estimated annual population index increases. Under the NAA and all alternatives other than Alternative 3, the Bay-Delta Longfin Smelt population is likely to continue to decline to extirpation in the near future. Such an outcome is inconsistent with the requirements of both state and federal Endangered Species Acts.

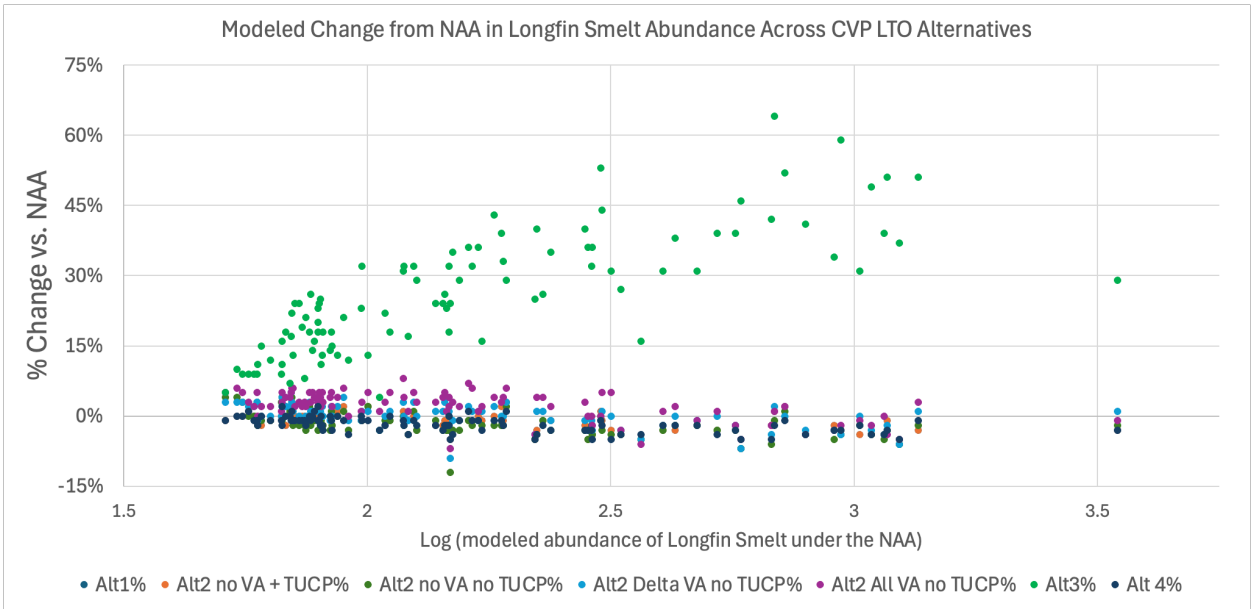


Figure 3: The percentage difference between the estimated annual Longfin Smelt Fall Midwater Trawl abundance index and the NAA in each year as a function of the modeled log(FMWT index) for the NAA (i.e., each year is represented by points for each alternative arranged vertically). Positive values indicate that an alternative is expected to produce more Longfin Smelt in a given year than the NAA. The positive effect of Alternative 3 operations increases, in absolute and relative terms, as the estimated FMWT abundance index increases. Performance of other alternatives tend to decrease relative to the NAA as the estimated FMWT abundance index increases.

Furthermore, these results likely underestimate the true impact on Longfin Smelt of combined proposed project operations, particularly for alternatives that allow for TUCOs, because the modeling assumes that requirements of the Bay-Delta Water Quality Control Plan and D-1641 and federal biological opinions will be enforced in all years. This has not been the case historically (*See, e.g.*, Reis et al. 2019).

The DEIS must disclose that the NAA is likely to lead to extinction of the Bay-Delta Longfin Smelt population in the near future. The results of the Longfin Smelt-Delta Outflow analysis must be depicted in a way that informs readers of the likely catastrophic outcomes of the Proposed Action and Alternatives 1 and 4, which all perform similarly to the NAA. The DEIS must disclose the sizeable potential benefits of Alternative 3 operations relative to the NAA. These disclosures should be made in transparent text and visually, through comparison of the *differences* in predicted Longfin Smelt abundance in each year that arise from differences among alternatives. Natural variance in projected Longfin Smelt abundance that has nothing to do with differences among alternatives (e.g., variance across years within a water-year type) is irrelevant to evaluation of the Proposed Action.

Entrainment Mortality model – juvenile

The DEIS's projected response of Longfin Smelt abundance to changes in Delta Outflow does not account for the massive increases in entrainment mortality of Longfin Smelt juveniles predicted to result from implementation of the Proposed Action (Table 3). Again, Alternative 3 is the environmentally superior alternative in all water year types. Salvage under the Proposed Action is expected to increase substantially in the vast majority of years under every variant of Alternative 2. In fact, salvage (and related mortality) increase so much in wetter years, that the Proposed Action would invert the established pattern in which Longfin Smelt were at greatest risk of entrainment in Dry and Critical years (Grimaldo et al. 2009; Rosenfield 2010); rather, entrainment-related mortality is now predicted to be greatest in wetter years. This continues a shift from the historical condition (under the 2008/2009 biological opinions) that began with huge increases in expected Longfin Smelt juvenile entrainment (up to 576% higher salvage in Wet years) under the 2019 biological opinion and 2020 ITP (*see, for example* CDWR 2019 Table 4.4-13 and Figure 4.4-56 at 4-185. The anticipated increases in entrainment-related mortality of Longfin Smelt may change entrainment from a potential episodic impact on the population (Rosenfield 2010) to a chronic threat to Longfin Smelt population viability.

Table 3: Predicted salvage of juvenile Longfin Smelt under the NAA and operational alternatives considered in the DEIS, by water year type. Copied from Appendix AB-I attachment I.4.

Table I.4-2. April – May predicted Longfin Smelt salvage by water year type (WYT) for modeled scenarios. Values are rounded to the nearest integer.

WYT	NAA	Alt1	Alt2 wTUCP woVA	Alt2 woTUCP woVA	Alt2 woTUCP DeltaVA	Alt2 woTUCP AllVA	Alt3	Alt4
Wet	1359	4,032 (197%)	3,712 (173%)	3,706 (173%)	2,764 (103%)	2,697 (98%)	109 (-92%)	3,508 (158%)
Above Normal	1335	5,280 (295%)	3,754 (181%)	3,757 (181%)	1,829 (37%)	1,779 (33%)	265 (-80%)	3,813 (185%)
Below Normal	1451	3,388 (134%)	2,537 (75%)	2,647 (82%)	1,901 (31%)	1,763 (22%)	395 (-73%)	2,700 (86%)
Dry	1464	2,390 (63%)	2,090 (43%)	2,091 (43%)	1,578 (8%)	1,403 (-4%)	449 (-69%)	2,124 (45%)
Critical	905	1,226 (35%)	1,168 (29%)	1,110 (23%)	1,170 (29%)	1,126 (24%)	477 (-47%)	1,114 (23%)

The DEIS must be revised to disclose the potential harm to Longfin Smelt viability caused by the high rates of Longfin Smelt mortality from entrainment that are expected under the NAA relative to historical conditions. Furthermore, the DEIS must disclose that mortality due to this mechanism is likely to increase several-fold under the Proposed Action.

Entrainment Mortality model – larvae

The DEIS fails to adequately analyze entrainment of larval Longfin Smelt or to disclose the impact of entrainment-related larval mortality on the Longfin Smelt population as a whole. The state of California acknowledges that larval Longfin Smelt are more vulnerable to entrainment-related mortality than juveniles (CDWR 2019 at 6-96). Yet it fails to adequately address the major increases in larval entrainment expected under the NAA with respect to the previous baseline (2008/2009 biological opinions) or under the Proposed Action.

Instead, the DEIS relies on findings of Kimmerer and Gross (2022) to assert that larval entrainment will average 1.5% of the population (DEIS, BA, Chapter 10 at p. 10-51). No rationale is provided which would explain why chronic loss of 1.5% of this one life stage via this one mechanism does not represent a significant impact to the population. Kimmerer and Gross (2022) underestimate the likely magnitude of larval entrainment in several ways. First, that paper studied larval Longfin Smelt exposure to entrainment based on data from 2009-2020. But the rules that governed Delta flows, exports, and entrainment risk during that period (the 2008/2009 operational baseline) have now changed in ways that are expected to increase entrainment-related mortality of larval Longfin Smelt (CDWR 2019 Table 4.4-8a at 4-173 shows estimated increases in entrainment of particles that serve as proxies for larval fish). Second, they assumed that larval Longfin Smelt were only susceptible to entrainment for approximately 7-13 days post hatching, but recent data reveal that many larval 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

p. 9 and at pp. 48-83 of the PDF). Third, Kimmerer and Gross (2002) estimated direct entrainment only during January-March, but the DEIS and BA show that Longfin Smelt larvae are present in March-June (Biological Assessment Appendix AB, Chapter 10 Figure 10-3), although the BA's estimate of larval Longfin Smelt relative abundance after March is understated. Larvae remain in the upper estuary through at least May (SWRCB 2010 Table 2 at p. 45; CDFW 2010) and likely into June (CDFW 2010; Rosenfield 2010; Lewis et al. 2019 at p. 9 of the PDF). Thus, to compare estimated changes in Longfin Smelt larval entrainment mortality in the DEIS, one must look at particle entrainment estimates for March-June.

In general, we disagree that Longfin Smelt larval entrainment risk is completely captured by studying neutrally buoyant particles, as Longfin Smelt larvae do exhibit behavior with respect to depth (Kimmerer, *personal communication*). Nevertheless, the only means of estimating the distribution of Longfin Smelt larvae with respect to the alternatives are modeling studies of neutrally buoyant particles injected where Longfin Smelt are believed to spawn (Sacramento River (Appendix AB-I, Attachment I.8 Particle Tracking Fate Modeling of Larval Smelt Entrainment Table I.8-42), West Delta Table (I.8-45), and Suisun Bay (Table I.8-46)). These tables consistently show that the number of particles entrained (or, for fish, killed) in the export facilities decreases substantially (up to 100%) in every inflow-combination bin[24] under Alternative 3; no other alternative shows this magnitude or consistency of reduced entrainment. Alternative 1 typically showed the greatest increases in particle entrainment. Entrainment under the Alternative 2 variant that includes all VAs is expected to increase in more year-type bins than it decreases, and the increases are generally of higher magnitude than the decreases. These increases are on top of massive increases in particle entrainment predicted to occur under the NAA versus the previous baseline (2008/2009 Biological opinions). According to modeling by DWR, particle entrainment rates increased by over 200-300% in some water year types during April and May under the state's proposed operations in 2019, which is today's baseline, as compared to the previous baseline (CDWR 2019 Table 4.4-8a at p. 4-173).

The DEIS must disclose the potential effect of larval entrainment under the NAA (which is not adequately represented by Kimmerer and Gross (2022)). It must also disclose how predicted increases in larval entrainment under some hydrological conditions are expected to impact components of viability (i.e., abundance and productivity) for the Bay-Delta's endangered Longfin Smelt population.

[24] The DEIS's reliance on qualitative bins of Sacramento*San Joaquin inflow is generally uninformative as there is no indication how often these bins occur over the modelled time period or how their frequency is expected to differ across alternatives (which modify flow levels in the two rivers). The DEIS should categorize years by a measure of unimpaired flow, which will allow for apples-to-apples comparisons of outcomes based on the frequency of year types that is consistent among alternatives.

4. White Sturgeon.

In response to a petition from some of our organizations (Baykeeper et al. 2023), the California Fish and Game Commission recently declared California White Sturgeon to be a candidate for listing under the state Endangered Species Act (CESA). This means that this population receives full protection under CESA until CDFW completes a status review. White Sturgeon harvest is now prohibited. A parallel federal petition is pending. It is thus appropriate for the DEIS to analyze potential impacts of proposed combined project operations on White Sturgeon, and to minimize and fully mitigate those impacts that are expected to result from those operations.

The only known spawning population of White Sturgeon in California is found in the San Francisco Bay watershed. Most spawning occurs in the Sacramento River, although NMFS (17388 Federal Register/Vol. 70, No. 65 citing Beamesderfer et al. 2004), CDFW (2015), and Heublein et al. (2017) indicate that White Sturgeon may spawn in the Feather River. Spawning has also been detected in recent years in the San Joaquin River mainstem, though reproductive success has not been confirmed (Jackson et al. 2016). The California White Sturgeon population is declining and imperiled. CDFW states "Annual recruitment of white sturgeon in California appears to have decreased since the early 1980s." (2015 at p. 224). Similarly, Blackburn et al. 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]"; they concluded, "[c]ontinued poor recruitment has the potential to put the population at risk." (2019 at pp. 897-898). In 2022 and 2023, large numbers of White Sturgeon were killed by a harmful algal bloom in San Francisco Bay, which further degraded the viability of this imperiled fish (CDFW 2023b).

One of the main threats to California White Sturgeon is the diversion of fresh water from major Central Valley rivers where they spawn, incubate, and rear as larvae (or did so historically), and diversion from the Delta, which is habitat for juveniles, sub-adults, and adults. Above certain flow thresholds, recruitment of juvenile White Sturgeon is positively correlated with high river flows and Delta outflow during spring and early summer months (Israel et al. 2009; CDFW 2015, 2023b; SWRCB 2017; *see also* AFRP 2001; Moyle 2002; Willis et al. 2022). Below the flow threshold, recruitment of White Sturgeon is very low or non-existent. As UC Davis Professor, Dr. Andrew Rypel, recently explained: "Most of our native fishes rely on those high-flow years for recruitment, and white sturgeon are the extreme example of that. They only recruit on the highest of flow years." (https://mavensnotebook.com/2024/07/11/feature-a-bigger-older-fish-gasping-for-more-water-white-sturgeon-slipping-away/). The connection between White Sturgeon reproductive success and high river flows is also known from other watersheds (Parsley and Beckman 1994). Successful cohort formation for California White Sturgeon, which corresponds to years of high spring-summer river flows into and out of the Delta (Moyle 2002; Fish 2010; CDFW 2015 citing Kohlhorst et al. 1991 and Schaffter and Kohlhorst 1999; SWRCB 2017). Chronically low river flows and reductions in freshwater inflow to San Francisco Bay

(also referred to as Delta outflow) resulting from water diversion and storage operations, have been implicated in the decline of California White Sturgeon (CDFW 2015; Jackson et al. 2016; SWRCB 2017; Baykeeper et al. 2023).

The State Water Board analyzed the relationship between recruitment of juvenile White Sturgeon and average freshwater Delta outflow in March-July (SWRCB 2017). That analysis found that recruitment of juvenile White Sturgeon was much less likely to occur when March-July average flows were below certain thresholds (*see* Figures 3.6-2 and 3.6-3 of SWRCB 2017 at pp. 3-65) and that monthly average Delta outflows > 37,000 cfs during this period were necessary to protect the public trust benefits of California White Sturgeon. From 1980-1999, average March-July Delta outflows >37,000 cfs occurred 30 percent of the time (6 out of 20 years). Since 1999, flows of this magnitude have occurred only 17.4 percent of the time (4 out of 23 years). Reis et al. (2019 Table 5 at 12) show that the frequency of wet and above average hydrology (as they measured it) experienced by White Sturgeon in the Bay's watershed is reduced by water diversions and storage, including operations of the CVP and SWP. Furthermore, Baykeeper et al. (2023) showed that recruitment of YOY White Sturgeon was very low or zero when Sacramento River flows ("SAC" + "YOLO" variables in Dayflow) average < 30,000 cfs between April and July.

The DEIS's analysis of White Sturgeon response to alternative operations of the CVP Appendix AB-J, Winter and Spring Pulses and Delta Outflow Attachment J.2 is flawed. Specifically, the DEIS's method for calculating Delta Outflow impacts of the Proposed Action on White Sturgeon (DEIS Appendix 6B at 6B-408) assumes that the relationship between production of White Sturgeon juveniles and Delta outflow is log-linear across the range of inflows. However, because it is highly unlikely that White Sturgeon reproduce successfully in drier year types, projected effects of alternative operations in those year types are erroneous and reveal flaws in the analysis that would tend to understate the true impact of the Proposed Action. Because the DEIS applies a log-linear regression across the range of flows, it estimates that water project operations will affect production of juvenile White Sturgeon across the range of flows. Ignoring the non-linear nature of the flow-juvenile production relationship also means that the DEIS's regression relationship is lower magnitude ("flatter") than the actual relationship, thus it likely underestimates the effect of high flows on juvenile production. As a result, the DEIS's analysis likely underestimates the Proposed Action's negative effects on White Sturgeon production in wetter years, relative to the baseline. The same problem is likely to apply to the DEIS's analysis of Green Sturgeon (DEIS, Appendix AB, Chapter 8).

Despite these flaws in estimation of the Proposed Action's effects on the Bay's imperiled White Sturgeon population, it is likely that the analysis reflects the relative impact of proposed operations with respect to the No Action Alternative. Except for Alternative 3, all project alternatives (and Proposed Action variants) perform worse than the NAA in Wet years, when the bulk of White Sturgeon juvenile production is expected to occur (Table J.2-5). A relatively small

amount of White Sturgeon recruitment is expected in some "Above Normal" water years. Although the variant of the Proposed Action that includes all VAs is expected to perform slightly better than the NAA under these conditions, the overall expected change under this variant is still negative with respect to the NAA when the effects in Wet Years and Above Normal years are considered together (This is especially true because "Wet" years are expected to occur more frequently than "Above Normal" years). Again, no recruitment of Age 0 juvenile White Sturgeon is expected in years that are drier than "Above Normal," but even if it did, Table J.2-5 demonstrates that all alternatives except for Alternative 3 are worse for White Sturgeon than the NAA, on average.[25] By contrast, Alternative 3 is expected to produce significant proportional increases in White Sturgeon production as compared to the NAA. Because of the population modeling errors described above, the DEIS probably underestimates the differences (positive and negative) between the alternatives and the NAA.

The DEIS must be revised to disclose the precarious and deteriorating conservation status of White Sturgeon under the NAA and the likely negative effects of the Proposed Action on both White Sturgeon and the threatened Green Sturgeon DPS. Furthermore, the DEIS's methodology should be revised to account for the non-linear nature of the flow-recruitment relationship for White Sturgeon and Green Sturgeon, where the effect of flow changes materializes only in the wetter end of the hydrological spectrum.

B. The Proposed Action is Fundamentally Flawed Because it includes The Proposed Voluntary Agreements.

The Proposed Action is deficient in relying on the proposed Voluntary Agreements ("VAs") because – in addition to the Proposed Action's adverse impacts to listed species discussed in the previous section – the VAs are not reasonably certain to occur, the purported magnitude and benefits of VA-associated flows are incorrectly described, and, even if implemented, the VAs would be likely to be short-term in duration. **Because of these flaws, reliance on the VA proposal is unlawful, and the VAs should not be included as a component of the alternatives in the DEIS**.

1. The Voluntary Agreements are not reasonably certain to occur.

The Proposed Action in the DEIS assumes a set of fully developed and executed VAs that have been analyzed and accepted by the State Water Board. These assumptions are highly questionable. In fact, the VAs are not reasonably certain to occur. *See, e.g., Nat'l Wildlife Fed'n, v. Nat'l Marine Fisheries Serv.*, 524 F.3d 917, 936 & n.17 (9th Cir. 2008). The VA proposal has

[25] The same general pattern applies to the DEIS's analysis of Green Sturgeon – Alternative 2 variants perform worse than the NAA (Appendix AB, Chapter 8 – Green Sturgeon Table 8-10). Alternatives 1, 3, and 4 were not analyzed in the Green Sturgeon appendix.

been in development for more than a decade and proponents have still not produced a complete proposal as of September 2024. *See* Voluntary Agreement Timeline, Attachment 4. Given this track record, there is no reason to assume that the VA effort will ever produce a complete package.

Even if a complete package is eventually produced, it could be years in the future. Missing elements include, but are not limited to, a final funding agreement, enforcement agreements, a detailed proposal for tribal engagement in decision-making, a detailed operations plan for the Delta, SMART biological goals and objectives, and technical details 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." *See* SWRCB 2023 at p. G3a-1.

Further, it is not certain that the State Water Board will approve the VA proposal. The Board's most recent description of its plan for updating Bay-Delta water quality standards (SWRCB 2023) describes "Proposed Plan Amendments" that do not include the VAs – the VAs are described as an alternative to the Proposed Plan Amendments. Furthermore, the proposed VAs are any final VA proposal. The proposed Bay-Delta VA is more complicated than any previous effort to manage a discretionary block of environmental water anywhere in the nation. The attached *Building Blocks* white paper documents significant challenges that have faced 18 other efforts to do so – most of which are located in California.[26] Compared to all of the other similar projects across the nation, the VA proposal is broader in geographic scope, broader in terms of the species and beneficial uses it would address, and broader in terms of the complexity of the water management systems involved. Yet, all previous environmental block of water efforts in California, despite the fact that they were far less complex than the Bay-Delta VA proposal, have encountered major implementation challenges. In some cases, those challenges have dramatically reduced or even eliminated entirely anticipated environmental benefits.

The problems faced by previous environmental blocks of water have included a failure to purchase anticipated environmental water, accounting issues related to the program's environmental baseline, inadequate funding, unanticipated impacts caused by changes in project operations, and more. All of these problems apply to the Bay-Delta VA proposal, clearly demonstrating that the anticipated VA environmental benefits are not reasonably certain to occur.

Beyond the challenges identified in the *Building Blocks* report, the VA proposal also contains numerous additional flaws that reduce the likelihood of anticipated environmental flows and benefits:

[26] *Building Blocks – Tools and Lessons for Designing a Block of Water for the Environment*. Barry Nelson, Defenders of Wildlife. June 2022.

- The VA accounting proposal clearly allows future increases in demand, or the development of new storage or conveyance facilities, to reduce environmental water over time. As currently proposed, the VAs would provide no protection for current environmental flows that are greater than current regulatory minimums. Future water diversions could capture these unregulated flows, effectively reducing environmental flows and harming listed species. (*See* Alternative 6a in SWRCB, Draft Staff Report, pp. 7.2-15 and 7.2-16). Given current proposals for large scale new diversions related to the Delta tunnel, Sites reservoir and other proposed new storage facilities, it is highly likely that these additional diversions, which are allowed under the VAs, will significantly reduce environmental flows during the term of the final Biological Opinions.
- Given the current focus on wet season diversions to rechange groundwater basins, related to the implementation of the Sustainable Groundwater Management Act, the above flaw in the VA accounting proposal, which does not protect existing environmental flows, could allow anticipated environmental water to be reduced significantly during the term of the final Biological Opinions.
- The flows promised in the American River VA could be provided in as few as 3 of the 8 years of the VA's initial term. In no case would VA environmental flows be provided in more than 6 of the 8 years. (*See* Global Agreement to the Healthy Rivers and Landscapes Program in the Bay-Delta, March 29, 2024 Draft, Appendix 1, Sec. 1.1.1).
- Alternative 2a includes the use of Temporary Urgency Change Petitions (TUCPs) and Temporary Urgency Change Orders during future droughts. *See* p. E-67. Repeated approval of these TUCPs has allowed Board, CESA and related ESA flow requirements to be waived in 6 of the past 10 years. This is particularly important, given the impacts on Delta Smelt, winter run and spring run Chinook salmon, white sturgeon and other listed species, as well as fall run Chinook salmon, during droughts. TUCPs in the future could reduce environmental flows to a level below that assumed in the DEIS. As a result, the total environmental flows in the VA package and the DEIS's Proposed Action, including existing regulatory flow requirements, are unlikely to occur.
- The VA proposal has no adequate enforcement mechanism, in the likely event that this effort fails to produce anticipated environmental water. For example, the VAs do not require annual, much less real-time or seasonal, accounting of flows – so there is no way to ensure that the pledged water arrives as promised or when it is needed by imperiled fish and wildlife.
- The VA proposal relies heavily on long-term modelling, not real-time, real-world conditions, to account for environmental water. Given the experiences with the Environmental Water Account, a modelling approach is inadequate to ensure that environmental water is provided as anticipated.

- The current VA proposal would not begin a comprehensive evaluation of the implementation of the VA program until year 6. As a result, even if the VAs were to fail comprehensively, that failure might not be adequately detected, reported, summarized and analyzed until year 6 or later.

For all of these reasons, even if the State Water Board were to approve the VAs, the amount of environmental water that is described in the VA proposal – and which is uncritically repeated in the DEIS – is not reasonably certain to occur. The fundamental problems above are not adequately analyzed in the DEIS.

Even if the VA proposal were eventually to be finalized, approved and implemented, the uncertainties regarding the final VA proposal and the implementation challenges that have faced all other similar "environmental block of water" efforts clearly demonstrate that the final "on the ground" benefits and/or impacts of the VAs cannot be adequately evaluated at this time.

2. The description in the DEIS of the Voluntary Agreement proposal for Delta flows is misleading.

The DEIS includes a table describing the claimed new environmental water to be provided by the CVP and SWP. (*See* Appendix AB, p. 3-68, Table 3-12). That table also summarizes the "Total VA Outflow by All VA Parties." However, the State Water Board's analysis indicates that the VAs are likely to result in *lower* Delta outflows in Wet years than would have occurred under that agency's baseline, which incorporates the 2008/2009 Biological Opinion RPAs rather than the invalid 2019 BiOp. (*See* SWRCB 2023 Chapter 9 Table 9.5-41. As discussed more below, the). The VAs could decrease environmental flows during critical dry years, particularly relative to the current the 2024 Interim Operations Plan, which is being implemented at the direction of the federal court. This could be the case even if the VAs were to provide all of the water they currently promise – and as discussed above, this is far from certain. Thus, the portrayal in the DEIS of potential flow improvements under the VA proposal is misleading.

3. The DEIS appears to incorrectly assume that all anticipated Voluntary Agreement environmental flows would benefit listed species.

The DEIS appears to assume that flows provided by VA early implementation will be managed to improve spring outflow to benefit listed species. (*See* Appendix AB, p. 3-67). Yet the VA proposal appears to "count," as a VA flow contribution environmental water that is not diverted by the CVP and SWP Delta pumps as a result of causes that are unrelated to environmental protection, such as regular or unscheduled maintenance, pump/canal/storage failures or capacity limitations, or lack of demand. Even if these unplanned changes in operations provide an environmental benefit (and there is no requirement or guarantee that they will), flows bypassed under these circumstances already represent a significant portion of current Delta outflows (Reis

et al. 2019) and therefore may not be additive to the baseline. The assumption implicit in the DEIS – that all of the anticipated VA water, even if it is all actually provided, would be managed to achieve maximum benefits for listed species – is not reasonable.

4. The approach included in the DEIS means the VA flows are likely to be in place for only two years.

Alternative 2c includes an "early implementation" proposal for the VAs, including two years of export reductions by the CVP and SWP. (*See* Appendix AB, p. 3-68, Table 3-12). The DEIS further states that, after this early implementation period,

> "Reclamation and DWR will operate consistent with the VAs only if (a) the State Water Board incorporates the VAs, as proposed by the VA parties, into the WQCP, and (b) the VA parties execute the agreements contemplated by the VAs,
>
> or
>
> Reclamation and DWR will operate as described by the Proposed Action but without any of the actions contemplated for 'early implementation' or the VAs if (i) the State Water Board does not incorporate the VAs, as proposed by the VA parties, into the WQCP, or (ii) the VA parties do not execute the agreements contemplated by the VAs." (*See* Appendix AB, p. 3-69.)

As discussed above, the DEIS overlooks the fact that the VA process has already been underway for 13 years, yet it still has not resulted in a complete proposal. Further, the VA process has failed to meet at least 8 self-imposed deadlines during this period. *See* VA Timeline Fact Sheet, Attachment 4. Additionally, both NMFS and EPA have concluded, in letters to the State Water Board discussed elsewhere, that the VAs are not adequate to protect beneficial uses. Given this record, it is likely that the VA process will continue to struggle - intentionally or not - to produce a complete package. It is also possible that, even if a complete VA package is completed, the State Water Board may not approve it.

In the event that the Board has not approved the VAs as a part of an update to the Bay-Delta Water Quality Control Plan, the initial two-year CVP and SWP Delta export reductions would end. In this case, the early implementation component of the Proposed Action would expire, without a clear and comprehensive replacement.

This scenario suggests that it is possible, perhaps likely, that the early implementation actions in Alternative 2c would expire after two years and that the full implementation of VAs anticipated by Alternative 2d would never happen. This could lead to yet another multi-year reconsultation period, during which time listed species would suffer from the lack of comprehensive, scientifically based and legally sufficient long-term Biological Opinions. This could

unnecessarily allow listed species to continue to decline, possibly to extinction. The DEIS does not adequately analyze this extinction risk.

5. The DEIS does not adequately describe and analyze the VA's status, elements, potential benefits or potential impacts.

The VAs are, as discussed elsewhere in this document, incomplete after more than a decade of discussions. Further, the VA documents that have been released are deeply flawed and potentially damaging. For example, as discussed above, the VA accounting approach could set the stage for large new diversions that would reduce current environmental flows. In addition, many current VA proposals are ambiguous or confusing.

The DEIS discussion of alternatives, including the discussions of Alternatives 2c and 2d, (*See* DEIS, Appendix E, p. E-67) fails to adequately describe the VAs, including the concerns discussed in this document regarding flaws, unreliability and potential impacts, as well as the incomplete, ambiguous, and confusing nature of the components of the VAs that have been released to date. Therefore, separate from our concern that the VAs are not reasonably likely to occur, the document fails to adequately describe and analyze the VA package as it exists today.

It is also important to note that the VA process is currently being legally challenged. On August 23, 2023, the U.S. Environmental Protection Agency accepted for investigation a Title VI complaint filed by Buena Vista Rancheria, Shingle Springs Band of Miwok Indians, Winnemem Wintu Tribe, Little Manila Rising, and Restore the Delta (known as the Delta Tribal Environmental Coalition, or DTEC)) against the State Water Board for alleged discrimination in the management of California water. At the center of this complaint are the VAs, because they were produced in an inequitable and discriminatory processes that excluded Native American Tribes, communities of color, and the general public from participating in water quality governance. In the Title VI complaint, DTEC has publicly called for the suspension of the VAs in the current Bay-Delta Plan update and for a robust public participation policy to ensure a publicly accessible and inclusive process for formulation of any state-sponsored alternative to a regulatory update to the Bay-Delta Plan.

IV. The DEIS Fails to Include a Plan for Droughts that Does Not Violate Minimum Water Quality Objectives.

The DEIS's treatment of drought management is highly problematic. To begin with, the DEIS fails to clarify whether, how, and under what criteria shortage provisions will be imposed on Sacramento River Settlement Contractors, as is needed to comply with the CVPIA's rebalancing of project purpose to include environmental protection and restoration. Furthermore, the DEIS fails to identify specific actions that Reclamation will commit to mitigate the highly foreseeable

and largely avoidable conditions of drought and avoid the reliance on temporary urgency changes that have characterized drought management in the past fifteen years, with devastating consequences for protected species. Instead, the DEIS offers up the Drought Toolkit. **The voluntary, largely qualitative nature of the Drought Toolkit and the lack of authorization or funding for its implementation makes it difficult to assume that it is reasonably likely to occur, and therefore reliance on the Drought Toolkit in the DEIS is unlawful**.

In contrast to the 2019 Biological Opinions, which scarcely mentioned droughts and drought operations of the CVP and SWP, the DEIS explicitly contemplates drought operations in the analysis of various operations under the alternatives it analyzes. The DEIS frames some of its discussion of drought in the broader context of overall operations and some of its discussion of drought specifically in terms of drought operations.

The DEIS proposes under Alternative 2 that future drought operations will differ from previous drought operations through changes in governance. This is most extensively shown in discussion of governance for Shasta Reservoir operations and in discussion of Alternative 2 Sacramento River/Shasta operations. (DEIS, Appendix E, pp. E-127 and E-67 ff).

The DEIS also evaluates prospective changes to Delta operations during droughts by modeling a series of sensitivity analyses of Alternative 2 without "Temporary Urgency Change Petitions" (TUCPs)[27] for Delta operations. (*See* first mention of TUCPs in DEIS, without even description of the acronym, p. 0-24). Yet while there is extensive reporting of *model output* with and without TUCPs, the DEIS does not introduce narrative context of the practice or the issue of TUCPs in the analysis of Alternative 2, leaving the reader to divine or wonder what the importance of the modeling analyses may be. Equally frustrating, the DEIS does not describe whether the preferred alternative will or will not rely during droughts on temporary urgency changes to Bay-Delta water quality requirements, or what the decision-making process will entail or rely on, both as a default and as it happens.

The analyses of Shasta operations and TUCPs during droughts are necessarily interrelated. In the last decade, the Sacramento River downstream of Shasta/Keswick reservoirs and Delta water quality have been the parts of the CVP and SWP system that most gravely broke during droughts, causing disastrous effects on fisheries. On a practical level, the Board granted TUCPs for Delta operations largely to enable BOR to "conserve" storage in Shasta Reservoir, even if that storage did not wind up being actually used for the ostensible purpose of maintaining the coldwater pool.[28]

[27] Please note that Temporary Urgency Change Petitions ("TUCPs"), once approved and finalized by the State Water Resources Control Board ("State Water Board") become Temporary Urgency Change Orders ("TUCOs"). In these comments, TUCPs and TUCOs are referenced and should be considered interchangeable.
[28] The DEIS uses the term "preserve storage" rather than "conserve storage."

A. Shasta Reservoir Operations.

1. Governance.

The DEIS's approaches to governance in the Proposed Action are problematic. Alternative 2 proposes "three main coordination forums" for operations of Shasta Reservoir. These include the Shasta Operations Team ("SHOT"), "consisting of Agency subdirectors and managers [who] will serve as the management and policy group for decisions related to Shasta Reservoir operations. The team will develop a charter to describe membership and process." (DEIS, Appendix E, p. E-128). The SHOT coordinates with the systemwide managers forum, the Water Operations Management Team ("WOMT"). *Id*.

Underneath the SHOT is the Sacramento River Temperature and Flow Technical Group ("SRG"), a technical team. The SRG consists of representatives from BOR, DWR, USFWS, CDFW, NMFS Central Valley Office, NMFS Southwest Fisheries Science Center, the SWRCB, Western Area Power Administration, the Yurok Tribe, the Hoopa Tribe and the SRS Contractors. (DEIS, Appendix E, p. E-129).

The third "coordination forum" for Shasta operations consists of the "Meet and Confer Group." This group consists of SRS Contractors, BOR, and NMFS, with others by invitation. Its purpose is to meet during dry years "to determine if there is any role for the SRS Contractors in connection with Reclamation's operational decision-making for Shasta Reservoir annual operations in those years. … Any mutually agreeable operations resulting from meet and confer discussions must be consistent with the terms of the SRS Contracts and may also be subject to other regulatory approvals." *Id*. The Meet and Confer Group is established as a result of the "Sacramento River Settlement Contractors Resolution," which is afford its own subsection under that title. (DEIS, Appendix E, p. E-84). Key elements of the resolution include consistency with the SRS Contracts, payment for water deliveries voluntarily foregone, and consideration of changes in timing (not volume) of water deliveries.

One of the main problems with the proposed governance framework is the apparent limited decision space in which the "coordination forums" may operate. As suggested by the definition of the Meet and Confer Group, any reductions in deliveries to the SRS Contractors beyond those specified in their contracts is limited to voluntary actions, and those would likely require payment. *See id.*[29] It is unreasonable to assume, therefore, that any necessary actions to protect listed species that have any water supply cost will emerge from this process.

[29] It is also important to note that Alternative 3 proposes a different governance framework that prioritizes inclusion of Native American Tribes and delegates the ultimate decision-making authority for water operational decisions with the fisheries agencies, NMFS and USFWS, "if the issue is not resolved in the management team process." (*See* DEIS, Appendix E, p. E-169).

2. Shasta Storage Framework and "bins" of different storage conditions.

Reclamation must disclose how Alternative 2 will ensure that adequate cold water is stored behind Shasta Dam in the winter and spring to provide suitable incubation conditions for listed salmonids and in the fall to create a reasonable likelihood that coldwater storage will be adequate in the following calendar year. The DEIS proposes, for Alternative 2, a "Water Temperature and Storage Framework" for Shasta operations that places water years in different "bins," or classifications of water years. Bins are defined by predicted end-of-April (EOA) Shasta storage. (DEIS, Appendix E, p. E-72).

The DEIS states that:

- 80 percent of years are "Bin 1" water years, in which "hydrologic conditions are generally good and water resources are available to meet demands." (DEIS, Appendix E, p. E-73).
- 11.5 percent of years are "Bin 2" water years, in which "hydrologic conditions are more limited than in Bin 1 and adequate water resources are not available to meet all demands." (DEIS, Appendix E, p. E-76).
- 8.5 percent of years are "Bin 3" water years, in which "critically dry conditions exist, the system is stressed and water resources are not available to meet all demands." (DEIS, Appendix E, p. E-79).

Within each Bin, there are two "categories: standard (Bin A) and drought protection (Bin B)." (DEIS, Appendix E, p. E-72). "The A Bins are years when the expected demand from the reservoir is lower meaning it's likely to result in better drought protection should the following year be dry. The B-bins are intended to increase the priority of storage conservation to address the risk that the ensuing year could be a drought." *Id*.

Table 4. Breakdown of Alternative 2 Proposed Shasta Reservoir Bins By Expected End of April (EOA) and End of September (EOS) Shasta Storage

Bin	EOA Storage Target	EOS Storage Target
1A	≥ 3.7 MAF	≥ 3.0 MAF
1B	≥ 3.7 MAF	≥ 2.4 MAF
2A	≥ 3.0 MAF	≥ 2.2 MAF
2B	≥ 3.0 MAF	≥ 2.0 MAF
3A	< 3.0 MAF	≥ 2.0 MAF
3B	< 3.0 MAF	< 2.0 MAF

(DEIS, Chapter E, pp. E-73 through E-82)

The DEIS does not disclose how Reclamation will achieve its Bin 1 frequency target. The assignment of 80 percent of all water years to "Bin 1" without committing to take actions that will actually ensure such a high frequency of such Bin 1 years is a strong demonstration of BOR

's ongoing denial of the need to proactively address drought in the first Dry or Critically Dry year. Absent the appropriate precautionary actions such assignment fails to understand and respond to the fact that a second sequential Dry or Critically Dry year places the combined CVP and SWP in crisis. The assignment of 80 percent of years to Bin 1 without accompanying significant changes to allocation policy perpetuates a system of crisis management rather than promoting crisis avoidance. It perpetuates an allocation of excessive (but predictable) risk to fisheries and the aquatic ecosystem to enable imprudent and, over the long-term, excessive allocations of water. Finally, without a set of specific actions that will protect coldwater pool such that Bin 1 conditions are achieved in 80% of years, it is not reasonably likely that such conditions will actually occur with the intended frequency. This failure to ensure the frequency of Bin 1 conditions renders speculative the DEIS's analysis of the Proposed Action's effect on river temperatures and reservoir discharge during the spawning, incubation, and rearing season of listed salmonids. A more precautionary approach is warranted, particularly in light of the historical fact that Dry or Critically Dry years frequently come back-to-back or in pairs.

It is good that the DEIS assigns EOA and EOS storage numbers to each of the bins and "categories." However, the numbers are weighted too heavily to increase water supply, and they will not protect listed species. Consider the contrasting approach applying principles that require achievement of water storage requirements in Shasta Reservoir before allocation of water supplies in Alternative 3. By contrast, Alternative 3 requires achievement of water storage requirements in Shasta Reservoir before allocation of water supplies. (DEIS, Appendix E, p. E-163).

The DEIS's description of Alternative 2 contains inconsistent, unexplained, and at times conflicting explanations of whether, how, and when BOR might impose involuntary delivery shortages on SRS Contractors. As noted above, the Central Valley Project Improvement Act of 1992 rebalanced the project purposes of the CVP to include environmental protection and restoration. It is unlikely that either endangered species can be protected or the CVP's specific environmental mandates (such as anadromous fish doubling or refuge water supplies) be achieved without changes to the SRS Contracts under drought conditions. It is notable that the DEIS mentions contractual (25 percent) shortages to SRS Contractors only in the context of Bin 3 water years, or only 8.5 percent of all years (DEIS, Appendix E, p. E-80). Aside from the discussion of Governance and specifically the Meet and Confer Group, it is unclear whether, and if so how, BOR would address deliveries to SRS Contractors outside the voluntary framework of this "coordination forum" and its contemplated voluntary reductions, payments in lieu of deliveries, and so forth. (*See* DEIS, Appendix E, p. E-129, as discussed above). Clarification of these criteria would benefit not only species protection efforts but the SRS Contractors themselves in minimizing their supply uncertainties given defined hydrological conditions.

The DEIS prominently features discussion of fidelity to the SRS Contracts, as discussed above. (DEIS, Appendix E, p. E-84, E-124). However, the DEIS also describes Bin 3B as follows:

"During Bin 3B years, defined as having an EOA storage below 3.0 MAF and a projected EOS storage less than 2.0 MAF … available water supply for diversion under the SRS Contractors is limited to between 75% and 50% of total contract quantities, or approximately 1.5 - 1.1 MAF." (DEIS, Appendix E, p. E-80). Since the SRS Contracts limit deficiencies to 25 percent in defined "critical" years, this suggests some kind of action by BOR to involuntarily limit deliveries to SRS contractors beyond the level defined in the contracts.[30] The DEIS continues: "This reduced volume of available water will be applied to all SRS Contractors collectively and individual contractor reductions may vary based on agreements and transfers between different SRS Contractors. In these years, previously described SRS Contractor voluntary actions under their resolution may not be possible due to the very limited supply." (DEIS, Appendix E, pp. E-80 to E-81).

That seems clear. But the DEIS follows with discussion of a scenario in which there is not agreement on allocations to SRS Contractors, in which the decision point and the ultimate decision maker are anything but clear:

> "In situations where appropriate fall and winter flows were discussed and tradeoffs were evaluated but there was not agreement on the implemented flow regime from the SRS Contractors, SRS Contractors propose alternative methods to meet obligations to senior water right holders under the SRS Contracts with the SHOT should the following year be a 3B year. Should a similar disagreement occur during a Bin 3B year after the Bin has been designated, flows in disagreement will not affect the determination on volume of available water. Under these conditions, the likelihood of storage below 2.0 MAF will increase."
>
> (DEIS, Appendix E, p. E-81).

A revised and recirculated DEIS needs to make unequivocally clear:

- how BOR will ensure that reservoir storage conditions consistent with Bin 1 will be achieved in at least 80% of years
- whether BOR will impose involuntary water delivery shortages on SRS Contractors, pursuant to the CVPIA and endangered species needs;
- if so, under what conditions BOR will impose water delivery shortages on SRS Contractors; and

[30] *See* Defenders of Wildlife letter to the Bureau of Reclamation and U.S. Fish and Wildlife Service, "Proposal to Reduce Refuge Water Deliveries as Proposed Action in CVP LTO Consultation Would Hurt Numerous Species and Violate Federal Law", April 24, 2023. Defenders never received a response. Therefore, we remain concerned the Proposed Action will also in turn involuntarily short mandatory water deliveries to wildlife refuges, as required by Congress in the CVPIA.

- what the decision-making process for the imposition water delivery shortages on SRS Contractors will be.

The extremely limited conditions under which the DEIS contemplates shortages to SRS Contractors is a fundamental flaw in program designed to protect listed species. The level of deliveries to SRS Contractors is unsustainable. It causes a crisis in the overall CVP and SWP system each time there are two or more sequential Dry or Critically Dry years. A more sustainable model is allocations to senior agricultural diverters on the Mokelumne River, who take a 35 percent reduction in water deliveries in every "dry" (and not just critically dry) year. Again, clarification of these reduction procedures would benefit not only species protection and CVPIA implementation but the SRS Contractors themselves by minimizing their future water supply uncertainties.

B. Delta Operations and the Serial Use of Temporary Urgency Change Petitions (TUCPs).

1. Background.

Over the past decade, BOR and DWR repeatedly, consistently, and successfully sought to waive or weaken numerous water quality objectives, including minimum required Delta outflow, which are the basis of an incorporated into requirements of both the 2008/2009 and the 2019 biological opinions. BOR and DWR also failed repeatedly to meet upstream water temperature requirements of both the Biological Opinions and the Basin Plan. These failures to meet ESA requirements occurred despite the fact that existing ESA requirements and the water quality and temperature objectives they incorporate are widely acknowledged to be insufficiently protective (*see*, CDFW 2010; (*See*, *e.g.,* SWRCB 2010, 2017, 2018). In addition to inadequate Sacramento River Temperature Management Plans (required under water rights decision 90-5 and 91-1) and associated management of Shasta Reservoir, Temporary Urgency Change Petitions (TUCPs) for Delta operations have been the principal artifice of this serial weakening of environmental protections during sequential Dry and Critically Dry years and also Wet years.

TUCPs submitted by DWR and BOR were approved by the SWRCB in six out of ten years in the last decade: 2014, 2015, 2016, 2021, 2022, and 2023. These changes to water project operations were not previously analyzed as part of the environmental documentation for the Biological Opinions or in the SWRCB's 1995 Bay-Delta Water Quality Control Plan and Water Right Decision 1641. (*See, e.g.,* Water Rights Order 2014-0029 (September 24, 2014)[31]; Water Rights

[31] Available online at:
http://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/2014/wro2014_0029.pdf

order dated February 3, 2015[32]; April 6, 2015, Revised Order[33]; July 3, 2015, order conditionally approving petition for temporary urgency change[34]). For instance, in 2015 the waivers of water quality standards reduced Delta outflows and increased water deliveries by approximately 800,000 acre-feet.

These waivers of required operations contributed to devastating impacts to winter-run Chinook Salmon, spring-run Chinook Salmon, fall-run Chinook Salmon, Delta Smelt, Longfin Smelt, and other native fish species, including:

- Greater than 95 percent mortality of endangered winter-run Chinook Salmon eggs and juveniles above Red Bluff Diversion Dam in 2014 and 2015, including temperature dependent mortality of 77 percent in 2014 and 85 percent in 2015 due to lethal and chronically adverse water temperatures below Keswick Dam.
- Greater than 95 percent mortality of fall-run Chinook Salmon eggs and juveniles that spawned in the mainstem Sacramento River above Red Bluff Diversion Dam in 2014.
- Total closures of California fall-run Chinook fisheries in 2023 and 2024 for lack of abundance of returning adult spawners due to high TDM rate impacts on the eggs and juveniles of 2020, 2021 and 2023 year-classes.
- Record low abundance indices for Delta Smelt in the 2014 and 2021-23 Fall Midwater Trawl and 2015 and 2021 Spring Kodiak Trawl surveys.
- Near record low abundance of Longfin Smelt in the 2014 Fall Midwater Trawl survey and a new record low abundance in the 2015 Fall Midwater Trawl survey.
- Negative impacts on the survival of juvenile Delta Smelt in June through August of 2021, on the recruitment and post-larval survival of Delta Smelt in 2022, and on the recruitment of Delta Smelt in 2023.
- Negative impacts on the spawning and recruitment of Longfin Smelt in June and July of 2021 and on abundance of Longfin Smelt in 2022 and 2023.
- Lower survival and recruitment of several other estuarine species in 2021, 2022, and 2023.
- Increases in the abundance of nonnative species like Black Bass in the Delta; and,
- Increases in the abundance of toxic cyanobacteria in the genus *Microcystis* that result in harmful algal blooms in the Delta (*see* Lehman et al. 2022 and SWRCB 2021).

[32] Available online at: https://www.waterboards.ca.gov/drought/docs/tucp/2015/tucp_order020315.pdf
[33] Available online at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/docs/tucp/2015/tucp_order040615.pdf
[34] Available online at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/docs/tucp/2015/tucp_order070315.pdf

(*See, e.g.,* Water Rights Order 2014-0029; Water Rights order dated February 3, 2015; April 6, 2015 Revised Order; July 3, 2015 order conditionally approving petition for temporary urgency change; Protest to TUCP filed by the NRDC dated February 13, 2015[35]; March 24, 2015 Petition for Temporary Urgency Change, Attachment A[36]; Feb 15, 2022 Order Denying in Part and Granting in Part Petitions for Reconsideration of the Executive Director's Approvals of the June 1, 2021, Order Conditionally Approving a Petition for Temporary Urgency Changes To License and Permit Terms and Conditions Requiring Compliance with Delta Water Quality Objectives In Response To Drought Conditions and the June 10, 2021, Sacramento River Temperature Management Plan[37]; March 18, 2022 Temporary Urgency Change Petition for April 1, 2022 through June 30, 2022[38]; and February 13, 2023 Temporary Urgency Change Petition for February 1, 2023 through March 31, 2023[39].)

2. Application of TUCPs in Droughts under Alternative 2.

As mentioned above, the DEIS is unclear about the role (if any) of TUCPs for Delta operations in droughts or sequential dry years. The DEIS, under the heading **"**3.5.10 Drought," states the TUCPs would have no role under Alternative 3: "Similar to Alternative 2, however Alternative 3 prohibits the use of a TUCP." (DEIS, p. 3-66). Leaving aside the unclear syntax, this appears to suggest that Alternative 3, which prohibits the use of TUCPs, is different from Alternative 2 in this respect, and thus that there would be some role for TUCPs under Alternative 2. This language should be clarified.

In a similar vein, the discussion of drought actions under Bin 2B states:

> "Reclamation will consider water supply (CVP allocation) reductions and, through coordination with the SHOT, will identify moderate system-wide tradeoffs and potential transfer modifications and with the goal of meeting both of these goals. Moderate system wide tradeoffs generally include, but are not limited to, rebalancing between other CVP reservoirs with moderate impacts to other parts of the system, transfer timing modifications, situation-specific adjustments to Delta water quality standards under D-1641 to address developing drought conditions and other actions from the drought toolkit." (DEIS, Appendix E, p. E-77).

[35] Available online at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/comments_tucp2015/docs/nrdc_obegi021315.pdf
[36] Available online at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/docs/tucp/2015/apr2015_req032415.pdf
[37] Available at: https://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/2022/wro2022_0095.pdf
[38] Available at: https://www.waterboards.ca.gov/waterrights/water_issues/programs/applications/transfers_tu_notices/2022/20220318_tucp.pdf
[39] Available at: https://www.waterboards.ca.gov/drought/tucp/docs/2023/20230213_tucp.pdf

And the discussion of drought actions under Bin 3B similarly states:

> "Reclamation, through Chinook salmon coordination with the SHOT, will identify moderate and heavy system-wide tradeoffs with the goal of conserving storage and meeting minimal temperature objectives. Moderate system wide tradeoffs generally include, but are not limited to, rebalancing between other CVP reservoirs with moderate impacts to other parts of the system, transfer timing modifications, situation-specific adjustments to Delta water quality standards under D-1641 to address developing drought conditions and other actions from the drought toolkit." (DEIS, Appendix E, p. E-80).

If there is a mechanism other than TUCPs that could accomplish such "situation-specific adjustments to Delta water quality standards," the DEIS fails to describe them.

In discussing Alternative 1, the DEIS states: "Reclamation and DWR would not apply for TUCPs to preserve storage in upstream reservoirs beyond water required to maintain public health and safety." (DEIS, p. 3-42). It is unclear then what the purpose of a TUCP would be, or how BOR would parse the purposes of a TUCP. It is also unclear whether this limitation would apply to Alternative 2. Among other things, the distinction between a TUCP to "preserve storage in upstream reservoirs" and a TUCP to benefit water supply is rarely self-evident. As discussed earlier, previous TUCPs to preserve storage have used the preserved storage to maintain or increase deliveries instead of maintaining adequate temperature conditions, among other things.

Rather than reducing deliveries to the SRS contractors, most of the alternatives in the DEIS (other than Alternative 3) contemplate harmful actions such as reducing the minimum flow from Keswick Reservoir in winter below the 3250 cfs minimum. (DEIS, p. 3-44). This would dewater fall-run Chinook Salmon redds and degrade habitat for winter-run Chinook Salmon juveniles that remain in the upper reaches of the Sacramento River downstream of Keswick Dam. The DEIS also contemplates reducing summer flows in the Sacramento River at Wilkins Slough from the required 5000 cfs to allow BOR to meet SRS Contracts (*See, e.g.,* DEIS, Appendix E on Bin 3 years, p. E-79: "As a default, Reclamation will target a minimum flow of 3,400 cfs [at Wilkins Slough] under these conditions."). Such reductions would degrade the migration corridor for Chinook Salmon and other species that under existing (non-drought) conditions is almost always already impaired by high water temperatures and lack of adequate flow during summer months.

The overarching problem with TUCPs, and the other rob-Peter-to-pay-Paul options that the DEIS proposes, to "preserve storage" in Shasta or other reservoirs is not simply that they have limited storage benefit. It is that they are founded on recovering storage depleted by unsustainable water deliveries, generally in the first Dry or Critically Dry year. TUCPs are also ineffective because they are a band aid on a wound that was created at least a year previously. Conserving (or "preserving") storage with TUCPs does not fail because it doesn't save enough water. It is a

failed strategy because it acts too late, after the time when increased storage could have made a difference.

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. *See* Wat. Code § 1435, subd. (c). Unfortunately, the DEIS fails to adequately exercise due diligence by identifying the specific measures to mitigate the highly foreseeable and largely avoidable conditions of drought and the bad management decisions that have been made in the past in response to drought. The DEIS's treatment of the Drought Toolkit is a case in point.

C. Drought Toolkit.

Part of the proposed mitigation for impacts of the CVP and SWP during drought conditions is the voluntary "Drought Toolkit," which would provide a coordination process to implement drought relief actions. However, the measures in the Toolkit are described generally and are not compared side-by-side from one alternative to another. It is also unclear whether the Drought Toolkit is a menu of potential actions or a prescribed protocol for actions in response to drought, or some combination.

DEIS Section E.3.9 ("Drought") states that the "Drought Toolkit" was a requirement of the 2020 Record of Decision for the 2019 BOs. It further states that BOR and DWR completed the latest version of the drought toolkit in 2022. However, the section **does not describe the contents of the drought toolkit.** (DEIS, Appendix E, p. E-58).

Some aspects of the Drought Toolkit seem to be part of Alternatives 1 and 4; but even there, there is no comprehensive inventory of required measures, only a general reference. For example, regarding Alternative 1, the DEIS states: "… Reclamation and DWR would implement elements of a drought toolkit …" (DEIS, Appendix E, p. E-66). The DEIS says "**a** drought toolkit." It does not say which "elements" such a toolkit contains, which elements BOR and DWR would select, or how BOR and DWR would select such elements.

Moreover, the description of any existing Drought Toolkit would still not address the relationship between such measures and Alternative 2.

Regarding Alternative 2, the DEIS states: "Reclamation is proposing to change the balance between risks of flood control releases for Shasta Reservoir and place a higher priority on maintaining storage for drought protection. The strategy is framed around a framework adapted from the multi-year drought sequence experienced in Victoria, Australia." (DEIS, Appendix D, p. D-8). However, this priority, repeated in several places in the DEIS (*see also* DEIS, Appendix E, p. E-71), is stated only in general terms as a policy, not as a series of specific measures.

Moreover, it does not address the relative priority of maintaining storage in relation to water supply.

DEIS Table D-5, "Summary of Alternative 2 Avoidance and Minimization Measures for Fish and Aquatic Resources," states regarding drought:

> "Avoidance Measure: … Drought Operations Priority Framework."
>
> "Geography & Listed Species Impacted: … Sacramento River (salmonids and sturgeon); Bay-Delta (salmonids, sturgeon, and smelt)"
>
> "Impact: "Reclamation will develop a Drought Emergency Plan that establishes system priorities and seeks to provide Winter-run Chinook salmon spawning water temperatures.
>
> "The measure may increase or decrease the water temperatures by decreasing Sacramento River flows into the Delta; however, increasing Shasta Reservoir storage may provide for more suitable water temperatures in the following year. The measure may also impact outmigration by decreasing Sacramento River flows into the Delta."
>
> (DEIS, Appendix D, Table D-5, pp. D-20, D-24, D-25).

Here again, the measure described seems to suggest, in the absence of other mechanisms, that BOR and DWR will request TUCPs in "decreasing Sacramento River flows into the Delta." *Id.*

The voluntary, largely qualitative nature of the Drought Toolkit and the lack of authorization or funding for its implementation makes it difficult to assume that it is reasonably likely to occur, and therefore reliance on the Drought Toolkit in the DEIS is unlawful.

Droughts are a normal part of the California climate. About forty percent of the last one hundred water years have been part of drought sequences. BOR and DWR must plan for consecutive dry years. This requires laying down to water supply some of the bets that have previously placed inordinate and devasting risk on listed species.

However, as contemplated in the DEIS, involuntary shortages to SRS Contractors are exclusively limited to a triage situation. Until unsustainable levels of water deliveries are met head-on, the CVP and SWP will always be one year away from a potential fisheries disaster. The listed species covered in the forthcoming BOs cannot survive many, if any, more such disasters.

The Drought Toolkit contemplated in the DEIS fails the requirements of NEPA for disclosure and analysis. It also appears to be likely to result in the same mismanagement and resort to TUCPs as experienced in recent years. Indeed, the Newsom Administration recently revised

emergency drought executive orders so as to continue maximizing water exports while loosening drought restrictions for both rural and urban communities receiving CVP and SWP water. TUCPs for river and Delta management would undermine and alter the function of the drought toolkit if they continue to be used at all times as part of Delta management.

V. The Proposed Action Does Not Match the State's Proposed Project.

The Proposed Action in Reclamation's DEIS does not currently match the State's Proposed Project in the Draft Environmental Impact Report ("DEIR"), published in May 2024. We are concerned that this will lead to several inconsistencies in implementing the coordinated project operations, and also deny the public an informed opportunity to review *coordinated* project operations that fully disclose environmental impacts. (40 C.F.R. §§ 1502.1 (b)-(c); *see also Columbia Basin Land Protection v. Schlesinger,* 643 F.2d 585, 594 (9th Cir. 1981) (A DEIS must ensure "full disclosure of the environmental consequences of a project."))

The DEIS states,

> "A Sub-Alternative, '2B', is derived from Alternative 2, but includes components developed by CDFW and DWR during DWR's current Incidental Take Permit application process for the SWP. Alternative 2b is anticipated to result in changes on Delta exports from more restrictive QWEST criteria. Alternative 2B also includes an extension of the CCF operation period to December 1 through March 31 from mid-December through mid-March, effectively increasing the operation of the SWP by one month. These components were not available in time to be included in quantitative modeling.
>
> Reclamation has identified Alternative 2B as the preferred alternative. Alternative 2B best meets the Purpose and Need, including the goals of E.O.13990 because NMFS and USFWS reached consensus on an alternative for Reclamation to submit for consultation. Alternative 2B incorporates the Delta criteria proposed in DWR's ITP for the Delta facilities of the SWP to harmonize operations of the CVP and SWP." (DEIS, Executive Summary, pp. 0-3 and 0-4).[40]

"Alternative 2B" is different in important ways from DWR's Proposed Project. The Proposed Project includes and assumes implementation of all Voluntary Agreements, as well as potential

[40] Once again, we remind Reclamation that NMFS and USFWS have used an old version of Alternative 2 for analysis under their Biological Opinions, and therefore "Alternative 2B" is not used or agreed upon by the fisheries agencies.

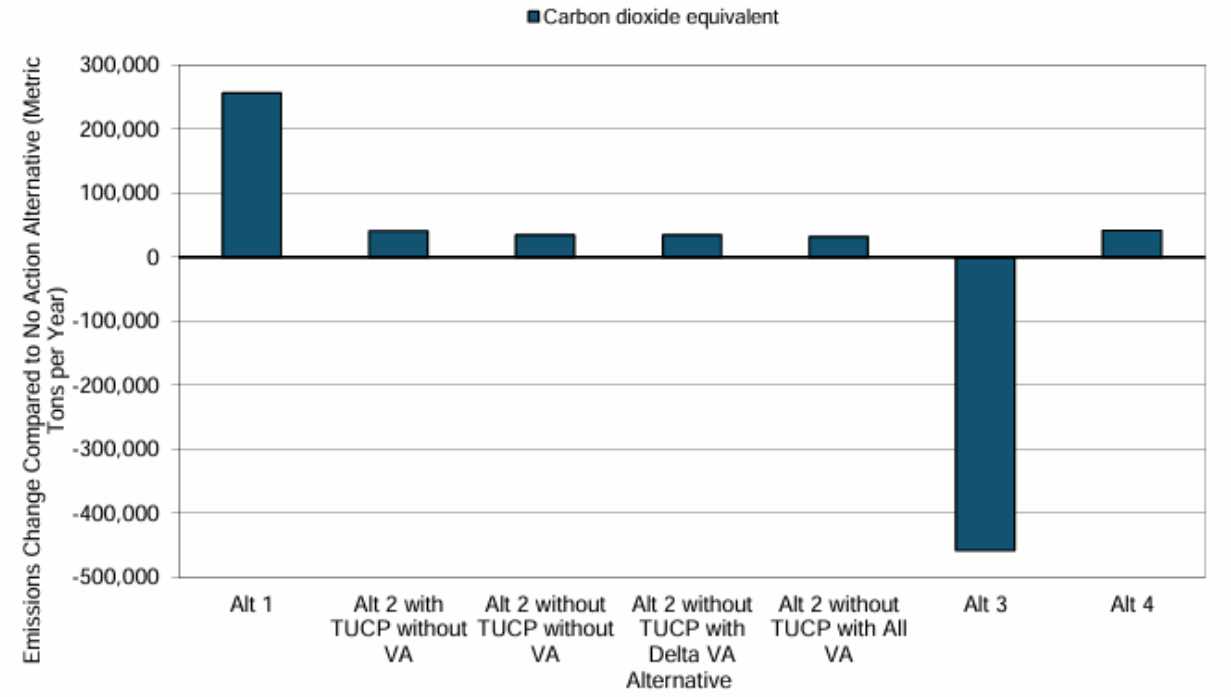
application of TUCPs.[41] The combination of both of these actions is not analyzed or addressed by Reclamation in the DEIS in any of the Alternative 2 variants.

The DEIS purports to analyze long-term operations of the CVP and the SWP, yet each project has a different preferred alternative – and in each case that preferred alternative fails to comply with federal and state law. Reclamation must revise and recirculate the DEIS to address how the state and federal preferred alternatives will be coordinated – and, as stated above, revise the preferred alternative to meet the requirements of the ESA.

VI. The DEIS Fails to Properly Analyze the Effects of Climate Change.

California state law required statewide Greenhouse Gas (GHG) emissions to be reduced to 1990 levels by 2020 (this goal was met), and 2015 Executive Order EO-B30-15 sets a goal of reducing GHG emissions 40% below 1990 levels by 2030 (DEIS, Appendix M, p. M-6). Section 10 and Appendix M of the DEIS describe the GHG emissions of the alternatives, yet fails to disclose if the 1990 emissions of the SWP and CVP were different than the baseline. Table M-2 shows CVP energy use is similar or greater than NAA under all alternatives except Alternative 3, which would have a 39% reduction in energy use. SWP energy use is greater than NAA under all alternatives except Alternative 3, which would have a 47% reduction in energy use. This reduction in energy use would result in reduced emissions--Alternative 3 is the only alternative that significantly reduces the GHG emissions of the CVP and SWP. Figure 10-6 (reproduced below) specifically shows that Alternative 3 would result in a reduction of almost half a million metric tons of CO_2-equivalent per year. This is a 14% reduction; the other alternatives would increase emissions.

[41] For more detail, please *see* NGO comment letter re DWR's SWP LTO DEIR July 2024 (attached).



VII. Alternative 3 Should Be the Preferred Alternative and, therefore, the Proposed Action.

Reclamation should adopt Alternative 3 as the Proposed Action. and compare it to other alternatives. Alternative 3 is the only alternative that adequately protects endangered species as required by law. Because the DEIS does not contain a reasonable range of alternatives that are designed to achieve that threshold, Reclamation should adopt Alternative 3 as the Proposed Action and compare it to other alternatives that might similarly and feasibly provide an adequate level of protection, Reclamation should develop additional adequate alternatives and compare them to Alternative 3.

In performing this revised alternatives analysis, Reclamation should assume implementation of the Sustainable Groundwater Management Act ("SGMA") and evaluate a broad array of water conservation mitigation measures. This would provide a more accurate analysis of the actual water supply impacts of implementing Alternative 3, which are wildly overstated in the DEIS.

A. Alternative 3 Should Be the Preferred Alternative Because It Is the Only Alternative That Meets the Legal Requirements of the ESA and NEPA.

NEPA regulations state that "[t]he environmentally preferable alternative will best promote the national environmental policy expressed in section 101 of NEPA by maximizing environmental benefits." (40 C.F.R. § 1502.14). **The *only* alternative that adequately protects endangered species as required under the state and federal ESAs - indeed, the only alternative that provides significant measurable benefits to endangered species at all – is Alternative 3, which is therefore the "environmentally preferrable alternative."** *Id.* This alternative was designed to prioritize listed species' needs, with appropriate attention to achieving temperature requirements and the magnitude and timing of Delta outflow necessary to support viable populations. It performs these tasks far better than the other alternatives and the NAA. For more detail, please see Section III of these comments, specifically the detailed discussions of the impacts of the Proposed Action to listed species compared to Alternative 3. It should also be noted that Alternative 3 is the only alternative that significantly reduces the greenhouse gas emissions of the CVP and SWP.

B. Even With the Inclusion of Alternative 3, the DEIS Still Fails to Analyze a Reasonable Range of Alternatives.

NEPA requires that Reclamation consider a reasonable range of alternatives. (*See* 42 U.S.C. § 4332; 40 C.F.R. §§ 1502.14, 1508.25(b); *see also, Kootenai Tribe of Idaho v. Veneman*, 313 F.3d 1094,1122-1123 (9th Cir. 2002) (and cases cited therein)).As we have established in previous comments and litigation, and in more detail above, the coordinated operations of the CVP and SWP under the 2020 Record of Decision are jeopardizing ESA-listed species. Evaluation of alternatives cannot exclude alternatives that result in significant reductions in water deliveries to, water diversions by, and water allocations for the contractors of the SWP and CVP or include alternatives which would violate the ESA by allowing for the continued decline and eventual extinction of listed species. In light of these facts, and in order to evaluate a reasonable range of alternatives thus requires modeling and analysis of one or more alternatives that prevent the extinction and support the recovery of listed species, and which include actions such as reductions in water diversions by senior water rights settlement/exchange contractors greater than the reductions provided for in the existing contracts. The DEIS has made a start through the development of Alternative 3, and we are grateful that the Bureau worked with a number of the undersigned organizations to inform this Alternative.

However, in the DEIS, Alternative 3 is the <u>only</u> alternative in the DEIS whose implementation would lawfully mitigate the harmful impacts of Project Operations under the ("NAA"). NEPA requires the Bureau to "rigorously explore and objectively evaluate" a range of alternatives to

proposed federal actions. This requirement is intended to prevent an EIS from becoming "a foreordained formality." *City of New York v. Dep't of Transp.*, 715 F.2d 732, 743 (2nd Cir. 1983); *see also Davis v. Mineta*, 302 F.3d 1104 (10th Cir. 2002). Without additional consideration and analysis in the DEIS for Alternative 3, the DEIS's ambiguous and deeply flawed Proposed Action risks becoming a "foreordained formality." *Id.*

The range of alternatives is considered the heart of the environmental impact statement (CITE). The DEIS is deeply flawed because it does not include a range of reasonable alternatives in violation of NEPA. As established in other sections of this comment letter (*see* Section II and Section V), the Proposed Action and Alternatives 1 and 4 perform largely the same as or worse than the NAA. The NAA is the implementation of the 2020 Record of Decision, which is itself legally and biologically inadequate. Furthermore, as established above, the Proposed Action is missing critical information, and its information and analyses are flawed, which impacts the legitimacy of its results and conclusions.

The revised and recirculated DEIS should include additional alternatives similar to Alternative 3 in that they are primarily designed to protect endangered species and remedy the harmful effects of water storage, diversion and export associated with operations of the CVP and SWP.

C. The DEIS Must Incorporate SGMA Into its Analysis of Groundwater Impacts.

As the DEIS notes, the model used to project groundwater pumping changes does not include the Sustainable Groundwater Management Act ("SGMA"). (*See* Cal. Water Code § 10720 (2020)). On page 6-5, the DEIS states:

> "The C2VSimFG model does not directly simulate limitations to groundwater levels and pumping that may be imposed as part of SGMA. The model assumes that groundwater will be used to supplement water supply if surface water supplies are decreased in order to meet demands. Conversely, if surface water supplies are increased, the C2VSimFG model will decrease groundwater pumping. The model, therefore, may over predict increases in groundwater pumping, decreases in groundwater levels, increases in loss of surface water to groundwater, and subsidence. If groundwater supply is unable to be increased beyond a certain level (based on the GSP for the area) then the current demand level may not be able to be supported."

This omission matters because the DEIS proceeds to evaluate impacts and mitigation measures based on the model's output. It is particularly problematic for Alternative 3, which would reduce surface water deliveries substantially.

Estuarine species need significantly more Delta outflow, as discussed in detail in Section III of these comments. It is likely that any alternative that meets the needs of listed species for adequate flow into, through, and out of the Delta will necessarily result in significantly lower water deliveries. Table H-54 shows that Alternatives 1 and 4 maintain or increase deliveries, while Alternative 2 results in delivery reductions that are only 6-11 percent. On the other hand, Alternative 3, the only one that meets many of the listed species' needs for improved environmental conditions, does so in large part by reallocating water diversions to necessary flow augmentations, thereby substantially affecting water deliveries.

Reduced deliveries to CVP and SWP contractors projected under Alternative 3 are not representative of all water users and do not reflect all of the SWP and CVP contractors' water supplies. For example, Table F.2.4-12 shows a 1.1 MAF reduction in south of Delta agricultural contract deliveries under Alternative 3. This is similar to the 0.9 MAF reduction in Delta supply to the San Joaquin Valley expected under the SWRCB's 65% of unimpaired flow scenario (SWRCB 2023 at 6-54). That scenario represented a 31 percent reduction of Delta supplies but only represented a 5 percent reduction of total San Joaquin Valley supply. In addition, the DEIS at F.1-1-2 states "CVP south of Delta service contractor demands are reflected as full contract obligation." Given that many south of Delta water contractors do not typically receive their full demands, the characterization of impacts to south of Delta water supply is overstated.

The DEIS incorrectly assumes that water delivery reductions projected to result from Alternative 3 cannot be mitigated. The "Potential Mitigation Measures" column of Table H-54 in the DEIS was not populated because:

> "These reductions in water supply deliveries and water made available for diversion would not be able to be replaced reliably from other sources, such as water transfers or groundwater pumping. Water transfers are included in the No Action Alternative and would not be available to further offset the reduced water supply deliveries generated by Alternatives 2 and 3. Reliance on groundwater pumping to offset these reductions would not be feasible given the potential for numerous environmental effects generated by additional groundwater pumping in an area with declining groundwater levels and the limits on the availability of groundwater supplies with the implementation of the Sustainable Groundwater Management Act (see Appendix I, Groundwater Technical Appendix, for more information). Given the environmental and technological limits on the implementation of other potential options to offset this impact, *no feasible mitigation has been identified to reduce the severity of these reductions*." (DEIS, Appendix H, p. H-56) (emphasis added).

In other words, the DEIS, based on the model, assumes that reductions in deliveries would be replaced by groundwater pumping (DEIS 17-3, Appendix I, pp. 188-202). The DEIS ignores that fact that SGMA **is** the minimization and mitigation measure for potential groundwater impacts

under proposed CVP/SWP operations or its alternatives. Effective Groundwater Sustainability Plans (GSPs) will identify and promote strategies to refill groundwater aquifers, when feasible, and restrict pumping to ensure aquifer levels can be maintained in California's evolving climate. Only by overlooking the status of SGMA implementation can the DEIS conclude, "No avoidance and minimization measures or additional mitigation measures have been identified for groundwater." (DEIS, p. 6-19). GSPs have already been completed, and deficient GSPs have been identified and are in the process of being revised or subject to state control. The DEIS fails to disclose these facts and their obvious implications. **Reclamation must revise the DEIS to properly include the future implementation of and compliance with GSPs and other requirements of the Sustainable Groundwater Management Act, specifically revising the modeling results and subsequent analysis of impacts related to Alternative 3.**

D. The DEIS Must Seriously Evaluate Water Conservation and Other Mitigation Measures Available to Offset Water Supply Impacts of Alternative 3.

The DEIS's failure to disclose the role of SGMA in preventing groundwater impacts is matched by its failure to acknowledge the huge potential for water conservation to mitigate impacts of reduced surface water supplies in California. Numerous studies in recent years have identified millions of acre-feet of potential reductions in water use in California. As the Water Board notes,

> "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." (SWRCB 2023, p. 6-95).

In addition to SGMA, measures identified in these reports should be considered feasible mitigation for Alternative 3. NEPA requires the Bureau to take a "hard look" at mitigation measures. *Coal. for Canyon Pres. v. Slater*, 33 F. Supp. 2d 1276, 1280 (D. Mont. 1999) (An agency's "perfunctory description of mitigating measures is inconsistent with the 'hard look' it is required to render under NEPA.") **Reclamation must revise the DEIS to properly include the future implementation of water conservation measures and other water management actions, specifically revising the modeling results and subsequent analysis of impacts of Alternative 3.**

E. There are Clerical Errors and Unclear Descriptions of Alternative 3 that Require Correction.

Section E.6.1.3 of the DEIS describes water temperature management under Alternative 3, and Section 7 covers Alternative 4. These sections have the following possible typographical errors in section numbering that should be reviewed and revised:

- The DEIS refers to "Delta outflow requirements described in Section E.7.1.1, Water Temperature Management, from December through May…" (DEIS, p. E-163). It is likely this should refer to section E.6.4.2. Section E.7.1.1. contains no description of Delta outflow requirements.
- The DEIS on p. E-163 also states that "Reclamation would not make water available for delivery until operational plans show the targets in 7.1.1 and 7.1.2 are likely to be met or exceeded." However, Sections 7.1.1 and 7.1.2 contain targets that appear to be inconsistent with targets in Section E.6.1.3. For example, Section 7.1.1 contains a 2.0 MAF EOS target, while Section E.6.1.3 contains a 2.2 MAF target. Section 7.1.2 contains fall-winter instream flows under Alternative 4, and EOS targets between 2.4 and 3.2 TAF that control Keswick releases; however, Section 6 specifies Alternative 3's approach of releasing 45-55% of unimpaired inflows in order to achieve Delta outflow criteria.
- F.2-1-1 must be corrected – it displays an error where a reference source was not found for a figure number.

These references to Section 7 in Section 6 should be corrected. We would also recommend that Reclamation compare the summary of Alternative 3 callouts on F.1-1-53 and the callout tables in Section F.1-2. The Section E.6 summary appears to be incorrect and incomplete compared to the callout summary in Section F.1-1.7 and should be revised for accuracy. In addition, Section E.6 fails to mention the lower pass-through of unimpaired flow when storage requirements are not likely to be met (described on F.1-1-53).

The DEIS states in several places (e.g., E-63, E-167, F.1-1-18, F.1-2-7) that all the alternatives except NAA assume that San Luis Reservoir 130 TAF to 1,102 TAF of increased CVP capacity. However, the October to April exceedance graphs on pages F.2-1-288 to F.2-1-294 show the Alternative 3 line reaching peak storage at the same capacity as NAA. This apparent inconsistency between the Alternative 3 description (including increased San Luis Reservoir storage) and the modeling (not including the increased storage) must be corrected when the DEIS is revised and recirculated.

Additionally, there are many document clarity issues. In general, paragraphs in the main body of the DEIS summarizing results must do more than reiterate the range of model outputs for each alternative and state that each alternative has potential adverse and potential beneficial impacts.

For example, the paragraph describing impacts of the Proposed Action on Delta Smelt (DEIS at 12-53) is unintelligible:

> Alternative 2 is expected to have little to negligible impacts to larvae resulting from increased and decreased entrainment of larvae (Neutrally buoyant particle fate by inflow bin entrained at exports: 45% hihi – 90% hilo; neutrally buoyant particle fate by OMR bins entrained at exports 56% at -2,000 cfs – 79% at -5,000 cfs). For rearing habitat, there are expected minor adverse to minor beneficial impacts on juveniles (Habitat Suitability Index (HSI) without temperature threshold of non-critically dry water year types and critically dry water year type: 0.513 – 0.65 and 0.402 – 0.424 and HSI with temperature threshold: 0.203 – 0.525 and 0.129 – 0.137). For population abundance, there are expected adverse to beneficial impacts on the population growth rate (LCME: Geometric mean of predicted population growth rate of wet and above normal water year types and below normal, dry, and critically dry water year types: 1.24 (Wet and Above Normal) – 1.28 (Wet and Above Normal), 0.74 (Below Normal, Dry, and Critically Dry,) 0.74 – 0.77 (Below Normal, Dry, and Critically Dry), Figure 12-4). Alternative 2 includes Old and Middle River Flow Management which adjusts exports to minimize entrainment of fish and protection of critical habitat.

Providing such an unprioritized list of the range of effects of each alternatives in different water year types on different life stages of different fish, with no context, is not informative.This and the description of the effect of other Alternatives on Delta Smelt bury the lead: The NAA and all alternatives except Alternative 3 are expected to result in continued rapid declines of Delta Smelt, but Alternative 3 is expected to result in mean population growth of this highly imperiled species (Figure 12-4). **The DEIS must be revised so that each of the alternatives are compared clearly, concisely, and accurately, and the ultimate result of such effects are acknowledged.**

VIII. DEIS Alternatives 1 and 4 are Properly Rejected.

A. Alternative 1 Demonstrates the Need for an updated Bay-Delta Plan and Substantive ESA Protections.

DEIS Alternative 1, also referred to as the Water Quality Control Plan Alternative, operates the CVP and SWP to meet the current Bay-Delta Water Quality Control Plan (i.e., D-1641 and WRO 90-5). However, it does not contain any operational restrictions from the 2008, 2009, or 2019 Biological Opinions. Biological Opinions. (DEIS, Appendix E, pp. E-59-E-60). According to BOR, this allows for evaluation of the effectiveness of "non-flow measures." *Id.* at p. E-60.

Not surprisingly, given that (a) the Delta ecosystem is in crisis, *see, e.g.,* SWRCB 2010, 2017, 2018, 2023; USEPA 2024; CDFW 2010; USFWS 2024a, and (b) the current regulatory minimum flows required by the Bay-Delta Water Quality Control Plan are woefully inadequate to protect fish and wildlife, especially endangered fish, *see, e.g.,* CDFW 2010; SWRCB 2010, 2018, 2023; USEPA 2024, the results of adopting Alternative 1 would be catastrophic for endangered fish and would not comply with the Endangered Species Act. Alternative 1 would eliminate or reduce a host of standards and requirements that are necessary (though insufficient) to reverse the downward trend toward extirpation and extinction for the listed fish species of San Francisco Bay, the Delta, and their watershed.

Initially, the same problems with temperature and other modelling described above (*see e.g.,* § III.A.1 re Chinook Salmon Temperature analysis) apply to the analysis of Alternative 1. However, given the additional negative impacts this alternative would cause as compared to the NAA, the Proposed Project, and Alternative 3, even the flawed analysis contained in the DEIS demonstrates that Alternative 1 is quantitatively and qualitatively worse than the other alternatives and the NAA.

Moreover, the results are clear: mean population growth for Delta Smelt is far worse under Alternative 1 than the NAA (Figure 1, *supra*; Attachment F.4 Table F.4-5); change in Longfin Smelt abundance is markedly worse under Alternative 1 than under the NAA (Figure 2, *supra*, Source data from DEIS Appendix AB-J attachment J.1, provided by BOR); and Longfin Smelt salvage is predicted to be substantially higher under Alternative 1 than under the NAA and would be materially higher than the Proposed Project alternatives (Table 3, *supra*; Appendix AB-I attachment I.4). Similarly, TDM of winter-run Chinook Salmon eggs would be markedly higher under Alternative 1 than under the NAA (Appendix AB-L attachment L.2 Table L.2-2) and life-cycle modeling indicates that abundance of this unique salmon population will drop precipitously (Appendix F Attachment F.5 Table F.5-12)

In short, Alternative 1 demonstrates: (a) a new substantially more protective Bay-Delta Water Quality Control Plan is urgently needed; (b) non-flow measures do not protect, restore, or support endangered fish populations; and (c) ESA protections are necessary and vital to avoid continued loss and harm to the Bay-Delta's endangered fish. Alternative 1 is correctly rejected as it does not comply with the ESA.

B. Alternative 4 is Both Under-analyzed and Properly Rejected.

DEIS Alternative 4, where it is analyzed, is relatively similar to Alternative 2, generally worse than the NAA, and far less protective than Alternative 3. (*See e.g.,* Figure 1, *supra*; Figure 2, *supra*; Figure 3, *supra*, and Table 3). Additionally, as in the rest of the analyses in the DEIS, the problems with temperature and other modelling described above (*see e.g.,* § III.A.1 re Chinook

Salmon temperature analysis) apply to the analysis of Alternative 4 where it was performed. However, given the relative negative impacts this alternative would cause as compared to the NAA and Alternative 3, even the flawed analyses contained in the DEIS demonstrate that Alternative 4 is insufficient to protect endangered species.

IX. The DEIS Lacks Proper Analysis of Severe Impacts to Indian Trust Assets and Cultural Resources.

Indian Trust Assets ("ITAs") and cultural resources are invaluable to the Native American tribes in California. The DEIS discussion and analysis of the impacts to ITAs and cultural resources requires further development. Chapter 7: Indian Trust Assets fails to adequately analyze the ITAs that are within the study area. Chapter 8: Cultural Resources fails to adequately discuss Native American history in California and the BOR must adhere to all federal policies and guidelines meant to protect cultural resources. Ultimately, the No Action Alternative and action alternatives fail to propose mitigation measures in the analysis of each topic.

The analysis of both Indian Trust Assets and cultural resources relies on the No Action Alternative. These comments have highlighted the improper reliance on the 2020 Record of Decision and 2019 Biological Opinions and therefore the analysis of impacts under the No Action Alternative needs to be reevaluated. Given the status of current operations, further analysis is required for the No Action Alternative and its potential impacts to ITAs and cultural resources in order to comply with federal law. The analysis for the action alternatives should also be reexamined as they are based on changes from the No Action Alternative.

A. The DEIS Must Adequately Analyze the Impacts to Indian Trust Assets.

The DEIS states, "the U.S. Government's trust responsibility for Indian resources requires BOR and other agencies to take measures to protect and maintain trust resources. These responsibilities include takings reasonable actions to *preserve and restore* tribal resources." (DEIS, Indian Trust Assets, p. 7.1; Appendix J, p. J-4)(emphasis added). ITAs can include land, minerals, federally reserved hunting and fishing rights, federally reserved water rights, and in-stream flows associated with trust land. (DEIS, Indian Trust Assets, p. 7.1).

1. Federal reserved rights

Federal reserved rights, as established by *Winters v. United States*, 207 U.S. 564 (1908), applies to certain federal lands, including tribal reservations. Several tribes in California have established federally reserved water rights. Under *Winters*, federally reserved rights are not based upon

actual uses and therefore cannot be lost through non-use. Once quantified, it is possible for the place of use and nature of use to be changed. (*Winters v. U.S.*,1908). The DEIS incorrectly makes the claim that "[t]here are no ITAs in the rivers in the Central Valley that would be affected by the project." (DEIS, Appendix J, p. J-8). The DEIS further states that impacts on existing ITAs would be considered adverse if the action interfered with a federally reserved right or degrades the water quality there is a federally reserved right. (DEIS, Appendix J, p. J-7)

An example of one tribe that has ITAs in the Central Valley is the Cachil [42] Band of Wintun Indians of the Colusa Indian Community ("Cachil [43] Band"). The Cachil [44] Band's traditional homelands are within the Sacramento River Basin and was formally recognized in 1941.[45] In the adopted Constitution and By-Laws, the tribe's jurisdiction is noted as extending to all lands then within the confines of the Colusa Rancheria and Reservation, and to land that would be added.[46] The original 80-acre Reservation was located along the Sacramento River and subsequently another 410 acres were added.[47] The tribe also draws drinking water from groundwater, which is also protected under *Winters*. Additionally, the Kletsel Dehe Wintun Nation that live on the Cortina Reservation also use groundwater as a water supply. (Yates 1989) Accordingly, the Cachil Dehe Band and Kletsel Dehe Wintun Nation should have ITAs identified within the study area of the Proposed Action.

The changes in operations of the CVP and SWP would directly impact the Sacramento River and may change groundwater resources in the Central Valley. (DEIS, Groundwater, p. 6-1) Therefore, it can be assumed that the Proposed Action has potential to impact ITAs that exist in the Central Valley.

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[45] U.S. Dep't of the Interior, Office of Indian Affairs. "Constitution and By-laws for the Cachil Dehe Band of Wintun Indians of the Colusa Indian Community" (Nov. 23. 1941) https://tile.loc.gov/storage-services/service/ll/llscd/42038591/42038591.pdf; *See also,* U.S. Dep't of the Interior, Office of Indian Affairs. "Corporate Charter of the Cachil Dehe Band of Wintun Indians of the Colusa Indian Community" (Nov. 23. 1941) https://maint.loc.gov/law/help/american-indian-consts/PDF/42038471.pdf.

[46] U.S. Dep't of the Interior, Office of Indian Affairs. "Constitution and By-laws for the Cachil Dehe Band of Wintun Indians of the Colusa Indian Community" (Nov. 23. 1941) https://tile.loc.gov/storage-services/service/ll/llscd/42038591/42038591.pdf.

[47] Colusa Indian Community Council. "Heritage." (2013) https://www.colusa-nsn.gov/government/heritage.; *See also*, J. Paul Getty Trust & Getty Research Institute. *Getty Thesaurus of Geographic Names*. "Colusa Rancheria (Indian reservation (Native American reservation))." (2004). https://www.getty.edu/vow/TGNFullDisplay?find=Washington&place=national+capital&nation=&english=Y&subjectid=9226953.

Appendix J, Table J-2 Impact Summary shows that under all alternatives, including the No Action Alternative, there are "no anticipated changes expected" for "potential chances in quality of water used by a federally recognized tribe." (DEIS, Appendix J, pp. J-12-14). However, this analysis is based on the incorrect conclusion that there are not ITAs in the Central Valley. There are at least two federally recognized tribes obtaining their water via groundwater and BOR has a federal responsibility to protect and preserve those water sources. **The BOR must adopt an alternative which analyzes and provides mitigation measures for the impacts to water quality of federally reserved water in the Central Valley.**

2. Tribally reserved fishing rights

Tribally reserved fishing rights are established for tribes in the Klamath River Basin. This is significant because the CVP and SWP are connected to the Klamath River via the Trinity River diversion. The tribally reserved fishing rights are significant for the tribes in the Klamath River Basin because salmon are an important cultural resource. Many of California's tribes have ceremonies and traditions centered around salmon and it is an important cultural resource. Ensuring healthy salmon populations is vital for protecting and preserving tribal cultural resources.

The Preferred Alternative would have adverse effects on spawning and incubating Southern Oregon/Northern California Coast Coho Salmon. (DEIS, Appendix J-9) It is well known that salmon populations are suffering. Returns have been so low that the salmon fishing season has been closed for the second year in a row. Mismanagement of water resources, more frequent drought, less predictable precipitation patterns, loss of adequate habitat, and many other factors are contributing to the drastic population decline of recent years. Federal and state agencies must avoid taking any actions that could contribute to the population decline. **Alternative 3 must be the preferred alternative because it will benefit salmon and provide healthy habitat in the form of high flows and better water quality.**

3. Tribal lands

There are many tribes listed in Table J.1 and the study area encompasses land occupied by more than 40 distinct Native American "cultural groups." (DEIS, Appendix J, p. J-4; Cultural Resources, p. 8-1). Through erosion or degradation, the No Action Alternative may potentially impact the land or sites of religious or cultural importance to federally listed tribes, quality of water used by tribes, and salmonoid populations. (DEIS, Indian Trust Assets, p. 7-3). The Proposed Action has potential for increased erosion as compared to the No Action Alternative. (DEIS, Appendix J, p. J-12)

The CVP and SWP has impacted traditional homelands of both federally listed and non-listed tribes since their construction. Over time operation has impacted the traditional homelands of many tribes throughout California and continued operation would still impact tribal lands and tribal resources.

As noted above, the federal government is required to take measures to protect, maintain, preserve and restore tribal resources. (DEIS, Indian Trust Assets, p. 7-1). However, for ITAs the DEIS, states that "no avoidance and minimization or additional mitigation measures have been identified." (DEIS, Indian Trust Assets, p. 7-3). **The BOR must prioritize an alternative that recognizes its duty to protect Indian Trust Assets that exist within the study area.**

B. The DEIS Discussion on Cultural Resources is Insufficient and Must Thoroughly Analyze the Impacts to Cultural Resources and Provide Mitigation Measures.

1. Chapter 8: Cultural Resources requires extended discussion of California's history as it relates to Native Americans.

When discussing the Indigenous people that have lived on the land that is now California, it is necessary that the appropriate language is used to describe them. While the term "Indian" is used in the titles of some federal regulations and policies, it should be avoided in all other contexts. In the second paragraph of 8.1 Affected Environment, "Indian" is used out of the context of any federal regulation or policy and therefore must be changed. Additionally, the people that resided on the land prior to the continent being named North America, should be called Indigenous people, not "prehistoric people." (DEIS, Appendix K, p. K-2).

Furthermore, there is a lot of missing information related to Native American's and California history in the description of the Affected Environment. (DEIS, Cultural Resources, p. 8-1). NEPA regulations require an EIS contain analysis of "…possible conflicts between the proposed action and the objectives of Federal, regional, State, Tribal, and local plans, polices and controls for the area concerned." 40 C.F.R. § 1502.16(s)(4). That has not occurred here. The timeline of the affected environment skips from 8,000 years ago to 1769. (DEIS, Cultural Resources, p. 8-1). Millenia of Indigenous occupation of present-day California is excluded from this discussion that is meant to focus on the cultural resources of these specific people. The tribal histories that are provided in Appendix K provides much needed context, even in an abbreviated form. The primary description of the history of the area fails to recognize the significance of Indigenous

people in California prior to the invasion of European colonizers and more of the historical discussion in Appendix K must be included.

The description of the events that transpired after the 1769 invasion of Europeans fails to account for the extensive harm that was inflicted on Native American people, their culture, and their cultural resources. The DEIS stats that the period after 1769 was characterized by "the establishment [of] military presidios, development of large tracts of land owned by the missions and *subjugation of the local Indian population for labor*." *Id.* (emphasis added) However, the local tribes suffered much more than subjugation for labor. The mission system that was established by the Spanish colonizers resulted in enslavement, indoctrination, removal from traditional lands, destruction of culture (ceremonies, cultural resources, language, etc.), and the introduction of fatal diseases all of which contributed to the catastrophic loss of life for Indigenous Californians. The growing population of settlers contributed to further loss of tribal lands and populations due to relocation and extermination policies promulgated by the state and federal governments.

The DEIS states that the "study area encompasses lands occupied by more than 40 distinct Native American cultural groups." (DEIS, Cultural Resources, p. 8-1). Appendix K provides the ethnographic context for 20 tribes whose traditional homelands are included in the study area. (DEIS, Appendix K, p. K-4). Some of the brief descriptions of those 20 tribes include the importance of local waterways to the tribe, its culture, and its traditions. (DEIS, Appendix K, pp. K-4–8). In most of the descriptions, many of the tribes are known to have lived near rivers or other bodies of water, therefore there are likely many village sites with cultural resources nearby that exist along the waterways that are and will be impacted by the CVP and SWP. *Id.* so many Native people within the study area, it is unrealistic that the project would not greatly impact cultural resources of those tribes. **The BOR must adopt an alternative that incorporates complete historical analysis to protect cultural resources that exist near any and all impacted waterways within the study area.**

2. The DEIS fails to consider all national policies regarding all types of cultural resources.

The DEIS claims that because there is no ground disturbance involved in the Action Alternatives, the potential impacts would come from inundations or exposure of buried archaeological historic properties in a way that would cause damage or destruction to those properties. (DEIS, Cultural Resources, p. 8-2).

Under the National Historic Preservation Act ("NHPA"),[48] the BOR must comply with Section 106 which includes,

> "…identifying consulting and interested parties, delineating and area of potential effects, identifying historic properties withing the area of potential effects, and assessing effects on any identified historic properties, and resolving adverse effects through consultations with the State Historic Preservation Officer, Indian tribes, and other consulting parties." (DEIS, Cultural Resources, p. 8-2).

As such, the BOR must conduct tribal consultation with the tribes within the study area and the tribes listed in Appendix J Table J-1, all of whom can be classified as interested parties.

There are several federal policies and memoranda that detail what is necessary for adequate government to government consultation between federal agencies and tribes.[49] The BOR must adhere to these policies, in addition to NHPA, in its development of the DEIS and should disclose whether that consultation with federally listed tribes has or has not occurred.

According to the DEIS, the No Action Alternative and condition changes due to climate change are predicted to result in more frequent shorter-duration, high-rainfall events and less snowpack in the winter and early spring. (DEIS, Cultural Resources, p. 8-2). Ultimately, the changing climate has the potential to decrease reservoir levels which could affect areas that were previously inundated. As a result, cultural resources may become exposed. *Id.* Despite the known potential impact to cultural resources, the DEIS states that there are "[n]o avoidance and minimization measures or mitigation measures" that have been identified for cultural resources. (DEIS, Cultural Resources, p. 8-3). With the knowledge that climate change has the potential to affect cultural resources in this manner, there should be mitigation measures proposed. However, there are none in the No Action Alternative or any of the action alternatives. The DEIS must use an alternative that incorporates mitigation measures for these irreplaceable resources that have the potential to be impacted.

The DEIS states that the No Action Alternative is not expected to affect historic properties. *Id.* Cultural resources are not only classified as "historic properties." In a 1993 study of Environmental Impact Statements and Environmental Assessments, when the documents defined

[48] National Historic Preservation Act, 36 CFR § 800.
[49] *See* Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, 65 FR 67249 (Nov. 6, 2000); Presidential Memorandum on Tribal Consultation (Nov. 5, 2009); Memorandum on Tribal Consultation and Strengthening Nation-to-Nation Relationships (Jan. 26, 2021); Memorandum on Uniform Standards for Tribal Consultation (Nov. 30, 2022); Dept. of Interior, *Dept. Manual*, "Department of the Interior Policy on Consultation with Indian Tribes," 512 DM 4 (Nov. 30, 2022).

cultural resources directly or implicitly, it was found that a "cultural resources is generally understood to mean a piece of real or personal property that is eligible for consideration under another statute dealing with historic preservation, archaeology, or Native American graves" (King 1998).

In addition to NHPA which applies to historical properties, the Archaeological Resources Protection Act ("ARPA") prohibits the excavation, removal, or damage of archaeological resources on federal public lands of Native American tribal lands. (*See* Archaeological Resources Protection Act, 16 U.S.C. §§ 470aa *et seq.*). With the potential that cultural resources may be exposed by the change in reservoir levels or erosion, precautions and mitigation measures must be implemented to protect the cultural resources that are protected under ARPA.

The Native American Graves Protection and Repatriation Act ("NAGPRA") applies to "Native American cultural items" rather than specific locations and requires federal agencies to return any discovered items to the federally listed tribe that the items come from. (*See* Native American Graves Protection and Repatriation Act, 43 CFR § 10 *et seq.*). Similar to the discussion on ARPA there is the potential for cultural items protected under NAGPRA (human remains, funerary objects, sacred objects, objects of cultural patrimony) to be exposed with the continuation of operations or under the Proposed Alternative, there must be mitigation measures put in place to prevent violations of NAGPRA in future operations.

Lastly, the American Indian Religious Freedom Act ("AIRFA") states that the federal government must protect the inherent rights of Native American tribes to the free exercise of their traditional religions. (*See* American Indian Religious Freedom Act, 42 U.S.C. § 1996). AIRFA is an important policy to consider because traditional Native American religious and ceremonial practices are frequently tied to a location or an aspect of the environment, like a waterway, and are essentially place-based cultural resources. For example, the Yurok Tribe's creation stories include the Klamath River, and the river is an integral part of Yurok culture that includes use of canoes on the river to gather cultural food and materials, and travel for ceremonial purposes. *Id.* Protection of flows and clean water are a necessity for the Yurok people and their religion and must be protected as an inherent right. Additionally, the Hoopa and Karuk Tribe's culture and traditional stories emphasize the important and intimate relationship of the people, salmon, and the Klamath River. *Id.* AIRFA also requires BOR to consult with federally listed tribes when a proposed action might affect traditional religious practices (King 2000).

The DEIS discussion and analysis recognizes the potential for impacts to cultural resources, therefore, Reclamation must revise the DEIS to include mitigation measures to ensure protection and preservation of all cultural resources. The No Action Alternative and Proposed Action are currently insufficient because they fail to provide mitigation measures

for cultural resources. The BOR must prioritize an alternative that provides mitigation measures for impacts to cultural resources.

X. The Proposed Action has Unreasonable Impacts to Environmental Justice Communities and Exacerbates Public Health Issues.

The coordinated operations of the SWP and CVP have extensive and significant environmental impacts that are contributing to the degradation of ecosystems that communities otherwise rely on as a source of drinking water, nutrition, recreation and leisure among other uses. Since the previous update to the operations plan in 2019, beneficial uses of water for communities remain impaired. The DEIS fails to acknowledge significant impacts to environmental justice communities, worsening disparate impacts.

Reductions in freshwater flow have caused a cascade of ecological impacts in the Bay-Delta, including altered salinity levels, higher water temperatures, changes to water circulation patterns, increased concentration of pollutants, alteration of dissolved oxygen and other water quality parameters, disruption of fish migratory routes and nursery conditions, and habitat loss. Poorly managed releases from upstream dams and reduced inflows, coupled with diversions and export of water, also alter peak, base, and pulse flows to which aquatic species are adapted.

The changes to stream hydrology and water quality caused by reduced flows have caused fish populations to plummet. According to the State Water Board, the best available science demonstrates that current flow conditions, if not corrected, will result in permanent impairment to the Bay-Delta's native fish and wildlife populations as well as other public trust resources.

A. Reduced Freshwater Flows Impact Environmental Justice Communities in the Delta.

The DEIS fails to analyze the adverse effects of reduced freshwater flows on environmental justice communities in the Delta, including the potential for increase in reverse flows, worsening salinity, and changes to residence time, creating inadequate conditions for the river's ecosystems and subsistence fishing species that Delta communities rely on. In the "In the Your Delta, Your Voice" report prepared by DWR, 90 percent of Delta Environmental Justice respondents disclosed that they rely on Delta fish to feed their families on a nearly costless basis. (DWR 2021). The Delta is home to a large population of underrepresented and economically disadvantaged communities who traditionally rely on fisheries for cultural ceremonies, cultural preservation, consumption, sports, and leisure. The DEIS's "Potential Disproportionate Economic Effects on Minority or Low-Income Populations" does not evaluate public health impacts or the financial burden communities face from declining fish populations and reduced

subsistence fishing opportunities, nor does it attempt to quantify to what extent proposed alternatives would exacerbate already-existing hardships.

Coordinated project operations increase the presence of water contaminants. As explained earlier in these comments, the Bureau has not developed a plan through the Proposed Action that does not continue to violate water quality standards. Therefore, under the Proposed Action, there is an increased presence of contaminants, such as selenium, mercury, and cyanotoxins. In turn, this could lead to a number of human health impacts.

First, the increase of those contaminants could increase food web pathways to humans relying on subsistence fishing. Nitrogen, a key nutrient in the formation of HABs, could also contribute to the formation of methylmercury. The bioaccumulation of methylmercury in fish tissue derived from the consumption of contaminated lower trophic species could reduce spawning success and reduce fertility in fish and could also contribute to a variety of human health risks. As described earlier in comment Section III, the Proposed Action has the potential to worsen already devastating fishery conditions and thus threaten public health in communities that have limited access to healthcare. An increased threat from consuming contaminated fish has the potential of going undocumented because of the lack of resources. **The DEIS lacks an analysis of the potential impact to communities from increased bioaccumulation of toxins in fish, and we urge Reclamation to add this analysis in the revised and recirculated DEIS.**

B. Risk of Harmful Algal Blooms and Associated Economic Impacts Are Increased.

Additionally, under all four variants of the Proposed Action, the occurrence of Harmful Algal Blooms (HABs) will be more frequent and extensive, creating hazardous conditions and exacerbating air and water pollution in already-impacted communities. The World Health Organization considers cyanobacterial toxins to be “among the most toxic naturally occurring compounds.” (Chorus and Welker 2021). The DEIS recognizes the occurrence of HABs “throughout the southern and central Delta, including in Discovery Bay, at several locations along the San Joaquin River, and at locations along the Stockton waterfront.” However, there is no mention of how the Proposed Action would impact the existing public health issue of exposure to cyanotoxins by drinking, swimming, or bathing in affected waters, eating contaminated fish or shellfish, or inhaling aerosolized particles. As noted extensively in comment Section III and in other sections, the Proposed Action will reduce freshwater flows into the Delta, which would worsen conditions and these associated public health concerns. Steps necessary to mitigate, reduce, and eliminate HABs in the Delta must be integrated into the operations of the SWP and CVP.

Increased salinity and presence of HABs would increase water treatment cost and potentially impose water rate hikes to cover those rising costs. Increased water rate hikes would

disproportionately impact environmental justice ratepayers in communities affected by these adverse changes in local drinking and surface water quality.

Communities struggle with access to safe water and access to Delta waterway commons. The SWP and CVP have exploited Delta exports, and communities have been left with degraded water quality, worsening environmental and public health stressors that impair public access to waterways. Proposed operations must demonstrate methods to remedy the ecological conditions that result in disparate impacts that restrict environmental justice and tribal communities from utilizing public trust resources. In addition, agricultural labor in the Delta is impacted by changes to Delta water quality for irrigation. Worsening water quality directly harms crop production and variety, leading to reductions in the agricultural workforce, which is comprised of numerous environmental justice community members.

The DEIS fails to properly evaluate worsening salinity, HABs proliferation, and other water quality conditions, and does not recognize the potential impacts to public health and economic impacts to environmental justice communities. Proposed alternatives resulting in the degradation of water quality, which is every Alternative other than Alternative 3, are not lawful under the federal Clean Water Act, the state Porter-Cologne Water Quality Control Act, and State Water Board Resolution 68-16.

C. Justice 40 Criteria Are Not Addressed

In April, 2023, President Biden signed Executive Order 14096 to expand the nation's commitment to environmental justice, broadening the scope of his earlier signed Executive Order 14008 in regard to tackling the climate crisis. In regard to its climate change analysis and lack of Justice 40 criteria examination, the DEIS fails to meet the requirements of the Justice 40 initiative.

The overall goal of Justice 40 is that 40 percent of the overall benefits of certain Federal climate, clean energy, affordable and sustainable housing, and other investments flow to disadvantaged communities that are marginalized by underinvestment and overburdened by pollution. A Justice 40 covered program is defined as a "Federal government program that falls in the scope of the Justice40 Initiative because it includes investments that can benefit disadvantaged communities across one or more of the following seven areas: climate change, clean energy and energy efficiency, clean transit, affordable and sustainable housing, training and workforce development, remediation and reduction of legacy pollution, and the development of critical clean water and wastewater infrastructure."
https://www.whitehouse.gov/environmentaljustice/justice40/

Specifically, BOR has listed that Watershed Projects fall under Justice 40 guidelines and lists five other program areas that dovetail with proposed operations of the CVP. These additional program areas include Authorized Rural Water Projects; IRA - Domestic Water Supply Projects; Native American Affairs Program; Other Water Infrastructure Activities; Tribal Water Rights

Settlements; and WaterSMART. Additionally, Justice 40 specifically calls for agencies to conduct abundant outreach using the Climate and Economic Justice tool to disadvantaged and impacted communities to participate in and evaluate covered projects. To date, no such abundant outreach has been conducted by BOR regarding long term operations of the CVP.
The DEIS ignores any discussion of coordinated CVP operations as a Watershed Project and only Alternative 3 reduces GHG emissions. Instead, BOR has chosen a preferred alternative that fails to meet the criteria of Executive Order 14008. The DEIS also fails to delineate how 40 percent of the benefits of the Long Term Operations Plan assist impacted tribes and environmental justice communities located in the Bay-Delta watershed and tributaries. Almost all environmental and economic benefits from the LTO are directed away from these communities, yet declining fisheries, the proliferation of harmful algal blooms, and degraded water quality will all worsen within the watershed with implementation of Alternative 2.

For all these reasons, the DEIS's evaluation of impacts to environmental justice communities is inadequate and must be revised in the updated recirculated document.

XI. The DEIS's Analysis Cannot Include Potential New Infrastructure that is Speculative and Not Reasonably Certain to Occur.

As we noted in scoping comments submitted in 2022, the DEIS should not include potential new infrastructure that is speculative and not reasonably certain to occur.[50] Here, this specifically applies to the Delta Conveyance Project and the proposed Sites Reservoir, due to their operational complexity and inadequate temporal scope of this ESA section 7 consultation. Unfortunately, the DEIS includes both of these proposed projects and applies a "programmatic" approach. (DEIS, Chapter 3, p. 3-59.) This is beyond the mandatory NEPA inclusion in the cumulative impacts analysis. (*e.g.,* DEIS, Appendix Z). Just like with the inclusion of the VAs, the DEIS is therefore legally deficient due to the inclusion of these projects.

Additionally, the DEIS fails to consider the cumulative impacts of such projects on the listed species or their habitat, in violation of NEPA. (40 C.F.R. § 1502.16(a); 1501.3(d)(2)(vi) ("Agencies shall analyze the intensity of effects considering . . . The degree to which the action may adversely affect an endangered or threatened species or its habitat, including habitat that has been determined to be critical under the Endangered Species Act of 1973.)

Nothing in these comments in any way waives any of our organizations' rights to comment on the Delta Conveyance Project in any other forum.

[50] Both of these projects require a substantial increase in funding, are still in the midst of environmental review and will face legal challenges – rendering the prospect of these projects speculative and inappropriate to include in DEIS analysis beyond the cumulative impacts analysis.

Reclamation should limit the inclusion of the Delta Conveyance Project and Sites to the cumulative impacts analysis in the revised and recirculated DEIS.

XII. The DEIS Suffers from Additional Important Defects.

A. The DEIS Generally Fails to Meet the Intent of the New NEPA Rules Published July 1, 2024.

While we have appreciated the opportunity to engage in the reconsultation process, we want to note that this document was particularly complex, long and challenging to review, especially within a short time frame. With over 400 pages of the DEIS, almost 19,000 pages of related Appendices and Attachments, "informed" review was close to impossible to achieve for most stakeholders.

Additionally, this document was also challenging on a most basic level to analyze due to a lack of fundamental analytical conclusions. NEPA regulations state,

> "Agencies shall write environmental impact statements in *plain language* and should use, as relevant, *appropriate visual aids or charts so that decision makers and the public can readily understand such statements*. Agencies should employ writers of *clear prose* or editors to write, review, or edit statements, which shall be based upon the analysis and supporting data from the natural and social sciences and the environmental design arts." (40 C.F.R. § 1502.7) (emphasis added).

As detailed more in Section III of these comments and in other sections, there was a lack of clarity, direct comparative analysis and conclusion about actual impacts of the Proposed Action and other alternatives on the Bay-Delta Estuary, Cultural Resources, Environmental Justice communities and more. We do not believe the intent of this NEPA regulation was met here and encourage Reclamation to revise and recirculate the DEIS accordingly.

B. Water year "Bin" types Should Not be Used to Compare Between Alternatives.

In order to evaluate Delta hydrodynamics, nine inflow combinations of high, medium, and low NAA Delta inflows were created ("inflow bins") as well as OMR intervals ("OMR bins"), described in Attachment I.3. These bins are used to compare the alternatives in numerous places (e.g., DEIS pp. 12-53 through 12-56). We are concerned that these bins are not weighted for frequency, and therefore impacts within each bin cannot be compared between alternatives. For example, one alternative may have a different proportion of months in a bin than another alternative. Table I.3-5 shows up to 30 percent of the OMR data were excluded for this analysis.

In a revised and recirculated DEIS, the Bureau should scrap the OMR and "hi-lo" bin comparisons and compare outcomes of Alternatives by water year-types or some other categorization that is not affected by the Alternatives themselves.

C. Consideration of Mitigating Impacts to the Trinity River are Improperly Excluded.

The DEIS fails to include any mitigation measures to protect state and federally threatened Coho Salmon or the vitally important commercial, recreational and tribal species fall- and spring-run Chinook in the Trinity River. Instead, the DEIS defers action on the Trinity River until completion of a subsequent Biological Assessment (BA), Biological Opinion (BO) and possible Supplemental EIS (SEIS) for the Trinity River (DEIS at 0-52).[51] Inadequate temperature requirements, inadequate Trinity Lake carryover storage, and the impact from the Voluntary Agreements on Trinity Lake coldwater storage are all issues that require immediate mitigation in this DEIS, and should not be deferred to a later date.

1. Existing temperature problems for Trinity River salmon.

The problem with the approach in the DEIS is that current operational conditions and targets for the Trinity River already impact Coho Salmon and Chinook Salmon in the Trinity River and are included in most alternatives. The 56°F North Coast Basin Plan temperature objective for the Trinity River (https://www.waterboards.ca.gov/northcoast/water_issues/programs/basin_plan/180710/BPChapter3WaterQualityObjectives.pdf), along with the 56°F temperature requirement in Water Right Order 90-5 is outdated, not based in the best available science, and is inadequate to prevent high levels of Temperature Dependent Mortality (TDM) for salmon eggs. As described above, the best available science recognizes that Chinook Salmon incubating eggs require temperatures no greater than 53.5°F (Martin et al. 2016, 2020). Coho Salmon require weekly mean incubation temperatures no greater than 50°F and 7-day average of daily *maxima* no greater than 55.4ºF (Richter and Kolmes 2005). In 2021, a significant portion of Coho Salmon eggs at the Trinity

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[51] "*The alternatives in this EIS, including the No Action Alternative, incorporate the continued implementation of the 2000 Trinity River Mainstem Fishery Record of Decision (2000 Trinity ROD) and the 2017 Long-Term Plan to Protect Adult Salmon in the Lower Klamath River Record of Decision. Changes or impacts described for resources associated with the Trinity Reservoir levels and Trinity River flows have been previously analyzed under the environmental compliance that led to those two Records of Decision.*

Reclamation is separately and concurrently coordinating with the Hoopa Valley Tribe and the Yurok Tribe as joint leads (40 CFR part 1501) on Trinity River-specific considerations to develop potential Trinity River-specific alternatives for an updated operation for releases to the Trinity River and diversions from the Trinity River Basin to the Central Valley. Reclamation also is developing a biological assessment for listed species that are specific to the Trinity River Division and plans to request formal consultation with the appropriate federal resource agencies. Reclamation expects to update the analysis presented in this document to reflect changes in Trinity River Division operations if there are different impacts as a result of decision on the Trinity River Division."

River hatchery were impacted by temperatures well below 56°F, but greater than 50°F (Figure 4).

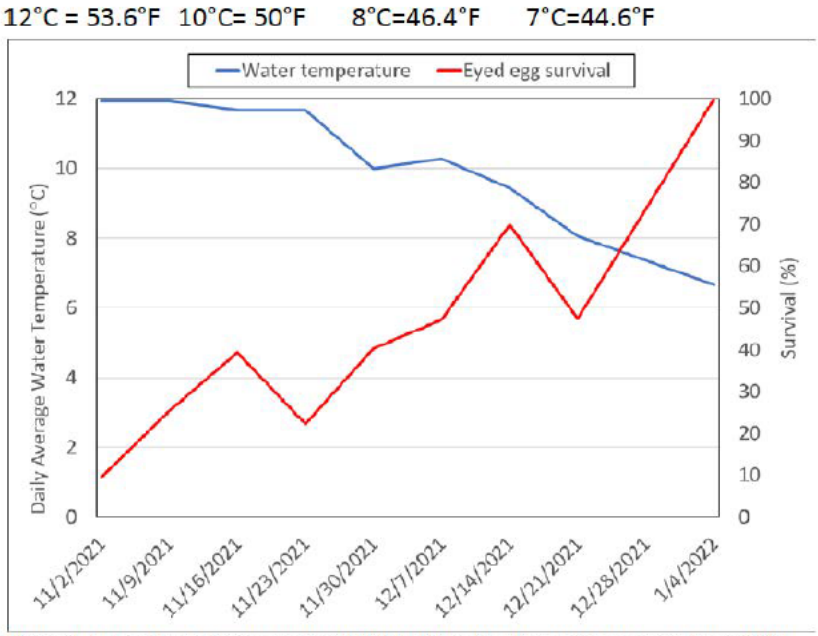

Figure 1. Coho salmon egg survival and Trinity River Hatchery water temperatures, 2021 (Clifford 2022)

Figure 4: Coho Salmon egg survival and Trinity River hatchery water temperatures, 2021 (Clifford 2022). Copied from Memorandum to SWRCB, From: Justin Ly, April 27, 2022, re: Comments on Reclamation's draft Sac River Temperature Management Plan. Accessed at: https://ftp.waterboards.ca.gov/Hearing%20Documents%2FParties'%20Hearings%20Exhibits%2FPacific%20Coast%20Federation%20of%20Fisherman%20Association%20Exhibit%2FPCFFA-50%20Justin%20Ly%20to%20SWRCB%202022.pdf

Also, the Bureau does not recognize the summer 60°F North Coast Basin Plan temperature objective to protect migrating and holding state-threatened Spring Chinook as a requirement.[52] According to the SWRCB[53], the 56°F temperature requirement for the Trinity River only applies when BOR is actively diverting water from the Trinity River for temperature control on the

[52] *See* 2/23/11 letter from Paul Fujitani, Chief of CVP Ops to Brian Person, Chairman Trinity Management Council. Accessed at: https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/PCFFA&IGFR/part2/pcffa_114.pdf

[53] *See* SWRCB's October 23, 2023, response to complaint by Michael Palmer. Accessed at: https://ftp.waterboards.ca.gov/Hearing%20Documents%2FParties'%20Hearings%20Exhibits%2FPacific%20Coast%20Federation%20of%20Fisherman%20Association%20Exhibit%2FPCFFA-49%20SWRCB%20to%20Palmer%20Ltr%202023.10.23_TrinityExceedancesResponse%5B74%5D.pdf

Sacramento River. Therefore, when the Bureau is not actively diverting water to the Sacramento River for temperature control, but for other purposes such as water supply, hydropower or Delta water quality, there are *no* temperature protections for the Trinity River whatsoever.

2. Inadequate coldwater carryover storage in Trinity Lake.

The NMFS 2000 Biological Opinion[54] for the Trinity River, includes a minimum carryover storage in Trinity Reservoir on September 30 of 600,000 AF and requires reconsultation if storage falls below that level. However, numerous other analyses have found that a 600,000 AF minimum carryover storage is itself inadequate. A 2012 report by Reclamation found that September 30 carryover storage requirement of less than 750,000 AF is "problematic" in meeting state and federal Trinity River temperature objectives protective of the fishery.[55]

In 1992 Balance Hydrologics found that a minimum carryover storage of 900,000 AF was necessary to meet Basin Plan temperature objectives.[56]

Analyses completed for Trinity County for the Trinity Record of Decision by Kamman Hydrologics indicated that September 30 Trinity Reservoir carryover storage of at least 1.2 million AF on September 30 is necessary to meet Basin Plan temperature objectives at the beginning of a simulated 1928-1934 drought.[57] During the recent drought, Trinity Reservoir storage fell well below levels necessary to maintain temperatures during a historic multi-year drought such as 1928-1934.

Furthermore, BOR's Mid-Pacific office also produced a preliminary technical memorandum on the problem of excessive heating of Trinity Dam water releases[58] when they pass through the shallow 7-mile-long Lewiston Reservoir. While Trinity Dam releases are often 43°- 44°F, summer heating in Lewiston Reservoir can be severe unless approximately 1,300- 1,800 cfs is being released from Trinity Dam. Given that Trinity River summer base flows are only 450 cfs,

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[54] National Marine Fisheries Service (2000), Biological Opinion for the Trinity River Record of Decision, accessed at: https://www.trrp.net/library/document/?id=1240

[55] See Bender MD (2012) Trinity Reservoir Carryover Storage Cold Water Pool Sensitivity Analysis. Technical Memorandum No. 86-68220-12-06, U.S. Bureau of Reclamation, Technical Service Center, Denver, CO. Accessed at: http://odp.trrp.net/Data/Documents/Details.aspx?document=1813

[56] See Balance Hydrologics (6/26/1992) "The Need for Standards for Minimum Carryover Storage in Trinity Reservoir" Accessed at:https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/PCFFA&IGFR/part2/pcffa_116.pdf

[57] Memorandum from Greg Kamman to Tom Stokely and Mike Deas on Carryover Storage Analysis Simulated (1928-34) Period, 5/22/1998. Accessed at: https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/PCFFA&IGFR/part2/pcffa_117.pdf

[58] See USBR (2012) Lewiston Temperature Management Intermediate Technical Memorandum, Lewiston Reservoir, Trinity County, California. Report by U. S. Bureau of Reclamation, Mid-Pacific Region, Sacramento, CA. accessed at http://odp.trrp.net/Data/Documents/Details.aspx?document=1814

water must be diverted to the Sacramento River to keep the Trinity River cold enough to meet Basin Plan temperature objectives. However, during severe drought or under certain operational circumstances, there may not be adequate water to provide base fishery flows and to divert water to the Sacramento River to keep the Trinity River cold. Several structural solutions have been identified in Reclamation's preliminary technical memorandum; however, a full feasibility study and environmental document would need to be prepared to select a solution and no such plans exist at this time.

Full temperature protection through a water right hearing for the Trinity River was promised in SWRCB Water Quality Order 89-1859 and WRO 90-5.60 That promise has yet to be fulfilled over 30 years later, and the Trinity River's salmon remain at high risk of TDM. Mitigation is required.

3. The Voluntary Agreements negatively impact Trinity Lake coldwater storage.

The Proposed Action includes the proposed Voluntary Agreements (VAs). The DEIS does not disclose that the VAs adversely impact storage at Trinity Lake. This is a new negative of CVP operations that can only be mitigated through new mitigation measure included as part of the Biological Opinion, not deferred to a later date for an as-yet undefined process.

The impact on Trinity coldwater storage from the VAs can be found in SWRCB 2023 Appendix G3a, figures G3a-72 and G3a-73 on page G3a-8061 as copied below.

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[59] WQO 89-18, p. 17: "*Finding: The State Board should conduct water right proceedings to consider whether the Bureau's permits should be modified to establish temperature limitations or other conditions to assure adequate water quality for protection of the fishery in the Trinity River.* Accessed at: https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/1989/wq1989_18.pdf
We direct the Division of Water Rights to initiate proceedings to consider whether the Bureau's permits should be modified to set conditions relating to temperatures in the Trinity River."

[60] WRO 90-5, p 31: "*We have already announced our intention to conduct a water right proceeding to consider whether the Bureau's Trinity River water rights should be modified to establish temperature limitations and other controls on water quality to protect the fishery in the Trinity River. See Order No. WQ 89-18*." Accessed at: https://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/1990/wro90-05.pdf

[61] See SWRCB Appendix G3a "Sacramento Water Allocation Model Methods and Results for Proposed Voluntary Agreements." Accessed at: https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/docs/2023/staff-report/app-g3a.pdf

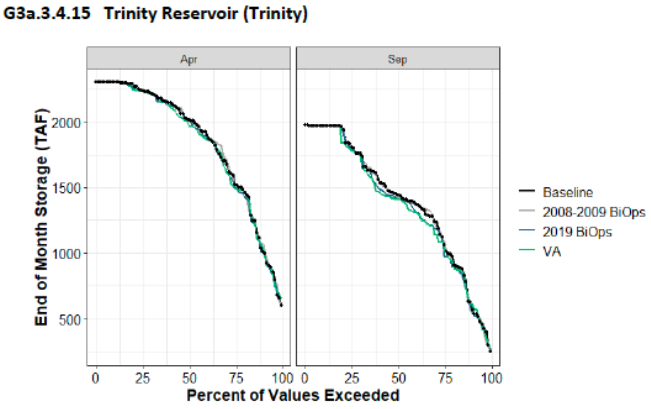

Figure G3a-72. Trinity Reservoir End of April and End of September Storage (TAF) Percent Exceedance Plot

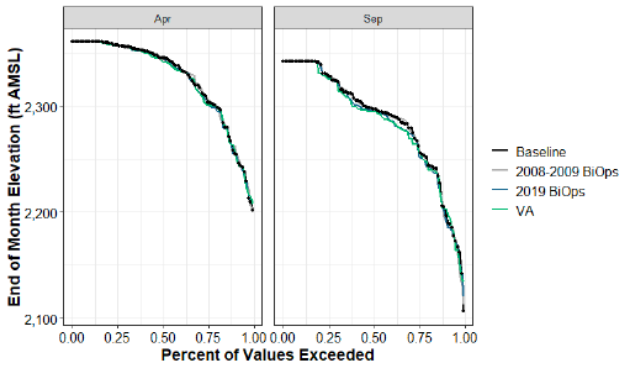

Figure G3a-73. Trinity Reservoir End of April and End of September Elevation (ft AMSL) Percent Exceedance Plot

This impact is significant because coldwater storage in Trinity Lake is already impaired due to excessive water deliveries and climate change. **Mitigation for the Proposed Project's temperature impacts on Trinity Lake is required until completion of the separate Trinity River BA, BO and SEIS**.

4. Interim mitigation measure to prevent harm to Trinity River salmon prior to completion of a separate Trinity BA, BO and SEIS.

As discussed above, Trinity River Coho Salmon, spring-run Chinook Salmon and fall-run Chinook Salmon are at high risk from TDM. A significant proportion of Trinity River Hatchery eyed eggs perished in 2021, despite compliance with the (inadequate and outdated) 56°F requirement in WRO 90-5. Trinity River fall-run Chinook Salmon and spring-run Chinook Salmon eggs will perish even given full compliance with the 56°F requirement of WRO 90-5 and North Coast Basin Plan temperature objectives. The Trinity Lake carryover storage requirement in the 2000 NMFS Biological Opinion for the Trinity River is grossly inadequate, even according to BOR's own scientists. The VAs will further deplete Trinity Lake

carryover storage and coldwater by diversion to the Sacramento River basin to meet Bay-Delta water quality requirements.

Therefore, interim mitigation measures/Reasonable and Prudent Measures to protect the Trinity River should be incorporated into all alternatives until superseded by a subsequent Trinity BA, BO and SEIS, as follows:

1. Trinity Lake carryover storage should never be allowed to go below 750,000 AF at the end of September.
2. The Bureau should be required to operate to meet a 60°F North Coast Basin Plan temperature objective at Douglas City from July 1 to September 15.
3. The Bureau should be required to operate to meet a 53.5°F temperature requirement at Douglas City from September 15 until October 1.
4. The Bureau should be required to operate to meet a 53.5°F temperature requirement at the North Fork confluence from October 1 through October 30.
5. The Bureau should be required to operate to meet a 50°F temperature requirement at Lewiston Dam November 1 through December 31 to protect threatened Coho Salmon.
6. The Bureau shall provide enough egg chillers at the Trinity River Hatchery to keep all Chinook Salmon and Coho Salmon eggs alive in the event temperatures in items 3-5 above cannot be met.
7. The Bureau shall bypass the Trinity Dam Powerplant as necessary to meet the temperatures in items 3-5 above.
8. The Bureau shall petition the SWRCB to request a hearing to provide full temperature protection for the Trinity River in their state water permits, as promised by the SWRCB in Water Quality Order 89-18 and Water Right Order 90-5. The Bureau shall pay all costs of such water right hearing.

XIII. Conclusion.

Reclamation must revise and recirculate the DEIS. NEPA Regulations require, "If the agency determines that a draft statement is so inadequate as to preclude meaningful analysis, the agency shall prepare and publish a supplemental draft of the appropriate portion." 40 C.F.R. § 1502.9(b).

First, in addition to the deficiencies listed in the opening summary and discussed in detail above, the DEIS is missing critical information, including, but not limited to:

- Failure to identify or analyze all potential combinations of Alternative 2 which includes TUCPs and all VAs.
- Failure to use the NMFS Winter-run Lifecycle Model to assess likely effects on the listed species from the Proposed Action.
- Failure to use the proper temperature thresholds for assessing Proposed Action impacts to various salmonid life stages.

- Failure to disclose the impact of high river temperatures on the winter-run juvenile production impact.
- Failure to disclose the precarious state of the listed species, including the Bay's White Sturgeon population (which recently gained CESA protection as a "candidate" for listing), and that the status quo for these species is decline, not stasis. Thus, the DEIS fails to disclose that outcomes from any alternative that are not significantly different from the NAA represents an impact that is not consistent with ESA requirements.

Proper inclusion of these important elements and others listed in our comments will qualify as a "substantial change" to the Proposed Action and therefore require revision and recirculation to all Interested Parties and the public in order "to allow outside reviewers to give meaningful consideration to the environmental issues involved." (*State of California v. Block,* 690 F.2d 753, 770 (9th Cir. 1982; *see also Marsh v. Oregon Natural Resources Council,* 490 U.S. 360, 372 (1989); *Friends of the Clearwater v. Dombeck,* 222 F.3d 552, 557-558 (9th Cir. 2000).)

Additionally, it is also quite likely the Voluntary Agreements in their current form may not be finalized, let alone be implemented. But more certain and importantly, the update to the State Water Board's Bay-Delta Water Quality Control Plan will be finalized within the next year. This would qualify as "substantial new circumstances or information about the significance of adverse effects that bear on the analysis." This would also legally trigger revision and recirculation of the DEIS under NEPA.

As we stated in our scoping comments,

> "The question in this section 7 consultation is not whether a new operations plan is as protective of listed species as water operations under the environmental baseline, but rather whether, ***based on the best scientific and commercial information available, and in light of baseline conditions (including climate change), proposed Water Project operations will jeopardize the continued existence of the species or destroy or adversely modify its critical habitat***. *See Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv.*, 524 F.3d 917, 926 (9th Cir. 2008). In fact, courts have previously held that even stating that protections will increase as compared to the status quo is not sufficient to demonstrate that the action will not jeopardize listed species without more analysis and explanation, because even under increased protections an action can jeopardize a species that has severely declined. *See, e.g., Aluminum Co. of Am. v. Adm'r, Bonneville Power Admin.*, 175 F.3d 1156, 1162 n.6 (9th Cir. 1999) (given imperiled status of the species, minor improvements in survival compared to prior operations may be insufficient to avoid jeopardy); *Turtle Island Restoration Network v. U.S. Dep't of Commerce*, 878 F.3d 725, 737 (9th Cir. 2017) (even small additional harms can jeopardize the species when population is declining under baseline conditions); *S. Yuba River Citizens League v. Nat'l Marine Fisheries Serv.*, 723 F.Supp.2d 1247, 1267 (E.D. Cal. 2010) ("[A]lthough the

> BiOp properly concludes that the project … will partially reduce the impact of prior stressors, this is itself insufficient."); *Nat. Res. Def. Council v. Kempthorne*, 506 F.Supp.2d 322, 371–72 (E.D. Cal. 2007). Rather than simply performing comparative modeling in this consultation, life cycle models and/or other analyses should be used to demonstrate ***whether alternatives would achieve positive population growth of ESA-listed species sufficient to avoid jeopardizing the continued existence and recovery of the species***." (emphasis added).

The DEIS's own analysis demonstrates that all the alternatives, except Alternative 3, are insufficient to avoid jeopardizing the continued existence and recovery of listed species. This does not satisfy requirements under NEPA or the ESA. The DEIS also does not satisfy other federal policy requirements such as Justice 40, climate analysis requirements promulgated by the Council on Environmental Quality and the federal government's duties to protect tribal trust resources. Therefore, it must be revised and recirculated to include the correct and new information noted in our comments.

We look forward to continuing to engage in the reconsultation process. Thank you for consideration of our views.

Sincerely,

Jann Dorman
Friends of the River

Jonathan Rosenfield, Ph.D.
San Francisco Baykeeper

Scott Artis
Golden State Salmon Association

Chris Shutes
California Sportfishing Protection Alliance

Regina Chichizola
Save California Salmon

Carolee Krieger
California Water Impact Network

Barbara Barrigan-Parrilla
Restore the Delta

Lisa Damrosch
Pacific Coast Federation of Fishermen's Assn.s

Glen Spain
Institute for Fisheries Resources

Konrad Fisher
Water Climate Trust

CC: Dave Mooney, Bay-Delta Office Area Manager, U.S. Bureau of Reclamation
Jennifer Quan, Regional Administrator, National Marine Fisheries Service
Lenny Grimaldo, Assistant Environmental Director, California Department of Water Resources
Paul Souza, Regional Director, Pacific Southwest Region, U.S. Fish and Wildlife Service
Steve Tryon, Director, Office of Environmental Policy and Compliance, Department of Interior
Dr. BJ Howerton, NEPA Coordinator, Bureau of Indian Affairs
Kori Cordero, Tribal Advisor, USEPA Region IX
Karla Nemeth, Executive Director, California Department of Water Resources
Charlton Bonham, Executive Director, California Department of Fish and Wildlife
Gary Bobker, Keiko Mertz, Friends of the River
Ashley Overhouse, Defenders of Wildlife

Attachments:

1. NGO LTO Draft Proposed Action Comment Letter Part 1 – July 2023
2. NGO LTO Draft Proposed Action Comment Letter Part 2 – August 2023
3. NGO Bay Delta Plan Phase II Draft Staff Report Comments – January 2024
4. NGO SWP LTO DEIR Comment Letter – July 2024
5. Voluntary Agreement Timeline Fact Sheet – July 2024
6. Defenders et al. Letter to Agencies on ITL Exceedance – April 2024
7. Defenders Letter to Agencies Refuge Water Deliveries – April 2023
8. NRDC et al. BOR LTO Scoping Comment Letter – March 2022

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