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Submittal by email

RE: Comments on the Draft Environmental Impact Report for Operations of the State Water Project

Dear Mr. Wilkinson,

This letter is submitted as the comments of San Francisco Baykeeper, Friends of the River, Golden State Salmon Association, California Sportfishing Protection Alliance, and Restore the Delta on the Department of Water Resources (“DWR”) May 2024 Draft Environmental Impact Report (“DEIR”) regarding Operations of the State Water Project (“SWP”). Unfortunately, as discussed in detail on the pages that follow, the DEIR fails to comply with requirements of the California Environmental Quality Act (“CEQA”), and recirculation of a revised DEIR is required to comply with CEQA. In particular, the DEIR:

- Fails to provide an accurate and consistent project description;
- Fails to consider a reasonable range of alternatives;
- Fails to adequately analyze the effects of implementing the addendum to the Coordinated Operating Agreement, notwithstanding DWR’s Notice of Preparation;
- Fails to adequately disclose likely environmental impacts during droughts, including by failing to consider the effects of climate change;
- Fails to consider the whole of the action under CEQA, because it fails to analyze the effects of coordinated operations of the SWP and CVP upstream of the Delta;
- Fails to adequately analyze environmental impacts and fails to disclose the significant adverse impacts of the Proposed Project; and
- Fails to adequately consider cumulative impacts.

DWR must substantially revise the DEIR to comply with CEQA, and DWR must recirculate the revised DEIR for public comment. *See* Cal. Code Regs., tit. 14, §§ 15088.5(a)(1)-(3), 15090.

Finally, DWR's preferred alternative in the DEIR plainly would jeopardize the continued existence of species listed under the California Endangered Species Act ("CESA"), in violation of CESA's requirements. As we noted in CEQA comments on the existing ITP, the changes in SWP operations authorized in 2020 are expected to exacerbate the problems that led to CESA listing of four fish species that are native to the San Francisco Bay Delta estuary ("estuary") and its watershed¹. Those project impacts were not fully mitigated, as required under CESA. In many ways, DWR's new preferred alternative for SWP operations makes those problems worse and is likely to increase the risk of extinction for five native Delta fish species that are protected under CESA². The baseline for the Proposed Project is measurably worse for imperiled fish species than the conditions that preceded the 2020 update. The DEIR's baseline conditions are expected to produce declines in imperiled species, and conditions under the preferred project are projected to be worse for these species than the baseline. Indeed, the DEIR's baseline includes the 2019 biological opinions authorized by the Trump administration (2019 BiOps), despite the fact that the state successfully challenged the 2019 BiOps in court as inadequate to protect endangered species. The DEIR is wholly inadequate for use by DFW in its consideration of an incidental take permit under CESA.

These issues are discussed in further detail on the pages that follow.

1 Our January 6, 2020 comment letter is available at the link provided below and incorporated by reference.

2 In 2020, four CESA listed fish species were negatively affected by the change in SWP operations: winter-run Chinook Salmon, spring-run Chinook Salmon, Delta Smelt, and Longfin Smelt. On June 19, 2024, the California Fish and Game Commission voted unanimously to make California White Sturgeon, which spawn only in the estuary's watershed, a candidate for CESA listing. CESA candidate species enjoy full protection under CESA until the California Department of Fish and Wildlife completes a status review. (<https://wildlife.ca.gov/News/Archive/fish-and-game-commission-approves-white-sturgeon-as-a-candidate-species-for-listing-as-threatened#:~:text=2022%2D2024%20News%20Releases&text=The%20California%20Fish%20and%20Game,that%20listing%20may%20be%20warranted>).

I. The DEIR Violates CEQA Because it Fails to Provide an Accurate and Stable Project Description.

The DEIR violates CEQA because it fails to provide an accurate and stable description of the project. First, DWR’s project description excludes a critical component of SWP operations, Oroville Reservoir operations and immediate downstream impacts to the Feather River. Second, the DEIR violates CEQA because the DEIR incorporates the proposed Voluntary Agreements (“VA” or “VAs”), which are not reasonably certain to occur, rendering the project unstable, and as a result the DEIR is fundamentally misleading and does not accurately assess potential environmental impacts from the project.³

It is black letter law that, “[a]n accurate, stable and finite project description is the sine qua non of an informative and legally sufficient EIR.” *County of Inyo v. City of Los Angeles*, 71 Cal. App. 3d 185, 193 (1977). CEQA requires that a DEIR identify a preferred alternative. *Washoe Meadows Community v. Department of Parks and Recreation*, 17 Cal.App.5th 277, 285-87 (2017). That preferred alternative must give a clear explanation of the nature and scope of the Proposed Project, otherwise it “is fundamentally inadequate and misleading.” *See Communities for a Better Environment v. City of Richmond*, 184 Cal.App.4th 70, 84-85 (2010).

DWR has violated these requirements here.

A. Exclusion of Upstream Operations

First, DWR’s Proposed Project in the DEIR erroneously excludes upstream operations of Oroville reservoir and related facilities. DEIR at pp. 2-17 at Table 2-3 and 2-18, 3-17, and 3-18. Therefore, the Proposed Project description is not accurate as required by CEQA. The DEIR goes as far as to admit that Oroville operations are critical to project operations, describing the connection between upstream operations, Delta conditions and SWP exports,

“The principal facilities of the SWP are Oroville Reservoir and related facilities, and San Luis Dam and related facilities, facilities in the Delta, the Suisun Marsh Salinity Control Gates (SMSCG), the California Aqueduct including its terminal reservoirs, and the North and South Bay Aqueducts.... Water stored in the Oroville facilities, along with water available in the Delta (consistent with applicable regulations) is captured in the Delta and conveyed through several facilities to SWP contractors. *As such, changes to SWP operations at these facilities may result in changes to surface water hydrology in the lower Sacramento River, downstream from the Feather River confluence, the Delta and Suisun Bay, and exports from the Delta to south-of-Delta SWP water users.*”

DEIR at 4-1 (emphasis added).

³ Please note that while some of the documents in the LTO process adopt the new, misleading branding for the Voluntary Agreements, “the Healthy Rivers and Landscapes [HRL]”, we will continue to refer to this critical element of operations under the federal Proposed Action and state Proposed Project as the “Voluntary Agreements” (VA or VAs) for ease of reading, consistency and transparency for all involved parties.

A court compared this requirement to similar provisions in the National Environmental Policy Act (NEPA), recognizing “that an accurate description of the project is necessary in order to decide what kind of environmental impact statement need be prepared [internal citations omitted].” *County of Inyo v. City of Los Angeles*, 71 Cal.App.3d 185, 192 (1977). There has never been a CEQA analysis of the SWP’s water supply operations for Oroville Dam and the Feather River, and there is none in the DEIR at issue here. There is no baseline analysis in for this operation. There is no quantification of the operation. There is no analysis of how this operation has changed or could reasonably be expected to change in the future. Thus, the DEIR does not have an accurate project description.

As a result, the DEIR also cannot disclose the environmental impacts of changes to the water supply operations of Oroville Reservoir and changes to the Feather River downstream of Oroville Dam. CEQA requires that the DEIR analyze the effects of the whole project on the environment. *See* CEQA Guidelines § 15378 (definition of “project” means “the whole of an action”). The definition of a project is broadly construed in order to maximize protection of the environment. *Nelson v. County of Kern*, 190 Cal.App.4th 252, 271 (2010). Additionally, the entire project being proposed must be described in the EIR, and the project description must not minimize project impacts. *City of Santee v. County of San Diego*, 214 CA3d 1438, 1450 (1989). Without inclusion of upstream operations, the DEIR also violates CEQA because it fails to analyze the whole of the action.

The DEIR must be revised to provide an accurate, consistent and stable project description that is the project that DWR intends to implement, and thereafter recirculated for public comment.

B. Incorporation and Improper Reliance on Voluntary Agreements

Moreover, the DEIR violates CEQA because its description of the project is inaccurate and potentially unstable due to its incorporation of the Voluntary Agreements.

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

The Voluntary Agreements 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).⁴ The VA proposal has been in development for more than a decade and proponents have still not produced a complete proposal as of July 2024. *See* Voluntary Agreement Timeline, Attachment 4. Given this track record, there is no reason to assume that the VA effort will ever actually produce a complete package. Missing elements include, but are not limited to, a final Funding Agreement, enforcement agreements, and technical details such as “which reservoirs may be reoperated,

⁴ For purposes of interpreting statutory intent, the federal Endangered Species Act can be used to compare for CESA. *San Bernardino Valley Audubon Society v. City of Moreno Valley* (App. 4 Dist. 1996) 44 Cal.App.4th 593.

which fields will be fallowed, when reservoirs can refill, and when groundwater substitution will occur, have not been fully specified.” See SWRCB Draft Staff Report at p. G3a-1.

Further, it is not certain that the State Water Board will approve the VA proposal. The proposed Bay-Delta VA is more complicated than any previous “block of water” effort anywhere in the nation. The *Building Blocks* white paper (accessible in the link we provide below) documents significant challenges that have faced 18 other efforts to create environmental blocks of water – most of which are located in California.⁵ The problems faced by previous environmental blocks of water included a failure to purchase anticipated environmental water, accounting issues related to the program’s environmental baseline, unanticipated impacts caused by changes in project operations and more. Here, the Bay-Delta 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. All of these problems make the anticipated VA environmental flows even less likely to occur.

The VA proposal also contains numerous additional flaws that reduce the likelihood of anticipated environmental flows:

- 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. This problem is exacerbated by the fact that 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.
- Given the current focus on wet season diversions to recharge groundwater basins, this flaw in the VA accounting proposal could allow anticipated environmental water to be reduced significantly during the term of the final Incidental Take Statement.
- 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.
- The Proposed Project does not exclude the use of Temporary Urgency Change Petitions (“TUCPs”) and Temporary Urgency Change Orders during future droughts. The VA proposal contemplates continued use of TUCPs. Approval of these TUCPs have allowed State Water Board flow requirements to be waived. This is particularly important, given the impacts on Delta Smelt and other listed species during droughts. TUCPs in the future would reduce environmental flows to a level below that assumed in the Proposed Project. As a result, the total environmental flows in the VA package, including existing regulatory flow requirements, are unlikely to occur.

⁵ *Building Blocks – Tools and Lessons for Designing a Block of Water for the Environment*. Barry Nelson, Defenders of Wildlife. June 2022.

- The VA proposal has no adequate enforcement mechanism, in the likely event that it 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.
- Finally, it is important to note that VA proposal is currently undergoing legal review. A Civil Rights Petition was filed by a coalition of Tribal and Environmental Justice organizations on December 16, 2022, and is currently pending before the U.S. Environmental Protection Agency.⁶ The Petition articulates several legal issues with the VAs. Additionally, “[t]he Legislature finds and declares that California Native American tribes traditionally and culturally affiliated with a geographic area may have expertise concerning their tribal cultural resources. *See* Cal. Pub. Res. Code § 21080.3.1 (West). There is a question as to whether the Voluntary Agreements have met the Tribal consultation requirements under CEQA.⁷

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 Proposed Project – is not reasonably certain to occur.⁸ Therefore, reliance on the VA proposal is unlawful, jeopardizing years of collaboration and collective work by all agencies involved in the reconsultation process.

2. The Project Description is misleading and potentially unstable by assuming VA flows would be realized and would benefit the environment.

The Proposed Project erroneously relies on “early implementation” actions by DWR and BOR, based on the proposed VAs, to allegedly contribute to Delta outflow in the spring. Reliance on the proposed VAs is highly problematic for the listed fish species (all of which suffer from reduced river flows into and through the Delta) because even if it were fully implemented, the VA fails to provide anything even remotely close to adequate Delta outflows, based on the best available scientific evidence. Therefore, this increases the likelihood the DEIR project description will fundamentally change, rendering the project unstable. An “unstable project

⁶ The Petition can be accessed here: <https://www.restorethedelta.org/wp-content/uploads/2022-12-16-Bay-Delta-Complaint-and-Petition.pdf>

⁷ We strongly encourage the Department of Water Resources and the other agencies in the reconsultation process to proactively reach out to Tribal entities and interests so they can properly inform DWR’s decision-making.

⁸ In addition to failing to provide an accurate project description, the failure to ensure that these operational requirements will be achieved appears to violate CEQA’s requirements that mitigation measures must be fully enforceable through permit conditions, agreements, or other legally-binding instruments. Cal. Code Regs., tit. 14, § 15126.4(a)(2). This proportional share approach clearly would violate CESA, since it does not ensure that these measures are successfully implemented, nor does it prevent the coordinated operations of the CVP and SWP from jeopardizing the continued existence of CESA-listed fish species. *Id.* §§ 783.4(a)(2), (b), (c). Because the SWP is operated by the State of California, which has a duty to conserve listed species, CESA’s general requirement of rough proportionality does not apply. Cal. Fish and Game Code §§ 2052, 2052.1.

description draws a red herring across the path of public input.” *Save Our Capitol! v. Dep't of Gen. Servs.*, 87 Cal.App.5th 655, 674 (2023).

In fact, NMFS has determined that “(t)he flow commitments identified in the VA Term Sheet would not provide a significant divergence in average flow relative to the baseline.” NMFS also stated that “[W]e are highly uncertain that the VAs as currently proposed will provide for the reasonable protection of fish and wildlife beneficial uses.”⁹ The U.S. Environmental Protection Agency has also concluded that “VA flow assets provide only minimal benefits,” and that “EPA is concerned that the total volume and timing of Delta inflow and outflow provided under the proposed VA alternative relative to baseline is not large enough to adequately restore and protect aquatic ecosystems.” Finally, the EPA concluded that “(D)uring critical dry years the proposed VA alternative will result in a decrease of flows from baseline.”¹⁰

Based on this information from other agencies, the DEIR project description at issue here is misleading. The DEIR states in Chapter 2, Section 2.3.5.2 “Early Voluntary Agreement Implementation” that,

“Early implementation Spring Delta outflow actions will be achieved through either Implementation of Condition of Approval 8.17 of DWR’s 2020 Incidental Take Permit (2020 ITP) . . . [or] . . . Actions to generate flow volumes that are on average equivalent to implementation of the 2020 ITP Condition of Approval 8.17. *If this latter approach is pursued, DWR and CDFW will meet and confer on the final operational plan that considers hydrology and accounting methods, and DWR will obtain CDFW approval of the operational plan prior to April 1st. This flow volume will be through cuts to SWP export of unstored water. DWR will not be required to restrict exports at the Banks Pumping Plant below its minimum health and safety exports of 600 cfs to meet the low volumes.*” DEIR at p. 2-33 (emphasis added).

Not only is this second “option” for implementing Delta outflows missing critical information and deferring analysis of the final “operational plan” at issue in this DEIR, but DWR is assuming that the VA flows will be realized and sufficient to meet operational requirements (and all applicable environmental compliance requirements, as well). This is a fundamental mischaracterization of not just the Voluntary Agreements, but also presuming that two different state agencies will approve the foundational flows that are implicated here in this action.

Furthermore, the State Water Board’s analysis indicates that the VAs are supposed to be *additive* to the ITP flow regime, rather than just contribute to the ITP flows, and more importantly, the VAs are likely to result in *lower* Delta outflows 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 Phase II Bay Delta Plan Draft Staff Report, pp. 9-13 and 9-14. Like in *Save Our Capitol!*, a project description is unstable and misleading “when it significantly

⁹ Cathy Marcinkevage, Assistant Regional Administrator, National Marine Fisheries Service to the State Water Resources Control Board, Jan. 19, 2024.

¹⁰ Thomas Torres, Director, Water Division, EPA Region 9 to State Water Resources Control Board, Jan. 19, 2024.

changed the project description . . . in the final EIR to the detriment of public participation and informed decision-making on the project's most controversial aspect.” 87 Cal.App.5th 655, 678 (2023). Here, the flows, and specifically the amount of Delta outflow, are easily the “most controversial aspect” of the project description. As discussed more in attached comment letters, 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. Thus, the DEIR’s portrayal of potential flow improvements under the VA proposal is misleading and could dramatically change in the FEIR and final implementation of the coordinated project operations. This thwarts true “public participation and informed decision-making”, in violation of CEQA. *Id.*

The DEIR’s Proposed Project also appears to incorrectly assume that all anticipated Voluntary Agreement environmental flows would benefit listed species by providing Delta outflow. *See* DEIR at pp. 2-31, 9-30. Yet the VA proposal appears to “count” as a VA contribution to flow water that is not diverted due to causes that are unrelated to environmental protection – such as regular or unscheduled maintenance, pump/canal/storage capacity limitations, or lack of demand. Even if it provides an environmental benefit (and there is no requirement that it must), flows bypassed under these circumstances are a significant portion of current Delta outflows and would not be additive to the baseline (Reis et al. 2019). The assumption implicit in the Proposed Project – that all of the anticipated VA water would be managed to achieve maximum benefits for listed species – is not a reasonable assumption.

These wholly inconsistent descriptions of the Proposed Project due their misleading characterization of the Voluntary Agreements are grossly misleading to the public and decisionmakers in violation of CEQA. *See, e.g., San Joaquin Raptor Rescue Center v. County of Merced*, 149 Cal.App.4th 645, 655-56 (2007) (holding that the project description was inconsistent as to whether the project would increase mining production and violated CEQA, in part based on statements in public hearings on the CEQA document that demonstrated such inconsistencies); *Communities for a Better Environment*, 184 Cal.App.4th at 83-84 (holding project description violated CEQA because of inconsistent statements whether the objectives of the project were to increase processing of heavier crudes at the refinery, relying in part on contradictory statements made by Chevron in a 10-K filing).

Therefore, the DEIR is wholly inaccurate due to missing upstream operations from the second largest reservoir in the state, and improper reliance on the Voluntary Agreements, the DEIR violates CEQA. DWR must revise the DEIR and recirculate to address these fundamental flaws and allow true public participation and informed-decision-making.

II. The DEIR Violates CEQA because it Fails to Consider a Reasonable Range of Alternatives.

CEQA requires that a reasonable range of alternatives to the Proposed Project be considered in the environmental review process, including a no project alternative. Cal. Pub. Res. Code §§

21002, 21061, 21100; tit. 14, Cal. Code Regs. (“CEQA Guidelines”) § 15126.6. “While the lead agency may ultimately determine that the potentially feasible alternatives are not actually feasible due to other considerations, the actual infeasibility of a potential alternative does not preclude the inclusion of that alternative among the reasonable range of alternatives.” (*Watsonville Pilots Assn. v. City of Watsonville* (2010) 183 Cal.App.4th 1059, 1087; see also, *Banning Ranch Conservancy v. City of Newport Beach* (2017) 2 Cal.5th 918, 936-937; *Habitat and Watershed Caretakers v. City of Santa Cruz* (2013) 213 Cal.App.4th 1277, 1300-1306 (no feasible water alternatives considered”).)

The alternatives considered in the DEIR do not provide a reasonable range, nor do they provide sufficient information for public to understand the impacts of the Proposed Project. The fundamental purpose of the DEIR is to ensure compliance with the law in operation of the project, specifically the California Endangered Species Act. Yet none of the alternatives considered would have decreased diversions or increased Delta outflow in a way that would protect endangered species. Instead, DWR rejects these as “infeasible” without analysis of the impacts of alternatives that would comply with CESA. This is inconsistent with CEQA.

DWR acknowledges that it chose not to consider alternatives which would have increased Delta outflow because such alternatives may reduce water deliveries from DWR. *See* DEIR at 11-5. The DEIR says that such alternatives “would not allow DWR to store, divert, and convey water in accordance with DWR’s existing water rights to deliver water pursuant to water contracts and agreements up to full contract quantities.” DEIR at 11-5. DWR then explains that the “feasibility of this alternative is questionable because this alternative would require operation of facilities that are outside of the geographic scope of the Proposed Project and are subject to different regulatory requirements and operational control.” DEIR at 11-5. This does not comply with CEQA or CESA.

First, it is an admission that compliance with CESA cannot be achieved consistent with water deliveries that are up to full contract quantities. Second, it chooses not to provide information to the public or to analyze alternatives because of the existence of water rights. But CESA and CEQA are not subservient to the water rights of the State Water Contractors—CESA requires protection of endangered species, and CEQA requires full analysis of the impacts of the long-term operations of the State Water Project, not just analysis of the limited range of conduct DWR has proposed. Third, DWR asserts that analyzing a full range of alternatives, including ones that meet the demands of CESA, require analysis of the project as a whole (both Oroville operations and interaction with the federal operations of the Central Valley Project). Again, CESA and CEQA require this analysis in order to provide complete and accurate information about the impacts of the project.

The DEIR states that the objective of the Proposed Project is the continued operation of the SWP consistent with applicable laws, including CESA, contractual obligations, and agreements. DEIR at 2-1.

The best available science demonstrates that existing protections to limit diversions from the Delta need to be strengthened to comply with CESA. [SWRCB 2017 SED, SWRCB 2023 SED, EPA 2024 comments on Phase 2 SED, Baykeeper et al. 2024 comments on Phase 2 SED.] Yet the DEIR fails to consider any alternatives that would increase protections for endangered species by reducing water exports from the Delta as compared to the baseline. This is a failure to consider alternatives that would comply with CESA.

In addition, the DEIR fails to provide a reasonable range of alternatives because it fails to include any alternative that would require increased winter-spring Delta outflows, despite the findings of numerous state and federal agencies that such measures are necessary to protect native species and their habitats.

The No Project Alternative would continue the status quo operations of the Project based on the 2020 ITP, the 2019 BiOps as modified by the Interim Operations Plan for the CVP and SWP operations as of June 16, 2023. DEIR at 11-7. This is the same as “baseline conditions” for the Project. *Id.* Because the No Project Alternative and baseline conditions are the same, DWR concludes in the DEIR that there would be no change, and this would be “similar to the Proposed Project.” DEIR at 11-8.

Alternative 1 adopts the Proposed Project with a few changes – keeping the CCF increased diversion period December 15-March 15 instead of expanding it, and modifying spring Delta outflow to “deploy” flows from the “Voluntary Agreement program” to limit those flows to May, rather than to allow them in March, April, or May. *See* DEIR at 11-8. “All other components of the Proposed Project are included in Alternative 1.” DEIR at 11-9. Figures 11-1 to 11-16 show that there is effectively no change between baseline conditions, the Proposed Project, and Alternative 1. *See* DEIR at 11-10 to 11-19.

Similarly, the tables of projected salvage and take at the South Delta Export Facility for various fish species demonstrates the lack of variation between the Proposed Project and the various alternatives. *See* DEIR Table 11-5 (mean modeled salvage due to Proposed Project and Alternatives 1-3 are nearly identical for juvenile Winter-run Chinook Salmon); Table 11-6 (same for Spring-run Chinook Salmon); Table 11-9 (same for Steelhead); Table 11-10 (same for Green Sturgeon); Table 11-11 (same for White Sturgeon).

The March – May Delta Outflow (Table 11-24), March – June Delta Outflow (Table 11-25), February – June Delta Outflow (Table 11-26), April – June Delta Outflow (Table 11-27) all show the same: effectively no difference between the Delta outflow under the Proposed Project and each of the Alternatives. DEIR at 11-29 to 11-32. Ultimately, DWR concludes that, “for listed species, the effects of Alternative 1 generally would be similar to those for the Proposed Project.” DEIR at 11-33.

Alternative 2 is, like Alternative 1, nearly indistinguishable from the Proposed Project. As DWR describes them, the “relative incremental changes . . . due to Alternative 2 as compared to Baseline Conditions are similar to those described under the Proposed Project.” DEIR at 11-45. Figures 11-27 to 11-35 demonstrate the near identity between the Proposed Project and

Alternative 2. As DWR concludes: “overall long-term average Delta outflow, exports, or other hydrologic conditions would be similar under Alternative 2 and the Proposed Project. Because differences in these long-term average hydrologic variables would be minimal, impacts on all other resources under Alternative 2 would be expected to be the same as described for the Proposed Project.” DEIR at 11-58.

Alternative 3 is, like the other alternatives, essentially the same as the Proposed Project. Again, DWR describes the “relative incremental changes in surface water hydrology due to Alternative 3 as compared to the Baseline Conditions are similar to those described under the Proposed Project.” DEIR at 11-58. Figures 11-45 to 11-57 show the overlap between the Proposed Project and Alternative 3. In sum, “the impacts of the Proposed Project and Alternative 3 are essentially equivalent.” DEIR at 11-76.

Despite the lack of difference in the impacts of the Proposed Project and the Alternatives analyzed by DWR, DWR concludes that it has both analyzed a reasonable range of alternatives and identifies an “environmentally superior” alternative. Yet neither DWR’s analysis of the limited range of alternatives nor its selection of Alternative 3 as the environmentally superior alternative meet the requirements of CEQA.

DWR asserts that Alternative 3 is “environmentally superior” because it would “provide the same benefits” during the spring as the Proposed Project while limiting diversions from December to March to baseline conditions. DEIR at 11-76. The purported benefits from Alternative 3 are focused on a “potentially” lower entrainment risk due to the choice not to expand the period during which winter diversions can occur.

First, none of the alternatives included in the DEIR would strengthen protections for endangered fish and wildlife compared to today. The DEIR excludes consideration of any alternatives that provide increased restrictions on Delta exports. Increased protections for endangered fish and wildlife in the Bay-Delta is necessary to meet the requirements of state and federal law including CESA. In 2008 the Supreme Court upheld the failure to consider a reduced export alternative in the final EIR for CALFED, stating that,

“Bay–Delta ecosystem restoration to protect endangered species is mandated by both state and federal endangered species laws, and for this reason water exports from the Bay–Delta ultimately must be subordinated to environmental considerations. The CALFED Program is premised on the theory, as yet unproven, that it is possible to restore the Bay–Delta’s ecological health while maintaining and perhaps increasing Bay–Delta water exports through the CVP and SWP. If practical experience demonstrates that the theory is unsound, Bay–Delta water exports may need to be capped or reduced.”

(In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings (2008) 43 Cal.4th 1143, 1168.) Practical experience has now plainly demonstrated that theory is unsound; indeed, the DEIR (and recent federal biological opinions from NMFS and US FWS) demonstrate that the Proposed Project and alternatives are likely to result in continued declines in

the survival and abundance of CESA-listed fish species in the Bay-Delta watershed. Thus, the failure to consider an alternative in this DEIR that reduces water diversions from the Delta in order to improve environmental conditions for fish and wildlife violates CEQA.

Second, numerous state and federal agencies have identified the need to increase winter-spring outflow to protect fish and wildlife, including endangered species. In contrast, the DEIR fails to even consider any alternatives that would increase winter-spring outflow, and only the no action alternative would maintain existing outflow. Despite the repeated recognition of the need to increase Delta outflow in the winter and spring months, none of the alternatives in the DEIR would increase Delta outflow in the winter and spring months.

Third, such alternatives exist, were proposed during the NOP by various commenters, and similar alternatives were analyzed in the federal Biological Opinions recently published by NMFS and FWS.

DWR's failure to consider one or more alternatives that increase Delta outflow from January to June is even more problematic because, as discussed *infra*, the DEIR's conclusion that the reduction in Delta outflow would not cause a significant impact is clearly erroneous and is the result of statistical manipulation in contravention of sound science.

The impact of DWR's failure to analyze an adequate range of alternatives is compounded in this instance because (a) it failed to consider a reasonable range of alternatives in analyzing the 2020 ITP, and (b) the current baseline conditions are inadequate to actually protect endangered fish species. As a result, DWR limits its CEQA analysis to a baseline that is not protective and was identified largely based on a lack of informed CEQA and CESA analysis leading up to the 2020 ITP and a series of alternatives that do not materially differ from that baseline and none of which would improve conditions from the baseline. Only by using a cramped analysis which excludes relevant information and legally required alternatives can DWR justify its conclusion that continuing to divert more and more water between December and June will not continue to cause increasing harms to the endangered species put on the brink of extinction by the lack of freshwater flow during those months.

Because the DEIR fails to consider a reasonable range of alternatives in violation of CEQA, it must be revised and recirculated.

III. The DEIR Violates CEQA Because it Fails to Analyze the Effects of the 2018 Addendum to the Coordinated Operating Agreement.

For the 2020 ITP, DWR failed to analyze the 2018 Addendum to the 1986 Coordinated Operations Agreement which governs combined operation of the SWP and CVP. This meant analysis of the 2020 ITP ignored the potential adverse effects of implementing the Addendum to the Coordinated Operating Agreement at Lake Oroville and other areas upstream of the Delta, and rather than evaluating these potential effects, included the Addendum to the Coordinated Operating Agreement in the environmental baseline. See 2019 DEIR at 4-2; *see* 2019 DEIR, Modeling Appendix at B-5.

The DEIR again makes this error, omitting needed information for the public, DWR, and CDFW to understand the overall impacts of the Proposed Project and the Alternatives. Having failed to previously analyze the impacts of the 2018 Addendum to the COA, DWR again incorporates the COA into its baseline. DEIR at 4A-1-12 (defining the COA as “Same as the Baseline Conditions”).

Federal assessments of the COA Addendum showed storage declines in Lake Oroville as a result. But the DEIR (improperly) fails to analyze or consider operations at Lake Oroville. And there is a reasonable scientific basis and a fair argument to believe that implementation of the COA Addendum would cause significant adverse environmental impacts under CEQA. *See* Bureau of Reclamation, Environmental Assessment, Addendum to the Coordinated Operating Agreement, Central Valley Project/State Water Project, December 2018 (explaining storage impacts at Lake Oroville)¹¹; *see also* NRDC et al. 2019 Comments at pp. 11-13 (section III, explaining Feather River impacts due to Lake Oroville storage changes), and at Exhibit 1 (CDFW’s modeled impacts).

DWR has a duty to analyze and disclose the effects of the 2018 Addendum to the COA, including these significant adverse effects. DWR has not complied done so, either in the DEIR or previously. DWR must revise the DEIR to analyze the effects of implementing the 2018 Addendum to the COA in connection with the impacts of the Proposed Project as well as a reasonable range of alternatives.

By failing to disclose and analyze upstream impacts, incorporating changes to the COA into the baseline, and then comparing the Proposed Project to that unanalyzed baseline, DWR conceals the scope of overall impacts of its actions from 2018 to the present that have reduced protection for endangered fish.

IV. The DEIR Fails to Adequately Analyze and Disclose the Significant Adverse Environmental Impacts that the Proposed Project is Likely to Cause during Droughts.

The DEIR fails to analyze or disclose the adverse environmental effects of water project operations during droughts. As discussed below, the DEIR’s proposed Spring Outflow and Delta Smelt Summer-Fall Habitat measures fall far short of outflows necessary to protect Delta smelt, Longfin smelt, and estuarine habitat in all years, and fail to augment flows at all in Critically Dry Years. But the DEIR’s inadequacy is not limited to its proposed measures, because it also utterly

¹¹ This document is available online at: https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc_ID=36503 (last visited August 5, 2024). It is hereby incorporated by reference.

fails to consider drought conditions – and the management responses to drought – that were experienced in the real world in recent years. The DEIR acknowledges that in its analysis:

“Actual exports in 2014, 2015, and 2021 were outside the modeled range. Export data during these years represent operations under stressed water supply conditions. DWR and Reclamation filed Temporary Urgency Change Petitions (TUCPs) to temporarily modify requirements in their water rights permits in response to the drought conditions in 2014, 2015, and 2021. As noted in Appendix 4A, Attachment 8, “Model Limitations,” CalSim 3 results differ from real-time operations under stressed water supply conditions.” DEIR at 4-7.

Absent the adoption of regulatory and/or management regimes that are more protective than the DEIR’s preferred alternative, it is more than reasonably foreseeable – it is a virtual certainty – that numerous operational and other protective measures for fish and wildlife (such as water temperature standards, Old and Middle River flow restrictions, and Delta outflow requirements), including measures considered and assumed in the DEIR, will not be implemented during future droughts. Thus, the DEIR fails to disclose the likely adverse impacts that will result from less protective operations during droughts, and it fails to identify in any detail mitigation measures that could credibly or sufficiently reduce or avoid these impacts.

Over the past decade, DWR and Reclamation have repeatedly, consistently, and successfully sought to waive or weaken numerous water quality objectives (including minimum Delta outflow) and ESA requirements under both the 2008 and 2009 and the 2019 biological opinions and failed to meet water temperature standards – despite the fact that existing water quality objectives, ESA requirements, and water temperature management regimes are widely acknowledged to be insufficiently protective (*see*, for instance, SWRCB 2010, 2017). TUCPs submitted by DWR and Reclamation were approved by the SWRCB in in six out of 10 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)¹²; Water Rights order dated February 3, 2015¹³; April 6, 2015 Revised Order¹⁴; July 3, 2015 order conditionally approving petition for temporary urgency change¹⁵. (For instance, in 2015 the waivers of water quality standards reduced Delta outflows and increased water deliveries by approximately 800,000 acre feet).

¹² Available online at:

http://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/2014/wro2014_0029.pdf

¹³ Available online at: https://www.waterboards.ca.gov/drought/docs/tucp/2015/tucp_order020315.pdf

¹⁴ Available online at:

http://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/docs/tucp/2015/tucp_order040615.pdf

¹⁵ Available online at:

http://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/docs/tucp/2015/tucp_order070315.pdf

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

- Greater than 95% 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% in 2014 and 85% in 2015 due to lethal and chronically adverse water temperatures below Keswick Dam;
- Greater than 95% mortality of fall-run Chinook salmon eggs and juveniles that spawned in the mainstem Sacramento River above Red Bluff Diversion Dam in 2014;
- 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).

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, 2015¹⁶; March 24, 2015 Petition for Temporary Urgency Change, Attachment A¹⁷; 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 Plan¹⁸; March 18, 2022 Temporary Urgency Change Petition for April 1, 2022

¹⁶ Available online at:

http://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/comments_tucp2015/docs/nrdc_obegi021315.pdf

¹⁷ Available online at:

http://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/docs/tucp/2015/apr2015_req032415.pdf

¹⁸ Available at:

https://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/2022/wro2022_0095.pdf

through June 30, 2022¹⁹; and February 13, 2023 Temporary Urgency Change Petition for February 1, 2023 through March 31, 2023²⁰.

DWR's sole proposed mitigation for impacts of the SWP during drought conditions is the Voluntary Drought Toolkit, which would provide "a coordination process to implement drought relief actions." DEIR Appendix 2a, Attachment 6 at 3. However, the measures in the Toolkit are described qualitatively and not included in the DEIR's modeling of project operations. Furthermore, as discussed {above}, there is no reason to assume that the Toolkit's measures are likely to occur, given that there is currently no authorization or funding for its implementation.

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). DWR has failed to exercise such due diligence by failing to analyze the impacts of TUC Orders in drought years and failing to specify and analyze the impact of potential mitigation measures such as the proposed Drought Toolkit or alternative approaches.

It should be noted that the problem of TUCPs and their adverse impact on endangered species is not solely limited to drought years. For instance, the most recent TUC Order was issued on February 21, 2023²¹. By January of 2023, multiple atmospheric rivers were hitting the Sierra Nevada and Central Valley, leading to significant flood events.²² Water year 2022-2023 ultimately was determined to be a wet year. Clearly, TUCPs and the potential damage from them are not limited to drought years. Therefore, the analysis of TUCPs must also include non-drought years, particularly including years at the end of droughts.

Indeed, DWR's failure to perform due diligence extends to its failure to analyze in the DEIR that that climate change will likely reduce Lake Oroville reservoir storage during droughts to levels far below the minimum water storage ever observed historically, which DWR admits is likely to result in changes to water project operations during future droughts that includes not meeting minimum flow conditions and violating salinity standards. These and similar operational responses are likely to cause significant adverse effects on fish and wildlife, including adverse water temperatures in the Feather River and the significant adverse effects observed in 2014-2015. However, these reasonably foreseeable adverse effects are not considered in the DEIR. In addition, the DEIR's analysis and modeling improperly assumes that the proposed operational measures would be implemented in future droughts, when the text indicates otherwise. *See* CEQA Guidelines § 15126.4(a)(2).

¹⁹ Available at:

https://www.waterboards.ca.gov/waterrights/water_issues/programs/applications/transfers_tu_notices/2022/20220318_tucp.pdf

²⁰ Available at: https://www.waterboards.ca.gov/drought/tucp/docs/2023/20230213_tucp.pdf

²¹ Available at: <https://www.waterboards.ca.gov/drought/tucp/docs/2023/20230221-final-tuco.pdf>

²² Matthew Cappucci, "California is not Done: Three More Atmospheric Rivers are on the Way," *The Washington Post*, January 6, 2023. Available at <https://www.washingtonpost.com/weather/2023/01/06/california-atmospheric-river-forecast-flooding/>

Because waivers of protective operations in future drought conditions are reasonably foreseeable, and because such waivers are likely to result in significant adverse impacts that are not disclosed in the DEIR, DWR must identify feasible mitigation measures to reduce or avoid these significant impacts. CEQA Guidelines §§ 15126, 15126.4. DWR must recirculate a revised DEIR that includes such mitigation measures. CEQA Guidelines § 15088.5(a)(1)-(3).

V. The DEIR Fails to Accurately Assess Environmental Impacts, and the DEIR Fails to Disclose Significant Environmental Impacts of the Proposed Project.

CEQA requires that the DEIR accurately assess potential environmental impacts from the Proposed Project and alternatives, using credible methods of analysis. *See, e.g.,* Cal. Code Regs., tit. 14, § 15151; *Laurel Heights Improvement Assn. v. Regents of University of Cal.*, 47 Cal.3d 376, 409 (1988). The DEIR fundamentally fails this essential function, and it fails to disclose environmental impacts that are significant. The DEIR must be revised and recirculated.

A. The Flawed Modeling in the DEIR, including Baseline Modeling, Results in Inaccurate Assessment of Environmental Impacts.

First, as discussed *supra*, the CalSim modeling in the DEIR is deeply flawed²³. Because this CalSim modeling is used as an essential input to the biological models and analyses that are used to assess potential environmental impacts, the flawed hydrological modeling infects the DEIR's assessment of environmental impacts, leading the DEIR to report misleading and erroneous conclusions regarding significant impacts.

Second, the CalSim modeling fails to account for reasonably foreseeable waivers of protective measures including OMR and Delta outflow requirements. *See* Section IV, *supra*. In six of the 10 the years between 2014 and 2023, DWR and Reclamation applied for and received waivers from existing water quality standards (D-1641) via Temporary Urgency Change Orders (TUCOs). There is no question that these waivers of Delta outflow requirements contributed to significant adverse impacts on fish species in the Delta, yet the DEIR fails to consider and incorporate the effects of reduced Delta inflow, outflow, and/or Old and Middle River flows resulting from

²³ Furthermore, we reiterate our concern that impacts of the project baseline were never properly modeled. Specifically, the previous environmental documentation failed to model the more negative OMR conditions authorized by the project description (see NRDC et al. 2020 at 19). More negative OMR would likely increase entrainment and reduce survival and abundance of fish species including Delta smelt, Longfin smelt, winter-run Chinook salmon, spring-run Chinook salmon, fall-run Chinook salmon, and Central Valley Steelhead. These modeling flaws significantly underestimated the environmental impacts of the current baseline when it was originally analyzed, resulting in biased and inaccurate assessment of environmental impacts of the project, which is now the baseline for the Proposed Project. If this modeling error has not been corrected in the current DEIR, then it will fail to reveal differences between modeling of the previous project (and associated outcomes) and the baseline as presented here. As a result, the DEIR fails to disclose the incremental impact of the baseline versus operations prior to 2020, and comparisons of this baseline to the Proposed Project and Alternatives do not reflect the true impact of the Proposed Project on the biological resources of the of the estuary and its watershed.

future waivers of water quality standards. In addition, the DEIR fails to account for waivers of Old and Middle River flow requirements under previous BiOps (*see* Section IV, above, and Reis et al. 2019).

Furthermore, the DEIR fails to disclose the effects of actual implementation of the Proposed Project's already inadequate safeguards for threatened and endangered fishes. For example, in 2024 combined operations of the CVP and SWP resulted in substantial exceedances of mortality ("loss") limits for endangered winter-run Chinook Salmon and federally threatened Central Valley Steelhead that exceeded the incidental take limits identified in the NMFS 2019 biological opinion (NMFS 2019; NMFS 2024b. Reclamation 2024a). Unpermitted take of these protected species continued for weeks and exports frequently exceeded levels identified as protective by NMFS biologists (WOMT 2024). As a result, the DEIR fails to analyze and disclose likely significant environmental impacts and overstates the impact of the Proposed Project on water supplies.

Finally, the Proposed Project continues to ratchet up negative effects on imperiled fish, fisheries, and water quality, while erroneously concluding that the incremental effects are "small" and "not significant" under CEQA. The environmental analysis ignores that baseline operations of the CVP and SWP are devastating for imperiled fish, fisheries, and water quality in the Delta. As described in our previous comments (NRDC et al. 2020), current SWP operations (the "baseline" of the current DEIR) degraded conditions from the previous baseline, which reflected operational requirements of the 2008/2009 federal biological opinions, the 2009 state incidental take permit, and requirements of the Bay-Delta Water Quality Control Plan (D-1641) (hereafter: "the 2008/2009 operational baseline"). The 2008/2009 operational baseline was already understood to cause significant adverse impacts on fish and wildlife in the Delta caused by upstream water temperatures for spawning and egg incubation, water operations in the Delta on rearing habitat, and effects of water operations on migration habitat for covered fish species (USDOI 2016; SWRCB 2010, 2017)²⁴. The 2019 DEIR, which analyzed the current baseline, found that it would increase entrainment, reduce survival of salmon migrating into and through the Delta, and reduce winter-spring Delta outflow and abundance of various imperiled species as compared to the 2008/2009 operational baseline. Nevertheless, the 2019 DEIR erroneously concluded that these impacts would be less than significant. The Proposed Project will exacerbate many of these negative effects relative to current project operations. Thus, the DEIR shows that the Proposed Project will worsen environmental conditions relative to an environmental baseline that was degraded relative to the 2008/2009 operational baseline which was understood to cause significant impacts. Continuing to degrade environmental conditions and the conservation status of fish populations that are already trending towards extinction is not consistent with the DEIR's repeated findings of "no significant effect", nor is it consistent with federal or state endangered species acts. At a minimum, DWR must provide a reasoned explanation for the different

²⁴ *See* Department of Water Resources, Bay Delta Conservation Plan / California WaterFix, Final Environmental Impact Report / Environmental Impact Statement, December 2016, at ES-67 to ES-68; *id.*, Chapter 11, at 11-273 to 11-275.

conclusions regarding significance, and it has not done so here. The DEIR must be revised and recirculated.

B. The DEIR’s conclusions that the project will not cause significant impacts to fish is clearly erroneous and is not based on credible analyses.

In addition to the inaccurate modeling preventing accurate assessment of impacts, the analyses that are presented are scientifically flawed and, in many cases, not credible. Nevertheless, these analyses show that the Proposed Project will cause significant impacts which the DEIR fails to acknowledge or disclose. We describe some of these impacts in detail below.

1. Longfin Smelt

The U.S. Fish and Wildlife Service (“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 2024 at 36). In its final listing decision²⁵, 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” (*see also*, Federal Register Vol. 87, No. 194 (Friday, October 7, 2022) at pp. 60957-60974). Furthermore, USFWS analysis revealed that: “Forecasts 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” (USFWS 2024 at 195). Therefore, any alternative that does not improve conditions relative to the status quo for the San Francisco Bay estuary’s Longfin Smelt population is inconsistent with the requirements of the ESA. Despite this finding, the proposed combined operations of the SWP and CVP analyzed in the DEIR would not only fail to improve conditions for the imperiled Longfin Smelt, they would make those conditions worse.

The DEIR acknowledges that the Proposed Project’s effects on Delta Outflow will result in reduced Longfin Smelt abundance relative to the baseline (which is already inadequate to ameliorate the threats to this population, according to USFWS 2024). Furthermore, the DEIR’s projected decline in Longfin Smelt abundance does not account for the massive increases in entrainment mortality for Longfin Smelt juveniles that the DEIR also predicts will result from implementation of the Proposed Project. And, these results are likely to underestimate the true impact of combined CVP/SWP proposed operations on Longfin Smelt because the modeling

²⁵ Federal Register Number 2024-16380, Document ID FWS-R8-ES-2022-0082-0031, available at: <https://www.regulations.gov/document/FWS-R8-ES-2022-0082-0031>

assumes that requirements of the Bay-Delta Water Quality Control Plan (D-1641) and federal biological opinions will be enforced in all years, which has not been the case historically.

Reduced Delta Outflows under the Proposed Project will harm Longfin Smelt

The DEIR employs flawed modeling to estimate the impacts of the Proposed Project and misrepresents the harm to Longfin Smelt represented by its modeled results

To investigate the potential for the Proposed Project and Alternatives to affect the Bay-Delta Longfin Smelt population via their effect on Delta outflow, the DEIR employs a novel statistical approach, which has not been peer-reviewed, to develop multiple models²⁶. These models indicate that the Longfin Smelt population is likely to decline under the Proposed Project (DEIR Tables 6-26 & 6-27 at 102). In addition, the modeling predicts that Longfin Smelt abundance indices are likely to be lower more frequently under the Proposed Project than under the baseline in the majority of years (DEIR Tables 6-29 & 6.30 at 103).

²⁶ The modeling that produced these results is not credible. 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 different time 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 DEIR’s modeling approach and neither does Thomson et al. (2010 at 1439-140 and Figure 6 at 1442).

Second, the DEIR’s modeling employs unorthodox and non-traditional approaches. For example, the DEIR generates different predictions of Longfin Smelt population response to the Proposed Project for each fish sampling program. Each of these predictive models relies on multiple models whose “distributions were combined as a weighted average across models” in a process called “stacking”. The DEIR explains (at Appendix 6B p. 6B-396): “...the model with the largest stacking weight does not necessarily have the highest predictive score compared to other models in the set” and “[c]ompared 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...” (emphasis added). Thus, the DEIR’s predictions of Longfin Smelt response to different operational alternatives is based on a weighted average of multiple models, where the weights did reflect their predictive ability. 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 others where flow is measured from March-May outflow. This means that flow during March-May is differentially represented in the final model – the DEIR provides no explanation of, or justification for, why this would be the case.

Third, the models rely on randomization procedures, used to generate “probability distributions” for the modeled results (DEIR 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 such as variation in abundance over the entire Longfin Smelt data series. These “probability distributions” for model predictions are then inappropriately compared to the differences in means for several water year types across different alternatives to suggest that differences between alternatives are “very small” compared to the variability (DEIR at 6-100).

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 2024 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).

The DEIR claims that the negative effects of the Proposed Project will be “very small” relative to the high variability of predicted abundances generated by the DEIR’s population model (DEIR at 6-100). In 2019, CDWR attempted to dismiss the negative effects of its then-Proposed Project (which is now the baseline) using the same excuse²⁷. This explanation is erroneous and misleading for several reasons. First, the DEIR’s own modeling shows Longfin Smelt will be negatively affected by the Proposed Project’s effect on Delta outflow relative to the status quo, even after ignoring other negative effects (e.g., increased entrainment mortality, *see below*). Second, status quo conditions under current operations have already been found inadequate to protect the imperiled Longfin Smelt population; even if the negative impact of the Proposed Project relative to the baseline is “very small”, it cannot be consistent with CESA. Third, the large variability of predicted abundance is due, in large part, to the artificial variance generated by the DEIR’s population abundance model (*see FN 3*). As we commented previously (NRDC et al. 2020), comparing the average outcomes among alternatives with their overall variance improperly obscures the differences between alternatives. A valid comparison of the impacts on Longfin Smelt of SWP operational alternatives would analyze the average of annual *differences among alternatives* in projected abundance relative to the variance in those annual *differences*. Because the best available science continues to show that Longfin Smelt abundance increases in response to increased winter-spring Delta outflow (Rosenfield and Baxter 2007; Rosenfield 2010; Thomson et al. 2010; Nobriga and Rosenfield 2016; USFWS 2024), operations that produce higher winter-spring Delta outflow in a given year *will* outperform alternative operations that result in lower winter-spring Delta outflows. There will be little variance in this result. Most of the additional variance in estimated abundance referred to by the DEIR (e.g., as depicted in Figures 6-53 through 6-55) is not relevant to comparison of operational alternatives.

Increased entrainment-related mortality of juveniles under the Proposed Project will harm Longfin Smelt

The DEIR shows very large increases in entrainment-related mortality of Longfin Smelt relative to current operations are likely under the Proposed Project. Still, the DEIR dismisses entrainment-related mortality under the Proposed Project as “small.” The DEIR’s modeling of this impact is severely flawed because it likely underestimates the impact of entrainment by an order of magnitude or more.

Furthermore, any impact of increased entrainment due to changes in CVP/SWP combined operations is likely to be additive to the effects of changes in Delta outflow – yet the DEIR fails to disclose the additive effect of these separate impacts. The DEIR (at 6-96) acknowledges that there will be “large relative increases in entrainment under the Proposed Project relative to the Baseline Conditions scenario,” yet, it ignores this stress on the population. Although no model linking Longfin Smelt entrainment-related mortality with overall population dynamics has yet been developed, if this (or any) mortality source increases dramatically as the result of changed

²⁷ Reductions in Delta outflow resulting from CDWR’s previously proposed (now current) operations were predicted to cause a reduction in the Longfin Smelt population, in every year type, up to 11% (DEIR 2019 “Part III revisions to the DEIR” Table 4.4-9 at 4-179).

project operations, it must have a negative effect on overall abundance at some point. The DEIR projects very substantial increases – between 8% and 73.8%, depending on water year type – in salvage of juvenile Longfin Smelt from Proposed Project operations relative to the baseline (DEIR at Table 6-22 and Figure 6-52).

The DEIR’s explanation that entrainment mortality is likely to represent a “very small percentage of the population” is not convincing and its analysis is flawed in various ways. DEIR Table 6-23 (at 6-97) purports to show that entrainment of the Longfin Smelt population was small, relative to estimates of total abundance, in the years 1995-2015. Entrainment estimates are based on equations derived from Grimaldo et al. 2009; however, that paper measured “salvage,” not entrainment²⁸. “Salvage” of small fish at the CVP/SWP south Delta export pumps is generally only a small fraction of mortality due to entrainment because the salvage operations are inefficient. For each “salvaged” fish, many more fish are either drawn into the export pumps or consumed by predators in canals that lead to the pumps and salvage facilities (Grimaldo et al. 2009). The DEIR applies a static multiplier (20.3) to convert estimated “salvage” into entrainment loss (see footnote Table 6-23). This expansion of salvage to entrainment-mortality does not represent the best available science and is arbitrary and capricious. Castillo et al. (2012) concluded that entrainment loss prior to salvage of Delta Smelt (which are similar in size, shape, and swimming ability to Longfin Smelt) was the largest source of entrainment-related mortality and that the percentage of fish killed following entrainment, but prior to salvage, changed from month to month. In three separate months of their study, pre-screen loss amounted to 94.3%, 99.1%, and 99.9% of Delta Smelt in the SWP’s south Delta export infrastructure²⁹. To convert “salvage” to entrainment loss under these circumstances would require expansion by factors of 16.5, 110.1, and 999, respectively. Thus, the DEIR’s assumption that entrainment-related loss is consistently 20.3 times salvage (Table 6-23) is not supported and is likely to be far too low most of the time. And, these results likely seriously underestimate entrainment losses as the modeling does not account for waivers of Bay-Delta water quality requirements via TUCOs, and/or relaxation of requirements in federal biological opinions and this ITP, both of which have occurred frequently in the past.

The DEIR’s estimate of entrainment-related mortality impacts of the baseline and the Proposed Project are further flawed because they are based, in part, on patterns of entrainment that occurred under more restrictive regulatory regimes. Table 6-23 presents salvage and population estimates from 1995-2015. During the final third of that period (2009-2015), water exports were

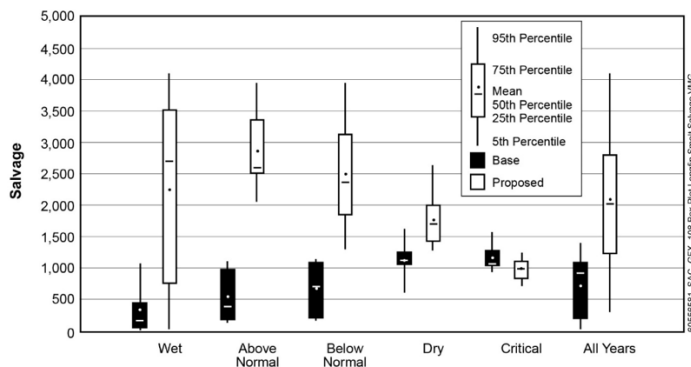
²⁸ Grimaldo et al. (2009 at 1256) report: “In this paper, we use salvage as an index of entrainment. Actual entrainment losses at the SWP and CVP are unknown because fish are not sampled continuously and because the louvers are less than 100% effective (Brown et al. 1996; Puckett et al. 1996; Bowen et al. 1998). Louver efficiency varies by species, life stage, and probably facility (Bowen et al. 1998, 2004), but for the purposes of this paper we assume that louver efficiencies are constant within and among years. *The SWP salvage data also do not include additional fish losses in the Clifton Court Forebay as a result of predation before reaching the louvers (Gingras 1997) or within the holding tanks themselves (Liston et al. 1994).*” (emphasis added)

²⁹ Given these results, it is highly likely that some entrainment-related mortality occurs, even in years when “salvage” is zero.

constrained by protections found in the 2008/2009 biological opinions (USFWS 2008; NMFS 2009). Recent research indicates that those constraints reduced entrainment impacts for Delta Smelt (Smith et al. 2021) and they are more likely than not to also have reduced entrainment for Longfin Smelt. However, those operating rules have now been replaced by operations analyzed in CDWR’s 2019 DEIR (as revised). CDWR previously projected massive increases in Longfin Smelt juvenile entrainment resulting from current project operations when compared to the prior baseline (the 2008/2009 baseline; CDFW 2019 “Part III revisions to the DEIR” Table 4.4-13 and Figure 4.4-56 at 4-185; *see below*). Thus, juvenile salvage rates (CDFW 2019 Table 6-23) were expected to increase several-fold under current SWP operations. Under the Proposed Project, rates of entrainment-related mortality are expected to increase yet again.

Table 4.4-13. Mean Annual Longfin Smelt April–May Salvage, from the Regression including Mean Old and Middle River Flows (Grimaldo et al. 2009), Grouped by Water Year Type

| Water Year Type | Existing | Proposed Project | Proposed Project vs. Existing |
|-----------------|----------|------------------|-------------------------------|
| Wet | 333 | 2,251 | 1,918 (576%) |
| Above Normal | 551 | 2,863 | 2,311 (419%) |
| Below Normal | 670 | 2,494 | 1,824 (272%) |
| Dry | 1,130 | 1,761 | 631 (56%) |
| Critical | 1,171 | 991 | -180 (-15%) |



Note: Plot only includes mean responses and does not consider model uncertainty.

Figure 4.4-56. Box Plot of Longfin Smelt April–May Salvage, from the Regression including Mean Old and Middle River Flows (Grimaldo et al. 2009), Grouped by Water Year Type

Increased entrainment-related mortality of larvae under the Proposed Project will harm Longfin Smelt

The DEIR 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 DEIR acknowledges that larval Longfin Smelt are more vulnerable to entrainment-related mortality than juveniles (CDFW 2019 at 6-96). Yet it fails to analyze entrainment in several months in which larvae are abundant near the south Delta export facilities; the risk of larval entrainment increases dramatically in two of those months (April-May) due to proposed operations.

Instead, the DEIR relies on findings of Kimmerer and Gross (2022) to assert that larval entrainment will average 1.5% of the population. (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 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 (*see above*; 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 larval many Longfin Smelt remain in low salinity habitats, which are often within the area affected by water exports, for 100-150 days (Lewis et al. 2019 at 9 and at 48-83 of the PDF). Third, Kimmerer and Gross (2002) estimated direct entrainment only during January-March (and the DEIR models entrainment of particles as a proxy for larval entrainment only during these months; Tables 6-24 and 6-25); but larvae remain in the upper estuary through at least May (SWRCB 2010 Table 2 at 45; CDFW 2010) and likely into June (CDFW 2010; Rosenfield 2010; Lewis et al. 2019 at 9 of the PDF). Omitting estimates of larval entrainment in April and May fails to disclose significant Longfin Smelt mortality that is likely to occur under the Proposed Project because (a) larval entrainment mortality occurs in months beyond what is estimated in the DEIR, (b) the salinity field usually moves east during April and May, increasing X2 and drawing rearing larvae closer to the export facilities (X2 is expected to increase under the Proposed Project relative to the baseline in most water year type during April and May (DEIR Appendix 4C at Table 4C-5-1-1c)), and (c) Old and Middle River flows are projected to become much more negative in April and May under the Proposed Project (Table 4B-2-8-1c), increasing the risk of larval entrainment.

Furthermore, the 2019 DEIR (CDFW 2019) also failed to analyze the effect of project operations (the current baseline) on entrainment of larval Longfin Smelt in April and May. Larval entrainment would be expected to increase significantly between the 2008/2009 operational baseline and the SWP operations analyzed in CDFW 2019 – OMR flows became much more negative in April and May of the 2019 project, as evidenced by massive increase in juvenile entrainment expected under that project (*see above*) and increases in entrainment of particles meant to serve as proxies for larval entrainment during those months (CDWR 2019 Table 4.4-8a at 4-173). Because both X2 and negative OMR flows increase under the Proposed Project, larval Longfin Smelt entrainment will again increase substantially.

The proposed “Larval and Juvenile Longfin Smelt Protection” action is not reasonably certain to prevent entrainment-mortality. This action is only triggered when Longfin Smelt larvae are detected at two specific sampling locations. But fish sampling programs can fail to detect target fish, even when those fish are in the vicinity and susceptible to entrainment. This is especially likely when abundance of a target fish species is low, which is exactly the condition when preventing entrainment-mortality is most critical. For instance, Delta Smelt have been entrained on days when sampling designed to detect Delta Smelt failed to find any of these fish at stations near to the south Delta Export facilities. Specifically, on days in 2013 when Kodiak Trawl sampling detected no Delta Smelt at sampling stations nearest the south Delta water export facilities (January 7, February 4-6, March 4, and April 29-May 2), large numbers of Delta Smelt

were salvaged (16, 11, 4, and 284 fish, respectively; Figure 1). This indicates that Longfin Smelt larvae and juveniles are susceptible to entrainment-mortality, even when sampling programs fail to detect them close to the export facilities.

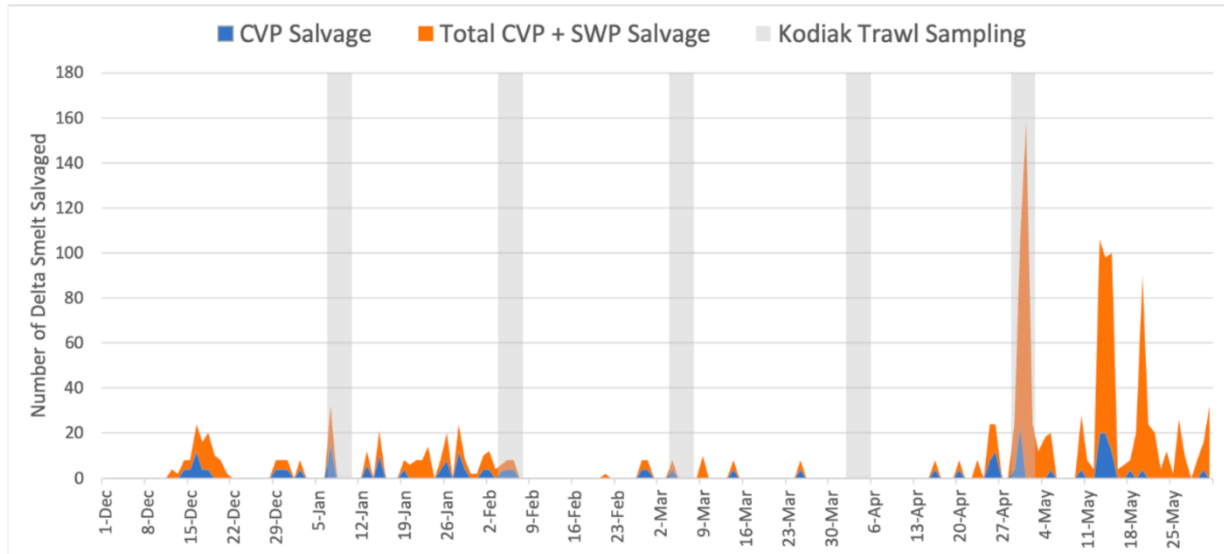


Figure 1: Reported CVP daily salvage of Delta Smelt (blue) and combined daily CVP/SWP salvage (orange), December 2012-May 2015. The USFWS’s Kodiak Trawl detected no Delta Smelt and sampling stations nearest the export facilities during this period. On days when the Kodiak Trawl was sampling but detected no Delta Smelt (grey bars: January 7, February 4-6, March 4, and April 29-May 2), Delta Smelt were salvaged at both CVP and SWP water export facilities.

Entrainment-related mortality of larvae and juvenile Longfin Smelt represents a significant threat to the persistence of this population and its ability to recover, at least episodically (Rosenfield 2010). In fact, each previous Incidental Take Permit for SWP operations has included actions intended to limit this source of mortality, as does the current ITP; clearly CDFW considers Longfin Smelt entrainment mortality to be a problem that must be avoided and fully mitigated in a CESA permit. The very large proportional changes in entrainment projected for the Proposed Project, on top of massive increases in entrainment mortality expected under current operations relative to the 2008/2009 baseline, are likely to have measurable impacts on overall population dynamics. The final DEIR must:

- correct its flawed estimates of entrainment-related mortality,
- apply estimates of the likely conversion between juvenile salvage and entrainment loss that are based in the best available science (or at least study a range of such values),
- acknowledge that some entrainment is likely to occur even when Longfin Smelt “salvage” is zero,
- estimate larval entrainment impacts in April and May (at least)

- disclose the cumulative impact on larval and juvenile Longfin Smelt entrainment due to operational changes to those that persisted under the 2008/2009 BiOps
- and analyze the combined impact of reduced Delta outflows and increasing larval and juvenile Longfin Smelt entrainment-related mortality on overall population dynamics and viability.

2. Delta Smelt

Delta Smelt are now one of the most endangered species on Earth. They are found only infrequently in the wild and none have been caught in the fall midwater trawl since 2017 (although a few fish are still detected every year in other sampling programs and/or at the CVP/SWP export facilities). Given its dire plight, operational proposals that do not significantly improve status quo conditions are likely to lead to extinction of Delta Smelt in the wild (Smith et al. 2021) and are thus inconsistent with state and federal endangered species acts. The DEIR's comparisons to the status quo conditions do not disclose the harm to Delta Smelt that is likely from proposed operations. Relatedly, Delta Smelt life cycle modeling results presented in the 2024 CVP LTO draft EIS (federal DEIS 2024) in support of the forthcoming federal biological opinions, which is not utilized or presented in the DEIR, indicates that the nearly identical federal preferred alternative will result in continued declines in abundance of Delta Smelt (federal DEIS Figure 12-4 at 12-55). This result is not consistent with the DEIR's finding of no significant impact. One of the other modeled operational alternatives in the federal DEIS was expected to result in population growth; however, the DEIR does not consider this alternative or any alternative with similar environmental benefits (i.e., the DEIR does not consider an adequate range of alternatives).

The Proposed Project reinforces status quo conditions or makes them worse for Delta Smelt – it is not consistent with state or federal Endangered Species Acts. The DEIR finding that unmitigated negative impacts of Project Operations to critically endangered Delta Smelt are not significant is not consistent with CEQA.

Reduced Delta outflow under the Proposed Project will harm Delta Smelt

Numerous recent studies indicate that Delta Smelt population growth is positively correlated with Delta outflow during certain months and seasons (USFWS 2016, CDFW 2016, Polanski et al. 2020, CSAMP 2024). Reporting on results of the USFWS's Delta Smelt Life Cycle Model (Delta Smelt LCM), Polanski et al. (2020 at 358) states:

“... the following relationships were observed: (a) recruitment was most influenced by temperature, the approximate location of the 2-ppt isohaline during the previous fall, and adult food (note also the export-inflow ratio had high evidence of support based on the models summarized in Table C.2); (b) post-larval survival by outflow and turbidity; (c) juvenile survival by turbidity (Secchi depth) and temperature; and (d) sub-adult survival by turbidity in the south Delta

(south Secchi depth), a spatially localized hydrodynamics flow measure in the Old and Middle River corridor (OMR), and adult striped bass (*Morone saxatilis*).”
(emphasis added)

Post-larval survival is positively associated with Delta outflow during June-August (“summer Delta outflow”; see also CSAMP 2024). Summer Delta outflow under the Proposed Project is expected to decrease in all water year types relative to baseline conditions (DEIR Appendix 4c Table 4C-3-10-1c at 189 of the PDF). Therefore, according to the best available science, the Proposed Project would be expected to harm Delta Smelt.

Recruitment of larval Delta Smelt is negatively associated with X2 (positively associated with Delta outflow) in the previous fall (“Fall X2”; USFWS 2008; Polansky et al. 2020; CSAMP 2024). The Proposed Project would reduce fall Delta outflow in Wet years, Below Normal years, and Dry years (DEIR Appendix 4c Table 4C-3-10-1c at 189 of the PDF), increasing fall X2 in those year types (DEIR Appendix 4c Table 4C-5-1-1c at p. 3 of the PDF). This decrease in fall Delta outflow is in addition to the decrease that was expected to result from current operations relative to the 2008/2009 operational baseline (CDWR 2019 Figure 4.4-27 at 4-14). As a result, it is more likely than not that the Proposed Project will harm Delta Smelt recruitment and post-larval survival.

The Proposed Project’s “Summer Fall Habitat” action will not mitigate for the expected negative effects of flow changes described above. The DEIR makes clear that additional fall flow promised as part of the 2019 ITP, is not reasonably likely to occur under the Proposed Project, stating:

“One of the actions required by the 2020 ITP (Condition of Approval 8.19) includes release of 100 TAF for Delta Outflow during June through September of wet and above-normal water years, or October immediately following the end of that water year. However, if conditions are appropriate and it is approved by CDFW, DWR may defer and redeploy the additional 100 TAF Delta Outflow to supplement Delta Outflow in the following water year during the March through September period, or the October immediately following the end of that water year. The additional 100 TAF is not required to be deployed if the following water year is a critically dry water year.”

DEIR at 2-34 (emphasis added).

The Proposed Project suggests that: “DWR and Reclamation will consider food subsidy measures to augment the SFHA.” (DEIR at 2-50). However, in addition to not being reasonably certain to occur, the effect of food subsidies that the DEIR describes are hypothetical and uncertain. Indeed, Hammock et al. (2019) indicate that Delta Smelt foraging success is improved by the physical context (proximity to marsh habitat) more than by prey abundance.

Increased entrainment-related mortality under the Proposed Project will harm Delta Smelt

The negative effect of entrainment-related mortality on Delta Smelt is well documented (USFWS 2008; 2019; Castillo et al. 2012). Recently, Smith et al. (2021 at 1021) concluded:

“In a population in which recruitment success rates cannot sustain the population, no additional mortality is sustainable; there is no surplus production. Given average environmental conditions, no level of predicted delta smelt entrainment mortality, including that associated with zero net OMR, led to a high probability of population growth. No additional mortality can be sustained by the population, but that does not mean that entrainment mortality of 0 will result in its recovery”.

Nonetheless, OMR flows are expected to become much more negative (flow toward the export pumps) in April and May under the Proposed Project, increasing the likelihood of larval and juvenile Delta Smelt entrainment mortality. The DEIR acknowledges (at 6-43):

“The [particle tracking model] analysis suggests the potential for appreciable relative increases in larval and early juvenile Delta Smelt entrainment at CCF in April and May under the Proposed Project scenario compared to the Baseline Conditions scenario (Table 6-4). This reflects greater differences in OMR flows during this time-period ...”

DEIR Table 6.4 reveals that modeled entrainment of particles (which serve as a modeling proxy for Delta Smelt) would increase by 26%-216% in May (and this likely underestimates the increase in entrainment during drought conditions when Bay-Delta water quality requirements are waived under Temporary Urgency Change Orders). These findings are not consistent with conserving and eventually recovering Delta Smelt in the wild.

Given changes in combined CVP/SWP project operations since 2019, it is likely that entrainment of larval and juvenile Delta Smelt now has significant impact on overall Delta Smelt population dynamics, but the DEIR inappropriately dismisses the significance of those impacts. Using data from 1994 through 2015, Polansky et al (2020) found strong evidence that OMR/entrainment was a major factor in the survival of sub-adult Delta Smelt. Smith et al. (2021) found that hydrodynamic management resulted in lower entrainment mortality in the period 2007-2015. However, constraints on negative OMR have weakened substantially compared to the periods studied by Polansky et al. and Smith et al. And the Proposed Project would again weaken requirements for OMR flow that are designed to minimize entrainment mortality.

During the OMR management season, OMR will be limited to no more negative than -5,000 cfs. The Proposed Project’s Adult Delta Smelt “turbidity bridge” trigger will require reduction of negative OMR to -3,500 cfs for 10 days. This is less protective than the baseline operations, which required reduction of OMR to no less than -2000 cfs for 5 days (DEIR Appendix 4A attachment 2 at 4A-2-7). Both the default OMR limit and the new proposed threshold following initiation of the “turbidity bridge” action are arbitrary and capricious. The DEIR fails to

demonstrate that these OMR thresholds are adequately protective of Delta Smelt or any of the other species for which entrainment is a concern. CDWR previously admitted that OMR flows of -5,000 cfs represented “the inflection point at which entrainment tends to sharply increase.” CDFW 2019 at 4-123. In fact, the 2008 USFWS BiOp RPA restricted use of the -5,000 cfs limit to a “low-entrainment risk” scenario. Under a “high-entrainment risk scenario,” OMR flow was limited to fourteen-day moving averages no more negative than - 3,500 cfs or -2,000 cfs (USFWS 2008 at p. 353–54) depending on actual salvage of Delta Smelt. The Proposed Project does not include any limit on actual entrainment of Delta Smelt adults and, because they are now so far, any entrainment of adult would represent a severe negative impact (Smith et al. 2021) that should be avoided at all costs. The DEIR should be revised to analyze whether impacts that are likely to occur as a result of weakening the “turbidity bridge” element and other OMR thresholds are adequately protective of Delta Smelt and other fish populations and whether these impacts can be fully mitigated or avoided.

The negative effects on Delta Smelt of continued weakening of OMR constraints under the Proposed Project are large and obvious. As noted above, entrainment of particles meant to serve as proxies for Delta Smelt entrainment were projected to increase dramatically (by 26% to 321% depending on the water year type) during April and May under the 2019 project (which is now the baseline) relative to the 2008/2009 BiOp baseline (CDWR 2019 Table 4.4-8a at 4-173). The Proposed Project threatens to increase Delta Smelt entrainment again during these months. As a result of these consecutive changes in the project operations, entrainment of larval and juvenile Delta Smelt is expected to have increased many-fold compared to conditions studied by Polansky et al. (2020) and Smith et al. (2021). It is now likely that entrainment of larval and juvenile Delta Smelt is a serious threat to Delta Smelt persistence. The draft DEIR should be revised to reflect this reality and project operations should be modified to avoid this impact, especially given the grave status of Delta Smelt and the consequences of additional entrainment-related mortality.

3. 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)³⁰. This means that this population receives full protection under CESA until CDFW completes a status review. White Sturgeon harvest is now prohibited and what had been a valuable fishery is now closed. It is appropriate for the DEIR to analyze potential impacts of proposed CVP/SWP combined operations on White Sturgeon, and to minimize and fully mitigate those impacts that are expected to result from those operations. Table 6-1 of the DEIR should be revised to properly reflect the “candidate” status of California White Sturgeon that are affected by project operations

³⁰ A federal petition to list the San Francisco Bay estuary watershed population of White Sturgeon is pending.

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 (2015 at p. 224) states “Annual recruitment of white sturgeon in California appears to have decreased since the early 1980s.” Similarly, Blackburn et al. (2019 at pp. 897-898) 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.” 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 2023)

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, 2023; SWRCB 2017; *see also* AFRP 2001; Moyle 2002; Willis et al. 2022). The connection between White Sturgeon reproductive success and high river flows is also known from other watersheds (Parsley and Beckman 1994). 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. Chronically low river flows and reductions in freshwater inflow to San Francisco Bay (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). As a result, successful cohort formation is infrequent for California White Sturgeon, corresponding to years of high spring-summer river flows into and out of the Delta (Moyle 2002; Fish 2010; CDFW 2015 citing Kohlhorst et al. 1991 and Schaffter and Kohlhorst 1999; SWRCB 2017).

The SWRCB 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 determined 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% of the time (6 out of 20 years). Since 1999, flows of this magnitude have occurred only 17.4% 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 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 (Figure 2).

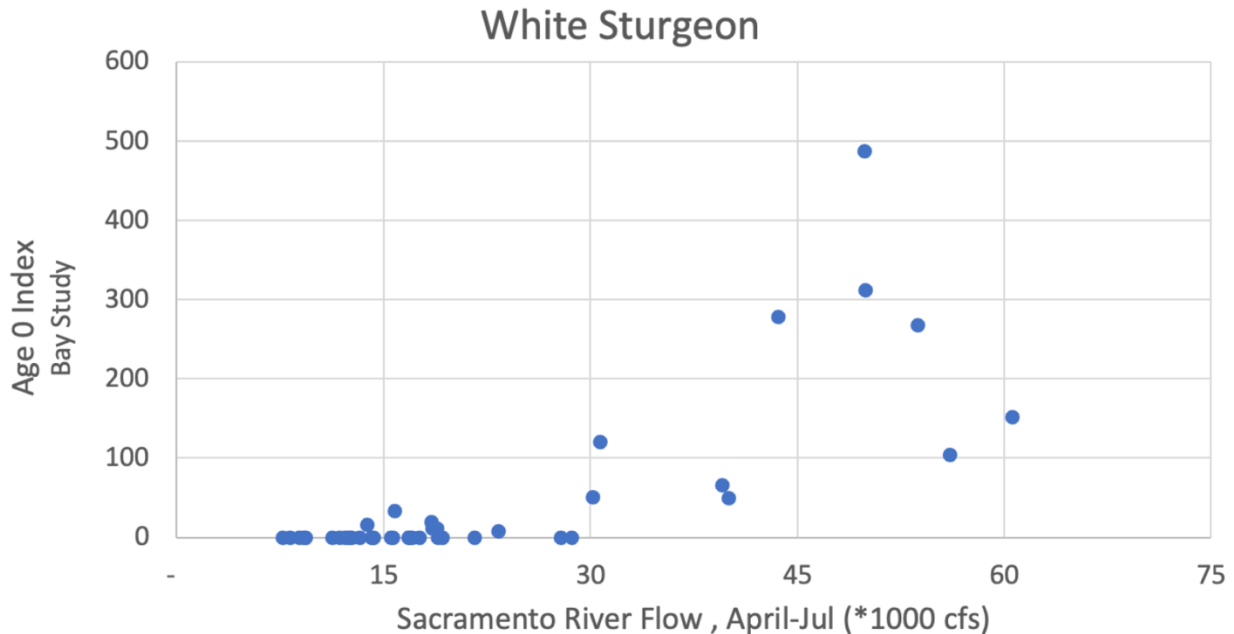


Figure 2: Relationship of spring-summer Sacramento River flow (= “SAC” + “YOLO” variables in Dayflow; <https://data.cnra.ca.gov/dataset/dayflow>) and an index of California White Sturgeon juvenile recruitment (source: Age 0 California White Sturgeon Index, CDFW//Interagency Ecological Program’s Bay Study Otter Trawl).

Reduced River Flows and Delta Outflows under the Proposed Project will harm White Sturgeon

The DEIR reveals that the Proposed Project will have negative effects on the Bay’s White Sturgeon population. Based on a linear regression of the White Sturgeon year class index (Age 0 + Age 1 fish), the DEIR projects declines in Wet and Above Normal year types (DEIR Tables 6-80 at 6-208 and 6-81 at 6-209). Projected impacts in Dry years are likely to be erroneous because juvenile White Sturgeon production generally occurs only in wetter years (Figure 2; Willis et al. 2022)³¹. Project operations that exacerbate one of the major forces driving the long-term decline

³¹ Projections for change in drier year types reveal flaws in the analysis that would tend to understate the true impact of the Proposed Project. The DEIR’s method for calculating Delta Outflow impacts of the Proposed Project on White Sturgeon (DEIR 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. Figure 2 reveals that young-of-year (Age 0) White Sturgeon are almost never produced when Sacramento River flows are below a certain level and the recruitment-flow relationship is non-linear (a pattern sometimes referred to as a “hockey stick”). Because the DEIR applies a log-linear regression across the range of flows, it estimates that project operations will affect production of juvenile White Sturgeon across the range of flows. But this is unlikely and the analysis is flawed. Ignoring the non-linear nature of the flow-juvenile production relationship also means that the DEIR’s regression is lower magnitude

of a fish that is already imperiled and protected under CESA is a significant impact on the environment, and contrary to CESA. The DEIR must be revised to disclose and address this impact.

Failure to analyze or disclose effects of the Proposed Project as a whole

Despite the strong evidence that White Sturgeon population viability (i.e., population abundance, productivity, spatial distribution) benefits from a relatively high frequency of relatively high river flows into and through the Delta, the DEIR fails to analyze or disclose the likely negative effects of the SWP's Oroville reservoir operations (including reduction of April-July flows and radical alteration of the timing of those flows) on White Sturgeon reproductive success in the Feather River.

Moreover, the DEIR fails to disclose effects of the Proposed Project on entrainment of White Sturgeon at the CVP's south Delta water export facilities. CVP and SWP operations are coordinated and their combined effect on Delta hydrodynamics results in entrainment of White Sturgeon at both facilities. Ignoring an effect of the Proposed Project on entrainment of White Sturgeon at the CVP represents a failure to consider the effects of the whole project and a failure to properly evaluate cumulative effects.

Entrainment-related mortality under the Proposed Project will harm White Sturgeon

The DEIR shows that average annual entrainment mortality of White Sturgeon juveniles will increase in most year-types (Table 6-79 at 6-207). The DEIR's analysis regarding the potential impact of entrainment on the Bay's White Sturgeon population is flawed because its calculation of average entrainment includes years where White Sturgeon juvenile abundance is very low or zero – i.e., the plurality of years in which reproduction is unsuccessful. In many years, hundreds of White Sturgeon are salvaged – in 2023, almost one thousand White Sturgeon juveniles appeared in salvage. And, as discussed above (*see* discussion of Longfin Smelt), entrainment-related mortality is likely to be higher than salvage; the DEIR does not disclose this impact. Nevertheless, the DEIR states (at 206) “salvage as assessed with the salvage-density method ... would be expected to be low under the Proposed Project and Baseline Conditions, with limited differences anticipated between the scenarios based on modeled exports ... and generally similar entrainment risk.” Despite this unsupported assertion, the DEIR's analysis of impacts to White Sturgeon focusses only on entrainment-related impacts to White Sturgeon at CVP/SWP export facilities. The proposed “White Sturgeon Protection Measures” (DEIR Section 2.3.4) amount to convening a technical team to develop studies related to entrainment. DWR proposes to consider relevant data to inform “take reduction measures” by 2027 and “[i]n the interim, DWR and CDFW will develop information that will form the basis of an operational assessment in the

(“flatter”) than the actual relationship, thus it likely underestimates production of juveniles at high flows. As a result, the DEIR's analysis is likely to underestimate the Proposed Project's effects on White Sturgeon production in wetter years, relative to the baseline.

event of elevated entrainment risk that may lead to the implementation of a measure to reduce take at the SWP” (DEIR at 2-31).

Although we support scientific research into factors that may reduce take of White Sturgeon at the export pumps, (a) those studies do nothing to minimize or fully mitigate the take that occurs now and will occur under the Proposed Project, and (b) the impacts DWR proposes to study are not the only major impacts to the White Sturgeon population from current or proposed operations. Conserving this species and the options to recover it requires applying the best *available* science. At this time, the science clearly indicates that White Sturgeon are harmed by operations that reduce flows into or through the Delta when those flows would exceed certain thresholds.

4. Chinook Salmon -- spring-run

The viability of spring-run Chinook Salmon is extremely precarious (Lindley et al. 2007; NMFS 2014) and NMFS now considers the species to be at “high” risk of extinction (SWFSC 2023). Spring-run Chinook Salmon abundance and productivity are low and declining. They are also at high risk from localized catastrophic events (fire, volcanic activity, disease outbreaks, chemical spills) because of their constricted geographic range³². Elevated genetic influence from hatchery-reared fish and degraded life-history diversity also undermines the viability of this species.

Failure to analyze or disclose effects of the Proposed Project as a whole

The DEIR’s failure to analyze or disclose impacts of Oroville Reservoir operations on state and federally threatened Central Valley spring-run Chinook Salmon is a significant omission. Operations of Oroville are intimately and inextricably connected to SWP export operations in the Delta. The Feather River hosts a persistent population of wild-spawning spring-run Chinook salmon, which is affected by operations of Oroville Reservoir (NMFS 2014 at 40-42). The federal ESA recovery plan for Central Valley salmonids recommends many actions necessary to recover Central Valley spring-run Chinook salmon that implicate Oroville operations, including “Manage releases from Oroville Dam with instream flow schedules and criteria to provide suitable water temperatures for all life stages, reduce stranding and isolation, protect incubating eggs from being dewatered, and promote habitat availability” (NMFS 2014 at 241-252). By omitting any analysis of the Proposed Project (or the baseline) on Oroville operations, the DEIR fails to analyze or disclose the totality of SWP operational impacts on spring-run Chinook Salmon.

³² As this is written, two of the few remaining wild Central Valley spring-run Chinook Salmon populations are at grave risk from wildfires that are ravaging their watersheds (KQED 2024 at <https://www.kqed.org/news/11998224/park-fire-jeopardizes-californias-iconic-spring-run-chinook-salmon>).

Entrainment-related mortality under the Proposed Project will harm threatened spring-run Chinook Salmon

Entrainment-related loss impairs the viability of imperiled Chinook Salmon (Kimmerer 2008). The DEIR anticipates that the Proposed Project will dramatically increase entrainment-related mortality of spring-run Chinook Salmon. Loss of juvenile spring-run Chinook Salmon in the SWP export infrastructure is expected to increase by 7%-48% under the Proposed Project versus the baseline (DEIR Table 6-67 at 6-165). The DEIR acknowledges (at 6-175), “[t]here is greater potential for negative effects on spring-run Chinook Salmon under the Proposed Project relative to Baseline Conditions as a result of spring (April/May) Entrainment...” Moreover, the baseline was estimated to produce very large increases in mortality of spring-run Chinook Salmon as compared to operations under the 2008/2009 biological opinions (CDWR 2019 Table 5.3-15 l. at 5-174). The DEIR fails to disclose this impact of the Proposed Project or its baseline on spring-run Chinook Salmon. Furthermore, the DEIR fails to analyze or disclose the effects of the Proposed Project on spring-run Chinook Salmon entrainment-related loss in the CVP export infrastructure, despite the fact that coordinated operations of the two water projects produces environmental conditions (e.g., OMR) that affect entrainment rates at both facilities.

Project impacts on through-Delta survival under the Proposed Project will harm spring-run Chinook Salmon

River flow and diversion patterns affect through-Delta survival of juvenile Chinook Salmon (SWRCB 2017; Perry et al. 2018; Michel 2018; Hance 2022; Notch et al. 2020). NMFS has repeatedly warned that, “[s]mall reductions across multiple life stages can be sufficient to cause the extirpation of a population,” and in the WaterFix biological opinion³³ concluded that a 1% reduction in survival observed in the Delta Passage Model “can impact the population to a greater degree,” and that a “1% to 2% mean reduction in survival is a notable reduction for an endangered species, especially if it occurs on a consistent (i.e., annual) basis.”

Reducing the negative effects of CVP/SWP operations (exports and reservoir releases) on Chinook Salmon migration through the Delta is essential to ensuring the viability of imperiled populations and preserving opportunities to recover them. NMFS recovery plan for endangered Central Valley salmonids identifies a suite of actions needed to achieve minimum through-Delta survival objectives of “... 57% for winter-run, 54% for spring-run, and 59% for steelhead originating from the Sacramento River; and 38% for spring-run and 51% for steelhead originating from the San Joaquin River” (NMFS 2014 Table 5-4 at 127). Among the actions necessary to achieve these targets NMFS (2014) calls for: minimizing the frequency, magnitude, and duration of reverse flows in Old and Middle River to reduce the likelihood that fish will be diverted from the San Joaquin or Sacramento rivers into the southern or central Delta (at 133); augmenting flows and curtailing exports during critical migration periods (April- May) (at 135); and other actions to reduce mortality from entrainment and salvage.

³³ National Marine Fisheries Service, Final Biological Opinion, California WaterFix Project, NMFS Consultation No. WCR-2016-5506.

The DEIR claims that the Proposed Project will have little effect on survival of spring-run Chinook Salmon smolts migrating through the Delta relative to the baseline³⁴. The DEIR fails to disclose that baseline through-Delta survival for spring-run Chinook Salmon smolt was previously estimated to be ~35% at best and just over 15% during Critical years (CDWR 2019 Figure 4.4-75 at 4-218), always far less than the NMFS (2014) target for through-Delta survival of this run (54%). The DEIR does not disclose that its baseline produced lower survival than the baseline modeled with requirements of the 2008/2009 biological opinions (CDWR 2019 at 4-218). Thus, the Proposed Project maintains through-Delta survival rates that are inconsistent with viability of, and limit possibilities to recover, this population.

The analysis also reveals that CDWR does not know how efficient its Bioacoustic Fence mitigation will be (the DEIR models two assumptions regarding efficiency) and that the effect of this proposed mitigation is inconsistent (sometimes positive, sometimes negative as compared to no mitigation). Regardless of the assumptions made in the DEIR regarding efficiency of this mitigation, the effect of this mitigation is never meaningfully positive (DEIR Tables 6-37 through 6-46).

Restoring spring-run Chinook Salmon populations to the San Joaquin Valley is essential to the recovery of Central Valley spring-run (NMFS 2014; SWFSC 2023). Through-Delta survival of juvenile spring-run Chinook Salmon from the San Joaquin River is nearly identical in every year type under the Proposed Project compared to the baseline (DEIR Table 6-69 at 6-171). Median survival is expected to be <20%, approximately half of the NMFS (2014) minimum survival target for spring-run from the San Joaquin Valley. The DEIR does not reveal that through-Delta survival under the Proposed Project would foreclose opportunities to recover spring-run Chinook Salmon.

These results indicate that the Proposed Project is not consistent with protection and eventual recovery of spring-run Chinook Salmon, contrary to the requirements of federal and state endangered species acts. The DEIR fails to disclose this impact.

³⁴ The presentation of DEIR's analyses of through-Delta survival of Chinook Salmon juveniles obfuscates and fails to acknowledge significant impacts of the Proposed Project. Multiple-models are applied to analyze this issue, including physical modeling (e.g., velocity) at various locations and different biological models of overall migration success. The DEIR does not explain the relevance or relative merits of these models. With respect to modeling through-Delta survival of Chinook salmon smolt, the STARS model (Perry et al. 2018) is considered to be the best available science and our critique of project impacts is based on those modeled outputs. Modeling results are presented by month (rather than as annual averages) and sometimes within month estimates are provided based on different assumptions about mitigation efficacy. This cumbersome and confused presentation of results is a significant barrier for the general public to understand project impacts.

5. Chinook Salmon – winter-run

The viability of winter-run Chinook Salmon is extremely precarious (Lindley et al. 2007; NMFS 2014 and NMFS now considers the species to be at “high” risk of extinction (SWFSC 2023). Winter-run Chinook Salmon abundance and productivity are low and declining. Winter-run are also at high risk from localized catastrophic events (fire, volcanic activity, disease outbreaks, chemical spills) because of their extremely constricted geographic range. Elevated genetic influence from hatchery-reared fish and degraded life-history diversity also undermines the viability of this species.

The decline in winter-run Chinook Salmon viability has continued despite existing safeguards including water quality requirements, provisions of the 2019 biological opinions, the 2020 CESA ITP, and the Bay-Delta water quality control plan (i.e., the baseline) intended to maintain this unique population. In NMFS’s most recent viability assessment of endangered salmonids, the agency concluded:

“The overall viability of the [winter-run Chinook Salmon] ESU has continued to decline since the 2015 viability assessment (Johnson and Lindley 2016), with the single spawning population on the mainstem Sacramento River no longer at a low/moderate risk of extinction (Table 5.4)” (SWFSC 2023 at 142).

In other words, the status quo leads to decline of winter-run Chinook Salmon under the current baseline. The life cycle modeling results presented in the 2024 CVP LTO draft EIS (USFWS 2024) in support of the forthcoming federal biological opinions, which is not utilized or presented in the DEIR, also indicates that the nearly identical federal Proposed Action will result in continued declines in winter-run Chinook salmon, stating “[o]verall, all phases of Alternative 2 [the preferred alternative] and the No Action Alternative had mean annual decreases in spawner abundance, (federal DEIS Appendix O at O-705).” These findings are not consistent with the DEIR’s assertion that the effects of the Proposed Project on endangered winter-run Chinook Salmon are not significant.

Entrainment-related mortality under the Proposed Project will harm winter-run Chinook Salmon

The DEIR claims (at 6-117) that “... entrainment loss of juvenile winter-run Chinook Salmon at the SWP south Delta export facility would be similar between Baseline Conditions and Proposed Project scenarios (Table 6-33).” This is plainly untrue based on results presented in Table 6-33 (at 6-118), which shows that entrainment will increase or decrease by more than 10% in several year types. Averaging across these water year types does not capture the true risk of entrainment impacts to winter-run Chinook Salmon as there can be no expectation that these year types are distributed evenly through time. For example, if Critically Dry years occur in sequence (as has happened repeatedly in the recent past), then negative impacts projected for those year types would compound within one generation of winter-run Chinook Salmon. Furthermore, because Bay-Delta water quality requirements are frequently waived, especially during Dry and Critically Dry years, and enforcement of endangered species act requirements (i.e., OMR flows

requirements) is frequently relaxed under these conditions (Reis et al. 2019), modeled estimates of loss that assume these baseline will be consistently enforced are unlikely to be accurate and are likely to underestimate the true impact of entrainment loss on winter-run Chinook Salmon.

Furthermore, the provision that is supposed to protect early season winter-run Chinook Salmon juvenile migration is inadequate to avoid or fully mitigate entrainment impacts. First, this provision would only be triggered once winter-run salvage has exceeded certain thresholds. By the time salvage is detected (a) the damage has already occurred and (b) heavy “loss” of winter-run is likely to continue to occur because the fish are already in close proximity to the export infrastructure. Second, once salvage thresholds are triggered, the provision would only reduce exports to achieve OMR of -5,000 cfs. The 2008/2009 operational baseline did not permit OMR to be more negative than -5,000 cfs and required reducing exports to achieve more positive levels of OMR when winter-run Chinook Salmon were being salvaged or at risk of high levels of “loss” at the export facilities. The Proposed Project makes what was once the lowest level of protection for winter-run Chinook salmon into the upper limit of protection, even when fish are actively being killed at the export facilities. The experience of 2023, when the winter-run “loss” limit identified in the NMFS 2019 BiOp was exceeded over a prolonged period demonstrates that OMR flow rates even modestly more positive than -5,000 cfs are unlikely to be protective of endangered winter-run Chinook Salmon.

Also, the DEIR fails to disclose that entrainment under the existing baseline has exceeded the incidental take limit of the 2019 biological opinion (Reclamation 2024; NMFS 2024). This demonstrates that entrainment of winter-run Chinook Salmon is higher than expected (and higher than modeled) under the baseline. It also demonstrates that the 2019 biological opinion and 2019 CESA ITP (i.e., baseline) are inadequately protective of winter-run Chinook Salmon. The DEIR’s assurances that entrainment under the Proposed Project will be “similar” to the baseline indicate that the Proposed Project will not be consistent with the requirements or intent of state and federal endangered species acts.

Project impacts on through Delta survival under the Proposed Project will harm winter-run Chinook Salmon

The DEIR indicates that the Proposed Project will have little effect on through-Delta survival of winter-run Chinook Salmon relative to the baseline (at 6-131 and 6-146). Baseline survival through the Delta was previously estimated to be less than 40% in all cases, and less than 20% in Critically Dry years (as elsewhere, these estimates fail to disclose the impact on winter-run Chinook Salmon survival through the Delta of waiving water quality requirements with TUCOs and/or relaxing enforcement of the 2008/2009 biological opinion RPAs). This is well below NMFS (2014) target for through-Delta of winter-run 57%. The DEIR estimates that proposed operations will have little effect on winter-run Chinook Salmon survival through the Delta, meaning that survival will remain well-below that needed for recovery of this endangered species. Operations of the SWP thus preclude opportunities to recover winter-run Chinook Salmon. The DEIR fails to disclose this impact.

The relevant months for winter-run Chinook Salmon migration through and out of the Delta are October through April (Figure 3). The DEIR’s application of the STARS model shows that winter-run Chinook Salmon through-Delta survival under the Proposed Project will be equal to or worse than the baseline in most years in October (Table 6-48 at 6-152), December (Table 6-50), and February (Table 6-52). Other months are projected to have survival rates that are less than or equal to the status quo in multiple water year types. In cases where analyses suggest the likelihood of increased survival relative to the status quo, such increases are tiny. As discussed above, it is very likely that river flows and Delta outflow will decrease and the negative effect of Delta hydrodynamics (e.g., increasingly negative OMR) will increase in years where project operations are governed by TUCO’s and/or waivers/relaxed enforcement of ESA safeguards. Thus, expectations of through-Delta survival rates for winter-run Chinook Salmon are likely to be less positive in real life than they are in the DEIR’s modeling.

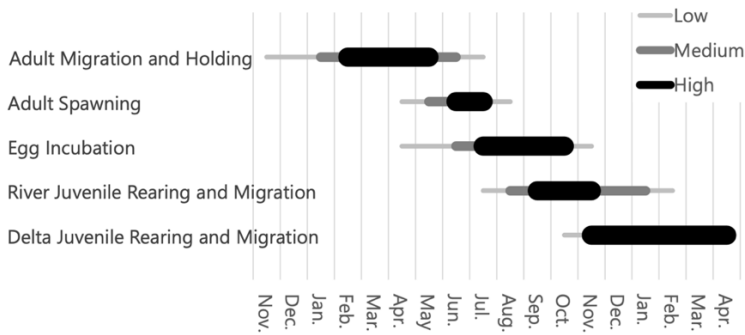


Figure C-2. Summary of Temporal Life Stage Domains for Winter-Run Chinook Salmon

Figure 3: Figure C-2 copied from Reclamation’s Biological Assessment of Central Valley Project long-term operations; Appendix AB-C of Reclamation’s DEIS for Central Valley Project long-term operations at p. 22 of the PDF.

The DEIR does not reveal that the project baseline was expected to result in lower through-Delta survival of winter-run migrating prior to December (CDWR 2019 at 5-163), a pattern that is potentially exacerbated under the Proposed Project. Nor does the DEIR disclose that baseline survival, which was previously estimated to range from below 20% in Critically Dry years to at best < 40% in Wet years (CDWR 2019 Figure 5.3-57 at 5-162), is well below the 57% survival that NMFS targets as the minimum necessary to recover this endangered salmon population³⁵.

6. Chinook Salmon – fall-run

Central Valley fall-run Chinook Salmon are the backbone of the California and Oregon coastal recreational and commercial fisheries. These fisheries have been closed for two years straight

³⁵ CDWR does not disclose why its estimates of winter-run Chinook Salmon survival in the current DEIR appear to be inconsistent with (higher than) estimates generated by the same model for the 2019 DEIR.

because of low production of juvenile salmon in previous years.³⁶ Chinook Salmon are also a traditional food source for Central Valley Indian Tribes – the tribal fishery has also been severely impacted by declines in all Central Valley Chinook Salmon populations. The DEIR fails to disclose the full impact of proposed operations on the coastal fishing industry or Tribal cultural and subsistence fishing.

The DEIR identifies important impacts to fall-run Chinook Salmon production arising from the Proposed Project. The DEIR projects very large increases in entrainment of fall-run Chinook Salmon under the Proposed Project (at 6-172). Similarly, the DEIR indicates that through-Delta survival of fall-run Chinook Salmon would be reduced under the Proposed Project in the vast majority of years, relative to the Proposed Project. The DEIR fails to disclose that the baseline represents a decrease in survival of fall-run Chinook Salmon migrating through the Delta as compared to conditions that prevailed under the 2008/2009 biological opinions (CDFW 2019 at 4-233 and 4-236).

As elsewhere, the DEIR fails to disclose the full impact of proposed operations by failing to analyze impacts on the Feather River population of fall-run Chinook Salmon related to Oroville Reservoir, the largest dam in the State Water Project. The DEIR also fails to analyze the impact on fall-run Chinook Salmon survival of waivers to water quality standards in the Bay-Delta (i.e., TUCOs) or relaxation of water temperature requirements upstream (i.e., changes in the temperature control point or temperature limits under WR 90-5), which are affected by joint operations of the CVP/SWP.

In addition, the DEIR fails to analyze whether and how the Proposed Project would affect achievement of the Bay-Delta Water Quality Control Plan's narrative salmon protection objective, which calls for doubling of natural production of Central Valley Chinook Salmon runs as compared to their 1967-1991 average. This omission applies to the other runs of Central Valley Chinook Salmon as well. Levels of through-Delta survival and entrainment under the baseline produce conditions that are inconsistent with attainment of the narrative salmon protection objective; the DEIR acknowledges that the Proposed Project would further degrade those conditions. The failure of the Proposed Project or alternatives to provide flow and water quality conditions inconsistent with achievement of the narrative salmon protection objective constitutes a significant impact under CEQA because it would impede compliance with a water quality standard.

7. Central Valley Steelhead

The Central Valley Steelhead distinct population segment is imperiled by combined operations of the CVP and SWP. The population has been listed as threatened under the federal endangered

³⁶ CDFW 2024 available at: <https://wildlife.ca.gov/News/Archive/pfmc-recommends-repeat-closure-for-californias-2024-ocean-salmon-fisheries>

species act since 1998. Although, NMFS considers it to be “stable”, at “moderate” risk of extinction (SWFSC 2023), it finds, “... the majority (11 of 16) of populations for which there are data are at a high risk of extinction based on abundance and/or hatchery influence, with no population considered to be at a low risk of extinction.” In addition, NMFS notes “[t]he lack of improved natural production ... [and] low abundances coupled with large hatchery influence in the Southern Sierra Nevada diversity group are causes for continued concern.” (SWFSC 2023 at 156).

Entrainment-related mortality under the Proposed Project will harm winter-run Central Valley Steelhead

The DEIR’s conclusion that increased entrainment are not a significant impact to the federally threatened Steelhead population is unsupported by the best available science. Entrainment-related mortality (“loss”) is projected to be higher under the Proposed Project than under the baseline (Table 6-77 at 6-196). The DEIR also fails to disclose that loss is more likely than not to be higher than the values portrayed in Table 6-77. First, the DEIR does not disclose potential changes in Steelhead entrainment at the CVP export facilities; entrainment and related mortality are a function of combined operations and federal take limits are generally for combined “loss” of the two projects (NMFS 2019 BiOp at 809-810). Second, the DEIR does not disclose that in 2023 existing controls on exports (i.e., the baseline) resulted in loss that significantly exceeded two separate loss limits identified in the 2019 Biological Opinion (Reclamation 2024). These exceedances demonstrate again that limits on baseline operations are inadequate to protect federally endangered species, like Central Valley Steelhead.

Furthermore, the DEIR fails to separately analyze project impacts to Central Valley Steelhead migrating from the San Joaquin valley (the “southern Sierra diversity group”) even though (1) NMFS (2014) identifies these Steelhead as critical to the viability and recovery of Central Valley Steelhead as a whole, and (2) juveniles in the southern Sierra diversity group are maximally exposed to entrainment (because they must migrate past the CVP/SWP export facilities) during April and May, when the risk of entrainment increases dramatically under the Proposed Project (i.e., because project exports (Appendix 4C-4 Table 4C-4-3-1c at p. 47 of the PDF) and negative OMR flows (Appendix 4C-3 Table 4C-3-8-1c at p. 145 of the PDF) are expected to increase).

C. Elements of the Proposed Project are inconsistent with the best available science and are likely to cause harm in addition to that disclosed in the DEIR.

Like its predecessor, the Proposed Project includes a “storm flex” provision which allows for OMR index values up to -6,250 cfs between the start of OMR management season and either the onramp of the larval and juvenile Delta Smelt protection action onramp or the last day of February, whichever occurs first. As we described in our comments on the previous EIR for the 2019 ITP, this provision is inadequately defined and would allow for conditions that are known to increase the risk of entrainment-related mortality for numerous imperiled fish species. CDWR previously admitted that OMR flows more negative than -5,000 cfs would exceed the “-5000

inflection point deemed protective of Delta smelt entrainment risk,” and that -5,000 cfs OMR is “the inflection point at which entrainment tends to sharply increase” (CDFW 2019 at 4-123). The storm flex provision also increases the risk that salmonids (particularly winter-run Chinook Salmon, spring-run Chinook Salmon yearlings, late-fall run Chinook Salmon, and Central Valley Steelhead) will experience reduced through-Delta survival and entrainment-related mortality (“loss”) at the south Delta export facilities. In fact, NMFS described the likely effects of the 2019 federal CVP storm-flex provision, as follows:

“The salvage density modeling shows that salvage and associated loss increases with exports during months when listed salmonids are present in the Delta. Therefore, if fish are present in the vicinity of the export facilities in the south Delta during a time that storm flex export operations are implemented, NMFS concludes there will be an increase in the number of fish entrained into the salvage facilities above that which would have been seen with no increases in exports. Furthermore, since listed salmonids tend to start migrating downstream in response to elevated flows in the Sacramento River basin and San Joaquin River basin waterways, there is a high probability that more fish will be present in the Delta exactly when the CVP and SWP increase their exports. Besides the fish entering the Delta on the elevated storm flows, listed salmonids (especially winter-run Chinook salmon) may already be present in the Delta due to migration earlier in the year...”

2019 NMFS BiOp at 531 (emphasis added).

The Proposed Project’s limits on OMR, including the constraint that OMR flows can be no more negative than -6500 cfs, do not minimize the potential negative effects of project operations that result from the storm-flex provision. Important details of the Storm Flex provision remain undefined or are clearly unprotective:

- “storm” is defined as merely “measurable precipitation.” The only additional qualification of what qualifies as a storm is that CDWR and Reclamation must determine that there is a higher level of outflow “available for diversion”
- elevated export rates could continue indefinitely after a “storm” occurs, unless a real-time OMR protection is “likely to be triggered,” but storm flex decisions will be re-evaluated only on a weekly basis, meaning that significant entrainment may occur while the WOMET evaluates the potential effect of maintaining storm-flex relaxation of constraints on OMR. Furthermore, the real-time salvage triggers (e.g., salvage/loss limits) are generally lagging indicators; by the time these impacts are noticed, significant impacts are likely to have occurred already.

Given CDWR’s finding that OMR more negative than -5,000 cfs is not protective of Delta Smelt and high levels of winter-run and Steelhead “loss” during 2023 which indicate that such negative OMR flows are not protective of imperiled salmonids, it is unclear why the Proposed Project allows exceeding this threshold any time that the Delta is in excess conditions, and why the

DEIR maintains that more negative OMR flows would not cause a significant environmental impact under CEQA.

In summary, given the imperiled status of these species, the further reductions in abundance and survival caused by the Proposed Project constitute mandatory findings of significant impacts under CEQA. The populations of Delta smelt, Longfin smelt, White Sturgeon, Green Sturgeon, winter-run Chinook salmon, and spring-run Chinook salmon already are not self-sustaining (particularly without hatchery supplementation of salmonids and Delta Smelt) and are declining in abundance, and the Proposed Project would further “cause a fish or wildlife population to drop below self-sustaining levels.” Cal. Code Regs., tit. 14, § 15065(a)(1).³⁷ Because the DEIR fails to recognize these mandatory findings of significance, the document must be revised to acknowledge these significant impacts and propose necessary mitigation measures, and the revised DEIR must be recirculated for public comment.

VI. The Proposed Project violates the California Endangered Species Act, and the California Department of Fish and Wildlife Should Not Rely on the DEIR.

The abundance of CESA-listed species including winter-run Chinook salmon, spring-run Chinook salmon, Delta smelt, Longfin smelt, and White Sturgeon has declined significantly under baseline conditions. The coordinated operations of the CVP and SWP have significantly contributed to the declines of these and other fish species, and the adverse effects of CVP and SWP operations have never been fully mitigated, including over the past decade when numerous requirements of the 2008 and 2009 biological opinions were waived, weakened, and/or not fully implemented.³⁸ The best available science demonstrates that increased protections are necessary to avoid jeopardizing the species and fully mitigate impacts. *See, e.g.*, Longfin Smelt Listing, USFWS, July 30, 2024.³⁹

Yet the baseline and the Proposed Project both eliminate existing protections, especially as compared to the protections that existed prior to their weakening in 2019. Under the Proposed Project CESA-listed species are likely to continue declining in abundance, and survival and abundance of CESA-listed species will be lower under the Proposed Project than under baseline conditions and as compared to pre-2019 conditions, demonstrating that the effects of the

³⁷ Moreover, any reductions in abundance and survival of listed species under the proposed project compared to the baseline demonstrates that the proposed project is not fully mitigating impacts as required by CESA, and thus that the proposed project is inconsistent with the project objectives.

³⁸ The federal CVP currently does not have an incidental take permit under CESA, and to our knowledge DWR lacks an incidental take permit under CESA for upstream operations of the State Water Project, including take resulting from SWP operations of Lake Oroville and in the Feather River. *See also* DEIR at 3-18 (stating that DWR is not seeking an ITP for Oroville Dam and Feather River operations, Coordinated Operation Agreement, or CVP facilities, operations and agreements).

³⁹ Available online at: <https://www.federalregister.gov/documents/2024/07/30/2024-16380/endangered-and-threatened-wildlife-and-plants-endangered-species-status-for-the-san-francisco>.

Proposed Project were not and are not fully mitigated as required under CESA and are likely to jeopardize the continued existence of the species.

In addition, while DWR purports to only seek an incidental take permit under CESA for project operations in the Delta, we are unaware of any authority for SWP operations in the Feather River to incidentally take CESA-listed species. DFW must consider the whole of the operations of the CVP and SWP to ensure that the Proposed Project will not jeopardize listed species, in light of upstream impacts and other impacts on the species. Finally, as discussed *supra* the DEIR fails to use the best available science regarding the effects of the Proposed Project on CESA-listed fish species and fails to analyze effects upstream. Therefore, DFW should not rely on the DEIR in making its conclusions under CESA.

VII. The DEIR Fails to Adequately Consider Cumulative Impacts.

The DEIR fails to adequately consider and disclose cumulative impacts. This violates CEQA.

DWR states that the “impacts of past projects, including past operation of the SWP” are included in the baseline environmental conditions. DEIR 10-26. This has resulted in a “baseline consisting of a trending decline of listed-species populations in the Delta and other waterways used by anadromous fish populations in Northern California.” DEIR at 10-26. “Existing federal statutes and regulatory requirements . . . provide . . . measures to avoid jeopardizing” endangered species, including BiOps to allow the SWP and CVP to operate. DEIR at 10-26. And “California [law] requires authorization under CESA for the long-term operation of the SWP” to protect those species. DEIR at 10-26. “*Despite these protections, the cumulative impact of past Delta modifications and other past and present projects has contributed to the continuing decline of Delta fish populations.*” DEIR at 10-26. And despite this finding, DWR concludes the cumulative impact of the SWP long term operations are not significant. This conclusion contradicts the findings and the reality that the status quo is ongoing declines of endangered fish and closure or severe constriction of multiple commercial, recreational, and/or Tribal fisheries.

DWR lists a host of projects that will continue to divert flow, reduce Delta outflow, and increase storage, *see* DEIR at 10-4 to 10-21 (Table 10-1a). Yet DWR does not actually analyze the impacts because of its conclusion that the Proposed Project’s impacts are not significant. But this conclusion is baseless, making the DEIR’s conclusion that the cumulative impacts are not significant similarly unreliable. Additionally, the failure to analyze the cumulative impacts of Sites Reservoir,⁴⁰ the Delta Conveyance Project,⁴¹ and the SWP mean the whole of the infrastructure projects and operation of the State Water Project are not analyzed or disclosed. Because Sites, the DCP, and ongoing operation of the SWP cause similar harms—reduced flow

⁴⁰ See Declaration of Jon Rosenfield re Sites, explaining impacts of Sites project.

⁴¹ See Protest to Water Rights Change Application re DCP filed by Baykeeper, et al.

into and through the Delta—failing to analyze the operations of each of these projects as a whole is a failure to accurately disclose, describe, and analyze the cumulative impacts.

Moreover, the coordinated operations of the SWP and CVP are responsible for a significant proportion of the water that is stored and diverted in the Bay-Delta system, and thus are responsible for a significant proportion of the adverse effects on fish and wildlife in the watershed including from changes in hydrology, water quality and temperature, entrainment, and habitat degradation. More than half of the total water diversions in the Bay-Delta watershed are associated with the CVP and SWP in some years, and the decline in fish species has accelerated as the CVP and SWP increased diversions over the past several decades. The DEIR’s conclusion that the impacts are cumulatively significant, but that the SWP’s contribution to these problems is not cumulatively considerable, is not supported by substantial evidence.

It is abundantly clear that the Proposed Project is inconsistent with the requirements of CESA, and that the Proposed Project, alone and in combination with CVP operations, will jeopardize the continued existence of species listed under CESA. Therefore, DWR must significantly revise the Proposed Project before re-submitting an application for an incidental take permit under CESA, and DWR must recirculate a revised draft DEIR describing that revised project for public and agency review and comment.

IV. Conclusion.

The documents referenced in these comments are available online at:

https://drive.google.com/drive/folders/15KN4rd5mS2c_YYp8mWb7ea8uATvQik14?usp=sharing

If you have any problem accessing the documents using this link, please let us know.

Thank you for the opportunity to comment on the DEIR. Please contact us if you have any questions regarding the concerns we have raised. We look forward to working with you to ensure that long-term operations of the SWP comply with the requirements of CESA and other legal mandates and ensure the survival and recovery of the Bay-Delta estuary’s endangered native species.

Sincerely,



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Jann Dorman
Executive Director
Friends of the River



Scott Artis
Executive Director
Golden State Salmon Assn



Chris Shutes
Executive Director
California Sportfishing Protection Alliance



Barbara Barrigan-Parrilla
Executive Director
Restore the Delta

CC: Ashley Overhouse, Defenders of Wildlife
Gary Bobker, Keiko Mertz, Friends of the River
Eric Buescher, San Francisco Baykeeper
Barry Nelson, Golden State Salmon Association

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