



May 16, 2019

Paul Souza, Regional Director  
U.S. Fish and Wildlife Service  
2500 Cottage Way  
Sacramento CA 95814

**RE: Reinitiation of Consultation on Long Term Operations of the State Water Project and Central Valley Project**

Dear Director Souza,

Thank you for making time to talk with us regarding the process and substance of the Reinitiation of Consultation on Long Term Operations of the State Water Project and Central Valley Project. We also greatly appreciate you following up with Reclamation to ensure that they shared with us the draft effects analysis and other materials that were transmitted to the peer review panel and the responses of the independent scientific peer reviewers.

I am writing to provide some initial comments on the draft effects analysis and biological assessment. While we have had limited time to review the draft effects analysis and related documents, as discussed below we are very concerned that the proposed project will jeopardize the continued existence of Delta Smelt and adversely modify its critical habitat, that the draft effects analysis fails to use the best available science, and that the scope of the consultation is legally inadequate. The responses of the peer reviewers validate several of these concerns, including that the draft effects analysis fails to use the best available science and that the proposed action would likely worsen conditions for Delta Smelt, which are already trending towards extinction.

**1. The Proposed Project is likely to Jeopardize Delta Smelt and Adversely Modify Designated Critical Habitat**

The Endangered Species Act requires the Service to ensure that the long-term operations of the Central Valley Project and State Water Project do not jeopardize the continued existence and recovery of Delta Smelt nor adversely modify designated critical habitat. It is unlawful for the Service's jeopardy analysis to simply compare the proposed project to current operations, particularly given the degraded baseline conditions that are leading towards extinction under current operations. Rather, the Act requires that the Service evaluate whether the effects of the proposed project, when added to the underlying baseline conditions, would tip the species into jeopardy. *Nat'l Wildlife Federation v. Nat'l Marine Fisheries Service*, 524 F.3d 917, 930 (9th Cir. 2008); *Turtle Island Restoration Network v. Dep't of Commerce*, 878 F.3d 725, 737-39 (9th Cir. 2017).

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On August 3, 2016, the Service concluded that reinitiation of consultation was required under the ESA and the 2008 biological opinion,

due to multiple dry years and new information. We recognize that this new information is demonstrating the increasingly imperiled state of the Delta Smelt and its designated critical habitat, and that emerging science shows the importance of outflows to all life stages of Delta Smelt and to maintaining the primary constituent elements of designated critical habitat.

On August 30, 2016 the Secretary of the Interior concluded that Delta Smelt may be headed towards extinction under baseline conditions, and that “[t]he reinitiation process will likely lead to new or amended biological opinions that will increase protections for the species.”<sup>1</sup> An analysis included with the draft effects analysis (DSM TN 40 by Leo Polansky) further demonstrates that the species is likely to go extinct under current baseline conditions.

However, rather than increasing protections for Delta Smelt as proposed by the Secretary of the Interior in 2016, the Proposed Project would significantly weaken existing protections in the 2008 biological opinion and does not provide additional conservation measures. The proposed project is likely to increase entrainment mortality, particularly entrainment of larvae and juvenile Delta Smelt, by weakening Old and Middle River flow requirements, and it is likely to reduce survival and abundance, and adversely modify designated critical habitat, by reducing Delta outflow. The Service’s prior findings and the best available science demonstrate that this proposed project likely would jeopardize the continued existence of the species and adversely modify its critical habitat.

The independent scientific peer reviews of the draft effects analysis validate these concerns. *See* Merz Review at i (“the BiOP provides enough information to demonstrate that the status of delta smelt critical habitat under the PA will most likely be degraded by cumulative effects under the early long-term”); *id.* at 1-2; Kneib Review at 1 (“Aquatic habitat suitable for the growth, survival and reproduction of many species, particularly Delta Smelt, has been compressed in spatial extent and quality to the point that a clear path to extinction has become evident.”).

**2. The Draft Effects Analysis Fails to Adequately Analyze the Adverse Effects of Reduced Delta Outflow on Delta Smelt**

Consistent with the Service’s August 3, 2016 memorandum regarding the reinitiation of consultation, the best available science demonstrates that reducing Delta outflow will adversely affect all stages of Delta Smelt, reduce the survival and abundance of Delta Smelt and adversely modify designated critical habitat. For instance, the 2015 MAST report found statistically significant effects of Delta outflow on subsequent abundance of Delta Smelt in both the spring and fall time periods.<sup>2</sup> The Service likewise concluded in the 2017 biological opinion for the

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<sup>1</sup> A copy of this memorandum and other documents and studies referenced in these comments are included as enclosures hereto.

<sup>2</sup> The MAST report is available online at: [https://www.fws.gov/sfbaydelta/documents/Delta\\_Smelt\\_MAST\\_Synthesis\\_Report\\_January\\_2015.pdf](https://www.fws.gov/sfbaydelta/documents/Delta_Smelt_MAST_Synthesis_Report_January_2015.pdf) and is hereby incorporated by reference.

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California WaterFix project that reducing Delta outflow in the summer months would have adverse population-level effects. *See, e.g.*, WaterFix biological opinion at 273 (where proposed project results in eastward movement of X2, “we would expect to see population-level effects more adverse than in the baseline conditions from effects of reduced habitat availability (i.e., habitat contraction).”); *id.* at 295 (small changes in X2 during the juvenile rearing season would result in loss of juvenile and adult Delta Smelt from poor habitat conditions, which “would affect abundance and recruitment contributing to the next generation of delta smelt.”). Service staff have produced multiple papers, analyses, and public presentations finding population-level effects between Delta outflow at various times of year and the survival and abundance of Delta Smelt. More recently, the life cycle modeling work performed by the Service (Leo Polansky) continues to find that delta outflow / X2 has statistically significant, population level effects on Delta Smelt abundance at different life stages.

Consistent with that scientific understanding, the Department of the Interior previously committed to augmenting Delta outflow above current State Water Resources Control Board requirements in order to better protect Delta Smelt and prevent extinction. *See* Department of the Interior Secretarial Order 3343 at 5 (Committing Reclamation and DWR to providing up to an additional 250,000 acre feet per year of outflow above SWRCB requirements). Similarly, in their letter requesting reinitiation of consultation, Reclamation and DWR agreed to implement the Delta Smelt Resiliency Strategy, which included the supplementation of summer outflow, until new biological opinions were completed. Unfortunately, as you are aware, Reclamation and DWR have failed to implement this element of the Delta Smelt Resiliency Strategy.

The Service has previously concluded that Delta outflows affect “all life stages” of Delta Smelt and its critical habitat and that reducing Delta outflow in the summer would have adverse population level effects on Delta Smelt. However, the draft effects analysis fails to evaluate the effect of changes in outflow on Delta Smelt throughout its life cycle.

The proposed project effectively proposes to reduce Delta outflow during the winter, spring, summer and fall months. Importantly, Reclamation’s modeling of current operations<sup>3</sup> in the biological assessment includes significant reductions in Delta outflow during the summer months of drier years (see highlighted cells in the table below), which are inconsistent with current baseline conditions and which would result in similar adverse effects to those identified by the Service in the WaterFix biological opinion.

<b>August Delta Outflow</b>	<b>ROC BA (Current Operations)</b>	<b>ROC BA (Proposed Action)</b>	<b>WaterFix BA (NAA)</b>	<b>WaterFix Proposed Action</b>
10%	4,225	4,316	4,519	4,000
20%	4,012	4,000	4,220	4,000
30%	4,000	4,000	4,011	4,000
40%	4,000	4,000	4,000	4,000

<sup>3</sup> The Service’s draft effects analysis appears to ignore the without project baseline in the Bureau’s final biological assessment. We note that the without project baseline appears to provide far better conditions for nearly all species analyzed in the biological assessment, including Delta Smelt.

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50%	4,000	4,000	4,000	4,000
60%	4,000	4,000	4,000	4,000
70%	3,961	3,789	4,000	3,605
80%	3,726	3,514	4,000	3,500
90%	3,500	3,500	3,849	3,500

September Delta Outflow	ROC BA (Current Operations)	ROC BA (Proposed Action)	WaterFix BA (NAA)	WaterFix Proposed Action
10%	19,516	5,458	19,656	19,844
20%	19,313	4,164	19,063	19,656
30%	15,362	4,075	15,256	16,482
40%	10,938	3,996	10,938	11,563
50%	3,712	3,855	4,378	3,000
60%	3,000	3,000	3,369	3,000
70%	3,000	3,000	3,000	3,000
80%	3,000	3,000	3,000	3,000
90%	3,000	3,000	3,000	3,000

The draft effects analysis appears to ignore the body of scientific information demonstrating adverse population level effects of reduced Delta outflow “to all life stages of Delta Smelt and to maintaining the primary constituent elements of designated critical habitat,” as the Service concluded in 2016. The biological opinion must use the best available science regarding the effects of changes in Delta outflow on Delta Smelt, and it must ensure that such changes do not jeopardize the species nor adversely modify its critical habitat. The independent peer reviews appear to validate these concerns. *See* Merz Review at 3 (“In short, the BiOP demonstrates that the PA generally will reduce delta outflow with relatively little evidence from Reclamation that this will not negatively alter delta smelt from its present trajectory.”); *id.* at 6-8, 15; Kneib Review at 2, 11-12.

**3. The Draft Effects Analysis and Biological Assessment Fail to Accurately Assess the Effects of Increased Entrainment Under the Proposed Project**

The proposed project would significantly increase South of Delta exports and increase the magnitude, frequency, and duration of reverse flows in Old and Middle River, adversely affecting Delta Smelt and designated critical habitat. The draft effects analysis correctly points out on page 7 that the biological assessment fails to accurately model the effects of the WIIN Act OMR waivers. While the modeling in the BA assumes a single, short duration waiver in January and February to allow OMR flows of -6,000 cfs, the proposed project imposes no limit on the magnitude, frequency or duration of these waivers, and it assumes that any precipitation in the Central Valley can trigger such waivers. *See* Biological Assessment at 4-4-51 to 4-55. As a result, the OMR conditions modeled in the BA are not reasonably certain to occur, and it is unlawful for FWS to rely on these more protective OMR model results in assessing the impacts of the proposal. *See Nat’l Wildlife Fed’n*, 524 F.3d at 935-36 & n.17.

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In addition, the proposed project would significantly increase OMR flows during the larval and juvenile rearing period because it proposes to eliminate Action IV.2.1 in the 2009 NMFS biological opinion (San Joaquin River inflow: export action). This element of the proposed project is likely to significantly increase entrainment of larval and juvenile Delta smelt, which the Bureau of Reclamation estimated in 2016 exceeds 10% of the population on average and more than 16% of the population in Below Normal, Dry, and Critically Dry water year types. *See* WaterFix Biological Assessment at 6-97.

The proposed project appears likely to significantly increase entrainment mortality of Delta Smelt, which scientific studies have demonstrated is a significant cause of the species' decline. *See, e.g.,* Kimmerer, Wim and Rose, Kenneth 2018. Individual-Based Modeling of Delta Smelt Population Dynamics in the Upper San Francisco Estuary III. Effects of Entrainment Mortality and Changes in Prey. Transactions of the American Fisheries Society, Vol. 1. There is no scientific justification for increasing entrainment mortality of Delta Smelt given current population levels.

The Service has repeatedly increased the amount of take authorized under the incidental take statement in the 2008 biological opinion, most recently proposing to use a surrogate for measuring incidental take given the extremely low population levels. However, the Service failed to analyze and determine whether such levels of incidental take in the revised incidental take statement would jeopardize the species, as required by the Act. *See* 16 U.S.C. § 1536(b)(4)(B). The Service must use the best available science, such as population viability analysis, to analyze whether the levels of incidental take likely to occur under the proposed action or as otherwise authorized in this consultation would not jeopardize the species. Finally, reliance on real time operations to minimize entrainment mortality as proposed in the biological assessment is inadequate and not reasonably certain to occur because:

- (a) the BA proposes that Reclamation and DWR shall make final decisions on OMR and other protective actions: The Service's 2008 biological opinion required that the Service make the final determination of OMR flows, because of the repeated examples of Reclamation and DWR rejecting recommendations of biologists from state and federal agencies to reduce pumping to protect Delta Smelt under the 2005(?) biological opinion. The district court explicitly found that the adaptive management provisions of the 2005 biological opinion were unlawful because while there was a mandatory process (DSRAM), there was no requirement to ensure that any specific protective operations were implemented. *NRDC v. Kempthorne*, 506 F.Supp. 2d 322, 352-56 (2007). Moreover, in recent years the Service has repeatedly rejected the advice of the Smelt Working Group to allow higher pumping, and has generally allowed higher pumping levels than the expected OMR levels identified on page 360 of the 2008 biological opinion, even as the population continued to decline and the incidental take limit was nearly exceeded in several years. Real time operations are not reasonably certain to protect Delta Smelt, based on recent historical evidence.
- (b) Existing Monitoring Programs Are Inadequate Given Current Population Levels: While the biological assessment proposes to rely on the Enhanced Delta Smelt

Monitoring (EDSM), individual scientists and peer review panels have concluded that EDSM cannot accurately estimate the distribution of Delta Smelt populations given the current, extremely low estimates of abundance.

- (c) Entrainment Events Must be Managed Proactively, not Retroactively: Once an entrainment event begins, such as by the creation of a turbidity bridge, it is difficult to effectively prevent salvage and entrainment losses. Moreover, the failure to manage OMR proactively to avoid entrainment can not only harm Delta Smelt, but can also reduce water supply, resulting in less negative OMR levels over a longer duration to manage and reduce entrainment.

Because the biological assessment fails to accurately model the effects of the proposed project, and because reductions in entrainment due to real time operations are not reasonably certain to be implemented, the consultation fails to ensure that operations of the CVP and SWP will not jeopardize Delta Smelt nor adversely modify its critical habitat.

#### **4. The Biological Assessment Fails to Accurately Model and Analyze the Scope of the Proposed Project**

The biological assessment fails to accurately model and assess the impacts of the following elements of the proposed project: (a) Implementation of the Water Supply Contract with Sacramento River Settlement Contractors; (b) Expansion of Shasta Dam; (c) long term operations of the Central Valley Project and State Water Project in light of the anticipated effects of climate change. Each of these flaws is discussed in more detail below.

- a. The Biological Assessment Fails to Analyze the Effects of Renewal and Full Implementation the Water Supply Contract with Sacramento River Settlement Contractors:

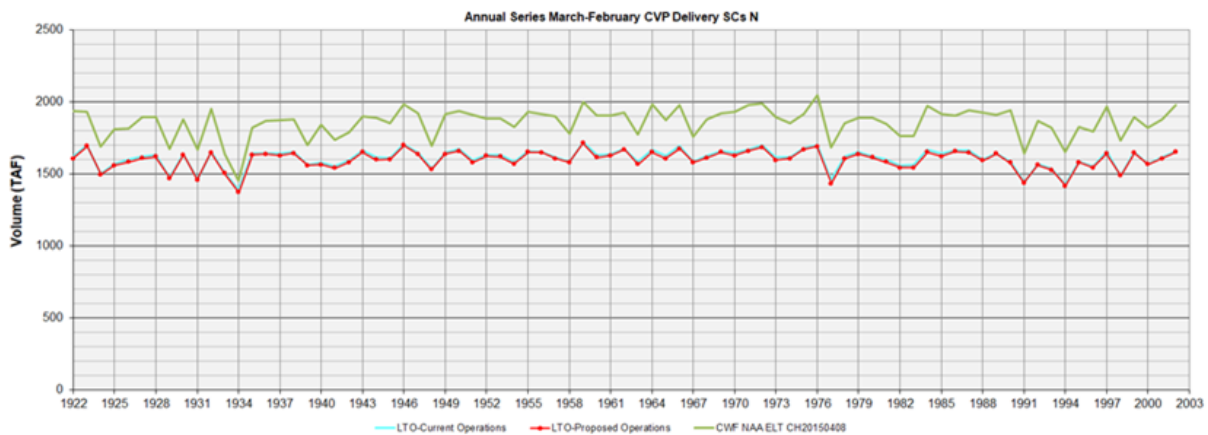
The Endangered Species Act requires that the Service's biological opinion be co-extensive with the proposed action, to ensure that the proposed action will not jeopardize listed species or adversely modify designated critical habitat. *Connor v. Burford*, 848 F.2d 1441, 1453 (9th Cir. 1988); *Wild Fish Conservancy v. Salazar*, 628 F.3d 513, 525 (9th Cir. 2010). This must include the effects of water diversions at full contract amounts for the Sacramento River Settlement Contractors, as well as the effects over the full duration of the contracts. However, the Biological Assessment fails to adequately consider the full effects of implementation of the Bureau of Reclamation's contract with the Sacramento River Settlement Contractors, because the BA fails to model or analyze: (1) the effects of full contract deliveries, instead only analyzing recent historic deliveries, which are significantly lower than full contract amounts; and, (2) the effects of full contract deliveries on salmon and other endangered species over the duration of the contract, instead only analyzing effects under near term climatic conditions in 2025 rather than effects over the full duration of the contracts (through 2045). Because the BA fails to analyze the full effects of implementing these contracts, the consultation does not ensure that implementation of the contracts will not jeopardize listed species.

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i. *The Biological Assessment Fails to Analyze the Effects of Sacramento River Settlement Contractor Diversions at Full Contract Amounts*

Unlike prior consultations and environmental reviews, this biological assessment only models the effects of recent historic levels of water diversions by Sacramento River Settlement Contractors instead of full contract amounts. The modeling assumptions in the BA explicitly states that the CalSim modeling only analyzes historic diversions by the Sacramento River Settlement Contractors, not the full contract amounts. *Id.*, Appendix D at 46 (“Land-use based, full buildout of contract amounts, except for Settlement Contractors represented with historical diversions.”); *id.* at 47.<sup>4</sup>

CalSim results from the BA also demonstrate that the Bureau of Reclamation changed the assumptions regarding the amount of water diversions by Sacramento River Settlement Contractors in both the Continued Operations Scenario and the Proposed Project. In recent previous ESA consultations and NEPA analyses the Bureau of Reclamation analyzed the effects of full contract amounts by the Sacramento River Settlement Contractors, including the California WaterFix biological opinions, California WaterFix Final EIS/EIR, and the 2015 Final EIS on Long Term Operations of the CVP and SWP. In contrast, here the Bureau of Reclamation has significantly reduced water diversions by Sacramento River Settlement Contractors in the model, limiting those diversions to historic levels rather than full contract amounts. Staff from the U.S. Fish and Wildlife Service confirmed that the CalSim model results show a significant reduction in water diversions by Sacramento River Settlement Contractors as compared to the California WaterFix modeling, providing the graphic below, and that this was a result of changes in the assumptions. *See* Email from Derek Hilts to Doug Obegi dated March 28, 2019.



The Sacramento River Settlement Contractors have never diverted their full contract amounts, and in most years total diversions are only 75% or less of full contract amounts. As a result, this change in modeling assumption significantly altered the modeling results, including causing a

<sup>4</sup> The text of the BA inaccurately asserts that the document analyzes full contract deliveries to the Sacramento River Settlement Contractors. *See* BA at 4-9 to 4-11. However, the CalSim modeling results and text demonstrate this statement is inaccurate.

significant increase in carryover storage in Shasta Reservoir as compared to those earlier modelling efforts.

**Comparison of Baseline Modeling Results**

	<b>ROC BA (Current Operations)</b>	<b>WaterFix BA (NAA)</b>	<b>2015 ROC EIS (No Action Alternative)</b>
<b>Shasta EOS Storage</b>			
<i>Wet</i>	2989	2985	2985
<i>Above Normal</i>	2833	2835	2834
<i>Below Normal</i>	2729	2615	2608
<i>Dry</i>	2611	2459	2462
<i>Critically Dry</i>	1225	914	937
<b>Shasta EOA Storage</b>			
<i>Wet</i>	4360	4298	4298
<i>Above Normal</i>	4501	4403	4404
<i>Below Normal</i>	4213	4027	4026
<i>Dry</i>	3889	3735	3737
<i>Critically Dry</i>	2474	2181	2202

FWS staff confirm that the change in assumptions for Sacramento River Settlement Contractor water diversions played a role in the change in water storage in Shasta Dam and other reservoirs, as did the changes to the Coordinated Operations Agreement. *Id.*

However, if the Sacramento River Settlement Contractors increased water diversions beyond historic levels up to full contract amounts, that would necessarily result in significant reductions in carryover storage in Shasta Dam and other reservoirs, reduced flows below the diversion points in the lower Sacramento River and Delta, and other adverse effects. These changes would significantly harm endangered winter-run Chinook salmon, spring-run Chinook salmon, Delta smelt, Green Sturgeon, and other species. For instance, NMFS has previously concluded that Shasta carryover storage levels as modeled in the WaterFix biological opinion and Final EIS/EIR would cause significant harm to winter-run Chinook salmon, jeopardizing the continued existence and recovery of the species and leading to the January 2017 draft revised Shasta RPA.

Because the BA does not analyze the effects of the Sacramento River Settlement Contractors diverting their full contract amounts, and because increased diversions up to full contract amounts would cause significant adverse effects on listed species that are not analyzed in the consultation, the consultation cannot provide incidental take coverage or ensure that the implementation of these contracts does not jeopardize endangered species.



ii. The Biological Assessment Fails to Analyze the Effects of Water Diversions by Sacramento River Settlement Contractors over the Full Duration of the Contracts

In addition to failing to consider the full amounts of water under the Sacramento River Settlement Contracts, the BA and consultation also fail to consider the effects of water deliveries over the full duration of the contract (through the year 2045). The BA only analyzes effects, including both the effects of climate change and Sacramento River Settlement Contractor water diversions, through the year 2025. *See, e.g.*, BA, App. D at 96.<sup>5</sup> As a result, the effects of 20 years of water diversions under the Sacramento River Settlement Contracts, in combination with the increased effects of climate change, are not analyzed in this consultation.

Numerous scientists and agencies including NMFS, USBR, and CDFW have acknowledged that climate change is likely to increase air and water temperatures, modify the amounts and forms of precipitation, and significant change hydrology in the Bay-Delta watershed. These effects of climate change are widely accepted to be increase over the longer term, with more significant effects anticipated after 2025, and that these effects are likely to significantly exacerbate the effects of water project operations on endangered winter-run Chinook salmon, Delta Smelt, and other listed species in the Bay-Delta.

Modeling in the California WaterFix Final EIS/EIR shows that the combination of climate change effects at the Late Long Term (2060) and water project operations would cause significant adverse impacts that are not reflected in the modeling that only considers the effects of climate change at the Early Long Term (2025). For instance, that modeling shows that at the Late Long Term, there is a dramatic increase in the magnitude, duration, and frequency of water temperatures below Shasta Dam that exceed lethal levels for endangered winter-run Chinook salmon. Climate change is likely to cause significant changes in flows and temperatures in the Delta in the LLT that could adversely affect Delta Smelt and other species and which are not observed in the ELT.

Because the consultation fails to analyze the effects of climate change and Sacramento River Settlement Contractor water diversions over the duration of these contracts, the consultation fails to ensure that implementation of the Sacramento River Settlement Contracts would not jeopardize the continued existence of Delta Smelt and other species listed under the ESA.

b. The Biological Assessment Fails to Model and Analyze the Effects of Enlarging Shasta Dam

Although the Biological Assessment purports to assess the impacts of enlarging Shasta Dam, because it fails to model the effects of enlarging Shasta Dam it fails to ensure that the project would not jeopardize ESA-listed species. The text of the BA states that an 18.5 foot raise of Shasta Dam is included in the proposed project, with less than one third of the increased storage

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<sup>5</sup> Although the text of the BA modeling appendix elsewhere claims that the BA modeling incorporates the effects of climate change through the year 2030, *see* BA, App. D at 18, the specific model results on hundreds of pages in Appendix D state that “All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise.”

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capacity purportedly for dedicated cold-water storage (191 TAF). BA at 4-33. However, the CALSIM modeling in the BA does not include an expanded Shasta Dam and instead only models the existing storage capacity of Shasta Dam. BA Appendix D at 48. Other models used in this consultation rely on the CALSIM modeling in the BA, and thus they also fail to consider the effects of an enlarged Shasta Dam. As a result, the modeling in the BA fails to analyze or consider the effects of enlarging Shasta Dam on endangered species.

For instance, increasing water storage in Shasta Dam will reduce flows in the Sacramento River and into the Delta by a commensurate amount, but by failing to model the increased storage capacity the BA fails to analyze the timing, frequency, or magnitude of reduced flows below Shasta Dam. State and Federal agencies have raised significant concerns in the past that the reduction in flows below Shasta Dam caused by this project would adversely affect listed salmonids. Reduced flows in the Sacramento River during the winter and spring months will reduce the survival of salmon in the Sacramento River and survival in the Delta in most years, and reduced inflows into the Delta resulting from increased storage and capture at an enlarged Shasta Dam will likely harm Delta Smelt and other species in most years by reducing Delta inflows and outflows. The BA wholly fails to model and consider these adverse effects on ESA listed species.

In addition, because the BA fails to model and analyze the effects of an enlarged Shasta Dam, it fails to demonstrate to what extent, if any, the dam raise would change temperature management for salmonids below the dam. The BA does not describe any rule that would reasonably ensure that increased water storage for fishery purposes resulting from an enlarged Shasta Dam would be available during drought conditions, or what that volume of water would be in addition to. Because there is no operational rule requiring this storage to be maintained into drought conditions, there is no basis for NMFS and FWS to conclude that any additional cold-water pool storage would be reasonably certain to occur in drought years.

Because the biological assessment fails to model or analyze the effects of enlarging Shasta Dam on Delta Smelt, the consultation fails to ensure that enlarging Shasta Dam would not jeopardize the continued existence of the species or adversely modify its critical habitat.

c. The Biological Assessment Fails to Model and Analyze the Effects of Long-Term Operations of the Central Valley Project and State Water Project in Combination with Climate Change

Although the biological assessment is entitled “Reinitiation of Consultation on the Coordinated Long-Term Operation of the Central Valley Project and State Water Project,” the document only analyzes the effects of operations through the year 2025, and it fails to consider the long-term effects of water project operations despite the fact that operations are anticipated to occur long after 2025. State and federal agencies have concluded that the adverse effects of climate change on ESA-listed species (e.g., increased air and water temperatures, more frequent droughts, changes in the timing and amounts of precipitation) are likely to worsen after 2025, exacerbating the existing effects of operations of the CVP and SWP. For instance, in the WaterFix Final EIS/EIR, lethal water temperatures below Shasta Dam in the year 2060 are significantly increased in magnitude and frequency compared to conditions in 2025. The fact that CVP and

SWP operations will undergo reinitiation in the future does not justify the failure to analyze the longer-term effects of the projects in this consultation. *Wild Fish Conservancy*, 628 F.3d at 525. Because the biological assessment and consultation fails to analyze the long-term operations of the CVP and SWP after the year 2025, the consultation fails to comply with the ESA.

**5. The Biological Assessment Models Infeasible Water Project Operations, Particularly During Critically Dry Years, and Fails to Assess the Impacts of Future Waivers of Environmental Protections During Drought Conditions**

The operations proposed in the biological assessment are infeasible during critically dry years, which is likely to lead to operational changes that will worsen conditions for Delta Smelt. In addition, the Service approved waivers of operational protections for Delta Smelt during the recent drought, which adversely affected Delta Smelt, and state and federal agencies have concluded similar waivers of Delta outflow and OMR requirements are reasonably foreseeable in future droughts. However, the biological assessment and draft effects analysis fail to discuss or analyze the effects of foreseeable changes in operations during future droughts.

First, according to Service staff, CalSim modeling of baseline<sup>6</sup> operations (Current Operations) in the biological assessment would drain Oroville Reservoir end of September storage far below minimum power pool levels in 8 of the 12 critically dry years that are modeled in CalSim. *See* email from Derek Hilts to Doug Obegi dated March 29, 2019. For instance, Oroville EOS storage is reduced below 800 TAF in 1924, 1929, 1931, 1933, 1934, 1977 (to 138.7TAF), 1988, and 1992. *Id.* These storage levels likely would cause significant adverse environmental impacts, and releases from the reservoir would be greatly limited or impossible because the storage would be below the powerhouse and the River Valve Outlet System has limited or no capability to release flows currently. Average critical year EOS storage in Oroville under the Current Operations baseline is 750TAF, *see* BA Appendix D at 116, yet the Proposed Action would reduce average critical year EOS storage in Oroville to 739TAF, *see id.* at 117. Oroville storage under baseline conditions is significantly lower in this consultation than in recent consultations and environmental reviews, which appears to result from the execution of the Addendum to the Coordinated Operating Agreement in combination with climate change. *See* email from Derek Hilts to Doug Obegi dated March 29, 2019.

Second, the proposed operations in the BA are estimated to result in temperature dependent mortality of 61% of endangered winter-run Chinook salmon in critically dry years. BA, App. D at 1792. However, this level of mortality is twice the level of temperature-dependent mortality identified in NMFS' January 19, 2017 draft Shasta RPA Amendment Memorandum.<sup>7</sup>

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<sup>6</sup> The draft effects analysis in the biological opinion appears to ignore the "Without Action" environmental baseline in the biological assessment. We note that the Without Action environmental baseline would be unlawful, as it would violate the terms and conditions of Reclamation's water rights. *See, e.g.,* SWRCB Water Rights Order 90-5 (requiring the Central Valley Project to operate Shasta Dam to meet downstream water temperature requirements).

<sup>7</sup> As NMFS acknowledged on page 10 of the memo, "These temperature dependent mortality numbers are preliminary and subject to further analysis to understand whether the population can withstand this level of mortality and still be viable."

Third, the proposed operations in the BA would reduce Delta outflows during the summer and fall months to 3,000 cfs. Yet the PPIC and others have noted that Delta outflows at those levels would not meet salinity standards in the Delta; for instance, the recent PPIC report<sup>8</sup> found that flows of approximately 3,700 cfs are needed to maintain D-1485 and D-1641 salinity standards at Tracy.

The operations proposed in the Biological Assessment therefore appear infeasible and are likely to result in changes in operations during critically dry years. That is consistent with Reclamation and DWR's finding in the final EIS/EIR for WaterFix that changes to Delta outflow and Old and Middle River flow requirements are "reasonably foreseeable" to recur in future droughts. The Service likewise concluded that the effects of the drought were one of the reasons why reinitiation of consultation was required, and there is no question that Delta Smelt suffered devastating declines in abundance as a result of drought and water project operations. However, the biological assessment and draft effects analysis fail to analyze the likely effects of future waivers of Delta outflow and OMR requirements in future droughts. As a result, the consultation fails to ensure that the proposed project will not jeopardize the species or adversely modify its critical habitat.

#### **6. The Biological Assessment Fails to Adequately Consider the Adverse Effects of CVP and SWP Operations on the Foodweb supporting Delta Smelt**

The biological assessment and draft effects analysis fail to adequately analyze the effects of water project operations on the foodweb that supports Delta Smelt. For instance, a recent peer reviewed paper concludes that operations of the CVP and SWP have dramatically reduced the abundance of zooplankton and phytoplankton that make up the foodweb for Delta Smelt. *See* Bruce Hammock et al, Hydrodynamic Modeling Coupled with Long-term Field Data Provide Evidence for Suppression of Phytoplankton by Invasive Clams and Freshwater Exports in the San Francisco Estuary, Environmental Management 2019. The study concludes that the CVP and SWP reduced primary productivity (as measured by chlorophyll) in the estuary by a minimum of 74%, and that the effects of water project operations and invasive clams together reduced chlorophyll by 97%. Other studies support the conclusion that water project operations have caused a significant reduction in primary and/or secondary productivity of the estuary through reductions in Delta outflow or other effects. *See, e.g.*, Marcus Beck et al 2018, Four decades of water quality change in the upper San Francisco Estuary, Estuarine, Coastal and Shelf Science 212 (2018) 11–22 (concluding that low Delta outflows result in very low levels of chlorophyll in Suisun Bay, and high Delta outflows results in reduced abundance of *potamocorbula* and reduced grazing pressure); Jassby et al 2002 (concluding that CVP and SWP exported approximately 18% of daily phytoplankton productivity estimated for 1975-1993); Kimmerer et al 2019.

In order to ensure that the operations of the CVP and SWP do not jeopardize Delta Smelt or adversely modify its critical habitat, this consultation must consider these adverse effects of the water projects on the Bay-Delta foodweb. The independent scientific peer reviews raise

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<sup>8</sup> Public Policy Institute of California, A New Approach to Accounting for Environmental Water, Appendix B at 29-30 (2017), available online at: [https://www.ppic.org/wp-content/uploads/1117ggr\\_appendix.pdf](https://www.ppic.org/wp-content/uploads/1117ggr_appendix.pdf). This report is hereby incorporated by reference.

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significant concerns over the inadequacy of the food web analysis in the biological assessment and draft effects analysis. *See* Kneib Review at 3-4, 11-12; Merz Review at 10-12.

## **7. Conclusion**

There is little dispute that Delta Smelt appear headed towards extinction under current operations, yet Reclamation has proposed to weaken protections for this once-abundant species in order to increase water deliveries to Westlands and other CVP contractors. The biological assessment and draft effects analysis fail to use the best available science, fail to adequately consider the effects of the proposed project, and appears likely to jeopardize the continued existence and recovery of Delta Smelt and adversely modify critical habitat. Considering these fundamental flaws, we urge the Service to seek a substantial extension of time to adequately complete the consultation process using the best available scientific information.

Thank you for consideration of our views.

Sincerely,

A handwritten signature in cursive script that reads "Doug Obegi".

Doug Obegi

**Enclosures**