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Via e-mail

RE: Comments on *Draft Environmental Impact Statement for Coordinated Long Term Operation of the Central Valley Project and State Water Project*

Dear Mr. Mooney:

The California Sportfishing Protection Alliance (CSPA), the California Water Impact Network (C-WIN), and AquAlliance respectfully submit comments on the U.S. Bureau of Reclamation's (Reclamation or BOR) *Draft Environmental Impact Statement (DEIS) for Coordinated Long Term Operation of the Central Valley Project (CVP) and State Water Project (SWP)*. The DEIS was issued on July 11, 2019.

I. Overview

Reclamation reinitiated Endangered Species Act (ESA) consultation with National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) in 2016 on the future joint operation of the CVP and SWP. The projects have been operating under 2008 and 2009 federal biological opinions. After several years of discussion among the parties and multiple stakeholders, Reclamation has come to a Proposed Action for future operations, a Long Term Operations Plan (LTO Plan) that it analyzes as the Preferred Alternative in the EIS.

Reclamation proposes to increase exports from the Delta to increase water delivered to its federal water contractors in the project area in the Central Valley. Reclamation knows full well that increasing south Delta exports is likely to cause further environmental degradation in the Central Valley and add to the risk of extinction of many Central Valley endangered species, most notably salmon, steelhead, sturgeon, and smelt. The proposed future operation (LTO Plan) would simply drop many existing ESA restrictions that protect endangered species and their critical habitat, in order to increase Delta exports. Consultation requires NMFS and USFWS to approve

the LTO Plan or add restrictions, as they did in 2008/2009. Additional restrictions are not expected given recent guidance and directives from the Commerce and Interior departments on ESA compensatory mitigation requirements.¹

The DEIS states the purpose of the Proposed Action in a manner that is unlawfully narrow, disallowing evaluation of reasonable alternative that would not increase water supply deliveries and optimize power generation. This unlawfully narrow project purpose thwarts the mandate of the National Environmental Policy Act to support reasoned decision making.

The previous operations of the CVP and SWP have in aggregate created baseline conditions (the No Action Alternative) that cause jeopardy to ESA-listed species and adversely affect critical their habitat. The DEIS fails to disclose this condition. In addition, the methodology of comparing project alternatives to the degraded baseline fatally flaws the DEIS's cumulative effects analysis.

The Preferred Alternative in the DEIS, Alternative 1, as well as Alternatives 2 and 3, would cause jeopardy under the ESA and adversely affect critical habitat. On their face, none of these alternatives is a reasonable alternative under NEPA. Even the apparent environmentally superior alternative, Alternative 4, contains elements that would likely cause jeopardy and adversely affect critical habitat; at minimum, it must be revised to correct its deficiencies.

The DEIS describes numerous proposed measures in insufficient detail to allow reasoned evaluation. The DEIS improperly uses a program-level analysis to avoid disclosing actions in sufficient detail to allow such evaluation. Even if detail for project-level construction is presently unknown, the DEIS must describe the proposed measures with sufficient clarity to allow a quantification of their ascribed effects or benefits and to understand the certainty of their implementation. As stated, many of the proposed measures are empty promises or plans to make plans, often contingent on future unrelated actions that may or may not actually occur. Other measures or actions included as part of the Proposed Action are already being implemented, which the DEIS should have described as part of baseline conditions.

The DEIS proposes that the Preferred Alternative would make compliance with the Central Valley Project Improvement Act (CVPIA) revocable at the discretion of the Secretary of the Interior. The DEIS fails to disclose that exercise of such discretion would be contrary to law and would unilaterally overturn the will of Congress.

The DEIS appears to include as part of the Preferred Alternative a raise of Shasta Dam and Shasta Reservoir. The DEIS fails to disclose that a Shasta raise would be contrary to California law.

¹ See for example the *Endangered and Threatened Wildlife and Plants; Endangered Species Act Compensatory Mitigation Policy* issued by the US Fish and Wildlife Service on July 30, 2018. Available at: <https://www.federalregister.gov/documents/2018/07/30/2018-16171/endangered-and-threatened-wildlife-and-plants-endangered-species-act-compensatory-mitigation-policy>

The DEIS fails to quantify the benefits of a healthy ecosystem and to show how it makes valuations of resources other than water supply and power generation and sales.

The Proposed Action would drive the final nail in the coffin of threatened and endangered Central Valley fish. Reclamation must develop a new Proposed Action that complies with the law and issue a recirculated DEIS in order to correct the deficiencies under NEPA that we describe below.

II. The Statement of Purpose in the DEIS is unlawfully narrow.

Section 1.1 of the DEIS, “Purpose of this Environmental Impact Statement,” states:

Reclamation prepared this environmental impact statement (EIS) to analyze potential modifications to the continued long-term operation of the CVP, for its authorized purposes, in a coordinated manner with the SWP, for its authorized purposes. This EIS evaluates alternatives to maximize water supply deliveries and optimize marketable power generation consistent with applicable laws, contractual obligations, and agreements and to augment operational flexibility by addressing the status of listed species.²

This statement of purpose states as a foregone conclusion an alternative that an EIS is supposed to evaluate, as an alternative. The operation of the CVP to “maximize water supply deliveries and optimize marketable power generation” is not the only manner in which the CVP can meet its “authorized purposes,” which include protection of fish and wildlife as well as meeting water supply and delivering power. By stating one alternative for operating the CVP as the purpose of the project, the DEIS fails to disclose that very purpose as the source of impacts to listed species and other aquatic resources. It disallows up front alternatives that would modify or avoid impacts to listed species by reducing water supply deliveries or modifying hydropower operations.³

The 2008 U.S. Fish and Wildlife *Biological Opinion on the Proposed Coordinated Operations of the Central Valley Project (CVP) and State Water Project (SWP)* began the Project Description as follows: “The proposed action is the continued long-term operation of the CVP and SWP.”⁴ This was a much fairer statement of the Proposed Action.

Reclamation should recirculate the DEIS with a statement of purpose that does not impermissibly narrow alternatives.

² DEIS, p. 1-1/19. [Throughout this document, cites to the DEIS show two cited page numbers. Page numbers to the right of “/” shows pdf pagination.]

³ See *City of Carmel-By-The-Sea v. U.S. Dep’t of Transp.*, 123 F.3d 1142, 1155 (9th Cir. 1997) (“The stated goal of a project necessarily dictates the range of ‘reasonable’ alternatives and an agency cannot define its objectives in unreasonably narrow terms”).

⁴ U.S. Fish and Wildlife *Biological Opinion on the Proposed Coordinated Operations of the Central Valley Project (CVP) and State Water Project (SWP)*, 2008 (“2008 USFWS BiOp”), p. 1.

III. The DEIS fails to present a reasonable range of alternatives. None of the alternatives analyzed in the DEIS is sufficient to avoid jeopardy to Delta smelt and listed salmonids or to protect other public trust fishery resources consistent with applicable law.

A. The No Action Alternative fails to disclose the existing condition of affected fisheries and is not sufficient to avoid jeopardy to Delta smelt and listed salmonids or to protect other public trust fishery resources consistent with applicable law.

1. The DEIS ignores the recent condition of pelagic and salmonid species.

The DEIS fails to acknowledge and describe the extent and magnitude of the declines of pelagic and salmonid fisheries in the San Francisco Bay/Sacramento-San Joaquin Delta Estuary and tributary rivers.

The California Department of Fish and Wildlife's (CDFW) Fall Midwater Trawl (FMWT) indices establish that, between 1967-1971 and 2014-2018, populations of striped bass, Delta smelt, longfin smelt, American shad, splittail and threadfin shad have declined 98.5, 99.4, 99.9, 52.6, 98.6 and 93.3 percent, respectively.⁵ Recent Delta smelt surveys have been dismal. For example, CDFW's 2018 20-mm survey index was incalculable due to low catch; the Summer Townet Survey index for 2017 was 0.2, the third lowest on record following two years in which the index was zero; the FMWT 2018 index was zero; and the 2019 Spring Kodiak Trawl index was 0.4, the lowest index on record.⁶ Survey results for Delta smelt led U.C. Davis fisheries professor Peter Moyle to warn state officials to prepare for the extinction of Delta smelt.⁷

While Delta smelt is particularly at risk of extinction, having lost more than 99% of its historical population, other species in the project area are also at high risk of extirpation. Additionally, Bay species that benefit from higher Delta outflow are ignored in the DEIS.

The U.S. Fish and Wildlife Service's (USFWS) Anadromous Fisheries Restoration Program (AFRP) documents that, since the 1967-1991 baseline period, natural production of Sacramento River mainstem winter-run Chinook salmon and spring-run Chinook salmon have declined by 88.8 and 97.96 percent, respectively, and are only at 5.5 and 1.02 percent, respectively, of doubling levels mandated by the Central Valley Project Improvement Act, California Water Code (CWC) and California Fish & Game Code. Natural production of San Joaquin River System fall-run Chinook salmon has declined since 1967-1991 by 54.5% and is

⁵ CDFW FMWT Monthly Abundance Indices, <http://www.dfg.ca.gov/delta/data/fmwt/indices.asp>.

⁶ USBR, Effects Analysis for the Delta Smelt Fall Habitat Action in 2019, p. 7; https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc_ID=39803

⁷ <http://www.capradio.org/44478>, <http://californiawaterblog.com/2015/03/18/prepare-for-extinction-of-delta-smelt/>, <http://news.nationalgeographic.com/2015/04/150403-smelt-california-bay-delta-extinction-endangered-species-drought-fish/>.

only 22.7% of doubling levels.⁸ Natural production since the 2008 USFWS and 2009 NMFS Biological Opinions (BiOp's)⁹ were issued is significantly below production in the initial 15 years of the doubling period (1992-2007).

The DEIS ignores the continuing decline of pelagic and salmonid species following construction of the SWP and the accelerating decline in recent years despite the BiOp's. This continuing decline of fisheries jeopardizes the existence of species already on the brink of extinction. The failure to acknowledge and analyze the continuing decline of fisheries and impending extinction of one or more species, despite the 2008 and 2009 BiOp's with their Reasonable and Prudent Alternatives (RPA's), renders the DEIS deficient as a NEPA document.

- 2. The DEIS does not comply with NEPA's fair disclosure and environmental setting requirements because it fails to acknowledge, analyze or discuss the numerous violations of water quality standards, the pattern and practice of weakening water quality standards, failures to comply with biological opinion RPA's, and other specific requirements pertaining to the Delta.**
 - a. The DEIS ignores and fails to describe the CVP/SWP's numerous violations of adopted water quality standards.**

The State Water Resource Control Board's (SWRCB or Board) Water Quality Control Plan for the San Francisco/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan) and the Central Valley Regional Water Quality Control Board's (Regional Board) Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (Basin Plan) are issued pursuant to requirements of the federal Water Pollution Control Act (Clean Water Act). The SWRCB's Water Rights Decision 1641 (D-1641) and Water Rights Orders 90-05, 91-01, 91-03 and 92-02 implement the Bay-Delta Plan and Basin Plan as terms and conditions in Reclamation's CVP water rights. The BiOp's and RPA's are predicated on compliance with Delta water quality and flow criteria and with Sacramento River temperature criteria contained in the SWRCB's D-1641 and Water Rights Orders.

The SWRCB's Water Rights Decision 1485 (D-1485) established Delta water quality and flow standards applicable to the SWP/CVP between 1978 and 1994. Those standards were violated 61 times in 1979 and 319 times between 1988 and 1994.¹⁰ The violations cited only involve standards for which both the SWP and CVP are jointly responsible for and exclude violations applicable to only one project, e.g. Vernalis standards. D-1641 established Delta water quality standards applicable to the SWP and CVP. Between 1995 and 2015, standards

⁸ https://www.fws.gov/lodi/anadromous_fish_restoration/documents/Doubling_goal_graphs_063016.pdf

⁹ 2008 FWS BiOp, National Marine Fisheries Service, *Biological and Conference Opinion for the Long-Term Operations of the Central Valley Project and the State Water Project*, 2009. ("2009 NMFS BiOp").

¹⁰ Exhibit DWR-401, Bay-Delta Objectives Exceedance Metrics (Joint SWP/CVP responsibility), presented during the WaterFix Hearing. https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/petitioners_exhibit/dwr/dwr_401.pdf

were violated 1,886 times, and violations occurred in 15 of the 20 years.¹¹ The SWRCB never issued enforcement actions for these violations.

The DEIS acknowledges that electrical conductivity (EC) and chloride levels would be “significantly higher” under all of the action alternatives than under the No Action Alternative.¹² Additionally, the DEIS briefly mentions that the SWRCB adopted Bay-Delta Plan amendments for San Joaquin River flow and southern Delta salinity on December 12, 2018, but dismisses the new water quality and flow standards because the SWRCB has not yet implemented them into water rights permits.¹³ However, the SWRCB will implement the new standards within the likely life of the proposed project. Both the Central Valley Project Improvement Act (CVPIA) and the Reclamation Act of 1902 require operation of the CVP in compliance with state law. The DEIS includes no alternative than analyzes or explains how the proposed operations will comply with the new Bay-Delta instream flow standards for the Stanislaus River instead of reducing flows as envisioned in the DEIS’s Preferred Alternative.

Moreover, the SWRCB has been developing new Bay-Delta standards for the Sacramento River, eastside tributaries and western Delta. Based upon the documents generated in the proceeding so far, it is likely that the new standards will require increased Delta inflow and outflow to the Bay. For example, the Final Scientific Basis Report for the Sacramento River watershed and Delta components of the update states: “The best available science, however, indicates that these requirements [D-1641 and the biological opinions] are insufficient to protect fish and wildlife.”¹⁴ The July 2018 Framework for the Sacramento/Delta Update to the Bay-Delta Plan envisions increased Delta outflow and reductions in water supply.¹⁵ The DEIS fails to even acknowledge or discuss the potential consequences of new standards or include an alternative consistent with the flows and operations identified in the Final Scientific Basis Report or the 2018 Framework.

The SWP/CVP has never complied with the narrative salmon protection standard in Table 3 of the SWRCB’s Bay-Delta Plan. The objective states, “Water quality conditions shall be maintained together with other measures in the watershed, sufficient to achieve a doubling of natural production of chinook salmon from the average production of 1967-1991, consistent with the provision of State and federal law.”¹⁶ This salmon doubling provision is also mandated in

¹¹ Exhibit DWR-402, Bay-Delta Objectives Exceedance Metrics (Joint SWP/CVP responsibility), presented during the WaterFix Hearing.

https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/petitioners_exhibit/dwr/dwr_402.pdf

¹² DEIS, pp. 5-7 and 5-8/137 and 138.

¹³ DEIS, p. 2-2/32.

¹⁴ SWRCB, *Scientific Basis Report in Support of New and Modified Requirements for Inflows from the Sacramento River and its Tributaries and Eastside Tributaries to the Delta, Delta Outflows, Cold Water Habitat, and Interior Delta Flows*, Final 2017, p. 1-5.

https://www.waterboards.ca.gov/water_issues/programs/peer_review/docs/scientific_basis_phase_ii/201710_bdphas_eII_sciencereport.pdf

¹⁵ SWRCB, July 2018 *Framework for the Sacramento/Delta Update to the Bay-Delta Plan*, pp. 13, 15, 19.

https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/docs/sed/sac_delta_framework_070618%20.pdf

¹⁶ Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary, December 12, 2018, p. 14. https://www.waterboards.ca.gov/plans_policies/docs/2018wqcp.pdf

the CVPIA and the California Fish and Game Code. As we previously discussed, natural production of Chinook salmon has significantly declined not increased since 1967-1991.

Because the SWRCB had failed to adopt protective water quality standards for the Delta, the U.S. Environmental Protection Agency (EPA) promulgated water quality standards in January 1995. The standards, at 40 CFR 131.37, established a fish migration criterion to double salmon populations based on salmon smolt survival index of number of tagged fall-run smolts released upstream on the Sacramento and San Joaquin Rivers and recaptured at Chipps Island in the western Delta. An estuarine habitat criterion was included to protect fish and wildlife in the Suisun, San Pablo and San Francisco bays and Suisun Marsh, and stringent specific salinity requirements were set to protect striped bass spawning in the San Joaquin River. These officially adopted and current federal water quality standards are applicable to California but have never been acknowledged or complied with by the CVP/SWP. They are not identified, discussed or analyzed in the DEIS.¹⁷

b. The DEIS fails to disclose the pattern and practice of waiving or relaxing water quality standards.

The SWRCB has succumbed to a pattern and practice of waiving (i.e., weakening) water quality, flow and temperature criteria whenever requested in Temporary Urgency Change Petitions (TUCP's). Prior to 1991, the SWRCB simply didn't enforce violations of water quality standards. In 1992, BOR and DWR intended to submit a TUCP, but CDFW wouldn't agree to approval; the SWRCB chose not to take enforcement action for some 218 violations.¹⁸ In June of 1992, the SWRCB relaxed D-1485 Suisun Marsh salinity and Contra Costa Canal chloride standards.¹⁹ The SWRCB conducted a February 2009 hearing on a DWR/BOR petition to relax Delta water quality standards, but miracle March rains made relaxation unnecessary.²⁰

In 2013, the SWRCB allowed BOR/DWR to operate to critical year water quality standards in a dry year, effectively weakening the standards.²¹ In 2014 and 2015, the SWRCB

¹⁷ Electronic Code of Federal Regulations (e-CFR), 131.37, current as of 27 August 2019. https://ecfr.io/Title-40/pt40.24.131#se40.24.131_137
[Federal Register, EPA, 10 CFR Part 131, January 24, 1995.](https://www.govinfo.gov/content/pkg/FR-1995-01-24/pdf/95-817.pdf)
<https://www.govinfo.gov/content/pkg/FR-1995-01-24/pdf/95-817.pdf>

¹⁸ SWRCB letter to USBR and DWR regarding D-1485 water quality violations, June 1992, pp. 1-2 and 4.
https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/CS_PA%20et%20al/part2/cspa_252.pdf

¹⁹ Order 92-02, Order Establishing Drought-Related Requirements for the Bay-Delta During 1992, p. 30-32.
https://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/1992/wro92-02.pdf

²⁰ Order WR 2009-0013-EXEC, Order Denying Temporary Urgency Change, February 24, 2009, p. 6.
https://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/2009/wro2009_0013.pdf

²¹ Letter from SWRCB Executive Director Tom Howard to Ronald Milligan and David Roose, Actions to Conserve Cold Water Pool in Shasta Reservoir for Fishery Resources, May 29, 2013, p. 3.
https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/sacramento_river/docs/05292013swrcb.pdf

weakened water quality, flow and/or temperature criteria some 35 times.²² Between January 2014 and December 2015, the SWRCB issued a series of fourteen orders largely granting TUCPs submitted by BOR and DWR for the Delta and San Joaquin River.²³ In 2014, SWRCB staff observed that the TUCP orders reduced regulatory Delta outflow by 43% and increased Delta exports by 18%. In 2015, SWRCB actions reduced regulatory outflow by 78% in order to increase exports by 32%. These changes shifted more than one million acre-feet of water from fisheries protection to agricultural and urban use.²⁴

The long history of BOR's violations of water quality standards is ignored in the DEIS. In fact, the word "violations" only appears a single time in a reference to program-level effects on water utilized by a federally recognized Indian tribe, where it concludes that, "adverse effects on water quality and violations to water quality standard are not expected..." Ignoring the long history of TUCP's and water quality standards fails to comply with NEPA's requirements for fair disclosure and requirement to accurately describe the environmental setting.

The DEIS fails to acknowledge, discuss or analyze the pattern and practice of serially weakening legally promulgated water quality and flow standards established to protect fish and water quality. It further fails to incorporate the serial failure to comply with water quality and flow standards in its modeling and assessment of the project's ability to deliver water and evaluation of alternatives. Consequently, the DEIS is deficient as a NEPA document.

CSPA submitted and presented numerous comments, objections, protests, petitions for reconsideration and complaints throughout 2013-2015 proceedings before the SWRCB. For example, the CSPA *et al.* Protest, Objection, Petition for Reconsideration of the February 3, 2015 TUCP Order discussed the results of the previous year's TUCP orders, past and future impacts and consequences to fisheries, mismanagement of water project operations and likely results of future TUCPs.²⁵ Attachments 1 and 2 to that Protest detailed the continuing declines of Delta smelt in 2013 and 2014 under D-1641 and how CVP/SWP operations exacerbated the decline.²⁶ Attachment 4 detailed how excessive water deliveries to Sacramento River Settlement

²² Public Policy Institute of California, *What if California's Drought Continues?* August 2015, page 7: http://www.ppic.org/content/pubs/report/R_815EHR.pdf and the Technical Appendix at page 6: http://www.ppic.org/content/pubs/other/815EHR_appendix.pdf

²³ State Water Project and Central Valley Project Temporary Urgency Change Petition page, 2015 and 2015. https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/tucp/

²⁴ SWRCB, staff presentation at the 20 May 2015 public workshop on drought activities in the Bay-Delta: http://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/docs/workshops/swrcb_staff_pres_sessi_on1b.pdf

²⁵ CSPA *et al.*, Protest, Objection, Petition for Reconsideration, February 3, 2015 TUCP Order, 13 February 2015, pp. 3-31. https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/comments_tucp2015/docs/cspa_shutes_021315.pdf

²⁶ Cannon, T., Summer 2013, The demise of Delta smelt under D-1641 Water Quality Standards, pp. 2-19. https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/comments_tucp2015/docs/cspa_att1.pdf
Cannon, T., Summer 2014, Demise of the Delta Smelt Population, pp. 2-43. https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/comments_tucp2015/docs/cspa_att2.pdf

Contractors exhausted the cold-water pool behind Shasta Dam in late August 2014 leading to a lethal increase in Keswick temperature releases in September.²⁷ Attachment 5 detailed how Delta smelt had declined to an all-time low and that, contrary to USBR/DWR, Delta smelt are in the Delta during June and July.²⁸ Attachment 6 detailed how multi-year drought sequences occur 40% of the time in the Central Valley and that water project operators supply all water possible during the initial year(s) of a drought on the gamble that the next year will be normal.²⁹

As another example, CSPA submitted a June 17, 2015 Protest, Objection, Petition for Hearing in response to a June 2015 notice regarding a BOR/DWR TUCP; this protest discussed the status of fisheries, consequences of previous TUC Orders, and how excessive water deliveries during initial drought years eliminated BOR/DWR's ability to meet water quality and flow standards.³⁰ CSPA also filed a July 21, 2015 formal complaint against the SWRCB, USBR and DWR for violations of Bay-Delta Plan, D-1641, Clean Water Act, Endangered Species Act, Public Trust Doctrine and the California Constitution. The complaint pointed out the pattern and practice of delivering near-normal water supplies in the early years of drought, depleting carryover storage, and then relying on the SWRCB to weaken water quality standards. Another formal complaint was filed by CSPA on August 2, 2015 against the SWRCB and BOR for violations of Central Valley Basin Plan, WR Order 90-05, Clean Water Act, Endangered Species Act, Public Trust Doctrine and California Constitution.³¹ The Complaint detailed the collapse of Sacramento River fisheries, compression of spawning habitat, explicit violations of Basin Plan and WR Order 90-05 requirements, failure to comply with BiOp RPA's, and the inability of the Sacramento River Temperature Task Group to meaningfully protect fisheries given the BOR's intransigent commitment to excessive water deliveries.

Attached to this comment letter is a list, with links, of the numerous comments, presentations, objections, protests, petitions for reconsideration and complaints CSPA submitted to the SWRCB in 2014 and 2015. Together, they present a very different reality than the one portrayed by the DEIS. The DEIS is little more than an omelet of distortion and half-truth designed to support a predetermined course of action. Consequently, decision-makers are

²⁷ CSPA, Demise of Winter Run in Summer 2014 pp. 1-3.

https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/comments_tucp2015/docs/cspa_att4.pdf

²⁸ CSPA, Delta Smelt on the Scaffold, pp. 1-3 and 7-24.

https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/comments_tucp2015/docs/cspa_att5.pdf

²⁹ CSPA, Workshop presentation February 18-19, 2014.

https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/comments_tucp2015/docs/cspa_att6.pdf

³⁰ CSPA et al., Protest, Objection, Petition for Hearing of June 8 notice of TUCP by DWR and BOR, pp. 3-10, 12-14, 15-20, June 17, 2015.

https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/comments_tucp2015/docs/cspa_billjen_nings061715.pdf

³¹ CSPA, Complaint Against SWRCB and USBR for Violations of Central Valley Basin Plan, WR Order 90-05, Clean Water Act, Endangered Species Act, Public Trust Doctrine and California Constitution, pp. 2-19, August 2 2015.

https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/comments_tucp2015/docs/cspa_complaint080315.pdf

deprived of the information necessary to reach an informed decision. The DEIS must be revised to accurately reflect the history of BOR's repeated petitions for TUC orders and the consequences to fisheries as a result of approved TUCP orders.

The DEIS mentions drought(s) 24 times, although the appendix on water quality also evaluates drought impacts on water quality constituents. However, there is no discussion of the frequency of drought and its effects water storage and supply or the fact that future droughts are likely to become more extreme. Over the last 100 years, there have been 10 multi-year droughts of large-scale extent in California spanning more than 40% of the time. These include the 1918-1920, 1923-1926, 1928-1935, 1947-1950, 1959-1962, 1976-1977, 1987-1992, 2000-2002, 2007-2009 and 2012-2015 droughts.³² Drought is normal in California's Mediterranean climate. Anthropogenic warming has substantially increased the overall likelihood of extreme California droughts.³³ BOR must recirculate the DEIS and include within it description of the frequency and extent of drought, and the likelihood that drought will become the "normal" in California. It must fully discuss and analyze what percentage of water supply commitments can be met while protecting an already degraded ecosystem and complying with water quality and flow standards.

The DEIS contains a single section entitled "Drought and Dry Year Actions" that comprises three short paragraphs.³⁴ Identified actions include development of a voluntary toolkit, a meet-and-confer with fish agencies and Sacramento River Settlement Contractors in the event of a dry or critical water year on possible voluntary actions and, should dry conditions continue, potentially developing a drought contingency plan (that may include actions from the toolkit) for the water year. There is no mention of TUCP's or waivers of water quality standards in the DEIS. The Biological Assessment for California WaterFix was more honest in that it anticipated creation of a drought management team that would create a drought contingency plan. Measures could include adhering to existing regulatory authorizations or proposing other drought response actions.³⁵

Previously, BOR and DWR have routinely submitted TUCP's in drought situations rather than undertake a serious effort to restrict deliveries in order to meet water quality requirements. There is nothing to indicate that this is no longer the situation. There has never been a public process to evaluate what reduction in water deliveries would enable BOR to meet water quality standards. Increased water deliveries and reduction of Delta outflow are likely to exacerbate existing conditions. BOR must recirculate the DEIS and include within it a candid discussion and analysis of the likelihood of BOR/DWR resorting to TUCP's and whether they will first operate to meet water quality standards before delivering water to contractors.

³² *Drought in California*, DWR, p. 4.

https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/CS_PA%20et%20al/part2/cspa_251.pdf

³³ Williams et al., 2015, *Contribution of Anthropogenic warming to California drought during 2012-2014*.

<https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2015GL064924>

³⁴ DEIS, p. 3-42/76.

³⁵ Biological Assessment for California WaterFix, Chapter 3, Description of the Proposed Action, 3.7.2 Proposed Future Drought Procedures, p. 3-222.

https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/exhibit104/docs/Ch_3_Proposed_Action_RevisedDraftBA.pdf

c. The DEIS fails to disclose that Basin Plan and SWRCB Order 90-05 are predicated upon controllable factors and that water deliveries are controllable factors.

The Regional Board's Basin Plan for the Sacramento River Basin and the San Joaquin River Basin has long included water quality standards for temperature. For the Sacramento River, "[t]he temperature shall not be elevated above 56°F in the reach from Keswick Dam to Hamilton City nor above 68°F in the reach from Hamilton City to the I street Bridge during periods when temperature increases will be detrimental to the fishery."³⁶ Temperature standards are dependent upon controllable factors, i.e., resulting from and controllable by human activity.³⁷ Constructing dams and storing, releasing and diverting water are obviously human activities.

In 1990, the SWRCB issued WR Order 90-05 that implemented the Basin Plan with respect to BOR's water rights in the Sacramento River at Red Bluff Diversion Dam. The Order requires BOR to meet a daily average water temperature of 56°F in the Sacramento River at Red Bluff Diversion Dam and that, during periods of higher temperature beyond the reasonable control of BOR, the Permittee shall after consultation with fishery agencies designate an upstream location where compliance can be achieved. None of the "factors considered beyond the control of the Permittee" enumerated by the Order include the need to deliver water to contractors.³⁸ The Order notes that Sacramento River temperature objectives are limited to "controllable factors" by BOR.³⁹ SWRCB WR Order 92-02 clarifies that timing and quantities of deliveries by BOR are controllable factors and that "...decisions on water deliveries are subject to the availability of water, and that water should not be considered available for delivery if it is needed as carryover to maintain an adequate cold water pool for the fishery."⁴⁰

The DEIS blatantly misstates WR Order 90-05 by claiming the "The orders stated Reclamation shall operate Keswick and Shasta Dams and the Spring Creek Powerplant to meet a daily average temperature of 56 degrees Fahrenheit (°F) as far downstream in the Sacramento River as practicable during when higher temperatures would be harmful to Winter-Run Chinook Salmon."⁴¹ The DEIS erroneously claims that BOR is only required to meet downstream temperature requirements "as far as practicable" and ignores the fact that protective temperatures are also required for spring-run and fall-run Chinook salmon, as well as other species. It fails to include a discussion of controllable factors or acknowledge that controllable factors include water deliveries. In fact, the words "controllable factors" are not in the document. The DEIS

³⁶ Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board Central Valley Region, Fifth Edition Revised May 2018, Sacramento River Basin and San Joaquin River Basin, p. 3-14.

https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201805.pdf

³⁷ *Id.*, at 3-2.

³⁸ SWRCB Order 90-05, Order Setting Terms and Conditions for Fishery Protection and Setting a Schedule for Completion of Tasks, 2 May 1990, pp. 54-55.

https://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/1990/wro90-05.pdf

³⁹ *Id.* at 6, 18, 48.

https://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/1990/wro90-05.pdf

⁴⁰ Order 92-02, Order Establishing Drought-Related Requirements for the Bay-Delta During 1992, Footnote, p. 9.

https://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/1992/wro92-02.pdf

⁴¹ DEIS, p. 3-4/38

also fails to acknowledge or discuss the extent of BOR water deliveries to Sacramento River contractors in drought years that reduced or eliminated BOR's ability to conserve the cold-water pool in Shasta to ensure that temperature standards could be met.

During the extreme drought years of 2014-15, BOR delivered more than 1.3 MAF in 2014 and 1.2 MAF to Sacramento River Contractors.⁴² Excessive water deliveries led to depletion of the cold-water pool in Shasta Reservoir in 2014-15. Winter-run Chinook salmon egg-to-fry survival was only 5.6% in 2014 and 4.2% in 2015, far below the 18-year average.⁴³

Nor does the DEIS discuss actual temperature compliance with WR Order 90-05. Examination of CDEC data from BOR's Red Bluff Diversion Dam station reveals that, regardless of water year or Shasta storage, BOR has never complied with the 56°F temperature standard at Red Bluff between May 15 and September 30 since at least 1992.⁴⁴

Failure to accurately discuss the relationship between controllable factors, water deliveries and their effects on cold-water storage and temperature compliance deprives the public and decision-makers of the information necessary to make informed decisions. It renders the DEIS as seriously deficient as a fair disclosure document. BOR must recirculate the DEIS and include within it the necessary information.

d. The DEIS fails to disclose BOR's failure to comply with Biological Opinion Reasonable and Prudent Alternatives.

The 2009 NMFS BiOp does not require compliance with Basin Plan standards or even with WR Order 90-05.⁴⁵ Action 1.2.1 (Performance Measures) of the BiOp's RPA's specifically requires a running ten-year average temperature compliance at Clear Creek (RM 292), Balls Ferry (RM 276), Jellys Ferry (RM 266) and Bend Bridge (RM 258) 95, 85, 40, 15 percent of the time, respectively.

A review of compliance point temperatures over the recent 10-year period demonstrates that BOR has frequently failed to meet RPA temperature standards. According to the University of Washington website that is funded by USBR for Central Valley Project Improvement Act (CVPIA) and federal Endangered Species Act (ESA) purposes, the RPA Temperature Target Analysis and Exceedance shows that the ten-year (2009-2018) running average temperatures exceeded 56°F at Balls Ferry, Jellys Ferry and Bend Bridge 89.9%, 100% and 100% of total days between 15 May and 30 September, respectively. Further, between 2009 and 2018, there were

⁴² CSPA, Attachment 5, BOR water deliveries to Sacramento Settlement Contractors and Tehama-Colusa Canal in 2014 and 2015.

⁴³ NOAA Fisheries, presentation at SWRCB workshop, March 18, 2016, egg-to-fry survival, p. 8. https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/sacramento_river/docs/nmfs_yip_0318_2016_ppt.pdf

⁴⁴ CSPA, Attachment 4, Red Bluff Dam Temperatures 2001-2019. Temperatures can easily be graphed by year and date range. The BOR Red Bluff Diversion Dam CDEC station can be found at: http://cdec.water.ca.gov/jspplot/jspPlotServlet.jsp?sensor_no=11866&end=&geom=small&interval=30&cookies=cec01.

⁴⁵ NMFS BiOp, p. 592.

56°F daily average temperature exceedances at Clear Creek, Balls Ferry, Jellys Ferry and Bend Bridge in 30%, 90%, 100% and 100% of the years, respectively.⁴⁶

The NMFS 2009 BiOp's Reasonable and Prudent Actions require specific end-of-season storage requirements for Shasta Reservoir. Performance measures for end-of-September (EOS) include: 87 percent of years, minimum EOS storage of 2.2 MAF; 82 percent of years, minimum EOS storage of 2.2 MA and end-of-April storage of 3.8 MAF in following year (to maintain potential to meet Ball's Ferry compliance point); and 40 percent of years minimum EOS storage of 3.2 MAF (to maintain potential to meet Jerry's Ferry compliance point in the following year).⁴⁷ However, over the most recent ten-year period, these storage requirements were met only 60%, 60% and 30%, respectively.⁴⁸

Failure to disclose BOR's noncompliance with BiOp RPA 1.2.1 deprives readers of information crucial to reaching informed conclusions about the Proposed Action. Accordingly, the DEIS must be revised and recirculated to meet NEPA's fair disclosure requirements.

e. The DEIS fails to transparently disclose the role, limitations of authority and ineffectiveness of the Sacramento River Temperature Task Group.

SWRCB WR Order 90-05 established BOR's responsibilities for meeting a 56°F temperature standard at Red Bluff Diversion Dam for protection of fisheries. If conditions beyond the control of BOR would not enable meeting the standard at Red Bluff, it required BOR to consult with fish agencies to determine an upstream compliance point where the temperature criteria could be met. After consultations, BOR would develop and implement a temperature management plan, subject the approval of the SWRCB. The Sacramento River Temperature Task Group (SRTTG) is the multiagency group formed to advise BOR on temperature management and review proposed plans for temperature control.

The almost 5,500-page DEIS contains only 11 brief references to the SRTTG. Those sections essentially state the purpose of the SRTTG and note that it reviews and comments on proposed management plans and works with BOR to develop strategies to protect fisheries. It is unclear if the temperature standard has ever been met at Red Bluff (RM 243); it certainly has not been met since 1991. It is clear that the temperature compliance point has been move further and further upstream. The default compliance point now seems to be Balls Ferry (RM 276), except in drought periods, when compliance points are established at Clear Creek (RM 292), or further upstream. During the recent drought, the temperature standard was modified and increased above 56°F to levels non-protective of salmon spawning, egg incubation and emergence.

The DEIS is silent on any potential responsibilities of the SRTTG other than its role as an advisory body. The SRTTG has no role in determining the quantity of water to be delivered to water contractors, the amount of higher temperature water from Whiskeytown Reservoir that will flow through the Spring Creek Powerhouse, or the timing of water released from Shasta

⁴⁶ CSPA, Attachment 2, DEIS LTO CVP/SWP.

⁴⁷ NMFS BiOp, p. 592.

⁴⁸ CSPA, Attachment 3, DEIS LTO CVP/SWP.

Reservoir. Essentially, BOR tells the SRTTG how much water it will make available to meet temperature requirements, and the SRTTG then advises how best to use that water to protect fisheries.

For example, in the SWRCB's approval of the June 25, 2015 Sacramento River Temperature Management Plan that increased the 56°F temperature standard to a non-protective 57°F, not to exceed 58°F, at Clear Creek, SWRCB Executive Director Thomas Howard noted that the NMFS concurrence letter stated "that these conditions could have been largely prevented through upgraded in monitoring and modeling, and reduced Keswick releases in April and May" and that "the plan provides a reasonable possibility that there will be some juvenile winter-run survival this year."⁴⁹ In fact, NMFS had admitted that "[i]t is now very clear through evaluating operations in both 2014 and 2015 that the volume of cold water available for real-time management in June through October is highly dependent on Keswick releases in April through early June."⁵⁰ However, BOR delivered Sacramento River Contractors 657,000, 631,512 and 835,444 acre-feet of water April-June in 2014, 2014 and 2016, respectively.⁵¹ When it comes to deliveries of water, BOR pays little heed to the SRTTG and seemingly to the SWRCB.

Carryover storage and early season water deliveries largely determine how much cold water will be available later in the year. Additionally, BOR's policy of releasing water from Shasta Dam during the day for peak power production, rather than at night, increases the temperature of water released to the river. Water imported from the Trinity River via Whiskeytown Reservoir and the Spring Creek Powerhouse to supply water contractors can be six, seven or more degrees higher than water released from Shasta.⁵² All of these actions impact the volume of cold water remaining in Shasta Reservoir. A recirculated DEIS must discuss and analyze the impacts of early season deliveries, Trinity River water diversions to the Sacramento River, and peak power production from the Shasta Powerhouse on meeting temperature standards in the Sacramento River. It must also evaluate feasible mitigations for these impacts.

As discussed previously, BOR's temperature management on the Sacramento River has failed to comply with Basin Plan's "controllable factors" requirements and with SWRCB Order 90-05, largely because of excessive water deliveries that have depleted carryover storage and the cold-water pool. BOR's temperature management has also failed to meet the storage and compliance point requirements in the 2009 BiOp RPA 1.2.1. And, as discussed below, the resulting consequences have been an increasing compression and reduction of Chinook salmon spawning habitat that have led to declines in successfully salmonid reproduction.

⁴⁹ SWRCB, Letter from Thomas Howard to Ron Milligan, July 7, 2015, pp. 2-3.

https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/sacramento_river/docs/tmp_mgt_plan.pdf

⁵⁰ NMFS, Letter to BOR and DWR regarding the Contingency Plan for Water Year 2015, July 1, 2015, p. 4.

https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/docs/tucp/2015/stellejr_nmfs_070115.pdf

⁵¹ CSPA, Attachment 5, BOR water deliveries to Sacramento Settlement Contractors and Tehama-Colusa Canal in 2014-2016.

⁵² CSPA, Attachment 7, DEIS LTO CVP/SWP.

There is nothing in the DEIS' discussion of proposed actions, alternatives or mitigation measures that would meaningfully improve BOR's Sacramento River temperature management efforts that is not already underway, and there is no discussion in the DEIS of actions that would improve the effectiveness of the SRTTG. The DEIS should have disclosed and discussed the failures of its temperature management and the limitations of authority of the SRTTG, and proposed and analyzed measures that would enable BOR to comply with the 2009 BiOp and Order 90-05. Such an analysis would require a candid assessment of the level and timing of reductions in water deliveries that would be necessary to increase carryover storage and retain cold water in Shasta Reservoir sufficient to meet temperature requirements for fish. Without such disclosure and analysis, the DEIS fails to comply with NEPA's requirements for fair disclosure and analysis and for evaluation of alternatives.

f. The DEIS fails to disclose and analyze the loss of post-Shasta historical spawning habitat or evaluate mitigation for the loss of spawning habitat.

Construction of Shasta Dam eliminated approximately 201 miles of historical habit and more than 90,000 Chinook salmon spawning sites. BOR's failure to meet Basin Plan temperature requirements at Hamilton City and SWRCB WR Order 90-05 temperature requirements at Red Bluff has compressed Chinook salmon spawning into a short river reach below Keswick Dam. Compaction of usable spawning habitat leads to superimposition of redds and other problems that adversely affect spawning success. As previously noted, the period since the construction of Shasta Dam corresponds with a dramatic decline of Sacramento River Chinook salmon.

CDFW annual spawning surveys demonstrate that, between 1969 and 1985, an average of 37.6% of combined Chinook salmon species (late-fall run, winter-run, spring-run and fall-run) spawning occurred below Red Bluff (RM 243). However, between 1986 and 2009, average spawning below Red Bluff had been reduced to only 17.2%. Between 2010 and 2017, average spawning had been further reduced to 10.6%. In 2016 and 2017, the numbers were 3.6% and 1.6%, respectively.⁵³ With respect to listed species, an annual average of 14.5% of winter-run and 15.7% of spring-run Chinook salmon spawning occurred below Red Bluff before 1986, whereas only 2.1% of winter-run and 2.9% spring-run spawning occurred between 1986 and 2009. Since 2009, no winter-run or spring-run spawning has occurred below Red Bluff.⁵⁴

The aerial spawning surveys reveal that between 2005 and 2012, 78 to 99 percent of winter-run salmon, 51 to 88 percent of late-fall-run salmon, 30 to 43 percent of spring-run salmon and 7 to 34 percent of fall-run salmon have spawned in the upper 5.5 miles between the Highway 44 Bridge (RM 296.5) and Keswick Dam (RM 302).⁵⁵ In 2017, 88% of winter-run

⁵³ CSPA, Attachment 6, DEIS LTO CVP/SWP, pp. 1-3.

⁵⁴ *Id.*

⁵⁵ CSPA, Complaint Against SWRCB and USBR for Violations of Central Valley Basin Plan, WR Order 90-05, Clean Water Act, Endangered Species Act, Public Trust Doctrine and California Constitution, August 2 2015, pp. 5-7.

https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/comments_tucp2015/docs/cspa_complaint080315.pdf

salmon and 50% of spring-run salmon spawned in the 2.5 miles between the Highway 44 Bridge and the ACID Dam (RM 299), and 100% of both species spawned in the 15 miles between the Airport Rd. Bridge (RM 284) and the ACID Dam.⁵⁶

The Basin Plan protects 103 miles of identified spawning habitat between Keswick Dam (RM 302 and Hamilton City (RM 199). Essentially, 44 miles of spawning habitat between Hamilton City (RM 199) and Red Bluff (RM 243) has been severely degraded because of excessively elevated temperatures. Since the default temperature compliance point is most frequently established at Balls Ferry (RM 276), salmon spawning is increasingly compressed into the upper few miles below the ACID Dam (RM 299) and Keswick Dam (RM 302). Establishing the compliance point at Balls Ferry effectively degrades another 31 miles of historical spawning habitat between Red Bluff and Balls Ferry. Elimination of 75 miles or 73% of identified post-Shasta historical Chinook salmon spawning habitat protected by Basin Plan temperature standards is a significant contributing factor in the degraded condition of wild Sacramento River salmon. Location of the temperature compliance point at Clear Creek, as is done during droughts, eliminates another 16 miles of spawning habitat and results in a total reduction of 88% of post-Shasta identified spawning habitat.

The DEIS' failure to disclose the extent of historical Chinook salmon spawning habitat in the Sacramento River and the increasing compaction of spawning, plus its failure to identify, discuss or analyze alternatives and/or mitigation measures that would expand and protect spawning habitat beyond a few miles below Keswick Dam, fails NEPA's requirements for fair disclosure, analysis, and selection of alternatives. The DEIS must be revised and recirculated.

g. The DEIS fails to identify, discuss and analyze the Delta Reform Act, the 2010 CDFW Quantifiable Goals and Flows Report and the 2010 SWRCB Flow Report.

Both the CVPIA and the Reclamation Act of 1902 require operation of the CVP in compliance with state law. Increasing degradation of the Delta's water quality and fisheries led the California Legislature to adopt the 2009 Delta Reform Act.⁵⁷ California Water Code (CWC), Division 35 (Sacramento-San Joaquin Delta Reform Act of 2009), General Provisions, Sections 85000-85067 establishes a state water policy for the Delta. The Legislature found and declared that:

The Sacramento-San Joaquin Delta watershed and California's water infrastructure are in crisis and existing Delta policies are not sustainable. Resolving the crisis requires

⁵⁶ CSPA, Attachment 6, DEIS LTO CVP/SWP, pp. 1-3;

Douglas Killam, Salmonid Populations of the Upper Sacramento River Basin In 2017, USRBFP Technical Report No. 02-2018, Appendix Table A3 pp. 44-47.

<https://www.calfish.org/ProgramsData/ConservationandManagement/CentralValleyMonitoring/CDFWUpperSacRiverBasinSalmonidMonitoring.aspx>

⁵⁷ California Legislative Information, Senate Bill No. 1, Chapter 5, (2009-2010) available at:

https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/CSPA%20et%20al/cspa_26.pdf

fundamental reorganization of the state's management of Delta watershed resources. (§ 85001(a).)

The Sacramento-San Joaquin Delta, referred to as the Delta in this division, is a critically important natural resource for California and the nation. It serves Californians concurrently as both the hub of the California water system and the most valuable estuary and wetland ecosystem on the west coast of North and South America. (§ 85002.)

It established a policy of the State of California to:

Restore the Delta ecosystem, including its fisheries and wildlife, as the heart of a healthy estuary and wetland ecosystem. (§ 85020(c)) Promote water conservation, water use efficiency, and sustainable water use. (§ 85020(d)) Improve water quality to protect human health and the environment consistent with achieving water quality objectives in the Delta. (§85020(e).)

It further found and declared:

The policy of the State of California is to reduce reliance on the Delta in meeting California's future water supply needs through a statewide strategy of investing in improved regional supplies, conservation, and water use efficiency. (c) The Delta is a distinct and valuable natural resource of vital and enduring interest to all the people and exists as a delicately balanced estuary and wetland ecosystem of hemispheric importance. (§ 85022(c)(1).) The permanent protection of the Delta's natural and scenic resources is the paramount concern to present and future residents of the state and nation. (§ 85022(c)(2).) The longstanding constitutional principle of reasonable use and the public trust doctrine shall be the foundation of state water management policy and are particularly important and applicable to the Delta. (§ 85023.)

As previously stated, both the CVPIA and the Reclamation Act of 1902 require operation of the CVP in compliance with state law. The LTO Plan includes joint operation of the CVP and SWP. The DEIS fails to discuss or analyze the requirements of state law as mandated by the Delta Reform Act and relevant sections of the CWC. In fact, a brief reference to Delta Reform Act and implementing sections of the CWC only occur in Appendix Y, Cumulative Methodology, on page 5,456 of a 5,487 page DEIS. Appendix Y contains a summary of 171 past, present and reasonably foreseeable projects that may contribute to potential future impacts on the project. Projects were screened to determine if they could have an impact. The references to the Delta Reform Act/CWC were related to a brief description of the Delta Stewardship Council. Failure to consider state policy and law regarding the Delta renders the DEIS seriously deficient with respect to fair disclosure and environmental setting. The DEIS must be revised and recirculated to address these shortcomings.

CWC, Division 35 (Sacramento-San Joaquin Delta Reform Act of 2009, Part 2, (Early Actions), Section 85084.5 required,

The Department of Fish and Game, in consultation with the United States Fish and Wildlife Service and the National Marine Fisheries Service and based on the best available science, shall develop and recommend to the board Delta flow criteria and quantifiable biological objectives for aquatic and terrestrial species of concern dependent on the Delta.

Following an extensive public proceeding including a peer-review process, CDFW issued a report titled *Quantifiable Biological Objectives and Flow Criteria for Aquatic and Terrestrial Species of Concern Dependent on the Delta*.⁵⁸ The report found that “recent Delta flows are insufficient to support native Delta fishes in habitats that now exist in the Delta” and recommended numerous biological and goals and objectives and specific recommendations for instream flow necessary to protect public trust fisheries. It also included the specific flow recommendations by the expert panel, fishery agencies and NGOs in the SWRCB’s 2010 flow hearing.⁵⁹ The DEIS fails to acknowledge, discuss or analyze the findings and recommendations in the legislatively-directed CDFW report. None of the alternatives in the DEIS incorporate the findings and recommendations in the report. Failure to consider the report and the scientific findings buttressing the report renders the DEIS deficient with respect to reasonable alternatives, fair disclosure and environmental setting. The DEIS must be revised and recirculated to address these shortcomings.

CWC, Division 35 (Sacramento-San Joaquin Delta Reform Act of 2009, Part 2, (Early Actions), Section 85086(c)(1) required

The SWRCB to, “pursuant to its public trust obligations, develop new flow criteria for the Delta ecosystem necessary to protect public trust resources. In carrying out this section, the board shall review existing water quality objectives and use the best available scientific information. The flow criteria for the Delta ecosystem shall include the volume, quality, and timing of water necessary for the Delta ecosystem under different conditions.

Section 85086(c)(2) also required that,

Any order approving a change in the point of diversion of the State Water Project or the federal Central Valley Project from the southern Delta to a point on the Sacramento River shall include appropriate Delta flow criteria and shall be informed by the analysis conducted pursuant to this section.

Pursuant to legislative direction, the SWRCB conducted an extensive public proceeding to determine flow criteria for the Delta necessary to public trust resources, using best available scientific information. The SWRCB’s proceeding to develop instream flows protective of public trust resources was the most intense and comprehensive effort to determine necessary flows to

⁵⁸ California Department of Fish and Game, *Quantifiable Biological Objectives and Flow Criteria for Aquatic and Terrestrial Species of Concern Dependent on the Delta*, Nov. 23, 2010. https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/swrcb_66.pdf

⁵⁹ Id. at 94, 97-104, 105-107.

protect public trust fish and wildlife resources in the 52-year history of the Board. The Board appointed an illustrious group of recognized experts to serve as an expert and reference 325 technical documents. Twenty-four parties to the proceeding provided 84 expert witnesses and 488 exhibits, plus exhibits from previous Bay-Delta hearings.⁶⁰

The resulting SWRCB report, titled *Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem*, found that “[t]he best available science suggests that current flows are insufficient to protect public trust resources” and that “recent Delta flows are insufficient to support native Delta fishes for today’s habitats.” It recommended flow criteria, crafted as percentages of unimpaired flows, of “75% of unimpaired Delta outflow from January through June, 75% of unimpaired Sacramento River inflow from November through June and 60% of unimpaired San Joaquin River inflow from February through June.”⁶¹ The report also included the specific flow recommendations of an expert panel, fishery agencies, and NGO’s in the hearing.⁶² The DEIS fails to acknowledge, discuss or analyze the findings and recommendations in the legislatively directed SWRCB Flow Criteria report. Nor do any of the alternatives in the DEIS incorporate the findings and recommendations in the report. Failure to consider the report and the scientific findings buttressing the report renders the DEIS deficient with respect to reasonable alternatives, fair disclosure and environmental setting. The DEIS must be revised and recirculated to address these shortcomings.

Together, the legislatively mandated SWRCB and CDFW 2010 proceedings represent the most comprehensive and scientifically robust effort to determine necessary flows to protect fishery resources in a watershed in the state’s history. The DEIS’ failure to disclose, discuss and analyze declared state policy and CWC requirements or to discuss and include the findings and recommendations of the SWRCB and CDFW reports in a project alternative is inexplicable and fails to meet the fair disclosure requirements of NEPA. It effectively sabotages the selection of alternatives and any effects analysis. The DEIS must be revised and recirculated for additional public review.

B. The Alternatives in the DEIS are not sufficiently distinct and are not legally or factually defensible.

Appendix D of the DEIS, Chapters 3 and 4, and especially Tables 3.2-1 and 4.1-1, describe the NEPA alternatives that the DEIS analyzes. These descriptions are difficult to follow and at times seem inconsistent.⁶³

⁶⁰ SWRCB, Delta Flow Criteria Program website.

https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/swrcb_25.pdf

⁶¹ SWRCB, *Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem*, 2009, p. 5.

https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/swrcb_25.pdf

⁶² Id. at 153-177.

⁶³ For example, comparing also Appendix F, it is unclear what if any limits on exports Alternative 4 would apply based on flows in the San Joaquin River.

Alternative 2 would simply strip out the RPA's in the 2008 and 2009 Biological Opinions, leaving only those flow measures from D-1641 on which the USFWS and NMFS found jeopardy in 2008 and 2009 respectively. Since listed species in the Bay-Delta system have crashed across the board since 2009 even with the RPA's, it defies imagination how removal of the RPA protections could be warranted.

Alternative 3 would also strip out the 2008 and 2009 RPA's, but would seek to compensate for these flow measures with a combination of physical habitat improvements and "interventions" such as capturing wild juvenile salmon outmigrants in Dry and Critically Dry years and physically transporting them to the Delta or San Francisco Bay. Most of these habitat and intervention measures are described only programmatically.⁶⁴ Many of them are already required or are already being implemented.

Alternative 1, the Preferred Alternative, would combine the habitat and intervention elements of Alternative 3 with modified RPA's that would limit the implementation of the RPA's through outright change and/or through real-time management, allowing agency managers to reduce or waive RPA requirements in to-be-determined circumstances. As a general principle, managers would make real-time decisions about applying flow or diversion limits based for example on "risk-based OMR [Old and Middle River] management"⁶⁵ and "hedging" decisions on when to initiate or conclude protective measures for Sacramento River water temperature.⁶⁶

The DEIS describes Alternative 4 as: "Operate storage reservoirs differently in order to increase flows for fish, which would decrease Delta exports."⁶⁷ Alternative 4 would combine removal of some elements the existing RPA's⁶⁸ with a requirement for year-round 55% of unimpaired flow released into and through the Delta.⁶⁹ There are also a series of constraints specific to Alternative 4, such as a requirement for "Positive Old and Middle River flows from March through May." However, there are also less stringent requirements than existing requirements; for instance, there are no requirements for Shasta storage.⁷⁰

We discuss each alternative in greater detail below.

⁶⁴ See DEIS, Table 3.4-1.

⁶⁵ DEIS, Appendix D, Table 4.1-1.

⁶⁶ DEIS, Appendix D., p. D1-13/304.

⁶⁷ DEIS, App. D, p. 3-7/190.

⁶⁸ The DEIS does not clearly define this.

⁶⁹ However, in modeling, BOR eliminates this requirement in about one third of all water years. It is also unclear whether in modeling BOR applied the 55% flow requirement to non-project facilities such as those on the Tuolumne, Merced and Yuba rivers.

⁷⁰ DEIS, Appendix D, Table 4.1-1.

C. Alternative 2 is insufficient to avoid take of Delta smelt and listed salmonids, will adversely affect critical habitat, and will not protect other public trust fishery resources consistent with applicable law.

Alternative 2 would eliminate the protections in the RPA's in the 2008 and 2009 BiOps, allowing water supply deliveries north of Delta and greater exports at state and federal facilities in the south Delta. Otherwise, Alternative 2 is largely the same as the No Action Alternative.⁷¹ The DEIS states that implementation of Alternative 2 would increase water supply deliveries by an average of 655 thousand acre-feet (TAF) per year.⁷²

1. Elimination of OMR restrictions would result in illegal take of listed salmon and smelt and adversely modify their critical habitat.

Prior to the Old and Middle River (OMR) restrictions in the RPA's, salmon and smelt protections were generally limited to "take limits" in the form of salvage counts and to water quality standards that included export limits, Delta outflow requirements, and agricultural salinity standards in state water quality standards (in Water D-1641). When these standards proved ineffective in protecting the listed salmon and smelt⁷³, the new biological opinions were issued, which added the OMR restrictions as well as other non-flow actions to preserve the species. Alternative 2 would eliminate the OMR protections in the RPA's, allowing greater exports at state and federal facilities in the south Delta.

The RPA's require limits on net negative flows in Old and Middle Rivers in the south Delta to protect listed winter-run and spring-run Chinook salmon, steelhead, and Delta smelt. Old and Middle River net flows are closely related to total south Delta exports. The OMR limits do not restrict higher exports when San Joaquin River inflows to the Delta are high and provide more positive net OMR. OMR limits allow restrictions on exports when Sacramento River inflows to the Delta are high and San Joaquin River flows are low. Without OMR limits (pre-2009), exports were very high when Sacramento River flows were high.

High OMR reverse flows and exports can draw salmon and smelt into the central and south Delta in the winter-spring period during high Sacramento River flows.⁷⁴ Under the RPA's, the presence of listed species can trigger OMR restrictions to -5000 cfs or less negative. Whichever RPA is the most restrictive governs operations at any given time. The RPA's prescribe an elaborate review process and triggering criteria for a Smelt Working Group

⁷¹ See DEIS Appendix D, Table 4.1-1. In some cases, Alternative 2 would also eliminate protections in addition to those in the RPA's.

⁷² DEIS Table 5.11-1 (Municipal and Industrial water supply) and Table 5.11-4 (Agricultural water supply).

⁷³ Take limits became irrelevant as overall populations of smelt dropped to such low levels that the take limits were never reached.

⁷⁴ The Delta Cross Channel is closed during most of the winter-spring period, and under such conditions Sacramento River flows contribute minimally to lower San Joaquin River and OMR flows. San Joaquin salmon and steelhead smolts that enter the Delta via Georgiana and Threemile sloughs, and smelt living in or moving into the central Delta, are at risk to south Delta exports during the winter-spring period. Their presence in the central Delta or export salvage can trigger OMR restrictions that otherwise would not occur under the regular D-1641 export/inflow restrictions.

(SWG⁷⁵) and Delta Salmon and Steelhead Group (DOSS⁷⁶) to make operations recommendations to Water Operations Management Team (WOMT), which may or may not adopt such recommendations.

OMR flow management (Actions IV.2 and IV.3) is prescribed for the period January 1 to June 15 in the RPA in the NMFS Biological Opinion. The RPA describes the purpose of these requirements as follows: “Control the net negative flows toward the export pumps in Old and Middle rivers to reduce the likelihood that fish will be diverted from the San Joaquin or Sacramento River into the southern or central Delta. ... Curtail exports when protected fish are observed near the export facilities to reduce mortality from entrainment and salvage.”⁷⁷

The USFWS’s Biological Opinion prescribes similar measures to protect smelt:

The objective of Component 1 is to reduce entrainment of pre-spawning adult delta smelt during December to March by controlling OMR flows during vulnerable periods.⁷⁸

... The objective [of Component 2] is to improve flow conditions in the Central and South Delta so that larval and juvenile delta smelt can successfully rear in the Central Delta and move downstream when appropriate.⁷⁹

The RPA’s provide essential protection in the winter-spring period by limiting exports and reducing losses of salmon, steelhead, sturgeon, and smelt that would otherwise be drawn to the south Delta export pumps under the D-1641, notwithstanding D-1641’s 65% export/inflow limit in December-January and 35% export/inflow limit in February-June. The OMR restrictions reduce entrainment of listed species into the central and south Delta in both dry and wet years, especially in December-January period. Even in drought years like winter-spring 2014-2015, OMR restrictions in winter reduced potential exports. Lack of prescriptions for December under the NMFS RPA did allow high negative OMR flows and exports in early December 2014. However, concerns for adult smelt led to voluntary reductions in exports and OMR negative flows in mid-December 2014 that subsequently were maintained through the winter.

In recent drought years, the OMR restrictions in the RPA’s have been more important than ever because D-1641 water quality standards have been weakened by the SWRCB, with the consent of NMFS and USFWS. *See* Section II(A)(2), *supra*.

Chapter 5 of the DEIS admits that elimination of the RPA’s governing OMR’s and consequent permission to increase exports would have negative effects on ESA-listed smelt and salmon species and on key unlisted species such as fall-run Chinook.

For example, the DEIS states:

⁷⁵ http://www.fws.gov/sfbaydelta/cvp-swp/smelt_working_group.cfm

⁷⁶ http://www.westcoast.fisheries.noaa.gov/central_valley/water_operations/doss.html

⁷⁷ NMFS BiOp, p. 630.

⁷⁸ FWS BiOp, p. 280.

⁷⁹ *Id.*, p. 282.

“Salvage and loss of juvenile Winter-Run Chinook have been shown to increase as exports increase.”⁸⁰

“For San Joaquin River-origin Spring-Run Chinook Salmon, salvage, and thus entrainment, is likely to be higher with greater exports.”⁸¹

“Under action alternatives 1-3, exports increase during the migration window for juvenile Fall-Run Chinook Salmon whereas exports under Alternative 4 are similar to the No Action Alternative. Salvage and loss of juvenile Chinook Salmon has been shown increase as exports increase. ... San Joaquin River-origin juvenile Fall-Run Chinook Salmon are likely to be entrained at the salvage facilities at higher rates under all action alternatives.”⁸²

“Under all of the action alternatives, exports increase during the migration window for juvenile California Central Valley Steelhead. Salvage of steelhead has been shown to increase as exports increase.”⁸³

“Higher exports may increase entrainment risk [for green sturgeon] for Alternative 1-3.”⁸⁴ “Under Alternatives 2 and 3, seasonal operations to D-1641 criteria may appreciably increase entrainment risk.”⁸⁵ It also admits: “greater OMR flow may reduce entrainment risk.”⁸⁶

The DEIS argues that for Alternative 1 “increased flow in the Sacramento River mainstem during spring” are likely to offset most of these acknowledged increases in entrainment risk.⁸⁷ However, Alternative 2 would require no increased Sacramento River mainstem flow increases.

2. Elimination of Fall X2 requirements would result in illegal take of listed smelt and adversely modify their critical habitat.

Alternative 2 would eliminate RPA 3, the Fall X2 requirement, from the 2008 Smelt Biological Opinion. This measure requires the release of water to maintain the low salinity zone in Suisun Bay during the fall of wet water years. Its purpose is to protect Delta smelt, whose production in spring and summer of wet water years is expected to be high.

When this RPA was first triggered in 2011, the summer-to-fall Delta smelt survival greatly increased, and there was a sharp, better-than-expected increase in the Fall Index. This was the last case of such an increase in Delta smelt survival. In the two years Fall X2 was

⁸⁰ DEIS, p. 5-69/269.

⁸¹ *Id.*

⁸² DEIS, p. 5-70/200.

⁸³ *Id.*

⁸⁴ DEIS, p. 5-71/201.

⁸⁵ *Id.*

⁸⁶ *Id.*

⁸⁷ See pp. 5-69 to 5-71/199-201. We analyze this assertion in discussing Alternative 1, below.

triggered, 2011 and 2017, production of longfin smelt was higher than expected, greatly helping the population of longfin smelt avoid the fate of Delta smelt.

Elimination of this effective measure will allow Reclamation to maintain the low salinity zone upstream of Suisun Bay in the Delta, where the low salinity habitat will be more constricted and warmer than it would be in Suisun Bay.

3. Removal of the San Joaquin River Inflow to Export ratio and elimination of the Head of Old River Barrier would result in illegal take of listed steelhead and adversely modify their critical habitat, and would adversely affect fall-run salmon.

Alternative 2 would eliminate RPA Action IV.2.1, San Joaquin River Inflow to Export Ratio, the requirement from the 2009 NMFS Biological Opinion that limits CVP and SWP exports in the south Delta in April and May based on the flow in the lower San Joaquin River. This RPA was designed to protect steelhead from the San Joaquin River watershed from being entrained at the Delta pumps or simply misdirected in their outmigration from river to ocean. It also protects steelhead from the Mokelumne River, and fall-run salmon from the San Joaquin watershed and the Mokelumne River. Many salmonids from the San Joaquin and Mokelumne watersheds have their peak outmigration in April and May of each year.

The DEIS acknowledges that entrainment of salmonids will increase with increased exports. However, in a bizarre twist of logic, the DEIS suggests that increased exports will increase outmigration success, noting: “Acoustic tagging studies indicate that when the Head of Old River Barrier is out, greater than 60% of fish that successfully migrate through the Delta have been salvaged at the TFCF and trucked to the western Delta (Buchanan et al. 2018).”⁸⁸

Similarly, the Proposed Action would eliminate the Head of Old River Barrier (HORB). The DEIS argues: “With no Head of Old River Barrier, more tagged fish approach the South Delta export facilities, but survival to Delta exit does not appear to be influenced by export rates (Buchanan et al. 2018, SST 2017).”⁸⁹ Here, Reclamation’s logic appears to be that since most salmonids do not survive to the ocean anyway, the Proposed Action can write off a measure that the DEIS acknowledges would reduce take (both from entrainment and from interfering with migration corridors) at a specific location.

In failing to disclose the impacts of the elimination of the San Joaquin River Inflow to Export Ratio and the Head of Old River Barrier, the DEIS violates NEPA.

⁸⁸ DEIS, p. 5-70/200. The DEIS makes a similar argument regarding steelhead on p. 5-71/201.

⁸⁹ DEIS, p. 1-11/29.

4. Elimination of RPA protections for Sacramento River operations would result in illegal take of listed salmon, steelhead and green sturgeon, and adversely modify their critical habitat.

Alternative 2 would eliminate NMFS RPA I.2.1-I.2.4 (Shasta Temperature Management). It would eliminate the 3250 minimum flow release requirement from Keswick Dam. There would be no minimum end-of-September Shasta storage requirement.

The absence of water temperature management under the existing RPA's would make water temperatures downstream of Keswick Reservoir worse. In particular, this would adversely affect winter-run Chinook salmon and the temperature of their only currently reliable habitat. As shown most notably in the drought years when there was "almost total mortality" of winter-run juveniles in 2014 and "substantial mortality" in 2015,⁹⁰ the RPA's already fail to protect winter-run Chinook salmon. It is unclear what compliance with Water Right Order 90-05 would look like in the absence of the NMFS RPA for Shasta Reservoir temperature management, but the SWRCB's enforcement of WRO 90-05 has been lax or non-existent, as described above. In addition, it is unclear that Reclamation intends to obey state laws regarding fishery protection going forward, as shown in statements by Reclamation officials to the SWRCB in 2018 meetings regarding the update of the Bay-Delta Plan and the Department of Interior's lawsuit against the state's adoption of lower San Joaquin River flow objectives as part of that update.⁹¹

The elimination of the 3250 cfs minimum flow downstream of Shasta would allow indiscriminate reed dewatering and episodes of large-scale mortality of all life stages of salmonids. Even with the existing flow requirement, there have been large scale mortality events, particularly of fall-run salmon eggs and juveniles dewatered or stranded in dry years when Reclamation has dropped flows in the fall as irrigation demand dropped.⁹²

The lax Shasta Reservoir storage requirements have already led to situations where storage was insufficient to support a cold water pool in a subsequent dry year. Combined with the stated project purpose of maximizing water deliveries, the absence of any end of September or end of April storage requirement in Shasta would increase the likelihood of reckless water deliveries in disregard of fish protections in future years. The mass fish mortality in the Sacramento River downstream of Keswick Reservoir in 2014 and 2015 was in part a result of over-delivery of water from Shasta Reservoir in 2012 and 2013, when the RPA for Shasta storage was in place. It is clear that protection of listed and non-listed salmonids and sturgeon downstream of Shasta and Keswick reservoirs requires more stringent carryover storage requirements for Shasta Reservoir. Complete abandonment of Shasta storage requirements, as

⁹⁰ SWRCB, Water Rights Order 2015-043, pp. 10-11. Available at:

https://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/2015/wro2015_0043.pdf

⁹¹ See Los Angeles Times, *U.S. Sues California over River Flow Standards*, March 28, 2019, available at

<https://www.latimes.com/local/lanow/la-me-water-flow-standards-lawsuit-20190328-story.html>

⁹² For examples, see "Fall Run Salmon Spawn 2018," Nov., 19, 2018, at <http://calsport.org/fisheriesblog/?p=2389>.

See also "2007-2009 Salmon Crash Revisited," May 11, 2018, esp. Figure 4. Available at:

<http://calsport.org/fisheriesblog/?p=2130>

proposed in Alternative 2 and all other alternatives analyzed in the DEIS,⁹³ is in itself sufficient to render all alternatives as non-compliant with the ESA, and thus, as unreasonable alternatives, deficient under NEPA.

5. Elimination of existing water temperature protections for the American River downstream of Folsom Reservoir would result in illegal take of listed steelhead and adversely modify their critical habitat, as well as in increased mortality of fall-run Chinook salmon.

The lower American River is widely acknowledged as temperature-impaired. Absent water temperature requirements for the lower American River, there were large-scale die-offs of fall-run Chinook salmon in 2001, 2002 and 2003.⁹⁴ These die-offs led to the adoption of the 2006 Flow Management Standard. The DEIS, Table 4.1-1 shows that the 2006 Flow Management Standard would govern operation of Folsom Reservoir and the lower American River.

The DEIS characterizes that 2006 Flow Management Standard as setting “a flow and temperature regime.”⁹⁵ However, Table 4.1-1 in Appendix D of the DEIS also shows that Alternative 2 would require “no temperature thresholds” for the lower American River downstream of Folsom Reservoir.

It thus appears that the intent for Alternative 2 is to limit application of the 2006 Flow Management Standard to the numeric flow requirements only, without the water temperature requirements. This would return to a situation that risks mass mortality, likely of listed steelhead as well as of salmon. Such elimination would violate the ESA, and render Alternative 2 an unreasonable and thus unlawful alternative under NEPA. Even if the table is inaccurate and the intent is to retain temperature thresholds for the lower American River, the lack of clarity on the issue violates the requirement under NEPA for clear disclosure. In addition, the lack of clarity is on this fundamental issue is symptomatic of the fact that Alternative 2 is not a serious alternative, but rather a straw proposal.

6. Reduction of flows in the Stanislaus River would result in illegal take of listed steelhead and adversely modify their critical habitat, as well as in reduced escapement of fall-run Chinook salmon.

Under Alternative 2, the flow requirement for the lower Stanislaus River would revert to the 1987 flow agreement between the Bureau of Reclamation and the California Department of Fish and Game (now Wildlife). This would provide about half of the required flow that is

⁹³ DEIS, Appendix D, Table 4.1-1.

⁹⁴ *The American River's Hidden Fish Kill: 181,000 Salmon Die Before Spawning*, available at: https://www.waterboards.ca.gov/waterrights/water_issues/programs/hearings/auburn_dam/exhibits/cspa_1a.pdf

⁹⁵ DEIS, Appendix D, p. 4-28/221.

currently required under NMFS Biological Opinion Actions III.1.2 and III.1.3 (commonly referred to as the 2E flows).⁹⁶

The Department of Fish and Wildlife Grand Tab shows the Stanislaus River with escapement of fall-run Chinook since 2009 substantially greater than that in the Merced and Tuolumne rivers, where required flows are substantially less.⁹⁷ Historically, the trout/steelhead fishery in the Stanislaus has been much more consistent than in the Tuolumne and Merced.

The DEIS makes no showing that reduction of flows in the Stanislaus River by half would protect ESA-listed steelhead or fall-run Chinook.

7. Alternative 2 must be dismissed as an infeasible, unlawful alternative under NEPA because it would result in illegal take of listed species and adversely modify their critical habitat.

Alternative 2 is not a valid alternative under NEPA because it would not comply with existing law. In the terms of the stated Purpose of the Proposed Action, it would not “address the status of listed species.” Alternative 2 is simply a straw man bookend for increasing water supply to make the Preferred Alternative (Alternative 1) appear as a compromise. A recirculated DEIS should eliminate the invalid Alternative 2 and analyze a suite of alternatives that are sufficiently distinct from one another and that comply with the law.

D. Alternative 3 is vaguely defined and unclear, and provides no analysis to show that its measures would be sufficient to avoid the take of Delta smelt and listed salmonids and the adverse effects to their critical habitat that elimination of the RPA’s will cause.

Alternative 3 would combine the flows in Alternative 2, Alternative 2’s elimination of RPA and other protections, and a suite of “habitat” and “intervention” actions that in concept would offset Alternative 2’s increased take of listed species and adverse modification of their critical habitat.

Alternative 3 fails on several levels.

First, most of the proposed mitigations in Alternative 3 lack sufficient definition to allow analysis. Some are wholly conceptual. Others are plans to study solutions. Absent definition, the effects of the measures in Alternative 3 on listed species and other resources are impossible to analyze.

⁹⁶ See DEIS Appendix F, pp. 11/16 (NAA) and 27-28/32/33 (Alternative 2). Given that the application of water years types are different and appear more favorable to water supply under the 1987 requirement, some years under Alternative 2 would likely require less than half of the flow required under the No Action Alternative.

⁹⁷ DFG Grand Tab, available at

GrandTab - CA.gov

Second, even where Alternative 3 defines proposed measures, the DEIS makes no effort to quantify their benefits. The DEIS contains no analysis that shows that the measures proposed under Alternative 3 would be sufficient to mitigate the effects of proposed CVP and SWP operations on listed species and other resources.

Third, some of the measures proposed under Alternative 3, such a predator reduction measures, are unproven as being effective.

The habitat and intervention components of Alternative 3 are the same as those under Alternative 1.⁹⁸ Table 3.4-1 (Components of Alternative 1) shows which of the habitat and intervention components of Alternatives 1 (and 3) the DEIS analyzes at a Program level under NEPA. It is, in fact, almost all of them.

Notably, the DEIS analyzes the following components on a program level, with few specific commitments:

- Spawning and rearing habitat restoration (multiple rivers)
- Small-screen program (multiple waters)
- Winter-run conservation hatchery production
- Adult rescue
- Juvenile trap and haul
- Drought temperature facility improvements (Folsom Reservoir)
- Lower San Joaquin habitat
- Predator hot spot removal
- Temperature management study (Stanislaus River)
- Sacramento Deepwater Ship Channel Food Study
- North Delta Food Subsidies/Colusa Basin Drain Study
- Suisun Marsh Roaring River Distribution System Food Subsidies Study
- Delta Cross Channel Gate Improvements
- Tracy Fish Facility Improvements
- Skinner Fish Facility Improvements
- Delta Fish Species Conservation Hatchery

Under NEPA, it may in the future be necessary to do project-specific analysis for measures that are not yet defined to a degree sufficient to analyze the specific impacts of construction and implementation. However, this is not an excuse to have such a vague project description that the relative effect of the project component is unknown.

Many of the components listed above are already-existing commitments that Reclamation hasn't gotten done. The DEIS provides no analysis to show that the outcome of these commitments in the future will be any different than the partial accomplishment of these commitments has been in the past. For instance, the DEIS states:

⁹⁸ DEIS, p. 1-2/20.

4.3.6.10 *Habitat Components*

DWR and Reclamation would continue to implement existing and ongoing restoration efforts that are underway but not complete, including:

- Coordination with water users: Reclamation would coordinate with water users to remove predator hot spots in the Bay-Delta, which includes minimizing lighting at fish screens and bridges and possibly removing abandoned structures; and
- Small Screen Program: Reclamation and DWR continue to work with existing authorities (Anadromous Fish Screen Program) to screen small diversions throughout Central Valley CVP and SWP streams and the Bay-Delta.⁹⁹

Other components that the DEIS analyzes programmatically yet lists as “habitat” or “intervention” actions are planning processes, such as a “Delta Smelt Summer-Fall Habitat action,” itself a shopping list of potential actions.¹⁰⁰ There is no reasonable way to quantify the effects of such actions based on these descriptions.

Some of the actions are also far less robust than their labels might suggest. For example, the “Skinner Fish Facility Improvements” appear to business as usual:

DWR would continue implementation of projects to reduce mortality of ESA-listed fish species. These measures that would be implemented include (1) electroshocking and relocating predators, (2) controlling aquatic weeds, (3) developing a fishing incentives or reward program for catching predators, and (4) operational changes when listed species are present.¹⁰¹

The planned “improvements” for the CVP’s Tracy Fish Collection Facility are only slightly more substantive. The DEIS promises to continue three predator reduction elements at that location. Beyond that, “Several additional TFCF [Tracy Fish Collection Facility] activities to improve salvage efficiency will be considered through adaptive management.” Despite the fact that CSPA and numerous other parties have been advocating for state of the art fish screening facilities at the CVP and SWP’s south Delta diversion for decades, the DEIS promises no more than to “consider” them.

The “juvenile trap and haul” element is equally vague, promising to install weirs at “key feasible locations.”¹⁰²

⁹⁹ DEIS, Appendix D, p. D4-74/267.

¹⁰⁰ DEIS, Appendix D, p. D4-73/266.

¹⁰¹ DEIS, Appendix D, p. D4-76/269.

¹⁰² DEIS, Appendix D1, p. D1-118/409.

Several of the proposed components are explicitly studies: the Sacramento Deepwater Ship Channel Food Study, the North Delta Food Subsidies/Colusa Basin Drain Study, and the Suisun Marsh Roaring River Distribution System Food Subsidies Study.

In short, the “habitat” and “intervention” actions of Alternative 3 are poorly defined or completely undefined, are plans to make plans, are existing actions often without proven results (such as predator reduction), and/or are contingent on future decisions. The DEIS makes no attempt to quantify their effects, makes no showing that they will actually be implemented, and makes no showing whatsoever that they will reliably protect listed species, specifically in the face of the elimination of RPA’s and other existing protections.

Thus, Alternative 3 fails under NEPA because it is inadequately defined and lacks an analysis to show that, in the terms of the stated Purpose of the Proposed Action, it would “address the status of listed species.”

E. Alternative 1 is insufficient to avoid take of Delta smelt and listed salmonids, will adversely affect critical habitat, and will not protect other public trust fishery resources consistent with applicable law.

Alternative 1, the Preferred Alternative, combines the Habitat and Intervention components of Alternative 3 with a series of modifications to the existing RPA’s that generally reduce flows compared to existing requirements (No Action Alternative). In some cases, Alternative 1 would eliminate existing RPA’s entirely (for instance, removal of the San Joaquin River Inflow to Export ratio and elimination of the Head of Old River Barrier), as in Alternative 2. In many cases, Alternative 1 retains the numeric requirements of the current RPA’s, but would apply them more selectively. This selectivity is based on real-time monitoring that shows fish presence, total salvage to date at the south Delta fish collection facilities, and other conditions, such as storms.

As a general matter, the DEIS proposes that weakening existing RPA protections will be mitigated by new measures, such as increasing habitat or increasing releases in some years from Shasta Reservoir into the Sacramento River. The DEIS offers no quantification of the ascribed mitigations. In addition, many proposed measures are open-ended and subject to further planning or evaluation, making quantification impossible.

1. The Sacramento River measures in Alternative 1 would result in illegal take of listed salmon, steelhead and green sturgeon, and adversely modify their critical habitat, and would not protect fall-run salmon.

The Preferred Alternative would eliminate the carryover storage targets in the current NMFS RPA’s for Sacramento River and Shasta Reservoir operations. This would subject listed species to take in subsequent years that were dry.

The Preferred Alternative would replace other aspects of those RPA’s with new requirements. These new requirements include:

- Evaluation of modifications to or replacement of the temperature control device at Shasta Dam; however, implementation of such modifications are conditioned on a raise in dam height,¹⁰³ a raise that would be contrary to California law;
- A process of “hedging” on temperature management in the Sacramento River downstream of Keswick Dam, trading benefits between different salmonid life stages for what would ostensibly be the greatest overall benefit.¹⁰⁴
- A requirement for spring pulse flows of “up to” 150 thousand acre-feet (TAF) in magnitude, dependent on May 1/April 1 storage in Shasta Reservoir.

As discussed below, these measures will not protect listed species and their critical habitat.

a. Elimination of the current NMFS RPA for carryover targets for Shasta storage, combined with the project purpose of “maximizing water deliveries,” would cause take of listed species in dry years.

The DEIS states that increasing pressure to deliver water is in direct conflict with environmental protection measures. This pressure has resulted in abandonment of carryover storage management to assure environmental protections and other uses over more than one year, except in the wettest water years:

Prior to the passage of the CVPIA in 1992, Reclamation was able to function as a multiyear project. This means that end of year reservoir storages were higher to allow for carryover storage into the next year to help protect against a drought. However, since the passage of CVPIA, the projects have come under increasing pressure to provide water for environmental protections, which has resulted in decreased ability to allocate water to CVP contractors that then has resulted in additional pressure being applied to Reclamation from contractors to allocate additional water. As a result, the reservoirs are drawn down lower more frequently to meet the additional demands. The combined effect of these actions is that the CVP now operates primarily as an annual project. Only in the wettest years is Reclamation able to carry over supplies into the following year for drought protection.¹⁰⁵

As discussed in Section III(A)(2) above, operation of the CVP as an “annual project” and the associated failure to use carryover storage for drought led to the mass mortality of juvenile winter-run salmon during the 2014 and 2015 drought years.¹⁰⁶ The only habitat currently available to winter-run salmon, the reaches of the Sacramento River downstream of Keswick Reservoir, reached temperatures that were lethal to winter-run eggs and alevins.

The DEIS further notes that NMFS, in 2017, determined that existing Shasta Reservoir storage targets were insufficient to protect fishery resources.

¹⁰³ DEIS, Appendix D1, p. D1-103/395.

¹⁰⁴ DEIS, Appendix D1, p. D1-13/ 304.

¹⁰⁵ *Id.*

¹⁰⁶ *See* DEIS, Appendix D1, p. D1-14/305 for description of winter-run mortality in 2014 and 2015.

On January 19, 2017, NMFS transmitted a proposed amendment to the 2011 amended RPA for Shasta Reservoir operations (RPA Action Suite I.2). The amendment included minimum storage targets between April 1 and May 31 between 3.5 MAF and 4.2 MAF, depending on water year type, and end of season storage between 1.9 MAF and 3.2 MAF, depending on water year type. Reclamation implemented a pilot program in 2017 for the draft amendment and modeled the draft amendment. The amendment's storage targets resulted in hundreds of thousands of acre-feet reduction in CVP water user deliveries.¹⁰⁷

As transmitted by NMFS in 2017 and acknowledged in the DEIS, management of carryover storage to protect listed species would require increases in carryover storage and reductions in water supply deliveries for Shasta Reservoir. However, faced with “conflicting objectives,” the Preferred Alternative absolutely prioritizes water supply over measures to protect listed species: “The adaptive management plan may include operational changes to the timing and magnitude of releases from Shasta Dam for the benefit of anadromous fish, *as long as there are no conflicts with current operational guidelines or adverse impacts to water supply reliability.*”¹⁰⁸

Elimination of the existing RPA carryover storage requirements in Shasta Reservoir, already identified by NMFS in 2017 as inadequate, would place winter-run salmon in the Sacramento River at even greater risk than under the No Action Alternative. The DEIS improperly includes the elimination of carryover storage requirements for Shasta Reservoir as component in the Preferred Alternative, and fails to disclose its impacts.

b. The current Temperature Control Device at Shasta Reservoir causes take of winter-run salmon, but Alternative 1 would make modification or repair of the Device dependent on an illegal raise of Shasta Dam.

The DEIS explicitly acknowledges that the existing Temperature Control Device (TCD) at Shasta Reservoir fails in conditions when storage in Shasta Reservoir is low:

The current Shasta TCD leaks, and when reservoir levels are below the shutters does not allow for selective withdrawal from the reservoir. Additional flexibility to meet temperature control could be provided with structural modifications. Implementation of the Shasta Dam Raise project would replace or modify the TCD.¹⁰⁹

The DEIS does not explicitly say whether a raise of Shasta Dam is part of the Proposed Action. However, Table 3.4-1, Components of Alternative 1, identifies “Shasta TCD Improvements” as part of Alternative 1 that the DEIS analyzes programmatically. And all discussion in the DEIS of a specific remediation for the TCD is within the context of raising Shasta Dam:

¹⁰⁷ DEIS, Appendix D1, p. D1-13/304.

¹⁰⁸ DEIS, Appendix D1, p. D1-19/310. Emphasis added.

¹⁰⁹ DEIS, Appendix D1-p. D1-103/394.

Depending upon the type of dam raise proposed, the TCD would be either modified or replaced by Reclamation. For relatively small raises of Shasta Dam, the existing TCD structure would be retrofitted to account for additional dam height, and to reduce leakage of warm water into the structure, but no new structure would be needed. However, modifications to, or replacement of, the existing structure are more likely to be necessary for increasingly higher dam raises.¹¹⁰

However, elsewhere in the body of the DEIS, the DEIS proposes only that as part of the Proposed Action, Reclamation will “study” the problem: “Reclamation would study the feasibility of infrastructure improvements to enhance TCD performance, including reducing the leakage of warm water into the structure.”¹¹¹

Clearly there is a major problem with the existing TCD that has already caused extensive mortality of listed species:

Currently, the Shasta TCD does not function adequately when reservoir levels are below the TCD shutters. A hindcast report issued in March 2015 by Reclamation (Reclamation 2015a) found that the Sacramento River temperature model used to model temperatures and operate the TCD slide gate to manage the cold water pool adequately represented the performance of the Shasta TCD before the side-gate was operational. However, it did a poor job at characterizing the TCD performance once the TCD side gate operation went into real-time effect. These model errors led to an excess expenditure of Shasta cold water pool in the summer of 2014, resulting in early depletion of cold water reserves and loss of temperature control in the river in September 2014. The condition still exists and is proposed to be addressed during the Shasta Dam Raise project (Reclamation 2015a).¹¹²

The DEIS fails to disclose whether a Shasta Dam raise is part of the Proposed Action. In that context, it also fails to disclose that the California Attorney General and others are litigating to stop a Shasta Dam raise on grounds that it would violate state law.¹¹³ This is clearly an issue of known controversy, an issue not raised as such in the DEIS. If in fact raising Shasta Dam is not part of the instant Proposed Action, the DEIS misleads the public by suggesting that the Proposed Action would actually implement improvements to the Shasta TCD that Reclamation would study.

c. The process of “hedging” that the DEIS describes for Sacramento River operations would illegally prioritize water supply reliability over avoiding take of listed species.

The DEIS describes “hedging” as follows:

¹¹⁰ DEIS, Appendix D1, p. D1-10/395.

¹¹¹ DEIS, p. 3-23/57.

¹¹² DEIS, Appendix D1, p. D1-105/396.

¹¹³ People of the State of California v. Westlands Water District, Complaint for Injunctive Relief and Petition for Writ of Mandate, Case no. 19287, Shasta County Superior Court, filed May 13, 2019.

Reclamation’s proposed action incorporates the concept of risk management, or what some refer to as “hedging”: a small certain loss now to reduce larger future risks. Examples of this include intentionally releasing small floods to avoid large ones, or conserving some storage and causing some immediate shortage to avoid deeper drought. For reservoirs for which cold water limits meeting downstream temperature and flow goals, there is a set of months, seasons and years for which expected and available water supply render meeting downstream targets unachievable, another set for which meeting temperature targets requires careful planning, and another set for which incoming fish population size is too small to warrant water use for temperature management under extreme drought conditions (Adams, 2017).¹¹⁴

As described above, under existing conditions the Sacramento River Temperature Task Group has no role in determining the quantity of water to be delivered to water contractors, the amount of higher temperature water from Whiskeytown Reservoir that will flow through the Spring Creek Powerhouse, or the timing of water released from Shasta Reservoir. Essentially, BOR tells the SRTTG how much water it will make available to meet temperature requirements, and the SRTTG then advises how best to use that water to protect fisheries.

The principle of “hedging” as described in the DEIS would take place completely within the limitations of the water allocation that Reclamation devotes to Sacramento River temperature management. If “expected and available water supply render[s] meeting downstream targets unachievable,” the SRTTG must decide which aspect of environmental protection to sacrifice.

These limitations by definition will adversely affect critical habitat for winter-run salmon. They will also likely affect critical habitat for other listed species, such as migration corridors for spring-run Chinook, steelhead and green sturgeon. These limitations will also create take of winter-run salmon, including adult, egg, alevin and likely juvenile life stages.

The DEIS does not disclose the impacts to listed species of the proposed process of “hedging.” Reclamation should correct this deficiency in a recirculated DEIS, and should also evaluate alternatives in which different water supply operations would better protect listed species and other public trust resources.

- d. Setting December 1 through end of February minimum flow releases from Keswick Reservoir as suggested in Alternative 1 could partially improve protection of fall-run Chinook redds and alevins in the Sacramento River, but the flow values are as yet not defined and would follow unknown flow requirements in October and November that Alternative 1 does not contemplate.**

In discussing fall and winter flows downstream of Keswick Reservoir, Alternative 1 contains an elaborate discussion of the tradeoffs between storage refill, cold water pool in the

¹¹⁴ DEIS, Appendix D1, p. D1-15/306.

following year, different scenarios for wet and dry falls, stranding late winter-run redds, and stranding fall-run redds.¹¹⁵

Appendix D, Table 4.1-1 shows defined minimum flow releases from Keswick Reservoir from December 1 through February 1 consistent with Table 3.4-2 as being part of the Preferred Alternative, with minimum flows for this annual time period ranging from 3250 cfs to 5000 cfs depending on end-of-September storage in Shasta Reservoir. However, a careful read of the text of the DEIS shows that the flow values in Table 3.4-2 are “example” flows; Reclamation will determine actual flows in the future, based on myriad factors:

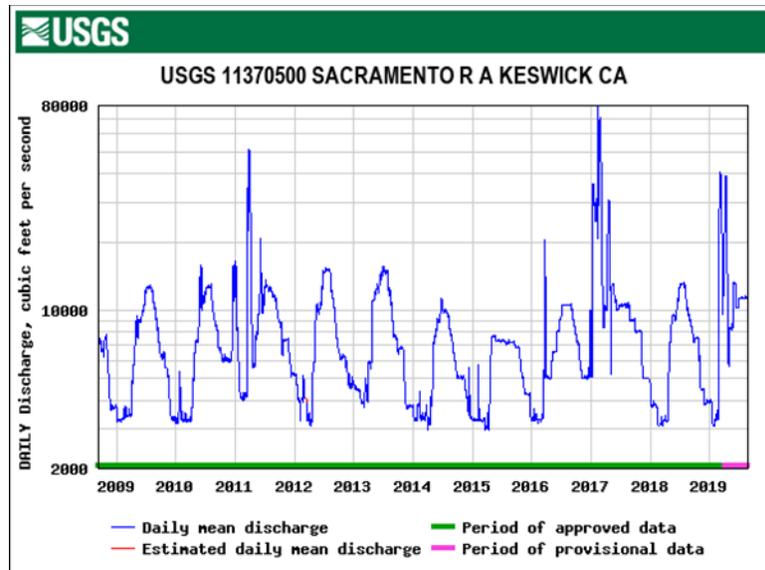
Demands by the wildlife refuges, upstream CVP contractors, and the Sacramento River Settlement Contractors in October result in Keswick Dam releases that are generally not maintained throughout the winter due to needs to store water for beneficial uses the following year. These releases result in some early fall Chinook redds being dewatered at winter base flows. If, based on the above analysis, Reclamation determines releases need to be reduced to rebuild storage, targets for winter base flows (December 1 through the end of February) from Keswick Dam would be set in October based on Shasta Reservoir end-of-September storage. These targets would be set based on end-of-September storage and the current hydrology after accounting for Winter-run Chinook Salmon redd stranding. Base flows would be set based on historical performance to accomplish improved refill capabilities for Shasta Reservoir to build coldwater pool for the following year. Table 3.4-2, Keswick Dam Example Release Schedule for End-of-September Storage, shows examples of possible Keswick Dam releases based on Shasta Reservoir storage condition; these would be refined through future modeling efforts as part of the seasonal operations planning.¹¹⁶

To understand the multiple contingencies and variables in this statement, it helps to call out each of its parts.

First, Reclamation would determine in any given year whether flows from October need to be reduced to rebuild storage. Reviewing the hydrographs for Keswick releases from 2009 to 2018, the answer would apparently always be that yes, flows need to be reduced:

¹¹⁵ DEIS, p. 3-22/56 ff.

¹¹⁶ DEIS, p. 3-22/56.



Except in years such as Water Year 2017 when there were flood releases in December through February, Reclamation has *always* reduced flow in this time period, particularly in January and February, to rebuild storage. So to start, Reclamation is likely to reduce flows from the “example” flow table in every year. It is not at all clear from the DEIS whether such reduction would occur at the beginning of the December-February time period, or whether Reclamation would reduce flow sometime within that time period (consistent with historical practice).

Next, Reclamation would set flow targets based on end-of-September storage, current hydrology, and real-time observation of winter-run redds. These targets would, further, be based on “historical performance” for Shasta refill. And they would “be refined through future modeling efforts.” Any of these factors, or all of them in combination, could influence the minimum flow value set for December-February in any given year.

To be clear, then, Table 3.4-2 does not show even the initial proposed December through February releases from Keswick Reservoir. It is an example of a schedule that Reclamation will define in the future based on a series of presently unquantified factors.

As notable as the vagueness of what the DEIS does say about December through February releases from Keswick Reservoir under Alternative 1 is what the DEIS does not say about the Preferred Alternative’s fall and early winter Keswick releases. The Preferred Alternative does not specify any proposed flow release requirements from Keswick in November, even though the DEIS acknowledges that demands on Shasta storage decrease after October.¹¹⁷ The Preferred Alternative apparently does not even contemplate a process for determining November flows.

The DEIS does not disclose how extending the water transfer window into October and November has the potential to cause flow fluctuations in the Sacramento River downstream of

¹¹⁷ *Id.*

Keswick, regardless of the minimum flow. The DEIS does not analyze any constraints that might modify or avoid impacts to ESA-listed or non-listed salmon from such fluctuations.

Because of its overly narrow statement of purpose (as discussed above), the Proposed Action does not consider alternative operations that would reduce impacts of flow reductions from October through February by reducing water supply deliveries either in the previous water year or in the subsequent water year.

Review of Keswick releases in the hydrographs shown in the figure above shows that requiring Reclamation to maintain minimum flow levels from December through February would be somewhat superior to historical practice in which Reclamation generally reduced releases from Keswick around the first of January. The Proposed Action thus identifies a real problem, but the proposed solution is utterly vague and contingent. It is not even clear whether Reclamation could reduce the established flows for December through February once they are set in any given year: “If the combined productivity of the remaining redds plus a conservative scenario for the following year is less than the productivity of maintaining releases, Reclamation would reduce releases to rebuild storage.”¹¹⁸

Reclamation should provide a clear description of proposed December-February flows downstream of Keswick Reservoir in a recirculated DEIS. Given the acknowledged drop in CVP water supply demands in November, Reclamation should also state how it proposes to address November flow requirements downstream of Keswick. The recirculated DEIS should include required flow values and the specific conditions under which Reclamation might seek to revise those values, either in any given year or in the long term.

e. The DEIS fails to disclose that optimizing marketable hydropower through the Spring Creek power plant would adversely affect fish in the Sacramento River downstream of Keswick Reservoir.

The DEIS describes operation of Spring Creek Powerhouse and generation from Shasta Dam under the Preferred Alternative as follows: “Under Alternative 1, Reclamation would operate the Shasta TCD to continue providing temperature management in accordance with CVPIA Section 3406(b)(6) while minimizing impacts on power generation.”¹¹⁹ Though “optimiz[ing] marketable power generation” is a project purpose, the DEIS does not describe the impacts that changes in power operations at Shasta Dam will have on water temperature and fishery resources downstream of Keswick Dam.¹²⁰

As described in Section III(A)(2)(c) of these comments above, and in Attachment 7 to these comments, water temperature of water imported from the Trinity River via Whiskeytown Reservoir and the Spring Creek Powerhouse can be six, seven or more degrees higher than water released from Shasta. It is reasonable to assume that optimizing marketable power generation

¹¹⁸ *Id.*

¹¹⁹ DEIS, p. 3-19/53.

¹²⁰ Equally, the DEIS does not analyze the impacts of “optimizing marketable power generation” at any other CVP and SWP reservoirs.

from Spring Creek and Shasta power facilities will change the timing and magnitude of power generation. Yet the DEIS makes no effort to describe the thermal or other impacts of such action. It is simply absent. Even if one assumed for the sake of argument that such changes would not violate applicable law, any increase in water temperatures stemming from power operations would create impacts in the Sacramento River downstream of Keswick Dam.

The DEIS must be recirculated so that it discloses the impacts to water temperature of changes in power operations in the proposed new operation of the CVP and SWP.

f. The spring pulse flows proposed in Alternative 1 are insufficient and uncertain in quantity and timing.

The Preferred Alternative proposes to release spring pulse flows in some cases: “Under Alternative 1, Reclamation would release spring pulse flows to help Spring-Run Chinook Salmon juvenile out-migration when the projected total May 1 Shasta Reservoir storage indicates a likelihood of sufficient coldwater to support summer coldwater pool management.”¹²¹ The decision to release such pulse flows is entirely contingent on the Proposed Action’s priority of water supply and power generation over protection of listed fish species and other fishery resources: “Reclamation would not make pulse flow releases during times that Shasta Reservoir is releasing flood flows or if the release would interfere with the ability to meet other anticipated demands on the reservoir.”¹²²

The DEIS does not state a clear threshold at which Reclamation would decide to release pulse flows: “Reclamation thinks that this volume is about 4 MAF, which is used as a surrogate for planning and analysis.”¹²³ Thus the DEIS promises benefits but does not make precise the conditions under which Reclamation will deliver the benefits.

In addition, the DEIS does not make precise the quantity of water that the pulse flow or flows would release: “Reclamation could make a spring pulse release of up to 150 TAF...”¹²⁴ So, Reclamation “could” make a release. But it might not. And Reclamation could release “up to 150 TAF.” In other words, Reclamation may make a pulse flow release of any amount greater than 0 AF up to 150 TAF. The DEIS makes no conditions, sideboards, or objective criteria for the size of the release.

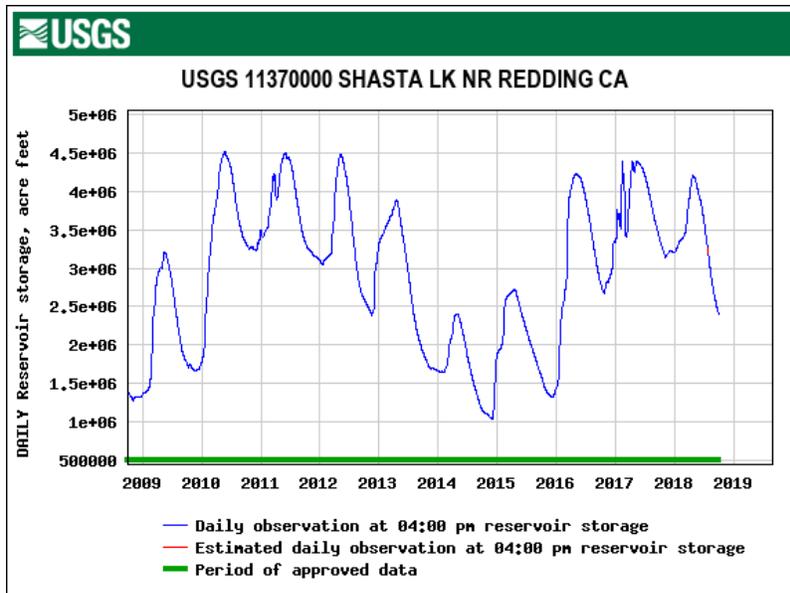
Consider the Shasta storage levels from the years 2009-2019 in the figure below, in combination with the previous figure of Keswick releases that shows when there are flood releases, to evaluate when a Shasta spring pulse release “could” happen under the Preferred Alternative.

¹²¹ DEIS, pp. 3-17 to 3-18/51-52.

¹²² DEIS, p. 3-18/52.

¹²³ *Id.*

¹²⁴ *Id.*



In 2010, 2011, 2012, 2016, 2017 and 2018, there was sufficient storage in Shasta Reservoir to meet the 4 MAF threshold. Though not shown, there was also sufficient storage in 2019. In 2011, 2017 and 2019 there were flood releases in the spring; thus, those years do not qualify. Thus, out of the 11-year period 2009-2019, the spring pulse flow component could have had effect in 2010, 2012, 2016 and 2018.

However, Figure 3.4-1 suggests that a 90% exceedance forecast will be used to predict whether storage in Shasta Reservoir will be sufficient to make the spring pulse flow release. It is likely that in 2016 and 2018, and perhaps in 2012, the 90% forecasted exceedance figure for May 1 Shasta storage would have been less than 4 MAF in March and April. So it is reasonable to assume that in 2016 and 2018, and probably in 2012, any spring pulse flow from Shasta Reservoir would have been either been less than 150 TAF, or would have been made entirely in May, or both.

Thus it appears that compared to the baseline, the spring pulse flow provision of Alternative 1 would have likely had full effect in one year (2010) out of the 2009-2019 period.

The Sacramento River downstream of major tributaries receives the benefits of natural flow pulses multiple times in most years. However, in many years, the upper primary salmon spawning reach of the Sacramento River directly downstream of Keswick Dam gets few pulses from November through March, when releases from Shasta and Keswick are limited to flood releases. Flow often increases from Keswick as water deliveries occur begin in April and ramp up in May, but a large proportion of these releases is diverted before it reaches the Delta.

An irregular, contingent, and modest spring pulse flow release such as that discussed in the DEIS as a component of Alternative 1 is not sufficient to mitigate the impacts of water storage operations in Shasta Reservoir. Salmon need flow pulses from Shasta/Keswick, especially in non-wet years, in the fall, winter, and spring. It is essential for wild and hatchery

smolt survival to provide such releases and time them to coincide with natural pulses from downstream tributaries. The requirement for release in all months of 55% of the unimpaired flow at Shasta Reservoir, proposed as a component of Alternative 4, would help meet this aspect of the need for pulse flows in fall, winter and spring.

In sum, the spring pulse flows from Keswick Dam that the DEIS evaluates are too unclear and contingent to reasonably evaluate. They would apply in a very limited number of years. Reclamation should evaluate clear, specific, and enforceable options for pulse flow releases from Keswick Dam in a recirculated EIS.

2. The elimination and/or modification of RPA's for Delta operations will further devastate Delta fisheries.

The DEIS summarizes the changes in Old and Middle River (OMR) flow management under the Preferred Alternative in this way:

OMR reverse flow provides a surrogate indicator for how export pumping, inflow and the spring-neap tidal cycle influence hydrodynamics in the south Delta. Reverse OMR flow (negative values of OMR) indicates a net flow from the Sacramento River toward the export pumps. The RPAs in 2008/2009 BOs added OMR reverse flow criteria to protect listed fish species in the Delta from entrainment into channels that lead to the export pumps. Reclamation would proposed [sic] Real-Time OMR Protections for Delta Smelt and salmonids, including modifications to FWS BO Actions 2 and 3 along with NMFS BO IV.2.3 to incorporate real-time monitoring of fish distribution, hydrodynamic models, and entrainment models into the decision support for the management of OMR, as follows:

The Smelt Working Group (SWG) and Delta Operations for Salmon and Sturgeon (DOSS) would inform Reclamation when fish species have entered the portion of the Delta that is within the influence of the Pumping Plants.

1. At that time, Reclamation would conduct a risk assessment based on hydrodynamic models, entrainment models, and the monitoring of fish distribution to determine whether the pumps were at risk of entraining fish over the incidental take limit.
2. If Reclamation's risk assessment indicates low risk to the species, pumping would continue. If the risk assessment indicates high risk of exceeding the take limit, pumping would be reduced until the risk lowers.
3. Once 50% loss has been reached in a given year/season, Reclamation would begin operating to the density dependent triggers as identified in the 2009 NMFS BO, as amended.¹²⁵

¹²⁵ DEIS, Appendix D1, p. D1-46/337.

This proposed revision to the OMR RPA's is at the center of the proposed changes in the Preferred Alternative, and would likely be its single most devastating component in its impact to fisheries.

a. The elimination and/or modification of RPA's for Delta operations will further devastate Delta smelt.

At current levels of Delta smelt abundance, the risk to Delta smelt from CVP and SWP operations is always high. Abundance of Delta smelt is too low to base OMR implementation on monitoring or salvage, or some other "risk assessment." Even at higher abundance, larval smelt are too small to salvage and generally go undetected by monitoring. The previous RPA's assumed larval smelt to be present based on life-history timing. The Preferred Alternative would eliminate that basic level of protection. As noted above, Delta smelt are at an all-time low level of abundance. It is unfathomable that Reclamation is contemplating reducing protection for this species, unless the purpose is to drive the species to extinction.

Real-time management by the Smelt Working Group has been ineffective.¹²⁶ Higher exports will affect Delta smelt generally and during flow pulses in the form of higher entrainment, reduced transport, misdirected flows, higher water temperatures, and poor food production. The nearly trivial and potentially detrimental habitat actions that the Smelt Working Group would have available to it under the Preferred Alternative would have little benefit to pelagic habitat, and would be further subject to lower outflow and higher exports under the Preferred Alternative. The lower outflow that Alternative 1 would allow in multiple circumstances compared to the existing RPA's would mean lower net flows to the Bay and also lower net flows in the north, central, and west Delta channels of the Sacramento and San Joaquin rivers; these are the low salinity habitats of Delta smelt, especially in drier years. Real-time management under these conditions offers little to decide.

As described above, Alternative 1 would eliminate Fall X2 requirements currently required in Wet and Above Normal years. Alternative 1 would create a Delta Smelt Habitat Action with a number of actions that, like many of the other actions contemplated in Alternative 1, are contingent and subject to future planning and evaluation. These *could* include (without commitments) replacing Fall X2 with a requirement to maintain X2 at the 80km mark upstream, but with a series of off-ramps based in large part on real-time monitoring.¹²⁷ To ostensibly offset the loss of habitat for Delta smelt from eliminating Fall X2 requirements in wetter water years, the DEIS proposes an option (not a commitment) to more frequently open the Suisun Marsh Salinity Control Gates (SMSCG) in June-October. This possible action in particular would likely increase the impacts of eliminating the Fall X2 requirements. Moving more Delta freshwater outflow into the Marsh would increase eastern Suisun Bay salinity and move the low salinity zone eastward. More Delta smelt might move into the Marsh, but episodic opening and closing of the gates could trap them in the Marsh and subject them to sporadic harsher salinity

¹²⁶ See for example "April 20, 2015 Smelt Working Group" at <http://calsport.org/fisheriesblog/?p=176>. For the general condition of smelt in the last decade, see also Section II(A) above.

¹²⁷ DEIS, p. 3-37 and 3-38/71-72.

and water temperature conditions. Smelt in the low salinity zone in east Suisun Bay and the San Joaquin channel of the west Delta would suffer with less freshwater inflow.

b. The elimination and/or modification of RPA's for Delta operations will further devastate longfin Delta smelt.

The DEIS acknowledges potential increased entrainment risk to longfin smelt under the Preferred Alternative. However, the DEIS offers the soporific that “there is some uncertainty in the extent to which outflow changes of the magnitude possible with water operations would change abundance relative to outflow changes attributable to hydrological conditions (i.e., wetter vs. drier years).”¹²⁸ Since longfin smelt abundance may be more heavily influenced by conditions in a drier year than by the changes under the Preferred Alternative, this would apparently make the impact of the changes less important. More on point, lower outflow caused by increased exports would harm longfin smelt, notwithstanding the number actually entrained.

c. The elimination and/or modification of RPA's for Delta operations will further devastate San Joaquin River fall-run Chinook salmon and steelhead.

The DEIS dismisses San Joaquin watershed fall-run Chinook with the observation; "San Joaquin River-origin juvenile Fall-Run Chinook Salmon are likely to be entrained at the salvage facilities at higher rates under all action alternatives."¹²⁹ San Joaquin watershed salmonids have been decimated by CVP and SWP Delta operations for decades, misdirected toward the Delta pumps through Old River and numerous other south Delta channels. The Vernalis Adaptive Management Program recognized this impact and limited CVP and SWP pumping for one month in April and May; this small but temporally inadequate improvement was abandoned after 2011. Since then, Action IV.2.1 in the 2009 NMFS Biological Opinion, the San Joaquin River Inflow to Export Ratio, has been the only Delta flow condition that has marginally protected San Joaquin salmon from CVP and SWP pumping, as a by-product of a measure designed to protect steelhead. The Preferred Alternative proposes to eliminate the San Joaquin River Inflow to Export Ratio. As noted above, the Preferred Alternative also proposes to eliminate the Head of Old River Barrier, a feature that in the California WaterFix hearings Reclamation proposed to replace with a permanent structure.

Reclamation's proposed treatment of San Joaquin fall-run salmon is the essence of Reclamation's approach in this DEIS. The protections in the SWRCB's Decision 1641 were inadequate to protect fish in the Delta. This created the need for the 2008 and 2009 Biological Opinions and RPA's. The RPA's triaged some of the worst problems, but were also inadequate to protect fish in the Delta. Now, failing to acknowledge the extent of the problem and the extent to which the CVP and SWP have created the problem,¹³⁰ Reclamation throws up its hands and

¹²⁸ DEIS, p. 5-72/202.

¹²⁹ DEIS, p. 5-70/200.

¹³⁰ See discussion of cumulative effects, *infra*.

writes off fisheries with palliatives and excuses, such as the notion that salvage will save a few.¹³¹

d. The elimination and/or modification of RPA's for Delta operations will devastate Sacramento River Chinook salmon and steelhead.

The DEIS conceals impacts of the Preferred Alternative to Sacramento River Chinook (winter-run, spring-run and fall-run) and Sacramento River steelhead by arguing for each species that “only a small proportion of the total population is lost at the export facilities.”¹³²

This description downplays the actual effect of negative OMR flows and export pumping, which is far greater than the direct effect of entrainment. The chance of survival for any salmon that negative OMR flows draw into the central Delta (through the Delta Cross Channel, Georgiana Slough or other route) is far smaller than the chance of survival of outmigrants that stay in the Sacramento River and thence enter Suisun Bay. This was a premise of the 2009 NMFS BiOp.

The DEIS suggests that increased flow in the Sacramento River will more than offset the impacts of increased pumping at the CVP and SWP south Delta facilities:

Increased flow in the Sacramento River mainstem would occur under all action alternatives and higher flow has been shown to increase through-Delta survival of juvenile Chinook Salmon and reduce routing into the interior Delta at Georgiana Slough. The Sacramento River mainstem is the primary migration route for juvenile Winter-Run Chinook Salmon, thus a much greater proportion of the population would be exposed to the positive effects of greater Sacramento River flows than would be exposed to the negative effects of increased exports.¹³³

It is unclear what the DEIS is referring to in the phrase “increased flow in the Sacramento River.”

If this refers to increased releases in December-February due to possible increased minimum releases from Keswick under Alternative 1, or to less restrictions on exports during that time period, then winter-run salmon in particular would be more likely drawn into the central Delta. Prior to the 2009 NMFS BiOp, salvage of migrating winter-run juveniles was high during periods of high exports in December-February; this was a primary reason that the Biological Opinion required OMR restrictions for salmon. Winter-run juveniles emigrate primarily during winter in pulsed flows. Under the Preferred Alternative, during winter

¹³¹ DEIS, p. 5-70/200. One could consider this the Merle Haggard approach to fisheries: “Never did have nothin’ I’ve got nothin’ much to lose.” (Truck Driver Blues).

¹³² DEIS, p. 5-69 and 5-70/199 and 200. There is similar language for each life history of Sacramento River salmon and for Sacramento river steelhead.

¹³³ DEIS, p. 5-69/199. There is similar language for other life histories of Sacramento River salmon and for Sacramento river steelhead.

“increased flow,” winter-run would be subject to greater risks due to higher exports and lower outflow.

If the above-referenced “increased flow in the Sacramento River” refers to the fact that Reclamation simply plans to release more water from storage for export at any time of year, any benefit is likely outweighed by the movement of more salmon (regardless of life history) into the Central Delta.

If the above-referenced “increased flow in the Sacramento River” refers to the contemplated spring pulse flows under Alternative 1, the benefit of this would be limited to those few years in which these spring pulse flows actually occurred, as discussed above.

The statement that “a much greater proportion of the population would be exposed to the positive effects of greater Sacramento River flows than would be exposed to the negative effects of increased exports” contains a basic fallacy. A small percentage of salmonids born in the Sacramento River system survive to reach the Delta. While flows upstream do in fact affect more fish than Delta operations, this discounts the fact that the fish that make it to the Delta have already been reduced from those born by as much as 90% in a good year to 99% or more in a bad year.

Alternative 1 would specifically eliminate export limitations during storms. Juvenile salmonids migrate downstream during storms. Eliminating protections during storms will attract high numbers of salmonids into the central Delta. This would be especially problematic in fall and early winter of drier years.

In addition to increasing exports, Alternative 1 would also allow opening of the Delta Cross Channel gates more frequently in the winter and spring. This will increase movement of Sacramento juvenile salmon, steelhead, and sturgeon through the DCC and expose them to even higher exports. From a perspective of protecting migrating fish, it does not make sense to promote increased flow in the Sacramento River only to direct them into the central Delta.

Reclamation should recirculate a DEIS that analyzes alternatives that would protect salmon and steelhead from CVP and SWP Delta operations.

F. Alternative 4 could be partly sufficient to avoid take of Delta smelt and listed salmonids, but as written could adversely affect critical habitat and would not protect other public trust fishery resources consistent with applicable law.

The DEIS describes Alternative 4 as follows:

Scoping comments proposed meeting a flow objective of 55% of unimpaired flows year round to mimic the natural hydrograph. However, a 55% requirement following the natural hydrograph results in high releases during winter and spring months, which constrain Reclamation’s ability to meet cold water pool storage targets. Therefore, the flow objectives cannot be met in all conditions. For example, a flow action would not be

taken in drier years to ensure cold water pool storage in reservoirs. During drier hydrologic conditions when the flow objectives are not met, Reclamation and DWR would operate the CVP and SWP to follow the operational objectives described in Alternative 1 and maintain the positive OMR. This operational regime would last from March through February, and the flow objectives would resume in the following March.¹³⁴

Alternative 4 of the DEIS has the relative merit of at least trying to evaluate the SWRCB's July 2018 *Framework for the Sacramento/Delta Update to the Bay-Delta Plan*.¹³⁵ It evaluates a requirement that CVP and SWP reservoirs upstream of the Delta (excluding the Friant Division) release 55% of the unimpaired flow in all months. However, Reclamation proposes to waive this requirement in years when there would be what Reclamation considers it necessary to "balance this operation with the need to preserve the coldwater pool."¹³⁶ In addition, the 55% requirement applies only to CVP and SWP reservoirs, unlike the SWRCB's *Framework* document.

Implied in Alternative 4 are a host of decisions that the DEIS does not spell out. For example, the threshold(s) at which the Alternative would waive the 55% flow requirement are unclear. It is also unclear if such waiver would be facility-by-facility or across the Board. Equally unclear is how specifically Reclamation would divide responsibility between the CVP and SWP; the modeling that the DEIS reports shows that the 55% requirement would be waived about 10% of the time at Shasta but 35% of the time at the SWP's Oroville Reservoir and up to 60% of the time at Folsom Reservoir.¹³⁷

Alternative 4 also includes restrictions on Delta operations that are as stringent as or more stringent than those under the No Action Alternative. Adoption of these measures would be an improvement over existing requirements.¹³⁸

However, despite the partial effort of Alternative 4 to evaluate flow requirements consistent with the SWRCB's *Framework*, there are elements of Alternative 4 that would render it ineffective in protecting listed species. First among these is the absence of any carryover storage requirements, particularly at Shasta: Reclamation or DWR could draw down their reservoirs to meet both existing demands and instream flow requirements, increasing the risk of waivers in following years. Failure to include carryover storage in the ostensibly most environmentally protective alternative means that none of the action alternatives contains any carryover storage requirement for CVP and SWP project reservoirs. New Melones operation under Alternative 4 would also be reduced to the proposed operation under Alternative 1, which reduces Wet year and Above Normal year flow requirements by one water-year type from the existing RPA requirements and ignores the SWRCB's recently adopted flow objectives for the San Joaquin River in the Bay-Delta Plan. Finally, the SWRCB's 2010 *Development of Flow*

¹³⁴ DEIS, Appendix D, p. 4-89/282.

¹³⁵ *Framework for the Sacramento/Delta Update to the Bay-Delta Plan, op. cit.*

¹³⁶ DEIS, p. 1-2/20.

¹³⁷ DEIS, Appendix D, pp. 4-91 and 4-92/284 and 285.

¹³⁸ See DEIS, Appendix D, Table 4.1-1 and Appendix F, pp. 36 ff.

*Criteria for the Sacramento-San Joaquin Delta Ecosystem*¹³⁹ suggests that a requirement for the release 55% of the unimpaired flow would not sufficiently protect listed and non-listed species.

In addition, similar to the description of the other alternatives in the DEIS, the description of Alternative 4 lacks clarity and detail, and can only be partially gleaned by reviewing multiple sections and appendices of the document. Reclamation should include a revised Alternative 4 in a recirculated DEIS that corrects the substantive shortcomings noted here and that provides sufficiently clarity and detail to support informed evaluation and decision making.

IV. The cumulative effects analysis in the DEIS fails to consider the cumulative effect of previous CVP and SWP operations.

The Council on Environmental Quality defines cumulative effects as the impacts on the environment which result from “the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. *Cumulative* impacts can result from individually minor but collectively significant actions taking place over a period of time.”¹⁴⁰

The cumulative effects analysis in the DEIS fails to consider the cumulative effect of past actions of the CVP and SWP on the existing environment. Rather, as described in DEIS Appendix Y, the DEIS considers only actions *other than previous CVP and SWP operations* that may interact with future CVP and SWP operations under the Proposed Action.¹⁴¹

This methodology leads to a degraded baseline against which the DEIS compares the incremental differences among project alternatives. This methodology was definitively rejected in *American Rivers v. Federal Energy Regulatory Commission*, 895 F.3d 32, 101 Fed.R.Serv.3d (2018), not only for NEPA but also for the ESA. The court held that a Biological Opinion failed because it “did not ‘incorporate degraded baseline conditions into its jeopardy analysis.’” *Id.* at 46. “[A]ttributing ongoing project impacts to the ‘baseline’ and excluding those impacts from the jeopardy analysis does not provide an adequate jeopardy analysis. The Opinion’s jeopardy analysis is arbitrary in failing to account for the impact of continued operations of the existing dams.” *Id.* at 47.

The same ruling makes clear that the same deficiency is unlawful under NEPA:

[T]he Service’s failure to factor the damage already wrought by the construction of dams into the cumulative impacts analysis fatally infected this aspect of the Commission’s NEPA decision as well. The Commission gave scant attention to those past actions that had led to and were perpetuating the Coosa River’s heavily damaged and fragile ecosystem. Nor did it offer any substantive analysis of how the present impacts of those past actions would combine and interact with the added impacts of the 30–year licensing

¹³⁹ *Op. cit.*

¹⁴⁰ 40 C.F.R. § 1508.7.

¹⁴¹ DEIS, Appendix Y, p. Y1/683, Table Y-1.

decision. The Commission's cumulative impact analysis left out critical parts of the equation and, as a result, fell far short of the NEPA mark.

Id. at 54.

Reclamation must issue recirculated DEIS that accurately describes past operations of the CVP and the SWP as part of the cumulative impact of project operations under the Proposed Action.

V. The Proposed Action Would Violate the Central Valley Project Improvement Act.

The Central Valley Project Improvement Act (CVPIA) made protection of fishery and other environmental resources an equal purpose of the Central Valley Project in relation to provision of water supply and other developmental purposes.¹⁴² The DEIS's stated purpose of maximizing water supply deliveries conflicts with this broad mandate.

More specifically, the DEIS states:

Reclamation would operate in accordance with its obligations under the CVPIA. This includes exercising discretion to take actions under CVPIA 3406 (b)(2).

The Secretary of Interior may make water available for other purposes if the Secretary determines that the 800,000 AF identified in 3406(b)(2) is not needed to fulfill the purposes of Section 3406.¹⁴³

This aspect of the Proposed Action would allow the Secretary of the Interior complete discretion to appropriate water designated by Congress for environmental protection and re-purpose it for water supply. Such discretion would unlawfully violate the express intent of Congress.

Reclamation should revise the Proposed Action in a recirculated DEIS so that it is consistent with the legal requirements of the CVPIA.

VI. The DEIS's Economic Analysis fails to use best economic practices, is seriously deficient, incomplete, biased and blatantly misleading. The foundation of the Economic Analysis is fatally flawed and based upon unsupportable conclusions.

Increased water supplies under Alternative 1 are itemized and economically evaluated in the DEIS. The DEIS also concludes that population of salmon along the southern Oregon and northern California coast would be higher under Alternative 1 and that consequently, commercial and recreational ocean harvest could potentially be increased leading to increased revenues.¹⁴⁴

¹⁴² U.S.C. Title XXXIV, Sections 3402 and 3406.

¹⁴³ DEIS, p. 3-3/37.

¹⁴⁴ DEIS, p. 5-94/224.

This is an unwarranted and unsupportable conclusion that defies more than three decades of scientific investigation and myriad administrative proceedings. These include CalFed, Delta Vision, BDCP, AFRP, numerous state and regional water board water rights and water quality hearings and orders, water quality control plans, multiple biological opinions, an array of adaptive management workgroups, innumerable environmental review documents, extensive habitat restoration efforts, etc., as well as the comprehensive hearings that led to the SWRCB's 2010 Flow Report and CDFW's Quantifiable Goals and Flows reports. The only constants throughout this checkered history is the continued degradation of fisheries and associated aquatic ecosystems and the diversion of more than half of unimpaired flow to consumptive uses. There is virtually nothing proposed in Alternative 1 that hasn't already been undertaken, committed to or required by law. The conclusion that additional diversions of water and reduced Delta outflow will somehow increase fisheries is laughable on its face.

A. The DEIS only monetizes the consumptive and power uses of water.

The DEIS provides detailed assessments of the effects of the Project and various alternatives on the consumptive uses of water: i.e., agriculture, M&I, power production, water transfers and regional economies. It quantifies changes in irrigated farmland and jobs from the various alternatives. With respect to regional economics, it states:

This impact assessment is based on the technical analysis documented in Appendix Q, *Regional Economics Technical Appendix*, which includes additional information on regional economics and technical analysis of the effects of each alternative. The analysis is based on results of several models: Statewide Agricultural Production (SWAP) model, which estimates economic effects on agriculture associated with changes in CVP and SWP deliveries; California Water Economics Spreadsheet Tool (CWEST), which estimates economic effects on M&I users from changes in CVP and SWP deliveries; and Impact Analysis for Planning (IMPLAN) model, which produces total economic effects.¹⁴⁵

The results show that the Proposed Action is largely beneficial for consumptive uses of water. For example, annual M&I water supply costs under Alternative 1 compared to the No Action Alternative would be reduced by \$30.1 million, while annual water supply costs of Alternative 4 compared with the No Action Alternative would increase by \$22.6 million.¹⁴⁶ Annual agricultural water supply costs under Alternative 1 compared to the No Action Alternative would be reduced by \$50 million, while annual agricultural water supply costs of Alternative 4 compared to the No Action Alternative would increase by \$33 million.¹⁴⁷ Similarly, annual water supply costs to Southern California under Alternative 1 compared to the No Action Alternative would decrease by \$25.6 million, while annual water supply costs under Alternative 4 compared to the No Action Alternative would increase by \$16.3 million.¹⁴⁸

¹⁴⁵ DEIS, p. 5-90/220.

¹⁴⁶ DEIS, Table 5.11-1, p. 5-91/221.

¹⁴⁷ DEIS, Table 5.11-3, p. 5-93/223.

¹⁴⁸ DEIS, Table 5.12-1, p. 5-96/226.

In contrast, there is no detailed analysis for fisheries and their supported economy. The DEIS acknowledges that the alternatives could change the salmon population. However, population changes to the primary commercial, sport and tribal fall-run Chinook salmon fishery are not projected in the EIS. The DEIS only presents a qualitative analysis of potential changes in socioeconomic factors under the alternatives.¹⁴⁹ And the qualitative assessment is that fish numbers will increase, and that consequently the economic impacts of Alternative 1 will be beneficial to the regional economy.¹⁵⁰ This conclusion is disingenuous, unsupportable and flies in the face of historical reality.

B. The DEIS inexplicably and improperly excludes the universe of non-developmental and passive uses of water.

While the authors of the DEIS expended considerable effort to quantify and monetize the Proposed Project's effects on water supply and power, they ignored the fact that non-use values are considered public goods that can be enjoyed by millions of people. A discussion and analysis of non-use values is crucial to an informed economic assessment. For example, existence value is a non-use value defined as benefits received from simply knowing that a resource exists and ecosystems provide a vast suite of goods and services, generally referred to as ecosystem services. In fact, the words non-use benefits, non-market valuation, existence benefits, ecosystem services, contingent valuation and cost benefit analysis do not appear in the DEIS or its appendices.

Ecosystem goods and services are frequently viewed as free benefits to society or public goods. They include habitat and diversity, watershed services, nutrient cycling, carbon storage, scenic landscapes, etc. Lacking a formal market, these natural assets are traditionally absent from society's balance sheet and are generally overlooked in decision-making. For example, inadequate instream flow reduces dilution and leads to increased concentration of pollutants to harmful levels. Inadequate flows allowed the Asian clam (*Corbicula fluminea*) to become established and expand into the Delta, devastating the aquatic food supply and serving as a pathway for selenium to bioaccumulate in fish to unsafe levels. Inadequate flows have led to the serious proliferation of aquatic plants like the waterweeds *E. densa* and water hyacinth and harmful algal blooms (HAB) like *Microcystis* that pose threats to public safety. All of these affect pocketbooks and public trust resources, and all have significant economic consequences. An array of accepted methods and best practices has been developed to evaluate ecosystem goods and services. Unfortunately, these methods and practices were ignored in the DEIS's economic assessment.

In 2005, the National Research Council of the National Academies issued an extensive 291-page peer reviewed report titled *Valuing Ecosystem Services: Toward Better Environmental Decision-Making* that discussed the value of natural capital and the principles and practices of valuing the services of aquatic and related terrestrial ecosystems. It outlined the major

¹⁴⁹ DEIS Appendix Q, p. Q-17/17.

¹⁵⁰ DEIS, p. 5-94/224.

nonmarket methods currently available for estimating monetary values of ecosystem services. Among the report's conclusions, it recommended that, "Policymakers should use economic valuation as a means of evaluating the trade-offs involved in environmental policy choices; that is, an assessment of benefits and costs should be part of the information set available to policymakers in choosing among alternatives" and that "both use and nonuse values should be included."¹⁵¹

The federal *Principles and Requirements for Federal Investments in Water Resources* (P&R) helps federal agencies like BOR plan water-related projects. The document observes that federal investments in water resources strive to maximize public benefits and that public benefits encompass environmental, economic and social goals, include monetary and non-monetary effects and allow for the consideration of both quantified and unquantified measures. It recommends an ecosystem approach to capture all effects of a project.¹⁵² The *Interagency Guidelines* (PR&G) are to be used in conjunction with the P&R. In evaluating project alternatives, agencies must evaluate ecosystem services, which include provision services, regulating services and cultural services. Cultural services include recreation, aesthetic, spiritual, existence and option values. It refers to Office of Management and Budget circulars for discussion on opportunity costs and willingness to pay concepts of value.¹⁵³ The DEIS ignores these federal principles and guidelines.

The goal of the Department of the Interior's (DOI) *Agency Specific Procedures For Implementing the Council on Environmental Quality's Principles, Requirements, and Guidelines for Water and Land Related Resources Implementation Studies* is to ensure that DOI offices consistently apply a common framework for analyzing a diverse range of projects and actions. It requires an ecosystem approach that captures use and non-use values. Economic assessments should include all components of total economic value, including both use and non-use values. Non-use values include existence and bequest values and methods for estimating them include contingent valuation and conjoint analysis.¹⁵⁴ The DEIS ignores DOI guidelines.

BOR's Technical Services Center in Denver Colorado contains a wealth of information on economic guidelines and reports on evaluating ecosystem services and non-use benefits.¹⁵⁵ These include: *Contingent Valuation Method: An Introduction*,¹⁵⁶ *Economic Nonmarket*

¹⁵¹ National Research Council, *Valuing Ecosystem Services*, 2005, pp. 6, 8-10. The reports can be found at: <https://www.nap.edu/read/11139/chapter/1#i>.

¹⁵² *Principles and Requirements for Federal Investments in Water Resources*, March 2013, pp. 3, 5, 6. https://obamawhitehouse.archives.gov/sites/default/files/final_principles_and_requirements_march_2013.pdf

¹⁵³ *Interagency Guidelines*, December 2014, pp. 21-22. https://obamawhitehouse.archives.gov/sites/default/files/docs/prg_interagency_guidelines_12_2014.pdf

¹⁵⁴ DOI, *Agency Specific Procedures For Implementing the Council on Environmental Quality's Principles, Requirements, and Guidelines for Water and Land Related Resources Implementation Studies* 2015, pp. 35-43. https://www.doi.gov/sites/doi.gov/files/elips/documents/707_dm.pdf

¹⁵⁵ Reclamation, Technical Service Center. <https://www.usbr.gov/tsc/techreferences/ecoreports.html>

¹⁵⁶ *Contingent Valuation Method: An Introduction*, 2000. https://www.usbr.gov/tsc/techreferences/economics/ContingentValuationMethodTM-EC-2000-03_2000.pdf

Valuation of Instream Flows,¹⁵⁷ *Estimated Fishery Economic Use Values*,¹⁵⁸ *Handbook for Estimating the Economic Value of Changes in Fish and Wildlife Resources*,¹⁵⁹ *Introduction to Conjoint Analysis for Valuing Ecosystem Amenities*,¹⁶⁰ and *Using Contingent Valuation and Benefit Transfer to Evaluate Water Supply Improvements Benefits*.¹⁶¹

EPA has developed two comprehensive guidelines for preparing economic analyses and valuing ecosystem services. The first, *Guidelines for Preparing Economic Analyses*, extensively discusses accepted methods, economic tools and best practices for valuing non-use values (bequest and existence values and paternalistic altruism).¹⁶² The second, *Valuing the Protection of Ecological Systems and Services*, identifies and describes accepted procedures, methods and best practices for determining the value of ecosystem services, including the use of contingent valuation or conjoint analysis for assessing non-use values.¹⁶³

The U.S. Forest Service has developed a General Technical Report titled, *Evaluating Benefits and Costs of Changes in Water Quality*. The report addresses market and nonmarket techniques for estimating economic values for changes in water quality on various water uses. It discusses identifying monetary values resulting from changes in water quantity, clarity, salinity, total suspended solids, temperature and dissolved oxygen on municipal, industrial, agricultural, recreational, hydropower and nonmarket uses of water. Nonmarket values for water include onsite use, value and nonuser benefits. Nonuser benefits of water include benefits people obtain without making direct use of water, such as ecological value, preservation benefits, and option or bequest values.¹⁶⁴

DWR has developed guidelines on economic analysis, including the *Economic Analysis Guidebook*, which describes an array of methods for valuing ecosystem services and non-use values.¹⁶⁵ Under an EPA grant, DWR also produced four studies on assessing economic costs titled *Ecosystem Valuation Methods*, *Natural Floodplain Functions and Societal Values*, *Middle*

¹⁵⁷ Economic Nonmarket Valuation of Instream Flows, 2000.

<https://www.usbr.gov/tsc/techreferences/economics/Flowpaper1.pdf>

¹⁵⁸ Estimated Fishery Economic Use Values, EC-2008-02, 2008.

https://www.usbr.gov/tsc/techreferences/economics/FINAL_FisheryUseValues_M&S.pdf

¹⁵⁹ Handbook for Estimating the Economic Value of Changes in Fish and Wildlife Resources, TM-EC-96-13.

https://www.usbr.gov/tsc/techreferences/economics/HandbkForEstimatgEconomicValueOfChangesInFWResources_TM-EC-96-13_1996.pdf

¹⁶⁰ Introduction to Conjoint Analysis for Valuing Ecosystem Amenities.

<https://www.usbr.gov/tsc/techreferences/economics/conjoint/TMEC200803.pdf>

¹⁶¹ Using Contingent Valuation and Benefit Transfer to Evaluate Water Supply Improvements Benefits.

https://www.usbr.gov/tsc/techreferences/economics/UsingContingentValuation&BenefitTransferToEvaluateWaterBenefits_1998.pdf

¹⁶² EPA, Guidelines for Preparing Economic Analyses, 2010. <https://www.epa.gov/sites/production/files/2017-08/documents/ee-0568-50.pdf>

¹⁶³ EPA, Valuing the Protection of Ecological Systems and Services, 2009.

<https://yosemite.epa.gov/sab%5CSABPRODUCT.NSF/F3DB1F5C6EF90EE1852575C500589157/%24File/EPA-SAB-09-012-unsigned.pdf>

¹⁶⁴ USDA, Evaluating Benefits and Costs of Changes in Water Quality, 2002, pp.1-26, 27.

<https://www.fs.fed.us/pnw/pubs/gtr548.pdf>

¹⁶⁵ DWR, Economic Analysis Guidebook, 2008.

https://water.ca.gov/LegacyFiles/pubs/planning/economic_analysis_guidebook/econguidebook.pdf

Creek Restoration Project Case Study: Benefit and Cost Analysis, and Floodplain Management Benefit and Cost Framework.

Establishing an economic value of natural ecosystems is neither a new or novel concept. In 1985, John B. Loomis of the University of California Davis' Division of Environmental Studies Department of Agricultural Economics conducted a cost/benefit balancing of Mono Lake. The report titled *Balancing Public Trust Resources of Mono Lake and Los Angeles' Water Right: An Economic Approach* found that the value of restoring Mono Lake was worth 57.3 - 133.5 times the cost of replacing a significant percentage the Los Angeles' water supply.¹⁶⁶ The SWRCB was sufficiently impressed with the study that it required Jones & Stokes Associates, the Board's contractor developing the Mono Lake EIR, to perform a more thorough market analysis. The economic values from that survey were counted dollar for dollar as equivalent to hydropower and water supply benefits and costs in the different alternatives analyzed in the EIR. The EIR analysis demonstrated that the annual benefits of raising the lake level vastly outweighed the costs of significantly reducing Los Angeles' water diversions from the lake.¹⁶⁷ John Loomis subsequently published a study on the increasing acceptance of non-market valuation studies in water resource management assessments.¹⁶⁸

Researchers with the US Geological Survey's Biological Resources Division in Fort Collins, Colorado conducted a study titled *The Economic Value of Trinity River Water*. The study compared the non-market value of allowing more water to flow down the Trinity River with the market uses of diverted water; i.e. the social costs to hydropower, irrigated agriculture, etc. As much as 90% of Trinity water was historically diverted to the Sacramento River for irrigation. The annual benefits of significantly reducing diversion of water exceeded the value of the status quo by almost 19 times.¹⁶⁹

Evaluating ecosystem and non-use values in determining the benefits of proposed projects is increasing common, which is why BOR's failure to include them in the economic effects analysis of the DEIS is perplexing. For example, BOR conducted a study titled *Klamath River Basin Restoration Nonuse Value Survey* that demonstrated that dam removal far outweighed the impacts of non-removal.¹⁷⁰ EcoNorthwest recently conducted a study titled *Lower Snake River Dams, Economic Tradeoffs of Removal* that revealed that the benefits of removing the dams far exceeded the alternative.¹⁷¹ EcoNorthwest also produced a report for Restore Hetch Hetchy titled *Valuing Hetch Hetchy Valley: Economic Benefits of Restoration in*

¹⁶⁶ CSPA, Attachment 8, John B. Loomis, Balancing public trust resources of Mono Lake and Los Angeles' Water Right: An economic approach, 1987.

¹⁶⁷ Mono Lake EIR, Chapter 3, Table 3n-14, 1992.

<https://www.monobasinresearch.org/images/mbeir/dchapter3/table3n-14.pdf>

¹⁶⁸ CSPA, Attachment 9, John B. Loomis, Use of non-market valuation studies in water resource management assessments, 1997.

¹⁶⁹ USGS, The Economic Value of Trinity River Water, 1999.

http://www.ajdouglasecon.com/files/reprint_folder/B7_0002.pdf

¹⁷⁰ CSPA, Attachment 10, BOR, Klamath River Basin Restoration Nonuse Value Survey, 2012.

¹⁷¹ ECONorthwest, Lower Snake River Dams, Economic Tradeoffs of Removal, 2019.

https://static1.squarespace.com/static/597fb96acd39c34098e8d423/t/5d41bbf522405f0001c67068/1564589261882/LSRD_Economic_Tradeoffs_Report.pdf

Yosemite Nation Park that identified the enormous economic benefits that would accrue from restoring the valley. The report surveyed a number of other willingness to pay studies including; Grand Canyon Flow Augmentation South Platte River Restoration, Elwha and Glines Dam Removal, Klamath Basin Restoration, etc.¹⁷² ECONorthwest also produced a study for us titled *Bay-Delta Water, Economics of Choice* that described basic economic practices, the SWRCB's balancing of Mono Lake, the ecological use of public trust resources, an array of federal and state methods and guidebooks on evaluating water projects, the principles of benefit-cost analyses, risk and uncertainty and other issues pertaining to the Bay- Delta, such as environmental justice concerns.¹⁷³

Clearly, there are generally accepted methods and best practices for evaluating ecosystem services, non-market, non-use and passive uses of water. And clearly these methods and practices have been routinely employed in evaluating water projects. As previously noted, the DEIS quantifies and monetizes the Proposed Action's effects on water supply and consumptive uses of water while only qualitatively considering the effects on commercial and recreational fisheries based upon an unsupportable conclusion that somehow there will be more fish. To then ignore the Proposed Action's effects on ecosystem services and non-market, non-use and passive uses of water effectively places a stack of bricks on one side of the scale. The DEIS must be revised to ensure that the public and decision-makers receive a balanced assessment of the impacts and effects of the Proposed Action. As it stands, the DEIS is fatally flawed because its economic analysis does not comply with NEPA's requirements for fair disclosure.

C. The DEIS fails to comprehensively evaluate the full spectrum of economic and social consequences of the Proposed Action.

The Proposed Action is a massive undertaking that seeks to significantly increase water diversions and exports at the expense of outflow to the Bay. If implemented it will inevitably have major known and unknown consequences that affect the incredibly complex and highly degraded ecosystem that comprises the Bay-Delta estuary and its tributary waterways. Those consequences have the potential to adversely affect millions of Californians throughout the state.

Any project of this magnitude must consider all of the environmental consequences, social effects and costs and benefits of alternatives including both market and non-market effects, use and non-use values, uncertainty and risk and follow rigorous professional standards and methods of analysis. It must consider benefits and costs to both agricultural and urban uses, as well as commercial fishing, recreational and passive uses. It must analyze benefits and costs of ecosystem services and contingent valuation or the value Californians place on a healthy ecosystem.

¹⁷² ECONorthwest, Valuing Hetch Hetchy Valley: Economic Benefits of Restoration in Yosemite National Park, 2019.
https://d3n8a8pro7vhm.cloudfront.net/hetchhetchy/pages/29/attachments/original/1562697333/Valuing_Hetch_Hetchy_Valley_-_ECONorthwest_2019_-_Full_Report_part_2.pdf?1562697333

¹⁷³ CSPA, Attachment 11, ECONorthwest, Bay-Delta Water: Economics of Choice, 2013.

The DEIS must be revised to include an evaluation of the effects of the Proposed Action on the full spectrum of identified uses of water and be recirculated. Otherwise the DEIS will remain seriously deficient as a NEPA fair disclosure document.

D. The DEIS fails to consider the constitutional mandate to prevent the waste and unreasonable use of water.

The Proposed Action is a joint effort by DWR and BOR. As noted previously, the CVP is required to comply with state law and DWR, as a state agency, is required to comply with the California Constitution. Article 10, Section 2 of the Constitution states:

It is hereby declared that because of the conditions prevailing in this State the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare. The right to water or to the use or flow of water in or from any natural stream or water course in this State is and shall be limited to such water as shall be reasonably required for the beneficial use to be served, and such right does not and shall not extend to the waste or unreasonable use or unreasonable method of use or unreasonable method of diversion of water.

California has a Mediterranean climate that experiences frequent droughts. The state also has an overappropriated water supply where demands for water exceed supply. It is beyond reasonable that the DEIS, for a Proposed Action that would supply more water for consumptive purposes and thereby reduce water available to support a seriously degraded aquatic ecosystem, should analyze whether the increased diversion of water is reasonable and whether the water would be put to a reasonable and beneficial use.

California agriculture comprises 2% of the state's GDP and uses an estimated 29 MAF of water. Scientists connected with the U.C. Davis Center for Watershed Sciences conducted a study of agricultural water use. They found that the top revenue producing and job creating commodities use the least water. Vegetables, horticulture, non-tree fruits, deciduous fruits, cucurbits (melons, squash, cucumbers, watermelon, zucchini, etc.), tomatoes, vine (wine and table grapes), onions, potatoes, etc. produce 81.8% of the jobs and 62.7% of the revenue but only use 21.5% of the water. By comparison, irrigated pasture, alfalfa, corn, almonds, pistachios and cotton use 53.7% of water but only provide 19.6% of the revenue and 13.9% of the jobs.¹⁷⁴

A recirculated DEIS must discuss and analyze whether the additional water to be diverted by the Proposed Action would be put to a reasonable and beneficial use and whether the state's economic and social interests would be best served by leaving that water in rivers to serve the aquatic ecosystem. Failure to conduct such an analysis renders the DEIS deficient as a fair

¹⁷⁴ UC Davis Center for Watershed Science, Jobs per drop irrigating California crops, 2015. <https://californiawaterblog.com/2015/04/28/jobs-per-drop-irrigating-california-crops/>

disclosure documents and deprives the public and decision-makers of information necessary to make an informed decision.

VII. Modeling for the DEIS appears to include elements not required as part of the project description, and the description of modeling in the DEIS is unclear.

Modeling in the DEIS appears to become a substitute for defining the proposed action. For instance, the “example” spring pulse flows shown in Table 3.4-2 were apparently modeled as part of the Proposed Action, even though the actual values have yet to be determined. This violates NEPA because it does not provide a clear project description and provides analysis of an action that is not part of the Proposed Action.

If we are mistaken in this understanding, it is because the presentation of the scenarios modeled are so lacking in detail that a reasonably well-informed reader cannot discern them, even with hours of review. If there is a table that shows exactly each component that Reclamation modeled for each alternative, we could not find it. The presentation of the specifics of what Reclamation modeled as part of the alternatives is so incomplete and hard to follow the DEIS fails under NEPA on grounds of basic lack of clarity.

VIII. The section of the DEIS that deals with groundwater inaccurately states that increasing water supply deliveries south of Delta will reduce groundwater pumping.

The Groundwater section of the DEIS erroneously concludes:

Alternatives 1, 2, and 3 would generally increase surface water supplies to CVP and SWP contractors. An increase in surface water supply would decrease the reliance on groundwater and result in less groundwater pumping.¹⁷⁵

This evaluation assumes a simple direct relationship that surface water applied is groundwater not pumped. This metaphor assumes that the impacts of the Proposed Action on groundwater are limited to acreage that is currently under cultivation. However, as Mark Arax documents extensively in *The Dreamt Land: Chasing Water and Dust Across California*, the last century of water development in California has shown that increases in surface water supply tend to lead to increases in irrigated land.¹⁷⁶ Increased acreage under cultivation places increased pressure on groundwater when drought strikes, as it inevitably does in California. Overall, increased acreage under cultivation creates the cumulative and long-term need for increases in pumping groundwater.

Implementation of the Preferred Alternative (or Alternatives 2 or 3) would be likely to expand the geographic extent of over-reliance on groundwater. Yet even if it did not, huge amounts of land already under cultivation in California, particularly in the southern San Joaquin

¹⁷⁵ DEIS, p. 5-121/251.

¹⁷⁶ Mark Arax, *The Dreamt Land: Chasing Water and Dust Across California*, Alfred A. Knopf, New York, 2019.

Valley, already rely on groundwater to backfill water supply in dry years. Much of this land draws on groundwater that is increasingly dropping in surface levels. For these lands, implementation of the Preferred Alternative will likely delay the following of land with marginal water supply and a movement toward a condition where available water is less out of balance with demand.

Implementation of the Preferred Alternative will thus prolong and increase the debt load on surface water, which can only be paid back in dry years with increased groundwater pumping. It would move California away from consensus that the state's waters are overappropriated and over-allocated, and away from solutions that are managed and relatively manageable.

In considering effects of the Preferred Alternative on groundwater, the DEIS considers only a close-up view and fails to consider the likely response of water users to a broad change in approach to water management. A recirculated DEIS should disclose that increasing dependence on sources of water supply that are already severely stressed will accelerate catastrophic days of reckoning.

IX. Conclusion

BOR should recirculate the DEIS with a proposed Action and alternatives that will allow operation of the CVP and SWP to comply with the ESA, the CVPIA and other applicable law. The recirculated DEIS should also address the additional issues raised in these comments.

Thank you for the opportunity to comment on the *Draft Environmental Impact Statement for Coordinated Long Term Operation of the Central Valley Project and State Water Project*.

Respectfully submitted,

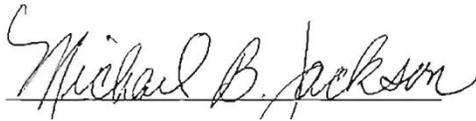
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List of Attachments

Attachment 1: CSPA submittals to SWRCB in 2014 and 2015

Attachment 2: SacPAS: Central Valley Prediction & Assessment of Salmon, Performance Measures RPA I.2.1 Summer Temperature Target, 10 Year Average (2009-2018) RPA Temperature Target Analysis and Exceedance

Attachment 3: SacPAS: Central Valley Prediction & Assessment of Salmon, Performance Measures RPA I.2.1 End-of-September (EOS) Carryover Storage 1987-2018.

Attachment 4: Red Bluff Temperature, Compliance with 56°F Criterion - 15 May – 31 October, 2001-2019, California Data Exchange Center

Attachment 5: BOR Deliveries to Sacramento River Contractors in 2014, 2015 and 2016

Attachment 6: Salmonid Populations of the Upper Sacramento River Basin in 2017, USBFP Technical Report 02-2018, Aerial Redd Counts, 1969-2017

Attachment 7: Northern CVP Water Temperature Report, August – 2019, Bureau of Reclamation

Attachment 8: Loomis, *Balancing Public Trust Resources of Mono Lake and Los Angeles's Water Right: An Economic Approach*

Attachment 9: Loomis, *Use of Non-Market Valuation Studies in Water Resource Management Assessments*

Attachment 10: RTI International for BOR, *Klamath River Basin Restoration Nonuse Value Survey* [Note: this document is not labelled as an exhibit because it is password protected.]

Attachment 11: ECONorthwest, *Bay-Delta Water: Economics of Choice*