Natural Resources Defense Council
The Bay Institute
American Rivers
Audubon California
California Sportfishing Protection Alliance
Friends of the River

October 27, 2014

Melissa Harris
Project Manager
U.S. Bureau of Reclamation, Planning Division
2800 Cottage Way
Sacramento, CA 95825-1893

Sent via U.S. Mail and via email to sha-mpr-usjrbsi@usbr.gov

RE: Comments on the Upper San Joaquin River Basin Storage Investigation Draft Environmental Impact Statement

Dear Ms. Harris:

On behalf of the Natural Resources Defense Council, the Bay Institute, American Rivers, Audubon California, the California Sportfishing Protection Alliance, Friends of the River, and our hundreds of thousands of members and activists in California, we are writing to provide comments on the Upper San Joaquin River Basin Storage Investigation Draft Environmental Impact Statement ("DEIS"). The DEIS fails to adequately assess the potential impacts of constructing and operating new storage at Temperance Flat, and even its flawed analysis demonstrates that the alternatives will result in significant adverse environmental impacts. Yet the document fails to consider feasible mitigation measures to address the significant environmental impacts that are likely to result from the alternatives analyzed in the DEIS. Overall, as documented in detail in the pages that follow, the DEIS fails to comply with the requirements of CEQA and NEPA. In particular, the DEIS:

- Fails to consider a reasonable range of alternatives;
- Fails to incorporate climate change into the operational modeling that is used in the DEIS to assess potential environmental impacts, thus dramatically understating potential environmental impacts of the alternatives analyzed in the DEIS;
- Relies on flawed operational modeling that results in inaccurate assessment of environmental impacts;
- Fails to adequately and accurately assess environmental impacts, including impacts to native fish and wildlife such as fall run Chinook salmon, spring run Chinook salmon, sturgeon, steelhead, hardhead, and Kern Brook Lamprey;
- Fails to adequately consider and analyze cumulative impacts; and,
- Fails to consider feasible mitigation measures and alternatives that would reduce or avoid the numerous significant environmental impacts caused by the alternatives considered in the DEIS.

Because of these significant flaws, the DEIS fails to comply with CEQA and NEPA. Our organizations and many others have previously commented that the Draft Feasibility Report is inadequate. Because the DEIS incorporates and tiers from the Draft Feasibility Report, we have attached a copy of our comments on the Draft Feasibility Report.

It is clear from our review of the Draft Feasibility Report and DEIS that Temperance Flat dam causes substantial adverse environmental impacts to native fish and wildlife, including reintroduction of self-sustaining salmon populations below Friant Dam pursuant to the Settlement. As a result, it would not be legally eligible for state funding if voters pass Proposition 1. Equally important, at a cost of over $2.5 billion and a potential yield of only 60,000-70,000 acre feet of water per year, it is clear that even with massive taxpayer subsidies the alternatives are not economically feasible.

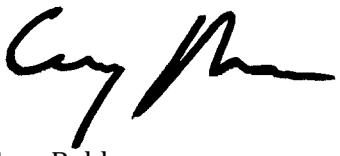
To date, Reclamation has spent millions of dollars analyzing and reanalyzing this project. Based on the high costs and minimal benefits that are associated with Temperance Flat, it makes no sense for Reclamation to continue to waste more public money analyzing this flawed project. Should Reclamation decide to continue to pursue this project, it must substantially revise the DEIS and Draft Feasibility Report and recirculate legally adequate documents for public comment.

As you are aware, several of our organizations previously requested an extension of the public comment period so that we could more fully analyze and understand the thousands of pages in the DEIS, particularly given its likely adverse impacts of the alternatives on the San Joaquin River Restoration Program and Stipulation of Settlement (to which NRDC, TBI, and other conservation groups are parties, with the United States and Friant Water Authority). Despite the fact that DWR has not prepared CEQA documentation for this project, despite the fact that the required Fish and Wildlife Coordination Act report has not been prepared or released, and despite the fact that the DEIS tiers to and relies on documents that were not publicly available during the public comment period, Reclamation declined to provide NRDC and other members of the public with additional time to review the DEIS. We are deeply disappointed by Reclamation's rush to judgment. Instead of rushing to release this flawed DEIS, Reclamation would have better spent the time developing an adequate environmental analysis and providing the public and decision-makers with adequate time to review and comment on the DEIS. In addition, Reclamation must allow for public comment when the Fish and Wildlife Coordination Act report has been prepared and released, and DWR should allow for public comment before determining whether this document (or any supplemental or revised document) is consistent with CEQA.

Thank you for consideration of our views. Please contact us at your convenience if you have any questions or would like to discuss this further with us.

Sincerely,

Doug Obegi
Natural Resources Defense Council



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I. The DEIS Fails to Consider a Reasonable Range of Alternatives Under CEQA and NEPA:

One of the primary purposes of CEQA and NEPA is to inform decision-makers and the public about the potentially significant environmental effects of proposed projects. *See, e.g.,* 14 Cal. Code Regs. §15002. Both CEQA and NEPA require consideration of a reasonable range of alternative actions that might achieve similar goals with less environmental impact, including a no project alternative. Cal. Pub. Res. Code §§ 21002, 21061, 21100; tit. 14, Cal. Code Regs. ("CEQA Guidelines") § 15126.6; 42 U.S.C. § 4332; 40 C.F.R. §§ 1502.14, 1508.25(b). "The existence of a viable but unexamined alternative renders an environmental impact statement inadequate." *Natural Res. Def. Council v. U.S. Forest Serv*., 421 F.3d 797, 813 (9th Cir. 2005) (quotation marks and citation omitted). Unfortunately, the DEIS fails to consider a reasonable range of alternatives. CEQA is designed to prevent public agencies from approving projects if feasible alternatives or mitigation measures would substantially lessen the significant environmental effects. Pub. Res. Code § 21002.

As the DEIS makes clear, all of the alternatives are likely to cause significant adverse environmental impacts. DEIS at Table ES-3 and ES-4.[1] These impacts are likely to be exacerbated when the effects of climate change and other cumulative impacts are adequately considered, as we discuss below. In addition, the DEIS erroneously concludes that some impacts are less than significant or beneficial (such as FSH-10), when in fact the alternatives will cause substantial adverse environmental impacts that were not adequately considered in the DEIS. Despite the adverse impacts, the DEIS incorrectly asserts that feasible mitigation measures are not available to reduce or eliminate these environmental impacts. To the contrary, there are a number of potentially feasible mitigation measures and alternatives available to Reclamation, including: water conservation and efficiency measures to reduce impacts; installation of a temperature control device on Friant Dam to reduce adverse water temperature impacts;[2] higher carryover storage requirements in Friant Dam to reduce adverse water temperature impacts; changes in operations to improve conditions for salmon and reduce temperature and flow impacts; floodplain restoration to reduce the impacts of reduced floodplain inundation and to improve groundwater recharge; habitat restoration to

[1] According to the DEIS, Alternative 5 results in significant and "cumulatively considerable incremental contribution to the overall significant cumulative impact to spring-run Chinook salmon," resulting in average negative spring run Chinook salmon populations as compared to the no action alternative, ranging from a reduction of 8 to 13 percent. DEIS at 27-67; DEIS Tables 5-7 to 5-8. This is wholly inconsistent with the project's purpose and need because it would substantially reduce the potential for fall run and spring run Chinook salmon restoration in the San Joaquin River. Reclamation claims no mitigation is available, and Alternative 5 should be rejected. In addition, we note that Alternative 5 was not evaluated in the Draft Feasibility Report.

[2] In comments on the draft feasibility report, Dr. Jeff Michael references prior analyses and estimates that a temperature control device on Friant Dam would cost $179M in 2013 dollars, or as little as $7M/year using the same assumptions as in the draft feasibility report. Given the potential environmental benefits and limited costs in comparison, this is clearly a feasible mitigation measure or project element. We agree with Dr. Michael that, "The salmon benefits of the project should be valued as the costs of reasonable alternatives that would achieve comparable increases in salmon abundance."

mitigate for inundated habitat; and groundwater banking and offstream storage projects that could reduce temperature and upstream environmental impacts while improving water supply reliability.

In addition, Reclamation has failed to proceed in the manner required by law to determine such feasible mitigation measures and alternatives. In particular, Reclamation has wholly failed to comply with the Fish and Wildlife Coordination Act, 16 U.S.C. §§ 661 *et seq*., which often results in the identification of feasible alternatives and mitigation measures to reduce potential environmental impacts. As the DEIS notes,

> Coordination under the Fish and Wildlife Coordination Act is intended to promote conservation of fish and wildlife resources by preventing their loss or damage. It also provides for development and improvement of fish and wildlife resources in connection with water projects. Federal agencies that undertake water projects must fully consider recommendations made by USFWS, NMFS, and the appropriate State fish and wildlife agency – in this case, CDFW – in their project reports and include measures to reduce impacts on fish and wildlife in project plans. Reclamation would consider and incorporate the recommended measures where feasible.

DEIS at 28-19. However, Reclamation has failed to coordinate with the U.S. Fish and Wildlife Service pursuant to the Act, and the DEIS fails to include the required Fish and Wildlife Coordination Act report.[3] *See* 16 U.S.C. § 662(b). That report is specifically required to estimate wildlife benefits and losses, id. at § 662(f), and to propose measures to reduce potential impacts, id. at § 662(a)-(b). As such, the DEIS fails to include potentially feasible mitigation measures, alternatives, and project elements that could reduce or eliminate adverse environmental impacts.

In particular, the DEIS erroneously excludes and fails to meaningfully analyze any and all potential groundwater banking alternatives. Reclamation's initial assessment found that an additional 50 TAF could be accessed through groundwater recharge. Fifteen potential groundwater storage projects in the San Joaquin Valley were identified that appear to have high potential for implementation. DEIS, Plan Formulation Appendix at 2-30. However, other studies indicate that there is even greater potential for groundwater banking in the region. *See* DWR, 2012 Central Valley Flood Protection Plan Attachment 8L: Groundwater Recharge Opportunities Analysis. In addition, a 2002 study by the Army Corps of Engineers found that modified flood operations and conjunctive management at Friant Dam could add 240 to 322 TAF in recharge to regional groundwater basins. Army Corps of Engineers 2002, Conjunctive Use for Flood Protection, available online at: http://www.water.ca.gov/orovillerelicensing/docs/FEIR_080722/AppendixA/Technical_Studies_Documentation_Dec_02/Supplemental_Reports/HEC_ConjunctiveUse_for_FC_2002-01.pdf. By itself, the Madera Irrigation District Water Supply Enhancement Project will create 55 TAF of new water a

[3] Because Reclamation has deprived the public of the opportunity to review the Fish and Wildlife Coordination Act report during the public comment period on the DEIS, Reclamation must reopen the public comment period upon release of the required report.

year, nearly as much as Temperance Flat. USBR 2011, Record of Decision Madera Irrigation District Water Supply Enhancement Project EIS. Additional opportunities to reduce or avoid environmental impacts while improving water supply reliability are likely available through groundwater recharge and offstream storage alternatives. In addition, given the high cost of Temperance Flat dam and likely substantial increases in water supply costs for Friant Class I and Class II districts, it is likely that groundwater banking and conjunctive use alternatives would provide similar or greater benefits at lower cost.

An alternative that includes offstream storage and groundwater banking, potentially together with a temperature control device on Friant Dam, is likely to result in substantial environmental benefits and improved water supply reliability, consistent with the overarching goals of the project, and the failure to include such an alternative violates CEQA. *See Citizens of Goleta Valley v. Board of Supervisors*, 52 Cal.3d 553, 566 (1990) (EIR must consider a reasonable range of alternatives that offer substantial environmental benefits and may feasibly be accomplished). This is particularly the case because all of the alternatives analyzed in the DEIS will result in significant environmental impacts, including significant impacts to native fisheries, as well as cumulatively significant impacts. Because there are likely to be feasible alternatives that would reduce or eliminate environmental impacts, the failure to meaningfully consider such alternatives in the DEIS precludes DWR from adopting an alternative that results in significant environmental impacts. *See* Cal. Pub. Res. Code § 21081; *California Clean Energy Committee v. City of Woodland*, 225 Cal.App.4th 173, 203 (2014).

In addition, the DEIS fails to include any water conservation and efficiency improvements as an alternative, project element, or mitigation measure. The DEIS claims that, "[o]pportunities to apply large-scale water conservation measures in the Friant Division are limited because conveyance losses and excess water application returns to groundwater for use in subsequent years." DEIS, Plan Formulation Appendix, at Table 2-1; *see id*. at 2-36. However, the DEIS also shows that much of the additional water supply from Temperance Flat would be used outside of the Friant Division, including by SWP Agricultural contractors and SWP Municipal & Industrial contractors. *See* DEIS at Table 2-11. The DEIS relies on flawed and outdated urban water demand projections that wholly ignore the requirements of the Water Conservation Act of 2009 (SB 7x7 of 2009) or the development of regional and local water supplies in recent years. *See* DEIS at 2-2 and 2-3. As a result, the DEIS overstates M&I demand for water. Similarly, the DEIS also fails to consider the lower cost for water conservation, water recycling, and many other supplies in comparison to water from the alternatives. A recent report from NRDC and the Pacific Institute estimates that urban water reuse, conservation, and efficiency in California have the potential to save or create 4.1 to 7 million acre feet of water per year. NRDC and Pacific Institute, Untapped Potential, available online at: http://www.nrdc.org/water/ca-water-supply-solutions.asp. And within the San Joaquin Valley, numerous conservation and reuse projects are being considered to improve water supply reliability; for instance, the North Valley Regional Recycled Water Program is expected to develop an additional 33 TAF of water in the region. North Valley Regional Recycled Water Program Description, available online at: http://www.nvr-recycledwater.org/description.asp. Just a few of

these types of projects could result in greater water supply yield than from Temperance Flat, with fewer environmental impacts and likely lower cost.

Also, contrary to the assertion in the DEIS that all agricultural "excess water application returns to groundwater for use in subsequent years," several Friant Division contractors lack access to useable groundwater supplies, *see* DEIS at 14-42. Water conservation and efficiency measures clearly can benefit Friant farmers, particularly in drier years when surface supplies are limited, as well as for those Friant Division contractors who have limited access to groundwater supplies. For instance, NRDC and the Pacific Institute found that 5.6-6.6 million acre feet of water could be saved by improving agricultural efficiency in California, through smart irrigation, deficit irrigation, and improved technologies. NRDC and the Pacific Institute, Untapped Potential, available online at: http://www.nrdc.org/water/ca-water-supply-solutions.asp. Additionally, local water districts have seen similar possibilities. For instance, the Regional Water Management Group for the Westside-San Joaquin Integrated Regional Water Management (IRWM) Region expects that increases in agricultural water use efficiency will decrease water use by 283 TAF between 1999 and 2025, approximately four times the benefit expected from Temperance Flat. *See* San Luis and Delta Mendota Water Authority, July 2014, Draft Westside-San Joaquin IRWMP, at 32, available online at: http://www.sldmwa.org/Westside_San_Joaquin_2014_IWRP_Draft-July2014.pdf.

Urban and agricultural water conservation and regional supplies could obviate the need for the alternatives and/or could reduce the significant environmental impacts associated with the alternatives. The DEIS wholly fails to consider water conservation requirements and the development of regional water supplies in the urban water demand projections used in the DEIS, wholly fails to consider urban water use efficiency in the range of feasible alternatives and mitigation measures, and fails to adequately consider agricultural water use efficiency improvements in the range of feasible alternatives and mitigate measures.

Because the DEIS fails to consider feasible alternatives and mitigation measures that would reduce or avoid significant environmental impacts, the DEIS fails to comply with CEQA and NEPA. Reclamation must revise the DEIS to include such measures and alternatives, and recirculate the document for public review and comment.

II. The DEIS Fails to Comply with CEQA and NEPA Because it Fails to Incorporate Climate Change Effects into Operations Modeling, Resulting in Inaccurate Assessments of Environmental Impacts

It is well accepted that changes to California's temperature and precipitation regime will occur in the coming decades,[4] and these changes will affect nearly all aspects of the CVP system. This should

[4] *See, e.g.,* Cayan et al 2013: Ch. 6: Future climate: Projected average. Assessment of Climate Change in the Southwest United States: A Report Prepared for the National Climate Assessment, G. Garfin, A. Jardine, R. Merideth, M. Black, and S. LeRoy, Eds., Island Press, 153-196, available online at http://swccar.org/sites/all/themes/files/SWNCA-color-FINALweb.pdf; Sarah Null and Joshua Viers 2014: In bad waters; Water year classifications in nonstationary climates, 49 Water Resources

be reflected in the Bureau's modeling approach, which should evaluate climate change impacts in a quantitative manner for all resource categories affected by the proposed project. In the DEIS, Reclamation uses CalSim II to model CVP operations and analyze potential environmental effects and impacts. However, the operational modeling does not integrate an assessment of climate change impacts into their analysis, and instead, a "climate change sensitivity analysis" was performed outside of the operations modeling process, using the less-accurate CVPIA Climate Modeling Suite. Consequently, many of the anticipated impacts to the CVP system associated with the proposed project are not analyzed in conjunction with projected changes to temperature, climatic and precipitation patterns. Because the operational modeling does not reflect likely operations in the future with climate change, the DEIS' assessment of potential environmental impacts fails to accurately assess the impacts of the alternatives in light of climate change. This approach is not consistent with CEQA or NEPA, and the operational modeling must be revised to incorporate climate change in order to accurately assess potential environmental impacts.

The DEIS fails to explain why the operational modeling does not incorporate climate change, particularly in light of the fact that Reclamation incorporated climate change into the modeling and assessment of environmental impacts for the proposed Bay Delta Conservation Plan, *see, e.g.*, BDCP DEIS/DEIR at 4-6, 5-47 to 5-49, and Appendix 3E, and also included some modeling with climate change in the modeling appendix for the draft feasibility study for the Upper San Joaquin River Basin Storage Investigation ("Draft Feasibility Study"), *see* Draft Feasibility Study, Modeling Appendix, Attachment C. We recognize that Reclamation's BDCP modeling has significant flaws, including flaws regarding climate modeling of Friant operations. For instance, one independent peer review concluded that,

> Specifically, under climate change, inflow to Millerton Lake is expected to decrease (BDCP DEIR/S, Appendix 29B). However, when climate change was implemented into the BDCP Model, it was done incorrectly such that: (1) the inflow into Millerton Lake was not adjusted for climate change and is thus overestimated, and yet (2) the flood control operations and water allocation decisions for Millerton Lake were adjusted for climate change as if the inflow was reduced. The net effect is that storage in Millerton Lake is overestimated; in fact, the BDCP model indicates that the amount of water stored in Millerton Lake will actually be increased as a result of climate change even though the inflow to the lake is projected to be reduced (i.e., non-sensible). This error results in the overestimation of Millerton Lake storage causing an overestimation of reservoir releases for flood control purposes and available water downstream at the Mendota Pool.

Research 1137-1148, available online at: https://watershed.ucdavis.edu/files/biblio/wateryear.pdf; Department of Water Resources 2009: Using Future Climate Projections to Support Water Resources Decision Making in California, CEC-500-2009-052-F, available online at: http://www.water.ca.gov/pubs/climate/using_future_climate_projections_to_support_water_resources_decision_making_in_california/usingfutureclimateprojtosuppwater_jun09_web.pdf. These reports and studies are incorporated by reference.

See MBK Engineers 2014, Report on Review of Bay Delta Conservation Program Modeling, at 4, 11-12.[5]. However, the failure to incorporate climate change projections into the operational modeling and impact assessments in the DEIS is an even more serious flaw, and one that is certain to result in the DEIS understating the likely significant environmental impacts of the alternatives. For instance, higher air and water temperatures are likely to increase the environmental impacts identified in FSH-11. Likewise, these higher temperatures are not incorporated into the modeling in FSH-10, and in conjunction with climate change the alternatives will likely result in a substantial environmental impact in FSH-10. Similarly, the analysis of downstream effects in FSH-14 fails to incorporate climate change projections, and is likely to show substantially greater reductions in downstream flows than shown in the DEIS and is likely to result in a significant adverse effect that is not currently identified in the DEIS.

III. The Limited Climate Change Sensitivity Analysis that is Included in the DEIS is Inadequate and Provides Inaccurate Information:

A. The DEIS Uses CalLite Modeling for the Climate Change Sensitivity Analysis, which is Less Accurate than CalSim II and is not Intended to Simulate New Facilities

While operations modeling for the DEIS was carried out using the CalSim II model, the climate change sensitivity analysis was performed using the Central Valley Project Improvement Act Climate Modeling Suite ('CVPIA Climate Modeling Suite'). The CVPIA Climate Modeling Suite uses the Water Evaluation and Planning System Central Valley model (WEAP-CV) to generate water budget data, which is used as input for the CalLite Model, a simplified version of the CalSim II model. The CVPIA modeling suite was not designed for use as an agency tool for assessing impacts associated with large infrastructure projects, and it is known to be less accurate than the CalSim II model. As the DEIS' Modeling Appendix admits, the CVPIA Climate Modeling Suite,

> does not include the capacity to quantitatively evaluate all the resources categories associated with potential climate impacts on the Investigation. These limitations mean that some of the details of the various Investigation alternatives could not be represented in the quantitative modeling of climate change assessments. The results are not directly comparable to the results of other modeling tools used in the Investigation and were not used to support specific impact evaluations.

DEIS, Modeling Appendix, at 2-2. According to the CalLite Reference Manual, CalLite "bridges the gap between more detailed system models, such as CalSim, maintained by DWR and Reclamation, and policy and stakeholder demands for rapid and interactive policy evaluations." CalLite v2.0 Reference Manual at 9-59, available online at: http://baydeltaoffice.water.ca.gov/modeling/hydrology/CalLite/Documents/CalLite2.00_Manuals.

[5] It appears that the same problems MBK Engineers found with the BDCP modeling may have also occurred in climate change modeling in the Draft Feasibility Report. A copy of this report is attached and incorporated by reference.

zip. While this makes CalLite a useful tool for multi-stakeholder water resource management decision-making processes, it is not an appropriate model for evaluating impacts associated with a multi-billion dollar federal project, especially when there is no need for 'rapid' evaluation.

The CalLite Reference Manual further states that,

> CalLite is intended as a screening model for Central Valley water management. Compared to CalSim II, CalLite is a simplified model and much of the complexity of the system has been aggregated. CalLite captures the most prominent aspects of the Central Valley hydrology and system operations, but simulated hydrology and water management within specific sub-basins has limited detail. As such, it is important to understand the limitations of the model when applying CalLite for Central Valley water management screening.

Id. at 9-59. Given the lack of detail for 'specific sub-basins', CalLite is wholly inappropriate for assessing the affects of climate impacts on the Proposed Project, as these impacts are largely limited to a small portion of the San Joaquin River Basin.

In addition, the DEIS uses CalLite to simulate changes from new facilities (Temperance Flat), even though the CalLite Reference Manual makes clear that this model is also inappropriate for simulating any change to the current CVP system that includes new facilities, operational rules, or regulations:

> The model is designed to simulate CVP and SWP operations under conditions that are reasonably close to current conditions in terms of system facilities, operational rules, and regulations. But CalLite allows the user to significantly change some of aspects of the system, particularly regulations, South-of-Delta demands, and allocation methods. While such flexibility is desirable for a screening model, the user should be aware that model error may increase the further away from current system conditions that CalLite's settings are, and simulations with assumptions that are drastically different from current conditions may produce counterintuitive results.

Id. at 9-59.

Use of CalLite to assess the effects of climate change impacts on the proposed project is inappropriate given the model's numerous limitations, and especially considering the availability of more powerful models, like CalSim II, which the Bureau used to assess climate change impacts in its USJRBSI Draft Feasibility Report ("Draft Feasibility Report"). Use of the CVPIA Climate Modeling Suite likely resulted in flawed projections, an example of which (inflows to Millerton Reservoir) is discussed in detail below. In order to accurately assess the impacts of alternatives in light of climate change, operational modeling must be done using CalSim II, after fixing the flaws identified in public comments reviewing the BDCP DEIS/DEIR.

B. The DEIS Uses Outdated and Flawed Assumptions in the Climate Change Sensitivity Analysis

In addition, the climate change assessment uses outdated and flawed assumptions that lead to inaccurate results. The DEIS uses some input data for the CVPIA Climate Modeling Suite from the most recent California Water Plan Update 2013 ("CWP Update 2013"). However, the DEIS also uses outdated input data, which has been revised for the CWP Update 2013. Outdated data sets used in the climate change impacts assessment include:

- socioeconomic future scenarios, *see* Climate Change Modeling Attachment at 3-3;
- projected changes in irrigated lands, *see id*. at 3-3;
- local inflow and precipitation, agricultural and urban water use, demand, return flows, local deliveries, and groundwater pumping for the San Felipe Division, *see id*. at 3-28; and
- population and water portfolio information, *see id*. at 3-38.

Additionally, population projections for the Sacramento, San Joaquin and Tulare Lake hydrologic regions were based on data developed by the California Department of Finance (DOF) in 2007, though the DOF recently updated this dataset in 2013. California Department of Finance, Report P-1 (County): State and County Total Population Projections, 2010-2016, January 2013, available online at: http://www.dof.ca.gov/research/demographic/reports/projections/P-1/. The failure to use updated projections and data sets is likely to substantially affect the modeling and assessment of environmental impacts in the DEIS.

C. The Modeling of Friant/Millerton Inflow in the Climate Change Sensitivity Analysis Is Substantially Flawed and Inconsistent with Prior Analyses by Reclamation, Demonstrating the Inadequacy of the Analysis

One of the key effects of climate change in the project area, and thus one of the key results of the climate change sensitivity analysis, is likely to be potential changes to Millerton Reservoir monthly inflows. However, in the DEIS, the projected monthly inflows to Millerton Reservoir (Figure 8-4, Chapter 8 Climate Change, page 8-17 through 8-18) are inconsistent in terms of flow volume with recently modeled projections in the Draft Feasibility Report (Draft Feasibility Report, Modeling Appendix, Attachment C, page 10, Figure 1) and the BDCP DEIS/DEIR (Environmental Impact Statement for Bay Delta Conservation Plan, Appendix 29B, Figure 8).

Under the median climate change scenario (Q5) the DEIS projects flow volumes up to 360 acre-feet per month for the 2012-2040 time period, 300 acre-feet per month for the 2041-2070 time period, and 250 acre-feet per month for the 2071-2099 time period. DEIS at 8-17 to 8-18. In contrast, the Draft Feasibility Report projects flow volumes of no more than 250 acre-feet in 2060 when accounting for climate change, *see* Draft Feasibility Report, Modeling Appendix, Attachment C, at 11 and Figure 1, and the BDCP DEIS/DEIR projects inflows of no more than 210 acre-feet per month for 2025 and 2060 with climate change, *see* BDCP DEIS/DEIR, Appendix 29B Figures at 8 and Figure 8.

All of these reports use the same climate change scenarios, developed for the California Department of Water Resources (DWR) California Water Plan (CWP) Update 2009. It would appear that the differences must be the result of differing modeling methodologies and assumptions. The Draft Feasibility Report and BDCP DEIS/DEIR both used CalSim II to generate inflow data for Millerton Reservoir, and the projections in these two reports match up much more closely than the projections within the DEIS, which used the CVPIA Climate Modeling Suite. Given the limitations associated with the CVPIA Modeling Suite compared with CalSim II, it seems likely that the DEIS projections are clearly erroneous.

The inaccuracies in Millerton Reservoir inflow predictions skew the entire climate change impacts assessment. Predicting substantially increased flow volumes to Millerton Reservoir would tend to inflate the water supply benefits of constructing the Temperance Flat Reservoir. Smaller flow volumes would mean less excess water available for capture. Inaccuracies in the projected timing of peak flows (i.e., showing a smaller temporal shift resulting from climate change than other modeling efforts) also tend to downplay the overall impacts of climate change on Millerton operations. A greater shift in operational rules further precludes CalLite as an appropriate model for simulating future conditions under climate change as it is not designed to simulate futures with significant changes to operating conditions.

D. Projected monthly inflows to Millerton Reservoir under the baseline scenario are non-sensible

As shown in Figure 8-4 of the DEIS, monthly inflow to Millerton Reservoir is projected to decrease in each successive modeled time period (2012-2040, 2041-2070, 2071-2099) under all future climate scenarios, including the 'current trends, no climate change' (CT_NoCC) scenario. DEIS at 8-17 to 8-18. While an overall decrease in precipitation (and therefore, monthly inflow) is expected under future climate change scenarios, it is not clear what factors would lead to a decrease in monthly inflow under current socioeconomic trends with no climate change. There is no discussion included in the DEIS of why this trend might occur.

E. Future precipitation time series are based on the historical record and thus do not include extended droughts, which are predicted to occur with greater frequency under climate change

Climate change is expected to increase the likelihood of longer, more extreme drought periods in California. *See* note 4, *supra* (citing Cayan et al 2013, Null and Viers 2014, and DWR 2009). However, these extended dry periods are not present within the historical record upon which future precipitation time series were based. While the DEIS mentions the potential water supply implications of a shift to earlier peak runoff and an overall decrease in average precipitation on an annual basis, it does not consider the water supply or environmental impacts associated with extended droughts.

As stated on page 3-54 of the Climate Change Modeling Attachment, "the future time series reflect the same inter-annual variability as the historical period because of the methodology used in developing the projections." Rather than reproducing past patterns, future precipitation time series used to asses climate change impacts should include longer dry periods than are present in the historical record. This is important to assess potential environmental impacts of the alternatives, including changes in water temperatures and downstream flows. In addition, including more frequent extended droughts in the modeling, consistent with current climate change projections, is likely to significantly reduce the water supply benefits of the alternatives. The failure to include more frequent and longer duration drought periods in the modeling results in the DEIS likely overstating potential water supply benefits and understating environmental impacts.

F. The future precipitation time series is based on the historical precipitation record, leading to flawed agricultural demand projections, which are heavily tied to precipitation

For the DEIS, modeled agricultural water demands are in part based on precipitation, with agricultural water demands increasing as precipitation decreases, and vice-versa. Because of this, and the fact that future precipitation time series were based on the historical record, there is a significant spike in agricultural water demands leading up to 2030 due to a dry period that occurred in the early 20th century. *See* Climate Change Modeling Attachment at 3-78, figure 3-55. While this spike is not a prediction of an actual increase in demand, it serves to skew agricultural demand data over the entire modeled period, which is actually predicted to decrease over time as more irrigated acreage is converted to urban land uses.

Artificially inflating agricultural demands at the beginning of the modeled period increases the apparent 'unmet demand,' which may seem to make the alternatives appear more appealing. This is another issue that arises as a result of using the historical precipitation record to generate future climate predictions, and is not the best approach, as stated in the DEIS itself:

> It is also important to note that the rapid increase in demands during the early 21st century is partly an artifact of using the historical period precipitation record to create the projected future climate. A better method would be to simulate droughts and wet periods throughout the simulation period. However, this approach was not implemented in this study.

Climate Change Modeling Attachment at 3-78.

G. The DEIS relies on and tiers to information about model assumptions, methods, and calibrations, which were not publicly available during the public comment period

The DEIS' climate change sensitivity analysis tiers from information that was not public available during the public review period. The DEIS refers to the Central Valley Project Integrated Resource Plan (CVP IRP) for additional information related to:

- methods for projecting changes in irrigated land acreages from 2050 to 2100, *see* Climate Change Modeling Attachment at 3-3;
- WEAP-CV model calibration, *see id*. at 3-22; and,
- Assumptions incorporated into the CalLite model, *see id.* at 3-42.

NRDC staff contacted Reclamation and requested a copy of the CVP IRP to review these assumptions, but Reclamation has not made the CVP IRP available at this time. *See* Attachment 1. As a result, much of the methodology leading to the climate change impacts projections was unavailable for review during the public comment period. This is unlawful. Reclamation must re-open the public comment period when the CVP IRP is available to the public, in order to provide the public with the opportunity to comments on these assumptions, methods, and model calibrations that were withheld from public review.

IV. The DEIS Fails to Accurately Assess Potential Environmental Impacts, Erroneously Concluding that Certain Impacts are Not Significant and Failing to Accurately Assess the Magnitude of Other Adverse Environmental Impacts

As discussed in more detail below, the DEIS fails to adequately assess potential environmental impacts of the alternatives on the reintroduction of spring and fall run Chinook salmon, on other native fish species, on downstream water temperatures and flows, on the San Joaquin River Restoration Program, and on groundwater. In addition, as noted above, the impact analysis in the DEIS fails to incorporate the likely impacts of climate change, and utilizes flawed modeling, both of which likely exacerbates adverse environmental impacts of the alternatives. The DEIS must be revised to address these flaws and recirculated for public comment.

A. The DEIS Fails to Adequately Analyze Environmental Impacts to Reintroduction of Fall Run Chinook Salmon Pursuant to the Settlement and Settlement Act

Fall run Chinook salmon are the backbone of the salmon fishery in California and much of Oregon, and pursuant to the San Joaquin River Restoration Settlement and Settlement Act, the United States has already begun reintroduction of both spring and fall run Chinook salmon to the San Joaquin River below Friant Dam.[6] In addition, fall run Chinook salmon are listed as a species of concern under the Endangered Species Act. 69 Fed. Reg. 19975 (April 15, 2004). As the DEIS notes, an alternative that causes a substantial adverse effect on a special status species shall constitute a significant environmental impact. DEIS at 5-67.

Despite this, the DEIS fails to analyze the impact of the project alternatives on fall run Chinook salmon in the extended study area between Friant Dam to the Merced River. For instance, although impact FSH-10 examines impacts to spring run Chinook salmon habitat (inaccurately, as we discuss

[6] The DEIS inaccurately fails to include reintroduction of salmon to the San Joaquin River under existing conditions. DEIS at 2-38. The Department of the Interior has already begun reintroducing spring and fall run Chinook salmon to the river pursuant to the Settlement. The DEIS should be revised to include salmon reintroduction in both the existing conditions and no project alternatives.

below), the DEIS fails to include a similar analysis for fall run Chinook salmon, and the DEIS fails to meaningfully (or accurately) consider impacts to fall run in FSH-11 and FSH-14.

Because fall run and spring run Chinook salmon exhibit different life history strategies, the impacts to each run will be distinct. As Table 5-2 in the DEIS indicates, the timing of spawning, adult migration, and juvenile rearing are very different between the two runs. As a result of these differences, the impacts of changes in flow, temperature, and habitat will have very different effects on these two distinct Chinook salmon runs. Yet the DEIS largely fails to assess the impacts on fall run Chinook salmon, particularly when those impacts would be substantially different from impacts to spring run Chinook salmon.

For instance, the DEIS claims that certain alternatives may result in improvements in summer water temperatures that will benefit spring run Chinook salmon, and that these improvements will offset increasingly warm water temperatures in the spring months that are caused by those alternatives. *See* DEIS at 5-96 to 5-97; Draft Feasibility Report, Modeling Appendix, Attachment A, at 4-1 to 4-2. However, increased flows and reduced water temperatures in the summer months will cause no benefits for fall run Chinook salmon, as they generally are not in the San Joaquin River during these months. *See* Table 5-2.

Yet the DEIS fails to inform the public and decision-makers that all of the alternatives would likely cause significant adverse impacts to fall run Chinook salmon through increased water temperatures in the spring months and from reduced flows and floodplain inundation. For instance, FSH-11 mentions the significant and unavoidable impacts to spring run Chinook salmon from increased water temperatures, but FSH-11 does not mention fall run Chinook salmon. *See* DEIS at 5-94 to 5-97. Similarly, while FSH-14 identifies a significant and unavoidable impact to salmon and steelhead from reduced floodplain inundation, it briefly discusses EDT model results for spring run Chinook salmon and simply assumes that similar effects would apply to fall run Chinook salmon without any analysis of the differences in life history. *See* DEIS at 5-105 to 5-107.

It is clear, as we discuss below, that increased spring water temperatures and reductions in floodplain inundation from the alternatives analyzed in the DEIS will significantly and adversely affect fall run Chinook salmon and spring run Chinook salmon, even more when the DEIS accurately accounts for the effects of climate change.

The DEIS must be revised to specifically address the potential impacts to fall run Chinook salmon under the action alternatives and to summarize the impacts to fall run Chinook salmon from the alternatives. It is clear from our review that all of the alternatives will substantially and adversely affect fall run Chinook salmon, and because they are listed as a special status species, the alternatives result in a significant adverse effect under NEPA and CEQA, and mitigation measures to reduce or eliminate these environmental impacts must be considered.

B. The Analysis of Water Temperature Impacts (FSH-11) in the DEIS is Significantly Flawed and Understates Likely Environmental Impacts

Although the DEIS admits that all of the alternatives likely would increase spring water temperatures, causing significant adverse environmental impacts (FSH-11), the DEIS does not adequately analyze or address the environmental impacts of proposed alternatives on spring water temperatures or consider feasible mitigation measures and alternatives to reduce or avoid these impacts. First, as we discuss above, the DEIS fails to include the effects of climate change in the operational modeling, which is likely to increase air and water temperatures and exacerbate the impacts of increased water temperatures from the alternatives. The DEIS wholly fails to analyze the environmental impacts of the alternatives on water temperatures in combination with the likely effects of climate change. Second, the DEIS fails to adequately analyze the impact of increased water temperatures, particularly on salmon populations between Friant Dam and the Merced River. Third, the DEIS provides implausible and inaccurate results from the EDT model for salmon (discussed *infra*). Fourth, the DEIS fails to include feasible mitigation measures to reduce or avoid the impact of higher water temperatures caused by the alternatives.

For salmon, early life stages are generally thought to tolerate narrower temperature ranges and more sensitive to temperature fluctuations. *See* California Department of Fish and Wildlife 2014, Final Environmental Impact Report, San Joaquin River Restoration Program: Salmon Conservation and Research Facility and Related Fisheries Management Actions Project, at 6-42. Temperatures between March and the end of June are most important for allowing outmigration of salmon from the river, but spring run Chinook juveniles may require optimal flows and temperatures throughout the year. *Id*. at Appendix H. Suitable smoltification temperatures are less than 55˚F and smoltification is impaired from 55°F to 59°F. U.S. Environmental Protection Agency. 2003. EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards.EPA 910-B-03-002. Temperatures reaching or above 55°F can halt or reverse smoltification in Chinook and steelhead salmon. *See* Richter and Kolmes 2005. Maximum Temperature Limits for Chinook, Coho, and Chum Salmon, and Steelhead Trout in the Pacific Northwest., Rev in Fish Sci, 13:1,23-49. DOI: 10.1080/10641260590885861. Yearling spring-run Chinook prefer temperatures below 52°F. *See* Sauter, S. T., J. McMillan, and J. Dunham. 2001. Issue Paper 1. Salmonid behavior and water temperature. Prepared as part of U.S. EPA Region 10 Temperature Water Quality Criteria Guidance Development Project.

The DEIS admits that the alternatives are likely to substantially increase water temperatures, stating that,

> Each of the action alternatives would reduce the number of weeks between January 1 and June 1 with 7-day average water temperatures below the 55°F temperature threshold in at least one reach in all water temperature year types, at all exceedence levels, with the largest effects occurring between reaches 1B and 2B2.
> …

> As shown, Alternative Plan 1 increases winter and spring water temperatures over baseline conditions. As a consequence, the 55°F 7-day average temperature threshold is exceeded 6 to 7 weeks earlier than the No Action Alternative at the typical 50th and warmer 90th percentile temperatures (see summary table of results in the Modeling Appendix).

DEIS at 5-96. The consequences of this effect are to dramatically reduce the migration and smoltification window for spring and fall run salmon:

> This has the effect of altering the timing and distribution of water temperatures suitable for juvenile salmon and steelhead migration and smolting throughout a large component of the migratory corridor, increasing both the distance and duration of exposure to water temperatures that inhibit smolting transformation. For example, Alternative Plan 1 has a large effect on the distribution of 50th percentile temperatures below threshold between Reaches 1B and 2B2. Threshold exceedence occurs from 1 to 7 weeks earlier between Reaches 1B and 2B2 (see summary table of results in the Modeling Appendix). **This effectively constrains the period of suitable migration water temperatures in these reaches to the first week of February, meaning that juveniles migrating later would face an additional 38 miles of water temperatures unsuitable for maintaining smolting physiology.** The effects are similar at the 10th and 90th percentiles, but they are shifted farther upstream and downstream, respectively. Alternative Plans 2, 3, 4, and 5 have generally similar effects, although there are some important differences by reach (see summary table of results in the Modeling Appendix).

DEIS at 5-97 (emphasis added). Yet the DEIS fails to fully account for this adverse impact, as it would significantly impair or eliminate downstream migration of juvenile salmon. Temperature barriers from the proposed alternatives likely will be widespread because of higher spring temperatures, creating barriers for downstream migration. In addition, the DEIS states that daily maximum temperatures are 1-2°F above the average daily water temperature in winter, however the temperature model used has been shown to vary from actual temperature by as much as 10°F higher. *See* Reclamation 2013, HEC-5Q Water Temperature Model in Post-Settlement Conditions (March 21, 2013), available online at: http://restoresjr.net/group_activities/TFMB-RestGoals/2013/3.0_20130321_RGTFG_RiverTemp.pdf; Federal Energy Regulatory Commission 2012, Study Plan W&AR16, lower Tuolumne River Temperature Model, Status Report, September 2012, available online at: http://www.donpedro-relicensing.com/Lists/Announcements/Attachments/84/LowerTuolumneRiverTempModelStatus_Sep2012_20121018.pdf.

Under the alternatives, spring temperatures could exceed threshold tolerance for spring run and fall run Chinook salmon in June in Reach 1 and in April, May, and June in Reach 2. In contrast, Reclamation's prior work with the EDT model concluded that temperatures in Reach 1 were adequate year round for both spring and fall run Chinook salmon. USBR 2014, Revised Final

Technical Report: Analysis of Fish Benefits for Reach 2B Alternatives of the San Joaquin River, March 2014 at 4-5. Modeling in the SJR5Q appendix to the DEIS shows that the alternatives generally increase winter spring water temperatures in Reaches 1-2 by 2-5°F, and increase water temperatures in reaches 3-5 by 2-3°F. DEIS, SJR5Q Modeling Attachment, at 3-27. Since Reclamation does not provide the raw temperature data, we include an additional 1-2°F as a conservative estimate of the range. Given this, Reach 1 temperatures for the Alternatives could reach between 47-52°F in April, 49-53°F in May, and 50-55°F in June. Reach 2 is expected to reach temperatures well above this, 54-70°F in April, 56-76°F in May, and 60—80°F in June. Already it can be seen that the alternatives may make Reach 2 act as a major barrier to outmigration as early as April. In all, the proposed alternatives could create a nearly 90 mile long barrier to downstream migration, effectively eliminating any proposed ecosystem benefits.

Equally important, the DEIS fails to consider the impact of increased water temperatures on adult salmon migrating upstream (or on spring run salmon holding and rearing habitat). According to Reclamation, adult spring run Chinook salmon typically migrate upstream in February to May. *See* USBR 2014, Revised Final Technical Report: Analysis of Fish Benefits for Reach 2B Alternatives of the San Joaquin River, March 2014 at 2-10. The increased water temperatures under the alternatives could become a barrier not only to downstream juvenile migration (and to dramatically shift life history strategies), but the increased water temperatures could also be a barrier to upstream adult spring run Chinook salmon migration. *See id*. at 5-3. The DEIS wholly fails to consider this potential impact.

Reclamation determined the increase in water temperatures caused by the alternatives to be "a cumulatively considerable incremental contribution to the overall significant cumulative impact to water temperature conditions supporting juvenile salmon and steelhead migration." DEIS at 27-67. This assessment does not take into account any other changes that might be brought about by other projects or climate change. Again, even though this increase in temperature could significantly impact salmon outmigration and adult spring run Chinook salmon upmigration, Reclamation wholly fails to identify any mitigation measures for this impact.

Finally, the DEIS also fails to evaluate impacts of changing temperature and dissolved oxygen on the salmon conservation and research facility (hatchery) being constructed immediately downstream of Friant Dam pursuant to the Settlement and Settlement Act. Water for the hatchery would originate from Millerton Lake and the quality of the water would depend on the lake elevation and temperature. The DEIS fails to assess whether increased water temperatures would adversely affect operations of the conservation hatchery.

Because the DEIS determines that the alternatives will cause significant environmental impacts, Reclamation must consider mitigation measures in the DEIS to reduce or eliminate these significant environmental impacts from higher water temperatures. One mitigation strategy that must be considered would be to modify proposed operations (and carryover storage requirements at Friant Dam) to protect salmon and reduce or avoid the increased spring water temperatures. A second feasible mitigation measure that Reclamation must consider would be installing a temperature

control device on Friant Dam. Although Reclamation previously rejected alternatives that only included adding a temperature control device to Friant Dam, *see* DEIS Plan Formulation Appendix at 4-79, this clearly is a feasible mitigation measure that could reduce or avoid these impacts. The failure to consider and analyze such mitigation measures in the DEIS is unlawful.

C. The DEIS does not consider potential increases in predation due to altered temperatures and entrainment on native fish populations

Rising water temperatures place salmon at risk from higher predation rates, a factor not considered in the DEIS. The DEIS states, "[t]he extent and duration of 7-day average temperatures above 84°F represent a potentially significant limitation on the availability of suitable summer rearing habitat for highly tolerant fish species while providing beneficial conditions for nonnative predator and competitor species." DEIS at 5-100. Species like largemouth bass and striped bass show a nearly linear relationship between temperatures and feeding rates. *See* Marine, K.R. and J.J. Cech, Jr., 2004. Effects of High Water Temperature on Growth, Smoltification, and Predator Avoidance in Juvenile Sacramento River Chinook Salmon, North American Journal of Fisheries Management, 24(1): 198-210; Coutant, C. C. 1975. Responses of bass to natural and artificial temperature regimes. Black bass biology and management, in R.H. Stroud and H. Clepper, eds. Sport Fishing Institute, Washington, D. C., 272-285. In contrast, temperatures below 59°F are thought to reduce predation. Largemouth bass are documented predators of outmigrating juvenile anadromous salmonids. Omission of predation rates could place limits on the expected benefits to salmon. Additionally, Reclamation failed to model the potential interaction between floodplain inundation, temperature, and predation. Given the importance of these three factors in determining population success, Reclamation should consider these factors simultaneously. A loss of floodplain inundation due to reduced spring flows and higher water temperatures will likely increase predation on salmon populations.

D. The DEIS Fails to Accurately Assess Impacts to Reintroduction of Spring run Chinook salmon, and the Alternatives are Likely to Result in Adverse Environmental Impacts under FSH-10

In the DEIS, Reclamation erroneously concludes that most of the alternatives are likely to increase spring run Chinook salmon, when an accurate assessment would conclude that the alternatives are likely to result in significant adverse impacts on spring run Chinook salmon under FSH-10. The modeling that is included in the DEIS improperly uses the EDT model, fails to account for the effects of climate change, fails to accurately account for the importance of floodplain inundation, downplays the effects of increased water temperatures in the spring on both juvenile and adult migration, and largely ignores the reductions in flows in the restoration area and downstream.

In general, as discussed above, the increases in water temperatures caused by the alternatives are likely to cause significant migration barriers. The EDT model fails to accurately assess the impacts of increased water temperatures on upstream and downstream migrations. If salmon cannot successfully migrate upstream or downstream in the spring, they obviously cannot benefit from improved summer temperatures. In addition, as we discuss below, the reduction in flows and

increased water temperatures are likely to reduce the benefits of floodplain inundation for salmon productivity. The EDT model poorly represents the benefits of floodplain inundation, thus failing to accurately assess these adverse impacts on spring run Chinook salmon. And the modeling in the DEIS fails to account for climate change impacts, which are likely to exacerbate water temperature and other impacts of the alternatives. These adverse impacts from the alternatives considered in the DEIS are likely to eliminate and more than offset any potential benefits of decreased summer temperatures on spring run Chinook salmon, resulting in a significant adverse impact on spring run Chinook salmon.

1. The DEIS Uses the EDT Model Inappropriately as a Predictive Tool

The EDT model is meant to provide insight into the potential for existing and future habitat conditions to support salmon populations, but it is explicitly *not* intended to be used as a predictive model. However, Reclamation does just this, using the output from the EDT model inappropriately as a predictive model. This is improper.

The developers of the EDT model have stated that, "[t]he model is a tool to facilitate both -planning and learning; it is not a predictive model." *See* Lestelle, L. C.; Lichatowich, J. A.; Mobrand, L. E., and Cullinan, V. I. 1994 Ecosystem diagnosis and treatment planning model as applied to supplementation; Model description, user guide, and theoretical documentation for the model introduced in the summary report series on supplementation in the Columbia Basin. Portland, Oregon: Bonneville Power Administration. Equally important, the developers have also stated that, "this performance measure is an indicator of how favorable the environment is or might become for salmon to persist and abound, **not a predictor of how many will return and when**." *See* Mobrand, L. E., J. A. Lichatowich, L. C. Lestelle, and T. S. Vogel. 1997. An approach to describing ecosystem performance "through the eyes of salmon." Can. J. Fish. Aquat. Sci. 54:2964–2973 (emphasis added).

In previous reviews, NOAA fisheries scientists have agreed, stating "because the underlying data and functional relationships are largely untested, ***the accuracy of any EDT outcome is unknown.***" *See* Beechie, T.J., E.A. Steel, P. Roni, and E. Quimby (editors). 2003. Ecosystem recovery planning for listed salmon: an integrated assessment approach for salmon habitat. U.S. Dept. Commerce, NOAA Tech. Memo. NMFS-NWFSC-58 (emphasis added). NOAA scientists have also stated that using the EDT model to predict the effects of flow alterations can be misleading, that the model is most sensitive to parameters focused on adult populations, and that error values for abundance, productivity, and capacity are large. *Id*. They also state that using the EDT model to assess potential fish performance is "risky" and that the model should not be used for making decisions without sensitivity analysis. *See* Steel et al 2009. Making the Best Use of Modeled Data: Multiple Approaches to Sensitivity Analysis of a Fish-Habitat Model. Fisheries 34: 330-339. Similarly, U.S. FWS, U.S. Geological Survey, and NOAA Fisheries have stated that, "Uncertainties inherent in EDT, a complex ecosystem model, made it important that confidence bounds around the results of this effort be taken into account" when using the EDT model for a similar purpose. *See* NMFS and USFWS 2011. Fall Chinook Salmon Life Cycle Production Model. Report to Expert Panel, available online at:

http://www.fws.gov/arcata/fisheries/reports/technical/Fall%20Chinook%20Report%20of%20FPM%20Team%20to%20Expert%20Panel%20DRAFT%201%202011.pdf.

Yet Reclamation uses the EDT model as a prediction of future outcomes under the alternatives, despite the clear directions from the model developers and fishery agencies not to do so.

Additionally, Reclamation does not demonstrate any level of error in the output. As suggested previously, a sensitivity analysis should be conducted to determine the significance of predicted changes in salmon populations, if Reclamation continues to utilize the EDT model in a predictive manner. Currently, the EDT model does not provide estimates of the uncertainty (or precision) of the output estimates, *see* Beechie et al 2003, making its usefulness minimal for this particular analysis. For example is the change in salmon abundance 6% plus or minus 20%? Are changes actually insignificant? When EDT predicts that a proposed action will result in an increase of 317 fish, is potential error associated with this estimate ± 10 fish or ± 400 fish?

The model has a large number of input parameters, most of which are estimated with relatively high uncertainty. As examined by NOAA scientists, the model largely ignores this uncertainty and model predictions are made based solely on the best or "point" estimate of the input parameters. McElhany, P., E. A. Steel, D. Jensen, and K. Avery. 2009 Uncertainty in a complex salmon habitat model. in E. E. Knudsen, J. H. Michael, and C. S. Steward, editors. Pacific salmon environment and life history models: advancing science for sustainable salmon in the future. American Fisheries Society, Symposium 71, Bethesda, Maryland. For instance when looking at the 90 percent confidence interval in the EDT model for the Columbia River Basin, McElhany found equilibrium abundance to be 2,563 to 6,550 – a difference of more than 4,000 individuals. A range of 4,000 Chinook salmon is much larger than the maximum difference of about 300 individuals between alternatives and no action for Temperance Flat. *Id*. On average, proposed alternatives predict that from 343 fewer to 190 more salmon will return across all year types. At low SAR, the best Reclamation expects is an additional 19 salmon to return due to the creation of Temperance Flat. DEIS at 5-11. It is highly doubtful that this change is statistically significant and would not be included in the error of the EDT model. Providing the prediction or confidence intervals is critical to determine the likelihood that predicted changes will occur, and the potential for adverse outcomes to occur.

In addition, Reclamation must make available the modeling assumptions and parameters utilized for the EDT model. The DEIS simply presents EDT model results, without explaining the parameters or assumptions that are used, and the appendices provide little additional information. This information is necessary for the reader to be able to fully evaluate Reclamation's assertions in the DEIS. The failure to make this information available in the DEIS undermines NEPA's public information function, and absent that information the conclusions in the DEIS lack substantial evidence.

Reclamation should not use the EDT tool as a way to predict the actual numbers of salmon returning to the system. At best EDT outputs can guide restoration, but the EDT model should not be used to determine likely ecosystem benefit for NEPA or economic benefits calculations.

2. The EDT Model Poorly Accounts for Floodplain Inundation and Use by Salmon

Second, the EDT model in general poorly accounts for floodplain inundation and productivity. R. Henery, Personal Communication, 2014. As a result, the model understates the adverse environmental impacts of reduced floodplain inundation and increased water temperatures on floodplains. This effect is exacerbated because the EDT model assumes the most limited floodplain restoration, and largely ignores required floodplain restoration in Reaches 2 and 4. *See* Draft Feasibility Report, Modeling Appendix, Attachment A, at 2-7 (stating that the EDT modeling utilized the "Minimum Restoration Scenario," which includes no "gravel augmentation, levee setbacks, floodplain habitat restoration, or other proposed restoration actions"); *see* DEIS at 5-104 (describing reaches 1 and 5 as having the greatest accessible floodplain area, which seems to ignore planned floodplain restoration in reaches 2 and 4).

Additionally, it is unclear whether Reclamation modeled potential impacts of lost riparian zone interaction due to reduced flood flows. Since such a feature is not supported in the standard EDT model design, Reclamation should utilize existing HEC-RAS models to address impacts of Alternatives to channel structure and riparian interaction. This analysis would likely show significant adverse impacts that negate purported environmental benefits.

E. The Analysis of the Environmental Impacts of Reductions in Pulse Flows and Floodplain Inundation (FSH-14) is Substantially Flawed, and the Alternatives are Likely to Cause Significant Environmental Impacts under FSH-14

The DEIS claims that the reduction in floodplain inundation caused by the alternatives will result in a less than significant impact. *See* DEIS at 5-107. However, while the DEIS acknowledges that, "the action alternatives would alter the duration of peak flows above 4,000 cfs," DEIS at 5-106, and that the alternatives would, "[r]educe the frequency, magnitude, and duration of floodplain habitat inundation, affecting rearing habitat," DEIS at 5-51, the DEIS fails to quantify or adequately consider the environmental consequences in the reduction in the duration of floodplain inundation, changes in the timing of floodplain inundation, or the effect of increased spring water temperatures on fisheries use of floodplains. The DEIS fails to use existing modeling tools, such as the HEC RAS model, to determine the effect on floodplain inundation. Instead, the DEIS only considers changes in the magnitude of peak flows in determining whether there is a significant environmental impact. *See* DEIS at 5-107.[7] By completely ignoring the environmental effects of changes in the timing, duration, extent, and water temperatures associated with floodplain inundation, the DEIS fails to adequately asses the environmental impacts of the reduction in floodplain inundation and erroneously concludes that the alternatives will not result in significant environmental impacts.

[7] In addition, the DEIS assumes that the only floodplain habitat in the system is in Reaches 1A, 1B, and 5. DEIS at 5-104; DEIS, Modeling Appendix, Attachment A at 2-7 to 2-8. However, pursuant to the Settlement, floodplain restoration will also occur in Reach 2 and Reach 4B. The DEIS appears to ignore the potential environmental impacts on restored floodplains.

Floodplain inundation is critically important to numerous native species in the extended study area, including salmon and splittail. Many scientific studies have documented that salmon that rear on floodplains grow substantially larger than those that rear in the main channel, and are more likely to successfully migrate and return to spawn. *See, e.g*., Opperman 2012; Sommer 2001. However, the timing, duration, extent, and magnitude of floodplain inundation, as well as the water temperatures during floodplain inundation, determine the productivity of floodplains and their use by salmon and other native species. *Id*.; Personal Communication with R. Henery 2014; *see also* Bureau of Reclamation, Revised Final Technical Report: Analysis of Fish Benefits for Reach 2B Alternatives of the San Joaquin River, March 2014. Longer duration of floodplain inundation is important to produce biological benefits for salmon, with a minimum of 2 weeks inundation often necessary to achieve biological benefits. Personal Communication with R. Henery 2014; *see* Opperman 2012.

In contrast to the strong scientific evidence that longer duration of floodplain inundation is necessary for biological benefits to salmon and other fisheries, the DEIS asserts that,

> As shown, sustained pulse flows between 4,000 and 8,000 cfs would occur more frequently under the No Action Alternative. This suggests that the duration of peak flows between 4,000 and 8,000 cfs would be reduced under Alternative Plan 1, but the ecological significance of changes in flood pulse frequency exceeding this threshold is unclear. The effects of the remaining action alternatives on flood pulse volumes and, by extension, the duration of flood pulses larger than 4,000 cfs, are similar to those described for Alternative Plan 1.

DEIS at 5-106 to 5-107. This is inaccurate. Elsewhere, the DEIS admits that the action alternatives would, "Reduce frequency, magnitude, duration of floodplain habitat inundation." DEIS at 6-72. Yet the DEIS fails to quantify these reductions and it completely disregards the environmental impacts of these reductions in reaching its erroneous conclusion that the reduction in floodplain inundation would not cause a significant environmental impact.

Table 12-6 in the DEIS shows that under the no action alternative, flood releases would occur in 39 of the 82 years in the 1922-2003 CALSIM simulation, although in the majority of these years flood releases were less than 100 TAF (20 years). DEIS at 12-39 to 12-40. In contrast, under most of the action alternatives, flood releases would only occur in 7 years. *Id*. Similarly, the Modeling Appendix shows significant reductions in flows would occur during the winter and spring months, at flow levels substantially below 8,000 cfs. *See* DEIS, CALSIM Modeling Appendix, at 659. Yet the DEIS fails to consider the environmental impact of this dramatic reduction in the frequency of flood releases and resulting floodplain inundation.

The DEIS also ignores the environmental impacts of reduced flood flows on salmon survival through the San Joaquin River between Friant dam and the junction with the Merced River. Studies conducted for the SJRRP in 2011 showed substantial survival rates for juvenile salmon migrating downstream and through the flood bypass system during flood releases. *See* SJRRP, Juvenile

Salmonid Survival and Migration in the San Joaquin River Restoration Area Spring 2011 and 2012, presentation to the Fisheries Management Technical Feedback Group, November 2, 2012. While the DEIS considers the impacts of reduced flows downstream (FSH-16), it fails to consider the impact of reduced flows on salmon survival from Friant Dam to the junction with the Merced River. The DEIS shows substantial decreases in flows in these reaches, *see* DEIS at 14-64 (citing Table 14-27), yet the DEIS wholly fails to analyze the effects of such flow reductions in these reaches on salmon survival.

The DEIS also ignores the impact of higher spring water temperatures on floodplain use by salmon. Prior EDT modeling by Reclamation concluded that floodplain restoration was less effective because of, among other factors, "High temperatures during maximum floodplain inundation later in the spring." Bureau of Reclamation, Revised Final Technical Report: Analysis of Fish Benefits for Reach 2B Alternatives of the San Joaquin River, March 2014 at 5-1. While the DEIS admits that the action alternatives will result in higher water temperatures during the spring, which will cause a significant environmental impact (FSH-11), the DEIS ignores the effects of higher spring water temperature in concluding that the action alternatives will not have a significant impact on spawning and rearing habitat from changes to flood pulses and floodplain connectivity. In contrast, significant increases in water temperatures resulting from the action alternatives likely will reduce the use of floodplains by salmon, significantly impairing rearing habitat.

In addition, the DEIS fails to consider the potential geomorphic impacts of reduced flood flows. The reduction in flood flows will likely have substantial impacts on the distribution and availability of gravel in the river, a preferred substrate for spawning salmon and for the propagation of aquatic invertebrates. Additionally, gravel substrate typically provides additional opportunity for upwelling zones, important for fish and invertebrate productivity and spawning. Within the restoration area, higher flows result in more gravel via bed coarsening by scour, while low flows contribute to fining, or the addition of more silt and sand, *see* SJRRP Channel Capacity Report 2014 Restoration Year, Appendix E, which can be detrimental to productivity and spawning.

The DEIS also fails to use existing models and analyses to quantify the potential impacts of reductions of floodplain inundation. Floodplain inundation modeling should be conducted to assess impacts of Alternatives on fisheries habitat. Previous runs of HEC-RAS and HEC-EFM models for the San Joaquin River restoration flows could be utilized for this. Models should assess whether water levels drop below the one foot threshold depth needed for outmigration of salmon, and the impact of the project to existing and restored habitat projects, gravel bars, and proposed restoration habitat under the SJRRP and other efforts. Without these data, Reclamation cannot adequately assess impacts from removing flood pulses.

Finally, the modeling of changes in floodplain inundation fail to account for climate change. Modeling in the Draft Feasibility Study indicates that climate change likely will result in increased flows and floodplain inundation events as compared to the status quo, particularly during the winter and early spring. Draft Feasibility Report, Modeling Appendix, Attachment C, at 14 and

Figure 6. The DEIS fails to analyze the potential impacts of reducing these flood releases and floodplain inundation events.

According to the DEIS, an alternative would cause a significant adverse environmental impact if it impedes the use of native fish rearing habitat. DEIS at 5-67. The available data indicates that the action alternatives likely will substantially reduce the frequency, magnitude, and duration of floodplain inundation, and that this will have substantial adverse environmental impacts on rearing habitat for salmon and other native fisheries. In addition, the increased water temperatures caused by the action alternatives in the spring will further degrade floodplain habitat and limit its use by migrating salmon. Inexplicably, the DEIS largely ignores these effects in reaching its erroneous conclusion in FSH-14. The available scientific data indicates that the alternatives likely will cause significant environmental impacts in terms of reductions in floodplain inundation, productivity, and use as rearing habitat. The conclusion in FSH-14 is not supported by substantial evidence, and the DEIS must be revised to acknowledge that the action alternatives will cause significant environmental impacts by reducing flood pulses, floodplain connectivity, and rearing habitat.

F. The DEIS Erroneously Concludes that the Reductions in Flows from the Alternatives do not Cause Significant Environmental Impacts (FSH-16)

Substantial scientific evidence demonstrates that the magnitude of flows at Vernalis during the spring months has a significant effect on salmon survival and subsequent abundance. The California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, National Marine Fisheries Service, conservation groups, and independent scientific reviews have all concluded that higher flows at Vernalis generally leads to higher salmon survival and subsequent abundance. *See* State Water Resources Control Board, Review of the San Joaquin River Flow and South Delta Water Quality Objectives and Program of Implementation, available online at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/index.shtml.[8] Evidence presented to the SWRCB indicates that

[8] The following documents from that website are incorporated by reference:
NMFS comments:
http://www.waterboards.ca.gov/waterrights/water_issues/programs/hearings/baydelta_pdsed/docs/comments032913/maria_rea.pdf
DOI Comments:
http://www.waterboards.ca.gov/waterrights/water_issues/programs/hearings/baydelta_pdsed/docs/comments032913/amy_aufdemberge.pdf
CDFW comments:
http://www.waterboards.ca.gov/waterrights/water_issues/programs/hearings/baydelta_pdsed/docs/comments032913/scott_cantrell.pdf
NGO comments:
http://www.waterboards.ca.gov/waterrights/water_issues/programs/hearings/baydelta_pdsed/docs/comments032913/jonathan_rosenfield.pdf
Delta Independent Science Board scientific peer review:
http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/docs/item8_att2_delta_isb_response.pdf

substantial increases in February to June flows at Vernalis are needed to sustain and restore salmon and steelhead populations in the San Joaquin basin, with flows above 10,000 cfs needed to likely achieve salmon doubling requirements of federal and state law and substantially higher flows necessary to inundate downstream floodplains. *Id*.

However, the DEIS concludes that the reduction in flows caused by the alternatives will not cause a significant environmental impact on salmon or other native fisheries, stating that, "The action alternatives have few monthly incidences where they result in flow reductions when flows are less than 10,000 cfs at Vernalis, or less than 6,000 cfs at the Merced River confluence." DEIS at 5-111. This is incorrect as a threshold of significance, given the scientific evidence demonstrating the biological importance of San Joaquin River inflows at Vernalis that exceed 10,000 cfs during the winter and spring months. For instance, the California Department of Fish and Wildlife has recommended Vernalis flows of a minimum of 15,000 cfs in the spring months of wet years. *See* footnote 8, *supra*.

Even assuming this were an adequate threshold of significance, the DEIS shows that the alternatives would result in substantial reductions in January and February Vernalis flows in Dry and Critical year types, DEIS at Table 14-58, and reductions in average monthly flows during virtually all winter and spring months, DEIS at Table 14-57. The CalSim Modeling Appendix shows that Alternative 1 would result violations of that threshold, with reductions of Vernalis flows of 10% or more during the February to June period, including substantial reductions in monthly flows when Vernalis flows are less than 10,000 cfs. *See* DEIS, CalSim Modeling Appendix at 682 (showing substantial flow reductions in 1937, 1943, 1978, and 1980 where Vernalis flows are under 10,000 cfs). The modeling also shows substantial reductions in flow at the junction with the Merced River. DEIS, Modeling Results Supporting Chapter 5 – Fisheries and Aquatic Ecosystems, San Joaquin River Flow figures at 4-5, 44-45. Results appear similar for other alternatives. As a result, the reduction in Vernalis flows would constitute a significant impact, and the DEIS should be revised to show that FSH-16 constitutes a significant adverse impact under CEQA and NEPA.

Equally important, the DEIS fails to adequately consider the potential impacts of reductions in flows between Friant Dam and the Merced River. The DEIS also shows that average flows downstream of Friant Dam are expected to decline substantially under all alternatives, with substantial declines in flow between January and June. For instance, the DEIS shows that in Reach 1, annual average flows are expected to decline by 63-124 cfs (8-17%) across all alternatives. DEIS at Table 14-27. Substantial declines occur between January and June, which could harm salmon survival. Flows during this time period are expected to decline by 174 to 253 cfs in April, 162-454 cfs in May and by 43 to 195 cfs in June. *Id*. Impacts downstream to Reach 2A are similar. *Id*. Reducing potential flows in Reach 2A could have serious effects on salmon restoration. Yet the DEIS fails to consider the consequences of these flow reductions in its analysis of salmon survival or the analysis of floodplain inundation.

G. The DEIS Fails to Accurately Assess or Mitigate Adverse Impacts to Riverine Species Upstream of Friant Dam (FSH-1)

The DEIS assesses potential impacts of temperature on native fisheries, but does little to assess the potential impacts of habitat changes on the species. The DEIS states that the Friant Dam has already contributed to "significant habitat loss for lotic fish" and that Temperance Flat would result in "**cumulatively considerable incremental contribution to the overall significant cumulative impact** to hardhead and Kern brook lamprey." DEIS at 27-64 (emphasis added). It also concludes that all alternatives would cause significant impacts on riverine fish in the study area. DEIS Chapter 5 at 5-68.

One of the most significant impacts to the area above Friant Dam is the loss of ~ 50,000 linear feet of stream habitat, including inundation of 3,431 linear feet of Big Sandy Creek and 46,488 linear feet of the San Joaquin River up to Kerckhoff Dam. Reclamation claims this impact to be potentially significant, but fails to provide any mitigation measures. DEIS at 11-39. This impact would essentially eliminate all stream habitat for fish and wildlife between Friant and Kerkoff dams.

Through the elimination of stream habitat, Temperance Flat would likely eliminate two special status species in the project area – the hardhead and the kern brook lamprey. Hardhead are a U.S. Forest Service Sensitive Species and a California Species of Special Concern and have substantially declined in recent decades, especially in the southern half of their range, and some populations have disappeared. DEIS at 5-4 to 5-5; *see* Moyle, P., R.M. Yoshiyama, J. Williams, and E. Wikramanayake. 1995. Fish species of special concern in California Hardhead are typically found in undisturbed areas of larger middle- and low elevation streams. *See, e.g.* Moyle, P. B., J. J. Smith, R. A. Daniels, and D. M. Baltz. 1982. A Review. Pp. 255-256. In P. B. Moyle (Editor), Distribution and Ecology of Stream Fishes of the Sacramento-San Joaquin Drainage System, California. Publications in Zoology 115, University of California Press, Berkeley, California. In at least 5 reservoirs in California, reservoir construction, including Millerton Reservoir, has caused the population of this species to crash. *See, e.g.,* Moyle, P.B. 1976. Inland Fishes of California. University of California Press, Berkeley. Habitat alteration has resulted in localized, isolated populations, partly due to the construction of dams, and in particular populations in the San Joaquin basin are disappearing rapidly. Moyle et al 1995. Kern brook lamprey are a California Species of Special Concern, with highly fragmented populations in the basin. DEIS at 5-4, 5-6. Many populations are below dams, which combined with their isolation, contribute to the likelihood of extinction. Moyle et al 1995. In fact, dams are listed as the primary factor in the decline of this species. *See* Moyle, P.B., Brown, L.R., Chase, S.D., and Quinones RM. 2009. Status and conservation of lampreys in California. In: Biology, Management, and Conservation of Lampreys in North America (eds Brown LR, Chase SD, Moyle PB, Beamish RJ, Mesa MG), at 279–292. American Fisheries Society Symposium 72, Bethesda, Maryland.[9]

[9] Reclamation admits that the alternatives will cause significant impacts on both species, but the agency should monitor populations of these two species in the project area and tributaries to better assess potential impacts.

The DEIS admits that alternatives that cause substantial adverse effects on a special status species shall constitute a significant environmental impact. DEIS at 5-67. The DEIS likewise admits that the alternatives will cause significant adverse impacts on hardhead and Kern brook lamprey. DEIS at 5-68 to 5-69. Because both hardhead and Kern brook lamprey are listed as special status species by the State of California, and because hardhead is also a federally listed species of special concern, this constitutes a mandatory finding of significant adverse effect under both CEQA and NEPA.

The failure to analyze feasible mitigation measures in the DEIS to reduce or avoid the impacts to these two species, and to other native fish species in the project area, is unlawful. To address this loss of habitat, at a minimum Reclamation must consider off site mitigation through stream, wetland and floodplain restoration and floodplain purchases downstream at a minimum of a one to one ratio (or higher) that benefits hardhead and Kern brook lamprey. In other words, Reclamation should restore at least 50,000 linear feet of stream or equivalent wetland/floodplains that benefits both special status species. Reclamation should consider whether purchasing floodplain easements and agricultural easements along the San Joaquin River could benefit these fish and wildlife species the alternatives would likely eliminate. A number of conservation groups have already identified potential habitat restoration projects that would benefit fish and wildlife, with associated amount of habitat and costs. Reclamation should refer to such documents to assess mitigation opportunities. Additionally, this will be a necessary action when seeking a 404 permit. Without mitigation in place, the 404 permit is at risk of not being approved.

H. The DEIS Fails to Analyze Potential Adverse Environmental Impacts to Steelhead and Sturgeon

The DEIS does not adequately assess the impact of the proposed project on downstream native fisheries. As stated in the Settlement, the Restoration Goal for the San Joaquin River Restoration Program (SJRRP) is "to restore and maintain fish populations in 'good condition' in the main stem San Joaquin River below Friant Dam to the confluence with the Merced River, including naturally reproducing and self-sustaining populations of salmon and *other fish*." DEIS at ES-4 to ES-5 (citing stipulation of settlement) (emphasis added); *see* Cal. Fish and Game Code § 5937.

The DEIS fails to consider potential impacts to the California Central Valley distinct population segment of steelhead, a federally threatened species under the Endangered Species Act. 50 C.F.R. § 223.102. This DPS includes all anadromous steelhead that spawn naturally below dams in Central Valley streams. *Id.* In addition, the 2014 recovery plan lists the San Joaquin River below Friant Dam as one of only four reaches designated as a primary target for steelhead reintroduction. *See* NMFS. 2014. Recovery plan for the evolutionarily significant units of Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, and the distinct population segment of California Central Valley steelhead; Appendix B: Threats Assessment. Thus, it is reasonable to expect that steelhead will be in the project area at the time of the proposed dam construction. It follows that Reclamation should consider the potential impacts to this species. The Recovery Plan identifies flow changes and changes in floodplain habitat caused by changing flows for juvenile rearing and outmigration as some of the most significant potential impacts to steelhead. *Id*. As discussed above, the alternatives are likely to worsen instream flow and temperature conditions

and reduce floodplain inundation. The alternatives are therefore likely to result in significant environmental impacts that are not disclosed in the DEIS, and Reclamation must consider alternatives and/or mitigation measures to reduce or avoid such adverse impacts.

The DEIS also fails to consider impacts to green and white sturgeon. Since 2008, white sturgeon have been found on the San Joaquin River, with evidence of spawning as far upstream as the Tuolumne River in 2012. California Department of Fish and Wildlife Sturgeon Report Card data indicate six green sturgeon and 169 white sturgeon were reported by anglers in the last five years within the San Joaquin River upstream of Stockton. DuBois, J., T. MacColl, and E. Haydt. 2012. 2011 sturgeon fishing report card: preliminary data report. California Department of Fish and Game, Stockton, California. Late April and early May spring pulses appear to trigger spawning events, as was seen during a 2012 flow event from the Merced and Tuolumne Rivers. Jackson, Z.J. and J.P. Van Eenennaam. 2013. 2012 San Joaquin River Sturgeon Spawning Survey Final Annual Report.

Although the DEIS wholly fails to consider potential environmental impacts to sturgeon, reductions in spring flows, increased temperatures, and degraded spawning habitat as a result of the alternatives are likely to result in adverse impacts to green and white sturgeon. For instance, the CalSim II model used in the DEIS shows a strong decline in wet weather flows or pulses in April and May below the Merced River. Based on historic flows, the proposed operations show a reduction in historic April flows by as much as 3,765 cfs (224 TAF) and in May by as much as 4,555 cfs (280 TAF). DEIS CalSim II Modeling Appendix at unmarked pages 667 and 1187. Additionally, sturgeon eggs are more likely to survive in substrates consisting of cobble substrate with little silt. *See* Van Eenennaam, J. P., J. Linares-Casenave, and S. I. Doroshov. 2012. Tank spawning of first generation domestic green sturgeon. Journal of Applied Ichthyology 28:505–511. Reductions in spring pulses and potential subsequent impacts on gravel and cobble availability through a reduction in scour will likely have significant impacts on sturgeon spawning. Increased water temperatures could also cause significant impacts to sturgeon, as optimal spring spawning temperature ranges from 57-61°F on the Sacramento River. *See, e.g*., Kohlhorst, D. W. 1976. Sturgeon spawning in the Sacramento River in 1973, as determined by distribution of larvae. California Department of Fish and Game 62:32–40.

A number of other native fish species were recently sampled within the San Joaquin River below Friant dam, and the DEIS must evaluate potential impacts on these species as well, particularly any special status fish species in the project area. The native fish species found in the project area include Hitch, pacific lamprey, prickly sculpin, river lamprey, Sacramento blackfish, Sacramento pikeminnow, Sacramento sucker, tule perch, and three spine stickleback. *See* SJRRP 2013, Fish Assemblage Inventory and Monitoring, available online at: http://www.restoresjr.net/flows/data-reporting/2013/Fish_Assemblage_Inventory_and_Monitoring-formatted.pdf.

I. The DEIS Fails to Adequately Analyze Impacts to the San Joaquin River Restoration Program's Water Management Goal and Restoration Goal

The DEIS fails to adequately analyze potential impacts to the Restoration Program's water management and restoration goals. For instance, the SJRRP provides water from the recovered water account (RWA) pursuant to Paragraph 16b of the Settlement to help reduce or avoid water supply impacts to Friant users. Under the Settlement, RWA water consists of excess water from wet years provided to Friant users at $10 per acre foot. DEIS at 14-42. As of Fall 2013, 680 TAF have been allocated from the RWA. *See* SJRRP 2013, Presentation to California Water Commission, available online at https://cwc.ca.gov/Documents/2013/11_November/November2013_Agenda_Item_7_Attach_2_PowerPoint_Forsythe_SanJoaquin.pdf. Since Reclamation proposes to reduce or nearly eliminate flood flows, RWA water will be reduced as well. *See* Draft Feasibility Report at 3-45 ("It would also capture and store flows that otherwise would have been delivered to the Friant Division Contractors at $10 per acre-foot to reduce the Recovered Water Account (RWA) or released from Friant Dam as flood flows to the San Joaquin River."). The Draft Feasbility Report notes that,

> Capture and storage of flows in Temperance Flat Reservoir would reduce the availability of $10 water under Paragraph 16(b) of the Settlement and could reduce the effectiveness of projects that would increase the delivery of Paragraph 16(b) water.
>
> The Friant Division contractors would be affected by the increase in cost to deliver stored Temperance Flat Reservoir water that would have otherwise been released as $10 water, but with Temperance Flat Reservoir could receive a greater volume of water supply and greater water supply reliability. In addition, the Friant Division contractors would be affected if the volume of water made available from Temperance Flat Reservoir is not made available to them and is stored for other CVP contractors. This would reduce the SJRRP's ability to reduce RWA balances.

Draft Feasibility Report at 3-47. Yet the DEIS fails to consider or quantify this impact in its discussion of water supply, groundwater and socioeconomic impacts. For instance, while Table 2-11 of the DEIS shows the significant reduction in Section 215 water (an average reduction of 61,000 acre feet per year), it does not quantify the changes in RWA water.

In addition, the DEIS fails to consider impacts on funding for the Settlement from the reduction in RWA water. By largely eliminating RWA water, the alternatives are likely to reduce funding for settlement implementation. Reductions in funding to RWA could have repercussions for existing and proposed restoration projects. Reclamation did not address this impact, which would be significant to existing local plans and conflict directly with existing Reclamation activities.

J. The DEIS Fails to Adequately Assess Impacts to Surface Water Supplies

Many water users would see very limited water supply benefits of the alternatives. For instance, Friant Division agricultural contractors would only receive an additional 8-18 TAF in dry years for Alternatives 1-4, and on average Friant Division agricultural contractors would see potential increases of 27 to 48 TAF. DEIS at Table 2-11. But that would come at the cost of reduced Section 215 and RWA water availability. DEIS at Table 3-2 and Table 3-3. The DEIS estimates that Alternatives 1-4 would only yield 1-2 TAF increases in supply for Friant Class I districts. DEIS at Table 2-11. However, the Draft Feasibility Report assumes that the cost of Friant Class I water would increase to pay for the alternatives, even assuming massive taxpayer subsidies for the project that are likely unavailable. Draft Feasibility Report at 6-23. Additionally, in "Below Normal" years, few water users benefits, with system wide deliveries of 2 to -41 TAF for Alternatives 1-4. DEIS Modelling Appendix at 3-21; 3-22. Friant Division agricultural users see the largest deficit in this year type ranging from -38 to -74 TAF in Alternatives 1-4. DEIS at Table 3-2 and Table 3-3. The DEIS fails to consider these impacts in the Draft Feasibility Report or DEIS, nor does it consider whether these increases in cost would impact disadvantaged communities.

Lastly, the values for percent change in simulated deliveries are miscalculated in a number of cases in the Modelling Appendix. Some miscalculations are likely simple errors, while others involve incorrect mathematical assumptions. It is unclear how the percent change values are utilized; however, if they are utilized in the EIS or model inputs and outputs, they greatly overinflate any benefit of the proposed dam operations. For instance, when the change includes a starting value of zero for existing conditions, Reclamation incorrectly assumes increases in deliveries upwards of 88,105%. *See, e.g.,* DEIS CalSim II Modelling Appendix at 43. As the Census Bureau states, estimates with an initial value of zero should be null, otherwise the value is considered infinity. U.S. Census Bureau, Percent Changes" available online at https://www.census.gov/acs/www/Downloads/data_documentation/Accuracy/PercChg.pdf. Additionally, during spot review of percent calculations, a number were found to be incorrect. For instance, for "Percent change in simulated Class 2 deliveries" for Alternative 1, Reclamation claimed an increase of 14,305% for May 1939, while the value should be 7,100%. DEIS CalSim II Modelling Appendix at 78. Similarly, instead of 3,655%, the values for November and December 1993 should be 2,000%. *Id*. Due to time limitations, we could not verify all mistakes, however, we recommend Reclamation review the calculations in the CalSim II modelling Appendix and pass the correct values through any other calculations dependent on this output.

K. The DEIS Fails to Use the Best Available Science to Assess Impacts to Groundwater Recharge and Surface Water-Groundwater Interaction:

The DEIS does not adequately assess potential impacts to groundwater systems and makes inappropriate assumptions regarding groundwater use based on a qualitative assessment. In particular, the DEIS uses a subjective qualitative model to determine groundwater impacts and does not address potential impacts of operations and reductions in flood flows on recharge or surface-groundwater interactions, both important to the two primary purposes – ecosystem

benefits and water supply. Reclamation states that, "The analysis presented in this section is qualitative and based on the premise that increased surface water deliveries would result in reduced groundwater pumping and, similarly, that reductions in surface water deliveries would be offset by increased groundwater pumping." DEIS at 13-50. Instead of a quantitative analysis, Reclamation assumes the increase in surface water supplies will result in less groundwater pumping, without any data or justification.

Reclamation should utilize the recently released U.S. Geological Survey's Groundwater Model for the San Joaquin, co-developed by Reclamation, to determine potential impacts of operations and management on groundwater resources in the basin. *See* Traum, J.A., Phillips, S.P., Bennett, G.L., Zamora, Celia, and Metzger, L.F., 2014, Documentation of a groundwater flow model (SJRRPGW) for the San Joaquin River Restoration Program study area, California: U.S. Geological Survey Scientific Investigations Report 2014–5148. The San Joaquin River Restoration Program groundwater flow model (SJRRPGW) uses data from 2,800 wells consisting of 90,000 records from 1922-2009. This dataset encompasses the entire period of record for the study and should not be omitted from the analysis in lieu of a qualitative model that is arbitrary and uses unjustified assumptions. The model has been utilized to assess historic changes in groundwater recharge and surface-groundwater interactions and should be used by Reclamation for the proposed project.

The DEIS inadequately considers or discusses the existing conditions regarding surface-groundwater interactions in the extended study area. While the DEIS notes a connection exists between surface and groundwater systems, little other information is presented. Rather the groundwater chapter dedicates substantial narrative to the impacts of groundwater use on agriculture and vice versa. Given the primary goal is to improve salmon populations; Reclamation should describe this resource and potential impact in more detail. Examples of such descriptions should include data on the effects of alternatives on recharge and surface-groundwater connections, the extent of the surface-groundwater connection via a map, potential recharge areas, and the ecological importance of groundwater discharge into streams or movement of surface water into groundwater. Providing more or less water during certain times of the year could impact the quantity and quality of groundwater. Additionally, upwelling zones, where groundwater contributes to the river could affect salmon populations. Losing access to these zones because of the proposed operations could reduce availability of spawning habitat, nutrients, and prey.

Data are readily available to model and describe the potential impacts of the proposed reservoir on surface-groundwater interactions and recharge. Historically in the San Joaquin basin, the interaction of groundwater and surface water resulted in net gains to streams. *See* McBain & Trush, Inc. (eds.), 2002. San Joaquin River Restoration Study Background Report, prepared for Friant Water Users Authority, Lindsay, CA, and Natural Resources Defense Council, San Francisco, CA. However, groundwater pumping has reversed flows so that water flows towards the wells pumping groundwater instead of the streams. *Id.*, *see, e.g.,* Bertoldi, G. L., R. H. Johnson, and K. D. Evenson. 1991. Groundwater in the Central Valley California—A Summary Report. US Geological Survey Professional Paper 1401-A. On the basis of available information, estimates of Reach 1 river losses range from 105 to 250 cubic feet per second and for Reach 2 from 75 to 170 cfs. *Id.*; Traum et al

2014 This flow reversal has large repercussions for fishery and ecosystem health in the San Joaquin River.

The SJRRPGW model calculated historic changes in groundwater-surface water interactions and recharge throughout the study area, finding that 508 TAF percolates into groundwater as recharge and streams contribute another 367 TAF to recharge in the San Joaquin study area. Traum et al 2014. Without the use of a quantitative groundwater model, Reclamation grossly underestimates the potential impact of Temperance Flat operations on groundwater recharge and availability. This is especially the case given that higher recharge and input to groundwater from streams occurs in wet years, the same water Reclamation proposes to reduce or eliminate. Reclamation should utilize the SJRRPGW model to estimate potential impacts to surface-groundwater interactions and recharge throughout the study area.

L. The DEIS Fails to Accurately Assess Potential Impacts to Groundwater from the Reduction in Section 215 and RWA Water Supplies

As the DEIS acknowledges, the alternatives are likely to significantly reduce or eliminate water supplies made available to Friant Water Authority and other water users in the region under Section 215. In nearly all alternatives, in all year types and all months, Section 215 water availability is nearly eliminated, an annual decrease of 15 to 137 TAF. DEIS at Table 2-11. Reclamation claims that, "[t]he Friant Division of the CVP would experience improved water supply reliability due to shifting Section 215 water to Class 2 supplies." DEIS at 2-33. However, Section 215 is a critical source of low cost water supplies that is utilized for groundwater recharge, as are water supplies provided to Friant Water Authority districts under the RWA.

The DEIS wholly fails to consider or analyze the likelihood that the increased cost associated with the conversion of Section 215 water and RWA water to Class 2 water under the alternatives will reduce groundwater recharge, and/or result in increased groundwater pumping (choosing to pump groundwater instead of purchasing far more expensive Class 2 water). Similarly, the DEIS fails to consider the impact on Friant Class I contractors, who will have to pay more for water even though the alternatives provide almost no water supply benefits to Friant Class I contractors. *See* DEIS at Table 2-11.

Reclamation recognizes nine existing groundwater banks that use 215 water: North Kern Water Storage District, Rosedale-Rio Bravo Water Storage District, Semitropic Water Storage District, Tulare Lake Basin Water Storage District, Cawelo Water District, Lakeside Irrigation District, Kaweah Delta Water Conservation District, Kern Water Bank Authority, and Meyers Farms Family Trust. *See* Reclamation, Groundwater Banking Criteria for Central Valley Project Water, available online at http://www.usbr.gov/mp/waterbanking/docs/Draft_Criteria_website.pdf. Reclamation should analyze the impacts of expected operations on these districts.

Finally, we note that the DEIS incorporates and relies on the Draft Feasibility Report. DEIS at ES-1, ES-3, ES-30, ES-32 to ES-34, 1-3, 1-18, 1-20, 2-16 to 2-19, 2-27 to 2-30, 2-50, 2-82 to 2-83, 23-35_.

However, as we and other commentators have noted, there are substantial flaws in that Draft Feasibility Report, which affect the assessment of socioeconomic impacts in the DEIS. A copy of our comments on the Draft Feasibility Report are attached hereto as Attachment 2. The DEIS makes clear that the DEIS and feasibility report both play an important role in providing the public and decision-makers with information on the costs, benefits, and impacts of the alternatives, in order to make an informed decision. *See* DEIS at ES-1, ES-3, ES-33 to ES-34. As a result, the DEIS's reliance on the flawed Draft Feasibility Report to inform the public about the costs and benefits of the proposed alternatives is unlawful, and Reclamation must revise the project's feasibility report in order to comply with NEPA and the Bureau's other legal obligations.

M. The DEIS Fails to Accurately and Adequately Assess Cumulative Impacts

The DEIS fails to adequately consider cumulative impacts, because it fails to include an accurate assessment of potentially cumulative projects[10] and because it relies on qualitative descriptions of potential impacts despite Reclamation having prepared quantitative modeling for many of these cumulative impacts. Most importantly, the DEIS only provides a qualitative analysis of BDCP and other CALFED storage projects. DEIS at 27-4, 27-24 to 27-45. The failure to use the existing modeling to make quantitative assessments is inexplicable, as Reclamation has prepared detailed modeling of BDCP, the potential raising of Shasta Dam, and other storage projects. The failure to examine the effects of these projects in conjunction, using the existing modeling information, is unlawful and appears to be an attempt to piecemeal environmental review. Such quantitative assessments are critical to evaluate cumulative impacts downstream and in the Delta, including potential adverse effects on Delta inflows, Delta outflow, and X2. Even where an alternative may not individually have a significant impact on outflow or X2, together with other reasonably foreseeable projects, it is likely to contribute to significant cumulative impacts.

The DEIS also ignores several reasonably foreseeable impacts from changes in reservoir operations in conjunction with other projects. For instance, the DEIS asserts that greater water supply may be available from the alternatives by integration with other facilities and operations. *See* DEIS at 2-94 ("Evaluation of Temperance Flat RM 274 Reservoir, integrated with the broader CVP and SWP SOD exports and storage systems under potential future conditions with increased flexibility for CVP and SWP Delta export operations, would likely result in significantly greater estimates of water supply reliability by capturing additional Delta water supply in wet years through exchange."); DEIS at 1-20 ("Additional operational scenarios could be evaluated in the future that may further improve the value of onsite hydropower mitigation. Scenarios that could be considered include integrating operations of Temperance Flat RM 274 Reservoir with other CVP and SWP SOD facilities, which would increase the amount of water stored in Temperance Flat RM 274 Reservoir (and corresponding head for generation) through exchange or changes in carryover storage levels. Additional mitigation components may also be needed…").

[10] For instance, the DEIS includes the Vernalis Adaptive Management Plan ("VAMP") in the description of cumulative impacts, DEIS at 27-4, even though VAMP has ended, and it does not include the SWRCB's update of the Bay Delta Water Quality Control Plan (Phase I or II).

Reclamation must revise the DEIS to use existing modeling data to make quantitative assessments of cumulative impacts of these alternatives in conjunction with BDCP and other reservoir storage projects, particularly with respect to Delta inflows, Delta outflow, and X2. The failure to use existing quantitative models to assess cumulative impacts constitutes piecemealing and is unlawful.

N. Failure to Consider Feasible Mitigation Measures to Reduce or Avoid Environmental Impacts

Because the alternatives result in significant adverse environmental impacts, including impacts that are not considered or inadequately analyzed in the DEIS, the document must be revised to consider mitigation measures that would reduce or eliminate these adverse impacts. The DEIS should consider the following potential mitigation measures or alternatives that could reduce or avoid adverse environmental impacts caused by the alternatives:

- Water conservation and efficiency measures;
- Floodplain restoration that allows more frequent and longer duration inundation at the lower flows caused by the alternatives;
- Installation of a temperature control device on Friant Dam to reduce the adverse environmental impacts of higher spring water temperatures caused by the alternatives;
- Higher carryover storage requirements at Friant Dam to reduce the adverse environmental impacts of higher spring water temperatures caused by the alternatives;
- Changes to reservoir operational rules at Friant Dam, including flood control rules, to address changes resulting from climate change and to mitigate higher spring water temperatures caused by the alternatives;
- Requirements to bypass some inflows to achieve floodplain inundation and water temperature targets to mitigate impacts caused by the alternatives;
- Habitat restoration for each acre of floodplain, riparian, riverine, and other habitat types that are inundated or adversely affected by the alternatives, at a minimum of a 1:1 ratio for each acre that is adversely affected; and
- Funding to compensate for the loss of RWA revenues to the San Joaquin River Restoration Program.

V. The DEIS Fails to Comply with CEQA, and Subsequent CEQA Review and Public Comments are Required:

As the document notes, there is no Draft Environmental Impact Report prepared under CEQA for this project, as the California Department of Water Resources (DWR) chose not to use its limited funding to review the document and prepare a DEIR. DEIS at 1-2. CEQA requires implementation of feasible mitigation measures to reduce significant environmental impacts, and also requires certain analyses that are not required under NEPA. CEQA also requires that a state agency be the lead agency that reviews and certifies environmental review under CEQA, and the Act prohibits delegating that role to another agency. *Planning and Conservation League v. Department of Water Resources*, 83 Cal.App.4th 892, 903-908 (2000).

The DEIS claims that the document can be used to meet the requirements of CEQA. However, the CEQA guidelines make clear that a DEIS *may* only be used for the purposes of CEQA when the document complies with all the substantive requirements of CEQA and the lead agency provides public notice that it intends to rely on the document and that the lead agency has determined that it complies with CEQA. CEQA Guidelines §§ 15221,15225. That is not the case here.

For instance, the DEIS admits that the project and alternatives result in significant adverse environmental impacts, and as discussed *supra*, feasible mitigation measures are available. In addition, the numerous other flaws in the DEIS identified in this comment letter must be rectified before it complies with the requirements of CEQA, including the failure to adequately consider cumulative impacts, the failure to accurately assess environmental impacts to salmon, and the failure to accurately account for climate change impacts. The DEIS also fails to identify an environmental preferable alternative as required by CEQA. DEIS at 28-100. Therefore, the document must be revised to address these flaws and to incorporate feasible mitigation measures before a notice of preparation and public comment period under CEQA commence.

In addition, DWR (the designated lead agency) has not provided public notice that it intends to rely on the DEIR for the purposes of CEQA. Prior to using a DEIR for purposes of CEQA, the CEQA guidelines require the lead agency to provide notice, in compliance with section 15087, that it intends to rely on the document and that the lead agency believes the document complies with CEQA. CEQA Guidelines § 15225. This notice has not occurred, and we have been informed that one or more State trustee agencies are not planning to comment on the DEIS, instead waiting to comment on any subsequently prepared CEQA document that is noticed through the state clearinghouse. Absent a new public comment period, DWR's failure to provide the required notice to the state trustee agencies (which are responsible agencies under CEQA) would deny the public and decisionmakers of the expert opinion of the state trustee agencies regarding whether the document complies with CEQA, whether the project results in significant adverse environmental impacts that were not disclosed or inaccurately disclosed in the DEIS, and whether additional mitigation measures must be considered.

Therefore, should DWR subsequently choose to use the DEIS for the purposes of CEQA, it must revise the document to comply with CEQA, send a notice of preparation to the State clearinghouse, and reopen the public comment period.

VI. The DEIS' Assumptions Regarding Channel Capacity Must be Implemented in order to Ensure Any Environmental Benefits

With a few exception,[11] the DEIS assumes that channel capacity in the San Joaquin River between Friant Dam and the Merced River is restored to design capacity in the Army Corps of Engineers

[11] The DEIS erroneously assumes that channel capacity would only be 1,300 cfs in Reach 2B, and 475 cfs in Reach 4B. DEIS at 5-52. Full restoration flows could not be released as shown in the DEIS unless channel capacity in Reach 2B is higher than 1,300 cfs, and the Army Corps of Engineer's

flood control manual. DEIS at 5-52. We agree that it is reasonable and appropriate to assume that downstream channel capacity constraints are resolved and fully addressed by 2030, such that full Restoration Flows are released pursuant to the Settlement, consistent with the legal obligations of the Lower San Joaquin River Levee District to maintain channel capacity, [12] as well as the efforts of the San Joaquin River Restoration Program, the Upper San Joaquin River Regional Flood Management Working Group, and similar efforts to restore flood control capacity and reduce flood risks in the region.

However, should Reclamation determine there are any ecosystem benefits of Temperance Flat relating to salmon reintroduction, any such benefits are completely dependent upon restoration of channel capacity to release full Restoration Flows, as well as implementation of the San Joaquin River Restoration Settlement and Settlement Act, which are restoring the river channel, reintroducing spring run and fall run Chinook salmon, and implementing water management actions to reduce or avoid water supply impacts to the Friant Water Authority. Reclamation has made substantial funding commitments to the SJRRP, and as we discuss in our comments on the draft feasibility study, any funding for the purported ecosystem benefits of the Temperance Flat project would yield no ecosystem benefits unless and until the SJRRP is funded and implemented.

In addition, the DEIS' assumption that the Lower San Joaquin River Levee District restores channel capacity means that the alternatives provide limited flood control benefits. The DEIS shows that flood releases from Friant Dam occur less frequently due to implementation of the San Joaquin River Restoration Program. *Compare* DEIS at 12-37 to 12-38 (Table 12-5, showing simulated flood releases under existing conditions for the no action alternative) *with* DEIS at 12-39 to 12-40 (Table 12-6, showing simulated flood releases under future conditions for the no action alternative, which includes the SJRRP). Given that maintenance of design capacity is an existing compliance obligation of the Lower San Joaquin River Levee District, the assumption of full conveyance capacity is appropriate to include in determining any impacts or benefits to flood control.

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applicable operations and maintenance manual requires maintenance of 1,500 cfs channel capacity in Reach 4B.

[12] *See* the letter from NRDC to the Central Valley Flood Protection Board dated June 5, 2014, attached as Attachment 3.

Attachment 1

Sahl, Jake

From: Sahl, Jake
Sent: Wednesday, October 01, 2014 10:55 AM
To: 'TANSEY, MICHAEL'
Cc: Arlan Nickel
Subject: RE: Electronic Copy of complete CVP IRP

Follow Up Flag: Follow up
Flag Status: Completed

Hi Michael,

Thanks for the suggestion. I have actually gone through that report and unfortunately it doesn't seem to have the information I'm looking for. I'm trying to track down more detailed information on calibration, assumptions, precipitation/temperature/hydrology time series, etc. for the WEAP-CV and CalLite models. I'm guessing that this would be within an appendix to the CVP IRP full report?

Thanks,
Jake

From: TANSEY, MICHAEL [mailto:mtansey@usbr.gov]
Sent: Tuesday, September 30, 2014 11:17 AM
To: Sahl, Jake
Cc: Arlan Nickel
Subject: Re: Electronic Copy of complete CVP IRP

Hi Jake,

Yes, there is a more detailed description of methods and models in our recent publicly released "Sacramento and San Joaquin Basins Climate Impact Assessment" report.

The link is:

http://www.usbr.gov/WaterSMART/wcra/docs/ssjbia/ssjbia.pdf

Please let me know if this meets you needs. I will continue working on the revision to the CVP IRP document.

Best regards,
Mike

On Tue, Sep 30, 2014 at 11:01 AM, Sahl, Jake <jsahl@nrdc.org> wrote:

Hi Mike,

Thanks for looking into this. I am requesting the report because it is often referred to within the Upper San Joaquin River Basin Storage Investigation (USJRBSI) DEIS. Many of the methods used in the climate modeling for USJRBSI

DEIS are not described within that report, but rather, readers are referred to the CVP IRP for 'further detail'. As you probably know, comments on the USJRBSI DEIS are due in a few weeks, so the sooner you are able to get me a copy of the CVP IRP, the better. Alternatively, is there anywhere else I can look to read into the methods used in developing the CVP IRP?

Thanks for your help with this, and please let me know if there is anything I can do to speed up the process.

Jake

Jake Sahl | **Water Program Assistant**

NATURAL RESOURCES DEFENSE COUNCIL| www.NRDC.org

111 Sutter Street, Floor 20 | San Francisco, CA 94104

phone: 415.875.6100 | email: **jsahl@nrdc.org**

follow us on Twiter: **@NRDCwater**

From: TANSEY, MICHAEL [mailto:mtansey@usbr.gov]
Sent: Tuesday, September 30, 2014 10:53 AM
To: Sahl, Jake
Cc: Arlan Nickel

Subject: Re: Electronic Copy of complete CVP IRP

Hi Jake,

I just checked with our program manager and was reminded that this report doesn't meet our visual identity and disabilities act compliance standards. The truth is you are the first person to request the full report. I have approval to get the document revised to meet these standards. It should take a couple of weeks. I apologize for the delay. However, as soon as it is complete, I will contact you.

Best regards,

Mike

On Mon, Sep 29, 2014 at 2:50 PM, Sahl, Jake <jsahl@nrdc.org> wrote:

Alright. Thanks!

From: TANSEY, MICHAEL [mailto:mtansey@usbr.gov]
Sent: Monday, September 29, 2014 2:50 PM

To: Sahl, Jake
Subject: Re: Electronic Copy of complete CVP IRP

Hi Jake,

I have a meeting now but I'll send it to you tomorrow.

Best regards,

Mike

On Mon, Sep 29, 2014 at 2:37 PM, Sahl, Jake <jsahl@nrdc.org> wrote:

Yes, Google Drive works. I've cc'd my Gmail account on this message.

From: TANSEY, MICHAEL [mailto:mtansey@usbr.gov]
Sent: Monday, September 29, 2014 2:37 PM

To: Sahl, Jake
Subject: Re: Electronic Copy of complete CVP IRP

Hi Jake,

I'm not sure if we can connnect to it. Can you use Google Drive?

Mike

On Mon, Sep 29, 2014 at 2:33 PM, Sahl, Jake <jsahl@nrdc.org> wrote:

Would Dropbox work?

From: TANSEY, MICHAEL [mailto:mtansey@usbr.gov]
Sent: Monday, September 29, 2014 2:30 PM
To: Sahl, Jake
Subject: Re: Electronic Copy of complete CVP IRP

Hi Jake,

The full report is lengthy (~300 pages). Do you have an upload site where I could post it.

Best regards,

Mike

On Mon, Sep 29, 2014 at 11:19 AM, Sahl, Jake <jsahl@nrdc.org> wrote:

Hello Michael,

I am writing to request an electronic copy of the complete Central Valley Project Integrated Resource Plan (CVP IRP) report. Please let me how I can go about getting this.

Thank you for your help!

Jake

Jake Sahl | **Water Program Assistant**

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111 Sutter Street, Floor 20 | San Francisco, CA 94104

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--

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Attachment 2

NATURAL RESOURCES DEFENSE COUNCIL

April 10, 2014

Sharon McHale, Project Manager
U.S. Bureau of Reclamation, Planning Division
2800 Cottage Way
Sacramento, CA 95825-1893

Sent via email to smchale@usbr.gov

RE: Comments on Draft Feasibility Report for Upper San Joaquin River Basin Storage Investigation – Temperance Flat River Mile 274 Reservoir

Dear Ms. McHale:

On behalf of the Natural Resources Defense Council, which has more 1.4 million members and activists, more than 250,000 of whom live in California, we are writing to provide comments on the draft feasibility report for the Upper San Joaquin River Basin Storage Investigation - Temperance Flat River Mile 274 Reservoir ("Investigation"). As discussed in detail below, the Investigation is significantly flawed, does not accurately analyze the economic or ecosystem cost and benefits of the proposed project, and fails to comply with federal guidelines for project evaluation. As such, we strongly recommend that the Bureau of Reclamation ("Reclamation") withdraw the Investigation, and recirculate a valid draft feasibility study once these flaws are addressed.

The Investigation evaluates a proposal for Reclamation to construct the Temperance Flat River Mile 274 Reservoir above Millerton Lake/Friant Dam to provide an additional 19-76 TAF of water downstream. Over the past 60 years, Reclamation has conducted a number of studies to assess the feasibility of expanding storage at Friant Dam, including raising Friant dam and adding another dam immediately upstream of Friant dam (e.g. Temperance Flat), and has yet to develop a feasible option.[1] It is unclear what new information is available to overturn these previous decisions and spend federal and state funds on a project already deemed infeasible. In any event, the most recent Investigation hinges on the erroneous assumption that taxpayer (not the water supply beneficiaries) should pay the vast majority of the $2.5 billion capital cost of the project, because the project purportedly will significantly aid the reintroduction of salmon to the upper San Joaquin River and provide other public benefits. The Investigation does not support such assumptions, as even the flawed analysis in the Investigation demonstrates that the proposed project would not substantially benefit salmon populations.

[1] USBR. 2014 Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. P. 1-12.

Unfortunately, the Investigation fails to accurately assess the potential costs and benefits of the project, and the proposed benefits are not supported by the record. The Investigation incorrectly communicates the benefits of this project by both inflating the value of the stated benefits while also undervaluing the costs of the project to the ecosystem and water users. The Investigation vastly overinflates the purported ecosystem benefits from the project, overstates the public spending justified by ecosystem benefits, and it erroneously assumes ecosystem benefits and taxpayer subsidies even when the project results in **reduced** salmon abundance,[2] the only ecosystem benefit that is considered. The study also fails to consider potential ecosystem impacts and costs, both upstream and downstream of the proposed reservoir. In addition to the lack of an adequate and relevant assessment of ecosystem costs and benefits, the Investigation overstates or describes private benefits such as water supply reliability and delta levee failure. These flaws result in the Investigation drastically overstating the taxpayer subsidies that the project could receive, inflating the benefits to cost ratio.

Moreover, even assuming taxpayers pay for over 72% of the construction cost; the project would substantially reduce existing, inexpensive water supplies for Friant Water Authority and other agricultural contractors and would instead provide water that is not affordable for many agricultural contractors. Without the unjustified taxpayer subsidies, the cost of water from the project rises to exorbitant levels.

Lastly, the investigation fails to conform to the most recent Principals and Requirements, requiring federal agencies to evaluate a full range of ecosystem services, non-structural alternatives, and mitigation measures.

Given this substantial range of both inaccurate assumptions and gaps in the study, we strongly recommend Reclamation withdraw this study and recirculate a revised analysis, prior to the development of the EIR/EIS.

Each of these points is discussed in more detail below.

I. The Current Investigation Dramatically Overstates the Public Benefits and Taxpayer Subsidies of the Project

A. <u>The Investigation Overstates the Purported Ecosystem Benefits</u>

The Investigation identifies ecosystem benefits from temperature regulation to salmon as the primary ecosystem benefit. [3] This hinges on the assumption that water temperature downstream of Friant serves as a critical constraint for recovery and that the flows under the SJRRP do not provide adequate water temperatures for salmon reintroduction. This is not accurate, and in fact, the project is likely to undermine the success of the San Joaquin River Restoration Program (SJRRP).

[2] USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. Modeling Appendix. Tables 5-2, 5-4.
[3] Water supply is listed as the other primary benefit.

The SJRRP has studied water temperatures below Friant dam, and their study concludes that water temperature inputs from the dam are not the primary constraint on salmon populations.[4] Reclamation has likewise previously concluded, in court filings, environmental impact statements, and other documents, that flows and downstream water temperatures under the San Joaquin River Restoration Settlement and Act are sufficient to achieve the long term population goals for reintroduction of spring run Chinook salmon.[5]

However, water temperature increases due to sand and gravel pits may be a challenge for fish. To help maintain adequate water temperatures, the SJRRP already includes such actions as restoring riparian habitat along the river and isolating gravel pits.[6] Additionally, under current conditions, the series of reservoirs upstream are operated in a manner that results in the release of unusually cold water downstream into Millerton Lake. Sometimes the existing fish hatchery below Friant Dam must blend in warmer surface water because water temperatures are too cold for optimal growth of fish. From our perspective, Reclamation should focus on the Restoration Program to achieve the desired results given that the Program's intent is to address issues outlined in the Investigation. Neglecting to do so will be an inefficient and redundant misuse of limited taxpayer resources.

The Investigation tracks these findings, concluding that, between February and May, the No Action alternative exceeds temperature benefits of any proposed alternative, sending cool water farthest downstream of Friant Dam in all year types. The only potential temperature benefit of Temperance Flat, as presented in the Investigation, occurs with Alternative 4 during the fall, specifically extending temperature benefits downstream between September and December as compared with No Action across a range of dry to wet years downstream an additional 50-60 miles. But these benefits come at the expense of worsening temperature conditions in the spring. In the spring, cold water would travel an additional 10-40 miles downstream if Temperance Flat was not constructed as compared with the best Alternative (number 4). Cool water flows in the spring are particularly important for spring-run salmon as they migrate upstream, potentially providing attraction cues, prespawning habitat, and improved health to prepare for spawning in the fall. Thus, providing cool flows downstream in the spring is critical for salmon productivity, as shown in nearby rivers.[7] While we do not discount the benefits of cool water flows in the late summer and fall, the impacts of lost temperature and flow benefits in the spring need to be fully considered.

Reclamation also inappropriately highlights the purported benefits of salmon return rates during dry years in their economic analysis, with limited focus on the negative average returns, particularly in wet years. Given that dry years are expected to occur 15% of all years, this approach inflates the potential benefits of the project to salmon recovery. In particular, expected salmon return rates in dry years range from 0.7% to 14%, while for the long term

[4] San Joaquin River Restoration Program. 2010. Water temperature Variation from Friant Dam to Sack Dam During the 2009 Fall Interim Flow Period. DRAFT Appendix C – Water Quality Data. 20 pp.
[5] See, e.g., SJRRP. 2011. Appendix K Biological Resources – Fisheries. Draft Program Environmental Impact Statement/Report ("Reach 1 currently has consistently low water temperatures, and flow schedules prescribed under the Settlement may provide acceptable temperatures to support initial population goals").
[6] San Joaquin River Restoration Program. 2010. Water temperature Variation from Friant Dam to Sack Dam During the 2009 Fall Interim Flow Period. DRAFT Appendix C – Water Quality Data. 20 pp.; Final PEIS/PEIR; ROD.
[7] SJRRP. 2008. Conceptual Models of Stressors and Limiting Factors for San Joaquin River Chinook salmon. ES-4.

average range from -0.7% to 4.9% [8]. Thus, the Investigation should take the weighted average into account in the ecosystem benefits model to derive a realistic value. Based on this weighted model, dry years will only occur in 15% of the years, while wet years will occur in 20% of the years. Taking the full range of year types into account would better reflect the negative abundances seen across all alternatives at Low and High SAR in wet years that result in an expected return of -0.5 to -4%, or a loss of 33 to 268 fish.[9] Alternative 3 produces particularly negative ecosystem benefits, with the loss of between 0 to 268 fish in normal-wet or wet years. Given that salmon are a purported primary beneficiary of Temperance Flat, Alternatives with negative average salmon abundances should not have successfully passed through the prioritization process. Alternatives, such as Alternative 3, with expected declines in salmon return rates should not result in any public ecosystem benefits in terms of the cost of this project.

Reclamation utilizes the same Ecosystem Diagnosis and Treatment Model to predict salmon abundance as the Restoration Program. However, Reclamation fails to heed the Restoration Program's own analysis of this model. The Restoration Program's analysis states that 1) Temperature downstream of Friant dam is already better than historic temperatures, meaning that it does not need to be modified; and 2) restoring the reach downstream of Friant dam would increase salmon abundance by 343 %. Conversely, degrading habitat, as would occur if Temperance Flat were constructed, would result in a 100 % decrease in every measured salmon population factor – prespawning, spawning, egg incubation, and juvenile rearing. [10] Clearly, Reclamation needs to take a closer look at their interpretation of the model used. Further, Reclamation should share the full output of the modeling efforts so that the public is aware of the range of potential negative impacts on salmon production as a result of the proposed Temperance Flat reservoir.

B. <u>The Investigation Overstates Public Spending Justified by Purported Ecosystem Benefits</u>

First and foremost, the Investigation is inconsistent with the SJRRP, and the proposed reservoir is at cross purposes with the SJRRP. Reclamation is a party to the SJRRP, and the SJRRP proposes to release restoration flows up to the existing channel capacity and to take advantage of controlled flood releases to provide appropriate water temperatures for salmon, promote riparian habitat restoration, and support restoration of floodplain rearing habitat for juvenile salmonids. In contrast, the proposed reservoir will significantly reduce the availability of such flood releases and thereby undermine the successful implementation of these objectives. Additionally, the proposed reservoir not only undermines the SJRRP's Restoration Goal, but it also undermines the Water Management Goal of the SJRRP. It proposes to do so by reducing the extent to which controlled flood releases are used in lieu of Restoration Flow releases to meet flow requirements. Important for water users, the Investigation proposes to impose

[8] USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. Modeling Appendix Tables 5-2 and 5-4.
[9] USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. Economic Analysis Appendix, pp. 5-8, 5-11.
[10] SJRRP. 2010. Exhibit F. EDT Proof of Concept. Fisheries Management Plan: A Framework for Adaptive Management in the San Joaquin River Restoration Program http://restoresjr.net/program_library/02-Program_Docs/FMPexhF2010Nov.pdf

significant costs on existing and new agricultural and M&I water users who will lose access to inexpensive Section 215 water and water pursuant to the Recovered Water Account established under Paragraph 16(b) of the Settlement. These water users will experience rising costs for water originating from Temperance Flat. It quickly becomes clear that Temperance Flat will do little to support the primary beneficiaries.

The Investigation assumes that 48.7% of the costs will be incurred by federal and state taxpayers for salmon recovery or $1.3 billion for construction costs alone. However, these costs are not supported by the expected benefits, particularly when looking across the range of year types. Not only would Temperance Flat be more costly than the Restoration Program, but it would have substantial negative impacts on the rest of the ecosystem, as described previously, while Restoration Program actions will provide a multitude of benefits to the watershed and to water users in the region. Spending more than one billion dollars on the purported ecosystem benefits of this reservoir project, which decreases salmon populations or at best increases populations by 4.9%, is completely unwarranted and infeasible. Instead, Reclamation should focus on implementing the Restoration Program, restoring salmon populations consistent with the Settlement Agreement between stakeholders and the federal government.

In addition, ecosystem benefits under this Investigation hinge entirely upon implementation of the San Joaquin River Restoration Settlement and Settlement Act, which are restoring the river channel, reintroducing spring run and fall run Chinook salmon, and implementing water management actions to reduce or avoid water supply impacts to the Friant Water Authority. Reclamation has made substantial funding commitments to the SJRRP, and any funding for the purported ecosystem benefits of the Temperance Flat project would yield no ecosystem benefits unless and until the SJRRP is funded and implemented. Moreover, while the Investigation estimates that the SJRRP will achieve an average long term abundance of 727 (Low SAR) to 4,148 (High SAR)[11] Spring run Chinook salmon, at a total cost of approximately $800M (including activities in support of the water management goal, improved flood protection and restored channel capacity, habitat restoration, and other activities),[12] the Investigation estimates that Temperance Flat will either ***decrease*** the abundance of salmon or increase it by 3 to 202 salmon annually, at a cost of $56.4 million annually. Since a lower investment in well-defined and legally required SJRRP projects yields far greater ecosystem benefits than Temperance Flat, Reclamation should ensure that SJRRP is fully funded and on a path to timely implementation prior to diverting scarce public dollars to an effort with far lower, if any, ecosystem benefits.

Even based on the flawed methodology used in the Investigation, it is clear that there are little to no ecosystem benefits from the project. Subsequently, the Investigation does not justify any public spending for ecosystem benefits from an alternative that result in a negative impact on salmon populations, and at best the Investigation justifies very little to no public spending for a

[11] Note: Output differs for weighted abundance in the Economic vs the Modeling Appendix.
[12] SJJRP. 2012. Third Party Working Draft Framework for Implementation. http://www.restoresjr.net/program_library/02-Program_Docs/20120619_SJRRP_Framework_for_ImplDRAFT.pdf

alternatives that yield very minimal benefits in terms of increased salmon abundance. And in all cases any public spending for ecosystem benefits of the project cannot reduce state and federal spending for the SJRRP, since any ecosystem benefits from the project depends on completion of the SJRRP.

II. The Investigation fails to consider ecosystem costs

As discussed further below, the Investigation fails to adequately account for many costs, which will reduce and may eliminate the purported ecosystem benefits of the project.

Floodplains and Flood Pulses: The SJRRP intends to take advantage of controlled flood releases to achieve the Restoration Goal including restoration of floodplain habitat for juvenile salmon. The Investigation fails to account for the loss of use of these flood releases and floodplain interactions and the extent to which it will negate many restoration activities conducted under the SJRRP, negatively impacting the health of river and the fish that reside in it. The modeled outcomes of the proposed reservoir operation reduces pulses so that they would only occur in 8.8% of historic years and cut in half those that still remain (Fig. 1).[13] Further, the Investigation claims that under the proposed alternatives the extent of floodplain inundation and enhancement will decline, yet does little to value this loss, even after stating the proposed reservoir will not impact the actions outlined in the SJRRP.

The loss of floodplain habitat and flood releases could result in significant additional costs to the Restoration Program. This is particularly true if SJRRP restoration activities such as floodplain restoration or re-grading[14] must be increased due to the proposed construction of Temperance Flat reservoir, increasing costs and redundancies and decreasing the effectiveness of these activities. Floodplain habitat is essential for achieving the goal of naturally reproducing and self-sustaining populations of Chinook salmon as required by the Settlement. Furthermore initial results from the SJRRP demonstrate that higher flows associated with controlled flood releases, such as those maintained within the channel, result in high survival of juvenile salmon through their downstream migration.[15] Similarly, increased flows at Vernalis result in significantly increased abundance of salmon in subsequent years.[16] Reduced high flows would likely reduce salmon survival in wet years in the Restoration Area as well as downstream to the Delta as compared to current conditions.

Additionally, although Reclamation claims that a decrease in flood releases will benefit spawning habitat, it is more likely that the flushing of spawning gravels and supporting

[13] USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. Figure 4-2.
[14] SJRRP. 2013. DRAFT Technical Memorandum Channel Capacity Report 2014 Restoration Year.
[15] SJRRP. 2011. 2011 Juvenile Salmonid Survival and Migration Study: July 2011 Draft. http://restoresjr.net/program_library/02-Program_Docs/20110725-JuvenileSurvivalPrelimReport.pdf
[16] See, e.g., State Water Resources Control Board. 2010. Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem. August 3, 2010. Available online at: http://www.swrcb.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/docs/final_rpt080310.pdf; State Water Resources Control Board. 2012. Public Draft Substitute Environmental Document in Support of Potential Changes to the Water Quality Control Plan for the San Francisco Bay-Sacramento/San Joaquin Delta Estuary: San Joaquin River Flows and Southern Delta Water Quality. December 2012. Available online at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/2012_sed/; California Department of Fish and Wildlife. 2013. Comments regarding the Substitute Environmental Document in Support of Potential Changes to the Water Quality Control Plan for the San Francisco Bay – Sacramento / San Joaquin Delta Estuary: San Joaquin River Flows and Southern Delta Water Quality. March 28, 2013. Available online at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/hearings/baydelta_pdsed/docs/comments032913/scott_cantrell.pdf

geomorphic processes that create fish habitat will decrease with fewer releases. Thus, the proposed reservoir would severely impact local channel structure, as is evident in many studies examining downstream impacts of dams. Encouraging bankful flows (e.g. those within the channel) is a necessary component for the recovery and maintaining the health of nearly any riverine ecosystem. Mobilizing gravel below Friant dam is already a challenge and the elimination of controlled flood releases will further aggravate the situation. Reduction of high flows could have significant effects on erosional and channel processes, potentially enhancing erosion and down cutting of the bed, contributing to declines in water quality, reducing opportunities for floodplain connections and any associated groundwater recharge benefits. Lastly the final PEIS/PEIR demonstrates that Restoration Flows and floodplain restoration can offset warm temperatures: "Juvenile salmonids larger than 2 inches in length in the Sacramento-San Joaquin system also rear on seasonally inundated floodplains," and bioenergetic modeling found that "increased prey availability on the Yolo Bypass floodplain was sufficient to offset increased metabolic demands from higher water temperatures (9°F) higher than in the mainstem."[17]

The costs of these losses to the target species are likely to be substantial. These supposed solutions from Reclamation are merely attempts to inflate the value of the project and do little to restore ecosystem function.

Other Social and Ecological Impacts: **Moreover,** the focus on a single species fails to account for the potential impact of Temperance Flat reservoir on species upstream and downstream of the proposed reservoir. The Investigation clearly identifies these losses in habitat and impacts on other wildlife and fisheries, but does nothing to quantify these costs in the cost-benefit analysis:

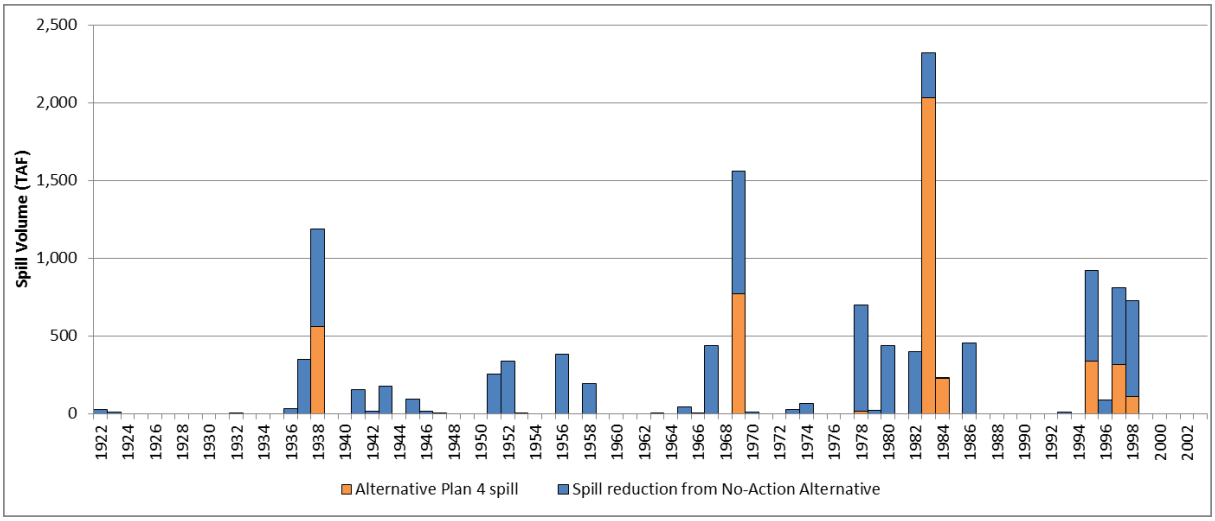

Figure 1 Reduction in spills under Alternative 4

[17] SJRRP. 2011. Appendix K Biological Resources – Fisheries. Draft Program Environmental Impact Statement/Report.

- "Adverse effects to riverine habitat within primary study area similar across all action alternatives and unavoidable due to conversion of riverine habitat to lacustrine habitat within San Joaquin River portion of primary study area."
- "Short-term adverse effects due to construction and long-term unavoidable adverse effects due to inundation of habitat in Primary Study Area anticipated to be similar across all action alternatives; adverse effects likely reduced through mitigation."
- "Long-term beneficial effects related to water supply reliability included in NED account for all action alternatives and greatest for Alternative 4; financial debt service benefits from more reliable water supply were not quantified." [18]

Many native fish and wildlife species have already been declining in the region,[19] and the proposed Temperance Flat reservoir will likely exacerbate current conditions and contribute to their decline. The conversion of river habitat to lake habitat will permanently destroy important habitat for threatened and protected aquatic species. Given the unique status of these species, mitigation will be expensive and challenging, if not impossible. The Investigation notes that the project area supports a number of important fish and other aquatic species, including:

- Supports the only landlocked population of successfully spawning American Shad;
- Support three native species with special federal or state status: hardhead, hitch, and Kern brook lamprey;
- Supports the freshwater pearlshell clam, a species whose status is unknown.

Permanent flooding of the San Joaquin River above Millerton reservoir as a result of dam construction will also affect terrestrial species such as the Tiger Salamander, roosts for special-status bats, the ringtail, American badger, San Joaquin pocket mouse. Game species will also be affected including mule deer, quail, wild turkey and feral pigs, and the San Joaquin deer herd.[20] Unmentioned are the species downstream of the dam, including the Sacramento splittail.

In addition to these ecosystem impacts, there is no effort to quantify the value of lost recreation opportunities in the Investigation. Not only is the San Joaquin Gorge, the area that will be inundated, highly valuable for the unique habitat it provides, but also for the access to breathtaking views, hiking trails, and other recreational opportunities. The proposed reservoir will destroy one of the few remaining free-flowing stretches of the San Joaquin with many long class 2, 3, 4, and 5 rapids separated by long pools used by rafters and kayakers.[21] By failing to account for these lost recreational opportunities, the Investigation fails to account for the economic impacts (losses) of the potential project.

Lastly, the Investigation does nothing to account for short term impacts of dam construction to the San Joaquin River downstream of Friant dam. The construction of the dam would come at a

[18] USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. p. 5-16.
[19] Mitchell, Dale. 2006. Regional Fisheries Chief, California Department of Fish and Game, Region 4. Fresno, California. Meeting on May 10.
[20] USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. p. 2-25 to 2-32.
[21] http://www.americanwhitewater.org/content/River/detail/id/288/

time that is critical to the restoration of the Chinook salmon and when the SJRRP will be in full swing. The sensitivity of salmon to potential short term changes in water quality and habitat could set the restoration program back, and should be included as a short term expense, one that could be substantial.

None of these ecosystem/social costs are evaluated in the plan, leaving a gaping hole in the understanding of the potential project impacts and in the benefits-costs analysis. Reclamation should incorporate modeling efforts to determine actual losses of habitat and subsequent economic losses, including the cost of compensatory mitigation measures.

III. Public Benefits for Water Supply are Overvalued and are a Burden for Private and Public Beneficiaries

A. Provisions for Emergency Water will burden taxpayers and are not an appropriate public benefit

Reclamation proposes to make virtual water available for use during emergencies such as earthquakes, droughts, and floods in the delta – virtual since space in the reservoir is not physically reserved to store such emergency water throughout the year. Because of this we have two concerns. The first is that this is a redundant quantification of water already allocated to other purposes. The second concern is that because water is not reserved for this purpose, a great deal of uncertainty exists in the amount of actual emergency water, giving false hope to those who might one day require this water. Thus, to fully reduce these risks, Reclamation should authorize emergency water in the permanent allocation of reservoir water, leaving it untouchable for other purposes. However, dedicating water to emergency purposes will affect other assumptions in allocations, particularly water availability for salmon recovery and agricultural water during dry years, when Reclamation states the most benefits are available. If Reclamation seeks to operate the project to provide the benefit of emergency supplies, Reclamation should remodel the yield of the reservoir to account for reoperating it to maintain a constant supply of emergency water.

As proposed in this Investigation, state taxpayers are asked to take on 100% of emergency water supply investment as non-reimbursable at a cost of $19.8 million annually or $425 million over the course of the project.[22] This is based on the probability of delta levee failure and potential water supply that could be provided during an emergency. However, the primary document referred to by Reclamation also recommends the greatest reduction in the risk of levee failure is accomplished through the implementation of ecosystem restoration and improvement projects in the Delta, not the creation of storage.[23] Funds invested in levee setbacks, wetland and slough restoration would provide a range of ecosystem benefits in addition to emergency preparedness and risk reduction not provided by Temperance Flat. Moreover, any such economic benefits of this project would likely be substantially reduced or

[22] USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. p.6-17.
[23] DRMS Phase II. http://www.water.ca.gov/floodsafe/fessro/levees/drms/docs/DRMS_Phase2_Foreword_Executive_Summary.pdf

eliminated with investments in levee improvements in the Delta and potential implementation of new conveyance in the Delta.

Equally important, these benefits are not appropriate for taxpayer dollars, but should be borne by the water agencies that would benefit from these water supplies. The Bay Delta Conservation Plan, which is also designed to reduce water supply risks associated with levee failure, requires the water contractors to pay 100% of the costs of new conveyance to reduce these risks. The same logic applies equally to this project, and the Investigation should not assume public dollars to pay for emergency water supply benefits. We recommend Reclamation reconsider both the beneficiaries of the emergency water supply benefits and the range of alternatives developed by California to reduces these risks, which are additive as they are implemented versus the fixed risk reduction provided by Temperance Flat.

B. The Investigation Demonstrates that the Project Would Significantly Increase the cost of Agricultural Water Supplies , and Agricultural Water Supplies Appear to be Infeasible

The assumed benefits of the project for agriculture rely on both an inflated value per acre foot and an inflated expected cost per acre foot compared with the present cost of water. Both assumptions inflate the benefit to agriculture and will lead to higher water supply costs for agriculture in the future. In addition to inflated costs, the Investigation shows that the project would nearly eliminate opportunities for obtaining water for Friant under the SJRRP Recovered Water Account at the cost of $10/AF. Additionally, in all alternatives the availability of Section 215 water will decrease by 15 to 137 TAF per year. Of particular importance is the substantial decline in expected water deliveries in below-normal years for Friant water users. These declines are expected to range from a deficit of 38 to 65 TAF annually, meaning Friant water users lose water.[24] Given that below-normal years were not included in Reclamation's economic model; the expected benefits to agriculture will be even less than stated.

Table 1 Proposed value of Agricultural water benefits per acre foot

Year Type	Alternatives (Benefits($) per AF / Year)			
	1	2	3	4
Average	620	NA	400	461
Dry	3,563	NA	1,129	2,228
Wet	264	NA	257	229

Since Reclamation uses two different models to derive water costs – one for the benefit value and one for the financial costs, we will first focus on the overstated benefits to agriculture. The proposed benefit per acre foot to agriculture greatly exceeds market value, in some cases by an

[24] USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. Modeling Appendix Table 3-2.

order of magnitude (Table 1). Following construction, agricultural beneficiaries are expected to incur annual benefits of $18.6 to $20.8 million. While wet and average water year types benefits (costs of water) are 3-4 times standard water values,[25] the benefits per AF in dry years are nearly an order of magnitude higher, inflating the purported benefits to agriculture.[26] The real loss to agriculture is during below-normal years as seen in Table 2.[27]

Unfortunately the NED benefits were not calculated for this year type and thus cannot be accurately represented. Deliveries to agriculture in below-normal years range from 9 to -45 TAF, with an average of -27 TAF. Utilizing the average NED benefit value for each alternative, a conservative estimate, agricultural is expected to ***lose*** $8.4 million in agricultural water benefits during below-normal years.[28] Given that this hidden cost to agriculture was not embedded in the economic analysis, Reclamation will need to revisit the analysis to accurately reflect potential costs.

Table 2 Proposed changes in Agricultural deliveries under each Alternative

Alternative Plan	WY Type San Joaquin Index [2]	Change in System-wide Delivery [3]	Total Friant Ag	Class 1	Class 2	Section 215	Total SWP SOD	SWP Ag SOD	SWP M&I SOD	Total CVP SOD [2]	CVP Ag SOD	CVP M&I SOD
1	Wet	112	102	(1)	239	(137)	33	(10)	44	(23)	(22)	(1)
	Above Normal	152	82	2	133	(53)	79	(3)	82	(9)	(9)	0
	Below Normal	1	(49)	(3)	(14)	(32)	53	7	46	(3)	(3)	0
	Dry and Critical	19	12	4	23	(15)	13	0	13	(5)	(5)	(1)
	All Years	**70**	**43**	**1**	**103**	**(61)**	**38**	**(3)**	**40**	**(11)**	**(10)**	**0**
2	Wet	115	99	(1)	237	(137)	0	(10)	10	16	17	(1)
	Above Normal	145	65	1	117	(53)	43	(3)	46	36	37	0
	Below Normal	(4)	(65)	(3)	(30)	(32)	42	7	35	19	19	0
	Dry and Critical	24	8	6	18	(15)	15	1	13	1	1	(1)
	All Years	**71**	**36**	**1**	**95**	**(61)**	**20**	**(2)**	**22**	**16**	**16**	**0**
3	Wet	116	86	(1)	224	(138)	22	(10)	33	9	10	0
	Above Normal	152	62	1	113	(53)	48	(3)	51	42	43	0
	Below Normal	7	(38)	(3)	(2)	(32)	21	6	15	23	23	0
	Dry and Critical	30	18	7	27	(15)	8	1	7	3	3	(1)
	All Years	**76**	**38**	**2**	**98**	**(62)**	**22**	**(2)**	**25**	**15**	**16**	**0**
4	Wet	99	91	(1)	220	(128)	(2)	(10)	8	10	11	0
	Above Normal	122	39	2	90	(53)	40	(3)	43	42	42	0
	Below Normal	2	(62)	(3)	(27)	(32)	40	6	34	23	23	0
	Dry and Critical	21	6	6	15	(15)	14	1	12	2	3	0
	All Years	**61**	**27**	**2**	**85**	**(59)**	**18**	**(2)**	**21**	**16**	**16**	**0**

The costs of agricultural water in the Investigation also assume that taxpayers will pay for over 72% of the total costs of constructing the project, yet the proposed taxpayer subsidies are clearly unjustified as demonstrated above. With the subsidies, agricultural water supplies under the contract are clearly infeasible; without those taxpayer subsidies, the costs of agricultural water from the project will substantially increase, making the project even less feasible (Table 3).[29] As Reclamation states: "If beneficiaries have the financial resources to pay

[25] http://valleyecon.blogspot.com/2014/03/new-temperance-flat-feasibility-study.html
[26] We calculated the benefit per acre foot by dividing the NED for year type by the AF benefit for that year type.
[27] USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. Modeling Appendix Table 3-2.
[28] We also did not calculate cost per AF for Alternative 2 because Reclamation did not run the Statewide Agricultural Production Model (SWAP) on this Alternative, relying on Alternative 3 data, even though deliveries differ.
[29] Calculation is based on 40 year loan with 3.5% interest rate. Subsidized and unsubsidized account for the cost allocation ratios determined in the Investigation. The cost is higher than that found in the Investigation due to the 1) Shorter 40 year vs 100 year period and 2) Use of current versus real dollars.

the costs allocated to them, then the project is considered financially feasible."[30] However, Reclamation states that CVP and SWP agricultural water users only have the ability to pay marginal increases in water costs of $3.95 per AF and not the additional costs of any new contracts, estimated by Reclamation at $212 per AF. However, actual expected costs per AF for Alternative 4 range from $413 to $1,593 per acre foot when subsidized by taxpayers and rises to $1,692 to $6,531 when not subsidized by taxpayers (Table 3). Not only are these costs infeasible for most farmers, but the range of costs seem remarkably high, providing little certainty to agricultural production and any profits seen.

Table 3 Proposed annual Agricultural water costs per acre foot

	Average Year	Dry Year
Unsubsidized	$1,593	$6,531
Subsidized	$413	$1,692

Agricultural landowners will be paying more for their water and the Restoration Program will suffer if Temperance Flat reservoir is constructed. Over the past 20 years, agricultural water supplies from the Friant unit of the CVP have averaged $43 per acre foot, costing a maximum of $125 per AF, half as much as the lowest expected cost for Temperance Flat water in the Investigation.[31] Water users accessing Section 215 water received water from Reclamation at Friant dam at an average rate of $10.29 per AF before restoration and local O & M charges.[32] Access to this low cost water will nearly disappear as Section 215 water is expected to decline by 15 to 137 TAF per year. The Investigation also mentions that less Recovered Water Account (RWA water at $10/AF) (without providing a quantity) will be available from the Restoration Program as a result of the proposed action. Agricultural water users could be paying 3 to 39 times more for subsidized and 12 to 150 times more for unsubsidized water than they are currently without accounting for the reduction in RWA water available at $10/AF. While these numbers are estimates, it is clear that water will become more expensive for agricultural users.

Lastly, the Investigation shows that the project will undermine implementation of the Water Management Goal of the SJRRP. A major aspect of the Water Management Goal of the SJRRP is to make better use of wet year water, which could provide Friant contractors with up to 556 TAF.[33] The Restoration Program includes local infrastructure projects to improve the ability of Friant Water Authority contractors to store wet year water in groundwater aquifers. New capacity projects in the Friant-Kern and Madera Canal to move water in wet years will be constructed prior to the proposed Temperance Flat project[34] and will decrease potential water supply benefits of Temperance Flat reservoir and will create operational redundancies. In addition, this was one of the primary reasons for providing water at $10/AF during wet years,[35] which also provides some funds for the Restoration fund. Any change in this structure could reduce the effectiveness of the Restoration Program, a cost not considered by Reclamation.

[30] USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. p.6-20
[31] http://www.ltrid.org/district_organization/news_articles/fact_sheet.php
[32] Personal communication. USBR. April 7, 2014.
[33] USBR. 2012. SJRRP Environmental Impact Statement. Record of Decision. p. 18
[34] USBR. 2012. SJRRP Environmental Impact Statement. Record of Decision. p.24
[35] USBR. 2012. SJRRP Environmental Impact Statement. Record of Decision.

Reclamation needs to ensure that outcomes of the Restoration Settlement are not impacted by this project. These and other potential Restoration Program water management projects must be adequately considered and included in the modeling effort.

IV. The Investigation fails to conform to current Federal Principles and Requirements

Though the Investigation cites both the 1983 and 2013 version of the Principles and Guidelines, little is done to address the 2013 update in the Investigation, as discussed below. Given the project is not anticipated to be complete until 2023, Reclamation should revise the Investigation to be consistent with the 2013 Principles and Requirements (P&R) in their study, rather than depending on 30 year old guidelines that have been superseded.

The Investigation states:

> The Federal objectives are guided by both the *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies* (P&G) (WRC 1983), which focuses on national economic development, and the *Principles and Requirements for Federal Investments in Water Resources* (P&R) (CEQ 2013), and encourages projects that maximize public benefits, both monetary and non-monetary.[36]

As detailed below, the Investigation is not consistent with the 2013 Principals and Requirements.

***Ecosystem Services*:**

An assessment of ecosystem services should be the guiding framework for federally funded studies and thus coincide with the benefits-cost analysis. According to the P & Rs "Alternatives must be evaluated for their performance with respect to each of the six Guiding Principles"

- Healthy and Resilient Ecosystems
- Sustainable Economic Development
- Floodplains (Actions should not eliminate the function of floodplains)
- Public Safety
- Environmental Justice
- Watershed Approach

The Investigation does not address most of these and when it does merely glosses over them. The Investigation hedges these requirements, by simply stating "The monetary valuation of ecosystem benefits is challenging, but the range of benefits clearly illustrates that the ecosystem benefits are sufficient to demonstrate economic feasibility."[37]

[36] USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. ES-8
[37] USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. ES-29

Given the efforts to quantify the ecosystem value of salmon recovery, Reclamation clearly has the ability to pursue ecosystem services valuation. While the economic value of salmon may be data limited, hundreds of datasets provide a range of value for nearly every imaginable ecosystem service. While these are imperfect, they provide guidelines that could be utilized, with even the most conservative value providing more information than has been provided here. Given the salmon data depend on little data, and none for the study site, additional investigation should be feasible, as required by the P&Rs.

Take for example, the requirement to plan at the watershed level. The plan mentions "San Joaquin River upstream from Friant Dam to Kerckhoff Dam, including Millerton Lake and the area that would be inundated by the proposed Temperance Flat RM 274 Reservoir."[38] A true watershed approach is missing from the study. While only the potential inundation zone is considered, the contributing area to Millerton Lake is much larger, covering the San Joaquin, Finegold creek, Cottonwood creek, Big Sandy, and NF Little Dry Creek watersheds, over 231 square miles.[39] Ecosystem services are vast, providing for the air we breathe, the water we drink, the food we eat, and the vast array of fish and wildlife that generate billions of dollars each year through recreation and tourism. Rather, the Investigation focuses on the political aspects of the watershed, ignoring important values of what will be flooded. Nearly every dam created has resulted in significant declines in fisheries populations. Collectively dam operators and owners subsequently spend billions attempting to fix their mistakes and meet regulatory requirements for fish and wildlife. Constructing Temperance Flat will be a future liability, potentially adding additional, unmeasured dollars to the cost of the Project.

We will not go into additional detail here on the lack of information on these guiding principles, but ask Reclamation to develop strategies and narrative to address each.

Nonstructural approaches:

As per the P & Rs, nonstructural approaches including public policy, pricing policy, regulations, and management practices ***must*** be considered.

"All alternative plans include constructing Temperance Flat RM 274 Dam and Reservoir in the upstream portion of Millerton Lake."[40] However, as alluded to in the Investigation, other options exist.

- *"An integrated portfolio of solutions, regional and statewide, to meet future water supply needs would include increased urban water use efficiency, recycling of municipal supplies, and improving Delta conveyance"*[41]
- *"Measures Specifically Addressing Increasing Water Supply Reliability and System Operational Flexibility -Measures retained that specifically address the primary planning objective of increasing water supply reliability and system operational flexibility include*

[38] USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. p. 1-9
[39] http://www.sierrafoothill.org/watershed/phase2_section1b.htm
[40] USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation p. ES-11
[41] USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. p. 1-6

> *those that perform reservoir operations and water management." Measures Specifically Addressing Enhancing Water Temperature and Flow Conditions Measures retained that specifically address the primary planning objective of enhancing water temperature and flow conditions include those that (1) perform reservoir operations and water management, and (2) construct water temperature management devices.*[42]

Reclamation did not adequately assess the three primary actions proposed by the SJRRP to mitigate unsuitable water temperatures: 1) modifying Friant and Madera canals to help preserve cold water pool in Millerton Reservoir; 2) installing a temperature control device on Friant Dam; 3) implementing measures to lower the temperatures in Millerton Lake.[43] Additionally, insufficient attention was given to other flexible strategies, particularly regarding the no action alternative, lacking focus on improved local water supply coordination, restoration of meadow wetlands, downstream restoration of wetlands to improve groundwater recharge and surface flows, and efficiency improvements to improve return flows. While a few non-structural approaches were considered in the Investigation, such as flow modifications, conservation, and groundwater banking, they were unnecessarily eliminated from consideration or considered in concept only.[44] Reclamation should not only explore a broader array of options, but provide detailed cost estimates of why options were omitted, rather than simply stating they are too expensive.

There are numerous water management strategies being developed as part of the SJRRP to improve use of the wet year water including improving the capacity of the Friant kern canal, investing in local water supplies such as groundwater banks, and facilitating recirculation such as through reversal of pumps at the Cross Valley canal and other measures. These are other actions that could provide water supply at reduced costs or implementation of these as part of the SJRRP would reduce the yield of the proposed dam. Given that these strategies have already passed through a prioritization process, Reclamation should consider them in the prioritization process for Temperance Flat.

Mitigation Measures:

According to P & Rs, when impacts are anticipated, mitigation plans ***must*** be developed. Reclamation states that "mitigation measures have not been completely identified at this stage in the Investigation and will be further developed for the Final Feasibility Report and EIS/EIR".[45] Until the watershed costs and benefits and ecosystem services have been quantified, and mitigation costs estimated, it is difficult if not impossible to accurately assess the financial viability of the project. Mitigation could substantially add to the overall project costs based on the impacts identified previously. The Investigation states that compensatory mitigation costs could be as high as 4:1,[46] with higher ratios for wetland and riparian habitats and habitat for

[42] USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation pp. 3-25, 3-26
[43] SJRRP. 2011. Appendix E. Fisheries Management Plan: A Framework for Adaptive Management in the San Joaquin River Restoration Program Draft Program Environmental Impact Statement/Report.
[44] USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. Formulation Appendix, Table 2-1
[45] USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. p. 3-29
[46] USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. Engineering Appendix p. 6-4

species of concern. Without potential short and long term mitigation costs, feasibility cannot be adequately assessed.

V. Conclusion: An accurate Investigation would likely conclude the Project is not feasible and other alternatives are more cost-effective

In general, the Investigation does not adequately give consideration to alternatives to dam construction, relying primarily on the expansion of storage to serve as a silver bullet for ecosystem and water supply needs. As outlined above, Reclamation does not adequately make this case and we believe must delve further into a justifiable analysis of costs and benefits of Temperance Flat reservoir. Overall, more consideration should be given to a portfolio approach, which could include actions such as high elevation meadow restoration, downstream floodplain and groundwater recharge, and improved agricultural and urban water efficiency and reuse projects. The value of pursuing these approaches is that 1) spreading activities over a range of strategies nearly always reduces risk and 2) in many cases additional investment is not required following the implementation of these strategies. Such an approach has broader public appeal and lower costs per acre foot of yield.

As highlighted here, the Investigation inadequately addresses the costs of the construction of Temperance Flat RM 274 reservoir. Not only does the Investigation completely omit information, but the information included overinflates the value of water supplies and ecosystem benefits from this proposed project. The Investigation also underestimates the costs of habitat loss for species of concern and endangered species, costs of lost recreation, and will drive up the costs of water for agricultural producers, particularly in dry years when water is needed most. Given these deficits and the lack of conformance to the most recent Principles and Requirements, Reclamation needs to withdraw and revise this Investigation to adequately address these issues.

Thank you for consideration of our views. Please contact us at your convenience if you have any questions about these comments or would like to discuss them further.

Sincerely,

Marcus Griswold, Ph.D.
Natural Resources Defense Council

Doug Obegi
Natural Resources Defense Council

Attachment 3

NRDC
THE EARTH'S BEST DEFENSE

NATURAL RESOURCES DEFENSE COUNCIL

June 5th, 2014

Bill Edgar, President
Central Valley Flood Protection Board
3310 El Camino Ave., Room 151
Sacramento, CA 95821

RE: Request for determination of channel capacity maintenance obligation of Reach 4B of the Upper San Joaquin River

Dear President Edgar and Members of the Board,

On behalf of the Natural Resources Defense Council ("NRDC"), which has more than 1 million members and activists, 250,000 of whom live in California, I am writing to request that the Central Valley Flood Protection Board ("Board") formally determine the scope and entity responsible for restoring and maintaining channel design capacity in Reach 4B of the upper San Joaquin River (from the Sand Slough Control Structure to the Mariposa Bypass). Clarification is urgently needed to enable on-going planning efforts to develop and implement flood management and habitat restoration improvements to the San Joaquin River. Unfortunately, it appears that this segment of the State Plan of Flood Control ("SFPC") has not been operated and maintained in compliance with the applicable Operations and Maintenance Manual[1] ("O&M Manual"), resulting in the loss of channel capacity below the design standard of 1,500 cubic feet per second and SFPC operations that deviate from the requirements of the O&M Manual. As a result, for several decades this twenty mile reach of the San Joaquin River has been effectively cut off from its historic channel. While this is a problem that both the Board and the California Department of Water Resources (DWR) have been aware of for a long time, it is critical that the Board address this issue now.

For several years, uncertainty over the scope and entity responsible for maintenance of channel capacity in Reach 4B has impeded restoration of the San Joaquin River and the development and implementation of projects to restore or expand channel capacity, provide fisheries habitat, reduce liability, and improve flood protection. The State and federal government have a clear interest in addressing these issues and restoring the health of California's second largest river. Both have designated substantial funding, including at least $200M of state funding, to implement the San Joaquin River Restoration Program (SJRRP), including projects to address channel capacity and structural improvements in Reach 4B. The State is also spending millions of dollars as part of the Central Valley Flood Protection Plan and the Upper San Joaquin River Regional Flood Management Plan (USJRRFMP) to develop improvements to the flood management system in the region. We believe that these programs provide an excellent opportunity for local, state, and federal cooperation to address significant flood management and habitat

[1] U.S. Army Corps of Engineers, Standard Operation and Maintenance Manual for the Lower San Joaquin Levees, Lower San Joaquin River and Tributaries, California, 1959 ("Standard O&M Manual"); Reclamation Board, Lower San Joaquin River Flood Control Project, Operation and Maintenance Manual for Levees, Irrigation and Drainage Structures, Channels and Miscellaneous Facilities, Part I, 1978 ("State O&M Manual Part I"); Reclamation Board, Lower San Joaquin River Flood Control Project, Operation and Maintenance Manual for San Joaquin River and Chowchilla Canal Bypass and Automated Control Structures and Appurtenances, Part III, 1969 ("State O&M Manual Part III).

restoration challenges in Reach 4B. However, the lack of clear understanding about the scope and entity responsible for addressing the issues related to the maintenance of channel capacity and operations consistent with the O&M Manual in this reach of the river, including whether the channel must be restored to convey 1,500 cfs as specified in the O&M Manual is thwarting forward progress with both programs. Most recently, the channel capacity and operations issues associated with Reach 4B have been discussed as part of the USJRRFMP. However, despite requests that a project to address Reach 4B channel capacity be included in the plan currently under development, one has not because of uncertainty about which agency is responsible for serving a lead role.

Our initial research indicates that the Lower San Joaquin Levee District (LSJLD) is the entity responsible for maintenance of this section of the SFPC, and that this obligation includes the maintenance of design capacity of the channels and operation of the SFPC (including the San Joaquin River Structure) in compliance with the O&M Manual. *See, e.g.,* Cal. Water Code App. § 75-7; 33 C.F.R. § 208.10; Standard O&M Manual at 3; State O&M Manual Part I, App. A, at A-5 to A-7 (Oct. 7, 1958 Agreement); State O&M Manual Part I at §§ 5100-5220, App. B, App. D; State O&M Manual Part III at §§ 5100-5200. While the SJRRP is studying alternatives for routing higher spring flows in this reach, the San Joaquin River Restoration Settlement Act does not alter these existing legal obligations under state or federal law. P.L. 111-11, §§ 10004(a)(1), (b); *Id.*, §§ 10006(a)-(b). However, both the Board and DWR appear to have responsibilities to address maintenance issues if the Levee District is unable to perform its duty.

Addressing the channel capacity issues related to Reach 4B are essential to restoring the San Joaquin River and are an excellent opportunity to improve flood management, reduce local and state liability and to address the deferred maintenance in this part of the SPFC. Guidance from the Board is needed at this time to enable forward progress with Reach 4B's inclusion in regional planning effort and in order to better delineate the proportion of local, state, and federal funds for this project. As such, we respectfully request that the Board make a formal determination of the scope and extent of the operations and maintenance obligations including required conveyance capacity, as well as the entities responsible for addressing the issues identified for this section of the SPFC.

Thank you for your prompt consideration of this request. We look forward to working with you and other parties to resolve this question and to advance multi-benefit flood management projects in Reach 4B and elsewhere in the upper San Joaquin River watershed. Please let us know if you have any questions regarding this request.

Sincerely,

Monty Schmitt
San Joaquin River Project Manager
Natural Resources Defense Council

cc:

Keith Swanson, California Department of Water Resources
Reggie Hill, Lower San Joaquin River Levee District
Ali Forsythe, U.S. Bureau of Reclamation