1D.1.9 Friends of the River

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September 29, 2015

Re: Supplemental Comments on Draft Environmental Impact Statement (EIS) for Coordinated Long-Term Operation of the Central Valley Project (CVP) and State Water Project (SWP)

Dear Mr. Nelson:

Introduction

These are supplemental comments submitted today on behalf of Friends of the River. These comments are submitted on the Draft EIS for Coordinated Long-Term Operation of the CVP and SWP. These comments supplement those made earlier today on behalf of the Environmental Water Caucus and its over 30 coalition members including Friends of the River.[1] It is difficult if not impossible to imagine a closer relationship for NEPA and CEQA purposes than that between the proposed new Bay Delta Conservation Plan (BDCP)/California Water Fix Delta Water Tunnels and the long-term operations of the CVP and SWP. Planned long-term operations of the CVP and SWP system determine whether the Delta Water Tunnels proposed by the BDCP/Water Fix even arguably might make any sense for water supply purposes. In turn, whether or not the new conveyance proposed by the BDCP/Water Fix is approved will make a major difference in the actual long-term operations of the CVP and SWP system.

FOTR 1

FOTR 2

Despite this extremely close relationship, separate environmental review processes for the Water Fix Delta Water Tunnels on the one hand, and the long-term CVP and SWP operations on the other hand, are underway. A Draft EIS has been prepared with respect to the long-term project operations with the comment period closing today. A separate Draft EIR/EIS and Recirculated Draft EIR/Supplemental Draft EIS have been prepared for the Water Fix Tunnels with the comment period closing October 30, 2015. The Bureau of Reclamation is the federal lead agency for both of these NEPA processes.

This deliberate separation of the Water Tunnels NEPA and CEQA process from the NEPA compliance process for the Coordinated Long-term Operation of the CVP and SWP is segmentation –also referred to as piecemealing --of environmental review. That segmentation violates NEPA and CEQA.

[1] Because of the refusal of Reclamation to grant an extension, it has been virtually impossible on a crash basis to develop comprehensive comments on the Draft EIS.

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The Segmentation of Environmental Review of long-term Operations from the Proposed Delta Water Tunnels Violates NEPA and CEQA

FOTR 2 continued

The NEPA Regulations are codified at title 40 of the Code of Federal Regulations (C.F.R.). The NEPA Regulations specify that "Agencies shall make sure the proposal which is the subject of an environmental impact statement is properly defined. . . Proposals or parts of proposals which are related to each other closely enough to be, in effect, a single course of action shall be evaluated in a single impact statement." (40 C.F.R. § 1502.4(a). [2]

Pursuant to NEPA Regulation 40 C.F.R. § 1508.25(a), multiple federal actions must be evaluated in the same environmental impact statement if they are connected, cumulative, or similar. Here, the long-term operations on the one hand, and proposed Delta Water Tunnels on the other hand, are all three. They are connected, cumulative, and similar. To assist the Bureau in complying with NEPA, we include the full text of the Regulation in the footnote.[3]

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[2] In *City of Rochester v. U.S. Postal Serv.*, 541 F.2d 967, 972-73 (2d Cir. 1976), the court explained that:

> To permit noncomprehensive consideration of a project divisible into smaller parts, each of which taken alone does not have a significant impact but which taken as a whole has cumulative significant impact would provide a clear loophole in NEPA. [citations omitted]. The guidelines of the Council on Environmental Quality make it clear that the statutory term "major Federal actions" must be assessed "with a view to the overall, cumulative impact of the action proposed, related Federal action and projects in the area, and further actions contemplated." 40 C.F.R. s 1500.6(a) (1975). The transfer decision is plainly a consequential, if not an inseparable, feature of the construction project.

3 40 C.F.R. § 1508.25. Scope consists of the range of actions, alternatives, and impacts to be considered in an environmental impact statement. The scope of an individual statement may depend on its relationships to other statements (§§ 1502.20 and 1508.28). To determine the scope of environmental impact statements, agencies shall consider 3 types of actions, 3 types of alternatives, and 3 types of impacts. They include:

(a) Actions (other than unconnected single actions) which may be: (1) Connected actions, which means that they are closely related and therefore should be discussed in the same impact statement. Actions are connected if they: (i) Automatically trigger other actions which may require environmental impact statements. (ii) Cannot or will not proceed unless other actions are taken previously or simultaneously. (iii) Are interdependent parts of a larger action and depend on the larger action for their justification.

(2) Cumulative actions, which when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact statement.

(3) Similar actions, which when viewed with other reasonably foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography. An agency may wish to analyze these actions in the same impact statement. It should do so when the best way to

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FOTR 2 continued

The NEPA Regulations also require that agencies "Integrate the requirements of NEPA with other planning and environmental review procedures required by law or by agency practice so that all such procedures run concurrently rather than consecutively." § 1500.2(c). *See also* § 1501.2 ("Agencies shall integrate the NEPA process with other planning at the earliest possible time to insure that planning and decisions reflect environmental values, to avoid delays later in the process, and to head off potential conflicts.").

The rules under CEQA are similar to those under NEPA in prohibiting segmenting environmental review. CEQA requires that "an agency must use its best efforts to find out and disclose all that it reasonably can" about a project being considered and its environmental impacts. *Vineyard Area Citizens v. City of Rancho Cordova*, 40 Cal.4th 412, 428 (2007). Under CEQA a "project" is defined as "the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment. . ." 14 Code Cal. Regs (CEQA Guidelines) § 15378(a). The courts have explained that:

> Theoretical independence is not a good reason for segmenting environmental analysis of the two matters. Doing so runs the risk that some environmental impacts produced by the way the two matters combined or interact might not be analyzed in the separate environmental reviews. Furthermore, if the two matters are analyzed in sequence (which was a situation here) and the combined or interactive environmental effects are not fully recognized until review of the second matter, the opportunity to implement effective mitigation measures as part of the first matter may be lost. *Tuolumne County Citizens for Responsible Growth v. City of Sonora*, 155 Cal.App.4th 1214, 1230 (2007).

Preparing separate environmental impact statements for long-term operation of the CVP and SWP, and the Delta Water Tunnels proposed by the BDCP/Water Fix in the Delta is unlawful segmentation of environmental review under NEPA.

To be crystal clear, if the Bureau of Reclamation proceeds with these separate environmental review processes, the Bureau is truly proceeding in the face of "red flags flying." The U.S. Environmental Protection Agency (EPA) commented last year during the BDCP environmental review process that:

FOTR 3

> Upstream/Downstream Impacts
>
> The Federal and State water management systems in the Delta are highly interconnected, both functionally and physically. The Draft EIS does not address how changes in the Delta can affect resources in downstream waters, such as San Francisco Bay, and *require changes in upstream operations, which may result in indirect environmental impacts that*

> assess adequately the combined impacts of similar actions or reasonable alternatives to such actions is to treat them in a single impact statement.

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must also be evaluated. We recommend that the Supplemental Draft EIS include an analysis of upstream and downstream impacts. (EPA comments on Draft Environmental Impact Statement for the Bay Delta Conservation Plan, San Francisco Bay Delta, California (CEQ# 20130365), p. 3, August 26, 2014)(emphasis added). [4]

FOTR 3 continued

There would be no proposal to develop the massive and expensive Delta Water Tunnels if there were not to be long-term CVP and SWP operations. Likewise, long-term CVP and SWP long-term operations will be vastly different depending on whether or not the Delta Water Tunnels are developed. The Introduction to the Water Fix RDEIR/SDEIS includes among the Water Tunnels project objectives;

FOTR 4

> Restore and protect the ability of the SWP and CVP to deliver up to full contract amounts, when hydrologic conditions result in the availability of sufficient water, consistent with the requirements of state and federal law and the terms and conditions of water delivery contracts held by SWP contractors and certain members of San Luis Delta Mendota Water Authority, and other existing applicable agreements. (Water Fix RDEIR/SDEIS Introduction, p. 1-9).

To proceed in the manner required by NEPA (and CEQA), the Bureau of Reclamation must cease these two separate environmental review processes. The Bureau of Reclamation must instead prepare and issue for public review one new Draft EIS/EIR comprehensively analyzing in one environmental review process and one Draft EIS the environmental impacts of both the Coordinated Long-Term Operation of the CVP and SWP and the proposed BDCP/Water Fix Delta Water Tunnels. Because of the segmentation, the Draft EIS is "so inadequate as to preclude meaningful analysis" in violation of NEPA. 40 C.F.R. § 1502.9(a).

Conclusion

The Bureau of Reclamation, in order to comply with NEPA, must prepare and issue for public and decision-maker review and comment one Draft EIS on both the coordinated long-term operation of the CVP and SWP, and the proposed BDCP Water Fix Delta Water Tunnels.

Sincerely,

/s/ E. Robert Wright
Senior Counsel
Friends of the River

[4] In its detailed comments attached to the letter, EPA further explained that:

> The Draft EIS does not include a comprehensive description of the CVP and SWP with and without new North Delta intake facilities or through-Delta operations. Such information as needed to assist the reader in understanding how the water delivery system operates under Existing Conditions and how it would change under CM1 [Delta Water Tunnels] alternatives. (Detailed Comments, p. 22).

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1D.1.9.1 Responses to Comments from Friends of the River

FOTR 1: Comment noted. Please see responses to the Environmental Water Caucus Letter Number 2 in Section 1D.1.7 of this appendix.

FOTR 2: This EIS addresses the coordinated long-term operation of the CVP and SWP with existing facilities. As described in Section 1.6 of Chapter 1, Introduction, of the Draft EIS, it is anticipated that substantial changes could occur to CVP and SWP operations as future projects are implemented. It is anticipated that most of these future projects have been identified in Section 3.5 of Chapter 3, Description of Alternatives, including the Bay Delta Conservation Plan (BDCP) which includes the WaterFix as one of the BDCP alternatives. Many of these future projects have not been fully defined and are not anticipated to be operational until the late 2020s. For example, operations of the BDCP has been estimated to not occur until at least 10 years following completion of the planning documents in 2016 (see Appendix 8A, Implementation Costs Supporting Materials, of the Draft Bay Delta Conservation Plan published in 2013).

If any of these future projects would substantially change CVP operations, Reclamation would evaluate the need to request for initiation of consultation under the Endangered Species Act (ESA) with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NFMS). For example, a separate consultation is being requested by Reclamation under Section 7 of the ESA for the WaterFix. Following this and/or other new ESA consultations on future projects, coordinated long-term operation of the CVP and SWP described in the Preferred Alternative for this EIS and set forth in the Record of Decision, may or may not be revised and alternative operating parameters be put in place. As described in Chapter 1, that is the reason that the study period for this EIS concludes around 2030.

Because the future operations under future projects (including the WaterFix) have not been finalized at this time; and because projects that would substantially change CVP operations would require future consultations with USFWS and NMFS, it would be pre-decisional to include these projects in the alternatives evaluated in this EIS. This approach does not lead to segmentation of the analyses because the analyses are sequential, and not concurrent.

Reclamation is the lead agency for this action and the environmental document; therefore, the environmental document is being prepared only under the National Environmental Policy Act. Several State of California agencies are cooperating agencies for this EIS. Because compliance with the California Environmental Quality Act (CEQA) would be under DWR's purview, Reclamation consulted with DWR on this comment. On October 5, 2015, DWR provided the following response: "The District Court required Reclamation to comply with NEPA on the provisional acceptance of the RPA actions. There is no action for the State of California requiring California Environmental Quality Act (CEQA) review."

FOTR 3: This comment is a comment provided by the U.S. Environmental Protection Agency on the BDCP Draft Environmental Impact Report/EIS, and not on this EIS. This EIS does evaluate the effects of the coordinated long-term operation of the CVP and SWP on areas located upstream and downstream of the Delta, as described in Section 1.5 of Chapter 1, Introduction, of the Draft EIS.

FOTR 4: The CVP and SWP will be operated in accordance with the Preferred Alternative set forth in the Record of Decision for this EIS until future projects are implemented, such as the BDCP. As described in Response to Comment FOTR 2, prior to implementation of future projects, separate environmental documentation would be completed; and, if substantial changes in operation of the CVP occur, separate ESA consultations would be required. The projects that have been identified but not fully defined at this time (including BDCP/WaterFix) are included in the EIS analysis through a cumulative effects analysis in Chapters 5 through 21. Due to the possibility of these future projects, the study period for this EIS is considered to extend only to the 2030 time period.

1D.1.10 Golden Gate Salmon Association and Pacific Coast Federation of Fishermen's Association

September 29, 2015

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

Dear Mr. Nelson:

On behalf of the Golden Gate Salmon Association and the Pacific Coast Federation of Fishermen's Associations, we provide these comments on the Bureau of Reclamation's Draft Environmental Impact Statement for Coordinated Long-Term Operation of the Central Valley Project and State Water Project ("DEIS"). Unfortunately, the DEIS fails to comply with the requirements of the National Environmental Policy Act ("NEPA"), because it fails to include a reasonable range of alternatives, fails to accurately inform the public and decision makers of potential significant environmental impacts and necessary mitigation measures, and fails to adequately analyze cumulative impacts. Because Reclamation has failed to use sound scientific information and instead used flawed and biased methods to assess potential environmental impacts, the DEIS fails to accurately assess likely impacts on fish and wildlife populations and fails to identify and propose reasonable mitigation measures for potentially significant impacts.

GGSA PCFFA 1

Comments on USBR Long Term Operations Draft Environmental Impact Statement
September29, 2015

1. The DEIS Fails to Accurately Assess Environmental Impacts to Fish and Wildlife

The DEIS largely ignores that over the past several years, the combination of the drought and CVP/SWP operations (including waivers of D-1641 water quality standards and other environmental protections) has driven delta smelt, winter run Chinook salmon, and other species to the brink of extinction. The DEIS never mentions that minimum Delta water quality standards under D-1641 were waived, and that RPA actions required under the biological opinions were not implemented during the drought, and the DEIS wholly fails to analyze the impact of the reasonably foreseeable waiver of water quality standards in future droughts. Yet the DEIS only acknowledges under the No Action Alternative that abundance levels for delta smelt and other fisheries "are difficult to predict" and that "Currently low levels of relative abundance do not bode well for the Delta Smelt or other fish species in the Delta." DEIS at 9-139.[1] Under the Second Basis of Comparison, the DEIS concludes that,

> As described above for the No Action Alternative, abundance levels for Delta Smelt, Longfin Smelt, Striped Bass, Threadfin Shad, and American Shad are currently very low, and abundance and habitat conditions for fish in the Delta in future years are difficult to predict. It is not likely that operations of the CVP and SWP under the Second Basis of Comparison would result in improvement of habitat conditions in the Delta or increases in populations for these fish by 2030, and the recent trajectory of loss would likely continue.

DEIS at 9-150. Despite these acknowledgements that current operations may very well lead to extinction of the species, the DEIS proposes no mitigation measures and does not even conclude that the alternatives result in significant impacts to delta smelt. Similarly, for longfin smelt, the DEIS ignores that current operations have resulted in the U.S. Fish and Wildlife Service concluding that listing longfin smelt under the Endangered Species Act is warranted, and continuation of existing spring outflow conditions is likely to result in adverse effects on the species. As a result, the DEIS fails to accurately assess environmental impacts of CVP/SWP operations on delta smelt and longfin smelt. All of this bodes poorly for the salmon that the commercial and recreational salmon fishing industry needs to survive. We strongly urge Reclamation to work with the National Marine Fisheries Service, U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, and U.S. Environmental Protection Agency to address these scientific and analytic flaws.

GGSA PCFFA 2

The DEIS fails to consider an alternative that includes increased investments in local and regional water supplies. It fails to accurately assess the likely socioeconomic impacts of

GGSA PCFFA 3

[1] In part, this conclusion is based on inaccurate assessment of entrainment impacts of the Alternatives on Delta Smelt, as discussed below.
[2] In contrast, Reclamation's revised draft environmental impact statement for the California

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GGSA PCFFA 3 continued

increased restrictions on ocean salmon fishing in Alternatives 3 and 4. It also fails to include any operational measures to adapt to climate change and mitigate its effects upstream.

GGSA PCFFA 4

With respect to salmon, the DEIS acknowledges that climate change will make it more difficult to achieve water temperature requirements with current upstream reservoir operations, resulting in impacts to salmon and steelhead. *See, e.g.*, DEIS at 9-126 to 9-127. Yet the DEIS fails to conclude that these temperance exceedances constitute a significant environmental impacts and fails to consider any mitigation measures.[2] During the current drought, the failure to meet minimum upstream water temperatures resulted in greater than 95 percent mortality of the 2014 brood year winter run Chinook salmon and probably as much, or more, of the fall run salmon our industry relies on. Failure to adequately forecast and manage upstream reservoirs may result in similar mortality for the 2015 brood year. Increased frequency, duration and intensity of upstream temperature exceedances as a result of climate change in combination with CVP/SWP operations are likely to cause significant environmental impacts. The DEIS also fails to demonstrate whether operations of Shasta Dam under the No Action Alternative are consistent with requirements of the 2009 NOAA biological opinion, which includes performance measures and other requirements to maintain adequate cold water pool for winter run Chinook salmon below the dam. As a result, the DEIS must be revised to analyze compliance with the biological opinion and to consider changes in reservoir operations to mitigate upstream temperature impacts.

GGSA PCFFA 5

GGSA PCFFA 6

Despite these short and long term impacts, the DEIS asserts that with respect to several salmon and steelhead runs, the effects of CVP/SWP operations under Alternative 1 are similar to those under the No Action Alternative and Alternative 2. *See, e.g.,* DEIS at ES-30 to ES-31, 9-397 to 9-398.[3] However, the federal courts have twice held that operations under Alternative 1 would jeopardize the continued existence and recovery of listed salmonids and steelhead, in violation of the Endangered Species Act. The DEIS therefore suggests that operations under the No Action Alternative and under Alternative 2 would also jeopardize these listed salmon species (primarily because of upstream water temperature impacts). Yet the DEIS does not identify a significant environmental impact from these effects, and it proposes no clearly defined mitigation measures to address these impacts (except for programs for upstream fish passage at major dams, which are already required under the No Action Alternative).

GGSA PCFFA 7

[2] In contrast, Reclamation's revised draft environmental impact statement for the California WaterFix concludes that under the No Action Alternative, upstream reservoir operations will result in significant adverse environmental impacts to winter run Chinook salmon and green sturgeon spawning and egg incubation. *See, e.g.,* USBR, CA WaterFix RDEIS/SDEIR at ES-48.
[3] This is at least In part because of Reclamation's flawed methodology for assessing impacts, particularly with respect to operations in the Delta..

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The DEIS is fundamentally flawed, and Reclamation must revise the DEIS to analyze a broader range of alternatives using a credible methodology for assessing environmental impacts, including cumulative impacts.[4]

GGSA PCFFA 8

Adding insult to injury, the DEIS assumes up to full contract delivery for CVP contractors. This is contrary to existing legal obligations to protect fish and wildlife, as well as provisions of the San Luis Act and compliance with the feasibility report accompanying that act.[5] Assumptions must not only comply with the law but comport with reality. Assuming up to full contract deliveries is not realistic.

GGSA PCFFA 9

In general, Chapter 9 fails to utilize recent scientific information and utilizes outdated and inaccurate models to assess potential impacts to fish and wildlife populations. As a result, the DEIS fails to accurately assess the likely environmental impacts of the alternatives on fish and wildlife and significantly understates the environmental impacts of some alternatives.

GGSA PCFFA 10

As with the pelagic species discussed above, the DEIS omits numerous recent scientific studies and analyses, particularly studies that indicate significant impacts of water project operations on salmonid survival and abundance. For instance, recent life cycle models for fall run Chinook salmon and spring run Chinook salmon have been developed and submitted to the Delta Science Program, which conclude that CVP/SWP delta exports significantly reduce spring and fall run salmon survival and abundance. *See* Cunningham *et al* 2015. In addition, Michel *et al* 2015 was recently published in the Canadian Journal of Fisheries and Aquatic Sciences, which reviews five years of acoustic tag data and demonstrates that increased flows dramatically increase survival of migrating salmon through the Sacramento River and Delta. These studies contradict many of the methods and models utilized by Reclamation in the DEIS to assess impacts, such as the Delta Passage model (which predicts very minimal changes in survival and abundance despite significant changes in exports and Old and Middle River reverse flows) and SALMOD.1

For example, Cunningham et al 2015 estimates that increasing exports by 30% above the 1967-2010 average would result in a 16-28% lower median survival rate from egg to adulthood for wild fall run chinook salmon and a 39-59% reduction in median survival for spring run Chinook salmon, concluding that, "[a] 30% increase in exports decreased spring and fall stock survival to the point where they would all decline regardless of the climate scenario." In contrast, the Delta

[4] In addition, Reclamation and DWR have not complied with CEQA, and compliance with CEQA is required before the Department of Water Resources could propose any changes to State Water Project operations. Numerous additional permits and approvals would be required before authorizing any changes to operations, including requirements under the federal Endangered Species Act, California Endangered Species Act, and other state and federal laws.

[5] The 1960 San Luis Act authorized irrigating only 500,000 acres in Merced, Fresno and Kings Counties and providing fish and wildlife benefits and compliance with the Fish and Wildlife Coordination Act continuing jurisdiction. See PL 86-488 and http://cdm15911.contentdm.oclc.org/cdm/ref/collection/p15911coll10/id/2106

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Passage Model predicts "very similar estimates of survival" for spring and fall run Chinook salmon under the No Action Alternative compared to the Second Basis of Comparison, despite the substantial increase in exports under the Second Basis of Comparison. *See* DEIS at 9-169, 9-178.

GGSA PCFFA 10 continued

In addition, the Delta Passage Model only attempts to estimate survival of salmon smolts, *see* DEIS Appendix 9J at 9J-1, and cannot assess impacts to salmon fry or parr. Yet fry and parr life stages are often the majority of salmon migrating through the Delta, and the DEIS wholly ignores the impacts of CVP/SWP operations on these salmonid life histories.

GGSA PCFFA 11

Similarly, the DEIS fails to explain the contradictory information from use of the OBAN life cycle model and the Delta Passage Model on salmon survival through the Delta. On page 9-162, the DEIS states that the Delta Passage Model results in similar winter run Chinook salmon survival through the Delta under the No Action Alternative and the Second Basis of Comparison, and on the same page it states that the OBAN life cycle model predicts that median survival through the Delta would be 12 percent higher under the No Action Alternative compared to the Second Basis of Comparison. The DEIS provides no justification for its statement that the OBAN model's survival estimates "suggest a high probability of no difference between these two bases of comparison." DEIS at 9-162. In fact, the model demonstrates a very substantial difference in survival between the two alternatives, and Reclamation's conclusory statement is arbitrary and capricious.

GGSA PCFFA 12

As a result, the DEIS fails to accurately assess environmental impacts of CVP/SWP operations in the Delta on migrating salmonids, and the conclusions drawn in the DEIS are arbitrary and capricious.

2. The DEIS Fails to Accurately Assess Upstream Water Temperature Impacts to Salmon

The DEIS' analysis of upstream temperature impacts on salmon is flawed and understates the adverse impacts of CVP/SWP operations on salmon (particularly in combination with climate change), and the DEIS fails to explicitly acknowledge that CVP/SWP operations cause significant adverse impacts and to propose mitigation measures to address these impacts in the short term. Reclamation's conclusions in the DEIS are arbitrary and capricious.

GGSA PCFFA 13

Even using flawed methodology, the DEIS demonstrates that there will be significant adverse effects on salmon from high water temperatures as a result of climate change and CVP/SWP operations, including under the No Action Alternative:

> Under the No Action Alternative, the ability to control water temperatures depends on a number of factors and management flexibility usually ends in October when the cold water pool in Shasta Lake is depleted. With climate

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continued

> change, cold water storage at the end of May in Shasta Lake is expected to be reduced under the No Action Alternative for all water year types. This would further reduce the already limited cold water pool in late summer. **With the anticipated increase in demands for water by 2030 and less water being diverted from the Trinity River, it is expected that it would become increasingly difficult to meet water temperature targets at the various temperature compliance points. It is likely that severe temperature-related effects will be unavoidable in some years under the No Action Alternative.** Due to these unavoidable adverse effects, RPA Action Suite I.2 also specifies other actions that Reclamation must take, within its existing authority and discretion, to compensate for these periods of unavoidably high temperatures. These actions include restoration of habitat at Battle Creek (see below) which may support a second population of winter-run Chinook Salmon, and a fish passage program at Keswick and Shasta dams to partially restore winter-run Chinook Salmon to their historical cold water habitat.

DEIS at 9-127 to 9-128 (emphasis added).[6] The DEIS also uses Reclamation's salmon mortality model to estimate temperature impacts on salmon production and mortality, concluding that the impacts from the No Action Alternative and the Second Basis of Comparison are similar, *see* DEIS at 9-160, that winter run Chinook salmon mortality is 31.4% in critically dry years under the No Action Alternative, *see* DEIS at Appendix 9C-8, and that Sacramento River spring run Chinook salmon mortality is 21.9% on average, and 84.8% in critically dry years under the No Action Alternative, *see* DEIS at Appendix 9C-7. Similarly, the SALMOD model results in the DEIS estimate that in approximately 10% of years, there would be zero production of spring run Chinook salmon below Shasta Dam. *See* DEIS at Figure B-3-1. And the DEIS estimates that under both the No Action Alternative and the Second Basis of Comparison, Reclamation will frequently violate temperature standards at Shasta Dam, *see* DEIS at 9-159 to 9-160, and at other reservoirs, *see* DEIS at 9-166 to 9-168. Yet the DEIS fails to explicitly identify upstream temperature mortality as a significant adverse impact, and the only mitigation measure identified in the DEIS (fish passage program) is a long term potential measure that is already required under the No Action Alternative and is therefore part of the baseline. That mitigation measure does not address the ongoing significant adverse impact in the near term, nor does it propose anything that is not already required.

[6] However, as noted above, the DEIS also fails to demonstrate whether operations of Shasta Dam under the No Action Alternative are consistent with requirements of the 2009 NOAA biological opinion, which includes performance measures and other requirements to maintain adequate cold water pool for winter run Chinook salmon below the dam. *See* DEIS at 9-125 (describing RPA requirements). To the extent that the modeled operations under the No Action Alternative fail to meet the RPA requirements, Reclamation must revise operations to be consistent with those RPA requirements.

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Moreover, the DEIS relies on flawed methodologies to assess temperature impacts on salmonids, many of which provide contradictory results, which mislead the public as to the effects of CVP/SWP operations on salmonids. For instance, the DEIS uses the SALMOD model to calculate juvenile production and the extent of temperature related upstream mortality to eggs and fry. The document concludes that the No Action Alternative results in similar impacts to the Second Basis of Comparison. DEIS at 9-162. Yet SALMOD's estimates of mortality and production are wildly inaccurate compared to recent data. For instance, Figure B-4-1 estimates that winter run Chinook salmon production would never drop below 500,000, yet in 2014 there was a total year class failure with over 95% mortality due to water temperatures. Figure B-4-1 also shows that according to the SALMOD model, in approximately 95% of years winter run Chinook salmon production does not vary by more than a few hundred thousand fish. Yet empirical data shows that winter run Chinook salmon egg to fry survival at Red Bluff Diversion Dam from 2002 to 2012 varied substantially, from a low of 15.4% to a high of 48.6%, with a mean of 26.4%. *See* U.S. Fish and Wildlife Service 2015 at Table 6c. Estimates for other salmon runs are similarly inaccurate compared to recent Sacramento River data from the U.S. Fish and Wildlife Service. And this recent data also contradicts the information presented in Reclamation's salmon mortality model, which significantly underestimates mortality compared to the recent data.

GGSA PCFFA 14

In addition, the analysis of water temperature impacts looks only at monthly average temperatures. DEIS at 9-109. As the DEIS notes briefly, "the effects of daily (or hourly) temperature swings are likely masked by the averaging process." DEIS at 9-110. This is clearly correct, and may help explain why the modeled results do not show the level of mortality seen from recent empirical data. Yet the DEIS fails to carry forward this caveat elsewhere in the discussion, when it presents the results of modeling. Similarly, the DEIS restricts its use of the IOS model to median escapement estimates and only uses a subset of the years from CALSIM, DEIS at 116, which excludes the highest mortality years in the driest years and therefore does not accurately assess impacts.

GGSA PCFFA 15

Finally, the DEIS' analysis of weighted usable area for rearing habitat fail to account for more recent scientific research demonstrating the strong effect of increased flow on downstream salmonid survival in the Sacramento River. *See* DEIS at 9-107 to 9-109. The methodology used in the DEIS does not account for the significant reduction in survival of migrating salmon under lower flow conditions in the Sacramento River. *See* Michel et al 2015. As a result, the DEIS fails to accurately assess the impact of reduced flow on salmon survival in the Sacramento River using this methodology.

GGSA PCFFA 16

The DEIS demonstrates that current CVP/SWP operations, including water deliveries to Sacramento River Settlement Contractors and other senior water rights holders, in combination

GGSA PCFFA 17

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with climate change, will result in significant adverse effects on salmon caused by violations of water temperature requirements. The DEIS predicts that these impacts will become more severe as a result of climate change and increased demands for water. As a result, the DEIS must consider alternatives and/or mitigation measures that reduce upstream water deliveries, including deliveries to Sacramento River Settlement Contractors and other water rights holders.

GGSA PCFFA 17 continued

3. The DEIS Fails to Accurately Assess Impacts to Salmonids in the San Joaquin Basin

The DEIS fails to accurately assess environmental impacts to salmonids in the San Joaquin Basin because it fails to assess impacts to spring run Chinook salmon and because it fails to assess the impacts from changes in river flows.

GGSA PCFFA 18

First, the DEIS fails to acknowledge that small populations of spring run Chinook salmon have been established in recent years in the Stanislaus and other rivers. NMFS has acknowledged these populations exist, but the DEIS only analyzes impacts to fall run Chinook salmon and mistakenly concludes that spring run have been extirpated. DEIS at 9-87, 9-92. The DEIS wholly fails to analyze impacts to spring run Chinook salmon in the Stanislaus River and other San Joaquin River tributaries.

Second, the DEIS acknowledges some of the studies documenting that salmon survival in the Stanislaus River and other San Joaquin tributaries is driven by river flow conditions. For instance, the DEIS cites Zeug et al 2014 to show that higher flow generally results in higher salmon survival and subsequent abundance. DEIS at 9-92. Yet the DEIS ignores other scientific studies which conclude that flows drive salmonid survival and abundance, including Sturrock et al 2015, Buchanan et al 2015, State Water Resources Control Board 2010, 2012.[7] The DEIS also fails to emphasize that inadequate flow is the dominant factor limiting salmon survival and abundance, instead relying on outdated research from 1982 to assert that survival through the Stockton Deepwater Ship Channel is one of the most limiting factors. DEIS at 9-92.[8]

GGSA PCFFA 19

The DEIS fails to utilize this recent scientific information on the importance of river flow in assessing environmental impacts. Although the DEIS analyzes impacts from changes in operations on water temperatures, it wholly fails to assess the impacts from changes in flows on the Stanislaus River. *See, e.g.,* DEIS at 2-202 to 2-209 (analyzing impacts to fall run Chinook

[7] The DEIS also cites to 2001 research by Mesick on the effect of fall flows and exports on straying, but ignores Marston et al 2012, which concluded that fall pulse flows and export rates are correlated with higher rates of straying.
[8] The DEIS also incorrectly asserts that flows must exceed 5,000 cfs to mobilize gravel in the Stanislaus River. DEIS at 9-95. That is incorrect; Kondolf 2001 concluded that flows below 5,000 cfs could mobilize the riverbed, particularly in certain reaches of the river.

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salmon and Steelhead).[9] The available scientific evidence demonstrates that a reduction in flows below the minimum requirements of the biological opinion would result in very significant adverse effects on steelhead, fall run Chinook salmon, spring run Chinook salmon. *See, e.g.,* Sturrock et al 2015; Zeug et al 2014; Buchanan et al 2015; State Water Resources Control Board 2010, 2012. And the State Water Resources Control Board, National Marine Fisheries Service, U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, and many others have demonstrated that current flow levels on the Stanislaus River and other San Joaquin River tributaries are causing significant impacts to salmon and steelhead, demonstrating a need to substantially increase flows to sustain salmon.

GGSA PCFFA 19 continued

This is particularly problematic for Alternative 3, which proposes to substantially reduce Stanislaus River flows. The DEIS wholly fails to analyze the impact of reduced flows and, based solely on temperature modeling, concludes that that Alternative 3 would have slightly beneficial effects on fall run Chinook salmon. DEIS at 9-316. Because the DEIS fails to assess the environmental impacts of reduced flows, which is the dominant factor affecting salmon and steelhead on the Stanislaus, Lower San Joaquin River, and other tributaries, the DEIS fails to accurately assess the environmental impacts of CVP/SWP operations on salmonids in the San Joaquin Basin. Reclamation's conclusions in the DEIS are arbitrary and capricious.

GGSA PCFFA 20

In addition, the DEIS fails to credibly analyze the impacts of the proposed trapping and barging of San Joaquin basin salmonids through the Delta under Alternative 3 and 4. The document makes unsubstantiated conclusions that this action would benefit salmonids without providing any analysis in the document. DEIS at 9-315 to 9-316. As a result, Reclamation's conclusion in the DEIS is arbitrary and capricious. There are substantial uncertainties regarding the effectiveness of capture operations (the stated goal is capturing 10-20% of the population) and potential adverse impacts. Moreover, coded wire tag data from the California Department of Fish and Wildlife show that salmon from the Merced Hatchery have successfully migrated through the Delta in recent years. *See* Kormos et al 2012; Palmer-Zwahlen and Kormos 2013. And in their comments on the ADEIS, NMFS raised substantial concerns that a trap and haul program would cause substantial adverse impacts on salmonids.

GGSA PCFFA 21

The DEIS also fails to assess whether such a program is consistent with Reclamation's obligation to double natural production of salmon populations under the Central Valley Project

GGSA PCFFA 22

[9] Elsewhere, the DEIS asserts that under the No Action Alternative, Reclamation will not fully implement the biological opinion requirements regarding Stanislaus River and Lower San Joaquin River flows, in order to make water available to contractors, yet asserts with no justification that the impacts would be "similar or reduced relative to recent conditions." DEIS at 9-133. The DEIS reaches a similarly flawed conclusion with respect to the Second Basis of Comparison, concluding that the failure to implement the biological opinion requirements on the Stanislaus River would not improve in the future. DEIS at 9-149.

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GGSA PCFFA 22 continued

Improvement Act.[10] Reclamation must substantially revise this section of the DEIS to provide a basis for its conclusions and to respond to the concerns raised by NMFS and others.

GGSA PCFFA 23

4. The DEIS Concludes that the Effects of Predator Control Program are Highly Uncertain and Could Cause Significant Adverse Environmental Impacts

GGSA PCFFA 24

As compared to the administrative draft, the DEIS' analysis of the impacts of predator control programs is substantially improved. For instance, the DEIS cites repeatedly to the Delta Science Program's independent peer review report (Grossman et al 2013) regarding the effects of predation on salmonids and the caveats statements that predator control programs will work as intended. *See* DEIS at 9-274 to 9-275. It also cites work by Peter Moyle suggesting that predator control programs could harm delta smelt, and acknowledges that predator control programs at the Columbia River have not demonstrated population level effects. DEIS at 9-274 to 9-276. As a result, the DEIS concludes that,

> the program may be difficult to implement, may not be effective, and may cause unintended harm to other native Delta fish species. Consequently, the outcome of the predator management program is highly uncertain. Compared to the No Action Alternative, which does not include a predator reduction program, Alternative 3 may or may not provide a benefit to salmonids and may result in an adverse effect on Delta smelt.

DEIS at 9-276.

However, the DEIS fails to acknowledge that USBR's own studies regarding the Head of Old River Barrier on the San Joaquin River have shown that increased flows reduce predation on salmonids, and reduced flows increase predation and reduce survival. *See* Bowen et al 2009 and 2010 (USBR Technical Memorandum 86-68290-10-07 and 86-68290-11). And the DEIS also inconsistently addresses the impact of CVP/SWP operations in contributing to predation by nonnative species, particularly by causing habitat conditions in the Delta and other rivers that favor non-native species. For instance, on page 9-354, the DEIS concludes that Alternative 5 may adversely affect striped bass, but the DEIS does not analyze whether or how that impact to striped bass may subsequently affect salmonids or other species.

5. The DEIS Fails to Accurately Assess Impacts of Fishing Mortality and Greater Restrictions on Salmon Fishing Proposed in Some Alternatives

[10] More broadly, the DEIS fails to assess whether any of the alternatives meet Reclamation's obligations under section 3406(b).

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The DEIS incorrectly assesses the impact of greater restrictions on salmon fishing under Alternatives 3 and 4. For instance, the DEIS downplays the effectiveness of the recent restrictions on salmon fishing as a result of the 2012 winter run Chinook salmon biological opinion, and it does not mention that NMFS' recovery plan for winter run Chinook salmon lists the ocean fishery as a low stressor on the population. *See* DEIS at 9-118, 9-277 to 9-278. The DEIS must be revised to account for this information in assessing impacts. Moreover, mark select fisheries are likely to substantially reduce fishing opportunities and may not improve conditions for wild salmon. The DEIS fails to analyze these potential adverse impacts of mark select fisheries.[11] In addition, as NMFS noted in its comments on the ADEIS, the harvest rule specified in Alternatives 3 and 4 may be less protective of winter run Chinook salmon than the existing biological opinion, given the restrictions on fishing at low levels of abundance. As noted in our prior comments, we strongly recommend that Reclamation work with the Pacific Fishery Management Council regarding these conclusions.

GGSA PCFFA 25

6. The DEIS Fails to Accurately Assess Impacts of Climate Change on Salmon and Propose Mitigation Measures to Address those Impacts

We appreciate that the DEIS includes the potential effects of climate change on precipitation and temperature, in order to assess how climate change may affect CVP/SWP operations. The DEIS assumes that climate change will reduce reservoir storage and cause increased temperature impacts on salmonids. *See, e.g.,* DEIS at 9-120, 9-123, 9-126 to 9-127, 9-130, 9-132 to 9-133, 9-146. However, the document wholly fails to propose any short term measures to mitigate the effects of CVP/SWP operations in combination with climate change in order to avoid violations of downstream water temperature standards that imperil salmon. As a result, the DEIS predicts more significant impacts on salmonids from increased upstream temperature, without proposing any changes or modifications to operations in order for Reclamation to meet its existing obligations under state and federal law to avoid violating water temperature requirements. The DEIS must be revised to analyze mitigation measures and alternatives that reduce or avoid water temperature violations below dams, consistent with Reclamation's legal obigations to protect and restore salmoninds, including reduced upstream diversions and deliveries to senior water contractors.

GGSA PCFFA 26

7. Conclusion

As discussed above, the DEIS fails to accurately assess environmental impacts of CVP/SWP operations, fails to consider a reasonable range of alternatives, and includes alternatives that

GGSA PCFFA 27

[11] In addition, the DEIS fails to analyze the socioeconomic effects of reducing salmon fishing as proposed under Alternatives 3 and 4. *See, e.g.,* DEIS at 19-77.

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violate Reclamation's water rights and the purpose and need statement of the DEIS. Reclamation must substantially revise the DEIS to comply with NEPA.

GGSA
PCFFA
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continued

Thank you for consideration of our views.

Sincerely,

John McManus
Executive Director
Golden Gate Salmon Association

Tim Sloane
Executive Director
Pacific Coast Federation of Fishermen's Associations

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1D.1.10.1 Responses to Comments from Golden Gate Salmon Association and Pacific Coast Federation of Fishermen's Association

GGSA PCFFA 1: Comment noted. Please see responses to Comments GGSA PCFFA 2 through GGSA PCFFA 27.

GGSA PCFFA 2: Droughts have occurred throughout California's history, and are constantly shaping and innovating the ways in which Reclamation and DWR balance both public health standards and urban and agricultural water demands while protecting the Delta ecosystem and its inhabitants. The most notable droughts in recent history are the droughts that occurred in 1976-77, 1987-92, and the ongoing drought. More details have been included in Section 5.3.3 of Chapter 5, Surface Water Resources and Water Supplies, and Section 9.3.8 of Chapter 9, Fish and Aquatic Resources, in the Final EIS to describe historical responses by CVP and SWP to these drought conditions and changes in fisheries resources.

Conditions that have led to consideration of the federal listing of Longfin Smelt are discussed on page 9-67 of the Draft EIS.

GGSA PCFFA 3: Alternative 5 increases fisheries protection related to the Old and Middle River positive flow regime as compared to the Alternatives 1 through 4, No Action Alternative, and Second Basis of Comparison; and increases reliance on increased investments in local and regional water supplies.

Additional details have been provided in Chapter 19, Socioeconomics, related to the socioeconomics of freshwater and ocean harvest of fish.

GGSA PCFFA 4: The EIS alternatives include consistent climate change conditions without consideration of potential regulatory or operational changes due to climate conditions in the future. Potential climate-related operational changes are currently unknown and it would be speculative to develop such assumptions for a NEPA analysis. The impact analysis compares conditions under the Alternatives 1 through 5 to the No Action Alternative; and under the No Action Alternative and Alternatives 1 through 5 to the Second Basis of Comparison. This comparative approach eliminates the effects of climate change from the incremental changes between the alternatives, No Action Alternative, and Second Basis of Comparison.

GGSA PCFFA 5: The discussion in Chapter 9, Fish and Aquatic Resources, does find that increased air temperatures and reduced snowfall would result in water temperatures that would result in substantial adverse impacts to salmonids and sturgeon in the rivers downstream of the CVP reservoirs under the No Action Alternative, Second Basis of Comparison, and Alternatives 1 through 5 (see subsections "Changes in Exceedance of Water Temperature Thresholds" in Section 9.4.3 of Chapter 9). The EIS analysis compares conditions in 2030 under the Alternatives 1 through 5 to the No Action Alternative; and under the No Action Alternative and Alternatives 1 through 5 to the Second Basis of Comparison. The EIS analysis has been prepared in accordance with NEPA and does not compare the conditions under the alternatives, No Action Alternative, and Second Basis of Comparison to the existing conditions (as is presented in CEQA documents, such as the Bay Delta Conservation Plan Environmental

Impact Report/Environmental Impact Statement). The No Action Alternative represents operations consistent with implementation of the 2008 and 2009 Biological Opinions. This No Action Alternative represents the current management direction and level of management intensity consistent with the explanation of the No Action Alternative included in Council of Environmental Quality's Forty Most Asked Questions (Question 3). NEPA does not require agencies to mitigate impacts, nor does it require agencies to identify mitigation associated with the No Action Alternative.

Droughts have occurred throughout California's history, and are constantly shaping and innovating the ways in which Reclamation and DWR balance both public health standards and urban and agricultural water demands while protecting the Delta ecosystem and its inhabitants. The most notable droughts in recent history are the droughts that occurred in 1976-77, 1987-92, and the ongoing drought. More details have been included in Section 9.3.8 of Chapter 9, Fish and Aquatic Resources, in the Final EIS to describe historical responses by CVP and SWP to these drought conditions and changes in fisheries resources, including recent impacts to winter-run Chinook Salmon.

GGSA PCFFA 6: As has been the case in the past, Reclamation will continue to work with NMFS and other members of the Sacramento Rivers Temperature Task Group (SRTTG) to manage water temperature in Sacramento River to maximize benefits for the species. However, it should be noted that meeting such objectives may not be possible given current regulatory environment.

The 2009 NMFS BO was written in consideration of project operations as described in the 2008 BA. Since 2008, the projects have been operating to 2008 USFWS and 2009 NMFS RPA actions. These actions include maintaining Old and Middle River flows at certain levels during December through June, increased closure of the Delta Cross Channel compared to those of previous requirements per SWRCB D-1641, export limitations in April and May based on San Joaquin River flow at Vernalis, and increased Delta outflow in fall months following wet and above normal years. All of these actions affect project operations and result in increased reservoir releases. These effects include a shift in export patterns from spring to summer months that causes more water to be released from the reservoirs than that is being exported to meet the Delta water quality standards during a season where Delta is more saline, an increased need in supply from the Sacramento River in April and May since San Joaquin River supply is limited, and increased reservoir releases in fall months following wet and above normal years. Therefore, this reduction in flexibility to use available water supply in most efficient way for water supply and water quality needs further limits possibility of meeting storage and temperature performance requirements on upper Sacramento River (namely NMFS BO Actions 1.2.1, 1.2.2, 1.2.3, and 1.2.4.).

These NMFS BO RPA actions (namely NMFS BO Actions 1.2.1, 1.2.2, 1.2.3, and 1.2.4.) are included and benefits are acknowledged in the No Action Alternative, Alternative 2, and Alternative 5; however, in this Draft EIS, it cannot

be assumed that full benefits of storage performance criteria would be achieved due to reasons explained above.

More details have been included in Section 9.4.3 of Chapter 9, Fish and Aquatic Resources, in the Final EIS to qualitatively responses to RPA actions not included in the CalSim II model in the No Action Alternative and Alternatives 2 and 5.

GGSA PCFFA 7: The EIS analysis is based upon the comparison of conditions in 2030 under different alternatives. The results of those comparisons related to water temperatures show relatively minimal changes under the Alternatives 1 through 5 to the No Action Alternative; and under the No Action Alternative and Alternatives 1 through 5 to the Second Basis of Comparison. However, as described in the response to Comment GGSA PCFFA 5, the water temperatures in the rivers downstream of the CVP reservoirs would result in substantial adverse impacts to salmonids and sturgeon under Alternatives 1, 2, 3, and 4 and the Second Basis of Comparison without the addition of fish passage methods that are included in the No Action Alternative and Alternative 5.

The CVP and SWP reservoirs are operated in accordance with regulatory limitations, including applicable state and federal laws, regulations, and water rights first prior to deliver of water to CVP and SWP water contractors. The CVP and SWP cannot choose to meet the applicable state and federal laws, regulations, and water rights; and, it is not possible to fully meet the temperature thresholds downstream of the CVP and SWP reservoirs in 2030 with climate change. Therefore, fish passage around the CVP and SWP reservoirs is considered to provide habitat with appropriate water temperatures for early lifestages.

GGSA PCFFA 8: The analysis in the EIS compares conditions under Alternatives 1 through 5 with the No Action Alternative to identify beneficial and adverse impacts for the range of physical, environmental, and human resources.

GGSA PCFFA 9: Contract deliveries are based upon available water supplies on an annual and monthly basis after all water flow and demand requirements for applicable state and federal laws, regulations, and water rights are met. Full CVP and SWP water contract deliveries are used in the CalSim II model as a maximum delivery volume, but are only met when sufficient water is available.

GGSA PCFFA 10: The results described in Cunningham et al. (2015) was added on page 9-78 (of the Draft EIS) to quantify the effects of exports on salmonid survival. Differences, such as those described by Cunningham in relation to exports, are not exhibited in a comparison of the No Action Alternative with Alternatives 1 through 5 since the impact analyses results for all of the alternatives comparisons do not result in the distinct export regimes (+1 standard deviations of the mean) modeled by Cunningham et al. (2015). Results of the SALMOD model for late fall-run Chinook Salmon in the Sacramento River (Table B-2-5 of Appendix 9D) show comparable results for pre-smolt and smolt mortality due to habitat (flow) as Michel et al. (2015) in that mortality is increased in drier years as compared to wetter years.

GGSA PCFFA 11: Please see Appendix 9M, Salmonid Salvage Analysis, which describes the methods for addressing the effects of export facilities on juvenile salmonids. This analysis, based on coded wire tagged fish, covers a broader range of size classes than does the DPM analysis.

GGSA PCFFA 12: Although the median survival predicted by the OBAN model was 12 percent higher under the No Action Alternative than under the Second Basis of Comparison, the probability intervals indicated that no difference between scenarios was a likely outcome (i.e. the dashed line of no difference lies within the dark gray central 0.50 probability interval in Figure 9I-14). The text on page 9-162 (of the Draft EIS) has been modified for clarity; however, specific degrees of certainty cannot be determined with the existing analytical tools.

GGSA PCFFA 13: Please see response to GGSA PCFFA 7.

GGSA PCFFA 14: SALMOD is not used as a predictive model, it is used as a comparative tool for analyzing differences between alternatives that would occur over a range of hydrologic conditions represented by output from the 82-year CalSim II model (see Appendix 9D, SALMOD Model Documentation). As used, SALMOD output represents the mean values for production and mortality each year with the same initial conditions for population parameters and varying operations simulated by CalSim II. It is not a life-cycle model and does not provide a time trajectory of production. There is no expectation that SALMOD output will mirror recent (or historical) data on production or mortality. However, the comparison of mean values for production and mortality are a valid and appropriate method of comparing possible outcomes among the various alternatives. Similarly, the Reclamation Salmon Mortality Model utilizes CalSim II output through the temperature models and is not expected to mirror recent or historical estimates of mortality (see Appendix 9C, Reclamation's Salmon Mortality Model Analysis Documentation). It too is used as a comparative tool to distinguish potential effects among the alternatives. The results of the impact analysis is to understand the differences in the outcomes of the alternatives as compared to the No Action Alternative and the Second Basis of Comparison.

GGSA PCFFA 15: As described and presented in Appendix 9H of the Draft EIS, the IOS model uses the full 82-year CalSim II simulation period. The impact analysis used in the EIS evaluates the differences between alternatives based on changes in the median annual escapement and the range of escapement values encompassed in the first and second quartiles (25 to 75 percent of years) over the 82-year CalSim II simulation period (see page 9-116 of the Draft EIS). As described in the response to Comment GGSA PCFFA 14, SALMOD is not used as a predictive model to mirror past data, it is used as a comparative tool for analyzing differences between alternatives that would occur over a range of hydrologic conditions represented by output from the 82-year CalSim II model. As used, SALMOD output represents the mean values for production and mortality each year with the same initial conditions for population parameters and varying operations simulated by CalSim II. It is not a life-cycle model and does not provide a time trajectory of production. However, the comparison of mean values for production and mortality are a valid and appropriate method of

comparing possible outcomes among the various alternatives under a NEPA analysis. Similarly, the Reclamation Salmon Mortality Model is used as a comparative tool to distinguish potential effects among the alternatives.

While likely effects from water temperature on early life stages occur at a shorter temporal scale than these models, comparative analyses are useful for long-term analyses, as in the EIS, because there is moderate certainty for long-term conditions.

GGSA PCFFA 16: The analysis of weighted usable area (WUA) in the Draft EIS is not intended to describe salmonid survival. The WUA methodology is used as a metric for evaluating changes in physical habitat related to flow as described in Appendix 9E, Weighted Useable Area Analysis, and on page 9-108 of the Draft EIS. The results of the SALMOD model are used to evaluate changes in salmonid survival in the Sacramento River (see Appendix 9D). Results of the SALMOD model for late fall-run Chinook Salmon in the Sacramento River (Table B-2-5 of Appendix 9D) show that mortality for pre-smolts and smolts is increased in drier years as compared to wetter years; this is consistent with Michel et al. (2015).

GGSA PCFFA 17: The EIS alternatives include consistent climate change conditions without consideration of potential regulatory or operational changes due to climate conditions in the future. Potential climate-related operational changes are currently unknown and it would be speculative to develop such assumptions for a NEPA analysis. This comparative approach eliminates the effects of climate change from the incremental changes between the alternatives, No Action Alternative, and Second Basis of Comparison.

The EIS analysis has been prepared in accordance with NEPA and does not compare the conditions under the alternatives, No Action Alternative, and Second Basis of Comparison to the existing conditions (as is presented in CEQA documents). The No Action Alternative represents operations consistent with implementation of the 2008 and 2009 Biological Opinions. This No Action Alternative represents the current management direction and level of management intensity consistent with the explanation of the No Action Alternative included in Council of Environmental Quality's Forty Most Asked Questions (Question 3). NEPA does not require agencies to mitigate impacts, nor does it require agencies to identify mitigation associated with the No Action Alternative.

GGSA PCFFA 18: "Spring-running" fish were not analyzed due to uncertainty whether they are genotypically spring-run, and if so, whether they are strays or a distinct population; and their exemption from take related to diverting or receiving water in accordance with the San Joaquin River reintroduction program. In the most recent Recovery Plan (NMFS 2014), it is stated that native spring-run Chinook salmon have been extirpated from all tributaries in the San Joaquin River Basin.

GGSA PCFFA 19: The references included in the comment provide additional information that is consistent with citations already included in the Draft EIS. Many of these reports also indicate that there still remains uncertainty in the flow-

survival relationship. Sturrock et al. (2015) did not conclude that flows drive salmonid survival and abundance but did provide evidence that salmon populations fluctuate considerably with river flows experienced during juvenile rearing. The text on page 9-92 of the Draft ESI has been modified to include the reference in the comment, and to indicate that mortality in the Deep Water Ship Channel is one of the limiting factors.

Footnote 8 in the comment regarding Kondolf is not correct. Despite one site having a lower value (i.e., TMI 280 cfs) than 5,000 cfs, Kondolf used a combination of sites to identify that mobility overall occurs beginning at about 5,000 cfs. On page 36 of Kondolf, it states "Results of the bed mobility analysis for five (TMl, RI, RS, R28A, and R78) of nine sites studied suggest that flows around 5,000 to 8,000 cfs are necessary to mobilize the D50 of the channel bed material (Table 7.1 and Appendix C)." There was one site (TMI 1) where flows less than 5,000 cfs (280 cfs) would mobilize gravel, but as Kondolf explains "The mobility of the gravel at TMI probably reflects the smaller diameter of the augmented gravel, rather than the mobility of the gravels that would naturally occur in this steeper reach."

Text has been modified on the page 9-149 of the Draft EIS has been modified in the Final EIS to provide more clarity on the statement referenced in Footnote 9 of this comment.

GGSA PCFFA 20: Long-term average flows are not substantially reduced under Alternative 3 as compared to the No Action Alternative or the Second Basis of Comparison for the Stanislaus River below Goodwin Dam (see Figures 5-68, 5-69, and 5-70 in Chapter 5, Surface Water Resources and Water Supplies). There are anticipated flow reductions generally from March through June and particularly in October under Alternative 3, but flows are anticipated to be increased under Alternative 3 relative to the No Action Alternative and comparable to flows under the Second Basis of Comparison in many months. As described on pages 9-313 through 9-315 of the Draft EIS, water temperatures under Alternative 3 are anticipated to be similar to the No Action Alternative or slightly lower in most months and lead to a slight reduction in egg mortality for fall-run Chinook salmon. The text on page 9-316 of the Draft EIS has been modified to improve the readability.

GGSA PCFFA 21: The description of the trap and haul program assumptions and methodologies presented in Chapter 9 of the Draft EIS were not extensive. Additional information has been included on page 9-316 of the Draft EIS, and additional information has been provided in Appendix 9O of the Final EIS.

GGSA PCFFA 22: Reclamation’s proposed action in the 2008 Biological Assessment included actions developed to contribute to Section 3406(b)(1) of the Central Valley Project Improvement Act (CVPIA) and other requirements of CVPIA. These actions were analyzed as part of the proposed action in the 2008 USFWS BO and 2009 NMFS BO. These actions are therefore also incorporated in the No Action Alternative and Alternative 5. Alternatives 1 through 4 and the

Second Basis of Comparison due not fully contribute to the goals of Section 3406(b)(1).

GGSA PCFFA 23: Please see responses to comments from National Marine Fisheries Service in Appendix 1.A.1.

GGSA PCFFA 24: Text has been added to Section 9.4.3.4 of the FEIS to include the studies by Bowen et al. (2009, 2010) regarding predation on salmonids around a Head of Old River barrier.

While the two-year study observed a variable and negative relationship between flow and survival past the Head of Old River barrier, there remained uncertainty due to the actual barrier structural configuration and how they would affect predator habitat in this reach. These studies did not speculated about overall survival rates or the biological significance of reach specific mortality around the Head of Old River barrier. Overall, the conclusions indicated that survival around the Head of Old River barrier would be structural design specific and highly variable; therefore certainty of the effect of the structures remains low.

GGSA PCFFA 25: The analysis in the Draft EIS did not rely on the 2012 Biological Opinion for analysis of effects. The latest (2014) Final Recovery Plan lists ocean harvest as a "very high" stressor on the winter-run Chinook Salmon population. Additional text has been added to Chapter 15, Recreation Resources, and Chapter 19, Socioeconomics, related to the effects of the harvest restrictions in Alternatives 3 and 4. The harvest rules specified in Alternatives 3, and especially Alternative 4, may be less protective for winter-run Chinook Salmon because this run is not allowed to be captured in either sport or commercial ocean salmon fishing. Additional text has been added to Section 9.4.3.5.2 on consistency of these alternatives with NMFS fisheries management framework for reducing the impact of ocean salmon fishery on winter-run Chinook Salmon.

GGSA PCFFA 26: Please see response to Comment GGSA PCFFA 17.

GGSA PCFFA 27: Reclamation has modified the Final EIS in response to comments from GGSA PCFFA and other commenters; and will use the Final EIS in the development of the Record of Decision.

1D.1.11 Natural Resources Defense Council and The Bay Institute

September 29, 2015

Ben Nelson
U.S. Bureau of Reclamation
Bay-Delta Office
801 I Street, Suite 140
Sacramento, CA 95814-2536

Sent via U.S. Mail and via email to bcnelson@usbr.gov

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

Dear Mr. Nelson:

On behalf of the Natural Resources Defense Council and The Bay Institute, we are writing to provide comments on the Bureau of Reclamation's Draft Environmental Impact Statement for Coordinated Long-Term Operation of the Central Valley Project and State Water Project ("DEIS"). Unfortunately, the DEIS fails to comply with the requirements of the National Environmental Policy Act ("NEPA"), because it fails to include a reasonable range of alternatives, fails to accurately inform the public and decisionmakers of potential significant environmental impacts and necessary mitigation measures, and fails to adequately analyze cumulative impacts. Because Reclamation has failed to use sound scientific information and instead used flawed and biased methods to assess potential environmental impacts, the DEIS fails to accurately assess likely impacts on fish and wildlife populations and fails to identify and propose reasonable mitigation measures for potentially significant impacts.

NRDC TBI 1

In addition, the DEIS largely ignores that over the past several years, the combination of the drought and CVP/SWP operations (including waivers of D-1641 water quality standards and other environmental protections) has driven Delta Smelt, winter run Chinook salmon, and other species to the brink of extinction. The DEIS never mentions that minimum Delta water quality standards under D-1641 were waived, and that RPA actions required under the biological opinions were not implemented during the drought, and the DEIS wholly fails to analyze the

NRDC TBI 2

impact of the reasonably foreseeable waiver of water quality standards in future droughts. Yet the DEIS only acknowledges under the No Action Alternative that abundance levels for delta smelt and other fisheries "are difficult to predict" and that "Currently low levels of relative abundance do not bode well for the Delta Smelt or other fish species in the Delta." DEIS at 9-139.[1] Under the Second Basis of Comparison, the DEIS concludes that,

> As described above for the No Action Alternative, abundance levels for Delta Smelt, Longfin Smelt, Striped Bass, Threadfin Shad, and American Shad are currently very low, and abundance and habitat conditions for fish in the Delta in future years are difficult to predict. It is not likely that operations of the CVP and SWP under the Second Basis of Comparison would result in improvement of habitat conditions in the Delta or increases in populations for these fish by 2030, and the recent trajectory of loss would likely continue.

DEIS at 9-150.[2] Despite these acknowledgements that current operations may very well lead to extinction of the species, the DEIS proposes no mitigation measures and does not even conclude that the alternatives result in significant impacts to Delta Smelt. Similarly, for longfin smelt, the DEIS ignores that current operations have resulted in the U.S. Fish and Wildlife Service concluding that listing longfin smelt under the Endangered Species Act is warranted, and continuation of existing spring outflow conditions is likely to result in adverse effects on the species. As a result, the DEIS fails to accurately assess environmental impacts of CVP/SWP operations on Delta Smelt and longfin smelt.

NRDC TBI 2 continued

With respect to salmonids, the DEIS acknowledges that climate change will make it more difficult to achieve water temperature requirements with current upstream reservoir operations, impacting salmon and steelhead. *See, e.g.*, DEIS at 9-126 to 9-127. Yet the DEIS fails to conclude that these temperance exceedances constitute a significant environmental impacts and fails to consider any mitigation measures.[3] During the current drought, the failure to meet minimum upstream water temperatures resulted in greater than 95% mortality of the 2014 brood year winter run Chinook salmon cohort, and may result in similar mortality for the 2015 brood year. Increased frequency, duration and intensity of upstream temperature exceedances as a

NRDC TBI 3

[1] In part, this conclusion is based on inaccurate assessment of entrainment impacts of the alternatives on Delta Smelt, as discussed below.
[2] Many of the flaws identified in the Second Basis of Comparison (which is the same as Alternative 1) also affect the analyses of Alternatives 3 and 4, and our comments are intended to address the similar flaws in the analyses of those alternatives as well.
[3] In contrast, Reclamation's revised draft environmental impact statement for the California WaterFix concludes that under the No Action Alternative, upstream reservoir operations will result in significant adverse environmental impacts to winter run Chinook salmon and green sturgeon spawning and egg incubation. *See, e.g.,* USBR, CA WaterFix RDEIS/SDEIR at ES-48.

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NRDC TBI 3 continued

result of climate change in combination with CVP/SWP operations are likely to cause significant environmental impacts. The DEIS also fails to demonstrate whether operations of Shasta Dam under the No Action Alternative are consistent with requirements of the 2009 NOAA biological opinion, which includes performance measures and other requirements to maintain adequate cold water pool for winter run Chinook salmon below the dam. As a result, the DEIS must be revised to analyze compliance with the biological opinion and to consider changes in reservoir operations to mitigate upstream temperature impacts, including reductions in upstream water diversions and deliveries to CVP contractors, including senior contractors.

NRDC TBI 4

NRDC TBI 5

Despite these short term and long term impacts, the DEIS asserts that with respect to several salmon and steelhead runs, the effects of CVP/SWP operations under Alternative 1 are similar to those under the No Action Alternative and Alternative 2. *See, e.g.,* DEIS at ES-30 to ES-31, 9-397 to 9-398.[4] However, the federal courts have twice held that operations under Alternative 1 would jeopardize the continued existence and recovery of listed salmonids and steelhead, in violation of the Endangered Species Act. The DEIS therefore suggests that operations under the No Action Alternative and under Alternative 2 would also jeopardize these listed salmonid species (primarily because of upstream water temperature impacts). Yet the DEIS does not identify a significant environmental impact from these effects, and it proposes no clearly defined mitigation measures to address these impacts (except for programs for upstream fish passage at major dams, which are already required under the No Action Alternative).

NRDC TBI 6

The DEIS is fundamentally flawed, and Reclamation must revise the DEIS to analyze a broader range of alternatives using a credible methodology for assessing environmental impacts, including cumulative impacts.[5]

NRDC TBI 7

I. <u>The DEIS Fails to Accurately Assess Environmental Impacts to Fish and Wildlife:</u>
In general, Chapter 9 of the DEIS fails to utilize recent scientific information and utilizes outdated and inaccurate models to assess potential impacts to fish and wildlife populations. As a result, the DEIS fails to accurately assess the likely environmental impacts of the alternatives on fish and wildlife and significantly understates the environmental impacts of some alternatives.

[4] This is at least in part because of Reclamation's flawed methodology for assessing impacts, particularly with respect to operations in the Delta, as discussed elsewhere in this letter.
[5] In addition, Reclamation and DWR have not complied with CEQA, and compliance with CEQA is required before the Department of Water Resources could propose any changes to State Water Project operations. Numerous additional permits and approvals would be required before authorizing any changes to operations, including requirements under the federal Endangered Species Act, California Endangered Species Act, and other state and federal laws.

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Comments on USBR Long Term Operations Draft Environmental Impact Statement
September 29, 2015

A. The DEIS Fails to Accurately Assess Impacts to Delta Smelt:

The DEIS substantially understates the environmental impacts of the alternatives on Delta Smelt because it ignores numerous recent scientific publications regarding the impact of water project operations on Delta Smelt, including: Rose et al 2013a, Rose et al 2013b, USGS 2015 (MAST report), and MacNally et al 2010. For instance, the only citation of Rose et al 2013a and 2013b in the DEIS occurs on page 9-115, in a discussion of delta smelt habitat, where it states that the DEIS chose not to use the life cycle model developed in these papers to assess impacts (the DEIS arbitrarily fails to provide any justification for choosing not to use this peer reviewed life cycle model to assess impacts). The DEIS' analysis of entrainment impacts on delta smelt wholly fails to discuss the conclusions of Rose et al 2013a and 2013b, which found that entrainment by the CVP and SWP was an important factor in the decline of delta smelt. *See* DEIS at 9-78 to 9-79. Similarly, the species description in the DEIS understates the role of entrainment as a stressor on the population and does not even mention the population level effects of entrainment. DEIS at 9-63 to 9-66. As a result of the failure to use sound scientific information, the DEIS misleads the reader on the impacts of entrainment by CVP/SWP operations on delta smelt.

NRDC TBI 7 continued

In addition to failing to use the life cycle model prepared by Rose et al 2013 to assess impacts, the methodology used in the ADEIS to assess entrainment impacts is flawed and fails to adequately assess impacts under the alternatives.

NRDC TBI 8

First, the DEIS uses average OMR values to calculate entrainment. DEIS at 9-114. As a result, the DEIS does not account for changes in operations within the OMR ranges specified under the biological opinion under the No Action Alternative, Alternative 2, and Alternative 5. Because the DEIS does not account for reductions in OMR to avoid significant entrainment events and to manage entrainment throughout the season, and the estimates of smelt entrainment are therefore unreasonably high under these alternatives. This substantially biases the comparison of entrainment impacts in the DEIS under these alternatives as compared to other alternatives.

NRDC TBI 9

Second, the DEIS fails to adequately analyze entrainment impacts because it fails to assess whether entrainment under the alternatives would exceed the incidental take statement in the biological opinion, which is estimated to be 5% of the adult population based on the Fall Midwater Trawl Survey. *See* 2008 Delta Smelt biological opinion at 387. Modeling information in the DEIS indicates that entrainment would exceed the incidental take limit under several of the alternatives, as discussed below. Exceeding the incidental take limit would cause significant impacts.

NRDC TBI 10

Third, the DEIS also fails to adequately assess entrainment impacts by using a 5% threshold, such that alternatives with entrainment estimates within 5% are considered to have similar effects. DEIS at 9-114. This is unreasonable and understates the environmental impacts of

NRDC TBI 11

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entrainment because it could result in a doubling of entrainment (5% versus 10%), and as noted above could result in substantially exceeding the incidental take limit. Kimmerer 2011 demonstrated that entrainment losses averaging 10% per year can be "…simultaneously nearly undetectable in regression analysis, and devastating to the population."

NRDC TBI 11 continued

The estimated entrainment under the Second Basis of Comparison approaches that 10% threshold for adults and greatly exceeds it for juveniles, *see* DEIS at 9-194, and Reclamation's estimated entrainment under this alternative and several others would likely exceed the take limit in many years. This would cause significant adverse effects that are not reported in the DEIS.

As a result of these substantial flaws, the DEIS fails to adequately analyze Delta Smelt entrainment impacts under the alternatives. The DEIS must be revised to analyze whether entrainment would exceed the incidental take limit (5% of the population), revise estimates of entrainment under the No Action Alternative, Alternative 2, and Alternative 5 to account for changes in operations under Actions 1-3 of the Delta Smelt biological opinion, and to eliminate use of the 5% threshold of significance.

NRDC TBI 12

With respect to the effect of changes in X2 on Delta Smelt, the DEIS wholly fails to analyze the effects of changes in spring X2 on Delta Smelt. *See* Mast Report 2015. The DEIS also fails to analyze the effects on Delta Smelt of waiving spring X2 requirements in recent years during the drought, as the population has declined to record low levels. With respect to changes in Fall X2, the document also largely ignores all of the comments of the Fish and Wildlife Service in the Bay Delta Conservation Plan process, and it ignores the additional biological analysis of BDCP impacts on delta smelt by Kimmerer et al prepared for the Nature Conservancy in 2013. These analyses demonstrate the significant role of CVP/SWP operations on delta smelt. Instead, the DEIS provides misleading information about other stressors. For instance, the DEIS repeatedly hypothesizes that discharge of agricultural runoff from the Colusa Drain led to measureable improvements in zooplankton abundance in 2011 and 2012, but it fails to inform the reader that Delta Smelt populations declined substantially in 2012. *See* DEIS at 9-65 and 9-66. In addition, on the same page the DEIS misstates the conclusions of the MAST report regarding the importance of implementation of the fall outflow RPA in 2011 (rather than agricultural runoff) on subsequent delta smelt abundance.

NRDC TBI 13

In addition, the DEIS fails to analyze the effects of CVP/SWP operations on Delta food webs, including phytoplankton and zooplankton that support delta smelt populations. Existing scientific information documents how changes in exports, residence time, and flows can affect these populations. *See, e.g.,* Jassby et al. 1995; Kimmerer 2002; Winder et al. 2011; Cloern and Jassby 2012. We raised this issue in our 2012 scoping comments, yet the DEIS wholly fails to analyze this impact. More recent studies document how changes in delta outflow can affect corbula populations and thus affect delta food webs. *See, e.g.,* Brown et al. 2012; Thompson et

NRDC TBI 14

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al. 2012; Teh 2012; Baxter and Slater 2012. And while the DEIS mentions the effect of introduced species on the food web, see DEIS at 9-65, it ignores peer reviewed research that hydrologic modifications, including diversions by the CVP and SWP, have facilitated invasions of the estuary. *See* Winder et al 2011. The DEIS must be revised to analyze these effects of CVP/SWP operations on delta food webs.

NRDC TBI 14 continued

Finally, although the DEIS discusses the effects of predation on Delta Smelt, it fails to consider the role of CVP/SWP operations in facilitating the abundance of invasive predators and worsening water quality. For instance, DWR and Reclamation have concluded that waiver of D-1641 outflow requirements during the drought have resulted in increased microcystis blooms, other water quality impairments, and increased populations of black bass and other nonnative predators that impact Delta Smelt. *See* USBR/DWR March 30, 2015 Temporary Urgency Change Petition, Attachment A, at 69-70. However, the DEIS wholly fails to analyze these indirect impacts of operations on water quality and fisheries, including analysis of changes in residence time as a result of operations, even though Reclamation's NEPA analysis of the California WaterFix includes modeling of changes in residence time and how that affects microcystis and other harmful algal blooms. The DEIS must be revised to analyze these effects of CVP/SWP operations on water quality, microcystis, and other harmful algal blooms.

NRDC TBI 15

The DEIS fails to use sound scientific information for the assessment of environmental impacts of the alternatives on delta smelt and it wholly fails to analyze important direct and indirect effects of CVP/SWP operations on Delta Smelt (such as spring X2, effects on food webs, effects on predator populations). As a result, the DEIS understates the impacts of Alternatives 1, 3, 4, and the Second Basis of Comparison, and it overstates the impacts of the No Action Alternative, Alternative 2, and Alternative 5.

NRDC TBI 16

B. *The DEIS Fails to Accurately Assess Impacts to Longfin Smelt*[6]

As with Delta Smelt, the DEIS fails to reference recent scientific information regarding longfin smelt, resulting in the document inaccurately assessing environmental impacts on the species. For instance, the DEIS fails to reference numerous recent scientific studies documenting winter / spring delta outflow as the primary driver of subsequent longfin smelt abundance, including MacNally et al 2010 and recent analysis by the Fish and Wildlife Service and California Department of Fish and Wildlife regarding flow and longfin smelt during the BDCP process (including Rosenfield and Nobriga in press). For instance, in 2013 the Fish and Wildlife Service noted that, "More than forty years of science has clearly established that Delta outflow is a

NRDC TBI 17

[6] We also note that the Bureau of Reclamation is also subject to the requirements of the California Endangered Species Act with respect to longfin smelt, which is listed as a threatened species under state law, consistent with section 3406(b) of the Central Valley Project Improvement Act of 1992 and Section 8 of the Reclamation Act of 1902.

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primary driver of longfin smelt abundance (e.g. Thomson et al. 2010). " In contrast, page 9-67 includes a single sentence about the effect of delta outflow being the largest factor affecting longfin smelt abundance. In addition, as discussed above, the DEIS fails to analyze the effects of CVP/SWP operations on delta food webs and indirect effects on longfin smelt.

NRDC TBI 17 continued

The DEIS uses an equation from Kimmerer 2009 to calculate average longfin smelt abundance by water year type, but because this analysis looks at each year in isolation, it understates the environmental impacts of multiple years of low outflow. In addition, because the DEIS ignores more recent scientific studies on flow thresholds for longfin smelt population growth prepared by the U.S. Fish and Wildlife Service in the BDCP process, the DEIS fails to assess whether spring outflows are likely to result in population growth. As a result, the DEIS likely understates the environmental impacts of the alternatives. We agree with the DEIS that the Second Basis of Comparison would result in far more adverse effects on longfin smelt that the No Action Alternative, DEIS at 9-196, but the DEIS fails to analyze whether the No Action Alternative results in adverse effects on longfin smelt.

The DEIS' conclusion that the Second Basis of Comparison would "maintain the recent trajectory of loss" for longfin smelt (page 9-152) is understated; it is likely that the Second Basis of Comparison and Alternatives 1, 3 and 4 will jeopardize the continued existence and recovery of longfin smelt, consistent with the U.S. Fish and Wildlife Service's recent conclusion that listing of longfin smelt under the Endangered Species Act is warranted but precluded. *See* 77 Fed. Reg. 19775 (April 2, 2012). In addition, the DEIS fails to demonstrate that implementation of the No Action Alternative would not result in significant impacts to the species, consistent with the finding that ESA listing is warranted and the ongoing population declines observed in numerous surveys. In fact, language in the DEIS admits that the No Action Alternative would result in "less adverse" effects than the Second Basis of Comparison, *see* DEIS at 9-156, but the DEIS fails to clearly state that the No Action Alternative results in adverse impacts on longfin smelt or to propose any mitigation measures to address that impact.

C. The DEIS Fails to Accurately Assess Impacts on Salmonids

As with the pelagic species discussed above, the DEIS fails to accurately assess the environmental impacts of CVP/SWP operations on salmonid survival and abundance. The DEIS omits references to important scientific studies, and instead relies on contradictory modeling information that does not accurately assess impacts. As a result, the DEIS fails to accurately assess environmental impacts and propose necessary mitigation measures.

NRDC TBI 18

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1. *The DEIS Fails to Accurately Assess Impacts to Migrating Salmonids in the Delta*

NRDC TBI 18 concluded

The DEIS fails to accurately assess impacts of CVP/SWP export pumping operations in the Delta on migrating salmonids, significantly understating the environmental impacts of increased pumping during migration seasons. For instance, recent life cycle models for fall run Chinook salmon and spring run Chinook salmon have been submitted to the Delta Science Program, which conclude that CVP/SWP delta exports significantly reduce spring and fall run salmon survival and abundance. *See* Cunningham et al 2015. The DEIS mentions this study briefly, but it fails to utilize this life cycle model to assess impacts. Similarly, Michel et al 2015 was recently published in the Canadian Journal of Fisheries and Aquatic Sciences, which reviews five years of acoustic tag data and demonstrates that increased flows dramatically increase survival of migrating salmon through the Sacramento River and Delta. Both of these studies contradict many of the methods and models utilized by Reclamation in the DEIS to assess impacts, such as the Delta Passage model (which predicts very minimal changes in survival and abundance despite significant changes in exports and Old and Middle Reverse Flows).

For example, Cunningham et al 2015 estimates that increasing exports by 30% above the 1967-2010 average would result in a 16-28% lower median survival rate from egg to adulthood for wild fall run Chinook salmon and a 39-59% reduction in median survival for spring run Chinook salmon, concluding that, "[a] 30% increase in exports decreased spring and fall stock survival to the point where they would all decline regardless of the climate scenario." In contrast, the Delta Passage Model predicts "very similar estimates of survival" for spring and fall run Chinook salmon under the No Action Alternative compared to the Second Basis of Comparison, despite the substantial increase in exports under the Second Basis of Comparison. *See* DEIS at 9-169, 9-178.

NRDC TBI 19

In addition, the Delta Passage Model only attempts to estimate survival of salmon smolts, *see* DEIS Appendix 9J at 9J-1, and cannot assess impacts to salmon fry or parr. Yet fry and parr life stages are often the majority of salmon migrating through the Delta, and the DEIS wholly ignores the impacts of CVP/SWP operations on these salmonid life histories.

NRDC TBI 20

Similarly, the DEIS fails to explain the contradictory information from use of the OBAN life cycle model and the Delta Passage Model on salmon survival through the Delta. On page 9-162, the DEIS states that the Delta Passage Model results in similar winter run Chinook salmon survival through the Delta under the No Action Alternative and the Second Basis of Comparison, and on the same page it states that the OBAN life cycle model predicts that median survival through the Delta would be 12 percent higher under the No Action Alternative compared to the Second Basis of Comparison. The DEIS provides no justification for its statement that the OBAN model's survival estimates "suggest a high probability of no difference between these

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two bases of comparison." DEIS at 9-162. In fact, the model demonstrates a very substantial difference in survival between the two alternatives, and Reclamation's conclusory statement is arbitrary and capricious.

NRDC TBI 20 continued

As a result, the DEIS fails to accurately assess environmental impacts of CVP/SWP operations in the Delta on migrating salmonids, and the conclusions drawn in the DEIS are arbitrary and capricious.

2. *The DEIS Fails to Accurately Assess Upstream Water Temperature Impacts to Salmonids*

The DEIS' analysis of upstream temperature impacts on salmonids is flawed and understates the adverse impacts of CVP/SWP operations on salmonids (particularly in combination with climate change), and the DEIS fails to explicitly acknowledge that CVP/SWP operations cause significant adverse impacts and to propose mitigation measures to address these impacts in the short term. Reclamation's conclusions in the DEIS are arbitrary and capricious.

NRDC TBI 21

Even using flawed methodology, the DEIS demonstrates that there will be significant adverse effects on salmon from high water temperatures as a result of climate change and CVP/SWP operations, including under the No Action Alternative:

> Under the No Action Alternative, the ability to control water temperatures depends on a number of factors and management flexibility usually ends in October when the cold water pool in Shasta Lake is depleted. With climate change, cold water storage at the end of May in Shasta Lake is expected to be reduced under the No Action Alternative for all water year types. This would further reduce the already limited cold water pool in late summer. **With the anticipated increase in demands for water by 2030 and less water being diverted from the Trinity River, it is expected that it would become increasingly difficult to meet water temperature targets at the various temperature compliance points. It is likely that severe temperature-related effects will be unavoidable in some years under the No Action Alternative. Due to these unavoidable adverse effects,** RPA Action Suite I.2 also specifies other actions that Reclamation must take, within its existing authority and discretion, to compensate for these periods of unavoidably high temperatures. These actions include restoration of habitat at Battle Creek (see below) which may support a second population of winter-run Chinook Salmon, and a fish passage program at Keswick and Shasta dams to partially restore winter-run Chinook Salmon to their historical cold water habitat.

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DEIS at 9-127 to 9-128 (emphasis added).[7] The DEIS also uses Reclamation's salmon mortality model to estimate temperature impacts on salmon production and mortality, concluding that the impacts from the No Action Alternative and the Second Basis of Comparison are similar, *see* DEIS at 9-160, that winter run Chinook salmon mortality is 31.4% in critically dry years under the No Action Alternative, *see* DEIS at Appendix 9C-8, and that Sacramento River spring run Chinook salmon mortality is 21.9% on average and 84.8% in critically dry years under the No Action Alternative, *see* DEIS at Appendix 9C-7. Similarly, the SALMOD model results in the DEIS estimate that in approximately 10% of years, there would be zero production of spring run Chinook salmon below Shasta Dam. *See* DEIS at Figure B-3-1. And the DEIS estimates that under both the No Action Alternative and the Second Basis of Comparison, Reclamation will frequently violate temperature standards at Shasta Dam, *see* DEIS at 9-159 to 9-160, and at other reservoirs, *see* DEIS at 9-166 to 9-168. Yet the DEIS fails to explicitly identify upstream temperature mortality as a significant adverse impact, and the only mitigation measure identified in the DEIS (fish passage program) is a long term potential measure that is already required under the No Action Alternative and is therefore part of the baseline. That mitigation measure does not address the ongoing significant adverse impact in the near term, nor does it propose anything that is not already required.

NRDC TBI 21 continued

Moreover, the DEIS relies on flawed methodologies to assess temperature impacts on salmonids, many of which provide contradictory results, and which mislead the public as to the effects of CVP/SWP operations. For instance, the DEIS uses the SALMOD model to calculate juvenile production and the extent of temperature related upstream mortality to eggs and fry, and concludes that the No Action Alternative results in similar impacts to the Second Basis of Comparison. DEIS at 9-162. Yet SALMOD's estimates of mortality and production are wildly inaccurate compared to recent data. For instance, Figure B-4-1 estimates that winter run Chinook salmon production would never drop below 500,000, yet in 2014 there was a total year class failure with over 95% mortality due to water temperatures. Figure B-4-1 also shows that according to the SALMOD model, in approximately 95% of years winter run Chinook salmon production does not vary by more than a few hundred thousand fish. Yet empirical data shows that winter run Chinook salmon egg to fry survival at Red Bluff Diversion Dam from 2002 to 2012 varied substantially, from a low of 15.4% to a high of 48.6%, with a mean of 26.4%. *See* U.S. Fish and Wildlife Service 2015 at Table 6c. Estimates for other salmon runs are similarly inaccurate compared to recent Sacramento River data from the U.S. Fish and Wildlife Service.

NRDC TBI 22

[7] However, as noted above, the DEIS also fails to demonstrate whether operations of Shasta Dam under the No Action Alternative are consistent with requirements of the 2009 NOAA biological opinion, which includes performance measures and other requirements to maintain adequate cold water pool for winter run Chinook salmon below the dam. *See* DEIS at 9-125 (describing RPA requirements). To the extent that the modeled operations under the No Action Alternative fail to meet the RPA requirements, Reclamation must revise operations to be consistent with those RPA requirements.

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And this recent data also contradicts the information presented in Reclamation's salmon mortality model, which significantly underestimates mortality compared to the recent data.

NRDC TBI 22 continued

In addition, the analysis of water temperature impacts looks only at monthly average temperatures. DEIS at 9-109. As the DEIS notes briefly, "the effects of daily (or hourly) temperature swings are likely masked by the averaging process." DEIS at 9-110. This is clearly correct, and may help explain why the modeled results do not show the level of mortality seen from recent empirical data. Yet the DEIS fails to carry forward this caveat elsewhere in the discussion, when it presents the results of modeling. Similarly, the DEIS restricts its use of the IOS model to median escapement estimates and only uses a subset of the years from CALSIM, DEIS at 116, which excludes the highest mortality years in the driest years and therefore does not accurately assess impacts.

NRDC TBI 23

Finally, the DEIS' analysis of weighted usable area for rearing habitat fails to account for more recent scientific research demonstrating the strong effect of increased flow on downstream salmonid survival in the Sacramento River. *See* DEIS at 9-107 to 9-109. The methodology used in the DEIS does not account for the significant reduction in survival of migrating salmon under lower flow conditions in the Sacramento River. *See* Michel et al 2015. As a result, the DEIS fails to accurately assess the impact of reduced flow on salmon survival in the Sacramento River using this methodology.

NRDC TBI 24

The DEIS demonstrates that current CVP/SWP operations, including water deliveries to Sacramento River Settlement Contractors and other senior water rights holders, in combination with climate change, will result in significant adverse effects on salmon caused by violations of water temperature requirements. The DEIS predicts that these impacts will become more severe as a result of climate change and increased demands for water. As a result, the DEIS must consider alternatives and/or mitigation measures that reduce upstream water deliveries, including deliveries to Sacramento River Settlement Contractors and other water rights holders.

NRDC TBI 25

3. *The DEIS Fails to Accurately Assess Impacts to Salmonids in the San Joaquin Basin*

The DEIS fails to accurately assess environmental impacts to salmonids in the San Joaquin Basin because it fails to assess impacts to spring run Chinook salmon and because it fails to assess the impacts from changes in river flows.

NRDC TBI 26

First, the DEIS fails to acknowledge that small populations of spring run Chinook salmon have been established in recent years in the Stanislaus and other rivers. NMFS has acknowledged these populations exist, but the DEIS only analyzes impacts to fall run Chinook salmon and mistakenly concludes that spring run have been extirpated. DEIS at 9-87, 9-92. The DEIS

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wholly fails to analyze impacts to spring run Chinook salmon in the Stanislaus River and other San Joaquin River tributaries.

NRDC TBI 26 continued

Second, the DEIS acknowledges some of the studies documenting that salmon survival in the Stanislaus River and other San Joaquin tributaries is driven by river flow conditions. For instance, the DEIS cites Zeug et al 2014 to show that higher flow generally results in higher salmon survival and subsequent abundance. DEIS at 9-92. Yet the DEIS ignores other scientific studies which conclude that flows drive salmonid survival and abundance, including Sturrock et al 2015, Buchanan et al 2015, State Water Resources Control Board 2010, 2012.[8] The DEIS also fails to emphasize that inadequate flow is the dominant factor limiting salmon survival and abundance, instead relying on outdated research from 1982 to assert that survival through the Stockton Deepwater Ship Channel is one of the most limiting factors. DEIS at 9-92.[9]

NRDC TBI 27

However, the DEIS fails to utilize this scientific information on the importance of river flow in assessing environmental impacts. While the DEIS analyzes impacts from changes in operations on water temperatures, it wholly fails to assess the impacts from changes in flows on the Stanislaus River. *See, e.g.,* DEIS at 2-202 to 2-209 (analyzing impacts to fall run Chinook salmon and steelhead).[10] The available scientific evidence demonstrates that a reduction in flows below the minimum requirements of the biological opinion would result in very significant adverse effects on steelhead, fall run Chinook salmon, and spring run Chinook salmon. *See, e.g.*, Sturrock et al 2015; Zeug et al 2014; Buchanan et al 2015; State Water Resources Control Board 2010, 2012. And the State Water Resources Control Board, National Marine Fisheries Service, U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, and many others have demonstrated that current flow levels on the Stanislaus River and other San Joaquin River tributaries are causing significant impacts to salmon and steelhead, demonstrating a need to substantially increase flows to sustain salmon.

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[8] The DEIS also cites to 2001 research by Mesick on the effect of fall flows and exports on straying, but ignores Marston et al 2012, which concluded that fall pulse flows and export rates are correlated with higher rates of straying.

[9] The DEIS also incorrectly asserts that flows must exceed 5,000 cfs to mobilize gravel in the Stanislaus River. DEIS at 9-95. That is incorrect; Kondolf 2001 concluded that flows below 5,000 cfs could mobilize the riverbed, particularly in certain reaches of the river.

[10] Elsewhere, the DEIS asserts that under the No Action Alternative, Reclamation will not fully implement the biological opinion requirements regarding Stanislaus River and Lower San Joaquin River flows, in order to make water available to contractors, yet asserts with no justification that the impacts would be "similar or reduced relative to recent conditions." DEIS at 9-133. The DEIS reaches a similarly flawed conclusion with respect to the Second Basis of Comparison, concluding that the failure to implement the biological opinion requirements on the Stanislaus River would not improve. DEIS at 9-149.

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This is particularly problematic for Alternative 3, which proposes to substantially reduce Stanislaus River flows. The DEIS wholly fails to analyze the impact of reduced flows, and based solely on temperature modeling concludes that Alternative 3 would have slightly beneficial effects on fall run Chinook salmon. DEIS at 9-316. Because the DEIS fails to assess the environmental impacts of reduced flows, which is the dominant factor affecting salmon and steelhead on the Stanislaus, Lower San Joaquin River, and other tributaries, the DEIS fails to accurately assess the environmental impacts of CVP/SWP operations on salmonids in the San Joaquin Basin. Reclamation's conclusions in the DEIS are arbitrary and capricious. NRDC TBI 28

In addition, the DEIS fails to credibly analyze the impacts of the proposed trapping and barging of San Joaquin basin salmonids through the Delta under Alternative 3 and 4. The document makes unsubstantiated conclusions that this action would benefit salmonids without providing any analysis in the document. DEIS at 9-315 to 9-316. As a result, Reclamation's conclusion in the DEIS is arbitrary and capricious. There are substantial uncertainties regarding the effectiveness of capture operations (the stated goal is capturing 10-20% of the population) and potential adverse impacts. Moreover, coded wire tag data from the California Department of Fish and Wildlife show that salmon from the Merced Hatchery have successfully migrated through the Delta in recent years. *See* Kormos et al 2012; Palmer-Zwahlen and Kormos 2013. And in their comments on the ADEIS, NMFS raised substantial concerns that a trap and haul program would cause substantial adverse impacts on salmonids. The DEIS also fails to assess whether such a program is consistent with Reclamation's obligation to double natural production of salmon populations under the Central Valley Project Improvement Act.[11] Reclamation must substantially revise this section of the DEIS to provide a basis for its conclusion and to respond to the concerns raised by NMFS and others. NRDC TBI 29 NRDC TBI 30 NRDC TBI 31

4. *The DEIS Concludes that the Effects of Predator Control Program are Highly Uncertain and Could Cause Significant Adverse Environmental Impacts:*

As compared to the administrative draft, the DEIS' analysis of the impacts of predator control programs is substantially improved. For instance, the DEIS cites repeatedly to the Delta Science Program's independent peer review report (Grossman et al 2013) regarding the effects of predation on salmonids and the caveats that predator control programs will work as intended. *See* DEIS at 9-274 to 9-275. It also cites work by Peter Moyle suggesting that predator control programs could harm Delta Smelt, and acknowledges that predator control programs at the Columbia River have not demonstrated population level effects. DEIS at 9-274 to 9-276. As a result, the DEIS concludes that, NRDC TBI 32

[11] More broadly, the DEIS fails to assess whether any of the alternatives meet Reclamation's obligations under section 3406(b).

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> the program may be difficult to implement, may not be effective, and may cause unintended harm to other native Delta fish species. Consequently, the outcome of the predator management program is highly uncertain. Compared to the No Action Alternative, which does not include a predator reduction program, Alternative 3 may or may not provide a benefit to salmonids and may result in an adverse effect on Delta smelt.

NRDC TBI 32 continued

DEIS at 9-276.

However, the DEIS fails to acknowledge that USBR's own studies regarding the Head of Old River Barrier on the San Joaquin River have shown that increased flows reduce predation on salmonids and reduced flows increase predation and reduce survival. *See* Bowen et al 20019 and 2010 (USBR Technical Memorandum 86-68290-10-07 and 86-68290-11). And the DEIS also inconsistently addresses the impact of CVP/SWP operations in contributing to predation by nonnative species, particularly by providing habitat conditions in the Delta and other rivers that favor non-native species. For instance, on page 9-354, the DEIS concludes that Alternative 5 may adversely affect striped bass, but the DEIS does not analyze whether or how that impact to striped bass may subsequently affect salmonids or other species.

5. *The DEIS Fails to Accurately Assess Impacts of Fishing Mortality and Greater Restrictions on Salmon Fishing Proposed in Some Alternatives:*

NRDC TBI 33

The DEIS incorrectly assesses the impact of greater restrictions on salmon fishing under Alternatives 3 and 4. For instance, the DEIS downplays the effectiveness of the recent restrictions on salmon fishing as a result of the 2012 winter run Chinook salmon biological opinion, and it does not mention that NMFS' recovery plan for winter run Chinook salmon lists the ocean fishery as a low stressor on the population. *See* DEIS at 9-118, 9-277 to 9-278. The DEIS must be revised to account for this information in assessing impacts. Moreover, mark select fisheries are likely to substantially reduce fishing opportunities and may not improve conditions for wild salmon because of bycatch mortality, and the DEIS fails to analyze these potential adverse impacts of mark select fisheries.[12] In addition, as NMFS noted in its comments on the ADEIS, the harvest rule specified in Alternatives 3 and 4 may be less protective of winter run Chinook salmon than the existing biological opinion, given the restrictions on fishing at low levels of abundance. As noted in our prior comments, we strongly recommend that Reclamation work with the Pacific Fishery Management Council regarding these conclusions.

[12] In addition, the DEIS fails to analyze the socioeconomic effects of reducing salmon fishing as proposed under Alternatives 3 and 4. *See, e.g.,* DEIS at 19-77.

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Comments on USBR Long Term Operations Draft Environmental Impact Statement
September 29, 2015

6. *The DEIS Fails to Accurately Assess Impacts of Climate Change on Salmon and Propose Mitigation Measures to Address those Impacts:*

We appreciate that the DEIS includes the potential effects of climate change on precipitation and temperature, in order to assess how climate change may affect CVP/SWP operations. The DEIS assumes that climate change will reduce reservoir storage and cause increased temperature impacts on salmonids. *See, e.g.*, DEIS at 9-120, 9-123, 9-126 to 9-127, 9-130, 9-132 to 9-133, 9-146. However, the document wholly fails to propose any short term measures to mitigate the effects of CVP/SWP operations in combination with climate change in order to avoid violations of downstream water temperature standards that imperil salmon. As a result, the DEIS predicts more significant impacts on salmonids from increased upstream temperature, without proposing any changes or modifications to operations in order for Reclamation to meet its existing obligations under state and federal law to avoid violating water temperature requirements. The DEIS must be revised to analyze mitigation measures and alternatives that reduce or avoid water temperature violations below dams, including reduced upstream diversions and deliveries to senior water contractors.

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34

II. The DEIS Fails to Include a Reasonable Range of Alternatives:

NEPA requires consideration of a reasonable range of alternative actions that might achieve similar goals with less environmental impact. *See, e.g.*, 40 C.F.R. §1502.14. However, the DEIS fails to include any alternatives that substantially improve conditions for fish and wildlife species, or that incorporate increased water supply from other sources like water use efficiency or wastewater recycling. Reclamation has violated NEPA by failing to include any alternatives that reduce impacts on fish and wildlife populations and/or that meaningfully reduce reliance on the Delta, as required by the Delta Reform Act of 2009 (Cal. Water Code § 85021).

In our scoping comments, we requested that Reclamation analyze an alternative in the DEIS that substantially increases Delta outflow in the winter-spring period to protect longfin smelt and other fish and wildlife species, and includes increased water use efficiency, water recycling, and other regional water supply programs to increase water supply reliability even if Delta exports decrease. *See* attachment 1 (scoping comments). However, Alternative 5 wholly fails to include any increase in regional and local water supplies, and Alternative 5 also fails to meaningfully increase Delta outflow.

Appendix 19A of the DEIS makes assumptions regarding investments in regional and local water supplies by SWP and CVP contractors, demonstrating that changes in local and regional water supplies are a reasonable alternative to consider. Yet Reclamation has failed to include an alternative that includes increased investments in these regional supplies, despite our scoping comments.

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Similarly, none of the alternatives meaningfully increase Delta outflow in the winter and spring months, despite the significant adverse impacts on longfin smelt and other species affected by current outflow levels. Alternative 5 provides extremely limited increases in delta outflow. The model runs for Alternative 5 appear to be constrained by several assumptions, including assumptions concerning the amount of deliveries in any year to upstream contractors such as the Sacramento River Settlement Contractors, and export levels. Those assumptions can and should be modified to reflect alternative water supplies available to contractors and the need to reduce CVP/SWP diversions and deliveries to comply with environmental requirements. Modifying those assumptions would allow significant changes in the model output to improve reservoir levels and outflows. As noted above, the DEIS assumes that increased outflow necessarily results in reduced reservoir storage and increased water temperatures at upstream reservoirs, but that depends on assumptions regarding water diversions and exports. We understand that Phase 2 of the State Water Resources Control Board's update of the Bay Delta Water Quality Control Plan includes operational changes so that substantially increased delta outflow does not impact water temperature control at upstream reservoirs, and that the same is true for Alternative 8 in the BDCP / California WaterFix EIS. Reclamation must review this work to modify Alternative 5 so that it results in substantial increases in spring outflow and does not impair upstream water temperature compliance, even if that results in reduced exports and diversions upstream.

NRDC TBI 35 continued

Finally, the DEIS also fails to include any alternatives that address the impacts of upstream operations and climate change. As noted above, the DEIS asserts that the effects of climate change and CVP/SWP operations (including water deliveries to senior contractors) will make it difficult to meet temperature compliance standards. DEIS at 9-126 to 9-127. However, the DEIS fails to include any alternative that would avoid this impact and meet temperature compliance obligations, including reductions in water deliveries to senior contractors.

NRDC TBI 36

Overall, the DEIS fails to analyze a reasonable range of alternatives that would eliminate or reduce the environmental impacts of ongoing CVP/SWP operations, as required by NEPA.

NRDC TBI 37

III. Alternatives are Not Consistent with Reclamation's Water Rights and the Purpose and Need Statement

In addition, Alternative 3 is not consistent with the stated purpose and need in the DEIS, because the New Melones Operations Criteria in Alternative 3 would cause Reclamation to violate the terms and conditions of its existing water rights and the State Water Resources Control Board's Water Rights Decision 1641 ("D-1641"). *See, e.g.*, DEIS at 3-36. It appears that other alternatives, except for Alternative 5, likewise would result in violations of Reclamation's water rights permits with respect to Vernalis pulse flow obligations under D-1641. *See* DEIS at 3-42. Reclamation is obligated to meet Vernalis pulse flow requirements under D-1641, as the State

NRDC TBI 38

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Comments on USBR Long Term Operations Draft Environmental Impact Statement
September 29, 2015

Water Resources Control Board has repeatedly made clear, and Reclamation must include these pulse flows under the No Action Alternative. NRDC TBI 38 continued

IV. The DEIS Fails to Accurately Assess Cumulative Impacts

Reclamation has violated NEPA by failing to analyze the cumulative impacts. The DEIS identifies a number of other projects that could result in cumulatively significant impacts, including new reservoirs (including Temperance Flat and raising Shasta Dam) and the California WaterFix project, as well as other regional water supply projects. DEIS at 3-45 to 3-55. Many of these projects, such as the California WaterFix, Temperance Flat Dam, and expansion of Shasta Dam, have prepared CALSIM modeling as part of their NEPA analyses, enabling quantitative analysis of the cumulative effects. However, the DEIS wholly fails to provide any quantitative analysis of the cumulative impacts of CVP/SWP operations in conjunction with these other projects, and provides only a single page of analysis of cumulative impacts. DEIS at 9-422 to 9-423. This vague discussion only considers a few of the actions identified in Chapter 3, (regulatory flow standards), and this discussion of cumulative impacts does not include any analysis of cumulative impacts from the California WaterFix, reservoir proposals (including Temperance Flat dam and expansion of Shasta Dam, for which Reclamation has prepared NEPA documents), and the other water supply projects identified in Chapter 3 of the DEIS. NRDC TBI 39

V. Conclusion

As discussed above, the DEIS fails to accurately assess environmental impacts of CVP/SWP operations, fails to consider a reasonable range of alternatives, and includes alternatives that violate Reclamation's water rights and the purpose and need statement of the DEIS. Reclamation must substantially revise the DEIS and recirculate it for public comment to comply with NEPA. NRDC TBI 40

Thank you for consideration of our views.

Sincerely,

Doug Obegi
Natural Resources Defense Council

Gary Bobker
The Bay Institute

Enclosures

17

1D.1.11.1 Attachments to Comments from Natural Resources Defense Council and The Bay Institute

Attachments to the Natural Resources Defense Council and The Bay Institute Comment letter are included in Attachment 1D.3 located at the end of Appendix 1D.

1D.1.11.2 Responses to Comments from Natural Resources Defense Council and The Bay Institute

NRDC TBI 1: Comment Noted. Please see responses to Comments NRDC TBI 2 through NRDC TBI 40.

NRDC TBI 2: Droughts have occurred throughout California's history, and are constantly shaping and innovating the ways in which Reclamation and DWR

balance both public health standards and urban and agricultural water demands while protecting the Delta ecosystem and its inhabitants. The most notable droughts in recent history are the droughts that occurred in 1976-77, 1987-92, and the ongoing drought. More details have been included in Section 5.3.3 of Chapter 5, Surface Water Resources and Water Supplies, and Section 9.3.8 of Chapter 9, Fish and Aquatic Resources, in the Final EIS to describe historical responses by CVP and SWP to these drought conditions and changes in fisheries resources.

Conditions that have led to consideration of the federal listing of Longfin Smelt are discussed on page 9-67 of the Draft EIS.

NRDC TBI 3: The population of winter-run Chinook salmon is at extreme risk. NMFS recently named Sacramento River winter-run Chinook salmon as one of the eight species most at-risk of extinction in the near future. Last year (2014), due to a lack of ability to regulate water temperatures in the Sacramento River in September and October, water temperature rose to greater than 60°F. This reduced early life stage survival (eggs and fry) from Keswick to Red Bluff from a recent average of approximately 27 percent (egg-to-fry survival estimates averaged 26.4 percent for winter-run Chinook salmon in 2002-2012) down to 5 percent in 2014. Consequently, 95 percent of the year class of wild winter-run Chinook was lost last year. Additional information regarding key components of the 2015 Shasta Temperature Management Plan is provided at: http://www.usbr.gov/mp/drought/docs/shasta-temp-mgmt-plan-key-components-06-18-15.pdf.

The 2014 spawning run of spring-run Chinook salmon returning to the upper Sacramento River system also experienced significant impacts due to drought conditions as well as elevated temperatures on the Sacramento River and other tributaries. Similar to winter-run, spring-run eggs in the Sacramento River experienced significant and potentially complete mortality due to high water temperatures downstream of Keswick Dam starting in early September 2014 when water temperatures exceeded 56° F. Few juvenile spring-run Chinook Salmon were observed this year migrating downstream of the Sacramento River during high winter flows, when spring-run originating from the upper Sacramento River, Clear Creek, and other northern tributaries are typically observed, indicating that the population was significantly impacted. Similar concerns for spring-run exist this year as for winter-run. While spring-run have greater distribution and inhabit locations in addition to the Sacramento River, conditions on those streams are also expected to be poor due to the drought. The conservation of storage expected as a result of the changes requested in the Temporary Urgency Change (TUC) Permit submitted by Reclamation and DWR in response to drought conditions are expected to also benefit spring-run this year. Additional information regarding CVP and SWP operations under a TUC Order issued on July 3, 2015, by the State Water Resources Control Board is provided at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/docs/tucp/2015/tucp_order070315.pdf.

The discussion in Chapter 9, Fish and Aquatic Resources, does find that increased air temperatures and reduced snowfall would result in water temperatures that

would result in substantial adverse impacts to salmonids and sturgeon in the rivers downstream of the CVP reservoirs under the No Action Alternative, Second Basis of Comparison, and Alternatives 1 through 5 (see subsections "Changes in Exceedance of Water Temperature Thresholds" in Section 9.4.3 of Chapter 9). The EIS analysis compares conditions in 2030 under the Alternatives 1 through 5 to the No Action Alternative; and under the No Action Alternative and Alternatives 1 through 5 to the Second Basis of Comparison. The EIS analysis has been prepared in accordance with NEPA and does not compare the conditions under the alternatives, No Action Alternative, and Second Basis of Comparison to the existing conditions (as is presented in CEQA documents, such as the Bay Delta Conservation Plan Environmental Impact Report/Environmental Impact Statement). The No Action Alternative represents operations consistent with implementation of the 2008 and 2009 Biological Opinions. This No Action Alternative represents the current management direction and level of management intensity consistent with the explanation of the No Action Alternative included in Council of Environmental Quality's Forty Most Asked Questions (Question 3). NEPA does not require agencies to mitigate impacts, nor does it require agencies to identify mitigation associated with the No Action Alternative.

NRDC TBI 4: More details have been included in Section 9.4.3 of Chapter 9, Fish and Aquatic Resources, in the Final EIS to qualitatively responses to RPA actions not included in the CalSim II model in the No Action Alternative and Alternatives 2 and 5. Please also see response to Comment NRDC TBI 4.

NRDC TBI 5: The EIS analysis is based upon the comparison of conditions in 2030 under different alternatives. The results of those comparisons related to water temperatures show relatively minimal changes under the Alternatives 1 through 5 to the No Action Alternative; and under the No Action Alternative and Alternatives 1 through 5 to the Second Basis of Comparison. However, as described in the response to Comment NRDC TBI 3, the water temperatures in the rivers downstream of the CVP reservoirs would result in substantial adverse impacts to salmonids and sturgeon under Alternatives 1, 2, 3, and 4 and the Second Basis of Comparison without the addition of fish passage methods that are included in the No Action Alternative and Alternative 5.

The CVP and SWP reservoirs are operated in accordance with regulatory limitations, including applicable state and federal laws, regulations, and water rights first prior to deliver of water to CVP and SWP water contractors. The CVP and SWP cannot choose to meet only portions of the applicable state and federal laws, regulations, and water rights; and, it is not possible to fully meet the temperature thresholds downstream of the CVP and SWP reservoirs in 2030 with climate change. Therefore, fish passage around the CVP and SWP reservoirs is the only measure available to provide habitat with appropriate water temperatures for early lifestages.

NRDC TBI 6: Because compliance with the California Environmental Quality Act (CEQA) would be under DWR's purview, Reclamation consulted with DWR on this comment. On October 5, 2015, DWR provided the following response: "The District Court required Reclamation to comply with NEPA on the provisional acceptance of the RPA actions. There is no action for the State of California requiring California Environmental Quality Act (CEQA) review."

NRDC TBI 7: The reference to Rose et al. (2013 a, b) and Baxter et al. (2010) has been included in the Final EIS on page 9-62 of the Draft EIS. The MAST report is referenced and described on pages 9-65 and 9-66 of the Draft EIS. A summary of conclusions in Rose et al.,(2013), MacNally et al. (2010) and Thomson (2010) was added to page 9-62 of the Draft EIS.

NRDC TBI 8: The life cycle model developed by Rose et al. (2013a, b) was not included in this analysis because it uses a wide array of daily data, many of the assumptions and parameter values were based on judgment.

NRDC TBI 9: Implementation of OMR flow requirements under the No Action Alternative, Alternative 2, and Alternative 5 are consistent with the approach explained in Appendix 5A, Section B (5A.8.1) and takes into account day-weighted monthly averages of trigger and off-ramp conditions. Implementation of 2008 USFWS BO RPA actions in CalSim II model were developed in 2009 through discussions with several agencies, as described in Section 9.4.1.3.3. Not all aspects of the 2008 USFWS BO and 2009 NMFS BO can be simulated in the CalSim II model which is a monthly time-step model.

In Alternative 3, OMR requirements are implemented in a similar fashion. It is acknowledged in Chapter 9, Fish and Aquatic Resources, that both Alternative 1 and Alternative 3 would have increased adverse effects compared to the No Action Alternative (See Table 9.4). Therefore, although the benefits of the OMR action are not fully captured in model output, the impact analysis in Chapter 9 includes a discussion of the quantitative results from the models and a qualitative analysis of other aspects in Alternative 3, including the benefits from the OMR criteria.

NRDC TBI 10: The analysis in the EIS compares conditions under Alternatives 1 through 5 with the No Action Alternative to identify beneficial and adverse impacts for a broad range of physical, environmental, and human resources.

The analytical tools used in the impact assessment of fisheries resources described in Chapter 9, Fish and Aquatic Resources, evaluate differences in conditions related to different lifestages of different species in the Delta watershed. However, there are no available analytical tools to quantitatively predict the total population differences for all species considered in this EIS which consider all portions of the life histories of the fish (by species and run), including ocean harvest conditions for anadromous fish. Results from life cycle models for winter-run Chinook Salmon, as presented in Chapter 9, predict life stage survival and adult escapement, but not total populations. At this time, accepted population models do not exist to analyze the effects of the alternatives for the fisheries species and runs considered in this EIS. Therefore, the NEPA analysis does not

determine if the alternatives would cause violations of existing biological opinion take limits. Rather, the NEPA analysis presents incremental differences between the alternatives, No Action Alternative, and Second Basis of Comparison.

NRDC TBI 11: The statement in this comment regarding Kimmerer (2011) is misconstrued and inaccurate. Kimmerer was reporting on an analysis designed to determine what level of impact could be detected by correlative methods. His regression analysis was between a simulated stock-recruitment index and OMR flows (assumed 0 if OMR is greater than 0 [northward]) to determine how large the maximum percentage loss (Pmax) would be before losses become detectable in the regression analysis. His results showed that the losses were not generally detectable in the regression until Pmax reached about 60 to 80 percent and maximum losses less than 20 percent were generally undetectable. Repeating the simulation 10,000 times with Pmax equal to 20 percent, the upper 95 and 90 percent confidence limits of the regression slope excluded zero (i.e., was statistically detectable) in 5 and 9 percent of the cases, respectively. This led to the conclusion that "a loss to export pumping on the order reported by Kimmerer (2008) can be simultaneously nearly undetectable in regression analysis, and devastating to the population." He also noted that "This also illustrates how inappropriate statistical significance is in deciding whether an effect is biologically relevant." Which was the sole reason for this exercise. Kimmerer (2011) did not imply there was a threshold of 10 percent mortality that would lead to devastating impacts on the population.

The determination of similar results based upon an incremental difference of 5 percent or less is indicative of a level of uncertainty in the model results. The EIS impact analysis starts with use of the monthly CalSim II model to project CVP and SWP water deliveries. Because this regional model uses monthly time steps to simulate requirements that change weekly or change through observations, it was determined that changes in the model of 5 percent or less were related to the uncertainties in the model processing. Therefore, reductions of 5 percent or less in this comparative analysis are considered to be not substantially different, or "similar." The definition of the similar results has been added to the text in several locations in Chapter 9, Fish and Aquatic Resources, and to the appendices of Chapter 9 in the Final EIS.

NRDC TBI 12: Please refer to responses to Comments NRDC TBI 10 and NRDC TBI 11.

NRDC TBI 13: As noted in the Appendix 5A, the No Action Alternative, Second Basis of Comparison, and Alternatives 1 through 5 include and meet the SWRCB D-1641 requirements to the extent allowed by the hydrology. The modeling for the EIS simulates the operations results are intended to be a reasonable representation of long-term operational trends. The Draft EIS also included an analysis of larval/juvenile delta smelt entrainment, based on Kimmerer (2008) regression estimating percentage entrainment as a function of X2 and OMR. The specific actions undertaken under recent droughts were not included in the EIS modeling efforts because the analysis considers the coordinated long-term operation of the CVP and SWP. The analysis is based upon an 82-year hydrology

which includes conditions that occur in a wide range of hydrology, including droughts. However, specific responses to the droughts and floods would be developed on individual basis and are not considered in the long-term analysis. The Draft EIS included an analysis of the fall X2 requirements as discussed in Appendix 9G based on the Feyrer et al. (2011).

The Draft EIS, at two locations in the document, suggested that food resources for Delta Smelt may have been supplemented in 2011 and 2012 when the release of Colusa Basin Drain water through the Yolo Bypass resulted in increases in nutrients and phytoplankton that led to measurable increases in zooplankton in the Yolo Bypass, Cache Slough, and the Sacramento River near Rio Vista. This was based on information contained in Frantzich (2014). The trends in Delta Smelt abundance, including the index value for 2012, are indicated in Table 9.1 on page 9-63 of the Draft EIS.

It is unclear how the Draft EIS, as suggested in the comment, "misstates the conclusions of the MAST report regarding the importance of implementation of the fall outflow RPA in 2011 (rather than agricultural runoff) on subsequent delta smelt abundance." The conclusions from the MAST Report reported on page 9-66 of the DEIS are nearly verbatim. The paragraph following the MAST Report conclusions in the DEIS suggests that agricultural runoff through the Yolo Bypass may have contributed to an increase of food resources. This paragraph was deleted in the Final EIS because it repeats information stated previously.

NRDC TBI 14: Existing conceptual models were considered in the preparation of the aquatic resources analysis in the EIS. Predicting and analyzing the differential effects of alternative project operations on the abundance and composition of phytoplankton, zooplankton and benthic organisms would require a coupled hydrodynamic-food web model of the Delta. Such a model is currently not available. However, additional text was added to Section 9.4.1.3.2 of the Draft EIS to better capture the current literature on this subject.

NRDC TBI 15: The analysis of changes in hydrology resulting from operations contained was based on CalSim II modeling, which relies on a long-term period of record. As mentioned in Section 5A.A.3.5, "In CalSim II, operational decisions are made on a monthly basis, based on a set of predefined rules that represent the assumed regulations. The model has no capability to adjust these rules based on a sequence of hydrologic events such as a prolonged drought, or based on statistical performance criteria such as meeting a storage target in an assumed percentage of years.." Nonetheless, text has been added to Chapter 9 to acknowledge the current drought and its effects on aquatic resources, including algal blooms and invasive species.

As indicated in the comment, the BDCP/WaterFix environmental documents included an analysis of residence time to evaluate changes in microcystis and invasive species. For that study, residence time was strongly influenced by shifting diversion to the north Delta (and by increased habitat restoration areas in early stages of the project under BDCP/WaterFix). Under the Draft EIS alternatives, all diversions would be conducted at the current export facilities and

all alternatives would include the same acreage of restoration. The operations in summer months would not vary significantly to affect temperature (mostly affected by ambient conditions) and residence time. Thus, incremental changes between alternatives regarding microcystis and invasive species would be indiscernible.

NRDC TBI 16: Please refer to response to Comments NRDC TBI 14 and NRDC TBI 15.

NRDC TBI 17: The analysis in the EIS analysis compares conditions under Alternatives 1 through 5 with the No Action Alternative to identify beneficial and adverse impacts for Longfin Smelt. The NEPA analysis does not determine if the alternatives would change the findings of the biological opinions in the determination of the likelihood of the alternatives to cause jeopardy to the continued existence of the species, or destroy or adversely affect their critical habitat.

NRDC TBI 18: The results described in Cunningham et al. (2015) was added on page 9-78 (of the Draft EIS) to quantify the effects of exports on salmonid survival. Differences, such as those described by Cunningham in relation to exports are not exhibited in a comparison of the No Action Alternative with Alternatives 1 through 5 since the impact analyses results for all of the alternatives comparisons do not result in the distinct export regimes (+1 standard deviations of the mean) modeled by Cunningham et al. (2015). Results of the SALMOD model for late fall-run Chinook Salmon in the Sacramento River (Table B-2-5 of Appendix 9D) show comparable results for pre-smolt and smolt mortality due to habitat (flow) as Michel et al. (2015) in that mortality is increased in drier years as compared to wetter years.

NRDC TBI 19: Please see Appendix 9M, Salmonid Salvage Analysis, which describes the methods for addressing the effects of export facilities on juvenile salmonids. This analysis, based on coded wire tagged fish, covers a broader range of size classes than does the DPM analysis.

NRDC TBI 20: Although the median survival predicted by the OBAN model was 12 percent higher under the No Action Alternative than under the Second Basis of Comparison, the probability intervals indicated that no difference between scenarios was a likely outcome (i.e. the dashed line of no difference lies within the dark gray central 0.50 probability interval in Figure 9I-14). The text on page 9-162 (of the Draft EIS) has been modified for clarity; however, specific degrees of certainty cannot be determined with the existing analytical tools.

NRDC TBI 21: Please see response to NRDC TBI 5.

NRDC TBI 22: SALMOD is not used as a predictive model, it is used as a comparative tool for analyzing differences between alternatives that would occur over a range of hydrologic conditions represented by output from the 82-year CalSim II model (see Appendix 9D, SALMOD Model Documentation). As used, SALMOD output represents the mean values for production and mortality each year with the same initial conditions for population parameters and varying

operations simulated by CalSim II. It is not a life-cycle model and does not provide a time trajectory of production. There is no expectation that SALMOD output will mirror recent (or historical) data on production or mortality. However, the comparison of mean values for production and mortality are a valid and appropriate method of comparing possible outcomes among the various alternatives. Similarly, the Reclamation Salmon Mortality Model utilizes CalSim II output through the temperature models and is not expected to mirror recent or historical estimates of mortality (see Appendix 9C, Reclamation's Salmon Mortality Model Analysis Documentation). It too is used as a comparative tool to distinguish potential effects among the alternatives. The results of the impact analysis is to understand the differences in the outcomes of the alternatives as compared to the No Action Alternative and the Second Basis of Comparison.

NRDC TBI 23: As described and presented in Appendix 9H of the Draft EIS, the IOS model uses the full 82-year CalSim II simulation period. The impact analysis used in the EIS evaluates the differences between alternatives based on changes in the median annual escapement and the range of escapement values encompassed in the first and third quartiles (25 to 75 percent of years) over the 82-year CalSim II simulation period (see page 9-116 of the Draft EIS). As described in the response to Comment NRDC TBI 22, SALMOD is not used as a predictive model to mirror past data, it is used as a comparative tool for analyzing differences between alternatives that would occur over a range of hydrologic conditions represented by output from the 82-year CalSim II model. As used, SALMOD output represents the mean values for production and mortality each year with the same initial conditions for population parameters and varying operations simulated by CalSim II. It is not a life-cycle model and does not provide a time trajectory of production. However, the comparison of mean values for production and mortality are a valid and appropriate method of comparing possible outcomes among the various alternatives under a NEPA analysis. Similarly, the Reclamation Salmon Mortality Model is used as a comparative tool to distinguish potential effects among the alternatives.

While likely effects from water temperature on early life stages occur at a shorter temporal scale than these models, comparative analyses are useful for long-term analyses, as in the EIS, because there is moderate certainty for long-term conditions.

NRDC TBI 24: The analysis of weighted usable area (WUA) in the Draft EIS is not intended to describe salmonid survival. The WUA methodology is used as a metric for evaluating changes in physical habitat related to flow as described in Appendix 9E, Weighted Useable Area Analysis, and on page 9-108 of the Draft EIS. The results of the SALMOD model are used to evaluate changes in salmonid survival in the Sacramento River (see Appendix 9D). Results of the SALMOD model for late fall-run Chinook Salmon in the Sacramento River (Table B-2-5 of Appendix 9D) show that mortality for pre-smolts and smolts is increased in drier years as compared to wetter years; this is consistent with Michel et al. (2015).

NRDC TBI 25: The EIS alternatives include consistent climate change conditions without consideration of potential regulatory or operational changes due to climate conditions in the future. Potential climate-related operational changes are currently unknown and it would be speculative to develop such assumptions for a NEPA analysis. This comparative approach eliminates the effects of climate change from the incremental changes between the alternatives, No Action Alternative, and Second Basis of Comparison.

The EIS analysis has been prepared in accordance with NEPA and does not compare the conditions under the alternatives, No Action Alternative, and Second Basis of Comparison to the existing conditions (as is presented in CEQA documents). The No Action Alternative represents operations consistent with implementation of the 2008 and 2009 Biological Opinions. This No Action Alternative represents the current management direction and level of management intensity consistent with the explanation of the No Action Alternative included in Council of Environmental Quality's Forty Most Asked Questions (Question 3). NEPA does not require agencies to mitigate impacts, nor does it require agencies to identify mitigation associated with the No Action Alternative.

NRDC TBI 26: "Spring-running" fish were not analyzed due to uncertainty whether they are genotypically spring-run, and if so, whether they are strays or a distinct population; and their exemption from take related to diverting or receiving water in accordance with the San Joaquin River reintroduction program. In the most recent Recovery Plan (NMFS 2014), it is stated that native spring-run Chinook salmon have been extirpated from all tributaries in the San Joaquin River Basin.

NRDC TBI 27: The references included in the comment provide additional information that is consistent with citations already included in the Draft EIS. Many of these reports also indicate that there still remains uncertainty in the flow-survival relationship. Sturrock et al. (2015) did not conclude that flows drive salmonid survival and abundance but did provide evidence that salmon populations fluctuate considerably with river flows experienced during juvenile rearing. The text on page 9-92 of the Draft EIS has been modified to include the reference in the comment, and to indicate that mortality in the Stockton Deep Water Ship Channel is one of the limiting factors.

Footnote 9 in the comment regarding Kondolf is not correct. Despite one site having a lower value (i.e., TMI 280 cfs) than 5,000 cfs, Kondolf used a combination of sites to identify that mobility overall occurs beginning at about 5,000 cfs. On page 36 of Kondolf, it states "Results of the bed mobility analysis for five (TMl, RI, RS, R28A, and R78) of nine sites studied suggest that flows around 5,000 to 8,000 cfs are necessary to mobilize the D50 of the channel bed material (Table 7.1 and Appendix C)." There was one site (TMI 1) where flows less than 5,000 cfs (280 cfs) would mobilize gravel, but as Kondolf explains "The mobility of the gravel at TMI probably reflects the smaller diameter of the augmented gravel, rather than the mobility of the gravels that would naturally occur in this steeper reach."

Text has been modified on the page 9-149 of the Draft EIS has been modified in the Final EIS to provide more clarity on the statement referenced in Footnote 9 of this comment.

NRDC TBI 28: Long-term average flows are not substantially reduced under Alternative 3 as compared to the No Action Alternative or the Second Basis of Comparison for the Stanislaus River below Goodwin Dam (see Figures 5-68, 5-69, and 5-70 in Chapter 5, Surface Water Resources and Water Supplies). There are anticipated flow reductions generally from March through June and particularly in October under Alternative 3, but flows are anticipated to be increased under Alternative 3 relative to the No Action Alternative and comparable to flows under the Second Basis of Comparison in many months. As described on pages 9-313 through 9-315 of the Draft EIS, water temperatures under Alternative 3 are anticipated to be similar to the No Action Alternative or slightly lower in most months and lead to a slight reduction in egg mortality for fall-run Chinook salmon. The text on page 9-316 of the Draft EIS has been modified to improve the readability

NRDC TBI 29: The description of the trap and haul program assumptions and methodologies presented in Chapter 9 of the Draft EIS were not extensive. Additional information has been included on the text from page 9-316 of the Draft EIS, and additional information has been provided in Appendix 9O of the Final EIS.

NRDC TBI 30: Reclamation's proposed action in the 2008 Biological Assessment included actions developed to contribute to Section 3406(b)(1) of the Central Valley Project Improvement Act (CVPIA) and other requirements of CVPIA. These actions were analyzed as part of the proposed action in the 2008 USFWS BO and 2009 NMFS BO. These actions are therefore also incorporated in the No Action Alternative and Alternative 5. Alternatives 1 through 4 and the Second Basis of Comparison due not fully contribute to the goals of Section 3406(b)(1).

NRDC TBI 31: Please see responses to comments from National Marine Fisheries Service in Appendix 1.A.1.

NRDC TBI 32: Text has been added to Section 9.4.3.4 of the FEIS to include the studies by Bowen et al. (2009, 2010) regarding predation on salmonids around a Head of Old River barrier.

While the two-year study observed a variable and negative relationship between flow and survival past the Head of Old River barrier, there remained uncertainty due to the actual barrier structural configuration and how they would affect predator habitat in this reach. These studies did not speculated about overall survival rates or the biological significance of reach specific mortality around the Head of Old River barrier. Overall, the conclusions indicated that survival around the Head of Old River barrier would be structural design specific and highly variable; therefore certainty of the effect of the structures remains low.

NRDC TBI 33: The analysis in the Draft EIS did not rely on the 2012 Biological Opinion for analysis of effects. The latest (2014) Final Recovery Plan lists ocean harvest as a "very high" stressor on the winter-run Chinook Salmon population. Additional text has been added to Chapter 15, Recreation Resources, and Chapter 19, Socioeconomics, related to the effects of the harvest restrictions in Alternatives 3 and 4. The harvest rules specified in Alternatives 3, and especially Alternative 4, may be less protective for winter-run Chinook Salmon because this run is not allowed to be captured in either sport or commercial ocean salmon fishing. Additional text has been added to Section 9.4.3.5.2 on consistency of these alternatives with NMFS fisheries management framework for reducing the impact of ocean salmon fishery on winter-run Chinook Salmon.

NRDC TBI 34: Please see response to Comment NRDC TBI 25.

NRDC TBI 35: The CVP and SWP reservoirs are operated in accordance with regulatory limitations, including applicable state and federal laws, regulations, and water rights first prior to deliver of water to CVP and SWP water contractors. Under the current regulatory scenario, it is not possible to fully meet the temperature thresholds downstream of the CVP and SWP reservoirs in 2030 with climate change. Additional reservoir releases to increase Delta outflow would result in further temperature issues in the rivers downstream of the CVP and SWP reservoirs. Reclamation cannot modify the state water rights requirements or SWRCB water quality criteria.

The EIS analysis indicates in that alternative water supplies would be required under Alternatives 1 through 5, the No Action Alternative, and the Second Basis of Comparison because CVP and SWP water deliveries are anticipated to be less than under existing conditions and full water contract amounts are only delivered in extremely wet years, as described in Chapter 5, Surface Water Resources and Water Supplies, and Chapter 19, Socioeconomics. Many of the municipalities are considering the alternative water supplies as part of their urban water management plans, as described in Appendix 5D, Municipal and Industrial Water Demands and Supplies.

As described in Section 1.6 of Chapter 1, Introduction, of the Draft EIS, it is anticipated that substantial changes could occur to CVP and SWP operations as future projects are implemented. It is anticipated that most of these future projects have been identified in Section 3.5 of Chapter 3, Description of Alternatives, including the Bay Delta Water Quality Control Plan Update. Many of these future projects have not been fully defined and are not anticipated to be operational until the late 2020s. If any of these future projects would substantially change CVP operations, Reclamation would evaluate the need to request initiation of consultation under ESA with the USFWS and NMFS.

The future projects are being developed for different project objectives than the purpose and need in this EIS for the coordinated long-term operation of the CVP and SWP. Because the future operations under future projects have not been finalized at this time; and because projects that would substantially change CVP operations would require future consultations with USFWS and NMFS, it would

be pre-decisional to include these projects in the alternatives evaluated in this EIS. Therefore, the alternatives under these future projects are considered in the cumulative effects analysis in this EIS.

NRDC TBI 36: Please refer to response to Comment NRDC TBI 34.

NRDC TBI 37: The EIS analysis compares conditions under a range of alternatives (Alternatives 1 through 5) with the No Action Alternative to identify beneficial and adverse impacts for a broad range of physical, environmental, and human resources. A reasonable range of alternatives includes technically and economically feasible alternatives to address the purpose and need for the action (40 CFR 1502.14). However, the range of alternatives can be limited if the alternatives analyzed address the full spectrum of alternatives (Question 1b of CEQ Forty Most Asked Questions). The range of alternative concepts were evaluated with respect to screening criteria defined in the purpose of the action (see Chapter 2, Purpose and Need), a determination if the concept addressed one or more significant issues, and if the concept was included in one or more alternatives (Table 3.1 in Chapter 3, Description of Alternatives).

NRDC TBI 38: The Council on Environmental Quality guidance describes that a "potential conflict with local or federal law does not necessarily render an alternative unreasonable, although such conflicts must be considered." Therefore, the range of alternatives considered in this EIS does include actions that are not necessarily consistent with existing federal and state requirements for the existing long-term operation of the CVP and SWP. The selection of the range of alternatives considered in the EIS was informed by several factors, including scoping comments, as described in Section 3.4 of Chapter 3, Description of Alternatives, in the EIS. Alternative 3 was developed through consideration of scoping comments from the Coalition for a Sustainable Delta, Oakdale Irrigation District, and South San Joaquin Irrigation District, as described in Section 3.4.5.

NRDC TBI 39: The discussion of cumulative impacts in Chapter 9, Fish and Aquatic Resources, has been expanded in the Final EIS.

NRDC TBI 40: Reclamation has modified the Final EIS in response to comments from NRDC, TBI, and other commenters; and will use the Final EIS in the development of the Record of Decision.