



January 15, 2018

Mr. Jim Watson  
Sites Project Authority  
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Via Email: [EIR-EIS-Comments@SitesProject.org](mailto:EIR-EIS-Comments@SitesProject.org)

**Re: Comments on Sites DEIR/S**

Dear Mr. Watson:

Thank you for inviting comments on the Sites Reservoir Project Draft Environmental Impact Report/Statement (DEIR/S).

Overall, the DEIR/S is incomplete and deficient. Much of the document appears to be boilerplate from DWR's 2013 administrative DEIR for the same project. In addition, our review discovered numerous instances where absolute mistakes have been made. Our impression is that this important document was rushed out the door for public review to meet California Water Commission funding deadlines. We believe that the Sites JPA should withdraw this inadequate DEIR/S, revise it to correct mistakes, including additional information concerning the many issues raised by the public, and recirculate it for further public review and comment.

**I. The DEIR/S does not provide an adequate description of the project.**

The DEIR/S does not provide an adequate description of the project. It fails to describe how the project will be operated. Although one operation scenario is described in the accompanying Feasibility Report, it is unclear that the operation summarized in the report is encompassed by any of the DEIR/S alternatives. The Feasibility Report summarizes CVP/SWP contract deliveries and environmental water deliveries under each Alternative in Table ES-2. No similar table is found in the DEIR/S, making it difficult to determine whether the Feasibility Report is describing the same project operationally as the one in the DEIR/S. The DEIR/S also fails to identify the preferred environmental uses of Sites water. Instead, a menu of different environmental uses is offered but none are identified as preferable, leaving reviewers to wonder which environmental benefits the final project will provide. The DEIR/S is also unclear as to who operates the project and who will assume the responsibility for meeting project outputs and environmental compliance.

## **II. The DEIR/S does not offer an adequate range of alternatives.**

The DEIR/S focuses largely on alternatives that maximize storage. Three of the four retained alternatives include a 1.8 million acre feet (MAF) reservoir and one alternative on a 1.3 MAF reservoir. The .8 MAF alternative was eliminated in the preliminary evaluation without any discussion about the impacts and benefits of this alternative in comparison to the larger reservoir alternatives. The alternatives examined in detail do not offer a range of different environmental benefits. None of the alternatives consider the potentially significant impacts of the Sites project on other concurrent actions. These include the California Water Fix, Water Board's Phase II update of the Bay-Delta Water Quality Plan, Central Valley Flood Protection Plan, Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project, and other projects and actions. No preferred alternative is identified, leaving reviewers to assume that Alt. C or D will likely be the alternative chosen in the final EIR/S. However, USBR NEPA guidelines require evaluation of all resource management alternatives, including a preferred alternative. The same guidelines also note that essential consultation with the USFWS and other agencies is usually initiated for a preferred alternative. The DEIR/S alternatives analysis would benefit substantially from consultation with other agencies.

## **III. The DEIR/S fails to include any meaningful information about water rights.**

The DEIR/S fails to include any meaningful information about water rights needed to operate the project. The project intends to use water from Sacramento River tributaries and cites a 1977 water rights application submitted by the state. But little or no information is provided on how the project will ensure that only tributary water will be diverted to Sites. Nor does it address the issue of water rights over-allocation or the Water Board's Phase II process.

## **IV. The DEIR/S fails to adequately consider the impacts of Sites diversions on the Sacramento River.**

The DEIR/S fails to adequately consider the impacts of Sites diversions on the Sacramento River and the river's flow-driven ecosystems, which support numerous sensitive, threatened, and endangered species. A major deficiency in the DEIR/S is that the Sacramento River, the source of water used to fill the Sites Reservoir, is considered part of the Secondary Study Area, with the implication that this secondary area requires less rigor in the analysis.

We believe that the DEIR/S is incorrect in asserting that impacts to the river will be less than significant. The DEIR/S does admit that project impacts on the Sacramento River's shaded riverine aquatic (SRA) habitat is unknown but fails to disclose this as a potentially significant impact. At the minimum, we believe the reach of the Sacramento River directly affected by Sites diversions should be included in the Primary Study Area, that further analysis is needed, and that impacts on the river and its SRA habitat should be considered potentially significant.

## *Models –*

Much of the DEIR/S analysis depends on the use of computer models with known deficiencies, particularly CALSIM II. CALSIM II's "daily flow disaggregation below Red Bluff Diversion Dam (RBDD) is known to be flawed...flows below RBDD **are for testing and demonstration purposes only.**"<sup>1</sup> According to a National Academy of Sciences assessment, many CALSIM II users believe that the model's primary limitation is its monthly time step and that the model should be used primarily for comparative analysis between scenarios, but its use for absolute predictions should be discouraged. This same assessment found that although use of models like CALSIM II is justified despite flaws, these models do not go far enough toward an integrated analysis of reasonable and prudent alternatives, and improvements were needed.<sup>2</sup> Further, even USBR admits that the CALSIM II disaggregation process used to simulate daily flows for modeling water quality "results in a crude representation of flow and temperature conditions on a daily time scale."<sup>3</sup>

The DEIR/S asserts that the problems with CALSIM II have been rectified with a new model, USRDOM, but no information is provided as to the provenance and accuracy of this model, or even if it has been peer reviewed. Four other models utilized to analyze various impacts on the Sacramento River are based on the CALSIM II/USRDOM models, which increases risk and uncertainty if these models are inadequate.

## *Environmental Standards –*

The DEIR/S bases its finding of no significant impact on the assertion that the project will be operated to meet existing flow standards for the Sacramento River and existing requirements established in biological opinions for threatened and endangered fish in the river. But these flow standards are inadequate. They are intended to meet water temperature targets for the river upstream of Red Bluff and to ensure that a minimum amount of salmonid spawning habitat is covered. The existing minimum flows of 3,250 CFS and BiOp requirements have largely failed to prevent the continued decline of Sacramento River salmonids.

The standard that ensures a minimum flow in the Sacramento River of 5,000 CFS is intended to provide for commercial river traffic that no longer exists and is not based on environmental needs. No standards have been established to ensure that flows are provided to maintain the river's complex flow-driven riparian and aquatic ecosystems. Claiming less than significant impacts based on compliance with weak and inadequate standards is a major flaw in the DEIR/S that must be rectified. Any "take" of water from an already over-allocated and stressed riverine

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<sup>1</sup> ESSA Technologies, March 2008, SacEFT Analysis Results Appendix F, pg. F-3.

<sup>2</sup> National Academy of Sciences 2010, A Scientific Assessment of Alternatives for Reducing Water Management Effects on Threatened and Endangered Fishes in California's Bay Delta.

<sup>3</sup> USBR, Fish and Wildlife Coordination Act Report Appendix, Shasta Lake Water Resources Investigation, June 2013.

system that supports many threatened and endangered species is, by definition, a significant impact.

Flow tables in the DEIR/S appendices confirm that the project will divert water much of the year and in virtually all water years, which will increase the likelihood that river flow will be reduced to minimum levels. There is little or no information available about the potential impacts to the Sacramento River associated with the project reducing river flow to minimum levels, particularly in dry and critically dry years. On average, the project will reduce flows in the Sacramento River downstream of Red Bluff 11 months out of the year and by as much as 8.3% in March (an important month for riparian habitat regeneration). Even more significant flow reductions will also occur in the Sacramento River in critically dry years during March. But because the project will meet the currently inadequate minimum flow standard, the DEIR/S assumes no significant impact.

#### *Public Lands & Land Use –*

The DEIR/S notes that non-compliance with existing land use plans is a significant unavoidable impact. But the Land Use chapter primarily focuses on non-compliance with county general plans and barely acknowledges land use associated with federal and state public lands along the Sacramento River. Federal and state agencies, as well as many non-governmental organizations, have spent millions of dollars to acquire lands along the Sacramento River to protect and restore riparian habitat and to provide public recreation opportunities. At least 20,000 acres of public lands are located on the river between Red Bluff and Colusa, including units of the Sacramento River National Wildlife Refuge, the Sacramento State Wildlife Area, and three state parks. The presence and ecological health of these public lands, even where they are adjacent to proposed project facilities, are virtually ignored in the DEIR/S. Existing and restored riparian habitat on these public lands depend on Sacramento River flows, which will be modified by the project. The Land Use chapter also fails to recognize the Upper Sacramento River Fisheries and Riparian Habitat Plan (aka, the S.B. 1086 plan) or its implementing entity, the Sacramento River Conservation Forum as land use plans. Compliance with these impact plans must be assessed in the DEIR/S.

#### **V. The DEIR/S fails to adequately describe potential project impacts on Sacramento River water quality.**

The DEIR/S claim of less than significant project impacts on water quality creates a high level of concern. Sites is a relatively shallow reservoir located in a part of the Sacramento Valley known for its extreme summer temperatures. And yet the models used to assess temperature impacts associated with Sites releases into the Sacramento River suggest that temperature impacts will be minimal (in many cases, less than 1% change in temperatures). This claim challenges all logic and raises concerns that the USRWQM, CALSIM II and USRDOM models are inadequate to accurately assess these impacts. In addition, helping to meet water quality standards is a primary environmental benefit from Sites, and yet this benefit remains unquantified. Documents produced by DWR and the Sites JPA suggest that the Delta water quality benefit

simply disappears when the Delta tunnels are constructed. The DEIR/S fails to disclose where this environmental water goes if the tunnels become a reality.

**VI. The DEIR/S fails to adequately address the potential for reservoir-triggered seismicity (RTS), particularly on local communities and structures.**

The DEIR/S discounts the possibility of the Sites reservoir triggering an earthquake. It notes that RTS earthquakes are primarily associated with reservoirs deeper than Sites. But the DEIR/S fails to fully examine the role that frequent filling and emptying of Sites would play in potentially triggering earthquakes. Faults beneath the reservoir footprint are capable of producing up to scale 7 earthquakes. Triggering of such quakes by Sites has serious implications for unreinforced structures in homes, ranches, and communities adjacent to the reservoir. The DEIR/S discounts the possibility of Sites triggering a seismic event because the reservoir is slightly smaller than the large reservoirs typically associated with RTS and because the faults beneath the reservoir and the associated rocks are compressed and have relatively low permeability. Nevertheless, the DEIR/S does admit that smaller reservoirs have been known to create RTS and at least one of two existing reservoirs located along the same fault system has been subject to RTS.

The DEIR/S fails to address the fact that repeated filling and draining of Sites is an important RTS factor. Protracted RTS (occurring long after a reservoir was initially filled) depends on the frequency and amplitude of lake-level changes, reservoir dimensions, and hydromechanical properties of the substratum. Earthquakes are associated with large and/or rapid lake-level rises. The Monticello Reservoir in South Carolina, which is much smaller than Sites, has experienced protracted RTS, perhaps because it's a pumped storage facility similar to Sites. In addition, RTS seems restricted to shallow depths with pumped storage reservoirs.<sup>4</sup> Located across the Coast Range west of Sites, Lake Mendocino in Mendocino County is both smaller and shallower than Sites, but it too has experienced RTS associated with the refilling of the reservoir after the 1976-77 drought.<sup>5</sup>

The DEIR/S needs to provide a more robust assessment of potential RTS at Sites and its implications, particularly regarding public safety and the potential RTS threat to unreinforced buildings and structures adjacent to Sites.

**VII. The DEIR/S fails to adequately address the potential for the project to increase greenhouse gases that contribute to global climate change.**

Most of Chapter 24. Climate Change and Greenhouse Gas Emissions focuses on the Sites project's production of greenhouse gas (GHG) emissions associated with construction and

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<sup>4</sup> Talwani, Pradeep. On the Nature of Reservoir-induced Seismicity. Pure and Applied Geophysics, 1997.

<sup>5</sup> Topozada, T.R. and C.H. Cramer, Ukiah Earthquake, 25 March 1978: Seismicity Possibly Induced by Lake Mendocino, California Geology, December 1978.

pumped storage operations. The relatively brief section addressing the known effect of reservoirs passively producing GHGs (primarily CO<sub>2</sub>) concludes without any information supporting the contention in the DEIR/S that Sites is “unlikely to produce substantial GHG emissions.” This statement cites Soumis 2004 and Tremblay 2005 as the source of this conclusion. Soumis assessed Shasta, Oroville, and New Melones reservoirs in California and found that Shasta and Oroville produce GHGs. We were unable to find a free copy of Tremblay 2005 on the internet to review. But given the Soumis findings, we recommend that a revised DEIR/S follow the World Bank’s guidelines on GHG measurement, preliminary GHG assessment tool, and methodology to investigate the potential for Sites to passively produce GHGs.<sup>6</sup>

**VIII. The DEIR/S fails to adequately assess impacts on rare plants in the project reservoir footprint.**

The DEIR/S claims that all impacts on vegetation communities and rare plants are mitigated to less than significance. There is uncertainty that the federally protected Keck’s checkerbloom is present in the primary study area, which requires additional scientific investigation. Given this, the impact on this specific plant should be considered potentially significant. Impacts on other rare plants present or directly adjacent to the primary study area are allegedly reduced to insignificance by following USFWS, CDFW, and CNPS compensation guidelines. However, these guidelines are not provided in the chapter or appendix, making it difficult for reviewers to determine whether full “compensation” is achieved. A revised DEIR/S should include the guidelines and provide sufficient explanation as to how following these guidelines reduce adverse impacts on rare plants to less than significant levels. In addition, the revised DEIR/S should confirm whether the endangered Keck’s checkerbloom is found in the primary study area.

**IX. The DEIR/S overstates potential project benefits for threatened and endangered salmonids.**

A major environmental benefit attributed to the Sites project in the DEIR/S is the potential for coordinated operations between Sites and the existing Shasta, Oroville, and Folsom dams to provide cold water suitable for threatened and endangered salmonids in the Sacramento, Feather, and American Rivers. We do not regard this as a net environmental benefit associated with Sites. Instead, this “benefit” is quite simply mitigation for the existing impacts of these dams. It should be noted that Prop. 1 water bond funding cannot be used to mitigate environmental impacts. Funding for such mitigation should be provided by those who directly benefit from the dam operations.

Even though the Sites JPA intends to spend millions of dollars of public Prop. 1 funds to provide supposed salmonid benefits, this benefit is not adequately quantified in the DEIR/S. USBR’s draft Feasibility Report does provide some quantification of salmonid benefits. On average over the full 82-year simulation period, Alt. D will boost endangered winter run chinook salmon by a

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<sup>6</sup> World Bank, Greenhouse gas emissions related to freshwater reservoirs, January 2010.

modest 3.3% and threatened spring chinook salmon by 2.4%. In dry years, winter chinook numbers are slightly less (3.2%) than the average improvement, and only slightly improved above the average in critically dry years (4.8%). There is no attempt to assess whether these modest improvements are worth the public cost, or for that matter, represent a net benefit over the more difficult to assess changes caused by Sites operation in the Sacramento River's aquatic ecosystems. Further, there is not attempt to compare these benefits with other actions that could improve salmonid habitat and survival.

It's important to note that the USFWS found that similar modest improvements in threatened and endangered salmonid survival generated by additional cold water from a proposed enlarged Shasta Reservoir was "very limited."<sup>7</sup> The USFWS also found that the cold water improvement was not superior to other actions such as restoring spawning and rearing habitat, improving fish passage, increasing minimum flows, and screening unscreened water diversions. The USFWS also expressed concern that further water resources development on the Sacramento River would result in additional losses of salmonid rearing and riparian habitat and adversely affect the recruitment and natural succession of riparian habitat along the Sacramento River, which is much contributor to SRA habitat.

Scientific research has underscored the importance of the Sacramento River flood plain, including its flood bypasses, in providing optimum conditions for the growth and survival of young out-migrating salmon. The Sites DEIR/S proposes to boost spills into flood bypasses in a few select months and during a few select water years. But the narrative in the DEIR/S fails to acknowledge the cost of this action – reduced bypass spills over many more months and water years. There is no information in the DEIR/S to quantify improved salmonid survival from the boosted spills in comparison to the reduced spills, making it impossible to determine whether this represents a "net" environmental benefit.

The DEIR/S must be withdrawn and revised with more information and better quantification of salmonid improvements and how these improvements could be achieved without Sites.

## **X. Detailed Comments on Specific Chapters**

### **Chapter 2. Alternatives Analysis**

The range of alternatives considered in the DEIR/S is inadequate. Not only does the document focus on the largest possible reservoirs with maximum diversions from the Sacramento River, it fails to consider an adequate range of environmental purposes and benefits that could be provided by the reservoir. Although several environmental uses are mentioned in the DEIR/S, no definitive list of environmental uses is provided by alternative. There is simply a block of water apparently dedicated to environmental use, with no attempt to identify the best environmental use of this water. Instead, JPA staff have indicated that environmental use of

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<sup>7</sup> USFWS, Fish and Wildlife Coordination Report for the Shasta Lake Water Resources Investigation, November 2014 (revised).

this water will be determined later by the state. Since providing water for the environment is a major purpose of the reservoir, the DEIR/S should fully incorporate environmental water benefits in an adequate range of alternatives and not passively leave this up to the state.

Pg. 2-20, Table 2-4 and last paragraph: This table displays 15 alternatives – four alternatives that include an .8 MAF reservoir, five alternatives that include a 1.3 MAF reservoir, and six alternatives with a 1.8 MAF reservoir. The reservoir options are then filtered using three different combination of conveyance options. Ultimately, only five alternatives based on the the two largest reservoir sizes are chosen for detailed analysis. Table 2-4 is heavily weighted towards the large reservoir options. The last sentence on this page implies that water supply yield was the overriding filter for formulating alternatives.

Pg. 2-21, Table 2-5 and paragraph 2: The DEIR/S refers to Table 2-5 and states that it shows that “the first three reservoir storage and conveyance options...perform much better” than other options. No explanation is given to support this conclusion, leaving reviewers to conclude that first three options appear to be “much better” to the Sites proponents simply because two of the three options include the largest reservoir and the maximum number of diversions.

The DEIR/S should more carefully consider other alternatives, such as the .8 MAF reservoir using just the new Delevan diversion to reduce flow impacts on the upstream reach of the Sacramento River where river meander is not constrained by levees.

In addition, the DEIR/S should consider an alternative that minimizes storage for consumptive water uses and focuses on providing additional water for maintaining Sacramento River meander, providing wildlife refuge water supply, and other environmental purposes.

Several other projects and actions are currently underway that will have serious implications for Sites operations, including the so-called “California Water Fix” (aka Delta tunnels) and the U.S. Bureau of Reclamation’s (USBR) recent Notice of Intent to revise coordinated long-term operations of the CVP/SWP to maximize water deliveries. These two projects alone will have huge implications on the Sites project, but the Sites DEIR/S fails to even mention them. The lack of cumulative impact analysis of this project and other projects and actions that compete for Sacramento River water is a fatal flaw in the DEIR/S.

## **Chapter 6. Surface Water Resources**

No mention is made in this chapter of the State Water Board’s (SWB) Phase II Update of the Bay-Delta Plan. The Phase II update is intended to address inflows to the Sacramento River, tributaries, and the Delta. SWB released a final Scientific Basis Report for the Update that found the Bay-Delta ecosystem to be in a state of crisis. Native fish populations have declined precipitously, “...attributed in part to flow modifications due to dams and water diversions and related operations.” Upstream water diversions and exports have reduced January to June outflows by an estimated 56% in average and by more than 65% in dry years. DEIR/S Appendices 6B and 6C show that Sites diversions will reduce spring flows even further,

particularly in low water years. The SWB report stated that “flow modifications greater than 20 percent likely result in moderate to major changes in natural structure and ecosystem function.” The science report proposes new inflow requirements for anadromous fish-bearing tributaries in the Sacramento River basin. The report proposes a numeric inflow objective of 35 to 75 percent of unimpaired flows.<sup>8</sup>

Because the Sites DEIR/S complete fails to address Phase II, the potential impacts of the Sites project on Delta inflow/outflow are undisclosed. This is a major failure of the document requiring that the DEIR/S be withdrawn and revised for public review and comment to address Phase II objectives.

This chapter also fails to address the critical issue that the state has granted rights to far more water than is reliably produced annually by natural run-off. Rights have been granted to approximately five times more water than produced by the state’s mean annual runoff. The greatest degree of over-appropriation is in the Sacramento and San Joaquin river basins. About 155% of the Sacramento River’s mean annual runoff has been appropriated.<sup>9</sup> Water rights over-allocation becomes particularly acute and obvious in drought years.

Operation of Sites Reservoir could potentially address this problem by diverting water only in high water years and releasing water in dry years. But Sites diversions are planned in every water year type, including critically dry years. Dry year diversions will only make the water rights over-allocation problem worse. According to DEIR/S Appendix 6B, critical water year diversions to Sites will reduce Sacramento River flows below the Red Bluff Diversion Dam by 11.2% in February, below Hamilton City by 13.3% in March, and below the Delevan intake by 11.8% in February.

Pg. 6-12, Table 6-1: This table summarizes existing CVP/SWP water contract “demands.” Just as rights have been granted to more water than is produced, water contracts promise to deliver more water than is available. Water management problems will continue so long as existing but unrealistic water rights and contracts form the baseline for perceived water demands and needs.

Controversy over water management in California is based on the perception that there remains “unused” in the Sacramento and other river systems. This is simply not the case, in that all water, even the water that flows to the sea during above normal water uses, is fulfilling a critical environmental function. The DEIR/S should be withdrawn, revised to address the water rights over-allocation issue, and released for additional public review.

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<sup>8</sup> State Water Resources Control Board, Scientific Basis Report in Support of New and Modified Requirements from the Sacramento River and its Tributaries and Eastside Tributaries to the Delta, Delta Outflows, Cold Water Habitat, and Interior Delta Flows. Final 2017.

<sup>9</sup> Grantham, T.E., J.H. Viers, 100 years of California’s water rights system: patterns, trends, and uncertainty. Environmental Research Letters, August 2014.

## Chapter 8. Fluvial Geomorphology

The analysis in this chapter is adversely affected by the fact that the Sacramento River between Red Bluff and Colusa is considered part of the Secondary Study Area. The Sacramento River is the source of the water to fill the reservoir. To consider the affected river reach to be part of the Secondary Study Area implies that less rigor and analysis is required.

Pg. 8-7, paragraph 2: The DEIR/S cites the 2000 report, *Flow Regime Requirements for Habitat Restoration along the Sacramento River Between Colusa and Red Bluff* (CALFED, DWR). It correctly notes that the “study indicated that the overall flow regime requirements for the Sacramento River could not be determined without further long-term studies...” Since these long-term studies have not been conducted or completed, this raises the serious concern that the DEIR/S conclusion that Sites will have a less than significant impact on Sacramento River fluvial geomorphology, riparian habitat, and river meanders is simply not supported by adequate knowledge and data.

Pg. 8-17, paragraph 4: Using historical daily flow patterns to calculate flow projections from the monthly CALSIM II results does not provide an adequate analysis of potential impacts. This is a long-standing criticism of CALSIM II. According to Appendix 6C, the average monthly flows provided by CALSIM II are “downscaled” to provide an estimate of daily flows by another model, USRDOM. The provenance of USRDOM is unknown. It does not appear to be referenced in Reference Chapter 37. An internet search found references to USRDOM in respect to this DEIR/S and in background documents provided to the California Water Commission, but little else. The USRDOM model wasn’t used in similar recent analyses, such as the 2014 Shasta Lake Water Resources Investigation. Appendix 6C does not disclose the source of the USRDOM model or whether it has been peer reviewed. Further, Appendix 6C provides no information on how USRDOM “downscales” monthly flows into daily flows. Without this important background, reviewers must assume that USRDOM simply divides CALSIM II’s monthly flow average by the number of days in the month to provide an estimate of daily flows. If this is the case, then estimating flow impacts using CALSIM II still has serious drawbacks.

Pg. 8-17, paragraph 5: Appendix 8A is cited as the source of information to determine the impact of the project on sediment transport capacity. Appendix 8A is USBR Technical Report No. SRH-2011-21, *Sacramento River Migration Analysis of NODOS Alternatives*. The alternatives analyzed in this 2011 technical report do not appear to be the alternatives analyzed in the 2017 Sites DEIR/S and the report’s conclusions cannot be automatically incorporated into the DEIR/S without further analysis and explanation.

Pg. 8-18, paragraphs 2 & 5: The SRH-Meander, SRH-1DV (vegetation), and the SacEFT (ecological flows) models are cited as informing this analysis. Although not specifically cited, this discussion seems to be derived from USBR Technical Report No. SRH-2009-27, *Calibration of Numerical Models for the Simulation of Sediment Transport, River Migration, and Vegetation Growth on the Sacramento River*, California, NODOS Investigation Report, March 2011. This technical report cites five models analyzed, noting that:

“...no single model can simulate all the interacting river processes in complete detail. The strategy applied in this investigation was to use models that focus on difference processes and different scales so that a more complete understanding of each process, and process interactions, could be understood. Five models are used to examine hydraulics, sediment transport, river meandering, and vegetation establishment and survival.” Pg. vii

No explanation is given as to why just three of the five models are cited in Chapter 8.

Pg. 8-23, last paragraph; Pg. 24, paragraphs 1-2: The DEIS states that sediment entrainment by the Tehama-Colusa Canal (TCC) under Alt. B would be “approximately 62,000 tons per years as compared to 40,000 tons under the Existing Conditions/No Project/No Action Condition” and cites Appendix 8A as the source of this information. We can find no such information in App. 8A. Further, as previously noted, the alternatives analyzed in the USBR technical reports that comprise App. 8A do not appear to be the same alternatives analyzed in the DEIR/S. It’s worth noting that sediment entrainment by the TCC appears to increase by 55%. The GCID diversion would increase sediment entrainment by 46%. This suggests significant sediment entrainment that could impact river meander and riparian succession.

Pg. 8-25, paragraph 4: The DEIR/S states that “It is not certain how Alternative B would affect the shaded riverine aquatic (SRA) habitat that occurs along the banks of a stream.” The USFWS considers SRA habitat to be Resource Category 1, representing “one-of-a-kind areas” that “cannot be replaced.”<sup>10</sup> This statement underscores the need to more fully analyze this impact. At the minimum, The DEIR/S must acknowledge that impacts to SRA are potentially significant.

Pg. 8-27, paragraphs 4-5 & 7: The DEIR/S again cites sediment entrainment numbers under Alt. C not found in App. 8A. It’s again worth noting that the sediment entrainment increase at the TCC and GCID diversions amount to 20-21%, which seems substantial. The 7<sup>th</sup> paragraph refers to Alt. A. This appears to be incorrect since this section focuses on the impacts of Alt. C.

Pg. 8-28: Paragraph 5 refers to Alternative B when the narrative is about Alt. C. Regarding the statement about SRA habitat in paragraph 7, please refer to our comment about the identical statement found on pg. 8-25.

Pg. 8-30, paragraph 1: The DEIR/S states that “Sacramento River flows and diversion flows are similar under Alternative D and Alternative A...” and yet, Alt. A creates a 1.3 million-acre-foot (MAF) reservoir and Alt. D is a 1.8 MAF reservoir, which is 38% larger. Logically, this would require longer diversions from the river and calls into question the preceding statement that “model results are similar under Alternative D and Alternative A.”

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<sup>10</sup> Impacts of Riprapping to Aquatic Organisms and River Function, Lower Sacramento River, California, June 2004 2<sup>nd</sup> Edition, USFWS.

Pg. 8-30, last paragraph: The DEIR/S states that “Because no potentially significant impacts were identified, no mitigation is required or recommended.” This conclusion is simply incorrect, given that Chapter 8 has obvious errors, cites a document that does not include the data discussed and considers project alternatives that may be different from those analyzed in the DEIR/S, and cites another document that calls for additional study. Further, the statement concerning uncertain impacts on SRA requires a “potentially significant impact” conclusion.

#### **Chapter 14. Terrestrial Biological Resources**

Pg. 14-23, paragraph 1: The DEIR/S states that 15 special status wildlife species potentially inhabit the primary study area, of which five species were documented in field surveys. But the species descriptions on pages 14-24 to 14-28 identify six special status species present in or directly adjacent to the primary study area, including bald eagle (active nesting site), valley elderberry longhorn beetle, greater sandhill crane, Swainson’s hawk, tricolored blackbird, and giant garder snake. Please explain this discrepancy.

Pg. 14-29, last paragraph: The DEIR/S states that of the 45 species of concern or state fully protected species, 29 species were documented in the field surveys. But the species descriptions on pages 14-30 to 14-41 identify 28 species. Please explain this discrepancy.

Pg. 14-58, paragraph 4: The DEIR/S states “Operational modeling indicates that Sacramento River flows would meet or exceed the *Biological Opinion for the Long-term Central Valley Project Operations Criteria and Plan* requirements with or without the Project (USFWS, 2008a). As previously noted, this BiOp and others have failed to stop the decline of threatened and endangered salmonids and other wildlife species. USBR recently published a Notice of Intent to prepare an EIS to revise the Coordinated Long-Term Operation of the CVP and SWP. The primary purpose of this revision, as directed by Congress, is to maximize water supply delivery. This would increase threats to species already on the brink of extinction. The DEIR/S should analyze the effects of revised CVP/SWP operations and determine whether the “meet or exceed” statement remains true.

Pg. 14-58, paragraph 5: The DEIR/S states that modeling indicates that the Sacramento River’s riparian vegetation would increase or remain the same under Alternative A. It’s stated on pg. 14-123, that Alt. D’s secondary study area impacts on Sacramento River riparian habitat will not be “substantially different” from Alts. A and C. We dispute these findings. See comments on Chapter 8. Fluvial Geomorphology. Alts. D and C include reservoirs that are 38% larger than Alt. A, which will require longer diversion times and more water overall diverted from the Sacramento River. There is a serious modeling problem if it fails to find any substantial difference in flows and flow impacts between Alt. A and Alts. D and C.

Pg. 14-126, Table 14-26: This table lists vague mitigation measures that reduce nearly all impacts identified in this table to “less than significant” and fails to provide sufficient information to assure the public that these serious impacts will indeed be reduced to insignificance. For example, Mitigation Measure Wild-1b requires a combination of habitat

protection, enhancement, and restoration for riparian habitat and other natural communities. This mitigation measure should be tied directly to the acreages of habitat type identified in tables for each alternative and how much habitat will be acquired and restored. Other measures also lack details. For example, what exactly does it mean to “Implement Protective Actions” to mitigate impacts to burrowing owl to less than significant levels?

## **Chapter 16. Geology, Minerals, Soils, and Paleontology**

There is no mention of mercury in this chapter. Mercury is discussed extensively in Chapter 7. Surface Water Quality, but that chapter focuses primarily on mercury from upstream sources in the Sacramento River watershed. The proposed Sites Reservoir is in California’s coast range, a well-known natural source of mercury. An extensive mercury mining district was located just south of the Antelope Valley. The valley itself appears to possess the pre-requisite geology to potentially produce mercury.

Mercury deposits in western California are found near a thrust fault that separates the Franciscan Assemblage and the Great Valley Sequence.<sup>11</sup> The most abundant rock of the Franciscan complex is muddy, low-density sandstone where cinnabar (mercury) deposits are found. Cinnabar was also deposited in the sandstone of the Great Valley sequence.<sup>12</sup> DEIR/S Table 16-3 on pg. 16-13 confirms that both the Franciscan formation and Great Valley rock units are found in or adjacent to the primary study area. And yet, there is no discussion about mercury naturally occurring in the rocks and soil that will be covered by the reservoir and potentially polluting any water released from the reservoir. This issue requires thorough investigation to address potential mercury pollution from the reservoir site in the DEIR/S.

## **Appendices 6B and 6C**

According to the Executive Summary, “The proposed Project would divert and store water within the Sacramento River watershed when available during high-flow events and when not meeting other environmental and water supply requirements.” Our review of Appendices 6B and 6C indicates that this is not an accurate description of Sites diversions and operations. The project diverts water during high flow events, but also diverts water during all water years, even critically dry years and low flow events, when not meeting other environmental and water supply requirements. A brief review of Appendices 6B and 6C indicating some alarming flow impacts to the Sacramento River and the Sutter Bypass, including:

Alt. D reduces average **Sacramento River** flows below:

- Keswick 7 months of the year and by as much as 6.1% in April. Pg. 846
- Bend 7 months of the year and by as much as 5.6% in June. Pg. 851
- RBDD 11 months of the year and by as much as 8.3% in March. Pg. 856

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<sup>11</sup> Mineralium Deposita 1984, Mercury Deposits of Western California: an Overview, P.A. Studemeister, University of Ottawa Geology Dept.

<sup>12</sup> Johnston, A.S., Mercury and the Making of California, University Press of Colorado, 2013.

- Hamilton City 10 months of the year and by as much as 10.5% in March.
- Delevan intake 6 months of the year and by as much as 10.1% in March.
- Wilkin Slough 5 months of the year and by as much as 10.3% in March.
- Verona 6 months of the year and by as much as 5.4% in March.
- Freeport 6 months of the year and by as much as 4.6% in March.

In critically dry years, Alt. D will also reduce flows below:

- Keswick by as much as 11.5% in May.
- Bend by as much as 9.8% in May.
- RBDD by as much as 11.2% in February.
- Hamilton City by as much as 13.3% in March.
- Delevan Intake by as much as 11.8% in February.

(App. 6B, pages 846-881)

Alt. D reduces average **Feather River** flows below:

- Thermalito 7 months of the year and by as much as 5.5% in December.
- Sacramento River confluence 7 months of the year and by as much as 4% in October.
- Shanghai Bend 7 months of the year and by as much as 4% in October
- Sacramento River confluence 8 months of the year and by as much as 4% in October.

In critically dry years, Alt. D will reduce flows below Thermalito by as much as 21.9% in June.

(App. 6B, pages 906-911)

Alt. D reduces average **American River** flows below:

- Nimbus Dam 3 months of the year and by as much as 8% in July.
- Watt Avenue 3 months of the year and by as much as 8.1% in July.
- H Street 3 months of the year and by as much as 8.7% in July.
- Sacramento River confluence 3 months of the year and by as much as 8.7% in July.

In critically dry years, Alt. D will reduce flows below Nimbus by as much as 19.6% in June.

(App. 6B, pages. 931-941)

Alt. D reduces:

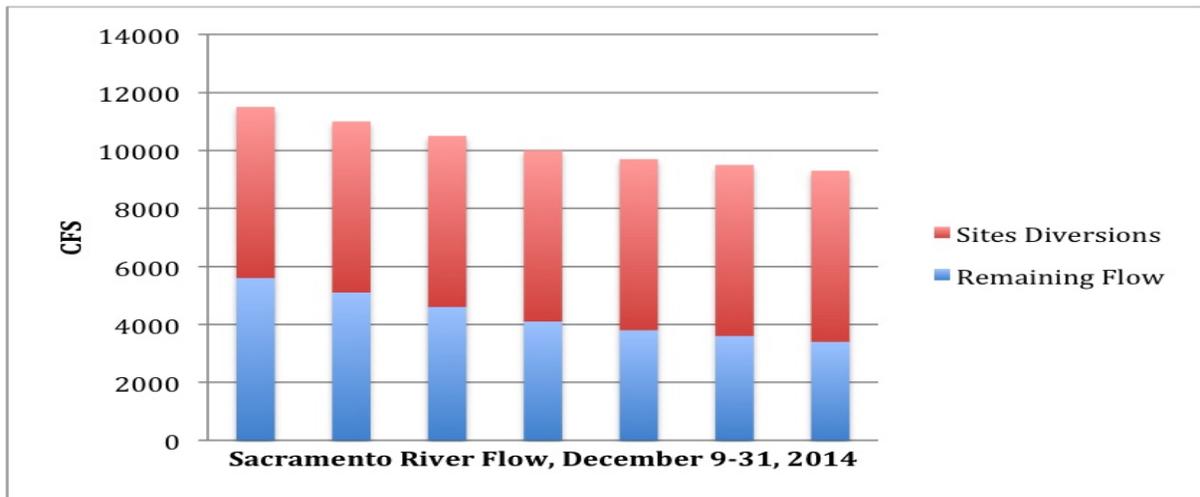
- **Ord Ferry spills** into the Sutter Bypass for four months from January-April and by as much as 55.5% in January.
- **Moulton Weir spills** into the Sutter Bypass in an above normal water year from January-April and by as much as 29.2% in January.
- **Colusa Weir spills** into the Sutter Bypass for 2-7 months in all water years and by as much as 16.5% in January in an above normal, 45.9% in March in a below normal year, 62% in March in a dry year, and 84% in January in a critically dry year.
- **Tisdale Weir spills** into the Sutter Bypass for 4-7 months in all water years and by as much as 48.5% in March in a dry water year and 100% in March in a critically dry year.

Generally, the Sites project reduces bypass spills significantly in multiple months in various water years in favor of boosting spills for fewer months in fewer water year types.

(App. 6C, pages 81, 86, 91, 96)

The potential impacts of Sites diversions and the reduction of flows in the Sacramento River and flood bypass system during drought years is particularly troubling. 2014 was one of the three driest consecutive years in California history. And yet, DWR in a post on its web site indicated that a brief few weeks of rain in December 2014 was sufficient to boost tributary flows in the Sacramento River to allow the Sites project to divert water. If the project diversions were in place and operating at that time, the diversions would have reduced Sacramento River flows by more than half (see graph below). This is a prime example of why existing minimum flows for the Sacramento River are insufficient.

### Sacramento River Flow Impacts Diversions To Sites Reservoir – Dec. 9-31, 2014



Sources: California Dept. of Water Resources, "FAQ: Sites Reservoir Diversion", March 1, 2015; USGS Sacramento River Gauge 11389500 at Colusa CA, Dec. 9-31, 2014.

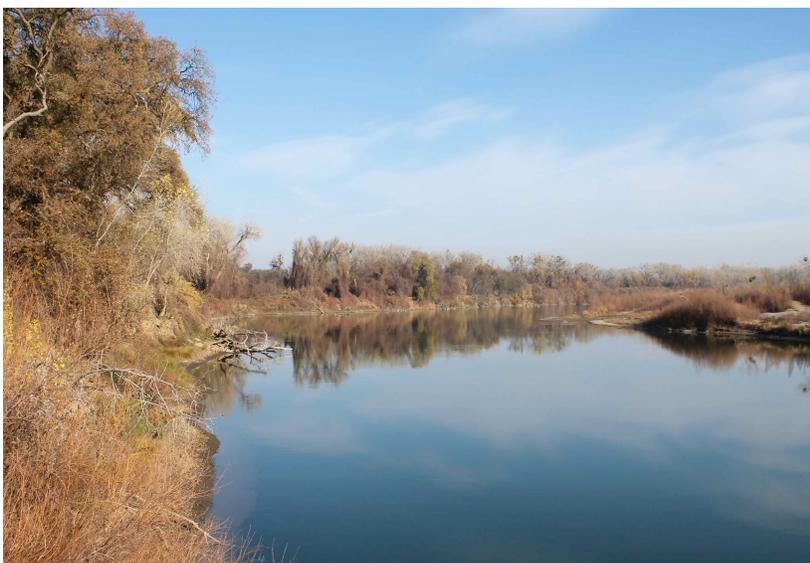


Photo: Sacramento River just upstream of the Delevan Diversion site on December 18, 2017. The flow is 9,000 CFS. The existing environmentally-based minimum flow of 3,250 CFS would allow Sites diversions to take nearly 2/3rds of this flow.

## XI. Conclusion

For all the reasons noted above, Friends of the River, Sacramento River Preservation Trust, and Mother Lode Chapter Sierra Club requests the withdrawal of the DEIR/S, its revision, and re-release for additional public review and comment.

Sincerely,



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