



April 21, 2014

Sharon McHale, Project Manager
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Sent via email to smchale@usbr.gov

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

Dear Ms. McHale:

On behalf of the Natural Resources Defense Council, the Bay Institute, California Sportfishing Protection Alliance, and Friends of the River, we are writing to provide comments on the draft feasibility report for the Upper San Joaquin River Basin Storage Investigation - Temperance Flat River Mile 274 Reservoir (“Investigation”). As discussed in detail below, the Investigation is significantly flawed, does not accurately analyze the economic or ecosystem cost and benefits of the proposed project, and fails to comply with federal guidelines for project evaluation. As such, we strongly recommend that the Bureau of Reclamation (“Reclamation”) withdraw the Investigation, and recirculate a valid draft feasibility study once these flaws are addressed.

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

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

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

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

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

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

Each of these points is discussed in more detail below.

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

A. The Investigation Overstates the Purported Ecosystem Benefits

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

² USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. Modeling Appendix. Tables 5-2, 5-4.

³ Water supply is listed as the other primary benefit.

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

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

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

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

⁴San Joaquin River Restoration Program. 2010. Water temperature Variation from Friant Dam to Sack Dam During the 2009 Fall Interim Flow Period. DRAFT Appendix C – Water Quality Data. 20 pp.

⁵See, e.g., SJRRP. 2011. Appendix K Biological Resources – Fisheries. Draft Program Environmental Impact Statement/Report (“Reach 1 currently has consistently low water temperatures, and flow schedules prescribed under the Settlement may provide acceptable temperatures to support initial population goals”).

⁶San Joaquin River Restoration Program. 2010. Water temperature Variation from Friant Dam to Sack Dam During the 2009 Fall Interim Flow Period. DRAFT Appendix C – Water Quality Data. 20 pp.; Final PEIS/PEIR; ROD.

⁷SJRRP. 2008. Conceptual Models of Stressors and Limiting Factors for San Joaquin River Chinook salmon. ES-4.

expected salmon return rates in dry years range from 0.7% to 14%, while for the long term average range from -0.7% to 4.9%⁸. Thus, the Investigation should take the weighted average into account in the ecosystem benefits model to derive a realistic value. Based on this weighted model, dry years will only occur in 15% of the years, while wet years will occur in 20% of the years. Taking the full range of year types into account would better reflect the negative abundances seen across all alternatives at Low and High SAR in wet years that result in an expected return of -0.5 to -4%, or a loss of 33 to 268 fish.⁹ Alternative 3 produces particularly negative ecosystem benefits, with the loss of between 0 to 268 fish in normal-wet or wet years. Given that salmon are a purported primary beneficiary of Temperance Flat, Alternatives with negative average salmon abundances should not have successfully passed through the prioritization process. Alternatives, such as Alternative 3, with expected declines in salmon return rates should not result in any public ecosystem benefits in terms of the cost of this project.

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

B. The Investigation Overstates Public Spending Justified by Purported Ecosystem Benefits

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

⁸ USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. Modeling Appendix Tables 5-2 and 5-4.

⁹ USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. Economic Analysis Appendix, pp. 5-8, 5-11.

¹⁰ SJRRP. 2010. Exhibit F. EDT Proof of Concept. Fisheries Management Plan: A Framework for Adaptive Management in the San Joaquin River Restoration Program http://restoresjr.net/program_library/02-Program_Docs/FMP_exhF2010Nov.pdf

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

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

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

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

¹¹ Note: Output differs for weighted abundance in the Economic vs the Modeling Appendix.

¹² SJRRP. 2012. Third Party Working Draft Framework for Implementation. http://www.restoresjr.net/program_library/02-Program_Docs/20120619_SJRRP_Framework_for_ImplDRAFT.pdf

salmon populations, and at best the Investigation justifies very little to no public spending for a alternatives that yield very minimal benefits in terms of increased salmon abundance. And in all cases any public spending for ecosystem benefits of the project cannot reduce state and federal spending for the SJRRP, since any ecosystem benefits from the project depends on completion of the SJRRP.

II. The Investigation fails to consider ecosystem costs

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

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

The loss of floodplain habitat and flood releases could result in significant additional costs to the Restoration Program. This is particularly true if SJRRP restoration activities such as floodplain restoration or re-grading¹⁴ must be increased due to the proposed construction of Temperance Flat reservoir, increasing costs and redundancies and decreasing the effectiveness of these activities. Floodplain habitat is essential for achieving the goal of naturally reproducing and self-sustaining populations of Chinook salmon as required by the Settlement. Furthermore initial results from the SJRRP demonstrate that higher flows associated with controlled flood releases, such as those maintained within the channel, result in high survival of juvenile salmon through their downstream migration.¹⁵ Similarly, increased flows at Vernalis result in significantly increased abundance of salmon in subsequent years.¹⁶ Reduced high flows would likely reduce salmon survival in wet years in the Restoration Area as well as downstream to the Delta as compared to current conditions.

¹³ USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. Figure 4-2.

¹⁴ SJRRP. 2013. DRAFT Technical Memorandum Channel Capacity Report 2014 Restoration Year.

¹⁵ SJRRP. 2011. 2011 Juvenile Salmonid Survival and Migration Study: July 2011 Draft. http://restoresjr.net/program_library/02-Program_Docs/20110725-JuvenileSurvivalPrelimReport.pdf

¹⁶ See, e.g., State Water Resources Control Board. 2010. Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem. August 3, 2010. Available online at: http://www.swrcb.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/docs/final_rpt080310.pdf; State Water Resources Control Board. 2012. Public Draft Substitute Environmental Document in Support of Potential Changes to the Water Quality Control Plan for the San Francisco Bay-Sacramento/San Joaquin Delta Estuary: San Joaquin River Flows and Southern Delta Water Quality. December 2012. Available online at: http://www.waterboards.ca.gov/waterissues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/2012_sed/; California Department of Fish and Wildlife. 2013. Comments regarding the Substitute Environmental Document in Support of Potential Changes to the Water Quality Control Plan for the San Francisco Bay-Sacramento / San Joaquin Delta Estuary: San Joaquin River Flows and Southern Delta Water Quality. March 28, 2013. Available online at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/hearing/baydelta_pdsed/docs/comments032913/scott_cantrell.pdf

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

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

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

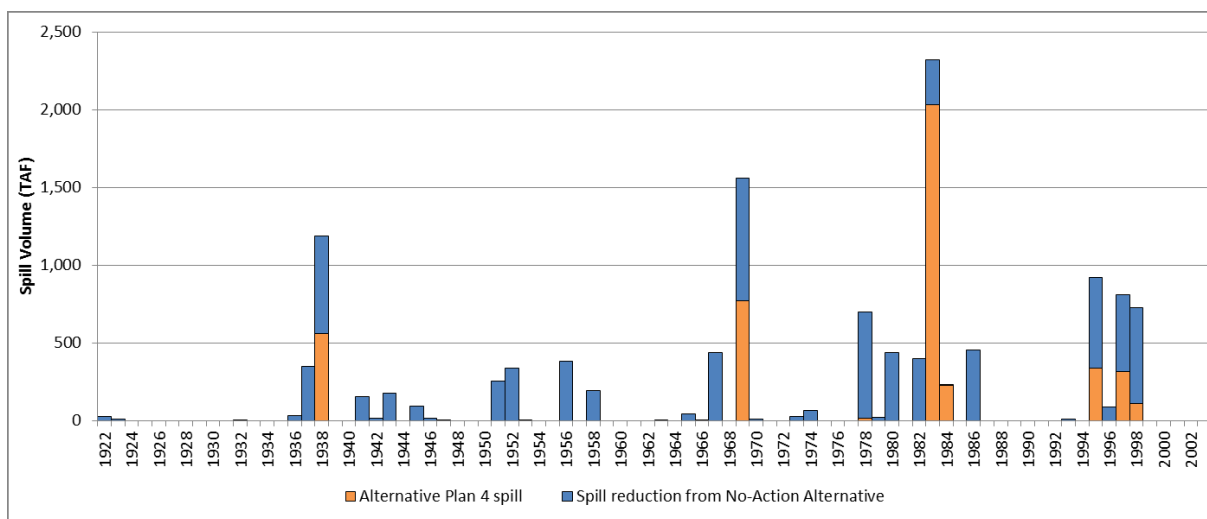


Figure 1 Reduction in spills under Alternative 4

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

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

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

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

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

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

¹⁸ USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. p. 5-16.

¹⁹ Mitchell, Dale. 2006. Regional Fisheries Chief, California Department of Fish and Game, Region 4. Fresno, California. Meeting on May 10.

²⁰ USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. p. 2-25 to 2-32.

²¹ <http://www.americanwhitewater.org/content/River/detail/id/288/>

Lastly, the Investigation does nothing to account for short term impacts of dam construction to the San Joaquin River downstream of Friant dam. The construction of the dam would come at a time that is critical to the restoration of the Chinook salmon and when the SJRRP will be in full swing. The sensitivity of salmon to potential short term changes in water quality and habitat could set the restoration program back, and should be included as a short term expense, one that could be substantial.

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

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

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

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

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

²² USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. p.6-17.

²³ DRMS Phase II. http://www.water.ca.gov/floodsafe/fesro/levees/drms/docs/DRMS_Phase2_Foreword_Executive_Summary.pdf

addition to emergency preparedness and risk reduction not provided by Temperance Flat. Moreover, any such economic benefits of this project would likely be substantially reduced or eliminated with investments in levee improvements in the Delta and potential implementation of new conveyance in the Delta.

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

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

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

Table 1 Proposed value of Agricultural water benefits per acre foot

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

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

Since Reclamation uses two different models to derive water costs – one for the benefit value and one for the financial costs, we will first focus on the overstated benefits to agriculture. The proposed benefit per acre foot to agriculture greatly exceeds market value, in some cases by an order of magnitude (Table 1). Following construction, agricultural beneficiaries are expected to incur annual benefits of \$18.6 to \$20.8 million. While wet and average water year types benefits (costs of water) are 3-4 times standard water values,²⁵ the benefits per AF in dry years are nearly an order of magnitude higher, inflating the purported benefits to agriculture.²⁶ The real loss to agriculture is during below-normal years as seen in Table 2.²⁷

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

Table 2 Proposed changes in Agricultural deliveries under each Alternative

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

The costs of agricultural water in the Investigation also assume that taxpayers will pay for over 72% of the total costs of constructing the project, yet the proposed taxpayer subsidies are clearly unjustified as demonstrated above. With the subsidies, agricultural water supplies under the contract are clearly infeasible; without those taxpayer subsidies, the costs of

²⁵ <http://valleyecon.blogspot.com/2014/03/new-temperance-flat-feasibility-study.html>

²⁶ We calculated the benefit per acre foot by dividing the NED for year type by the AF benefit for that year type.

²⁷ USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. Modeling Appendix Table 3-2.

²⁸ We also did not calculate cost per AF for Alternative 2 because Reclamation did not run the Statewide Agricultural Production Model (SWAP) on this Alternative, relying on Alternative 3 data, even though deliveries differ.

agricultural water from the project will substantially increase, making the project even less feasible (Table 3).²⁹ As Reclamation states: "If beneficiaries have the financial resources to pay the costs allocated to them, then the project is considered financially feasible."³⁰ However, Reclamation states that CVP and SWP agricultural water users only have the ability to pay marginal increases in water costs of \$3.95 per AF and not the additional costs of any new contracts, estimated by Reclamation at \$212 per AF. However, actual expected costs per AF for Alternative 4 range from \$413 to \$1,593 per acre foot when subsidized by taxpayers and rises to \$1,692 to \$6,531 when not subsidized by taxpayers (Table 3). Not only are these costs infeasible for most farmers, but the range of costs seem remarkably high, providing little certainty to agricultural production and any profits seen.

Table 3 Proposed annual Agricultural water costs per acre foot

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

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

Lastly, the Investigation shows that the project will undermine implementation of the Water Management Goal of the SJRRP. A major aspect of the Water Management Goal of the SJRRP is to make better use of wet year water, which could provide Friant contractors with up to 556 TAF.³³ The Restoration Program includes local infrastructure projects to improve the ability of Friant Water Authority contractors to store wet year water in groundwater aquifers. New capacity projects in the Friant-Kern and Madera Canal to move water in wet years will be constructed prior to the proposed Temperance Flat project³⁴ and will decrease potential water supply benefits of Temperance Flat reservoir and will create operational redundancies. In

²⁹ Calculation is based on 40 year loan with 3.5% interest rate. Subsidized and unsubsidized account for the cost allocation ratios determined in the Investigation. The cost is higher than that found in the Investigation due to the 1) Shorter 40 year vs 100 year period and 2) Use of current versus real dollars.

³⁰ USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. p.6-20

³¹ http://www.ltrid.org/district_organization/news_articles/fact_sheet.php

³² Personal communication. USBR. April 7, 2014.

³³ USBR. 2012. SJRRP Environmental Impact Statement. Record of Decision. p. 18

³⁴ USBR. 2012. SJRRP Environmental Impact Statement. Record of Decision. p.24

addition, this was one of the primary reasons for providing water at \$10/AF during wet years,³⁵ which also provides some funds for the Restoration fund. Any change in this structure could reduce the effectiveness of the Restoration Program, a cost not considered by Reclamation. Reclamation needs to ensure that outcomes of the Restoration Settlement are not impacted by this project. These and other potential Restoration Program water management projects must be adequately considered and included in the modeling effort.

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

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

The Investigation states:

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

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

Ecosystem Services:

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

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

The Investigation does not address most of these and when it does merely glosses over them. The Investigation hedges these requirements, by simply stating “The monetary valuation of

³⁵ USBR. 2012. SJRRP Environmental Impact Statement. Record of Decision.

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

ecosystem benefits is challenging, but the range of benefits clearly illustrates that the ecosystem benefits are sufficient to demonstrate economic feasibility.”³⁷

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

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

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

Nonstructural approaches:

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

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

- *“An integrated portfolio of solutions, regional and statewide, to meet future water supply needs would include increased urban water use efficiency, recycling of municipal supplies, and improving Delta conveyance”⁴¹*

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

³⁸ USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. p. 1-9

³⁹ http://www.sierrafoothill.org/watershed/phase2_section1b.htm

⁴⁰ USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation p. ES-11

⁴¹ USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. p. 1-6

- *“Measures Specifically Addressing Increasing Water Supply Reliability and System Operational Flexibility -Measures retained that specifically address the primary planning objective of increasing water supply reliability and system operational flexibility include those that perform reservoir operations and water management.” Measures Specifically Addressing Enhancing Water Temperature and Flow Conditions Measures retained that specifically address the primary planning objective of enhancing water temperature and flow conditions include those that (1) perform reservoir operations and water management, and (2) construct water temperature management devices.*⁴²

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

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

Mitigation Measures:

According to P & Rs, when impacts are anticipated, mitigation plans **must** be developed. Reclamation states that “mitigation measures have not been completely identified at this stage in the Investigation and will be further developed for the Final Feasibility Report and EIS/EIR”.⁴⁵ Until the watershed costs and benefits and ecosystem services have been quantified, and mitigation costs estimated, it is difficult if not impossible to accurately assess the financial viability of the project. Mitigation could substantially add to the overall project costs based on

⁴² USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation pp. 3-25, 3-26

⁴³ SJRRP. 2011. Appendix E. Fisheries Management Plan: A Framework for Adaptive Management in the San Joaquin River Restoration Program Draft Program Environmental Impact Statement/Report.

⁴⁴ USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. Formulation Appendix, Table 2-1

⁴⁵ USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. p. 3-29

the impacts identified previously. The Investigation states that compensatory mitigation costs could be as high as 4:1,⁴⁶ with higher ratios for wetland and riparian habitats and habitat for species of concern. Without potential short and long term mitigation costs, feasibility cannot be adequately assessed.

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

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

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

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

Sincerely,



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Natural Resources Defense Council



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Natural Resources Defense Council

⁴⁶ USBR. 2014. Draft Feasibility Report Upper San Joaquin River Basin Storage Investigation. Engineering Appendix p. 6-4



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