



May 6, 2022

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**RE: Objection to and Protest of the Shasta Temperature Management Plan  
Submitted Pursuant to Water Rights Order 90-5**

Dear Ms. Sobeck:

On behalf of the Natural Resources Defense Council, Pacific Coast Federation of Fishermen's Associations, Institute for Fisheries Resources, Save California Salmon, California Sportfishing Protection Alliance, the Bay Institute, and Golden State Salmon Association, we are writing to object to and protest the Shasta Temperature Management Plan submitted by the Bureau of Reclamation under Water Rights Order 90-5 ("Shasta TMP").<sup>1</sup> We recognize that the failure to adequately plan for drought, in part caused by the elimination of environmental protections as part of the Trump Administration's 2019 biological opinions, has left the State with few good options this year. We also recognize that, for the first time, Reclamation has reduced water deliveries to the Sacramento River Settlement Contractors equivalent to an eighteen percent allocation, an important precedent demonstrating Reclamation's reasonable control over these water supply allocations under Order 90-5.

However, as discussed in more detail below, approval of the Shasta TMP violates the requirements of Water Rights Order 90-5 and is contrary to law because it: (1) results in water temperatures that will cause devastating and unreasonable impacts to the salmon fishery, including ongoing violations of the Basin Plan water quality objectives for water temperatures

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<sup>1</sup> Pursuant to Water Rights Order 90-5, the Shasta TMP is deemed approved unless the Director of the Division of Water Rights objects within 10 days of submission of the plan.

*Protest and Objections to 2022 Shasta Temperature Management Plan  
May 6, 2022*

below Shasta Dam; (2) fails to demonstrate that the Bureau of Reclamation has taken all measures within its reasonable control as required under Order 90-5; (3) results in water temperatures that adversely affect salmon spawning and egg incubation in the Trinity River; and (4) results in only an eighteen percent water supply allocation (Level 2) to wildlife refuges North of the Delta, contrary to the express requirements of section 3406(d)(3) of the 1992 Central Valley Project Improvement Act. Finally, the Shasta TMP fails to meet the water temperature and carryover storage targets in the Interim Operations Plan (“IOP”) approved by the federal court.

In particular, while Reclamation has reduced water supply allocations to the Sacramento River Settlement Contractors (and unlawfully reduced the water supply allocation to North of Delta wildlife refuges), Reclamation and DWR have not reduced water supply allocations to other contractors, including the San Joaquin River Exchange Contractors and DWR’s Feather River Settlement Contractors. Water releases from Shasta contribute to these water supply allocations under the Coordinated Operations Agreement, and modeling by NMFS earlier this year demonstrates that limiting reservoir releases from Keswick to 4,000 cfs (instead of 4,500 cfs as proposed in the Shasta TMP, which would require reducing water supply allocations to CVP and SWP contractors) would reduce temperature dependent mortality of winter-run Chinook salmon, reduce water temperatures in October and November and the resulting temperature-dependent mortality of fall-run Chinook salmon, and increase end of September storage at Shasta Reservoir to improve compliance with Order 90-5 in 2023.

We therefore request that the State Water Resources Control Board formally object to the Shasta TMP on or before May 12, 2022 and require Reclamation to:

- 1) Provide updated modeling and analysis by NMFS’s Southwest Fishery Science Center comparing the Shasta TMP with operations that limit Keswick releases to 4,000 cfs, considering the effects on water temperatures, temperature-dependent mortality, and reservoir storage for fall-run Chinook salmon, spring-run Chinook salmon, and winter-run Chinook salmon, and in light of the updated modeling and analysis consider limiting reservoir releases to 4,000 cfs;
- 2) Strictly limit releases from Shasta and Keswick Dams as specified in the Shasta TMP, prohibiting releases from Shasta or Keswick to exceed the flows specified in the Shasta TMP, and instead require DWR to increase reservoir releases from Oroville as necessary in order to meet increased demands downstream and/or Delta water quality;
- 3) Reduce water supply allocations to other CVP and SWP contractors, including San Joaquin River Exchange Contractors and DWR’s Feather River Settlement Contractors, sufficient to provide a 75% allocation (Level 2) to wildlife refuges North of the Delta without increasing reservoir releases from Shasta or Keswick;
- 4) Provide notice to the San Joaquin River Exchange Contractors of Reclamation’s intent to renegotiate the terms of the San Joaquin River Exchange Contract, pursuant to Article 13 of the Second Amended Contract for Exchange of Waters;
- 5) Reduce water diversions from the Trinity River in order to comply with Order 90-5; and,

- 6) Model the effect of hydropower bypass operations at Shasta Reservoir in the late summer and fall to evaluate effects on water temperatures and the tradeoff in terms of electricity generation.

**I. *The Shasta TMP Fails to Provide Reasonable Protection of Salmon and Violates the Central Valley Basin Plan’s Water Temperature Objectives for the Sacramento River***

Approval of the Shasta TMP is contrary to law because it fails to provide reasonable protection of the salmon fishery and would result in water temperatures that violate water temperature objectives for the Sacramento River required by the Central Valley Regional Water Quality Control Plan. The water temperatures and resulting impacts to the salmon fishery under the Shasta TMP are neither reasonable nor lawful.

Order 90-5 does not simply require protections for endangered salmon runs, but instead it prohibits water temperatures that are detrimental to the “salmon fishery,” including fall-run Chinook salmon, as the State Water Board has previously acknowledged. *See, e.g.*, April 3, 2020 letter from the Board to Reclamation regarding Order 90-5 Sacramento River Temperature Planning. However, the Shasta TMP fails to even mention fall-run or spring-run Chinook salmon that spawn in the Sacramento River, let alone analyze or consider the impacts to these species. This failure to consider an important aspect of Reclamation’s legal obligations under Order 90-5 renders the Shasta TMP arbitrary and capricious.

The temperature modeling in the Shasta TMP demonstrates that it will cause unreasonable impacts to fall-run, spring-run, and winter-run Chinook salmon. Because Reclamation’s temperature model is unreliable and biased, particularly during the fall months,<sup>2</sup> the Board should not rely on the water temperatures and estimated temperature-dependent mortality included in Table 2, but should instead rely on the modeling performed by NMFS that is included as Attachment 4 to the Shasta TMP.

That modeling, which was performed by NMFS and presented to the Sacramento River Temperature Task Group on April 27, 2022, estimated that 52-58% of the endangered winter-run Chinook salmon eggs would be killed by lethal water temperatures below Shasta Dam this year, depending on how far upstream redds are laid. *See* Shasta TMP at Attachment 4. In addition, the modeling estimated that water temperatures in October and November would substantially exceed 60 degrees Fahrenheit at the Highway 44 gage (SAC gage). *Id.* Those excessive water temperatures are likely to cause very significant temperature dependent mortality of fall-run Chinook salmon.

In addition, the Shasta TMP also results in ongoing violations of the Basin Plan’s water temperature objectives for the Sacramento River, which prohibit water temperatures greater than

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<sup>2</sup> The Shasta TMP admits that the HEC-5Q model that Reclamation used in the Shasta TMP “does not perform well after mid-September under low storage conditions. Water temperatures may be warmer than these targets and HEC-5Q results.” *See* Shasta TMP at 8.

*Protest and Objections to 2022 Shasta Temperature Management Plan  
May 6, 2022*

56 degrees Fahrenheit whenever it would be detrimental to the salmon fishery.<sup>3</sup> The approved water temperatures, which are estimated to kill more than 50% of the endangered winter-run Chinook salmon eggs this year, and even higher proportions of spring-run and fall-run Chinook salmon that spawn in the Sacramento River later in the year, plainly are detrimental to the salmon fishery.

Finally, it is very likely that the water temperature, storage, and reservoir release targets in the Shasta TMP will not be achieved this year, resulting in higher water temperatures, greater temperature-dependent mortality, and lower end of September reservoir storage than predicted in the Shasta TMP. The document identifies numerous contingencies and uncertainties that make achievement of the targets in the Shasta TMP unlikely. Similarly, operations in 2021 ended up with greater reservoir releases, higher water temperatures, lower carryover storage, and earlier use of full side gate operations than anticipated in the 2021 Shasta TMP, as follows:

	Shasta TMP Targets	Observed Results
EOS Shasta Storage	1.250 MAF	1.07 MAF
Keswick Releases	June: 7,100 cfs July: 7,500 cfs Aug.: 7,100 cfs Sept.: 5,800 cfs	June: 7,709 cfs July: 9,169 cfs Aug.: 8,088 cfs Sept.: 6,835 cfs
1 <sup>st</sup> Side Gate / Full Side Gates	Aug 8 / Sept. 19	Aug 4 / Aug 11

For example, this year the Shasta TMP predicts first side gates on July 27 and full side gate operations on September 1; however, NMFS estimates first side gates would be used on July 5. Delaying use of the side gates as long as possible is critical to delay the loss of temperature control that will result.

Similarly, increased releases from Shasta and Keswick Dams beyond what is anticipated in the Shasta TMP would further deplete the cold water pool and increase mortality. In contrast, requiring DWR and Reclamation to cap releases to what is identified in the Shasta TMP, and increase releases from Oroville as necessary to meet increased downstream demands and Delta water quality, would better protect salmon and would account for the increased runoff to Oroville in recent weeks (the estimated April to July runoff to Oroville increased from 395 TAF on April 1 under the 90% forecast (550 TAF under 50% forecast) to 760 TAF on April 26 under the 90% forecast (930 TAF under the 50% forecast).

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<sup>3</sup> See Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board, Central Valley Region, Revised May 2018, at Table 3-7, available online at: [https://www.waterboards.ca.gov/centralvalley/water\\_issues/basin\\_plans/sacsjr\\_201805.pdf](https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201805.pdf) (“The temperature shall not be elevated above 56°F in the reach from Keswick Dam to Hamilton City nor above 68°F in the reach from Hamilton City to the I Street Bridge during periods when temperature increases will be detrimental to the fishery.”).

For all of these reasons, approval of the Shasta TMP would cause unreasonable impacts to the fishery, and the Board should immediately object to the Shasta TMP and impose the conditions identified herein.

**II. Approval of the Shasta TMP is Contrary to Law and Not Supported by Substantial Evidence Because it Fails to Require Reclamation to Take Actions Within its Reasonable Control to Maintain Adequate Water Temperatures in the Sacramento River to Protect the Salmon Fishery**

Approval of the Shasta TMP is also unlawful because the Shasta TMP does not require the implementation of all reasonable measures within Reclamation's control to maintain protective water temperatures for salmon in the Sacramento River. As we have discussed in numerous letters to the Board, and as the Board has admitted in letters to the Bureau of Reclamation, factors within the reasonable control of Reclamation include reducing water supply allocations to the CVP's water contractors, including settlement and exchange contractors:

**To the extent that Reclamation delivers water under its own water rights, Reclamation's obligation to deliver water to its contractors does not take precedence over its permit obligations.** Order WR 90-5 requires Reclamation to reduce releases to the extent reasonable and necessary to control water temperature. This permit condition is not and cannot be nullified by a contractual obligation. **Reclamation's water supply contractors are not entitled to more water under their contracts than Reclamation is authorized to deliver consistent with the terms and conditions of its water right permits and licenses.**

State Water Resources Control Board, June 1, 2020 letter to Reclamation (emphasis added).

And as modeling and analyses have demonstrated in recent years, reducing water supply allocations to the contractors of the CVP and SWP can reduce water temperatures and resulting temperature dependent mortality of salmon. The same is true this year, where further reductions in water supply allocations could reduce temperature mortality of salmon (including fall-run Chinook salmon) as well as increasing Shasta Reservoir carryover storage in order to comply with Order 90-5 next year.

We appreciate that for the first time ever, the Sacramento River Settlement Contractors are being required to substantially reduce their water diversions this year in order to improve water temperatures as required under Order 90-5. On April 14, 2022, Reclamation sent letters to the Sacramento River Settlement Contractors, explaining that "The purpose of this letter is to inform you of the persistent conditions that are affecting hydrology and water available for diversion

under your contract.” See Letter from Reclamation to Anderson-Cottonwood Irrigation District dated April 14, 2022.<sup>4</sup> The letter further explains that,

Water supply conditions this year do not allow for full diversions under the SRS Contracts. For all SRS Contractors, Reclamation estimates water available from Shasta Reservoir releases to be approximately 18% of the Contract Total, unless otherwise notified by Reclamation.

*Id.* Thus, pursuant to their contracts, Reclamation has reduced water deliveries to the Sacramento River Settlement Contractors to the equivalent of an eighteen percent allocation, which is an important precedent confirming that these water supply allocations are within Reclamation’s reasonable control under Order 90-5.<sup>5</sup>

However, Reclamation has failed to demonstrate in the TMP that further reductions to these allocations would not improve water temperatures for salmon, particularly in light of the fact that the TMP does not comply with the Interim Operations Plan, as discussed *infra*. Indeed, modeling performed by the National Marine Fisheries Service this year and presented to the Sacramento River Temperature Task Group in March concluded that reducing reservoir releases from Keswick Dam to a maximum of 4,000 cfs (rather than 4,500 cfs as proposed in the Shasta TMP) resulted in lower temperature dependent mortality of winter-run Chinook salmon, colder water temperatures in October and November that reduce mortality of fall-run Chinook salmon, and higher Shasta Reservoir storage at the end of September. *Compare* Exhibit A *with* Exhibit B.

Moreover, Reclamation has not reduced water deliveries and water supply allocations to other contractors pursuant to Reclamation’s water rights, despite the requirements of Order 90-5. For instance, Reclamation is making a 75 percent allocation to the San Joaquin River Exchange Contractors this year, even though water released from Shasta contributes to these water deliveries. See email from DWR to the SWRCB dated April 16, 2022, regarding April 4, 2022 TUCO - Condition 1.d.iii. (Reclamation estimates that two thirds of the CVP’s water exports from the Delta in April and May will support the allocation for the Exchange Contractors).

Similarly, under the Coordinated Operating Agreement, water released from Shasta contributes to water supply allocations for DWR’s State Water Project contractors and its Feather River Settlement Contractors. See 2019 Addendum to the Coordinated Operations Agreement at 2 (amending Article 6(c) of COA to specify that in critically dry years, Reclamation is responsible for 60% of storage withdrawals to meet Sacramento Valley inbasin uses, and DWR is responsible for 40%). Yet DWR has not reduced its discretionary water supply allocation to

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<sup>4</sup> This letter is available online at:

[https://www.andersoncottonwoodirrigationdistrict.org/uploads/3/4/0/2/34026618/bureau\\_of\\_reclamation\\_4-4-22.pdf](https://www.andersoncottonwoodirrigationdistrict.org/uploads/3/4/0/2/34026618/bureau_of_reclamation_4-4-22.pdf). It is hereby incorporated by reference.

<sup>5</sup> Reclamation also reduced or eliminated contract payment obligations for these contractors. See *id.*

SWP contractors to zero (while still making deliveries necessary for human health and safety), and DWR has not required any additional reductions in water supply allocations to Feather River Settlement Contractors beyond what is provided for in their contract (which results in an approximately 25 percent reduction in their water supply, according to Western Canal Water District). *See* Letter from Western Canal Water District to Growers and Landowners dated April 19, 2022, available online at:

<https://static1.squarespace.com/static/56f3336d9f7266fac154ef8b/t/62609511ff07956ff0196b81/1650496785740/Drought.Allocation.April.20.22.pdf>.

The TMP fails to provide any evidence to support a finding that reducing these water supply allocations would not result in more protective water temperatures for salmon and compliance with Order 90-5, while earlier modeling by NMFS demonstrates that further reductions in water supply allocations to these contractors would reduce temperature-dependent mortality of winter-run, spring-run, and fall-run Chinook salmon. Because Reclamation has not taken all reasonable measures under their control to meet the water temperatures required by Order 90-5, approval of the Shasta TMP violates Order 90-5 and is unreasonable.

**III. Approval of the Shasta TMP Violates Order 90-5 and is Contrary to Law Because it Results in Water Temperatures that Adversely Affect Salmon Spawning and Egg Incubation in the Trinity River**

In addition, Order 90-5 prohibits Reclamation from operating “its Trinity River diversion for water temperature control on the Sacramento River in such a manner as to adversely affect salmonid spawning and egg incubation in the Trinity River,” holding that daily average water temperatures that exceed 56 degrees Fahrenheit at specified locations are deemed to adversely affect salmon.

On April 27, NMFS notified the State Water Board that Reclamation’s ongoing use of the Trinity River diversion for temperature control on the Sacramento River is resulting in water temperatures on the Trinity River that adversely affect salmon. *See* Exhibit C. Moreover, NMFS’ email notes that water temperatures of 56 degrees Fahrenheit are not adequately protective and colder water temperatures are necessary to provide reasonable protection of salmon in the Trinity River. *Id.* Yet the Shasta TMP would result in even greater temperature exceedances on the Trinity River than those identified in NMFS’ April 27, 2022 email, with the Shasta TMP predicting monthly average temperatures at Lewiston would be 56.7 degrees Fahrenheit in September and 58.6 degrees Fahrenheit in October. *See* Shasta TMP at Table 4.

Because Reclamation’s operations of the Trinity River diversion for temperature control on the Sacramento River adversely affects salmonid spawning and egg incubation in the Trinity River, including exceeding the 56 degree Fahrenheit temperature objective, the Shasta TMP violates Order 90-5.

**IV. The Shasta TMP Unlawfully Reduces Water Supply Allocations to Wildlife Refuges North of the Delta**

Under the 1992 Central Valley Project Improvement Act, Reclamation is prohibited from reducing the water supply allocations for wildlife refuges by more than 25 percent of their level 2 water supplies. P.L. 102-575, § 3406(d)(4). However, the Shasta TMP admits that it assumes the equivalent of an 18 percent allocation to wildlife refuges North of the Delta. *See* Shasta TMP at 3. The Shasta TMP therefore violates federal law, and the State Water Board should require that Reclamation revise the TMP in order to meet the minimum 75 percent allocation to wildlife refuges North of the Delta.

**V. The Shasta TMP Violates the Interim Operations Plan Approved by the Federal Court**

Finally, the Shasta TMP fails to meet the minimum storage and water temperatures targets specified in the Interim Operations Plan approved by the federal court.

	<b>IOP</b>	<b>Shasta TMP</b>
Shasta storage (end of Sept.)	1.2 to 1.8 MAF	1.135 MAF
Daily Average Water Temperatures at the Sacramento River at Clear Creek	55 degrees Fahrenheit	May: 58.5 degrees Fahrenheit monthly average August: 55.9 degrees Fahrenheit monthly average Sept.: 55.4 degrees Fahrenheit monthly average Oct. 57.0 degrees Fahrenheit monthly average

Moreover, the water temperatures in the table are from Reclamation’s flawed and unreliable temperature model; in contrast, NMFS’ modeling of water temperatures shows that water temperatures at the Highway 44 bridge (SAC gage, upstream of the Clear Creek gage) would exceed 56 degrees Fahrenheit in May, exceed 55 degrees Fahrenheit in September, exceed 58 degrees Fahrenheit in October, and exceed 60 degrees Fahrenheit for much of October and November.

**VI. Conclusion:**

The Shasta TMP violates Order 90-5, violates federal law, and results in unreasonable harm to the salmon fishery. The State Water Resources Control Board should object to the Shasta TMP and require Reclamation to:

- 1) Provide updated modeling and analysis by NMFS’s Southwest Fishery Science Center comparing the Shasta TMP with operations that limit Keswick releases to 4,000 cfs, considering the effects on water temperatures, temperature-dependent mortality, and reservoir storage for fall-run Chinook salmon, spring-run Chinook salmon, and winter-

*Protest and Objections to 2022 Shasta Temperature Management Plan  
May 6, 2022*

run Chinook salmon, and in light of the updated modeling and analysis consider limiting reservoir releases to 4,000 cfs;

- 2) Strictly limit releases from Shasta and Keswick Dams as specified in the Shasta TMP, prohibiting releases from Shasta or Keswick to exceed the flows specified in the Shasta TMP, and instead require DWR to increase reservoir releases from Oroville as necessary in order to meet increased demands downstream and/or Delta water quality;
- 3) Reduce water supply allocations to other CVP and SWP contractors, including San Joaquin River Exchange Contractors and DWR's Feather River Settlement Contractors, sufficient to provide a 75% allocation (Level 2) to wildlife refuges North of the Delta without increasing reservoir releases from Shasta or Keswick;
- 4) Provide notice to the San Joaquin River Exchange Contractors of Reclamation's intent to renegotiate the terms of the San Joaquin River Exchange Contract, pursuant to Article 13 of the Second Amended Contract for Exchange of Waters;
- 5) Reduce water diversions from the Trinity River in order to comply with Order 90-5; and,
- 6) Model the effect of hydropower bypass operations at Shasta Reservoir in the late summer and fall to evaluate effects on water temperatures and the tradeoff in terms of electricity generation.

Thank you for consideration of our views.

Sincerely,



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Natural Resources Defense Council



Mike Conroy  
Pacific Coast Federation of Fishermen's  
Associations and Institute for Fisheries Resources



Regina Chichizola  
Save California Salmon



Chris Shutes  
California Sportfishing Protection Alliance



Gary Bobker  
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John McManus  
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**Enclosures**