



May 11, 2020

Eileen Sobeck  
Executive Director  
State Water Resources Control Board  
1001 I Street  
Sacramento, CA 95814

Sent Via Email to: [Bay-Delta@waterboards.ca.gov](mailto:Bay-Delta@waterboards.ca.gov)

**RE: Request that the State Water Resources Control Board Reject the Bureau of Reclamation's draft Temperature Management Plan for Shasta Dam under Water Rights Order 90-5**

Dear Ms. Sobeck:

On behalf of the Golden State Salmon Association, the Pacific Coast Federation of Fishermen's Associations and the institute for Fisheries Resources, we are writing to urge the State Water Resources Control Board ("Board") to reject the Bureau of Reclamation's draft Temperature Management Plan for Shasta Dam ("Draft Plan") pursuant to Water Rights Order 90-5. The Board should reject the Draft Plan because it fails to provide reasonable protection for fish and wildlife, and because Reclamation has failed to demonstrate that factors beyond its control preclude compliance with Order 90-5 at a location further downstream that would better protect salmon. The Board's obligations under Order 90-5 are not limited to complying with the minimum requirements of the state and federal Endangered Species Acts, but instead it requires stronger protections for fish and wildlife, including species that are not listed under the Acts, such as fall-run Chinook salmon. As a result, the Board should require Reclamation to adopt more protective operations, which limits temperature-dependent mortality of endangered winter-run Chinook salmon to less than 12 percent this year and provides reasonable protection to spring-run and fall-run Chinook salmon that spawn later in the year than winter-run.

The state board is the only state agency with the authority to require flow and temperature protections for fall-run chinook salmon. This is the non-ESA listed run that the California and Oregon salmon fisheries depend on. In particular, \$1.4 billion in annual revenue and 23,000 salmon fishing jobs rely on

a healthy Sacramento River basin fall-run. The commercial and recreational salmon fishing industry is a beneficial use that the Board must protect.

The Board should scrutinize reclamation's proposal carefully. Poor management of the CVP is a major reason why the California salmon fishery was closed down in 2008-2009. In particular, poor management of Shasta Dam was responsible for a massive temperature-driven fish kill in 2014 and 2015, as documented by both NMFS and CDFW. During those years, as many as 95%-97% of wild spawning winter-run and fall-run died before they emerged from the gravel or travelled as far down river as Red Bluff. During those two years, inaccurate Reclamation models projected better conditions than were experienced "on the ground". The Board has acknowledged that the management of Shasta Dam during the last drought was a failure. We urge the Board to learn from that failure, to scrutinize Reclamation's draft plan carefully, to reject it and to require stronger protections.

Order 90-5, which was adopted by the Board in 1990, requires Reclamation to achieve daily average water temperatures of 56 degrees Fahrenheit at Red Bluff Diversion Dam whenever warmer water temperatures would harm salmon and other fish. The Order also allows Reclamation to petition the Board to change this requirement in any year if factors beyond Reclamation's control prevent Reclamation from achieving this 56 degrees Fahrenheit requirement, and instead allow Reclamation to meet 56 degrees daily average temperatures in a different reach that is within Reclamation's reasonable control. See Order 90-5 at 20.

While inflow to Shasta in 2020 has been very low, Reclamation also began the year with maximum water storage behind Shasta Dam. Reclamation has the ability to provide better water temperatures and reduced mortality of endangered salmon, but instead chose to "maximize water deliveries." The level of temperature-dependent mortality predicted this year is unreasonable, particularly given this level of water storage at the beginning of the year. Moreover, Reclamation's proposed operations would greatly reduce carryover storage in Shasta, leaving California vulnerable if 2021 is also dry. The Board should reject Reclamation's proposal because it fails to provide reasonable protection for fish and wildlife, and because Reclamation has failed to demonstrate that more protective operations are not within its reasonable control.

**I. The Draft Plan Fails to Provide Reasonable Protection of Winter-Run Chinook Salmon in the Sacramento River**

First, Reclamation's Draft Plan estimates that it will kill 27-28% of the critically endangered winter-run Chinook salmon this year as a result of temperature dependent mortality, because Reclamation's proposed operations result in water temperatures in the Sacramento River that far exceed scientifically sound thresholds. See Draft Plan at 5. This level of mortality fails to provide reasonable protection for fish and wildlife; indeed, killing 27-28% of the species this year due to temperature dependent mortality far exceeds the level of mortality that the National Marine Fisheries Service has concluded would jeopardize the continued existence of winter-run Chinook salmon, in violation of the Endangered Species Act. For instance, in 2017 NMFS proposed, as part of an amendment to the 2009 biological opinion, that Reclamation's operations should limit temperature dependent mortality of winter-run

Chinook salmon to less than 8% in a Dry water year type like 2020.<sup>1</sup> Similarly, on July 1, 2019 NMFS concluded, as part of a biological opinion concluding that the Trump Administration’s proposal would jeopardize listed species in violation of the ESA, that temperature dependent mortality should not exceed 12% in a year like 2020 (classified as a Tier 3 year in the Draft Plan).<sup>2</sup>

2020 Estimated Temperature Dependent Mortality	NMFS’ Maximum Temperature Dependent Mortality from 2017 Draft Shasta RPA (Dry year)	NMFS’ Maximum Temperature Dependent Mortality from July 1, 2019 Jeopardy biological opinion (Tier 2/Tier 3 year) (page 946)
<b>27-28%</b>	<b>Less than 8%</b>	<b>Less than 12%</b>

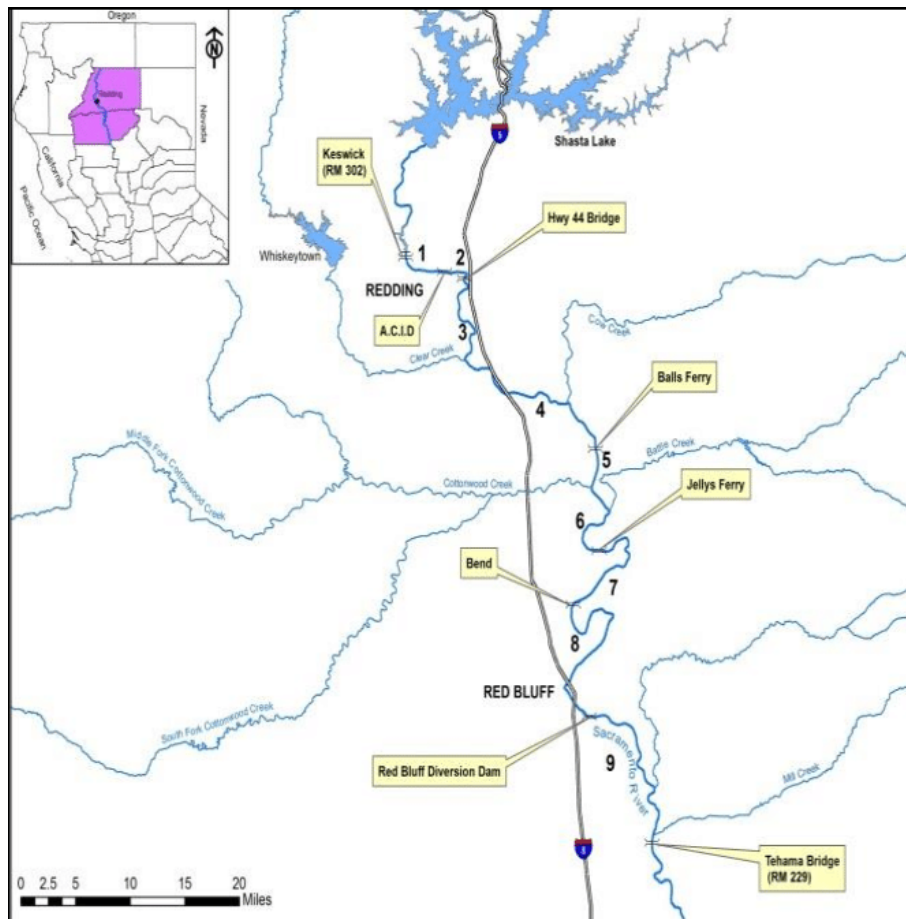
The Board’s 1990 Water Rights Order 90-5 generally requires Reclamation to meet daily average water temperatures of 56 degrees Fahrenheit at Red Bluff Diversion Dam, although that standard has been changed in most years. The 2009 NMFS biological opinion required that Reclamation achieve daily water temperatures of 56 degrees Fahrenheit between Balls Ferry and Bend Bridge, which are upstream from Red Bluff Diversion Dam.<sup>3</sup> However, scientists with NMFS concluded that these 2009 water temperature requirements failed to protect salmon, and they found that mortality of salmon occurs when maximum daily temperatures exceed 53.5 degrees Fahrenheit at the location of the salmon redd where eggs are laid. See Martin et al 2016. In recent years winter-run Chinook salmon have generally spawned in the Sacramento River near or upstream of the confluence with Clear Creek, and NMFS has generally required Reclamation to achieve 56 degrees daily average water temperatures between Balls Ferry and Jelly’s Ferry, which is comparable to and a surrogate for meeting 55 degrees Fahrenheit 7 Day Average Daily Maximum (“7DADM”) near the Sacramento River’s confluence with Clear Creek.<sup>4</sup>

<sup>1</sup> National Marine Fisheries Service, Proposed Amendment to the Reasonable and Prudent Alternative of the 2009 Opinion, January 19, 2017, available online at: <https://www.fisheries.noaa.gov/webdam/download/96691677>.

<sup>2</sup> National Marine Fisheries Service, biological opinion regarding long term operations of the Central Valley Project and State Water Project, July 1, 2019, available online at: <https://www.documentcloud.org/documents/6311822-NMFS-Jeopardy-Biop-2019-OCR.html>. This biological opinion concluded that Reclamation’s proposed operations jeopardize the continued existence of the species, but the Trump Administration refused to publicly release the biological opinion and a political appointee at the National marine Fisheries Service subsequently signed a no jeopardy biological opinion in October 2019. The State has concluded that the October 2019 biological opinions “are not scientifically adequate and fall short of protecting species and the state’s interests,” and the State of California has filed litigation challenging that biological opinion as unlawful. For instance, the incidental take limit would allow for 3 years of 100% mortality of winter-run Chinook salmon before reinitiation of consultation is required.

<sup>3</sup> Because water temperatures increase as water flows downstream, meeting 56 degrees Fahrenheit at Red Bluff would require colder temperatures at these upstream locations, and conversely, meeting 56 degrees Fahrenheit at Balls Ferry would result in hotter temperatures at downstream locations like Bend Bridge and Balls Ferry.

<sup>4</sup> See Letter from NMFS to Reclamation dated March 21, 2017, available online at: [https://archive.fisheries.noaa.gov/wcr/publications/Central\\_Valley/Water%20Operations/Delta%20Operations%20for%20Salmonids%20and%20Sturgeon/DOSS%20WY2016/NMFS\\_concurrence\\_on\\_reclamation\\_s\\_march\\_forecast\\_and\\_initial\\_allocations\\_-\\_march\\_21\\_2017.pdf](https://archive.fisheries.noaa.gov/wcr/publications/Central_Valley/Water%20Operations/Delta%20Operations%20for%20Salmonids%20and%20Sturgeon/DOSS%20WY2016/NMFS_concurrence_on_reclamation_s_march_forecast_and_initial_allocations_-_march_21_2017.pdf).



Source: Cal. Dept. of Fish and Wildlife 2016

In contrast, the Draft Plan proposes that in 2020 daily average water temperatures would be 56 degrees at Balls Ferry through mid-September, and then water temperatures at Balls Ferry would exceed 56 degrees Fahrenheit (likely greater than 58 degrees) at this location and all locations further downstream for the remainder of September and all of October. See Draft Plan at 6-7. Curiously, the Draft Plan fails to estimate water temperatures at Balls Ferry for these 6 weeks in late September and October, although it shows that water temperatures at Balls Ferry are generally 2 degrees hotter than water temperatures at Clear Creek. *Id.* As a result, throughout the fall, water temperatures at Clear Creek would far exceed the 53.5 degree Fahrenheit temperature threshold at which salmon mortality occurs.

	<b>Location Where Daily Average Water Temperatures This Year Would Be Required to Not Exceed 56 Degrees Fahrenheit</b>
Order 90-5	Red Bluff Diversion Dam
2009 NMFS Biological Opinion	Balls Ferry
2020 Draft Plan	Clear Creek

In addition, the Draft Plan proposes that temperature management for salmon will end after 95% of the winter-run Chinook salmon juveniles have emerged from their redds, even if this occurs before October

31. See Draft Plan at 2, 3. As a result, the last 5 percent of this endangered species may not be protected under the Draft Plan.

Finally, Reclamation's modeling has repeatedly been shown to be inaccurate, and Reclamation has frequently underestimated temperature dependent mortality and overestimated its ability to meet water temperature compliance. The Draft Plan provides far less protective water temperatures for salmon this year than would be required by Order 90-5 and NMFS' 2009 biological opinion, both of which would require more protective (colder) temperatures for winter-run Chinook salmon that spawn in the Sacramento River near Clear Creek. Ultimately, the Draft Plan fails to provide reasonable protection of winter-run Chinook salmon this year, and the Board should reject it.

## **II. The Draft Plan Fails to Provide Reasonable Protection of Spring-Run and Fall-Run Chinook Salmon this Year**

In addition to failing to protect winter-run Chinook salmon, the Draft Plan fails to provide reasonable protection for spring-run and fall-run Chinook salmon. The Draft Plan fails to provide any proposed water temperature standards after October 31, and it fails to include any analysis or discussion of impacts to spring-run and/or fall-run Chinook salmon.

As the Board's August 24, 2019 letter to Reclamation explains, Order 90-5 is not limited to protection of winter-run Chinook salmon, nor is it limited to protecting a fraction of winter-run Chinook salmon. Both spring-run and fall-run Chinook salmon, which are protected under Order 90-5, spawn after winter-run Chinook salmon. Because they spawn later in the year, they are not protected by temperature operations for winter-run Chinook salmon that end in October (before all winter-run Chinook salmon have emerged from their redds). The California Department of Fish and Wildlife's August 21, 2019 letter to Reclamation likewise explains that Reclamation's approach to temperature management under the 2019 biological opinions fails to adequately protect spring-run and winter-run Chinook salmon below Shasta dam.

The temperature management of Shasta Dam causes two additional problems for salmon. First, degraded temperatures in the mainstem of the Sacramento River are leading an increasing number of fall run to swim up Battle Creek, instead of spawning in the mainstem. In some years, the fall-run fish driven into Battle Creek overwhelm the available spawning habitat and cause potential conflicts with hatchery management and other fish runs. The increased number of spawning fall-run in Battle Creek has also led hatchery managers to kill thousands of "excess" fall-run annually. This is one of the leading reasons the upper Sacramento River has gone from the single most productive fall-run spawning reach to today's low productivity. Adequate Shasta dam temperature protections would prevent these fish from straying into Battle Creek and being killed and instead allow them to spawn naturally in the Sacramento River.

Second, inadequate Shasta dam temperature and flow requirements allow reclamation to rapidly ramp down river flows after winter run juveniles emerge from the gravel. However, because fall-run spawning is later than winter-run, fall-run incubating eggs are commonly dewatered when Reclamation

ramps down from summer to fall releases. Thousands of fall-run redds and hundreds of thousands or millions of eggs are often lost, as they likely will be this year.

The failure to conserve adequate cold water in Shasta Reservoir at the end of September likely will result in greater temperature dependent mortality of spring-run and fall-run Chinook salmon and cause additional impacts on tributaries such as Battle Creek and perhaps Clear Creek. The Board should reject the Draft Plan and require Reclamation to provide additional information demonstrating reasonable protection for spring-run and fall-run Chinook salmon spawning in the Sacramento River this year.

### **III. The Draft Plan Fails to Demonstrate that More Protective Water Temperatures Are Not Within Reclamation's Reasonable Control**

In addition to causing unreasonable impacts to fish and wildlife, Reclamation also fails to adequately consider measures within their control that would reduce temperature dependent mortality and improve protections for salmon in the Sacramento River. As a result, the Board should reject the Draft Plan and require more protective operations that are clearly within Reclamation's reasonable control.

The Board's August 19, 2019 letter to Reclamation explains that "[a]ctions that are within Reclamation's control include planning and management of all water diverted under Reclamation's water rights, including Settlement contract deliveries of water under Reclamation's rights." That letter also informed Reclamation that "[i]n order to attain a more favorable temperature regime for fish and wildlife, changes in water supply and/or power production assumptions should also be evaluated pursuant to Order 90-5." Reclamation has failed to demonstrate compliance with these requirements.

While Reclamation claims that they analyzed hundreds of different scenarios this year, Reclamation has admitted that it did not evaluate any scenario that reduced CVP allocations, water diversions and/or exports in order to improve temperature management this year. In its April 3, 2020 letter, the Board appropriately requested that Reclamation model and analyze alternatives that include reduced water deliveries in order to reduce temperature dependent mortality, but Reclamation rejected this request in its April 17, 2020 response. There is no question that the Board has continuing authority to protect fish and wildlife by requiring reduced water deliveries to Sacramento River Settlement Contractors. Instead, Reclamation's April modeling projections show CVP exports in the Delta increasing by more than 300,000 acre feet compared to Reclamation's March operations forecast, while end of September carryover storage is just barely more than 1.9 million acre feet in the latest forecast.<sup>5</sup>

Reclamation's proposed operations result in reservoir releases in the summer months in order to maintain CVP allocations and water deliveries, even though those releases are not necessary to maintain water temperatures and actually worsen temperature compliance. For instance, the Draft Plan proposes that Keswick Reservoir releases would be greater than 12,000 cfs in June and July, while NMFS' 2017 draft amendment to the 2009 biological opinion would have limited Keswick releases to 10,000 cfs

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<sup>5</sup> NMFS' January 2017 draft amendment to the Shasta RPA in the 2009 biological opinion proposed a minimum end of September carryover storage requirement of 2.2 million acre feet for a dry water year type, which is not achieved by the Draft Plan.

in June and July of a dry water year like 2020. Scientists with NMFS recently published a peer reviewed scientific paper confirming that maintaining temperature control for spawning salmon below Shasta Dam depends primarily on the temperature of the water being released from the dams, not the volume of water released. *See Daniels and Danner 2020.* These excessive releases deplete the cold-water pool in Shasta Reservoir and accelerate the use of the side gates at Shasta Dam, which hastens the loss of temperature control.

Moreover, Reclamation's modeling likely underestimates actual mortality of salmon this year. For instance, the Draft Plan uses the less conservative 25% meteorological data in its modeling, rather than the hotter 10% meteorological data that NMFS has required in recent years because it more accurately reflects actual air temperatures. NOAA's National Weather Service has found that air temperatures in the region this summer are strongly predicted to be hotter than the average of the last 30 years,<sup>6</sup> so the use of the 25% meteorological data suggests that Reclamation's modeling underestimates likely temperature dependent mortality. Similarly, the Draft Plan would allow Reclamation to increase mortality and worsen water temperatures downstream if there are "unforeseen circumstances," which appears to include foreseeable problems such as: (1) inflow to Shasta increases above 3.2 million acre feet, triggering 100% allocations to Sacramento River Settlement Contractors; (2) air temperatures are warmer than predicted; (3) runoff and reservoir storage is lower than predicted; (4) temperature measurements are inaccurate.

Finally, Reclamation's Draft Plan refuses to consider other tools to reduce temperature impacts. For instance, Reclamation's Draft Plan makes no mention of the use of power bypasses to better manage water temperatures from the lower elevations in the reservoir, given Reclamation's inability to adequately control water temperatures when releasing water from the side gates in Shasta Dam. The July 1, 2019 jeopardy biological opinion required Reclamation to consider using power bypasses at Shasta Dam to maintain temperature control, and the Board should also do so.

#### **IV. Conclusion**

We greatly appreciate the Board providing an opportunity for the public to review and comment on the Draft Plan. It is abundantly clear, particularly given Reclamation's refusal to comply with the Board's reasonable requests this year, that an improved process under Order 90-5 is necessary to allow for the Board and public to evaluate more protective operations in a timely manner.

Reclamation's Draft Plan fails to provide reasonable protection for salmon below Shasta Dam, and the Draft Plan likewise fails to demonstrate that more protective operations are not within Reclamation's

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<sup>6</sup> See National Weather Service, Climate Prediction Center, Mean Temperature Outlook for July, August, and September 2020, Climate Division 88 (Sacramento Region, California), made April 16, 2020, available online at: [https://www.cpc.ncep.noaa.gov/products/predictions/long\\_range/poe\\_graph\\_index.php?lead=3&climdiv=88&var=t](https://www.cpc.ncep.noaa.gov/products/predictions/long_range/poe_graph_index.php?lead=3&climdiv=88&var=t).

control. The Board should therefore reject the Draft Plan under Order 90-5 and require Reclamation to submit a revised plan within 30 days that:

- 1) Results in temperature dependent mortality of winter-run Chinook salmon that is less than 12% this year;
- 2) Evaluates one or more alternatives that reduce summer releases from Shasta Dam and result in increased end of September carryover storage compared to the Draft Plan;
- 3) Uses reasonable assumptions and model inputs that the Board approves, and which includes a factor of safety to account for Reclamation's modeling flaws and need to protect fall-run and spring-run Chinook salmon;
- 4) Demonstrates that it provides reasonable protection for fall-run and spring-run Chinook salmon this year, including requirements to maintain protective water temperatures through at least October 31, reduce redd dewatering and improve end of September carryover storage;
- 5) Requires use of power bypasses to achieve temperature requirements;
- 6) Prohibits Reclamation from changing operations that results in greater mortality to salmon or less protective operations (including prohibiting Reclamation from downgrading 2020 to a Tier 4 year under the 2019 biological opinion), and instead requires Reclamation to reduce water supply allocations and water deliveries if Reclamation finds that it cannot meet the requirements of the Draft Plan later in the year.

Thank you for consideration of our views. We greatly appreciate the Board's efforts to ensure that the Trump Administration is held accountable and does not succeed in destroying California's native fish and wildlife.

Sincerely,



John McManus  
Golden State Salmon Association



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