



NCWA
Northern California Water Association



March 30, 2021

Via Electronic Mail

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Members of the Board
State Water Resources Control Board
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Re: CVP Contractors' Response on 2021 Upper Sacramento River Temperature Management and Requests for Actions under Order 90-5

Dear Chair Esquivel and Members of the Board,

We reviewed the March 12 and March 14 correspondence sent by various non-governmental organizations (NGOs) and the Winnemem Wintu Tribe (Tribe) requesting that the State Water Resources Control Board (State Board) act to afford additional protections for cold-water habitat for winter-run Chinook salmon. As we all monitor the developing conditions in what is anticipated to be a very dry year, the undersigned, which represent the public water agencies and other water users that rely on the Central Valley Project (CVP) for their water supply (CVP Contractors), are disappointed with the tone and demands detailed in these letters. The NGOs and Tribe are more concerned about who is "correct" and finger pointing, rather than offering solutions to address what is going to be a challenging water year. The State Board has an important responsibility to ensure reasonable protection for all beneficial uses of water in the state, including a safe and reliable water supply for people, agriculture, and other environmental uses. The NGOs' and Tribe's singular focus on one element of habitat for one species – which was successfully managed last year – to the detriment of all other fish species, wildlife, refuges, farms, families, and communities in the State is myopic and outdated, and should be rejected.

As an alternative, the CVP Contractors recommend an approach taken by the managers, operators, regulators, scientists, and interested parties who have come together since the drought of 2014 and 2015 to proactively balance the complex system of demands on water supplies. As

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an example of this effort, we describe below the outcome of a consistent, collaborative, and transparent process undertaken in 2020, also a dry year similar to the conditions facing us this year, and suggest the lessons learned that can be implemented for 2021. The CVP Contractors also explain why 2014 and 2015 should be placed in context, rather than used to inflame rhetoric, given all that has changed since those difficult years. It is from this history, understanding, and collaboration that a better approach to management can be achieved.

1. The 2020 Temperature Management Outcome Was Favorable

Under the plan of coordinated operations for the CVP and SWP analyzed in the 2019 National Marine Fisheries Service (NMFS) Biological Opinion on Long-Term Operation of the Central Valley Project and State Water Project (2019 BiOp), Reclamation committed to delivering a report each December on Shasta cold water pool management. In December 2020, Reclamation's Bay-Delta Office released the "2020 Seasonal Report for the Shasta Cold Water Pool Management" (2020 Seasonal Report), summarizing and analyzing information on operations during the 2020 water year. Below are key points from the 2020 Seasonal Report.

The 2020 water year was a dry year, with below-average precipitation in the late winter and early spring months, and double-the-average precipitation in May.¹ On April 23, 2020, Reclamation issued a preliminary draft temperature management plan (TMP) for review and comment by the Sacramento River Temperature Task Group (SRTTG). The SRTTG includes representatives from NMFS, Reclamation, the U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, the State Board, Hoopa Valley Tribe, Yurok Tribe, Western Area Power Administration, and the Sacramento River Settlement Contractors. On May 20, 2020, Reclamation submitted a final TMP to the State Board for compliance with Order 90-5. Through these processes, Reclamation engaged with staff at each of the state and federal regulatory agencies as well as with water managers, engineers, and scientists. The final TMP selected a model scenario (number 148²) for implementation, which guided operations to maintain 53.5°F at the Clear Creek temperature compliance point (CCR) for a portion of the season during optimal spawning periods, target temperatures between 54°F and 56°F at CCR downstream to Balls Ferry (BSF) for the remaining portions of the season through October, delay the use of the side gates as long as possible, and provide a conservative level of cold water volume at the end of September.³

¹ 2020 Seasonal Report at 4.

² Reclamation developed and modeled 358 scenarios as part the Temperature Tier Scenario Protocol during the development of the TMP in 2020. *See* U.S. Bureau of Reclamation, Final Sacramento River Temperature Management Plan for Water Year 2020 2-3 (May 20, 2020), included as Appendix B to the 2020 Seasonal Report. "All 358 scenarios were considered for their stage-dependent and stage-independent temperature-dependent mortalities (TDMs), End of September Cold Water Pool (EOS CWP), and side gate operations." *Id.* at 3.

³ 2020 Seasonal Report at 25.

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Throughout the 2020 temperature management season, there were no unexpected changes or deviations from the final TMP, and no need to modify the TMP as the season continued.⁴ The 2020 Seasonal Report summarized the performance exceedances for temperature at CCR and BSF. From May 15, the start of the temperature management season, through October 31, there were 23 days where in-river temperatures exceeded the performance target at CCR, and 5 days at BSF. The average exceedance at CCF was 0.2°F⁵ (range of 0.1-0.5°F), and the average exceedance at BSF was 0.4°F (range of 0.1-0.7°F).⁶

In terms of the effects of temperature operations on winter-run Chinook salmon, at the beginning of the season, estimated temperature-dependent mortality (TDM) for scenario 148 was forecasted to be 14.8% for the stage-dependent (Anderson) model and 27.9% for the stage-independent (Martin) model.⁷ These models used average, observed redd construction timing and location from 2007-2014. The hindcast modeling, using observed data from 2020 for redd distribution and timing, estimates TDM for 2020 to be from 3.0% to 7.2%.⁸ These hindcast estimates meet the performance metrics under the 2019 BiOp. In contrast, modeled historical TDM for similar conditions is estimated to average 34% and reached as high as 77%.

Other data from 2020 also shows positive signs for the species. For example, the estimated number of female adult spawners in 2020 was 3,904, which was higher than the 10-year average for 2011-2020.⁹ The cohort replacement rate was positive for the second consecutive year.¹⁰ There were significant issues that impacted winter-run Chinook salmon in 2020 that NMFS identified in its 2020 JPE Letter. For example, NMFS suspects that the 2020 cohort was affected by a thiamine deficiency in returning adults.¹¹ Of course, this is an example of a complex system and a variety of factors can impact survival of winter-run. However, specific to the effects of temperature management and model performance in a dry year, 2020 had very positive outcomes. This result should be applauded and used as an example to guide temperature management in 2021 and similarly dry years in the future.

⁴ *Id.* at 25-26.

⁵ From May through September, the temperature target at CCR was 53.5-54°F. *Id.* at 28. As a result, the maximum river temperature observed at CCR was 54.8°F until September, and 56.1°F in October. *Id.*

⁶ *Id.* at 28.

⁷ *Id.* at 42.

⁸ *Id.* at 43.

⁹ Letter from Cathy Marcinkevage, Assistant Regional Administrator, National Marine Fisheries Service, to Kristin White, Operations Manager, Bureau of Reclamation 3 (Jan. 25, 2021) (2020 JPE Letter).

¹⁰ *Id.*

¹¹ *Id.*

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2. There Are Key Lessons That Can Be Learned from 2020

Given the favorable temperature performance in 2020, the State Board and interested parties should look to lessons learned from that year in order to prepare for and implement those lessons in 2021. For example, we know from 2020 and other years that key operational capabilities make big differences in temperature management performance.

Access to TCD Upper Gates: Access to the TCD Upper Gates is an important tool in the ability to minimize early use of colder water and extend the use of available cold water into the fall. In 2020, Reclamation took several actions to build storage in the spring in order to access the Upper Gates, including significantly increasing Trinity River diversions to augment Sacramento River flows and keep water in Shasta.¹²

Use of Side Gates: Similarly, use of the TCD Side Gates is an important operational marker that indicates likelihood of successful temperature management. "Opening the side gates too early with insufficient cold water to sustain downstream water temperatures for an extended period results in water temperature warming that cannot be controlled in the fall period."¹³ With this knowledge, Reclamation selected a modeling scenario for the final TMP that delayed side gate operations until later in the season.¹⁴

Real-Time Operations: Real-time monitoring and adjustments also make a difference. In September 2020, Reclamation detected a warm-water signal. Investigation of this data led to the discovery that two middle gates were not fully closed, and Reclamation subsequently deployed the Middle Gate TCD curtain to prevent warm water leakage into the TCD. Reclamation's controls and checks work. For future water years, Reclamation's operational experience improving temperature management should be acknowledged and weighted accordingly.

Conservative Forecasting: Another lesson learned is that Reclamation's forecasts are conservative by design. Reclamation's temperature model uses 90% runoff exceedance hydrology and an operations outlook with 25% meteorological conditions, which provides conservative assumptions of a dry and warm environment.¹⁵ Reclamation monitors the performance of the model against actual, observed conditions. "While the Clear Creek and Balls Ferry locations exhibited low error and close matching with the actual observed time series data, Keswick Dam forecasted model outputs were about 1-degree F warmer than 2020 observed data throughout the time series."¹⁶ Additionally, the actual cold water pool volume, for the most part,

¹² 2020 Seasonal Report at 12.

¹³ *Id.* at 25.

¹⁴ *Id.*

¹⁵ *Id.* at 40.

¹⁶ *Id.* at 38; *see also id.* at 39-41 & figs. 17-19.

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was larger than the modeled volume.¹⁷ Reclamation's forecasts proved to be conservative in 2020. For 2021, the interpretation of modeled forecasts with these conservative assumptions should be informed by that knowledge.

Collaboration: Water year 2020 also demonstrated a consistent trend of collaboration between and among federal and state agencies and interested parties. For example, in early April, it was forecasted that there would be little to no access to the TCD Upper Gates. To improve the operational capabilities for the entire season, there was a coordinated effort among Reclamation, the SRTTG, and Sacramento River Settlement Contractors during the last significant storm event in April to reduce releases and diversions, and increase storage as much as possible so that Reclamation could prolong access to the Upper Gates. As a consequence, TCD Upper Gates were used until June.¹⁸ Coordination and collaboration among stakeholders produce these types of temperature management improvements.

Timing of Analysis and Operational Decisions: Finally, although the CVP Contractors appreciate the important oversight role that the State Board conducts as part of Order 90-5, the back-and-forth correspondence, conditional approvals, and frequent demands for modeling of "alternative" operational scenarios¹⁹ in 2020 were not productive. Once the reservoir stratified in April, and enough information was known about the cold-water pool, Reclamation developed 358 different modeling scenarios as part of its process. Requests to model additional scenarios outside of the SRTTG process, with no clear performance objective and drastically different assumptions about contract administration and allocations, are not realistic, particularly after planting decisions are made and the irrigation season has begun. It also infringes on the appropriate role of Reclamation and the Department of Water Resources (DWR) in deciding how to allocate water supply among the many, many water contractors given the totality of all the applicable legal obligations of the CVP and SWP. Moreover, it diverts Reclamation staff from maintaining focus on the real-time issues that contribute to successful temperature management performance, as described above. This dynamic is a lesson from 2020 that should not be repeated in the 2021 water year, and the State Board should reject the demands from the NGOs and the Tribe to do so.

3. Much Has Changed Since 2014 and 2015, and Comparisons to These Years Should Be Viewed with Caution

The 2014 and 2015 drought years are recent enough that many of us are fearful of repeating similar outcomes. However, every dry year cannot be a reason to claim an approaching "disaster," especially when so much has been learned and has changed since

¹⁷ *Id.* at 41, fig. 20.

¹⁸ *Id.* at 12

¹⁹ It is worth noting that the NGO letters sent to the State Board this month repeat this language and now also demand that Reclamation and DWR submit "alternative operational scenarios."

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2014-15.²⁰ In this regard, Reclamation has improved both its temperature monitoring and modeling capabilities, and continues to work on a new model as set forth in the 2019 BiOp.²¹ As stated above, there was no error when comparing modeled river temperatures at Clear Creek and Balls Ferry to observed river temperatures for 2020. Additionally, the SRTTG has proven to be a valuable (and appropriate) forum for key state and federal agency staff to provide input on Reclamation's TMP and monitor its performance throughout the season. Reclamation relies on the subject matter experts across the agencies and stakeholders to develop the TMP, with a Water Operations Management Team that includes the State Board to resolve disagreement. Reclamation also posts daily temperature information online on the Central Valley Operations website – transparency has never been greater. Coordination between the agencies continues to develop new online products and future web sites.²² Reclamation's operational experience in dry conditions is more robust, and understanding of TCD performance with lower storage volumes is much improved.

Habitat restoration projects have also been completed. The Battle Creek Salmon and Steelhead Restoration Project, which diversifies the winter-run population by restoring 42 miles of habitat in Battle Creek and its tributaries, was accelerated, and “jumpstart” populations have been released to attract salmon to this new habitat.²³ The Livingston-Stone National Fish Hatchery has proven to be an important tool in protecting and preserving winter-run during extreme drought and has shown that the genetic effects of hatchery fish can be managed.

Perhaps most important, Reclamation is operating under a new tiered management approach. When cold water pool resources are limited, this tiered approach prioritizes the release of colder water during the most important spawning periods, and targets the location of the great majority of redds.²⁴ The previous operations plan that was utilized in 2014 and 2015 targeted a warmer river temperature at a compliance point farther downstream, resulting in

²⁰ Reclamation and DWR do not currently anticipate the need to file a temporary urgency change petition to modify D-1641 spring and summer outflow standards. *See* State Water Project and Central Valley Project Drought Contingency Plan: March 1, 2021–September 30, 2021 11 (Mar. 1, 2021), *available at* <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/State-Water-Project/Files/ITP/CVP-and-SWP-Drought-PlanFinal32221ay11.pdf>.

²¹ 2020 Seasonal Report at 48 (describing modeling adjustments in 2020 alone).

²² One such future site is the Central Valley Temperature Mapping and Prediction (CVTEMP) web site (<https://oceanview.pfeg.noaa.gov/CVTEMP/>). The web site is currently under development and will be a future home for modeled and observed water temperature and flow data for the Sacramento River associated with Shasta Reservoir, Shasta Dam operations, and meteorological conditions.

²³ *See* JPE Letter at 7.

²⁴ In 2020, 96.6% of carcasses were collected above the CCR temperature compliance point, and 3.4% were collected below CCR. *Id.* at 30. Aerial redd survey data show that 47% of redds were located between Keswick and ACID dams; 46% of redds were located between ACID dam and the Highway 44 bridge; 7% of redds were located between the Highway 44 bridge and Clear Creek; and no redds were observed below Clear Creek. *Id.* at 31.

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operations that used all the cold water earlier in the season. The new tiered approach worked in 2020, and actual performance far exceeded the modeled outcomes. This difference in approach cannot be ignored when considering comparisons to conditions that existed in 2014 or 2015.

4. Key Points in Conclusion

The above-referenced correspondence from the NGOs and Tribe advocate an approach to temperature management that is not feasible or legal, and puts the CVP Contractors in a place where they are too often compelled to respond. This diverts time and resources from the critical work to prepare for and manage through a drought year, including efforts that minimize impacts on so many communities across the Central Valley. Rather than approach this response with the intent of refuting each inaccurate allegation or flawed premise,²⁵ the CVP Contractors look to what has been learned and accomplished since 2014. This is why the Sacramento River Science Partnership was launched in 2020 by six state and federal agencies along with the Sacramento River Settlement Contractors to develop, share, and discuss science as a tool to inform water management activities and the protection of fish in the mainstem Sacramento River.

Meaningful solutions will come with collaboration and cooperation between and among the state and federal agencies, as well as other stakeholders and interested parties. State and federal agencies should continue to engage in the SRTTG and Sacramento River Science Partnership and prioritize resources to ensure long-term sustainable management of water resources for all beneficial uses. Thank you for your consideration of our comments and suggestions for productively moving forward for fish, farms, and all in the state who rely on the Sacramento River.

Jason Phillips
FRIANT WATER USERS

David Guy
NORTHERN CALIFORNIA WATER ASSOCIATION

Roger Cornwell
SACRAMENTO RIVER SETTLEMENT CONTRACTORS

Chris White
SAN JOAQUIN RIVER EXCHANGE CONTRACTORS

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SAN LUIS DELTA MENDOTA WATER AUTHORITY

Jeff Sutton
TEHAMA COLUSA CANAL AUTHORITY

²⁵ Some allegations are so inaccurate that they may be the subject of separate responses by individual contractors.

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