



United States Department of the Interior



BUREAU OF RECLAMATION
Interior Region 10
Central Valley Operations Office
3310 El Camino Ave #300
Sacramento, California 95821

IN REPLY REFER TO:

CVO-100
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September 30, 2020

VIA ELECTRONIC MAIL

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

Subject: Order WR 90-5 Sacramento River Temperature Management Plan, Letter Dated
August 31, 2020

Dear Ms. Sobeck:

This letter follows the conversations with your staff over the past month on temperature management as well as your most recent letter sent on August 31st regarding drought planning, seasonal temperature management planning, modeling, and long-term planning. The Bureau of Reclamation (Reclamation) appreciates the opportunity to discuss our efforts on the Sacramento River to deliver water, generate power, and support fish and wildlife. We remain committed to open and transparent operation of the Central Valley Project (CVP) and appreciate the State Water Board staff's dialog.

Reclamation recognizes the complexity of the issues we all manage and values collaborating on water management decisions. In the interests of transparent communication and responding to State Water Board staff requests, Reclamation has provided for State Water Board staff participation in the Sacramento River Temperature Task Group (SRTTG) and the related subgroup, the Upper Sacramento Scheduling Team (USST). From our perspective, this ensures that the State Water Board staff has the best available decision-making information and can engage in discussions alongside Reclamation, our federal and state agency partners, and stakeholders. We understand there are certain measures pertaining to legal requirements and policy decisions that fall outside of the technical purposes of the SRTTG and USST.

Though Reclamation continues to disagree on the requirements of Water Rights Order 90-5, we can outline a number of initiatives, developed in collaboration with other Federal and State agencies, to address the intent of the requested protocol. These include changes to the operation of the CVP to better build the cold water pool in Shasta Reservoir; development of a drought and

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dry year toolkit to address difficult years, strategies to manage water temperatures when cold water is limited; commitments to increase regulatory certainty; commitments to improving and expanding available habitat; improvements to our analysis tools; investments in infrastructure; and continuing development of better science. Reclamation operates the CVP, in coordination with the SWP, in an integrated manner to meet the multiple Congressionally authorized purposes of flood control, water supply, fish and wildlife protection, and power production. CVP operators consider each of these project purposes in seasonal, daily and even sub-daily operations to manage risks and meet multiple, sometimes conflicting, objectives. Our 2020 Record of Decision (ROD) for the Long-Term Operation of the CVP and the California Department of Water Resources' (DWR) operation of the State Water Project adopts a Proposed Action that does not aim to minimize populations of listed species, but rather puts forth a suite of measures for operating the CVP for the needs of fish and wildlife, water supply, and power generation project purposes. The resulting 2019 Biological Opinions from the US Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) found that the action would not reasonably be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, number, or distribution of that species.

In response to the specific requests made in the August 31st letter, we offer details on these measures with the information below to assist the Board in understanding operational conditions and administering Order 90-5. The measures below originated from the 2020 ROD (and related documents) and were not crafted specifically for meeting requirements of 90-5. As such, many measures did not specifically include the State Water Board as a coordinating member. For areas where the State Water Board is not specifically mentioned as receiving information and being a part of the coordination team, we are open to discussing the inclusion of representatives from the State Water Board, as a courtesy, to assist in their evaluations under 90-5.

“Early Drought Planning”

Reclamation and DWR are pursuing a number of efforts to address drought and dry year planning. Although meaningful information does not exist in early October to inform in-season temperature management for the upcoming year, certain actions and coordination can help to better prepare for a potential dry or drought year.

Reclamation plans to implement the following measures to address potential drought conditions:

1. Reclamation will coordinate with DWR to develop a voluntary toolkit to be exercised at the discretion of Reclamation, DWR, other agencies, participating water users, and/or others for the operation of Shasta Reservoir during critical hydrologic year types. The toolkit shall include, at a minimum: measures at the Livingston-Stone National Fish Hatchery; the potential for translocation of fish; and facility improvements to reduce the adverse effects of critical and dry years on listed species.
2. By February of each year, following a critical hydrologic year type, Reclamation will report on the drought and dry year measures employed and assess the effectiveness. The toolkit shall be revisited at a frequency of not more than 5 years.

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3. In the coldwater pool limited years (defined as Tier 3 and Tier 4 years under the Long Term Operation), Reclamation plans to meet and confer with the USFWS, NMFS, DWR, California Department of Fish and Wildlife (CDFW), and Sacramento River Settlement Contractors (SRSC) on voluntary measures to be considered if drought conditions continue into the following year, including measures that may be beyond Reclamation and DWR's discretion. If dry conditions continue, Reclamation will regularly meet with this group (and potentially other agencies and organizations) to evaluate current hydrologic conditions and the potential for continued dry conditions that may necessitate the need for development of a drought contingency plan (that may include actions from the previously described toolkit) for the water year.
4. During coldwater pool limited years with operational conditions as described in the Tier 3 and Tier 4 scenarios, the Sacramento River Settlement Contractors (SRSC) will meet and confer with Reclamation, NMFS, and other agencies, as appropriate, to determine if there is any role for the SRSC in connection with Reclamation's operational decision-making for Shasta Reservoir annual operations in those years. This determination will include consideration of what actions are feasible, consistent with the terms of the SRSC contracts. The types of actions that may be considered include, but are not necessarily limited to: (1) the scheduling of spring diversions by the SRSC; (2) voluntary, compensated water transfers by the SRSC, subject to Reclamation approval; and (3) delayed SRSC diversion for rice straw decomposition during the fall months.
5. Given that every fall has the potential to precede a dry year, Reclamation will rebuild storage and cold water pool for the subsequent year following each temperature management season. Reclamation will minimize effects of reducing flows with a risk analysis of the remaining winter-run Chinook salmon redds, the probability of sufficient cold water in a subsequent year, and a conservative distribution and timing of subsequent winter-run Chinook salmon redds. If the combined productivity of the remaining redds plus a conservative scenario for the following year is less than the productivity of maintaining, Reclamation will reduce releases to rebuild storage. The targeted minimum flow will be based on the end of September storage with a general relationship of higher storage leading to higher minimum fall/winter flows. Real-time fish monitoring data, operational conditions, and modeling will be shared and discussed through SRTTG and/or USST.
6. In the event of two successive years with total egg-to-fry survival less than 15% in each year, which may occur independent of Reclamation's actions, Reclamation will convene a meeting of the Regional Directors of DWR, NMFS, USFWS, and CDFW no later than the end of November. The Directors will meet and confer to develop a list of actions to address the potential for a third year of low survival. The Directors will continue to meet monthly, or more often as appropriate, through the next operational season. The Directors will hold a similar meeting in each of the two following Novembers to ensure that the years following the two-year emergency condition appropriately address the need to recover from the multi-year event.

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Reclamation's ability to implement these actions are subject to continuation of the ROD.

“Temperature Management Plan Development”

Reclamation has committed to developing draft plans as outlined in the Shasta Cold Water Pool Guidance document, shared with the State Board staff on April 2, 2020. Meaningful information to inform in-season temperature compliance locations does not typically become known until late-April or early-May. Prior to this time, available information includes hydrologic forecasts, historical patterns, current storage conditions, and forecasted regulatory conditions. The initial water supply allocation is provided by Reclamation to its contractors after factoring in potential regulatory requirements, end-of-season storage, and conservative hydrologic assumptions. Reclamation is open to further explaining our allocation methodology to the State Water Board staff to develop a shared understanding of how Reclamation factors regulatory requirements, including temperature management, into initial allocations with limited, imperfect, information and conservative assumptions.

As outlined in the Shasta Cold Water Pool guidance document, consistent with the Proposed Action consulted upon for the 2019 Biological Opinions, Reclamation has the following measures to address temperature management plan development:

1. The key component of temperature management in the Upper Sacramento River is operation of the Temperature Control Device (TCD) on Shasta Dam. Consistent with 90-5, and in accordance with CVPIA 3406(b)(6), Reclamation operates the TCD at Shasta Dam to “control water temperatures in the upper Sacramento River in order to protect anadromous fish in the upper Sacramento River.”
2. Reclamation uses a conservative hydrologic forecast (typically a 90% exceedance) for seasonal planning of reservoir releases (including developing initial and updated allocations) and temperature management planning. This conservative approach is intended to minimize the frequency where real-time management results in a drier or warmer water temperature condition than forecasted.
3. In February of each year Reclamation will create and share with the State Water Board and others a projection of water operations. This will include the 12-month outlook for monthly averaged releases and end of month reservoir storages.
4. Reclamation has set performance objectives for assessing cold water management under the different tiers. The objective is to ensure that the performance falls within the modeled range and shows a tendency towards performing at least as well as the distribution produced by the simulation modeling.
5. At the March forecast (mid-March), if the forecasted Shasta Reservoir total storage is projected to be below 2.5 MAF at the beginning of May, Reclamation will initiate discussions with USFWS and NMFS on potential intervention measures should this low storage condition continue into April and May, as described in Tier 4.

6. Reclamation will perform the first temperature model run in April after the DWR Bulletin 120 has been received. This is the first month that a meaningful temperature model run is feasible based on temperature profiles. Prior to April, there is insufficient stratification in Shasta Reservoir to allow a temperature model to provide meaningful results. The April temperature model scenario is used to develop an initial draft temperature plan for submittal to the State Water Board and SRTTG. This temperature plan may be updated as Reclamation collects improved data on reservoir storage and cold water pool via the reservoir profiles at the end of May, and throughout the temperature control season. We continue to welcome input and feedback during this process from the State Water Board staff through SRTTG meetings and correspondence where all members of the SRTTG have an opportunity to weigh in and discuss issues.
7. The temperature tier will be forecasted first in April of each water year based on projected storage, available reservoir profiles and temperature modeling results indicating the feasibility of meeting a particular tier. This tier will be finalized in May when there is additional confidence in the hydrologic forecast and availability of cold water. If, as the water year progresses, it is determined that additional cold water is available for temperature control purposes, then the tier may be upgraded to a more beneficial tier. Given the use of conservative forecasts, additional cold water pool would be expected more frequently than less cold water pool. Reclamation will operate to the most protective temperature tier that is achievable given the expected available cold water pool.
8. Once the initial tier is selected in May, Reclamation will not cause a shift into a warmer tier during real-time implementation of the Shasta Cold Water Management Plan except in the event of responding to emergency and/or unforeseen conditions. Examples of emergency and/or unforeseen conditions, may include, but are not limited to, higher Bay-Delta water quality control plan compliance requirements, warmer meteorology, changes in forecasted inflow quantities and temperatures to Shasta, facility malfunctions, and higher than expected non-project water diversions (e.g., diverters other than those exercising water service and repayment contracts with Reclamation such as in-Delta diversions, riparian diversions, etc.).
9. Following the emergence of winter-run Chinook salmon and prior to the majority of fall-run Chinook salmon spawning, Sacramento Valley CVP contractors and the Sacramento River Settlement Contractors propose to work to synchronize their diversions to lower peak rice decomposition demand. With lower late October and early November flows, fall-run Chinook salmon are less likely to spawn in shallow areas that would be subject to dewatering during winter base flows. Early reductions (late October–early November) would balance the potential for dewatering late spawning winter-run Chinook salmon redds and early fall-run Chinook salmon dewatering.
10. If the actual temperature dependent mortality or egg to fry survival fall outside the tier-based range described in any single year, Reclamation will confer with NMFS to determine if an independent panel is necessary. If a panel is determined necessary, Reclamation will charter an independent panel to review the drivers, review the metrics,

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recommend potential actions, and review the effectiveness of habitat restoration, facility improvements, intervention, and research measures. Reclamation will convene an independent panel at least every four years regardless of performance. The results of these panels will be public and available to State Water Board staff for review and consideration in their regulatory role.

“Modeling and Documentation”

Order 90-5 does not include terms and conditions addressing modeling and documentation; however, information sent to the State Board as compliance with Order 90-5 is a matter of public record. We have consistently supported the open sharing of information and providing opportunities for feedback in an effort to solicit the best ideas for meeting all of Reclamation’s authorized purposes for the CVP. Reclamation manages the SRTTG in an open and collaborative manner to encourage feedback from all members, including the State Water Board and its staff. Over the recent past, including 2020, Reclamation has held monthly, weekly and sub-weekly meetings and calls to discuss operations and temperature management as well as made available our toolsets, models, model inputs, input descriptions, and model results to the State Water Board’s staff. Modification to the format and/or venue of shared toolsets, models and modeled results is appropriate to be discussed through SRTTG or a relevant subgroup. Reclamation’s practice is to post materials from the SRTTG meetings as soon as practicable. Should the State Water Board develop its own information to support analysis of real-time conditions, we would appreciate sharing of that information through the SRTTG for discussion.

We remain willing to support a technical working session for the State Water Board, consistent with our July 9 letter, to discuss appropriate fish evaluation metrics, consideration of carryover storage, modeling assumptions, and other topics for which a common understanding would improve the temperature management planning process.

“Efforts to Inform Long-Term Temperature Management”

Order 90-5 specifically addressed long-term temperature issues by requiring, among other things, submission of a plan to address water temperature at Spring Creek Power plant and construction of the TCD on Shasta Reservoir. Reclamation completed the TCD in 1997 and has operated the TCD for downstream temperatures since that date. Long-term planning is, and continues to be, a top priority of Reclamation to ensure the sustainability and longevity of the public investment in critical water infrastructure within the CVP.

Reclamation has the following measures to address long-term temperature management:

1. Reclamation proposes to raise Shasta Dam. The additional storage created by the 18.5-foot dam raise could be used to improve the ability to meet water temperature objectives and habitat requirements for salmonids during drought years and increase water supply reliability.

2. Reclamation is coordinating with NMFS to study whether there are problems or limitations with the function of the TCD under low storage conditions, and, if necessary, to identify potential actions and/or modification for improving the TCD.
3. Reclamation is exploring lowering non-project intakes on the Sacramento River to support diversions by others with lower flows at Wilkins Slough. Many diversions in this region were designed at the 5,000 cfs historical navigation flow. This action would provide grants to senior water right holders within this area to install new diversions and screens that would operate at the lower flows, which would allow Reclamation to have greater flexibility in managing Sacramento River flows and temperatures for both water users and wildlife, including listed salmonids.
4. Reclamation will continue, as part of a collaborative model development effort, to develop a new temperature model for the Upper Sacramento River (Shasta and Keswick reservoirs). Reclamation will evaluate this model for implementation as part of the development of annual temperature management plans. The initial stratification model is expected to be available for pilot application and evaluation no later than January 1, 2022. At the end of a three-year period starting once the stratification model is available, Reclamation and NMFS will submit the model to the Four Year Review Panel for advice on the model's accuracy and utility as a forecasting tool.
5. Reclamation will include the Clear Creek system, including Whiskeytown Reservoir, to the new temperature modeling platform (referenced above) for the Sacramento River to enable better temperature forecasting and planning in Clear Creek.

In the August 31st letter, the State Board Staff specifically requests Reclamation's cooperation in developing appropriate metrics to support population-scale viability and recovery of the species below Keswick Dam. Reclamation continues to support and contribute to this goal through participating in and providing data and resources to the Upper Sacramento Science Partnership. Reclamation encourages the State Water Board to fully participate and provide resources to the Upper Sacramento Science Partnership along with the existing members including Reclamation, SRSC, USFWS, NMFS, DWR, CDFW, and non-governmental organizations.

Reclamation worked with NMFS to identify the performance expected from both the actions listed above as well as Reclamation commitments to implement other non-flow actions such as significant habitat restoration and other structural facility modifications. The expected performance by temperature tier is described below as temperature dependent mortality.

- Tier 1 – Maximum (39%); Average (6%); Median (2%); Minimum (0.4%);
- Tier 2 - Maximum (46%); Average (15%); Median (9%); Minimum (1%);
- Tier 3 - Maximum (77%); Average (34%); Median (24%); Minimum (6%); and
- Tier 4 - Metrics as addressed under “Drought and Dry Year Actions”.

Although Order 90-5 only addresses water temperatures, Reclamation leads and partners on many actions to assist in the recovery of listed species in the Sacramento River. For additional information, we recommend the State Water Board staff consider the NMFS Recovery Plan for

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winter-run, spring-run, and steelhead for habitat restoration and other actions that compliment water operations to support recovery of species.

Requirements of Water Rights Order 90-5

While the subject letter identifies a protocol as a requirement of Water Rights Order 90-5, the language of 90-5 states only that Reclamation must provide an operation plan to meet a temperature requirement at a new location when 56°F cannot be met at Red Bluff Diversion Dam. The purpose for the operation plan is to describe meeting temperatures at the alternative location. For nearly three decades, Reclamation has satisfied this requirement by submitting a temperature management plan each May that identifies the anticipated compliance location based on both the optimal operation of the TCD and the expected integrated Upper Sacramento River flow regime, as part of the overall 12-month Central Valley Project outlook which was based on a conservative (90% exceedance) forecast.

The August 31st letter suggests that 90-5 imposes a higher standard than the requirements of the federal Endangered Species Act (ESA). The purpose of the ESA is to protect and recover imperiled species and the ecosystems on which they depend. State Water Board Order 90-5 is focused on the State Water Board's authority to adopt terms and conditions on water rights to carry out basin plans and "to prevent waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of water and to protect public trust uses of water." (90-5, p. 7.) To that end, 90-5 focuses on the water quality objective set in the basin plan, which identifies a temperature objective, dissolved oxygen objective, and turbidity objective for the "reasonable protection" of the Sacramento River fishery. The 2019 Proposed Action and NMFS Biological Opinion incorporates the best available science based on multi-million dollar investments in collaborative research and monitoring over the past decade (including partnerships with DWR and CDFW). The ESA is not a low standard that Reclamation strives to just barely meet. To the contrary, the 2020 ROD and the BiOp recognize and respond to the low population abundances of listed species and rely heavily on advancements in science to provide better conditions for listed species affected by the State Water Project and the CVP.

This State Water Board interpretation is also inconsistent with the Board's conclusion that 90-5 appropriately relied on a categorical exclusion, finding that because Reclamation was obligated to comply with the federal ESA, which the State Water Board believed imposed the same requirements as adopted in 90-5, it was unlikely that 90-5 would result in any additional significant adverse effects. The State Board concluded that "...it is likely that if a significant adverse effect occurs because of controlling temperature in the upper Sacramento River, the effect would occur regardless of whether we adopted this order. The Bureau has obliged itself to the fishery agencies to do essentially the same things that are required herein..." In other words, at the time it was adopted, 90-5 essentially mirrored the requirements under ESA.

The process for analyzing conditions and incorporating the best information into water management decisions for temperature management at Shasta Reservoir is outlined in the Shasta Cold Water Pool Management Flow Guidance document which was shared with the State Board staff on April 2, 2020. The August 31st letter does not appear to comment on the relevant guidance document and instead requests a protocol based, in part, on a settlement the State Water

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Board entered into with California Sportfishing Protection Alliance, et al., to settle litigation to which Reclamation was not a party. This settlement involved multiple provisions that potentially affect Reclamation's water rights through 90-5, yet were not adopted after a thorough administrative process, including a public hearing. While the State Water Board staff has represented that the settlement does not impose substantive obligations on Reclamation, its subsequent letters have requested the protocol, as outlined in the settlement provisions, as a requirement in order to comply with 90-5. Good faith interactions are challenging when separate agreements are made in isolation purportedly to affect CVP operations without Reclamation's involvement or review. Reclamation does not consider a state court voluntary settlement, to which Reclamation is not a party, as valid, enforceable legal requirements imposed on Reclamation.

In closing, Reclamation puts forward a tremendous amount of operational experience and science for managing Shasta Reservoir releases and release temperatures for species, water supply, and power generation. We complement water operations with habitat restoration, conservation hatcheries, reintroduction programs, and research. We incorporate measures for transparency and accountability. The benefits of flexibly working together were apparent this year when, at the request of the State, the CVP was able to alter operations to preserve enough power for over 50,000 households during the heat wave as well as deliver additional water to the wildlife refuges that rely on CVP supplies. As leaders of water management within the State of California, it is incumbent on us to collaborate and work together in multi-agency and stakeholder partnerships. Only through this approach will we be able to achieve a reasonable balance among competing demands for use of Central Valley Project water, including the requirements of fish and wildlife, agriculture, municipalities, industry, and power customers.

Sincerely,

Kristin N. White
Operations Manager

cc: Mr. Ernest Conant
Regional Director
California-Great Basin Region
Bureau of Reclamation
2800 Cottage Way
Sacramento, CA 95825

Mr. Russ Callejo
Deputy Regional Director
California-Great Basin Region
Bureau of Reclamation
2800 Cottage Way
Sacramento, CA 95825

Mr. Paul Souza
Regional Director
Pacific Southwest Region
U.S. Fish and Wildlife Service
2800 Cottage Way
Sacramento, CA 95825

Mr. Barry Thom
Regional Administrator
NOAA Fisheries West Coast Region
1201 Northeast Lloyd Blvd., Suite 1100
Portland, OR 97232

Dr. Cathy Marcinkeavage
Assistant Regional Administrator
California Central Valley Area Office
National Marine Fisheries Service
650 Capitol Mall, Suite 5-100
Sacramento, CA 95814

Dr. David Mooney
Office Manager
Bay-Delta Office
Bureau of Reclamation
801 I Street, Suite 140
Sacramento, CA 95814

Mr. Chuck Bonham
Director
California Department of Fish and
Wildlife
1416 9th Street
Sacramento, CA 95814

Mr. Carl Wilcox
Policy Advisor
California Department of Fish and
Wildlife 1416 9th Street
Sacramento, CA 95814

Mr. Eric Oppenheimer
Chief Deputy Director
State Water Resources Control Board
1001 I Street
14th Floor, Office 43B
Sacramento, CA 95814

Ms. Diane Riddle
Assistant Deputy Director
Division of Water Rights
State Water Resources Control Board
1001 I Street
14th Floor, Office 43B
Sacramento, CA 95814

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