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May 19, 2021

*Via Electronic Mail and First-Class U.S. Mail*

Mr. Ernest Conant  
Regional Director  
U.S. Bureau of Reclamation, MP-100  
2800 Cottage Way  
Sacramento, CA 95825  
econant@usbr.gov

Re: Proposed Operations Plan for 2021 Temperature Management Season

Dear Mr. Conant:

This letter is written on behalf of the Sacramento River Settlement Contractors Corporation and its members (Settlement Contractors). We have reviewed the U.S. Bureau of Reclamation's (Reclamation) Draft Temperature Management Plan for Water Year 2021 (Draft TMP) submitted to the State Water Resources Control Board (State Board) on May 5, 2021. We also reviewed the comments submitted by the National Marine Fisheries Service (NMFS) on the Draft TMP dated May 14, 2021, and participated in the informational item on drought operations during the State Board's May 18, 2021 meeting. In response to this information, the Settlement Contractors find it necessary to provide additional information for Reclamation's consideration as it develops a final temperature management plan to guide operations for the remainder of the water year.

**1. The Settlement Contractors Propose an Operations Plan That Balances Operational Outcomes with Water Supply Needs to Achieve the Best Possible Result in These Critically Dry Conditions**

The Settlement Contractors have developed the following recommended plan for operations that balances the multiple beneficial uses of water and requirements of the Central Valley Project (CVP), taking into account the requested Temporary Urgency Change Petition (TUCP) this year. The following table summarizes the average monthly release schedule from Keswick Reservoir for the recommended plan and the forecasted end-of-September storage in Lake Shasta.<sup>1</sup> It bears emphasis that these recommended releases in June and July are significantly less than those contained in the Draft TMP.

	June	July	August	September	End-of-Sep. Shasta Storage (MAF)
Keswick Release (cfs)	8,000	8,000	7,500	5,000	1.15 <sup>2</sup>

Our analysis of these Keswick releases in the context of the entire CVP and State Water Project (SWP) system and Delta show they are the minimums necessary to satisfy the TUCP requested this year. Analysis of Lake Shasta temperatures under this release schedule shows that the plan has the ability to achieve the following operational objectives:

- **56 degrees** Fahrenheit (°F) at the Clear Creek compliance location starting June 1 through October 1. This is consistent with Tier 4 operations analyzed in the 2019 NMFS BiOp;
- An estimated temperature-dependent egg mortality (TDM) of **59 percent** based on the Martin model used by NMFS. This estimated TDM is well below the expected range for a Tier 4 year (77 to 100 percent) under the 2019 NMFS Biological Opinion (BiOp) and is within the ranges of estimates with more severe reductions in release from Keswick;
- **1.15 million acre-feet (MAF) in end-of-September Shasta storage**, with a high probability of refill during this winter to ensure health and safety water and the ability to deliver water for multiple benefits in 2022. This is consistent with Directive 4 of the Governor’s May 10, 2021 Drought Proclamation to protect carryover storage;

<sup>1</sup> Assumes May Bulletin 120, 90 percent exceedance forecast of inflow to Lake Shasta and monthly Spring Creek Powerhouse diversions from Central Valley Operations April 90 percent exceedance outlook.

<sup>2</sup> The forecasted end-of-September storage includes approximately 170,000 acre-feet of water made available for transfer by the Settlement Contractors to south-of-Delta buyers that would be released in October and November.

- **Diversions and deliveries to farms** (including ricelands) and wildlife refuges that support the economy and birds along the Pacific Flyway. Directive 7 of the Governor's May 10, 2021 Drought Proclamation calls for prioritization and financial support for actions to support Pacific flyway habitat needs;
- **Water sharing and transfers** with other parts of the state that will benefit cold water management in the upper Sacramento River and then subsequently help serve water to other parts of the state experiencing a critical need for this water. This is supported by Directive 3 of the Governor's May 10, 2021 Drought Proclamation calling on the California Department of Water Resources and the State Board to prioritize transfers; and
- Ability to achieve **Delta water quality objectives** in accordance with the requested TUCP this year and Directive 4 of the Governor's May 10, 2021 Drought Proclamation to conserve water upstream to protect cold water pools for salmon and steelhead.

The ability to manage temperature this year is made possible by actions of both the Settlement Contractors and Reclamation. The Settlement Contractors have voluntarily scheduled less diversions than in 2015, transferred water to other areas of the state in critical need, eliminated fall diversions, and implemented an emergency groundwater pumping program. Actions by Reclamation to bypass hydropower in April and May also preserved cold water for the summer (a several million dollar loss to power customers).

## **2. The Settlement Contractors Previously Communicated Their Diversion Schedules for the 2021 Water Year**

The Settlement Contractors have appreciated working with Reclamation and other federal and state agencies over these last two dry years in our continuing efforts to manage water under the Sacramento River Settlement Contracts (Settlement Contracts) for various beneficial purposes in the Sacramento Valley, including cities, farms, fish, and birds. Importantly, all of these actions to manage water for these various beneficial purposes have been accomplished by working with Reclamation within the framework of the Settlement Contracts and the 2019 biological opinions issued by NMFS and U.S. Fish & Wildlife Service.

In that regard, the Settlement Contractors recently sent a letter to Reclamation, dated May 13, 2021, regarding 2021 Sacramento River Settlement Contract Performance. Attachment 1 hereto, which we previously provided, is the aggregated diversion schedule, which identifies the estimated monthly diversion amounts by the Settlement Contractors in 2021. These amounts represent the aggregate demand based on individual planting decisions of landowners within each district or entity and the past and existing water conservation efforts of those landowners, plus ongoing and planned water transfers. The Settlement Contractors estimate that their aggregated diversion schedule for the entire irrigation season will comprise approximately 65 percent of their full contract amounts, or approximately 10 percent less than the 75 percent Critical Year reduced supply called for under the Settlement Contracts.

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Additionally, in the past week, the Settlement Contractors have taken emergency actions in compliance with the California Environmental Quality Act to provide up to an additional 60,000 acre-feet of groundwater pumping to further offset diversion amounts.

### **3. The Governor’s Emergency Proclamations Emphasize the Need for Balance and for Voluntary Measures**

As Reclamation finalizes its operations plan for the remainder for the 2021 Water Year, in addition to the schedules submitted by the Settlement Contractors, Reclamation should also consider the Governor’s Emergency Drought Proclamation provisions on how best to balance water supplies and constructively work through this drought year. In this regard, the Governor’s proclamations provide the following additional guidance:

- “To prepare for potential impacts of drought conditions on species, the Water Board and the Department of Fish and Wildlife shall work with federal agency partners to manage temperature conditions for the preservation of fish in the Sacramento River downstream of Shasta Dam while balancing water supply needs.” Governor’s April 21, 2021 Drought Proclamation, ¶ 14.
- Encouraging voluntary measures to ensure water deliveries for multiple benefits with a lighter regulatory role to streamline these operations. Governor’s May 10, 2021 Drought Proclamation, ¶ 3.

The Settlement Contractors’ proposed Sacramento River operational scenario is the best option to fulfill the Governor’s directives and to serve multiple beneficial uses this year.

### **4. The Proposed Operations Plan Allows for the Performance of the Settlement Contractors’ Other Commitments to Improve Outcomes This Year**

In our May 13, 2021 letter, we set forth a number of commitments to support Reclamation during this difficult water year. These include:

- Weekly coordination and communications with Central Valley Operations staff on scheduling Settlement Contractor diversions to achieve the most efficient use of water released from Keswick according to the above schedule.
- Active participation in meet and confer discussions with Reclamation, NMFS, and other appropriate agencies as contemplated by the 2019 NMFS BiOp.
- Support of expert operational and modeling consultants from MBK Engineers and Watercourse Engineering to engage with Reclamation and the fishery agencies to provide technical support and analysis of operational scenarios and temperature management

outcomes. This support is in addition to the Settlement Contractors' funding of monitoring improvements, data collection, and model development to improve temperature management performance and the understanding of the effect of temperature on Chinook salmon species.

- Water transfers to neighboring water districts with no surface supplies this year, as well as water suppliers in other parts of the state where surface water supplies have been limited.
- Use of groundwater wells to further offset surface water diversions from the Sacramento River, which is estimated to result in a reduction of approximately 60,000 acre-feet in surface water diversions by the Settlement Contractors from the Sacramento River, following the fulfillment of transfer commitments from those wells participating in the transfer program.
- Close coordination between Glenn-Colusa Irrigation District (GCID) and refuge managers at the three National Wildlife Refuges (Colusa, Delevan, Sacramento) in order to optimize deliveries to meet refuge needs and maximize habitat and feeding grounds for the Pacific Flyway. The Settlement Contractors' ricelands alone comprise approximately 60 percent of the feeding grounds for the Pacific Flyway, and these grounds will be even more critical this year to meet the energetic needs of avian species given the dire drought conditions in the Klamath Basin.
- Voluntary conservation measures by certain Settlement Contractors to forego surface water diversions in the fall.<sup>3</sup>

The operations plan proposed by the Settlement Contractors will allow for the performance of these commitments. The Settlement Contractors continue to be constructive members of the stakeholder community. In addition to all the commitments outlined above, the Settlement Contractors work with federal and state agencies to address the greater needs of the species and invest significant resources—both dollars and personnel—to support salmon recovery projects and deliveries for the Pacific Flyway.

As the Governor's Proclamations indicate, difficult years like this one require voluntary measures to allow for improved outcomes. The Settlement Contractors continue to commit to these voluntary actions and encourage other members of the stakeholder community to do the same.

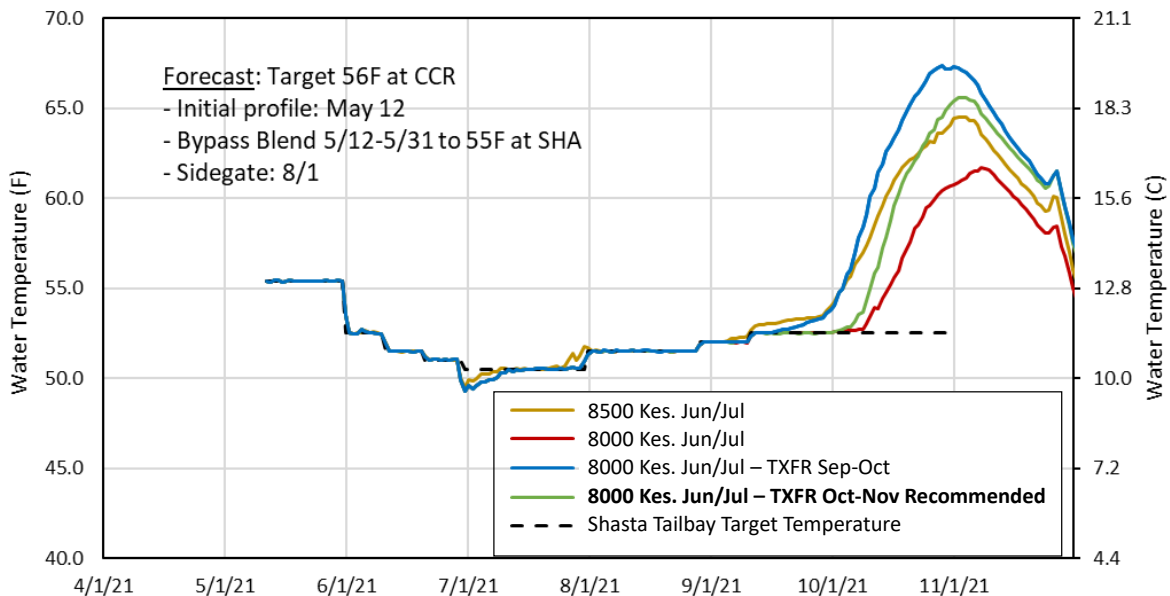
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<sup>3</sup> As consideration for all of these listed actions, the Settlement Contractors requested certain actions by Reclamation with respect to administration of the Settlement Contracts, including flexibility in rescheduling, water supply and groundwater accounting, and Project Supply charges.

**5. Other Proposals Focus on a Single Beneficial Use, Do Not Balance Multiple Beneficial Uses, and Are Otherwise Infeasible for the System**

There has been considerable discussion and comments regarding even further reductions in Keswick summer releases, with the ostensible purpose to further reduce estimated TDM and increase carryover storage in Lake Shasta. Temperature management in the Upper Sacramento River is merely one use of water in storage intended to benefit one species in the watershed, and there are considerable tradeoffs to shaping operations for this singular purpose. The following table and figure illustrate the tradeoffs associated with additional reductions in Keswick releases for both TDM and carryover storage.

Scenario	Average Monthly Keswick Release (cfs)				End-of-September Carryover Storage (MAF)	Carryover after Transfer Water Released (MAF)	Martin Model TDM
	June	July	August	September			
Recommended Plan	8,000	8,000	7,500	5,000	1.15	.98	59%
Rec. Plan minus 500 cfs	7,500	7,500	7,500	5,000	1.21	1.04	54%
Rec. Plan minus 1,000 cfs	7,000	7,000	7,000	5,000	1.30	1.13	52%



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Our analysis shows limited benefits of additional reductions in Keswick release for TDM based on the Martin model used by NMFS.<sup>4</sup> We understand one intended outcome of reductions in Keswick release is to preserve cold-water resources to achieve a temperature of less than 56°F during a window of peak egg incubation. Our analysis of this operational objective for any period of time during this critical year indicates this is a high-risk strategy that will result in earlier loss of temperature control, without a scientific understanding and associated monitoring that prove this approach would provide any additional benefit.

We also evaluated the potential benefits of an additional 150,000 acre-feet of carryover storage by forecasting Shasta operations through April of 2022. This analysis started from the carryover storage levels in the above table and evaluated 79 individual years of the observed inflow to Shasta for the months of October through April to assess the probability of storage conditions in the spring of 2022. It is also based on CALSIM hydrology inflow data into Shasta Reservoir and assuming a minimum Keswick release of 3,250 cfs from October 1 to April 1. Our analysis shows the additional carryover storage increased the probability of May 1, 2022 storage being at least 3 MAF<sup>5</sup> by only 4 percent compared to our recommended plan. There is also a 30 percent chance that the additional carryover would be spilled this winter. Finally, Keswick releases of less than 8,000 cfs in June and July would make it extremely challenging (if not impossible) to meet the broader CVP/SWP system requirements under the requested TUCP this year, and seem to “break the system” as compared to our recommended approach that balances multiple needs.

Comments on the Draft TMP and public comments at both the April 22, 2021 State Board Sacramento River Temperature Management Workshop and the May 18, 2021 State Board meeting reference modeling and analysis by the NMFS Southwest Fisheries Science Center (SWFSC) as justification for lower summer Keswick releases. Based on what we can understand from the limited information that has been made available, a significant portion of this analysis by the SWFSC was focused on the high-risk strategy of targeting less than 56°F for a portion of the temperature management season, and resulted in loss of temperature control in September. The Settlement Contractors continue to have concerns regarding the development, documentation, and transparency of the various models and tools used to prepare this information. Just as we coordinated with Reclamation on a transparent process on the new Shasta Temperature tool as well as making that tool available publicly, we request that NMFS follow a similar process with the tools they have developed, are developing, or may develop in the future.

From what we understand, this analysis also focused on management of a single life-stage of winter-run Chinook without any consideration of the numerous other obligations of the

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<sup>4</sup> TDM results are based on SacPAS and assumptions of maintaining 56°F at Clear Creek from June 1 through September 30 (Recommended Plan), October 14 (Recommended Plan minus 500 cubic feet per second (cfs)), and October 31 (Recommended Plan minus 1000 cfs).

<sup>5</sup> A storage of 3 MAF of more allows access to the upper gates on the temperature control device and increases the ability to manage temperature in 2022 without the use of power bypass.

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CVP. With respect to statewide water supplies this year, discretionary water supplies throughout California have been drastically reduced, with CVP contractors south and north of the Delta receiving 0 percent supplies. Urban users are receiving 55 percent. The State Water Contractors are receiving 5 percent (supplies already in San Luis Reservoir). For the CVP, Reclamation is pumping minimal supplies (800 cfs) from the Delta for health and safety, refuges, and exchange contracts. Nearly all the water available is in storage this year. Single-use management of storage is not a viable option.

## **6. The Proposed Operations Plan Exceeds Expected Performance Without Introducing the Uncertainties Presented by Other Proposals**

Reclamation's operation of the CVP that was analyzed in the NMFS 2019 BiOp includes a four-tier cold water management plan that addresses variability in differing water year types based on volume of cold water stored in Lake Shasta at the beginning of May. Reclamation has identified Water Year 2021 as a Tier 4 year based on estimated Lake Shasta storage of approximately 2.1 MAF. Based on the 82-year historical hydrological sample set analyzed in the NMFS 2019 BiOp, Tier 4 years are expected to occur in 5-7 percent of years and are estimated to have temperature-dependent mortality of 79 percent based on the Anderson model, and 81 percent based on the Martin model used by NMFS. NMFS 2019 BiOp at 252. Based on these estimates, the NMFS 2019 BiOp anticipates 77% or greater temperature dependent mortality with the dry conditions and low reservoir storage of a Tier 4 year. *Id.* at 801. Using the same modeling tools analyzed in the 2019 NMFS BiOp, TDM under the operational scenario proposed by the Settlement Contractors is estimated to be less than 77 percent, which is better than expected in a Tier 4 year.

As detailed in Reclamation's seasonal report on Shasta operations for Water Year 2020, Reclamation's temperature management performance in 2020 was better than the forecasted outcomes due to conservative forecasting assumptions for hydrology and meteorology. The same conservative assumptions have been used for forecasting and modeling in 2021, indicating that actual temperature management performance will improve survival and be better than the estimated TDM, which already is estimated to be better than expected for a Tier 4 year. The many management actions and voluntary measures by the Settlement Contractors and Reclamation have already improved the range of possible outcomes in a critically dry year (and the second consecutive dry year).

The Settlement Contractors recognize that not all agree with performance metrics set forth in the 2019 NMFS BiOp. At this point, however, every operational outcome has a tradeoff, and those tradeoffs are being evaluated with modeling tools with considerable uncertainty. For example, when considering whether TDM could be reduced by 2-3 percent, that 2-3 percent is already within the range of error of the modeling.<sup>6</sup> This means decisionmakers could be trading

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<sup>6</sup> The standard deviation for Martin model estimates of temperature dependent mortality during Tier 4 years was reported in the NMFS 2019 BiOp to be +/- 16 percent. NMFS 2019 BiOp at 252.



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away certain devastation in the communities in the Central Valley caused by further reductions in water supply, for a hypothetical benefit in the river that will never materialize. The same tradeoffs are present for carryover storage where not utilizing the water in storage this year comes with a heavy and known cost, versus limited to no benefit in future years if the coming winter is at least average. And it is not clear what the goalposts are for measuring the tradeoffs. There is no carryover storage requirement in the 2019 NMFS BiOp (and there was no carryover storage requirement in the prior BiOp). Order 90-5 similarly does not contain the type of operational requirements that are currently being discussed.<sup>7</sup> On the other hand, the operational and modeling experts do know for certain that it will not be possible for Reclamation to meet all that is required for Delta outflow, temperature control, health and safety, and environmental needs in the refuges and across the valley this year if there are reductions in Keswick releases beyond those in the Settlement Contractors' proposed operations plan.

The Settlement Contractors appreciate the collaborative discussions with Reclamation on these actions and look forward to further productive discussions regarding 2021 CVP operations that ensure that the Settlement Contracts are fully honored and performed by the parties. Please do not hesitate to contact us if you have any questions or need any additional information.

Very truly yours,



Donald Bransford, Board President  
Glenn-Colusa Irrigation District



William F. Henle, Board President  
Sutter Mutual Water Company



Thomas Ramos, Board President  
Natomas Central Mutual Water Company

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<sup>7</sup> See Settlement Contractors' March 30, 2021 letter to State Board Chair Joaquin Esquivel, and Settlement Contractors' May 11, 2020 letter to Ms. Diane Riddle.

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Roger Cornwell  
Chair, Sacramento River Settlement Contractors Corp.  
Board President, Reclamation District No. 108  
General Manager, River Garden Farms Company

Attachment

cc: Kristin White, [knwhite@usbr.gov](mailto:knwhite@usbr.gov)  
Russ Callejo, [rcallejo@usbr.gov](mailto:rcallejo@usbr.gov)  
Carter Brown, [carter.brown@sol.doi.gov](mailto:carter.brown@sol.doi.gov)  
Jared Blumenfeld, [SectyBlumenfeld@calepa.ca.gov](mailto:SectyBlumenfeld@calepa.ca.gov)  
Wade Crowfoot, [Wade.Crowfoot@resources.ca.gov](mailto:Wade.Crowfoot@resources.ca.gov)  
Karen Ross, [KB.R@cdfa.ca.gov](mailto:KB.R@cdfa.ca.gov)  
Joaquin Esquivel, [joaquin.esquivel@waterboards.ca.gov](mailto:joaquin.esquivel@waterboards.ca.gov)  
Dorene D'Adamo, [Dorene.Dadamo@waterboards.ca.gov](mailto:Dorene.Dadamo@waterboards.ca.gov)  
Tam Doduc, [Tam.Doduc@waterboards.ca.gov](mailto:Tam.Doduc@waterboards.ca.gov)  
Sean Maguire, [Sean.Maguire@waterboards.ca.gov](mailto:Sean.Maguire@waterboards.ca.gov)  
Laurel Firestone, [Laurel.Firestone@waterboards.ca.gov](mailto:Laurel.Firestone@waterboards.ca.gov)  
Eileen Sobeck, [Eileen.Sobeck@Waterboards.ca.gov](mailto:Eileen.Sobeck@Waterboards.ca.gov)  
Michael Lauffer, [Michael.Lauffer@waterboards.ca.gov](mailto:Michael.Lauffer@waterboards.ca.gov)  
Barry Thom, [Barry.Thom@noaa.gov](mailto:Barry.Thom@noaa.gov)  
Garwin Yip, [garwin.yip@noaa.gov](mailto:garwin.yip@noaa.gov)  
Howard Brown, [Howard.Brown@noaa.gov](mailto:Howard.Brown@noaa.gov)  
Paul Souza, [paul.ortiz@noaa.gov](mailto:paul.ortiz@noaa.gov)  
Chuck Bonham, [Chuck.Bonham@wildlife.ca.gov](mailto:Chuck.Bonham@wildlife.ca.gov)  
Karla Nemeth, [Karla.Nemeth@water.ca.gov](mailto:Karla.Nemeth@water.ca.gov)  
Josh Grover, [Joshua.Grover@wildlife.ca.gov](mailto:Joshua.Grover@wildlife.ca.gov)  
Diane Riddle, [Diane.Riddle@waterboards.ca.gov](mailto:Diane.Riddle@waterboards.ca.gov)  
Kaylee Allen, [kaylee\\_allen@fws.gov](mailto:kaylee_allen@fws.gov)  
Lenny Grimaldo, [Lenny.Grimaldo@water.ca.gov](mailto:Lenny.Grimaldo@water.ca.gov)  
Molly White, [Molly.White@water.ca.gov](mailto:Molly.White@water.ca.gov)  
Andrew Hitchings, [ahitchings@somachlaw.com](mailto:ahitchings@somachlaw.com)  
Brittany K. Johnson, [bjohnson@somachlaw.com](mailto:bjohnson@somachlaw.com)  
Meredith Nikkel, [mnikkel@downeybrand.com](mailto:mnikkel@downeybrand.com)  
Dustin Cooper, [dcooper@minasianlaw.com](mailto:dcooper@minasianlaw.com)

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### Attachment 1: 2021 Diversion Schedule

