



Sacramento River Temperature Task Group Notes

April 13, 2023

Members Attending

- USBR: Emily Van Seeters, Elissa Buttermore, Emelia Barnum, Lisa Elliot, Tom Patton
- USFWS: Bill Poytress, Craig Fleming, Jim Earley, Matt Brown
- CDFW: Doug Killam, Tracy Grimes, Vanessa Guzman
- NMFS: Barb Byrne, Stephen Maurano, Seth Naman
- SWFSC: Cyril Michel , Eric Danner, Flora Cordoleani, Miles Daniels
- DWR: Kevin Reach, Mike Ford
- SWRCB: Craig Williams, Matt Holland
- SRSC: Mike Deas, Lee Bergfeld, Roger Cornwell
- WAPA:
- Yurok Tribe: Christopher Laskodi
- Hoopa Tribe: Veronica Yates

Topics/Actions

- Reclamation will share the draft TMP before the April monthly Meeting.
- Kearns and West will share the pulse flow recommendation from the SRTTG with the Shasta Planning Group
- Reclamation will provide the SRTTG with operations updates on the status of the spring pulse
- Cyril Michel will reach out to Lewis Bair to coordinate on potential locations for monitoring deployment during the spring pulses.

Welcome, Agenda Review, and Purpose

Adam Fullerton, Kearns and West, welcomed all participants.

Hydrology and Operations

Reclamation presented the hydrology and operations updates with a focus on conditions for a spring pulse flow.

Releases and Storage:

- Keswick releases are currently at 3,250 cfs.
- There was warming downstream, but temperatures stayed cool near Keswick.
- Reclamation is planning to maintain the temperature in the river at 53.5° F at CCR all season. There should be enough cold water pool and storage capacity to maintain this temperature all season.
- Shasta storage will hit 4 MAF the week of 4/10.
- The April 50% Exceedance forecast should come out next week. Looking at the early runs of the forecast, Shasta should be full by early May and releases at Keswick will remain at 10,000 cfs throughout the season.
- The new forecast will provide the Trinity River ROD flows, which will begin on April 16th.
- Flows at Wilkins Slough are currently 15,000 cfs and will likely recede to 11,000 cfs due to decrease in flows from Bend Bridge. This could change if precipitation occurs.
- If flows drop below 11,000 cfs, it will mean that flows at Keswick would not have to increase drastically for the pulse flow.
- Releases need to increase at Shasta for either storage management or for downstream flow needs.

Questions and Comments

NMFS asked if the forecast still includes 2,500 cfs in April for Carr diversions?

- Reclamation responded that this is a holdover. The model for the March forecast assumed that there were going to be drier conditions. There will be no diversions through Carr; any flow would be from leakage.

Spring Pulse Flow Operation Proposal

Elissa Buttermore, Reclamation, presented the Spring Pulse Operations Plan (“the Plan”) to the SRTTG. This plan includes details of the proposed pulse flow that participants in the Upper Sacramento Scheduling Team (USST) – Spring Pulse Meetings discussed and agreed to bring to the SRTTG as a recommendation. Details of the Plan include:

- The purpose of the pulse flow is to increase survival of outmigrating juvenile spring-run Salmon in the Sacramento River.
- Based on forecasted conditions, the Proposed Action allows Reclamation to release up to 150 TAF from Shasta Reservoir via one or more pulse flows; the PA assumes that storage of more than 4 MAF in Shasta as of May 1 will allow a pulse flow while also maintaining sufficient cold-water pool to support summer cold water pool management and not interfering with the ability to meet performance objectives.

- The USST group discussed the forecast and timing for outmigration of smolts and fry. The greatest benefit of a pulse flow in most years is estimated to be in late April and early May because smolt populations from Mill and Deer Creek outmigrate later in the season.
- Cyril Michel, SWFSC, will be leading the effort to acoustically tag fish and will be doing telemetry studies.
- ACID needs and power impacts were also considered.
- The team reviewed various pulse flow scenarios.
- Scenarios that were presented include:

Table 1: Pulse Flow Scenarios Examined Summary

Scenario	Estimated Volume / Storage Cost (TAF)	Estimated Max Keswick Flow (cfs)	Estimated Difference in Migration Survival (all years)	Estimated Difference in Migration Survival (above normal years)
S1	58	12,200	1.06	1.04
S2	61	12,900	1.06	1.03
S3	60	11,900	1.06	1.05
M1	107	13,800	1.12	1.04
M2	100	14,000	1.12	1.04
M3	118	13,700	1.12	1.06
M4	83	12,500	1.11	1.13
M5	94	12,900	1.11	1.11

- The USST group recommends the M4 scenario based on the improved survival rate and comparable water cost with the other scenarios.
- The volumes noted in the table represent the amount of volume that would be used for each scenario. However, the water volume for the first pulse in M4 would be reduced if the water needed to be released regardless for reservoir storage management.
- The assumption was that accretions from the creeks will decrease from late April to May and diversions will increase.

Questions/Comments

- Lewis Bair, RD108, noted that there is an upper limit to flows at Wilkins Slough before seepage occurs. If water elevation reaches more than 41 feet (approximately 18,000 cfs) then there begins to be a negative effect on the crops adjacent to the river. The river is already at 16,000 cfs so keeping in mind the capacity issues should be part of the planning. Would the releases be limited to the target of 11,000 cfs?
 - Reclamation responded that a lot of assumptions are being made in the plan for accretions and diversions. As diversions pick up later in April, conditions could change, so plans may change. The information is good to know. If they do release a change order and the river forecast shows issues downstream, they will back off the releases.

- USFWS asked if there will be any documentation noting that for the total volume of water required by the pulse flows, some of it will be neutral because of the storage releases?
 - Reclamation commented that the total water cost and the amount that would be released regardless for reservoir management cannot be quantified at the moment, but there is a sentence in the Pulse Flow Scenario section that addresses the issue. They can break out the two pulses in their spreadsheet tool which will allow them to break out daily and monthly releases. They can add that to the Spring Pulse Operation Plan.
 - USFWS said this would be helpful to add to the plan to ensure documentation of the fact that the water cost is offset.
- NMFS commented that when planning the second pulse they would suggest looking at inflows from Mill and Deer Creek to align the pulse with outmigration from those tributaries.
- Lewis Bair commented that in the future they would like to see some analysis of whether temperature dependent mortality will be affected by a pulse flow. It should not be assumed that this decision can be made without this analysis.
 - Reclamation responded that this is always a concern; however, this year the plan will have no effect to temperature management. There is no concern about storage and there will be high releases all summer to prepare for flood control for next year. Under current conditions, if temperature models are run with and without a pulse, there would be no difference.
 - K&W commented that this was a topic that was addressed in the USST meetings and there was an understanding that TDM was not going to be an issue this year, but that the SRTTG needs to provide resources for this analysis in future years.

Pulse Flow Monitoring Implementation

Cyril Michel, described what the monitoring plan is for the spring pulse flow study. The two pulses are spread apart by the week.

- Acoustic tagging of 240 juvenile salmon from Coleman Hatchery will occur the week before the pulse, the week of the first pulse, the week after the first pulse, the week of the second pulse and the week after the second pulse.
- There are three control groups and three pulse groups.
- Available turbidity sensors will be deployed in the Sacramento River; however, there are monitoring gaps from Red Bluff to the Delta.
- Cyril is hoping that researchers along the river are notified of the pulse flow and can take advantage of the opportunity to do some additional monitoring and data collection.
- There is also an effort by Coleman Hatchery to release the last of their fall-run Chinook during one of the pulses in order to improve their survival during outmigration.

Questions and Comments

- USFWS commented that they let their Lodi office know and they look forward to helping with monitoring.
- Lewis Bair commented that they are willing to coordinate with water districts to provide for locations and power for monitoring efforts.
 - Cyril responded that they are looking for hard structures to hang monitoring gear off of that will not be tampered with. Cyril will reach out to Lewis coordinate.

Support for the Spring Pulse Recommendation

Representatives from SRTTG stakeholders gave their support for the recommended Spring Pulse Operation Plan. Stakeholders included:

- DWR
- CDFW
- NMFS
- USFWS
- SWRCB
- RD108
- The Yurok Tribe
- SRSC
- Reclamation

Process to raise recommendation at the Shasta Planning Group

- Based on the Pulse Flow Guidance Document, the group needs to document their recommendation that outlines the plan and send to the SPG for consideration.
- K&W will send an email to the SPG with the SRTTGs recommendation.

Adjourn

Post-Meeting Documentation

Thursday 4/13, 3:59 pm Email from Kearns & West to the Shasta Planning Group

Subject: SRTTG Spring Pulse Flow Recommendation to SPG

Dear Shasta Planning Group,

A subgroup of SRTTG members has met over the past six weeks to assess the viability of a spring pulse flow based on the criteria described in the Proposed Action and to determine what

a preferred scenario would look like in terms of number of pulses, duration, and timing. The subgroup has had regular participation from Reclamation, NMFS, SWFSC, DWR, CDFW, USFWS, SRSC, and the Hoopa Tribe. This afternoon, Tom Patton and Elissa Buttermore of Reclamation presented to SRTTG the subgroup's recommendation to implement Pulse Scenario M4, which includes two pulses, one in late April and one in early May. For your reference:

- The recommendation is outlined in the attached Spring Pulse Ops Plan.
- Also attached are the Spring Pulse Study Plan, which includes the Monitoring Plan, and the Spring Pulse Flow Guidance Document, which outlines the direction provided by the Proposed Action and BiOp. The survival estimates considered by the subgroup and the most recent updated runs are attached as the "survival per scenario" files.

All agencies present voiced support for advancing the M4 recommendation to the Shasta Planning Group; participating agencies were Reclamation, NMFS, DWR, CDFW, USFWS, SRSC, Water Board, and the Yurok Tribe. Additional feedback included:

- A request from NMFS that, to the extent possible, the subgroup provide input that would enable CVO to align the timing of the second pulse to outmigration from Mill and Deer Creek
- A request from SRSC that the pulse flow be closely monitored so that flows at Wilkins Slough do not exceed 18,000 cfs (i.e., 41 ft)
- A request from SRSC that analysis of future pulses include comparative TDM runs (i.e., with and without a pulse), so that the impact of the pulse on temperature can be assessed particularly in drier years.

I would also like to note the **time sensitivity of this request:** if the M4 Scenario is approved, Cyril Michel of SWFSC and his team will need to begin tagging fish for the "pre-pulse" comparison on Monday 4/17.

I expect that your individual SRTTG representatives will be briefing you further on the details and rationale supporting the recommendation, but please feel free to reach out to K&W if you need any of the materials the subgroup considered during their discussions.

Best,

Terra and the KW Facilitation Team

Friday 4/14, 3:18 pm, Email from Kristin White on behalf of the Shasta Planning Group to Kearns & West

Terra -

The Shasta Planning Group members all support this action and Reclamation approves, so we will begin implementing (to the point feasible given potential flood control/storage management operations) per the schedule.

The above email was forwarded to the SRTTG 4/14 at 3:30pm.