



Sacramento River Temperature Task Group

Spring Pulse Flow Planning Subgroup Meeting Summary

March 29, 2023

Participants

Agency	Attendees
CDFW	Crystal Rigby
DWR	N/A
NMFS	N/A
Reclamation	Elissa Buttermore, Lisa Elliot, Tom Patton, Gary Pitzer
SWFSC	Cyril Michel
Hoop Tribe	N/A
SRSC	Yuen Lenh, Anne Williams
USFWS	Jim Earley
Kearns & West	Mia Schiappi, Terra Alpaugh

Action Items

- **Jim Earley** to follow up with contacts working on Sacramento juvenile habitat projects to see if they have any data/observations about the number of fish in the uppermost river and how many fish have already moved downstream
- **Cyril Michel** to distribute Miles Daniels' analysis of what impacts on TDM would have been had there been pulse flows implemented in past years
- **Tom Patton** to update spreadsheet with a focus on making May as accurate as possible; include the latest estimated accretions across the month, depletions as informed by planned diversions, and planned Clear Creek pulses; share by **Monday 4/3 mid-day**
 - **Cyril** to run his survival modeling using Tom's latest numbers and share by **Tuesday 4/4 mid-day**.
 - Note: if Reclamation would like him to run the M10 scenario, please send further clarification.
 - **All participants** to review Tom's information on water cost and Cyril's survival estimates before meeting on Wednesday 4/5.
- **Elissa Buttermore and Lisa Elliot** to begin drafting the Pulse Flow Operations Plan; insert as much information as is available now; flag sections that need specific input from

participants and input after the Wed 4/5 discussion. Distribute to participants by **Tuesday 4/4 mid-day.**

Key Discussion Topics with Summary of Perspectives, Outcomes, and Agreements

Meeting Objectives

- Review Operations Update and May storage projections.
- Initiate discussion of potential pulse scenarios.
- Determine next steps needed to make recommendation to SRTTG.

Operations Update & Discussion of Next Steps

Reclamation provided a brief update on the current conditions and operations with a focus on the parameters impacting whether a spring pulse flow can be considered.

- Current storage in Shasta is 3.7 MAF, and there are good inflows. Reclamation is releasing 3,250 cfs and has no plans to change.
- ACID may try to install their diversion dam next week, but they will need a five-day dry window and forecasts are uncertain. A push for diversions is not anticipated until mid-April, so they still have time.
- Reclamation noted that diversions will increase around the same time they are considering for a pulse flow, so coordination will be necessary so that increased flows at Keswick are not diverted before they reach Wilkins Slough.
- Whiskeytown Reservoir will be naturally filled without diversions from the Trinity.
- Reclamation is currently implementing a small pulse on Clear Creek. There will be two more pulses on Clear Creek – during the first week of May and again in June. While they are not huge volumes of water, the May pulse could be used to supplement a pulse flow volume happening concurrently.
- Shasta is approaching encroachment (currently 250 TAF below the established threshold) but at this point in the year, that line is more of a guideline. Reclamation is most concerned about filling Shasta too early and then having to absorb a spring rain event and needing to spill, especially after the ACID dam is installed, which can't handle flows above 15k cfs. If the fill rate increases too quickly, they will increase Keswick releases to slow the fill.
- If Reclamation did need to spill from Shasta, it could be done concurrently with a pulse flow in early May. Whatever water was used as part of a spill would not be counted as part of the spring pulse volume.

Perspectives and questions shared by subgroup members included:

- Comment (C) (USFWS): Clear Creek flows would not help provide a signal to upper-Sacramento fish just below Keswick, which is a primary purpose of a pulse flow.
 - SWFSC agreed that while they should take advantage of any existing flow events and/or tributary runoff, they should plan the pulse flow to ensure those upper river fish also get the signal to move. The fish in that section only receive the 3,250 cfs from Keswick unsupplemented by tributary flows, so they are not experiencing the same wet year conditions as the other reaches.
- Question (Q) (SRSC): Is there monitoring that tells us how many fish are in that upper reach now? Or will be in late April/early May?
 - SWFSC explained that there is not a survey of where juveniles are in the system; while they know where adults spawned and have counts of fish exiting the system, that does not reveal how many are left. While the Red Bluff screw trap counts might give some clue, the recent high flow events prevented very accurate counts. It is reasonable to presume that many fish moved during those high flows even if they were not counted.
 - USFWS agreed that the numbers captured this year have been extremely low. There should be a lot of fish in the upper river because there has been recent completion of a number of projects creating juvenile habitat in the area. While flows have been high elsewhere, there have not been outmigrating flows in the upper section, though the precipitation should have created some additional inflow and turbidity.
 - Reclamation observed that this appears to be a gap in the monitoring program; maybe periodic snorkel surveys of the upper river are needed.

Proposed Timing and Duration of Pulse Flow

SWFSC put together a spreadsheet of forecasted baseline flows for the next three months with the acknowledgement that conditions can change quickly. SWFSC has developed R code so that as long as the formatting of the spreadsheet does not change, they can quickly rerun survival estimates when the flow numbers are updated.

SWFSC reminded the group how they developed 15 scenarios by looking at variations of pulses of 2, 3, or 4 days at full flow (11k cfs); one or two pulses; and implementation timing across the months of April and May. For each scenario this year, SWFSC evaluated the projected number of survivors above baseline conditions and calculated the additional water needed over baseline. Some of the initial conclusions are:

- None of the scenarios require more than 75 TAF, which is well below the cap of 150 TAF that can be used for the pulse flow action.
- Baseline flows in April are forecasted above 11k cfs, so there are numerous scenarios that include April pulses that do not show increased survival.
- There are May scenarios that show benefits to fish, specifically M5 (3 day pulses in early and mid-May) and M6 (4 day pulses in early and mid-May). M9 (pulses in early April

and early May) performs well when using data from all year types but not as well using data from wet years only.

Reclamation noted that the planning document they provided selects the start dates of the pulse flows at random, so the scenarios might perform differently if they were shifted a day or earlier or later.

Next Steps

Reclamation suggested that the group should put together a proposal but may need to be flexible on exact implementation dates. Considerations include:

- Uncertainty around accretions into the system in April and May; flows will not fall below 11k cfs until mid-April.
- While conditions may be drier and easier to forecast in May, diversion demands will be higher.
- If the rain continues, that will delay the diversion ramp-up date but not likely beyond May 1, so demands can be expected to be high the first two weeks of May. Generally, diversions peak the second and third week of May and then reduce for two to three weeks before another ramp-up in June. A later May pulse could coincide well with reduced diversion demands.

SWFSC agreed that maybe the group should specify that they want a pulse in early and later May and then make finer adjustments as they go along. Reclamation committed to fine tuning their forecasted accretion patterns and splitting our accretions and depletions; this should give them a better estimate of what May timing is feasible and whether Keswick releases will conflict with the ACID diversion dam.

TDM Update: SWFSC provided an update on TDM analysis; the SWFSC TDM team is not funded to support this effort, so they are unlikely to be able to do a custom analysis of TDM for this year's scenarios. Reclamation said it would also be hard for them to do an estimate at this time of year. They suggested that the group use the SWFSC's previous historical analysis (i.e., examining the difference in TDM that might have occurred if a pulse had been implemented in various past years) and pull out the wetter years of that historical period to support the subgroup's recommendation for a pulse. They can provide that analysis as an attachment to the Pulse Flow Operations Plan.