



Upper Sacramento Scheduling Team

Spring Pulse Flow Planning Subgroup Meeting

Summary

Thursday, April 4, 2024, 9:00–10:30 a.m.

Members Attending

- CDFW: Michael Memeo, Travis Apgar, Crystal Rigby, Tracy Grimes
- DWR: Ryon Kurth
- NMFS: Stephen Maurano
- USBR: Karissa Bridges, Derek Rupert, Lisa Elliot, Elissa Buttermore, Tom Patton
- SWFSC: Cyril Michel, Flora Cordoleani
- SWRCB: Shay Richardson
- SRSC: Yuen Lenh, Anne Williams
- USFWS: Craig Fleming, Matt Brown
- Kearns & West: Terra Alpaugh, Eva Spiegel

Topics/Actions

- USFWS (Craig Fleming) to share any updates on the ultimate Coleman release timing with the USST via email.
- SWFSC (Cyril Michel) to coordinate with CDFW staff tagging spring run on the river to see if they can utilize their collective efforts to cover the whole period under consideration for pulses.
- SWFSC (Cyril Michel) to analyze survival and water cost for the 2 and 3 pulse options under discussion in weeks 4, 6, and 8 and using Mill and Deer Creek passage data,
- Kearns & West to schedule an ad hoc SRTTG meeting on Thursday April 11.
- Kearns & West to notify the SPG that they will be asked for their input on a short timeline thereafter.
- USBR (Elissa Buttermore, Lisa Elliot, and Karissa Bridges) to draft Pulse Flow Operations Plan and share like with Kearns & West to put on Sharepoint for group edits.

Recap of Meeting Outcomes from March 25 & 28

Kearns & West reviewed outcomes from the last week's discussions, including:

- Reclamation will increase flows for Delta needs in early April, which will simulate a pulse flow. Reclamation will coordinate with Coleman Hatchery to determine if those flow increases can be timed with their fish release.
- The Spring Flows Group will move forward with reviewing SWFSC analysis to make recommendations for Spring Pulse Flows in late April or early May.
- Depending on the timing of the recommended flows, the group will determine when to bring the recommendation to the SRTTG. This could happen at a regularly scheduled meeting or an ad hoc meeting.

Operations Update

Reclamation provided a brief update on the current conditions and operations with a focus on the parameters for planning a pulse flow.

- Flows at Keswick are currently at 4,000 cfs but will increase to 6,000 cfs on Monday and arrive in the Delta later in the week. An additional flow increase to 8,000 cfs will likely occur later in the week and potentially another to 10,000 cfs the following week. Wilkins Slough should be at 14,000–15,000 cfs by late next week.
- Coleman Hatchery will likely coordinate their release with the flow increase late next week (at 8,000 cfs).
- How high flows need to go will be impacted by operations at Oroville Dam, which is currently moving out of encroachment and may be ramping down flows. Reclamation is coordinating with the State Water Project to ensure they are aligned on downstream needs.
- DWR will release its Bulletin 120 on Monday, which will give Reclamation important information on the snowpack and anticipated runoff.
- Shasta will be out of encroachment early next week.
- Depending on the standard established by the April 1 numbers, flows to the Delta will likely need to be elevated for up to 20 days. After that point, they could be reduced in mid to late April.
- Clear Creek will be back to 200 cfs and hold there through April. The next pulse at Clear Creek will be mid-to-late May.

Spring Pulse Flow Scenario Review

Participants discussed the pulse flow scenarios that were the highest performing in terms of survival estimates in the latest SWFSC analysis. With releases in back-to-back weeks removed (rationale described in “fish-related considerations” below), pulses in weeks 6 and 8 performed best using migration timing data from all year types and pulses in week 4 and 6 performed best using data from wet years. Given the uncertainty around whether all year or wet year migration trends are more reflective of this year's conditions, the group also discussed the possibility of

implementing three pulses in weeks 4, 6, and 8. The weeks were defined as follows:

- Week 1: week of April 1
- Week 2: week of April 8
- Week 3: week of April 15
- Week 4: week of April 22
- Week 5: week of April 29
- Week 6: week of May 6
- Week 7: week of May 13
- Week 8: week of May 20

Participants considered various options and reviewed the opportunities and challenges associated with each. They discussed the following considerations:

Reservoir Storage Considerations

- The total water cost of the combined pulses will need to be less than 150,000 acre feet.

Fish-related Considerations

- There is no part of the model that accounts for whether there is actually a reservoir of fish ready to move. Therefore, SWFSC recommended at least a week between pulse flows in order to ensure there is a new group of fish ready to migrate when the second pulse is initiated. There was some interest in whether spacing pulses at least two weeks apart would be even better experimental design.
- CDFW will be tagging fish for spring run work. SWFSC has 950 tags and may be able to get a small number more; this would not be enough for three pulses and associated control groups, but they could coordinate with CDFW to ensure that fish are tagged across all the weeks of the study period.
- In an ideal world, the Sacramento River and Clear Creek pulses would occur at different times. The Clear Creek Technical Team has observed that when temperatures are cooler by several degrees on Clear Creek than on the Sacramento, adult spring run are attracted up Clear Creek. Lower flows on the Sacramento would likely result in higher temperatures. Therefore, Clear Creek returning fish might benefit if the Sacramento pulses are before or after the Clear Creek pulse, which is currently scheduled for May 16–27 with peak flow at 800 cfs on May 17–20.
- SWFSC asked if there was any concern about temperatures rising with increased air temperatures later next week. USFWS and Reclamation said that temperatures should not be a concern given the amount of flow in the river.
- USFWS voiced their interest in supporting out-migration of spring-run fish from the tributaries, specifically Mill and Deer Creek. They asked the group to consider how the weeks being considered lined up with the historical migration timing from those

tributaries.

Timing-related Considerations

- In the past, there was some concern over water quality (temperatures) becoming progressively worse in the Delta during late May. Therefore, earlier pulses may be more protective by encouraging the fish to migrate during a period with better water quality.
- One potential benefit of a pulse is to encourage the last fish in the upper river to out-migrate; therefore, scheduling a late pulse may better serve that purpose.
- There can be a tension between assisting the most fish and implementing an experimental design that will allow the group to most clearly evaluate the effects of the action. Implementation of a pulse immediately on the tail of the higher April Delta flows would introduce confounding influences on the pre-pulse control group, but it still might be the best time to provide higher flows for fish during a time of peak migration.

Recommendation

- The participants concluded that they wanted to make a recommendation with some flexibility to address conditions in real time. Ideally, they would like to commence after flows stabilize in the 5,000–10,000 cfs range.
- Pending confirmation that they can implement three pulses and remain under the total 150,000 acre feet water cost cap, the USST will recommend three pulses, with the first pulse in Week 4 (April 22) or Week 5 (April 29) depending on conditions (see first bullet). The second pulse is proposed two weeks after the first pulse, which would be Week 6 or Week 7. The third pulse would occur two weeks later, which would be Week 8 or Week 9.
- If only two pulses are feasible given water cost constraints, they would recommend pulses in weeks 4 and 6 or weeks 4 and 8.
- For a week 4 release, the pre-pulse release group will need to be released the week of April 15. SWFSC suggested that they ask the CDFW group to provide data from the fish tagged during that period since it will likely be on the tail end of the high Delta flows and the data will not be as illustrative of distinct pre-pulse and pulse periods.

Next Steps

- Reclamation will create new flow scenarios informed by Bulletin 120 on Tuesday.
- SWFSC will produce analysis on survival and water costs for the two and three pulse scenarios discussed and using Mill and Deer Creek passage data on Tuesday.
- Reclamation will put together a draft pulse flow operations plan.
- Kearns & West will schedule an ad hoc SRTTG meeting and notify the Shasta Planning Group that they will need to convene or confer via email to provide input prior to an April 15 Reclamation decision.