BUREAU OF RECLAMATION

2024 Sacramento River Temperature Management Plan - Condition 6

February 11, 2025

Background

The State Board responded to Reclamation's 2024 Sacramento River Temperature Management Plan with conditions WRO 90-5. Condition 6 states:

> *By February 1, 2025, Reclamation shall report in writing to the State Water Board and fisheries agencies on improvements to tools to manage conditions for fall and spring-run Chinook salmon as well as improvements to decision support tools to better integrate assessment of TDM and redd dewatering.*

Improvements to Tools

Reclamation continues to develop and improve upon decision support tools related to Central Valley Project operations effects to fish in a manner that is transparent and accessible to all. Reclamation has been working with the Columbia Basin Research team at University of Washington on SacPAS for several years. SacPAS provides query tools to access historical and real-time data on environmental conditions and fishes, as well as predicted estimates of fish responses based on historical data and models. The SacPAS Fish Model is a decision support modeling tool that provides access to the data and models on juvenile salmon survival and migration in the Sacramento River and Sacramento-San Joaquin River Delta, including temperature dependent mortality. One recent improvement is that spring and fall-run chinook salmon spawning data have been integrated into the Fish Model Tool to use as inputs for estimates of temperature dependent mortality for these salmon runs.

- Fish Model

- SacPAS Fish Model Manual

Reclamation and University of Washington also recently developed an Upper Sacramento Scheduling Team page that is regularly updated during the fall season with information on potential flow scenarios, and winter redd dewatering estimates. This page includes an assessment of carryover effects to next year's winter-run chinook salmon brood. Reclamation's analysis on the relationship between winter-run chinook salmon temperature dependent mortality relationship and Shasta Reservoir end-of-year storage suggests a threshold of 2,200 TAF end of September Shasta Storage to assess the impacts of TDM impacts on next year's cohort. Next year's cohort is expected to experience minimal TDM impacts when end of September Shasta Storage is greater than this threshold, while values lower than 2,200 TAF are correlated with potentially more negative TDM impacts.

- Current Conditions for the Upper Sacramento Scheduling Team (USST) -- in development: SacPAS Sacramento Prediction and Assessment of Salmon and other fishes

Reclamation has created a publicly accessible github page that contains all input data, model code, and updated summaries, which is linked on the SacPAS USST page.

- GitHub - BDO-Science/Fall_Flow_Redd_Dewatering: code to create one page summary of Fall Flow scenarios and shallow redd dewatering

Reclamation is currently developing new tools to demonstrate how fall-run chinook salmon redd dewatering estimates vary through time for proposed scenarios. Reclamation anticipates that these new tools will be available for the upcoming season.

Reporting

Reclamation has existing processes for reporting out on improvements to evaluating the effects of CVP operations on fish species including improvements to decision support tools. Reclamation has two reports related to Shasta operations effects to salmon: *Shasta Winter Storage Rebuilding and Spring Pulse Flow Seasonal Report* and *Shasta Cold Water Pool Seasonal Report*. Reclamation coordinates with stakeholders through forums such as Sacramento River Temperature Task Group and Upper Sacramento River Temperature Task Group which in 2025 will be known as Sacramento River Flow and Temperature Group (SRG). Meeting notes are posted here:

Sacramento River Temperature Task Group | BDO | Area Offices | California-Great Basin | Bureau of Reclamation