BUREAU OF RECLAMATION

Sacramento River Group Summary

September 24, 2026

Participants

- California Department of Fish and Wildlife (CDFW): Travis Apgar, Mallory Boro, Jamie Ebenal, Tracy Grimes, Matt Johnson, Michael Memeo, Erica Meyers, Gary Zhao
- California Department of Water Resources (DWR): Mike Ford, Kevin Reece
- Contra Costa Water District: Deanna Sereno, Ashley Overhouse
- Friends of the River: Devon Pearse
- MBK Engineers: Catherine Morales-Sandoval
- National Oceanic and Atmospheric Administration (NOAA): James Gilbert, Miles Daniels, Sam Pyros, David Reynolds
- Sacramento River Settlement Contractors (SRSC): Thad Bettner
- San Luis-Delta Mendota Water Authority: N/A
- Save CA Salmon: N/A
- Stantec: Stephanie Theis
- State Water Resources Control Board (SWRCB): Matthew Holland, Jeff Laird, Craig Williams
- U.S. Bureau of Reclamation (USBR): Emelia Barnum, Luke Davis, Lisa Elliot, Randi Field, Ryan Lucas, Mandy Migura, Tom Patton, Mechele Pacheco, Kevin Thielen, Tim Warner, Rod Wittler
- U.S. Fish and Wildlife Service (USFWS): Kaitlin Dunham, Bill Poytress, Natasha Wingerter
- Watercourse Engineers: Mike Deas
- Westlands Water District (WWD): Katarina Campbell
- Western Area Power Administration (WAPA): N/A
- Yurok Tribe: N/A

- Kearns & West (K&W): Terra Alpaugh, Mia Schiappi, Anna Rossi

Action Items

- **Reclamation** to share graphic/visual displaying TCD and unit connectivity (including penstocks).
- **Miles Daniels/SWFSC and Reclamation** to coordinate development of a cost-benefit analysis to assess impact on TDM from marginal temperature changes.
- **Kaitlin Dunham** to share reference materials on hatchery temperature risk management levels

Summary of Actions

Welcome, Agenda Review, and Purpose
Mia Schiappi, Kearns & West, welcomed all participants.

Hydrology Update
Tom Patton, Reclamation, provided the latest forecast and implications for the Sacramento River system, and reported on current hydrologic conditions and dam operations. Patton presented the information contained in the meeting packet shared with the SRG. Sections below correspond to groups of graphs, images, and tables in the meeting packet provided by Reclamation.

Current Storage, Releases, Water Temperatures, and Current Operations: Daily CVP Water Supply as of September 21, 2026.

- Precipitation:
    - There is about a week left in the water year. Barring additional precipitation, the year will end at 51.6 inches, which is slightly below the average of 53.2.
- Reservoir Releases:
    - Releases are currently at 6,000 cfs to the river at Keswick. Reclamation will hold that level of release through the end of September and likely the first half of October but will adjust based on downstream conditions.
    - Currently, the Delta does not need additional water. Reclamation will continue with fall smoothing. They are working to get agreements in place and smoothing diversions for rice decomposition. Some diversions are being pushed from October to November.
    - The minimum flow through Keswick in the winter is 4,000 cfs. Reclamation is aiming to ramp down to minimums by late November/early December,

assuming no early seasonal flood events. There is room in Shasta for flood control.

- At Trinity, releases are at 1,200 cfs below Lewiston. Releases will ramp down to 450 cfs and lower across the lower portion of the Klamath River. Reclamation estimates the total release volume will be around 30,000-35,000 AF.
    - Reclamation will continue to monitor temperatures with the reduced flow.
    - Reclamation is diverting roughly 1,000 AF of water per day from the Trinity through the Carr Power Plant to primarily Whiskeytown and a portion to Spring Creek Power Plant.
- In response to warmer temperatures at the IGO gauge, Reclamation increased flows to Clear Creek. Current releases are at 225 cfs with an increase to 250 cfs on 9/25.
- In mid-October or mid-November, Reclamation plans to decrease releases at Whiskeytown Reservoir. Bringing levels down requires water going through Spring Creek Power Plant. To avoid impacts to end of year river temperatures, Reclamation is trying to delay when Whiskeytown water levels are decreased.

- CVP Storage and Inflow:
    - Storage in the Norther system is good.
        - Folsom storage is 98% of the 15-year average.
        - New Melones storage is 118% of the 15-year average.
    - Accumulated inflows for the year are about average.
        - Trinity is 103% of the 15-year average.
        - Shasta is 104% of the 15-year average.
        - With only one week left in the water year, Reclamation does not expect much change in these data points.
    - Shasta storage at the end of WY26 is at around 2.4 MAF, where the top of conservation sits at 3.2 MAG. There is room for flood management ahead of the winter season before decisions about adjustments need to be made.
- Temperature Management:
    - The TCD has shown slow increases in Shasta temperatures.
    - Currently, temperatures are just above 54°F. There have been no TCD adjustments, but Reclamation has been testing unit configurations.

        - Adjustments and testing will continue through the weekend, with efforts focused on pulling water through the coldest unit, Unit 5.
        - The current adjustments have slowed the rate of temperature increase.
        - Reclamation will reassess approaches next week.
    - Reclamation is monitoring water movement through Lewiston and is considering impacts below Lewiston.
        - There is still some anomalous data around penstock temperatures. Reclamation is exploring the cause, including potential leakage and uniqueness of the year with high storage and side gates open early. The plan is to keep things static and monitor any changes.
    - Spring Creek Power Plant is warm at 58.5°F. Reclamation has eased off diversions to try to lower temperatures.
    - Sacramento River at Clear Creek (CCR) temperatures are around 56.5°F. The daily average on 9/23 was 56.4°F.
    - At Balls Ferry, temperatures are at around 58°F as of 9/22.
    - Downstream, IGO is around 57°F, which is why Reclamation has increased flows at Clear Creek to try to reduce temperatures.
    - Mean daily temperature trends for the Sacramento River are as expected, with a slight trend upward. There is uncertainty if the trend will hold, or if the pace will change.
    - Mean daily temperature trends for the Trinity River are relatively flat. Reclamation may explore adjustments to the TRGs, but at this point in the year, there is little action to be taken. There may be more warming, but shorter days should prevent significant increases and will limit impact of a heat wave.

Reservoir Profiles and Cold-Water Pool: Graphs on Isothermobaths-2026, Graphs on Cold Water Pool Volume, Percent Exceedances (1998-2025):

- Shasta Reservoir:
    - Temperature profiles for Shasta Reservoir are collected weekly throughout the season. The most recent profile was taken 9/21 and shows as expected temperature progression.
    - Water leaving the TCD is about 54°F. Unit 5 temperature is 51°F. Units 1-4 are warmer, resulting in a blended temperature read from the TCD.
        - 51-52°F temperatures were expected from the outlets, but reports from the hatcheries indicate temperatures up to 53°F.

        - Reclamation deployed an ROV today (9/24) to search for missing panels or unexpected adjustments to the TCD (e.g., open gates, debris preventing gate closures). While Reclamation does not expect to find anomalies, the ROV process will eliminate uncertainty before moving forward with decision-making.
    - Water at the 750 outlets is around 53°F. The outlet is large and angled, so water is, in reality, being pulled at 650-750 depths.
    - Shasta's isothermobath plot shows incredibly limited levels of the coldest water.
    - Cold water pool volumes are very low across all profiles. The ≤52°F volume is trending below 2025 and 2022 drought years. The ≤50°F volume is nearing zero. The ≤48°F volume is basically at zero.
    - Shasta is at 75-90% exceedance mark for ≤52°F. The ≤50°F cold water pool volume is around 95% exceedance.
- Trinity Lake:
    - The Trinity and Whiskeytown profiles are conducted once a month.
    - Trinity is trending much cooler than Shasta.
    - The ≤52°F cold water pool exceedance is 50-52%, the ≤50°F and ≤48°F cold water pool exceedance is around 25%.
- Whiskeytown Lake:
    - The Whiskeytown profile shows warming, with co coldest water temperature along the deepest parts of the lake.
    - The ≤60°F is about average. The ≤58°F and the ≤56°F are below average.
    - For exceedance plots, the ≤60°F and the ≤58°F are between the 50-75% exceedance. The ≤56°F is just above 75%.

Outlooks:

- The Climate Prediction Center outlook, issued 9/17, shows above average temperatures for most of California in October.
- The October precipitation outlook shows an equal chance of normal precipitation.
- The October-December seasonal outlook shows elevated temperatures with above average chances and equal chances of precipitation for Northern California.
- The seasonal temperature outlook for December 2026 – February 2027 shows higher changes of above normal temperatures for Northern California. The seasonal precipitation outlook shows above average chances for all of California.

- The Northern Sierra Precipitation, including historical el Nino years, shows some strong el Ninos with below average precipitation, indicating possibility of a drier season.

Sacramento River Modeled Temperature, 2026 September Exceedance Water Outlook:

- At the end of the water year, there is not a lot of hydrology to look at. The 50% and 90% exceedances should be converging. Historically, hydrological conditions between October and November are limited and December will be the first indication of what WY27 may look like.
- For the 50% exceedance, storage is estimated at 2.4 MAF for the end of the water year for Shasta. That storage will decrease to 2.3 MAF by the end of October. Storage will be good if the reservoir receives the historical volume of runoff.
    - Releases on the Sacramento below Keswick are averaging 6,600 cfs, decreasing to 4,000 cfs by December.
- The 90% exceedance is drier. Shasta storage reaches 2.8 MAF. Hopefully, wetter conditions will improve the 90% exceedance estimates. Some conditions point toward a Bin 3 year, but Reclamation is looking into water demands to assess and is monitoring into the fall and winter.
    - In March 2027, releases drop to 3,250 cfs to conserve as much water volume as possible for as long as possible. Reclamation is planning to proceed with minimal pumping and minimal release. In terms of CVP operations, this is an extreme drought outlook.
    - There were recommendations to use a stepwise approach to adjusting the temperature target at CCR. This temperature run helps show that potential progression.

Power Bypass Updates:

- Reclamation reviewed the profiles and collected hatchery data to confirm temperatures for a bypass. A 750 bypass would increase releases to 3,000 cfs, similar to previous bypass.
    - Direction is dependent on Keswick management, which is releasing at 6,000 cfs with no adjustments planned. Releases at the power plant would be decreased and moved to Unit 5 to pull colder water.
    - Reclamation is working through what long-term benefit, if any, a bypass would have. An assessment of long-term benefits would include many assumptions and increase uncertainty.
        - Folsom is engaged in a full SDM process for deciding on a power bypass, but it is time-consuming and therefore unlikely to benefit Shasta operations for this WY. SDM processes may be a consideration for the future.

        - Reclamation is also considering hatchery impacts. During the 2014 bypass, there was no connectivity to the hatchery. Though Reclamation does not anticipate impact, a 750 bypass would pull more water through the hatchery and could potentially decrease volume of cold water more rapidly. Reclamation is working to assess the tradeoffs between hatchery and downstream conditions.
    - Over the last two weeks, the 750 outlets have seen ~1°F of warming per week.

Questions and Discussion

- SWRCB asked if Reclamation has or could produce a visual of the TCD and units to better understand connectivity.
    - Reclamation confirmed they can share a graphic with the SRG. Reclamation verbally described the setup as follows:
        - If looking up at the dam from downstream, Unit 5 is on the right, which is on the side of the TCD where the side gates are. Unit 1 is the furthest to the left towards the embankment side of the dam, furthest from the center line of the river.
    - CDEC has penstock temperatures. Each penstock has an SPS group identifier, which allows Reclamation to plot all 5 units together and compare temperature across.
- CDFW asked for clarification about increasing releases at Clear Creek and if the intent was to lower temperatures.
    - Reclamation responded that there is not a TCD at Clear Creek but they are targeting cooler water. The decrease in flows at Clear Creek is taking water from Spring Creek Power Plant. Water is switched through at the Power Plant at Keswick to bring it through Clear Creek and down to IGO. At IGO, Reclamation is working toward 56°F. Reclamation is changing the level of intake at Whiskeytown, pulling from the coldest water in the reservoir.
    - The next option is to increase releases to cool the river. Releases are increasing in 25 cfs increments through next week, and then Reclamation will assess and adjust as needed.
- CDFW followed up to confirm that the CCR Station is upstream of the Clear Creek confluence.
    - Reclamation confirmed this. They plan to continue releasing the same amount of water at Keswick, but more water will come from Shasta to make up for Clear Creek decreases. There will be more water below the confluence of Clear Creek.

- SWRCB asked about the expected change in temperature if the 750 bypass was implemented.
    - Reclamation responded that the .5°F was an estimate. Everything is slowly warming so even with a bypass, that warming will continue. A temperature benefit measured today may diminish in the future. There is also the question of when does the cost of cooling exceed its benefits to consider.
- Watercourse Engineering added that, given the size of Shasta, temperatures at depth will continue to heat on a stable trajectory. Looking at the Sacramento River Mean Daily Temperature chart, the TCD line is on a slow, but consistent upward progression through late November. The water will not cool at depth. However, releasing water to the river and exposing it to longer, cooler nights may balance need for cool water. Seasonal cooling should be considered to cool the water.
- Reclamation also noted that having a biological perspective on this approach would be helpful. For example, is there a 0.5°F cooling effect from the bypass, how can biological benefits be quantified?
- There is also an option to slow drawdown, bring more water in from Trinity and blend with warm water from Spring Creek.
- SWCRB added to Watercourse Engineer's comment. If Shasta releases are expected to trend upward, and there are minimal management actions to be taken, does this course of action become obsolete when considering risk to hatchery fish. SWCRB also asked if there were alternatives to a 750 bypass if the outcomes impacted hatchery fish.
    - Reclamation noted that chillers from past years were removed so there is not a backup plan in place to cool the hatchery. The 750 outlet was put in place to combat drought impact to the hatchery. From a cold water pool perspective, this is an extreme drought year.
    - SWFSC offered to work with Reclamation to conduct a cost-benefit analysis of a .5°F increase on TDM.
- Watercourse Engineering also added for consideration that a 750 bypass may not have any significant change on temperature. When assessing tradeoffs of economics and TDM, a bypass may not materialize in benefits to the river. A cold front would have a much more significant impact than a bypass.

Fall Flows Report Out

Tom Patton, Reclamation, shared that current flow releases are at 6,000 cfs. Reclamation is working with the settlement contractors to smooth out diversions, which has helped flatten out the temperature increases.

Releases are down at Keswick for this time of year. ACID is looking to pull out the dam in early November, which should help with dewatering. The dewatering threshold is holding at 1%, which is good. There were three redds that would be dewatered with the alternative, but the group decided it was an overall positive benefit to fall run to decrease flows sooner. Even with winter run redds, dewatering is likely to stay below the 1% threshold.

CDFW Sacramento River Fish Monitoring Update

Jamie Ebenal, CDFW, provided an update on CDFW's fishing monitoring.

- There are 45 total redds for 1% take.
    - 40 redds have been dewatered. 28 have been concentrated in one area and the remaining have been scattered between Keswick and ACID.
- Remaining shallow redds should emerge in the next several weeks.

USFWS Fish Conditions, Forecasts and Hatchery Updates

Kaitlin Dunham, USFWS, shared an update on winter-run Chinook at Livingston Stone National Fish Hatchery.

- Eggs are still on stacks and Livingston is taking fish.
- The hatchery is operating on the 750 valve. Temperatures were, on average, 51-52°F. Monday, 9/21, temperature highs hit 54°F, but the daily average was 53°F. Livingston is monitoring day to day.

Bill Poytress, USFWS, shared a brief update on juvenile fish at Red Bluff.

- Winter-run passage is increasing significantly.
    - 415,000 have cumulatively passed RBDD through yesterday, 9/20. USFWS is at 33% of average for passage for this date.

Questions and Discussion

- Reclamation asked Livingston what criteria meet sustained critical temperature for the hatchery.
    - USFWS responded that sustained, 56°F is a risk. They do not see mortality at this temperature, but it is not ideal for rearing winter run, especially later in the season as density increases. At that point, there is a much higher risk of death from disease spread, which could lead to higher mortality. USFWS would recommend alternative discussions when temperatures start holding at 54°F or 55°F.
- USFWS asked if there are chillers at the Livingston hatchery.
    - USFWS responded that there are chiller on the egg stacks only.

TDM Updates

Miles Daniels, NOAA, provided updates on the SWFSC TDM modeling.

- The website will be updated with lower flows tomorrow morning, 9/25.
- The modeling presented used the Shasta profile run from 9/21. The same egg mortality models were used as previous months.
- Predictions for October, November, and December were presented.
    - August predictions included cooler temperatures. Drawdown occurred faster than anticipated.
    - There is a cold bias of about 1°F. When reviewing data, keep in mind actuals may be 1°F more than the estimates.
- 2026 is tracking lower TDM than 2025. Provisional 20% against 24% (carcass, stage-independent survey). Survey data goes through August 30, 2026, making this estimate close to final.
- Population means are steady. The stage-independent redds are 17% and carcasses are 16% (based on 2013-2025 data), within 2 points of the 8/25 report.
- The 2026 aerial survey is not yet incorporated, and SWFSC temperatures have been biased cold for the year. In 2025, aerial surveys showed higher TDM (36%) than the carcass estimate (24%).

Questions and Discussion

- SRSC asked if there were estimates on egg-to-fry survival?
    - SWFSC responded that they have not yet explored egg-to-fry survival. That analysis will need to include thiamine and female population data, which is not yet accessible. SWFSC can start working with USFWS to develop analysis.

Additional Announcement & Review Action Items

Mia Schiappi closed the meeting by reviewing action items.

The next SRG meeting is scheduled for Thursday, October 22.

Adjourn