



American River Group

Power Bypass Ad-hoc Meeting

Thursday, September 26, 2022

Notes

1. Action Items

- a. Vanessa – Send temperature models PowerPoint and tabular data to K&W.
- b. Jason – Send thiamine data table to K&W
- c. K&W – Distribute temperature model PowerPoint, tabular data, and thiamine data table to ARG.

2. Introductions:

- a. USBR: Melissa Vignau, Thuy Washburn, Spencer Marshall, Zarela Guerrero, Carolyn Bragg, Elissa Buttermore, Brad Hubbard, Leeyan Mao, Drew Loney
- b. NMFS: Barb Byrne
- c. USFWS: Paul Cadrett, Craig Anderson
- d. CDFW: Crystal Rigby, Gary Novak, Tracy Grimes, Emily Fisher, Duane Linander, Jason Julianne, Mike Healey, Erica Meyers, Nick Bauer
- e. SWRCB: Michael Macon, Lauren Beaudin
- f. PCWA: Darin Reintjes
- g. EBMUD: I-Pei Hsiu
- h. SMUD: Ansel Lundberg
- i. City of Folsom:
- j. City of Sacramento: Brian Sanders
- k. San Juan Water District: Paul Helliker
- l. Westlands:

- m. City of Roseville:
- n. DWR: Mike Ford
- o. WAPA:
- p. FishBio:
- q. Water Forum: Jessica Law, Ashlee Casey, Erica Bishop
- r. Cardno: Craig Addley, Vanessa Martinez
- s. CFS:
- t. PSMFC: Logan Day
- u. Shingle Springs Miwok Band:
- v. Kearns & West: Mia Schiappi, Karis Johnston, Charles Harvey
- w. CSUS: DeDe Birch
- x. Other: Tom Boardman, Michelle Banonis, Jennifer Buckman

3. Operations Update

- a. Releases from Folsom Dam will be cut by 250 cfs (to 2,250 cfs) on 9/28/22, and another 250 cfs (to 2,000 cfs) by midday on 9/29/22. Reclamation is looking for opportunities for further cuts.

4. Power Bypass Discussion

- a. Water Temperature Modeling
 - i. Cardno prepared models based on the six scenarios decided upon at the regular September ARG meeting. For specific data please see the temperature model slides.
 - ii. Selected Modeling Results at Hazel Avenue
 - Without a power bypass, the water temperature at Hazel is above 64°F for most of October and will not drop below 60°F until late November.
 - 500 cfs power bypass beginning on October 20th with total Folsom releases of 900cfs – Water temperature at Hazel will decrease from approximately 65°F in mid-October to approximately 60°F - 62°F in the last week of October. The water temperature at Hazel drops below 60°F in mid-November.

- 500 cfs power bypass beginning on October 29th with total Folsom releases of 1,300 cfs – Warmer water temperatures in late October compared to the 10/20 – 900 cfs model; similar results by November 1 as the 10/20 – 900 cfs model.

b. Modeling Results at Watt Avenue

- By the end of November, all scenarios end up at almost identical temperatures because the reservoir will have mixed by then.
- There would be cooler water in December if there was no bypass because the cold-water pool would not have been depleted.

Questions/Comments

- NMFS asked if water is being released from the lowest shutters of the Folsom TCD in the beginning of October, before the bypass, would that affect the cold water storage available for bypass?
 - Cardno responded that it would not affect the very cold water that would be released during a bypass.
5. ARG participants discussed how potential changes in actual operations, relative to modeled operations, might change realized water temperatures compared to modeled temperatures.

a. Cold Water Pool Calculation

- There is 28 TAF of cold-water pool available for a power bypass, which equals approximately 28 days of power bypass at 500 cfs per day before the cold-water pool is depleted. If the power bypass begins 10/20/22, then the cold-water pool volume would last until 11/17/22.
- If all the cold-water pool is depleted, there will still be cooler water at the lowest penstock, but it will not be nearly as cold as the current cold-water pool. Folsom Reservoir will mix, cool, and be mostly destratified by the end of November.
- If the cold water is depleted, there would be a hope that the ambient air temperatures are low enough to cool water as it moves downstream.
- With a 250 cfs power bypass beginning on 10/20/22 and a cold-water pool volume of 28 TAF, there would be 60 days of cold water for a bypass.
- If it started on 10/29/22 at 28 TAF of cold-water pool, the water will not be fully depleted by mid-November. This would allow for availability of cold water if there is a heat wave in November.

Questions/Comments

- NMFS commented that with 28 days of 500 cfs, a bypass beginning a week later might (in the event of a warm spell) result in a loss of temperature quality around late November. The biggest gains in temperature would be in October.
- Cardno recommended caution about starting a 500 cfs bypass as early as 10/20. It may protect pre-spawn mortality rates but may negatively affect redds towards the end of the season.
- CDFW asked why temperatures at Watt Avenue look high when the water on the 2014 line should be cooling as it moves downstream?
 - Cardno responded that the average air temperature was much higher during this time and was not cooling the water.
- CDFW asked if the warming spikes in November and December are a consistent trend?
 - The model from 2014 is consistent with the heat waves that occur in many years. The uncertainty in the meteorology is not whether there will be warmer spells, but when they will occur.
- CDFW commented that in 2001, when water was well above 60°F, they saw substantial pre-spawn mortality. There are also a significant number of adult fish already in the American River, possibly because temperatures in the Sacramento River are unsuitable. Because of this, it is their preference to see water temperatures closer to 61°F to protect the adult fish that are holding.
 - NMFS commented that starting the power bypass the last week of October would take temperatures from 64-65°F to 60-61°F, and then down to 59-60°F in November. They asked if this scenario provides a net benefit to fish versus starting later and having adult spawners in 65°F water for one extra week in October. If the spawners die, then that is 100% egg mortality compared to maybe 40% mortality if there is a spike in temperatures in November.
- CDFW commented that they see a benefit to adult fish by doing a bypass earlier. Spawning time in the American River has been protracted every year and is moving closer to December. This could be due to the lack of cold-water pool in past years.
 - Cardno commented that eggs may be less sensitive to water temperature at some phases of development in relation to metabolic needs and demand for dissolved oxygen. You could hedge the trade-off between October and November conditions by starting a bypass on October 20 but bypassing 250 cfs rather than 500 cfs.
- SWRCB asked what a scenario would look like if they ran 250 cfs from October 20 to November 10 and then increase to 500 cfs to get an extra couple weeks of bypass.
 - NMFS responded that this is an interesting option and could be a way to see a benefit in late October without using as much of the coldest water in the reservoir.

- In addition to the start date options, the group discussed the 1,300 cfs vs. 900 cfs total release from Folsom. NMFS noted two caveats for the 900 cfs scenarios. First, this would mean flows would be below the MRR which would require some regulatory documentation and conversation but could be a possibility. Second, it is hard to predict what other demands will be needed of Folsom downstream and it may not be possible to get to 900 cfs.

6. Thiamine Deficiency

- a. CDFW commented that there is likely going to be an issue with thiamine deficiency in both natural and hatchery populations again this year. This creates an additional source of mortality for eggs or fry spawned in-river. Adult Chinook are still primarily eating anchovies in the ocean, so the hatchery is preparing to treat the fish if necessary. They will be collecting baseline data on thiamine levels before beginning any treatments.

7. Next Steps

- a. At the 10/03/22 ARG Power bypass Ad-hoc meeting, the group will decide on a scenario. Afterwards, using the decided scenario, they will run an egg mortality model. Lastly, a proposal based on the egg mortality and temperature models will be provided for consideration to Reclamation management.