

2023 Water Quality at Pelton Round Butte

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July 2024



Topics

- Water quality management and monitoring
- Temperature management
- Project dissolved oxygen and pH



PRB Water Quality Program

- Compliance
- Monitoring
- Reduce impacts of Project
- Adaptive management
- Benefit fish species –
reservoirs and downstream



Water Quality Sampling

Monthly sampling

- Tributary inflows
- Depth profiles in reservoirs
- Tailraces and lower river

Continuous stations

- Round Butte and Reregulating tailraces

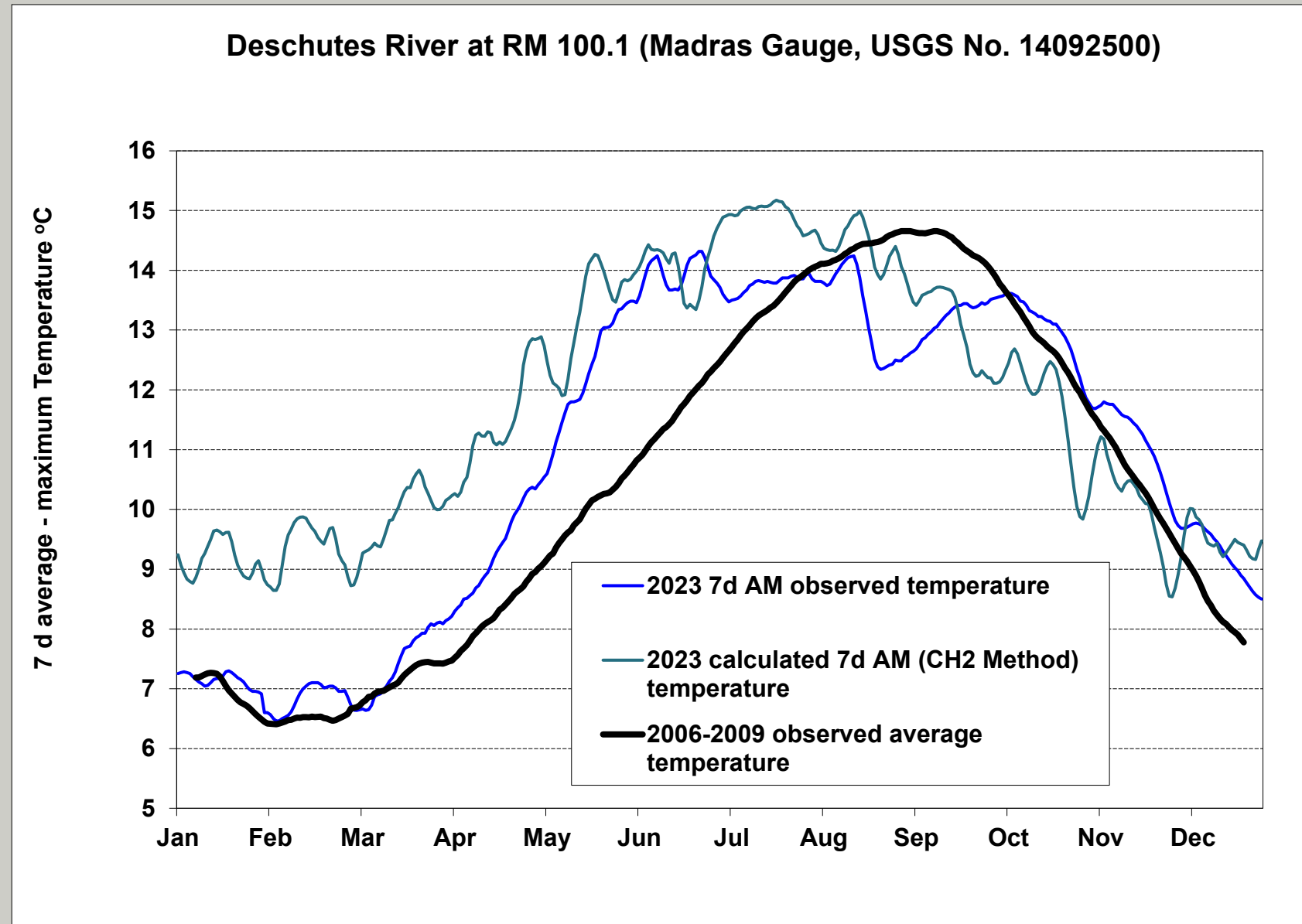
Data loggers

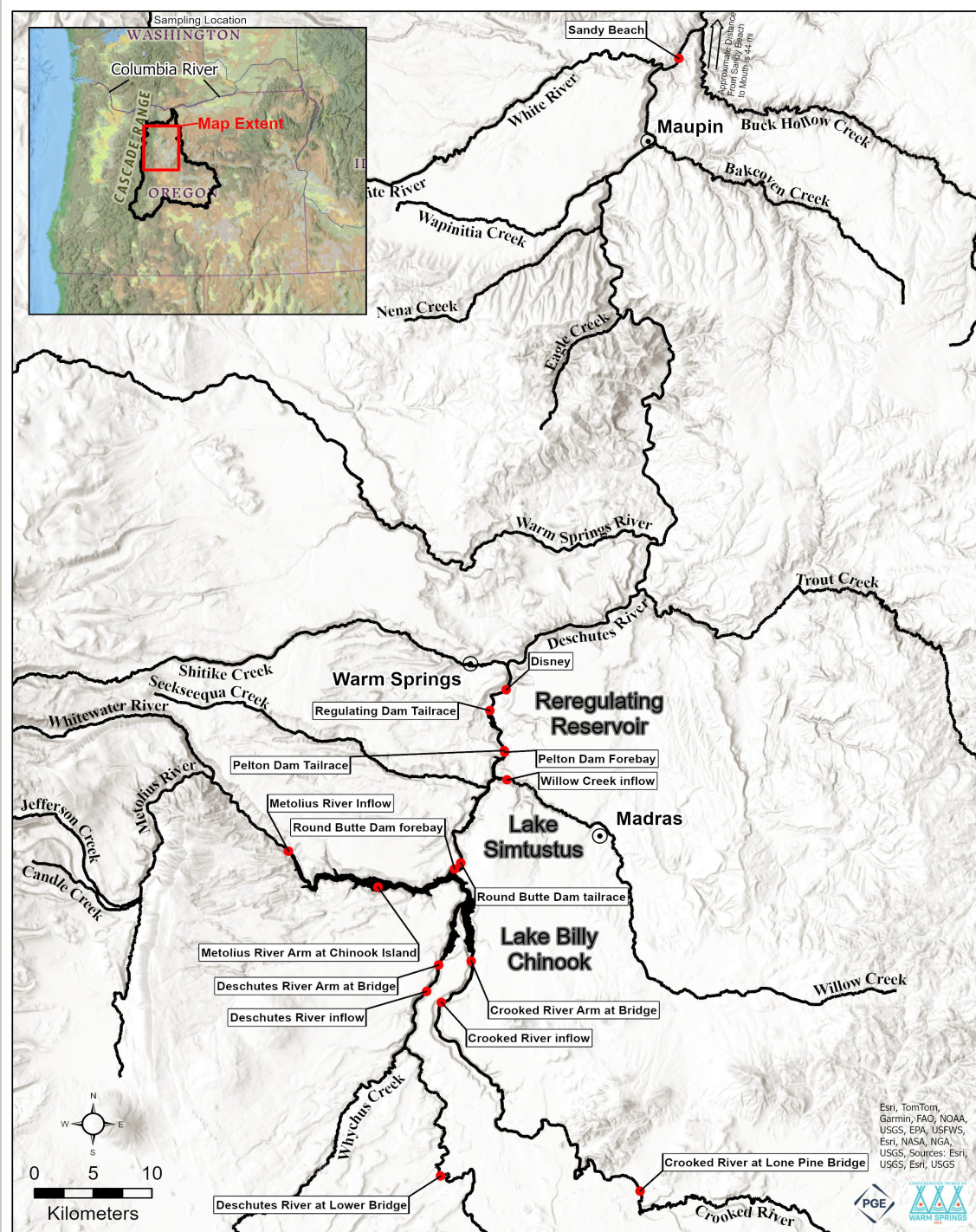
- Tributaries
- Reservoir profiles
- Lower river



Without Project Temperature

- Predicted temperature at the discharge point if the project were not in place
- Includes temperatures of combined tributaries, air temperatures
- Temperatures at Madras gauge compared to calculated temperatures



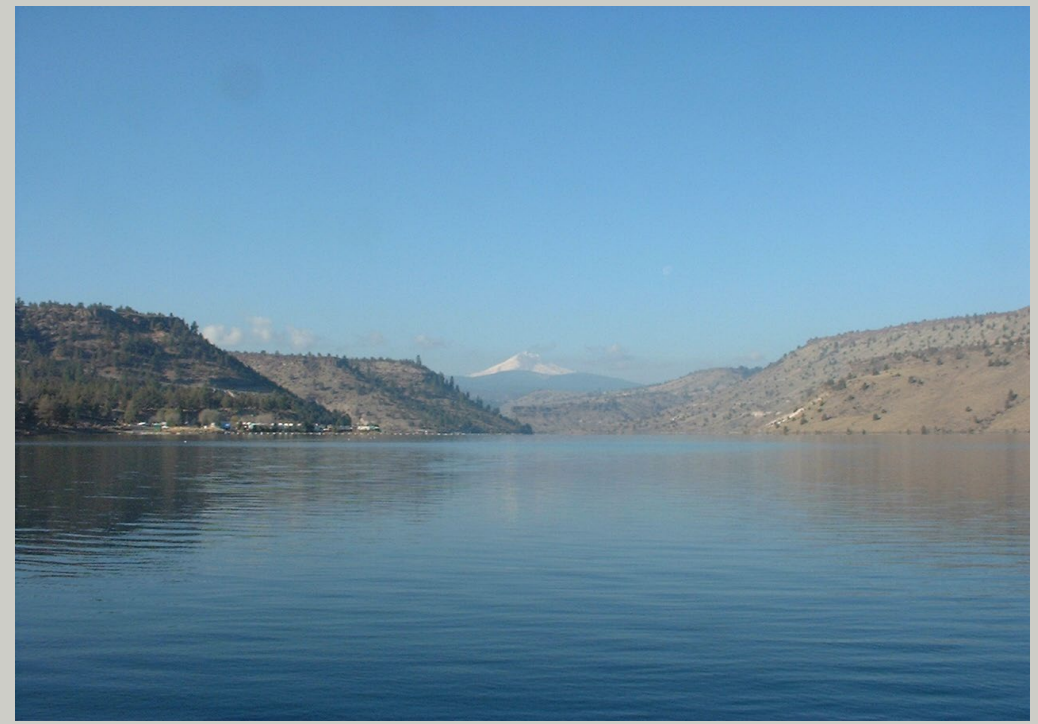


Tributaries

Solar radiation, or lack of radiation, on tributaries; primarily drives calculated (WPT) temperature during spring.

Reservoirs

Store heat, or lack of heat, in the water.



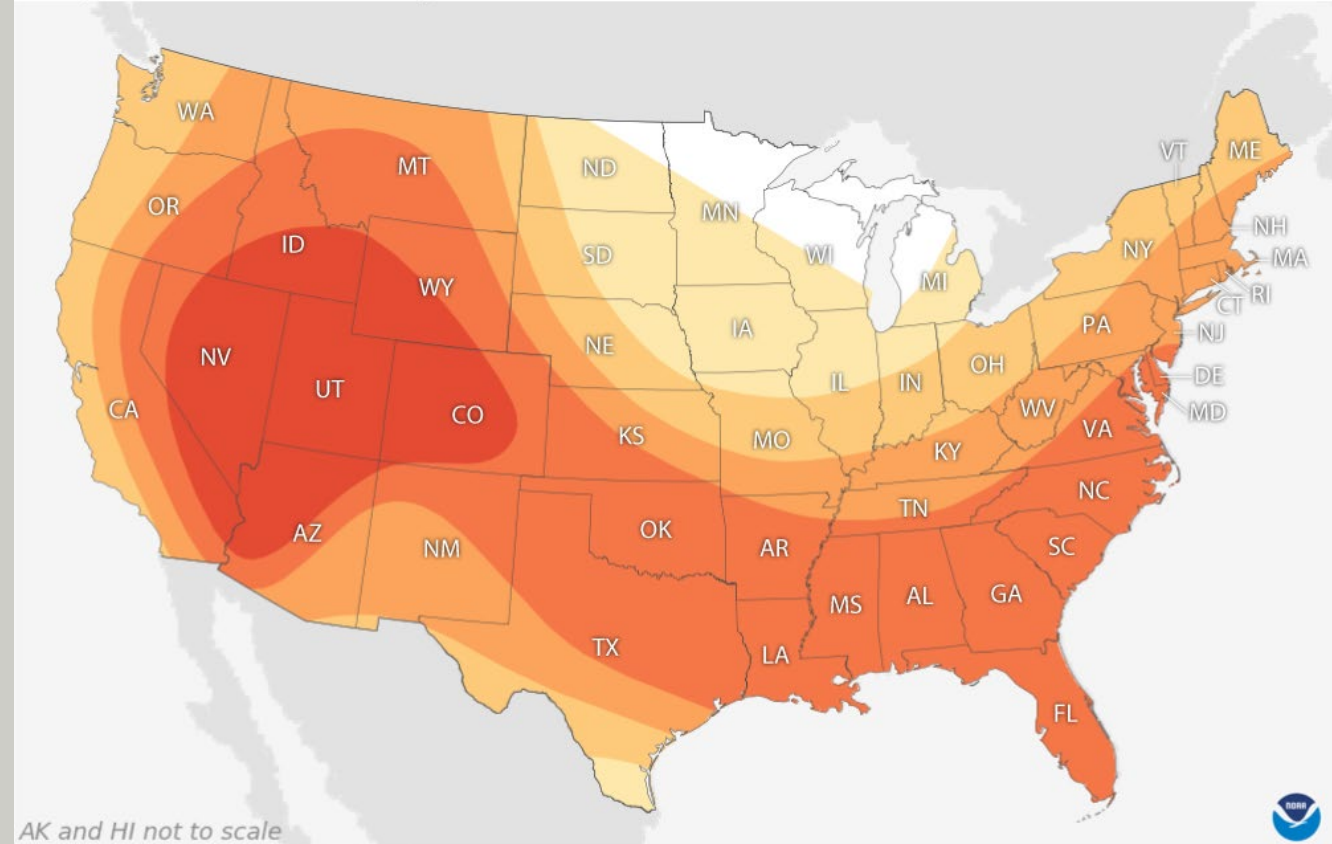
Recent weather patterns

Recent weather has been much warmer in winter and summer.

Tributary flows have been low.



Temperature outlook for July 2024



AK and HI not to scale



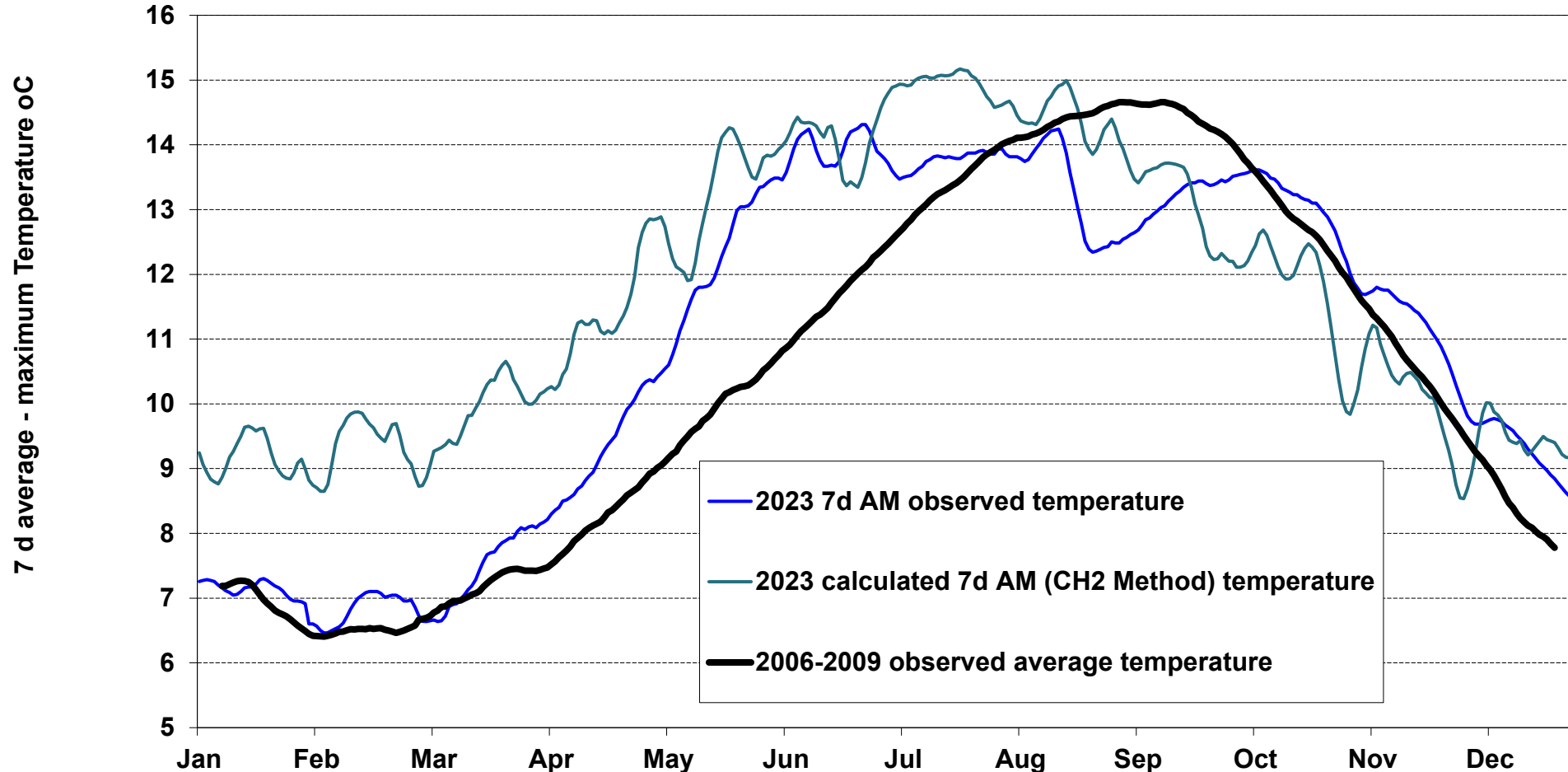
Probability (percent chance)		
Below Normal	Near Normal	Above Normal
Leaning Below	33-40%	33-40%
40-50%	40-50%	40-50%
50-60%	40-50%	50-60%
60-70%	Equal Chances	60-70%
70-80%		70-80%
80-90%		80-90%
90-100%		90-100%
Likely Below		Likely Above

Temperature Outlook for July 2024
Issued 30 Jun 2024

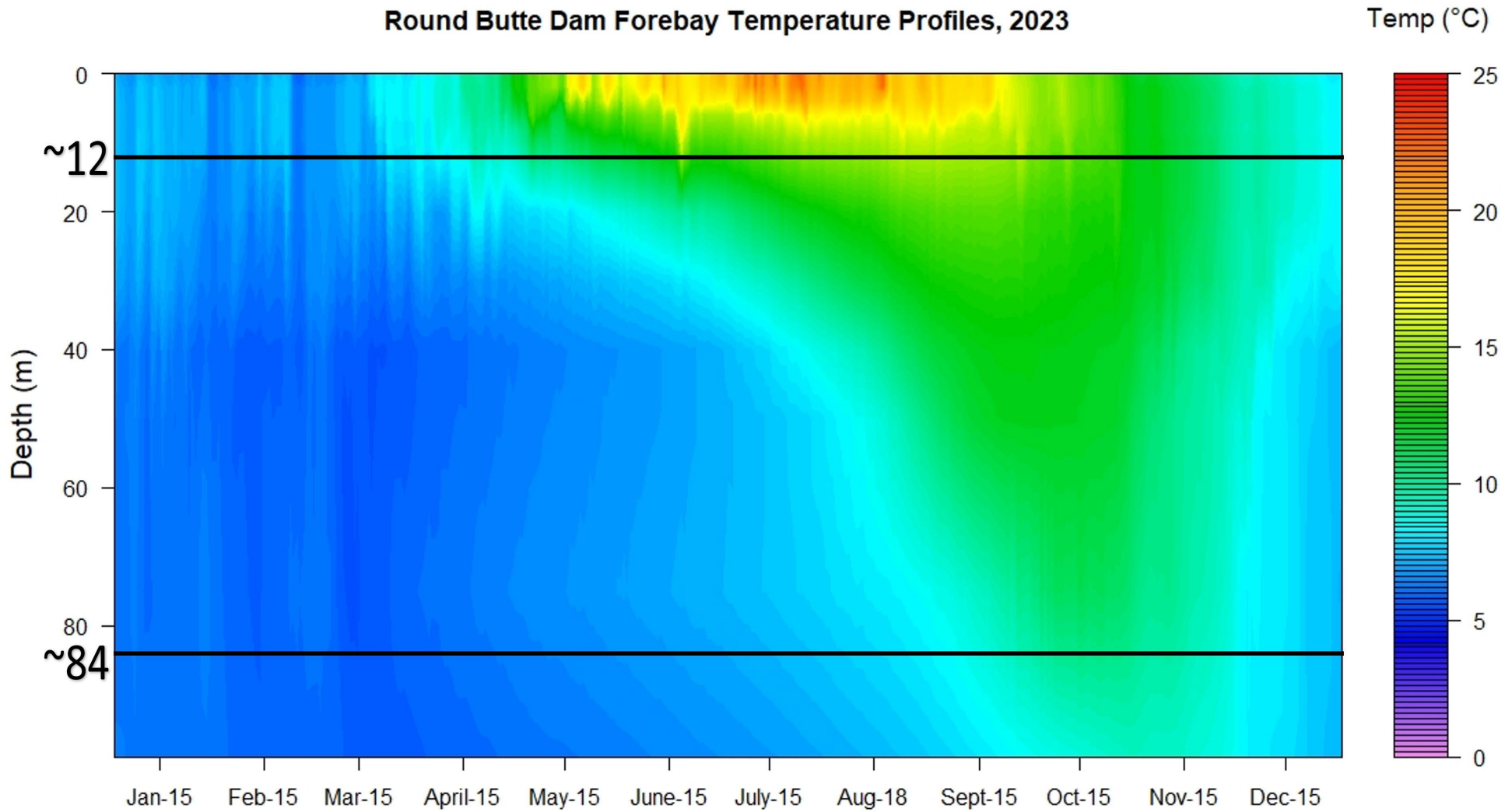
NWS Climate Prediction Center
Map by NOAA Climate.gov

2023 Discharge Temperatures

Deschutes River at RM 100.1 (Madras Gauge, USGS No. 14092500)



Round Butte Dam Forebay Temperature Profiles, 2023

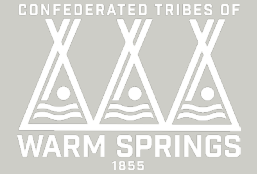
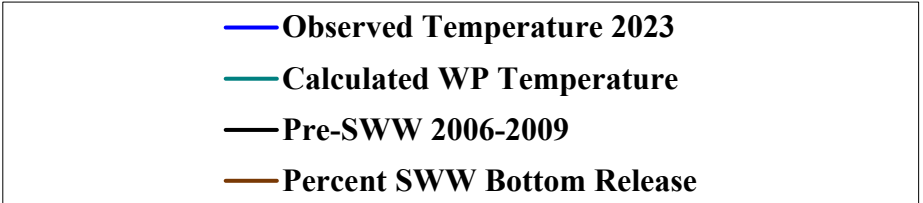
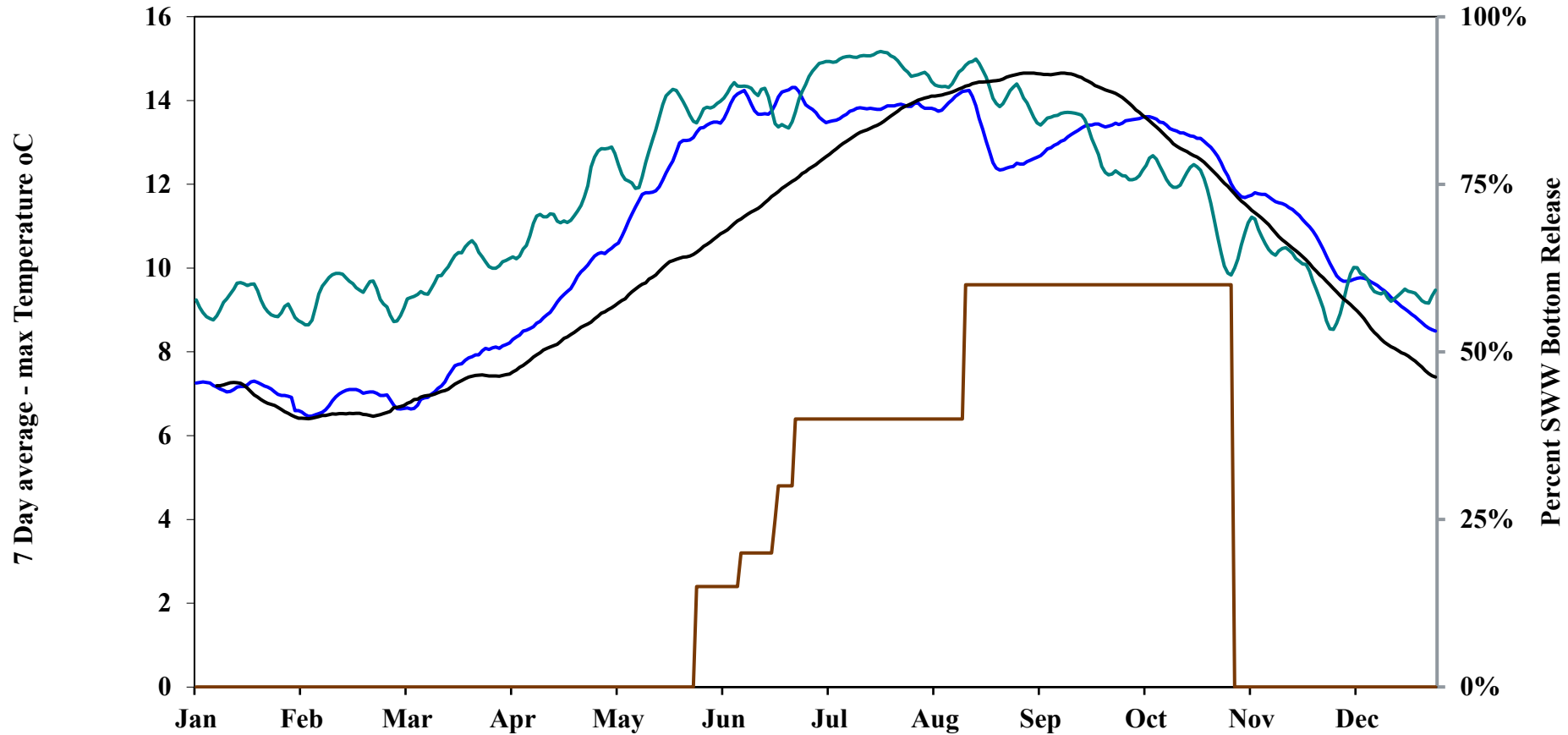


2023 Round Butte Dam forebay temperatures

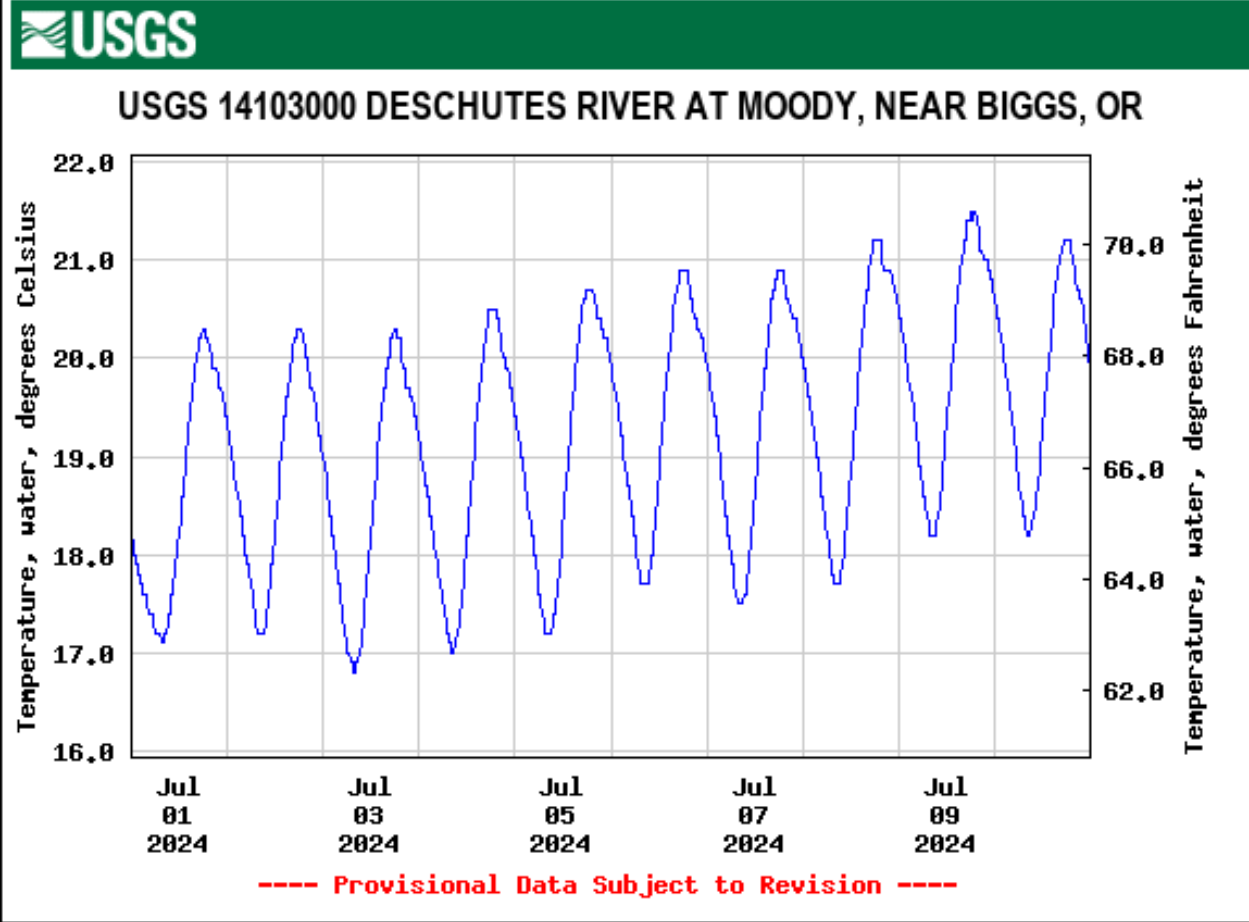
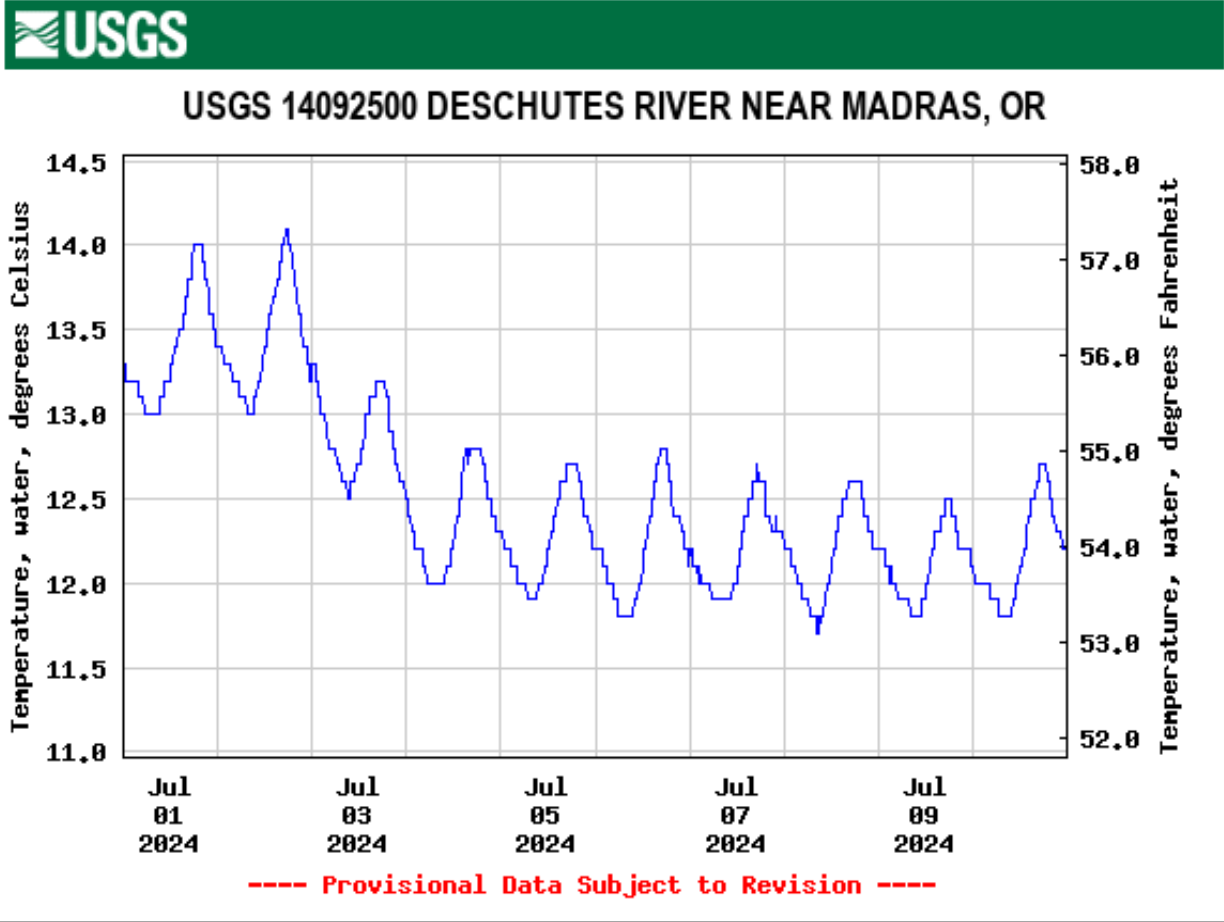


2023 Discharge Temperatures

Deschutes River at RM 100.1 (Madras Gauge, USGS No. 14092500)



2024 discharge (Madras) and Moody temperatures



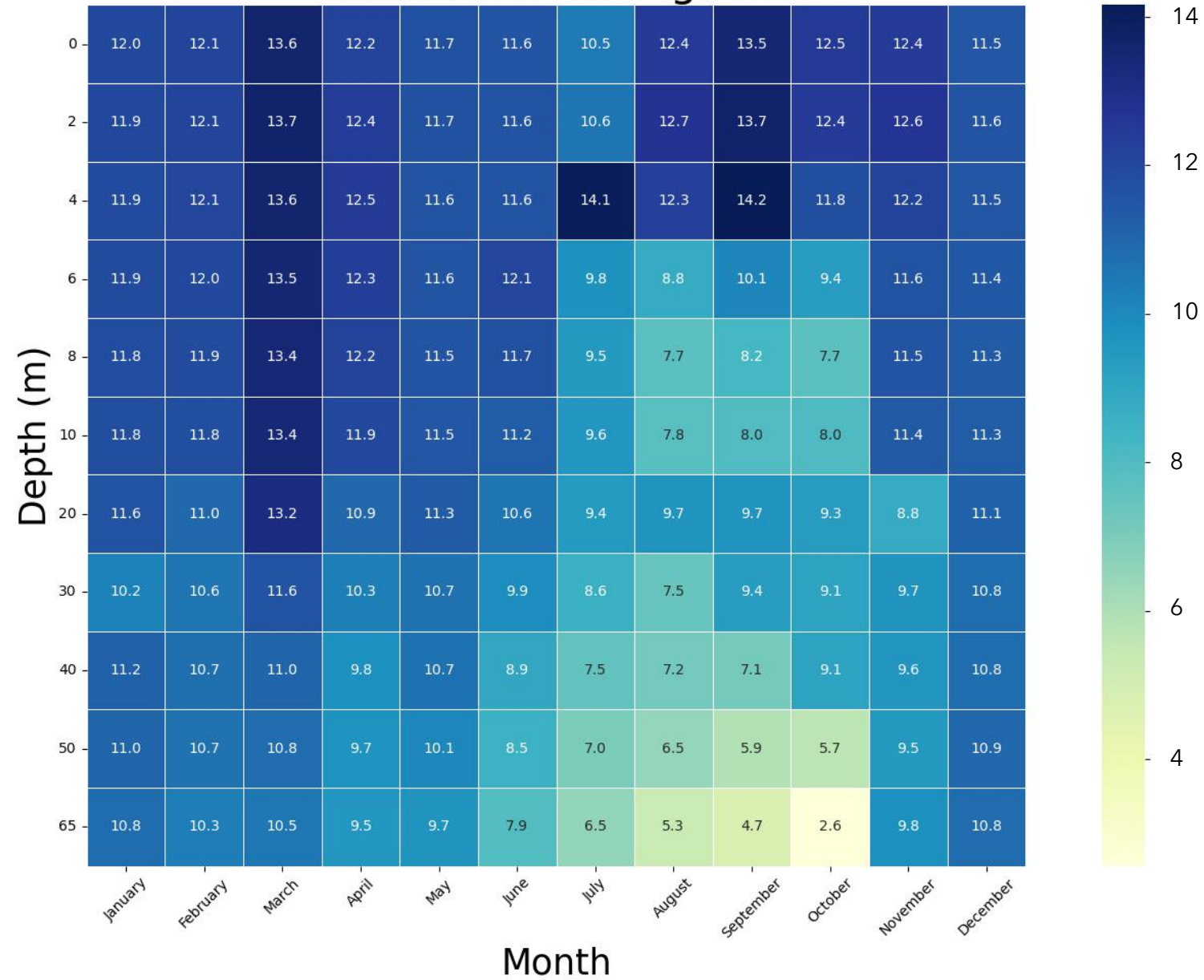
SWW was shutdown July 1, due to mechanical issue, and moved to 60% bottom water withdrawal.



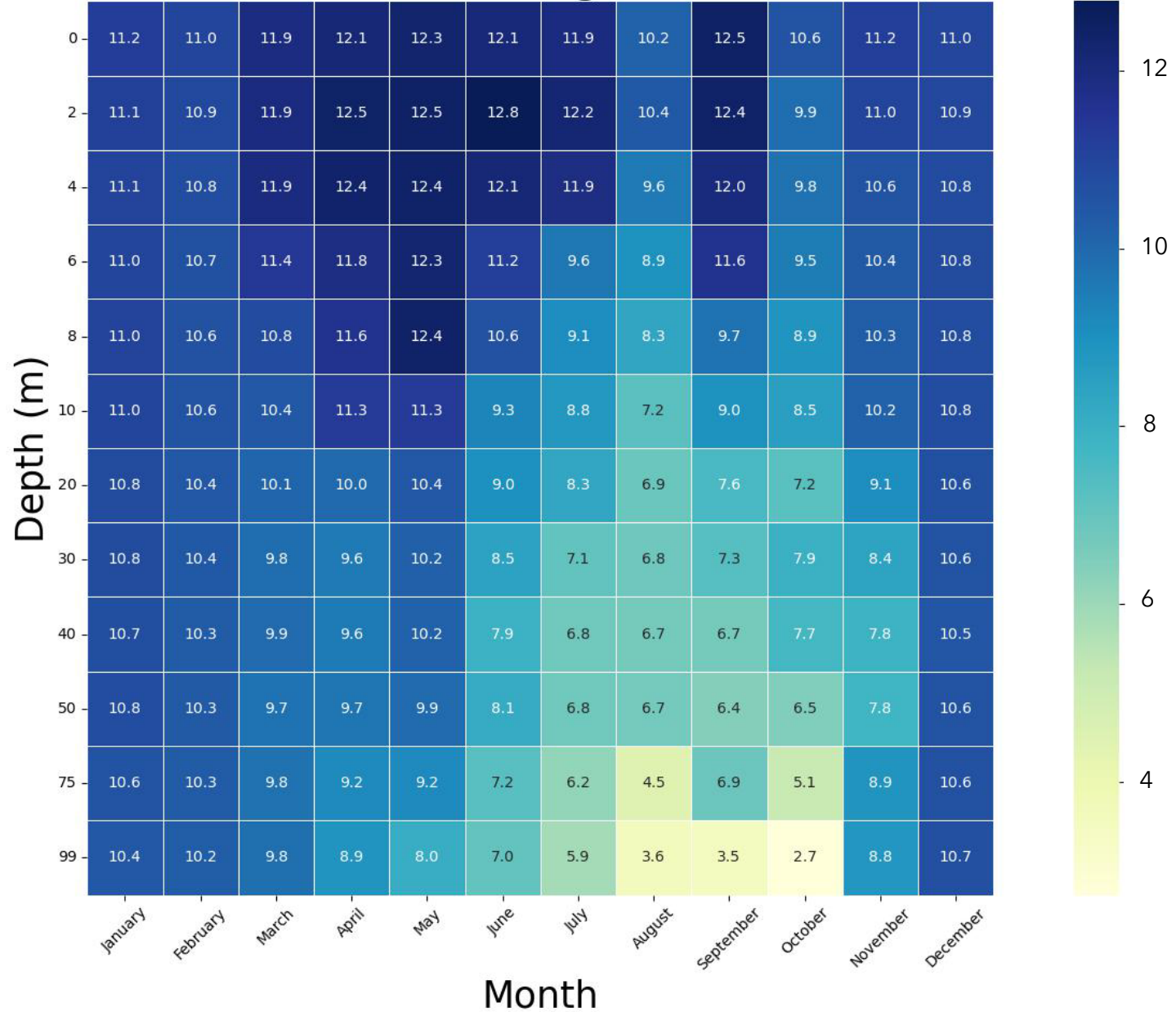
2023 Dissolved Oxygen and pH



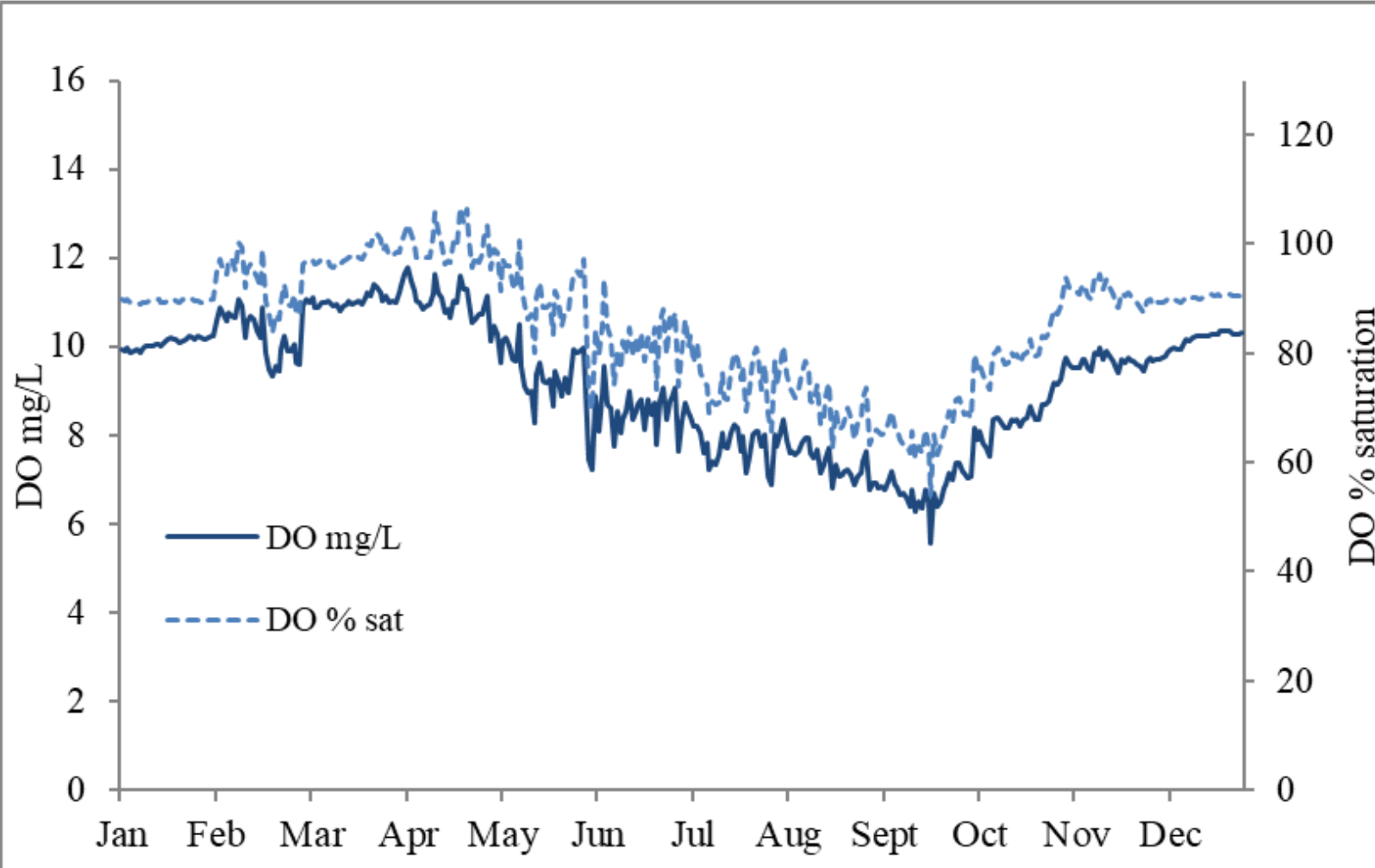
Metolius Arm DO mg\L 2023



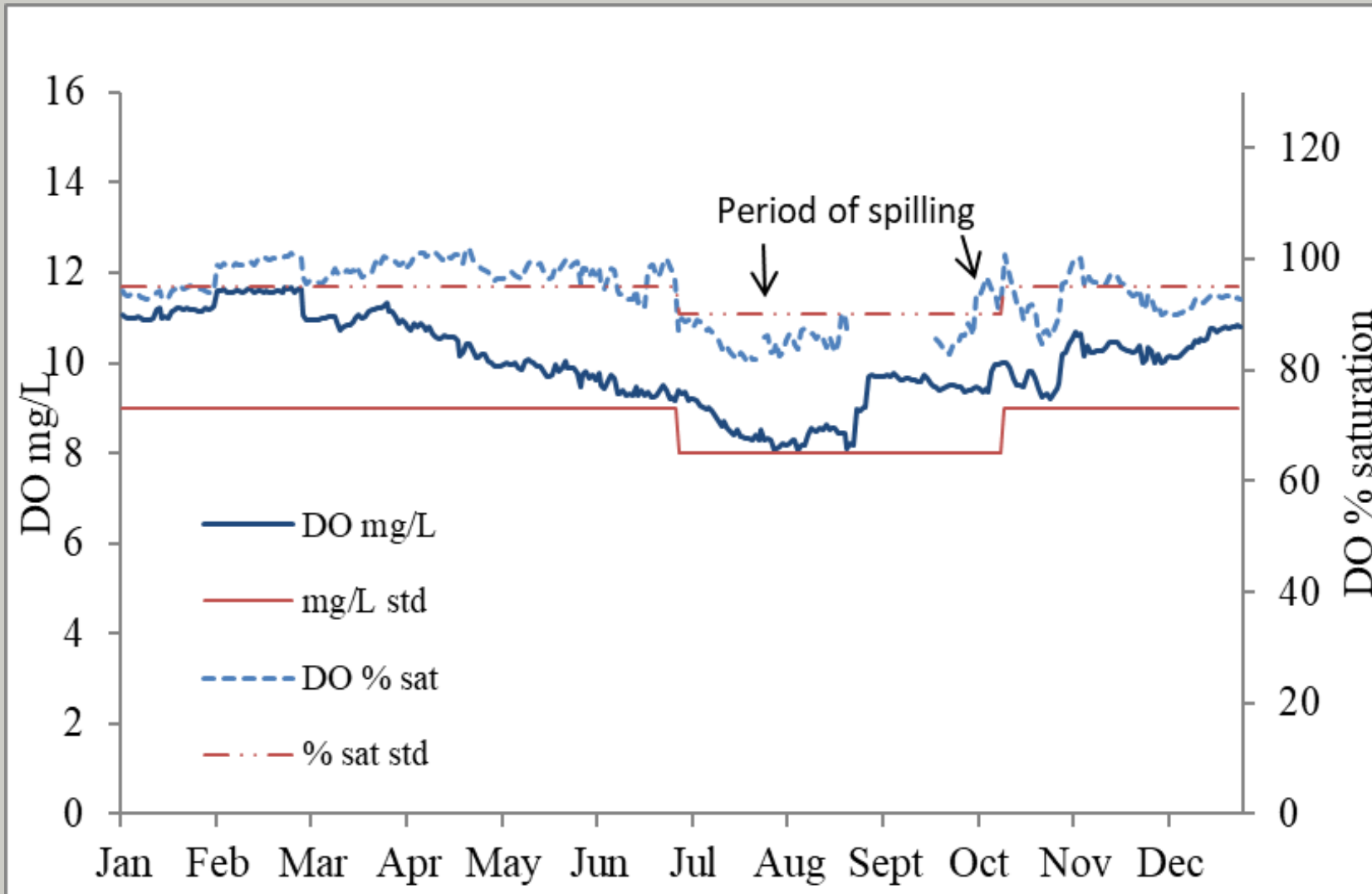
RBFB DO mg\L 2023



Dissolved oxygen (daily minimum as mg/L and % saturation) at Round Butte Dam tailrace



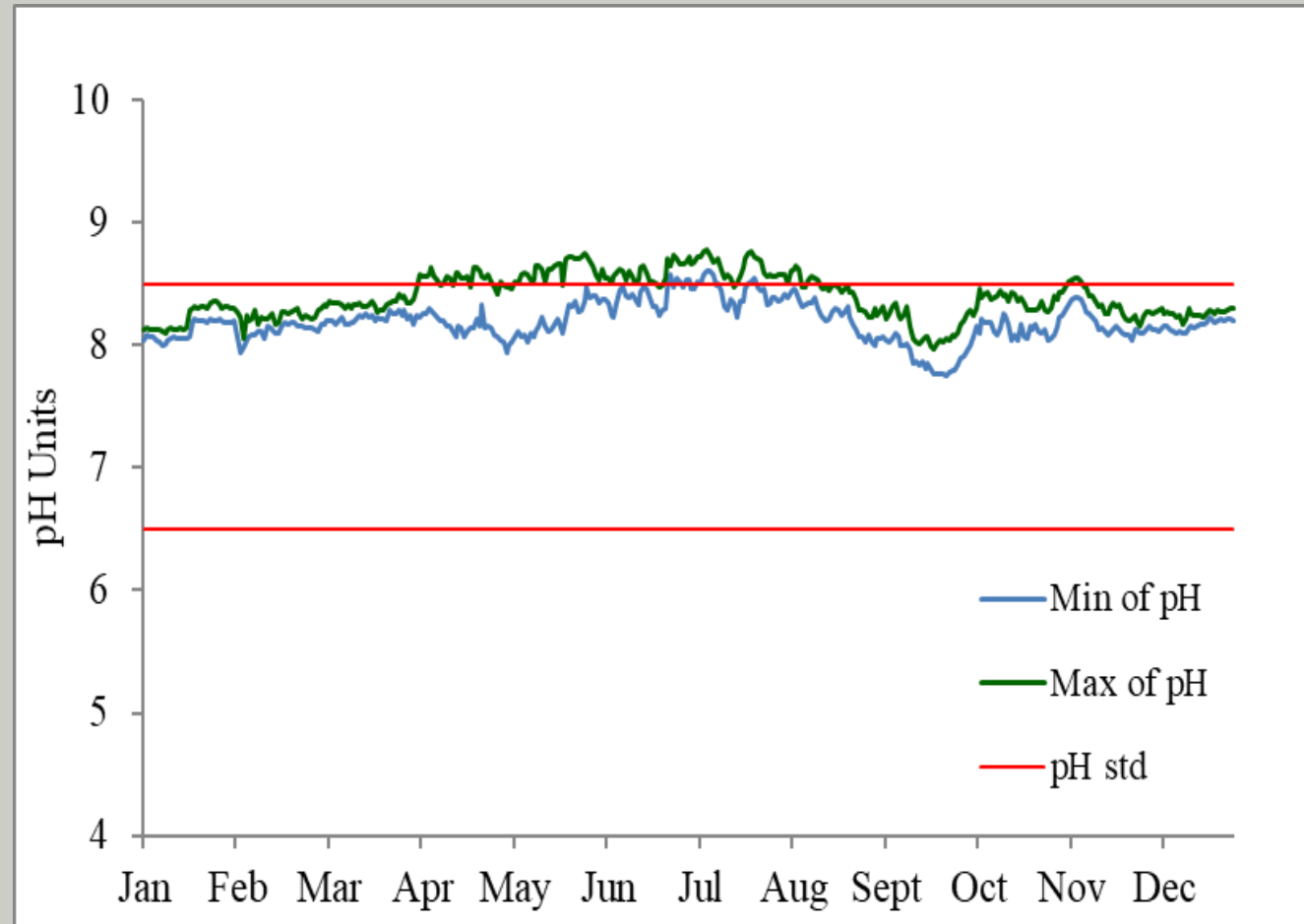
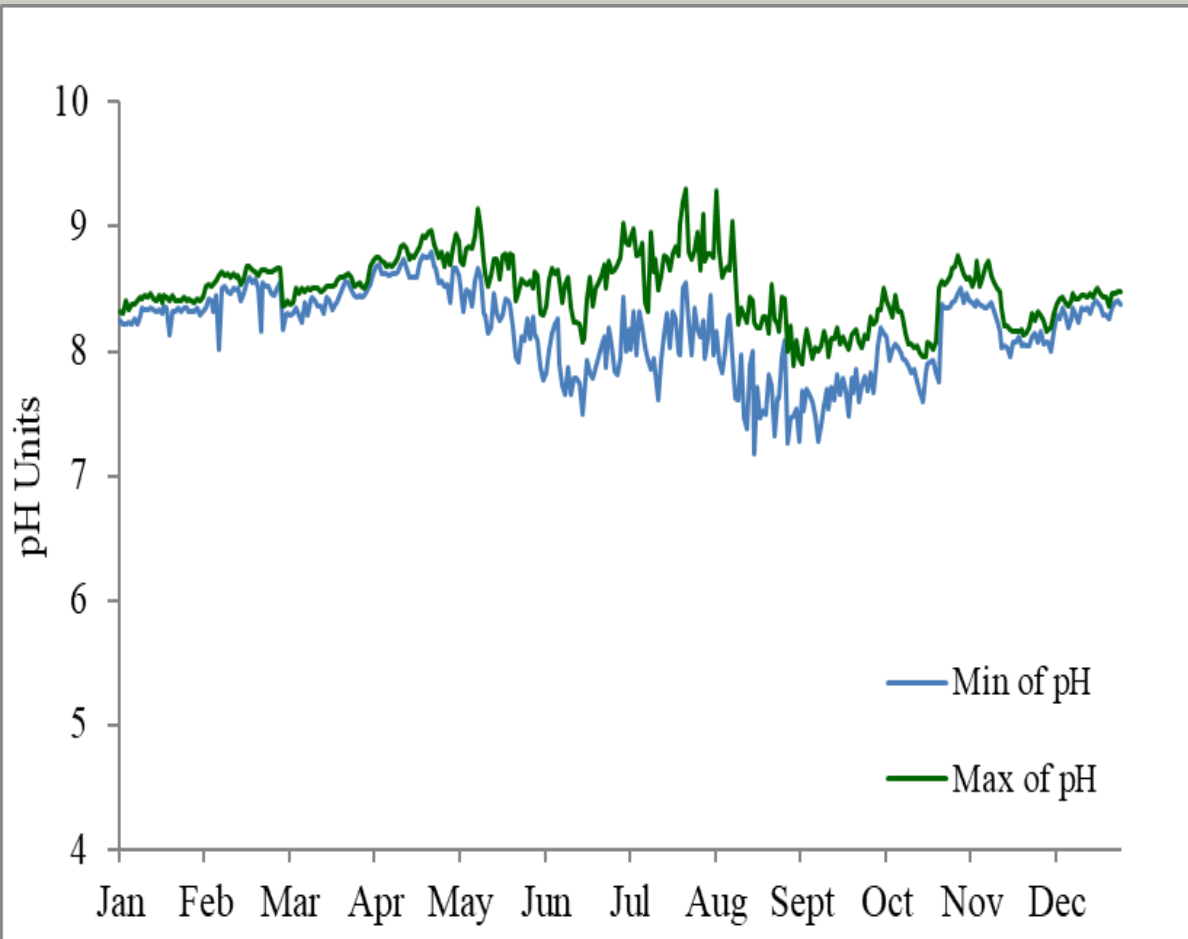
Dissolved oxygen (daily minimum as mg/L and % saturation) at Reregulating Dam tailrace



- In 2023, spills were needed between August 4 - October 18 to boost discharge dissolved oxygen



Values of pH (daily maximum and minimum) at Round Butte Dam tailrace and Reregulating Dam tailrace



For more information:

VIEW FULL REPORTS:

[2023 Water Quality Annual Report](#)

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