

# WILLAMETTE VALLEY RESERVOIR DRAWDOWNS

U.S. Army Corps of Engineers  
Portland District  
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US Army Corps  
of Engineers®  
Portland District

Green Peter Reservoir, Whitcomb Bridge, El. 782 ft.



Green Peter Reservoir, at El. 782 ft.





# BACKGROUND



## 2008 BIOP & INJUNCTION REVIEW



- March 2018 - Complaint filed by Plaintiffs alleging violations of the Endangered Species Act (ESA) related to alleged failure to implement Biological Opinion (BiOp) fully
- April 2018 - Corps reinitiated ESA consultation
- **August 2020 - Court rules in favor of Plaintiffs on all claims**
- **September 1, 2021 - Judge issues injunction ordering the Corps to carry out specified measures to improve fish passage and water quality in the Willamette River Basin**
- Judge's injunction has the full effect of the law and its requirements must be met unless the judge grants relief or when new BiOp is issued





# INJUNCTION MEASURES



- Complete reinitiated ESA consultation and issue a new BiOp by December 31, 2024
- **Operational measures to improve fish passage and water quality**
  - **Increased spill operations**
  - **Changes to reservoir elevations including delayed refills and deep drawdowns**
- Outplant adult spring Chinook salmon above Green Peter Dam
- Structural Measures
  - Dexter Fish Facility
  - Structural improvements for Big Cliff Dam total dissolved gas reductions
  - Cougar Dam regulating outlet improvements
- Research, Monitoring, & Evaluation
- Follow established maintenance outage schedules and emergency protocols
- Provide biannual status reports detailing progress and compliance with the injunction measures

*\* Most injunction measures, including the Green Peter Reservoir deep drawdown measure, were ordered by the court based upon input from an expert panel of scientists and biologists.*



# DEEP RESERVOIR DRAWDOWNS



**What:** Deep reservoir drawdowns were ordered at 4 Corps Willamette Valley System Dams:

- Cougar: A 27-foot drawdown to El. 1505 ft., from 15 November – 15 December
- Fall Creek: A 43-foot drawdown to El. 685 ft., from 01 December – 15 January
- Lookout Point: A 75-foot drawdown to El. 750 ft., from 15 November – 15 December
- Green Peter: A 142-foot drawdown to El. 780 ft., from 15 November – 15 December

**Why:** The Judge ruled that to avoid “irreparable harm to threatened species” interim measures that improve passage and water quality in the WVP were needed.

- The deep reservoir drawdowns are expected to provide immediate improvement to downstream fish passage and survival of ESA-listed fish species, including spring Chinook salmon and winter steelhead.

**Duration:** Deep drawdowns will be implemented each fall until the injunction ends.

- In the Corps’ DEIS alternatives, operational fish passage is included as an interim or long-term strategy for downstream fish passage improvement depending on the reservoir.
- Deep drawdown operations and structural downstream fish passage are both expected to be included in new BiOp.

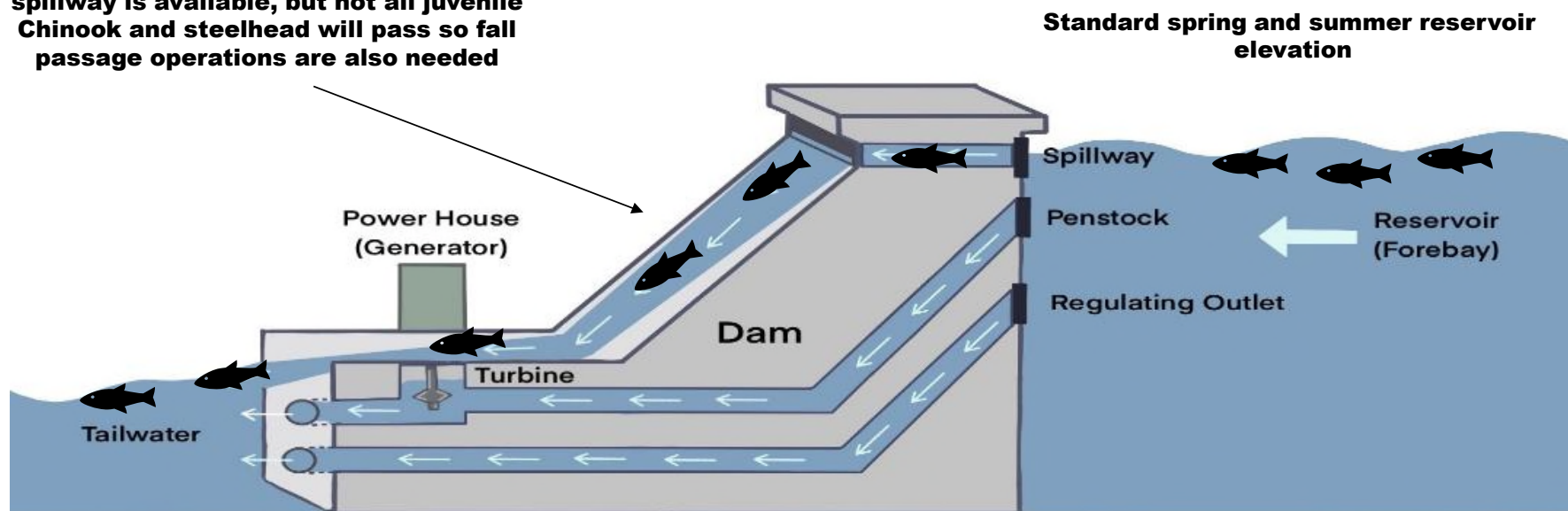


# THE MECHANICS OF OPERATIONAL DOWNSTREAM FISH PASSAGE



# FISH PASSAGE DURING SPRING/SUMMER DAM & RESERVOIR OPERATIONS

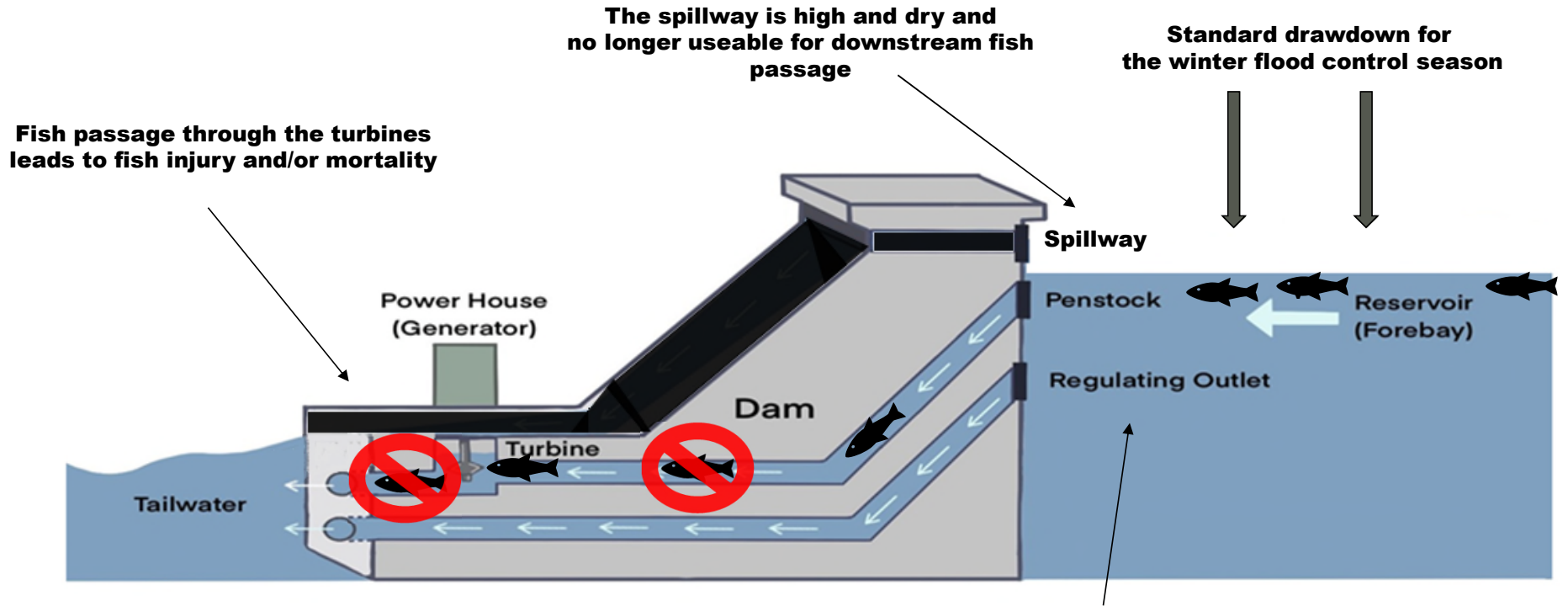
**Fish passage through the spillway is relatively effective during the spring and summer when the reservoir is full, and the spillway is available, but not all juvenile Chinook and steelhead will pass so fall passage operations are also needed**







# FISH PASSAGE DURING TYPICAL FALL/WINTER DAM & RESERVOIR OPERATIONS



**The regulating outlets are too deep for most juvenile Chinook and steelhead to find and pass through. Fish injury and mortality can occur when fish pass through an outlet when the water depth over an outlet is high.**



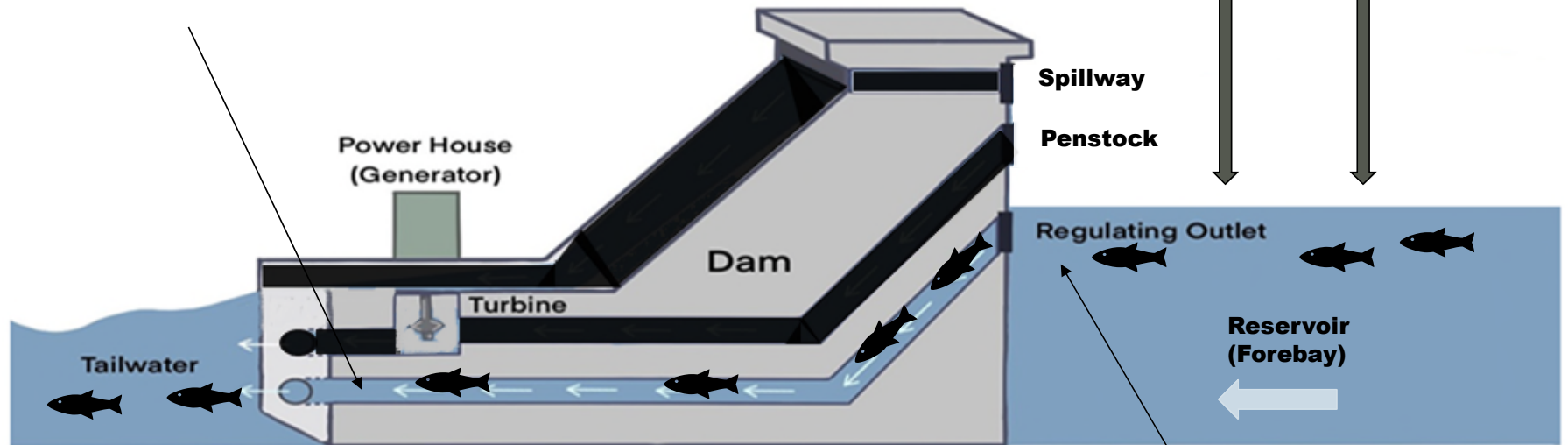


# FISH PASSAGE DURING DEEP RESERVOIR DRAWDOWN OPERATIONS



**A deep reservoir drawdown to regulating outlets is expected to improve overall juvenile Chinook or steelhead passage and survival**

**Deep reservoir drawdown for improved fish passage**



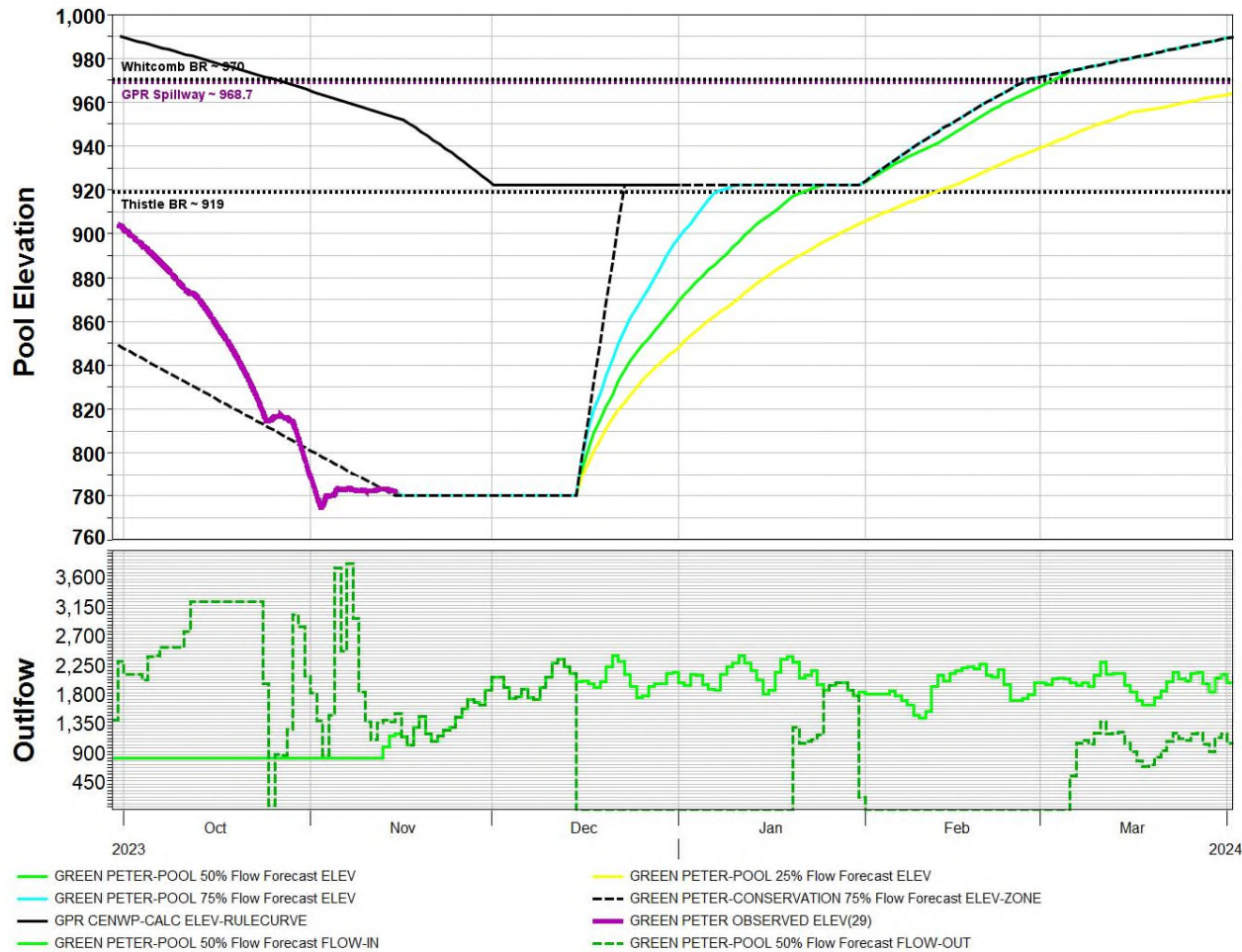
**The reservoir is shallow enough for juvenile Chinook or steelhead to find the regulating outlets to pass through**



# RESERVOIR DRAWDOWN AND REFILL SCHEDULE



# GREEN PETER REFILL FORECAST



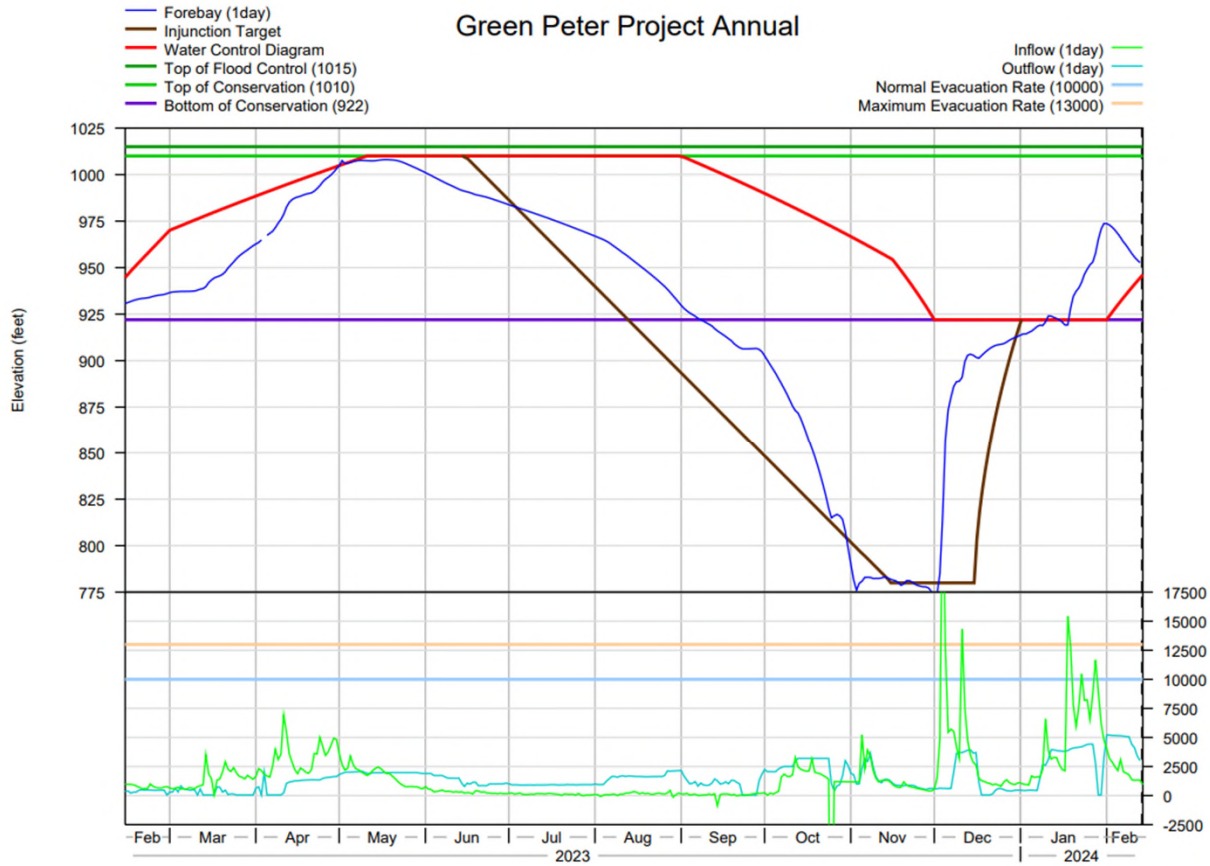
- Reservoir models suggest; drawdown has little to no impact on refill.
- Refill will begin 16 December to “normal” winter pool (922 ft).
- Model results indicate that Green Peter Reservoir should refill back to “normal” winter reservoir elevations by early February.
- Refill will resume as “normal” as hydrology allows.
- Refill is important for spring spillway operations, which are also part of the injunction to improve downstream fish passage.



# GREEN PETER

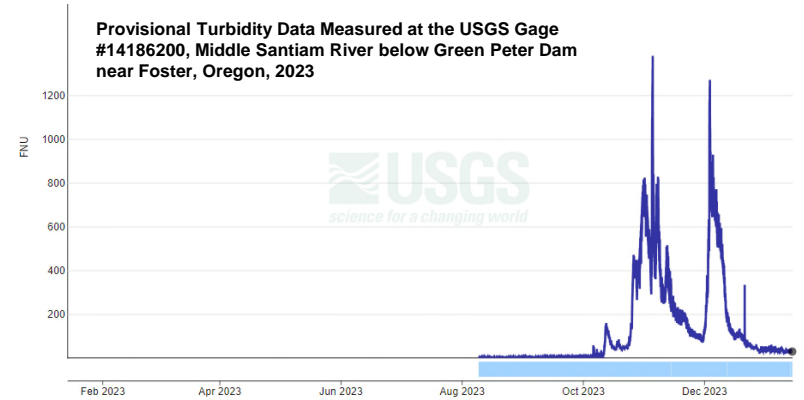


## Green Peter Project Annual

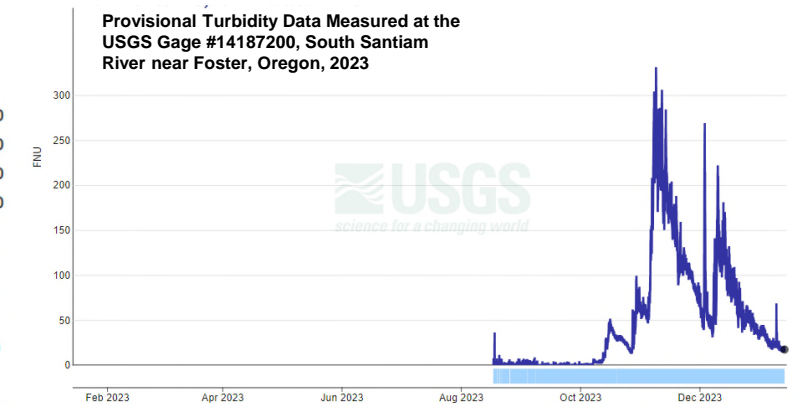


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Provisional Turbidity Data Measured at the USGS Gage #14186200, Middle Santiam River below Green Peter Dam near Foster, Oregon, 2023



Provisional Turbidity Data Measured at the USGS Gage #14187200, South Santiam River near Foster, Oregon, 2023





# GREEN PETER RESERVOIR

## POST DEEP DRAWDOWN, JANUARY 2024

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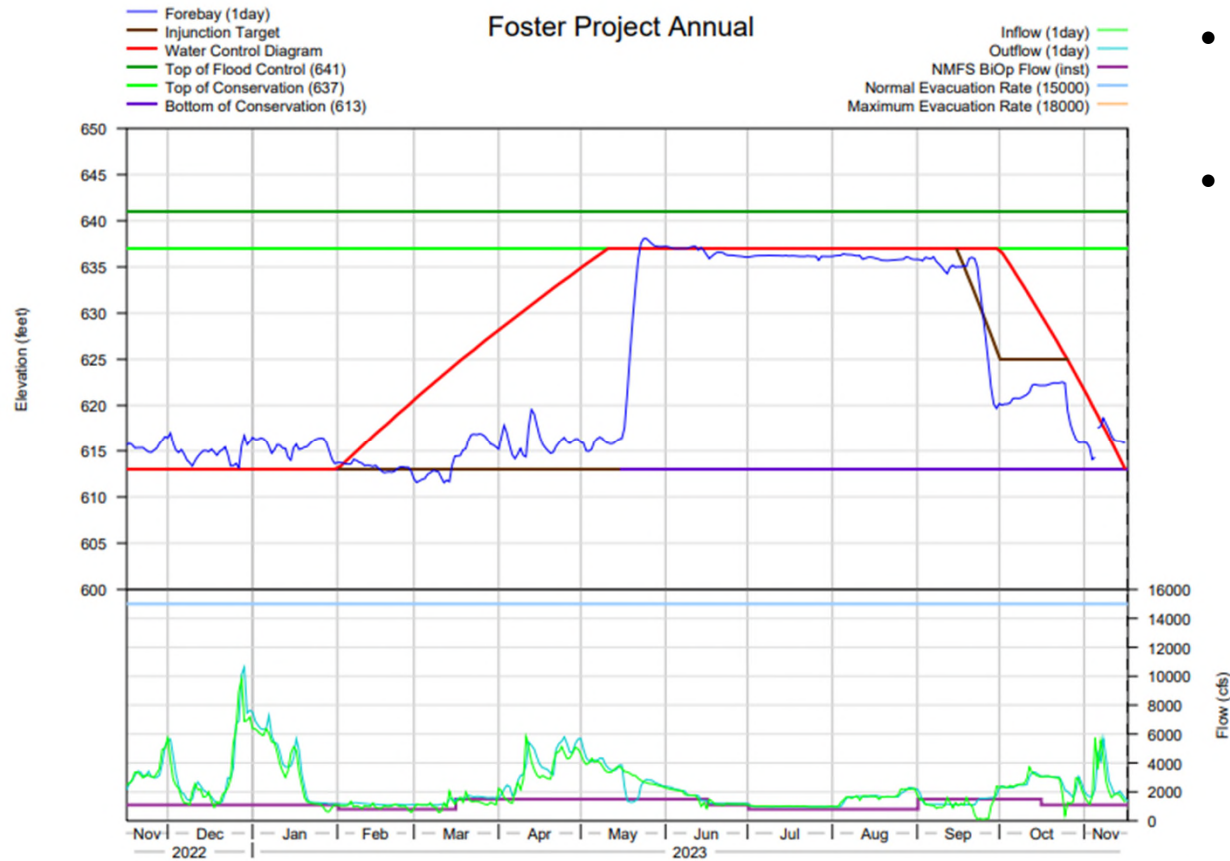


02/20/2024





# 2023 FOSTER OPERATIONS AND 2024 FORECAST



- 2024 operations will mimic 2023 operations.
- Foster full mid-May thru mid-September.



<https://www.nwd-wc.usace.army.mil/nwp/teacup/willamette/>

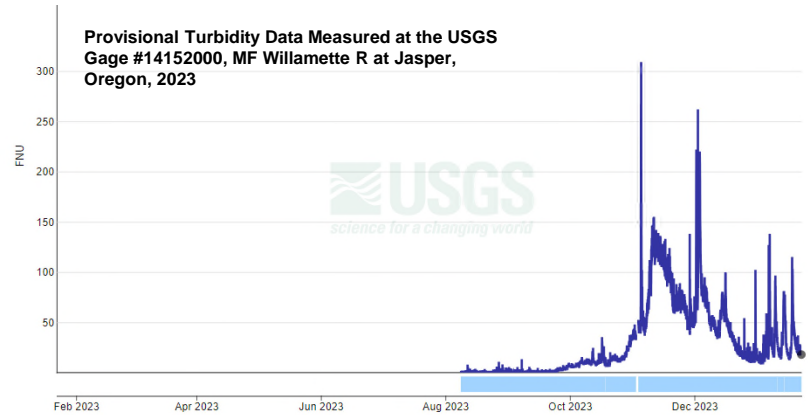
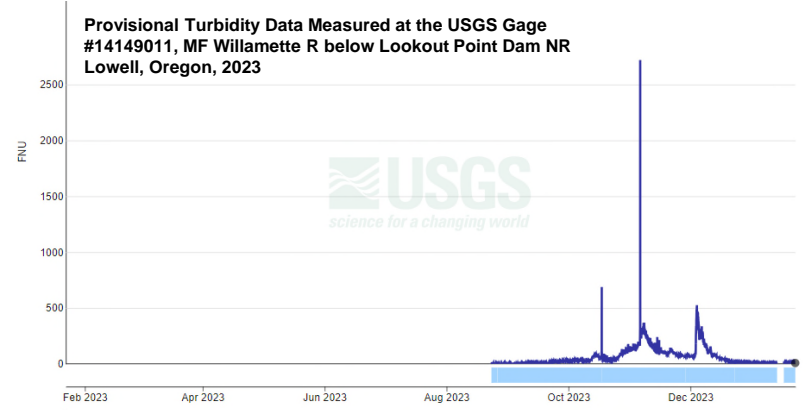
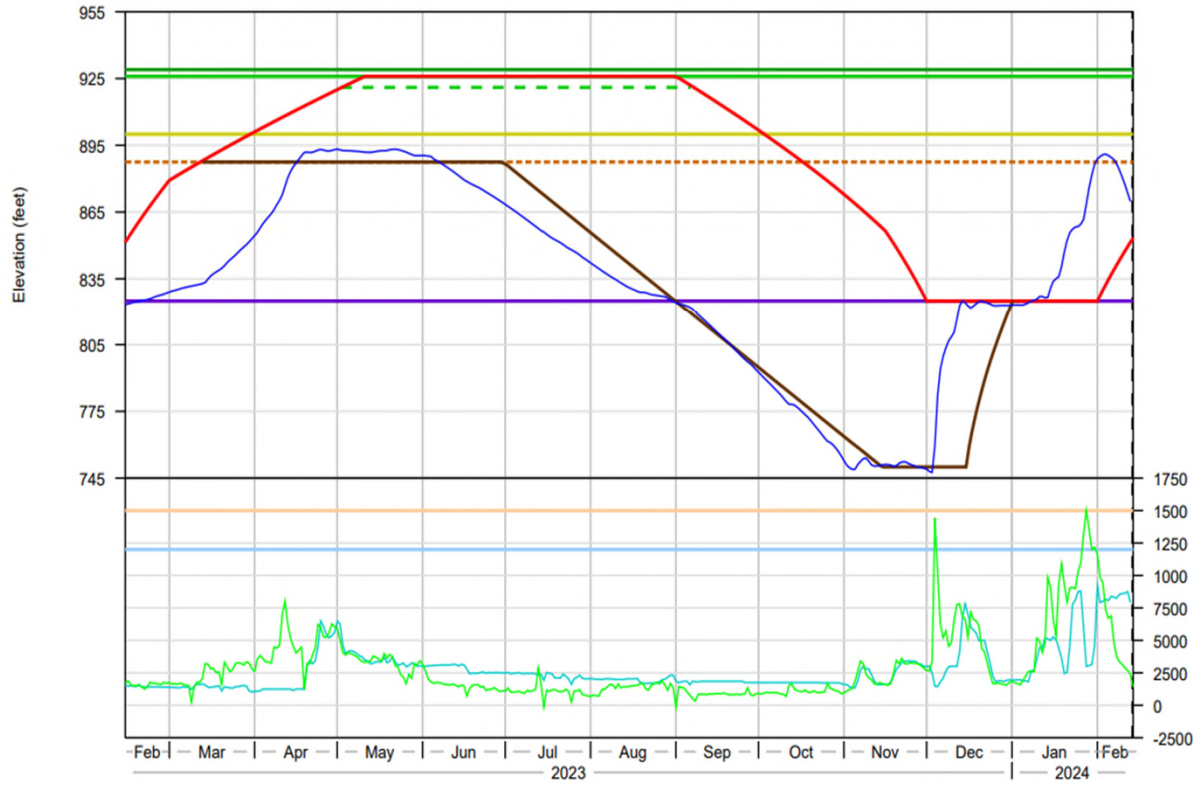


# LOOKOUT POINT



## Lookout Point Project Annual

- Forebay (1day)
- Injunction Target
- Water Control Diagram
- Top of Flood Control (929)
- Top of Conservation (926)
- Bottom of Conservation (825)
- Spillway Crest (887.5)
- Interim Risk Reduction Measure (921)
- RO Restricted Elevation (900)
- Inflow (1day)
- Outflow (1day)
- Normal Evacuation Rate (12000)
- Maximum Evacuation Rate (15000)



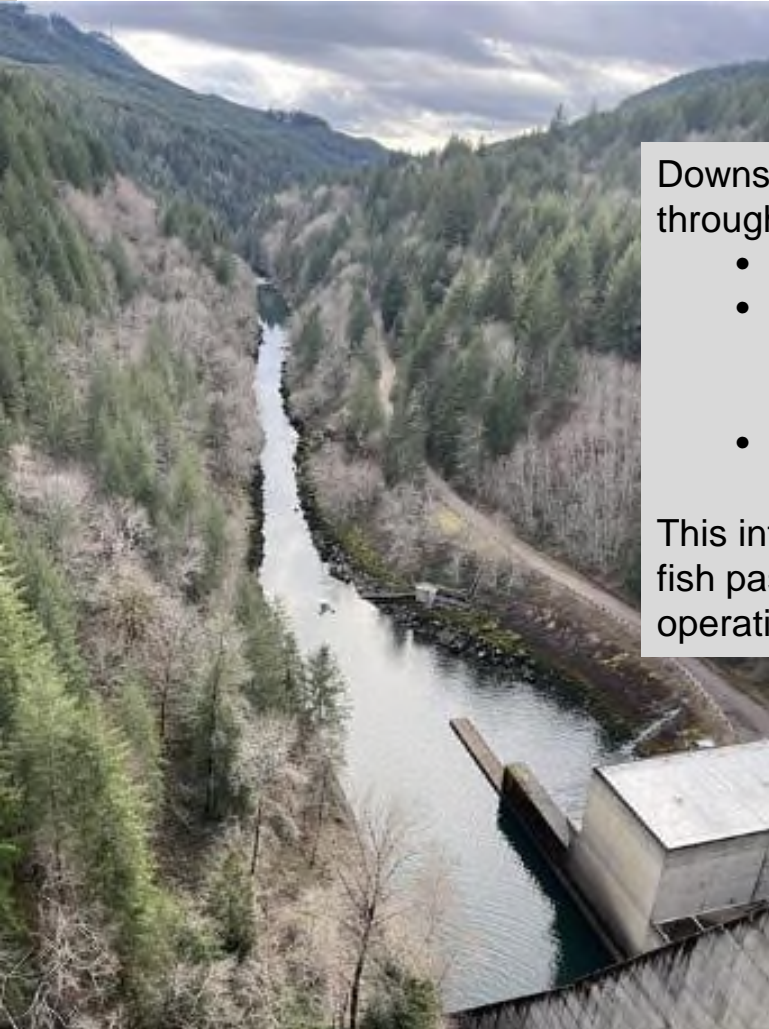




# BIOLOGICAL MONITORING



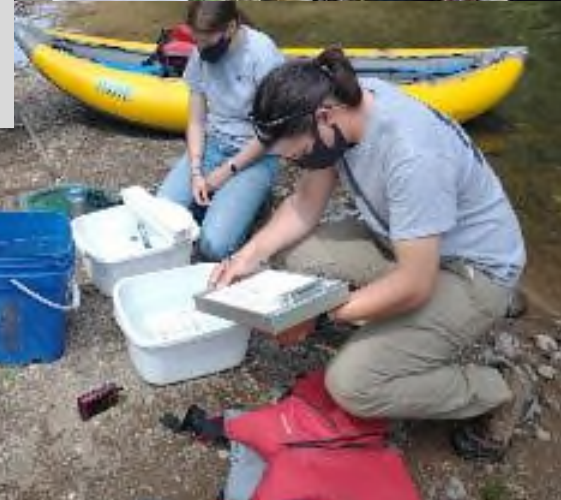
# DOWNSTREAM FISH PASSAGE MONITORING



Downstream fish passage is being monitored through a series of studies:

- Fish distribution in reservoirs
- Timing and relative abundance of juvenile migrating downstream into reservoir and below dams
- Passage behavior, injury and survival at dams

This information will be used to evaluate changes in fish passage from the spill and deep drawdown operations.





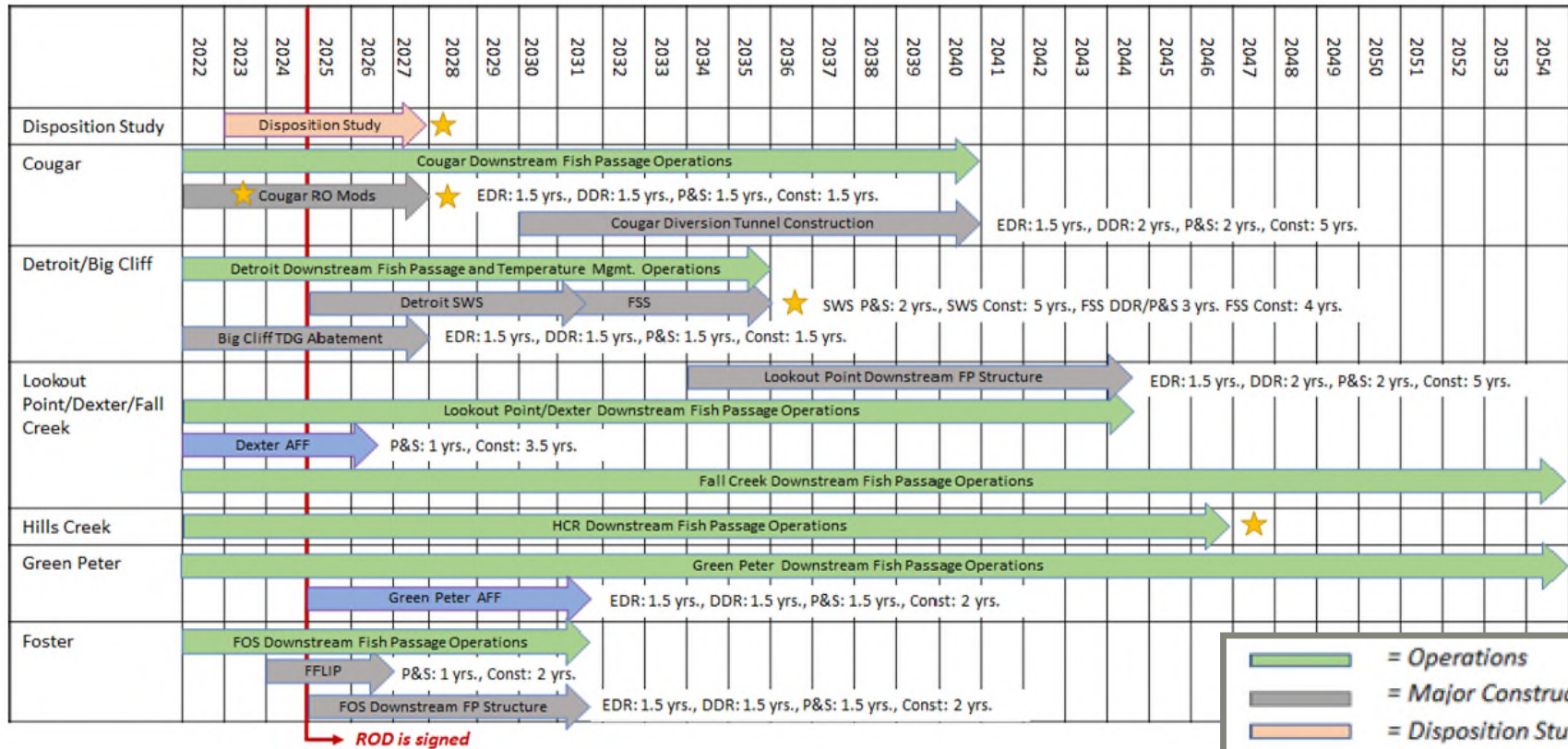
# NEXT STEPS



# POST INJUNCTION- 2025 AND FUTURE



## Draft EIS Appendix N: Implementation and Adaptive Management Plan, Nov. 2023



- ▬ = Operations
- ▬ = Major Construction
- ▬ = Disposition Study
- ▬ = AFF Constr.
- ★ = Check-ins





## NEXT STEPS



- The deep drawdowns (and the other injunction measures) were developed by the judge with input from a court appointed panel of scientists and biologists.
- The drawdown operation at Green Peter and Lookout Point is new and the Corps, other agencies, and the Tribes are carefully monitoring the biological effectiveness of this operation for the ESA-listed fish, as well as other impacts.
- Every six months, the Corps provides information about our implementation of injunction measures, and the results/impacts, to the court in a bi-annual status report (next one is due 28 February 2024).



## SUMMARY



- The Corps is under a court-order to drawdown at multiple reservoirs for improved downstream fish passage. Dates are specific and defined in the court order.
  - Based on research (and drawdowns in other subbasins), deep drawdowns are expected to provide improved downstream fish passage for ESA listed fish.
  - Biological and other information is being collected to better understand the impacts of the drawdowns.
- Deep drawdowns have resulted in elevated turbidity.
  - In-reservoir sediment sampling indicates sediment is clean and below toxicity screening levels.
  - Drawdowns have been conducted at Fall Creek and Cougar Reservoirs in the past; turbidity did not result in fish kills.
  - Fall Creek and Cougar Reservoirs cleared of turbid conditions once reservoir refill began.
- Refill of the reservoir back to typical winter elevations was expected by early February.
  - Reservoirs will continue to be refilled according to rule curve back to typical summer reservoir levels for summer recreation and other uses.