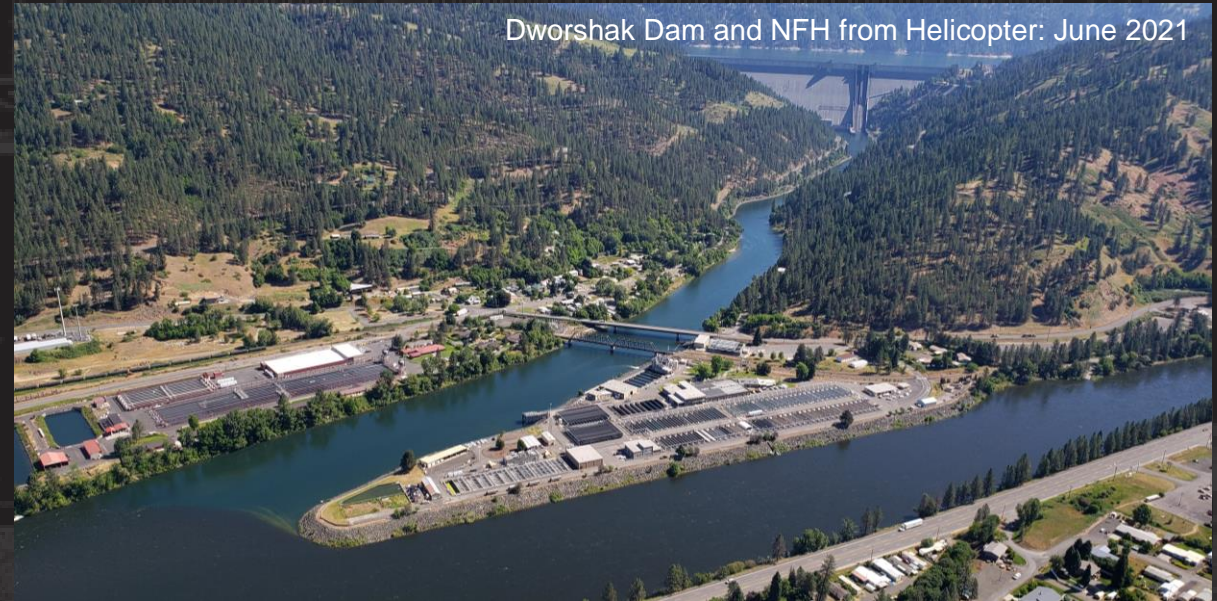


DWORSHAK SUMMER OPERATIONS

Willow Walker, P.E.
Reservoir Regulator
USACE – Walla Walla District
Date: 6 December 2023



Dworshak Dam and NFH from Helicopter: June 2021



Lower Granite Dam and Tailwater: July 2021



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OUTLINE

Dworshak Summer Flow
Augmentation Overview



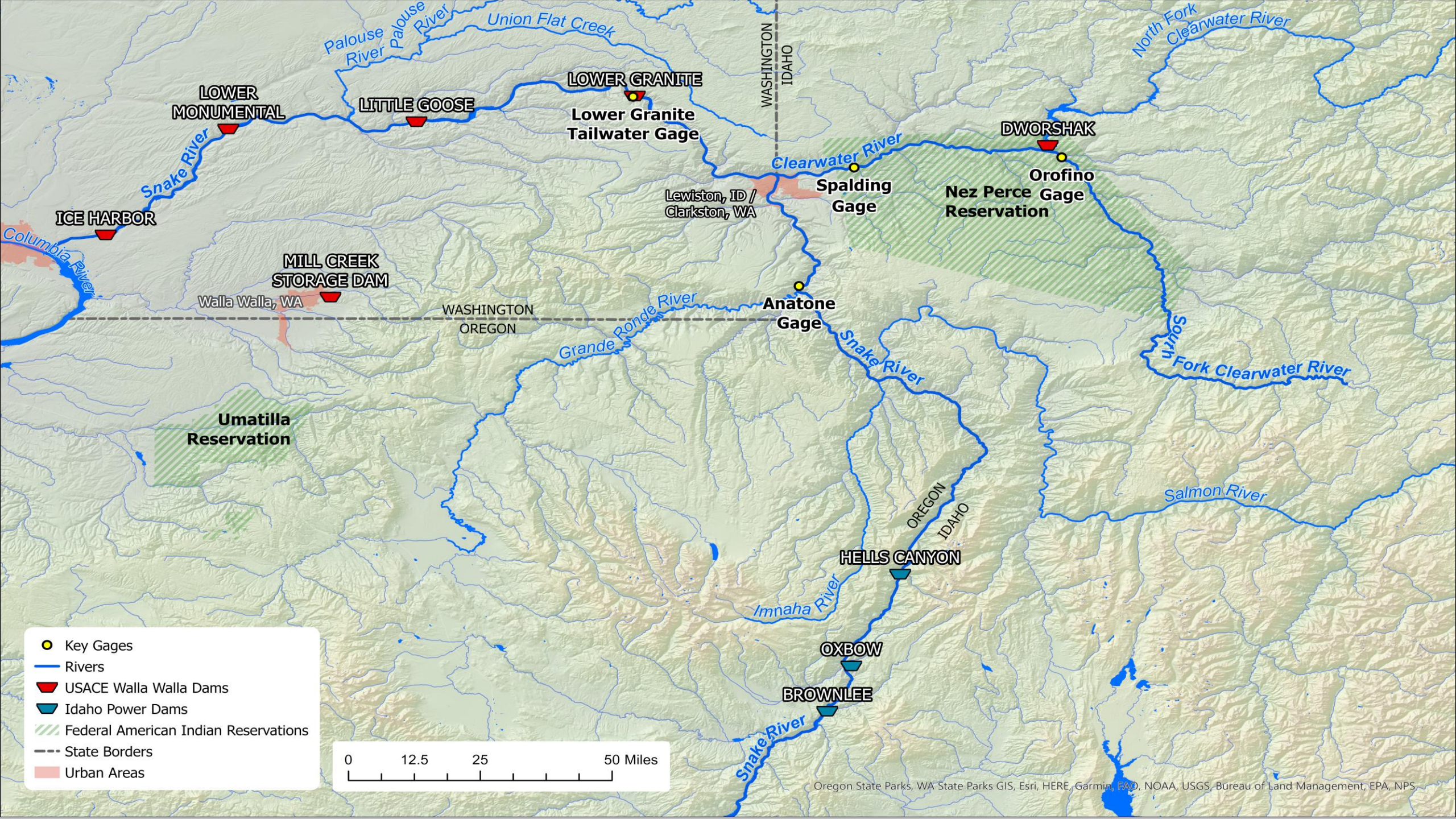
Water Supply



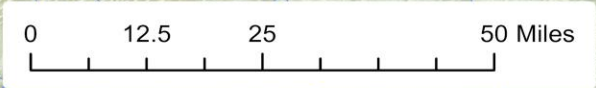
Using the Water



Future Considerations



- Key Gages
- Rivers
- ▾ USACE Walla Walla Dams
- ▾ Idaho Power Dams
- ▨ Federal American Indian Reservations
- - - State Borders
- Urban Areas



WATER SUPPLY DRIVERS

1. Carryover

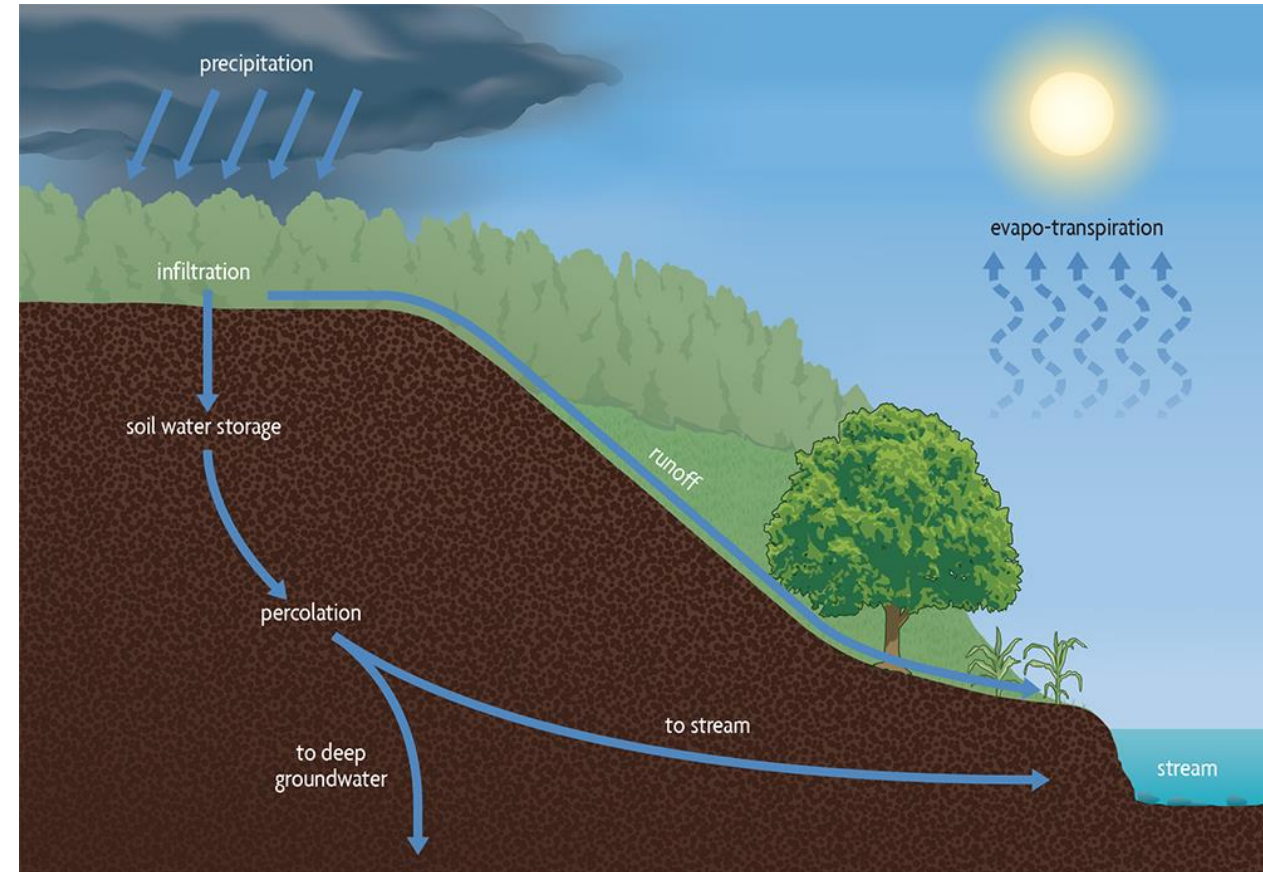
- Definition: the amount of water remaining in the reservoir from one water year to the next
 - Dworshak is a consistent storage reservoir starting off each water year near 1,520 ft.
 - Snake above Anatone has many reservoirs with highly variable carryover from year to year

2. Precipitation

- The fall and winter preceding the spring runoff directly impact the baseflow and soil conditions

3. Baseflow/soil conditions

- Dry soils will absorb more water, and thus less volume ends up in the reservoirs during spring runoff
- Saturated soils do not have as much space to absorb water, so the snowmelt is more effective in reaching the reservoirs



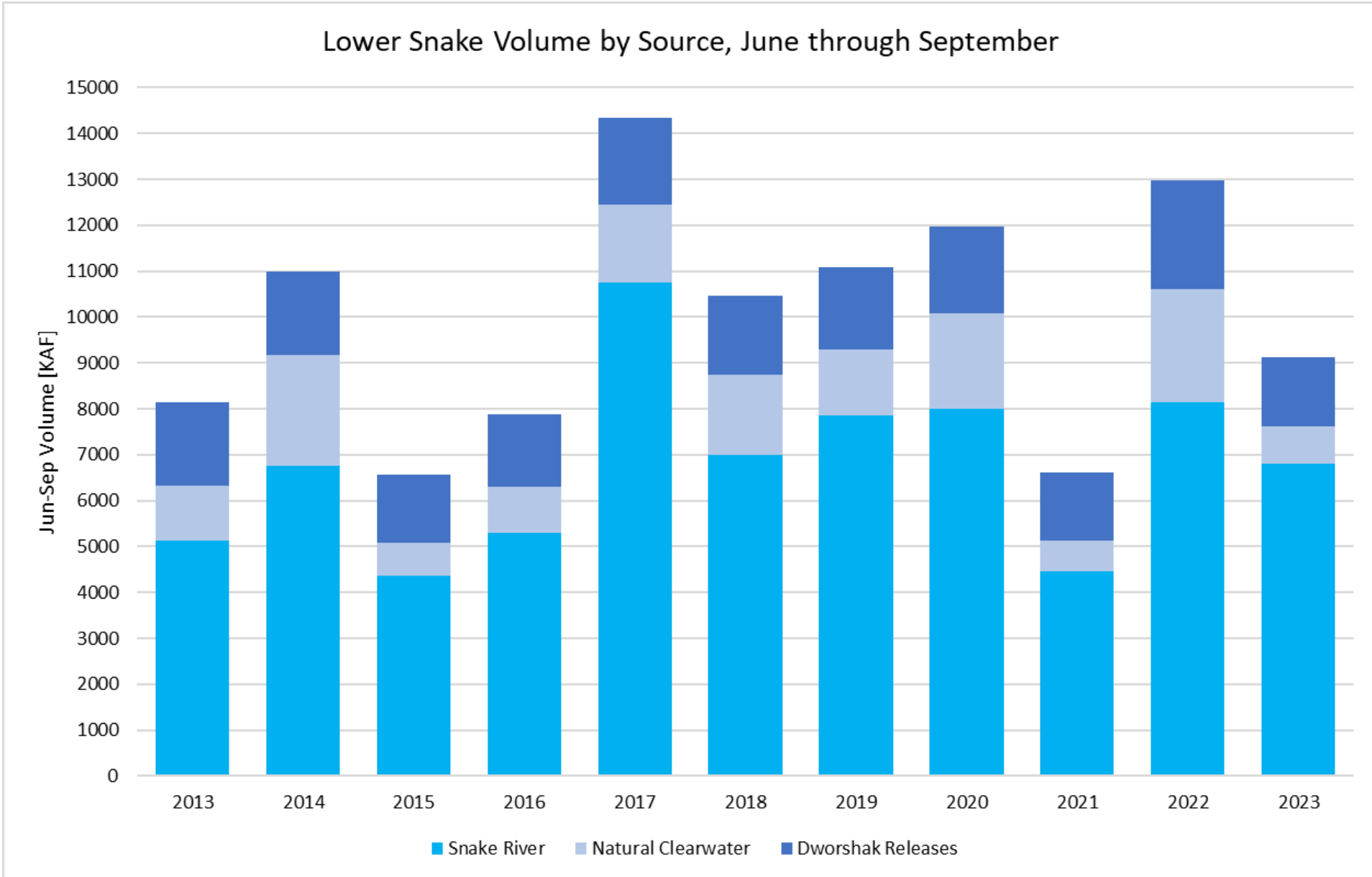


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WATER SUPPLY VOLUME COMPARISON





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WATER SUPPLY RECENT HISTORY

	2021	2022	2023	2024
REGIONAL CONDITIONS	<ul style="list-style-type: none"> • Higher carryover from 2020 • Low precipitation in the fall led to dry soil conditions and low baseflow • Hot temperatures in the summer 	<ul style="list-style-type: none"> • Low carry over from 2021 • Average precipitation • Continuing dry soils and low base flow 	<ul style="list-style-type: none"> • Average carryover • Low early winter precipitation • Dry soils 	<ul style="list-style-type: none"> • Higher carryover from 2023 • Moist soil from fall precipitation
DWORSHAK SUMMER OPERATIONS OUTCOMES	<ul style="list-style-type: none"> • Water from Dworshak was stretched and less effective for summer operations 	<ul style="list-style-type: none"> • Drought in parts of upper snake but average summer conditions and operations 	<ul style="list-style-type: none"> • Water from Dworshak was stretched 	<ul style="list-style-type: none"> • Outcome will depend on winter snowpack and summer conditions

IN-SEASON CONSTRAINTS AND FLEXIBILITY

Ramping Rates

- Never faster than 1ft per hour at Clearwater @ Peck USGS Gage (DWR Releases plus unregulated Clearwater flow)
- Up to 10kcfs at Orofino, rate of change in Dworshak releases limited to 2,000cfs a day or less
- Up to 20kcfs at Orofino, rate of change in Dworshak releases limited to 2,700cfs a day or less
- Increase discharge between 7pm and 11pm for normal operations. Decrease evenly throughout the day

Water Quality

- 110% maximum allowable TDG below Dworshak Dam

Reservoir Space

- 1,535 ft minimum Dworshak forebay elevation by the end of August 31
 - 1,029 KAF available for flow augmentation between 1,600 ft and 1,535 ft, plus summer inflow
 - 200 KAF of Snake River Board Adjudication water between 1,535 ft and 1,520 ft

Model Accuracy

- Model is calibrated to within +/- 0.5 degree F
- Model is calibrated to target 68 degrees F



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IMPROVING WATER EFFICIENCY

Improvements after NOAA's <i>2015 Adult Sockeye Salmon Passage Report</i>	Commitments Presented at 2021 YER	Current Status	Planned Future Improvements
<ol style="list-style-type: none"> 1. 30-60 day risk modeling capability 2. Increased efficiency of cooling water by targeting specific layers of stratification in the forebay 3. Added weather station and improved data QA/QC 4. Communications with salmon managers early, often, and two way 	<ol style="list-style-type: none"> 1. Consider the need for refill before July 1 2. Improve transition from refill to summer operations 3. Improve the Corps' water supply forecast 4. Increase understanding of Hells Canyon operations 	<ol style="list-style-type: none"> 1. Operations target fill at earliest date possible when safe and when water supply is available 2. New water supply forecast implemented in 2023 3. Additional snow flight added in 2023 4. Contacts made within IDP and increased frequency of communications 5. Ramping rates that more closely mimic natural environment 	<ol style="list-style-type: none"> 1. New temperature modeling software (HEC Res-Sim)

 **QUESTIONS / COMMENTS**

Chinook spawning in Red River – Idaho Fish and Game

Please share your feedback and needs with us!

Visit our website: <https://www.nww.usace.army.mil/Missions/Water-Management>

Contact Information:

- Team Lead: Jon Roberts, P.E., PMP
- Upper Snake System Willow Walker, P.E.
- Lower & Middle Snake System: Grant Bell, E.I.T.
- Walla Walla System: David Ries
- CWMS Management: Ashlynn Tate

Question/Comments call: **509-527-7283**

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