



AGENDA

IDAHO WATER RESOURCE BOARD

Upper Snake River Advisory Committee Meeting No. 7-23

Thursday, October 12, 2023

10:00 a.m. (MDT)

Meeting Location(s):

BOISE

Water Center
Conf. Room C & D
322 E. Front St.

IDAHO FALLS

Eastern Regional Office
Main Conference Room
900 N. Skyline Drive

or

VIDEO conference via Zoom is available upon registration, contact

cooper.fritz@idwr.idaho.gov for registration information

Brad Little
Governor

Jeff Raybould
Chairman
St. Anthony
At Large

Jo Ann Cole-Hansen
Vice Chair
Lewiston
At Large

Dean Stevenson
Secretary
Paul
District 3

Dale Van Stone
Hope
District 1

Albert Barker
Boise
District 2

Brian Olmstead
Twin Falls
At Large

Marcus Gibbs
Grace
District 4

Patrick McMahon
Sun Valley
At Large

1. Introductions and Attendance
2. Weather Forecast (NOAA)
3. Snow Pack / Streamflow Forecasts (NRCS)
4. Water Supply / Operations Update (USBR)
5. Idaho Power Company
 - a. Operations Update
 - b. Cloud Seeding Update
6. Water District 01 Briefing
7. IWRB Managed Recharge Operations
8. New Business
9. Adjourn

Committee Member: Brian Olmstead

Americans with Disabilities

The meeting will be held in person and online. If you require special accommodations to attend, participate in, or understand the meeting, please make advance arrangements by contacting Department staff by email jennifer.strange@idwr.idaho.gov or by phone at (208) 287-4800.



Snowpack & Streamflow Update

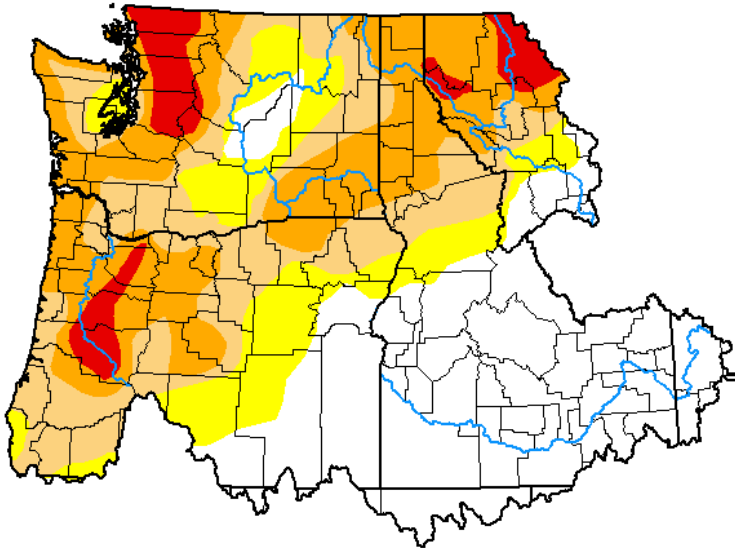
*Upper Snake River Advisory Committee
October 12, 2023*



Presented by Erin
Whorton

Current drought conditions

U.S. Drought Monitor Northwest RFC



October 3, 2023
(Released Thursday, Oct. 5, 2023)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

| | None | D0-D4 | D1-D4 | D2-D4 | D3-D4 | D4 |
|---|-------|-------|-------|-------|-------|------|
| Current | 36.71 | 63.29 | 49.15 | 27.74 | 5.57 | 0.00 |
| Last Week 09-26-2023 | 36.71 | 63.29 | 49.77 | 28.60 | 7.45 | 0.00 |
| 3 Months Ago 07-04-2023 | 36.06 | 63.94 | 38.38 | 4.93 | 0.00 | 0.00 |
| Start of Calendar Year 01-03-2023 | 14.75 | 85.25 | 48.70 | 23.61 | 8.20 | 0.49 |
| Start of Water Year 09-26-2023 | 36.71 | 63.29 | 49.77 | 28.60 | 7.45 | 0.00 |
| One Year Ago 10-04-2022 | 0.15 | 99.85 | 65.31 | 25.11 | 10.29 | 0.49 |

Intensity:

| | |
|---------------------|------------------------|
| None | D2 Severe Drought |
| D0 Abnormally Dry | D3 Extreme Drought |
| D1 Moderate Drought | D4 Exceptional Drought |

The Drought Monitor focuses on broad-scale conditions.
Local conditions may vary. For more information on the
Drought Monitor, go to <https://droughtmonitor.unl.edu/About.asp>

Author:

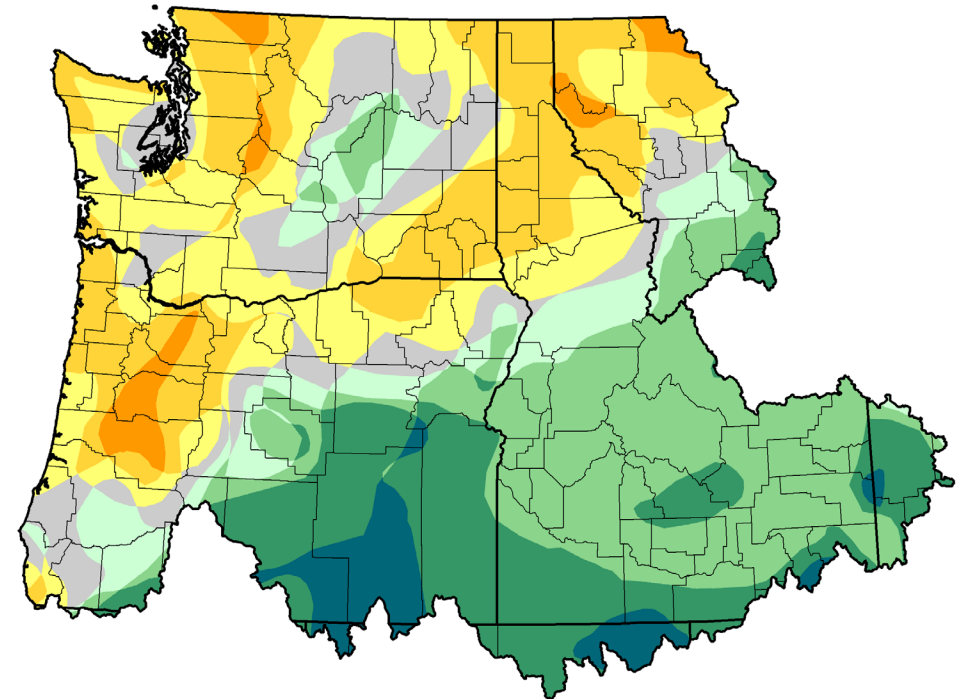
Brad Pugh
CPC/NOAA



droughtmonitor.unl.edu

Drought change from one year ago

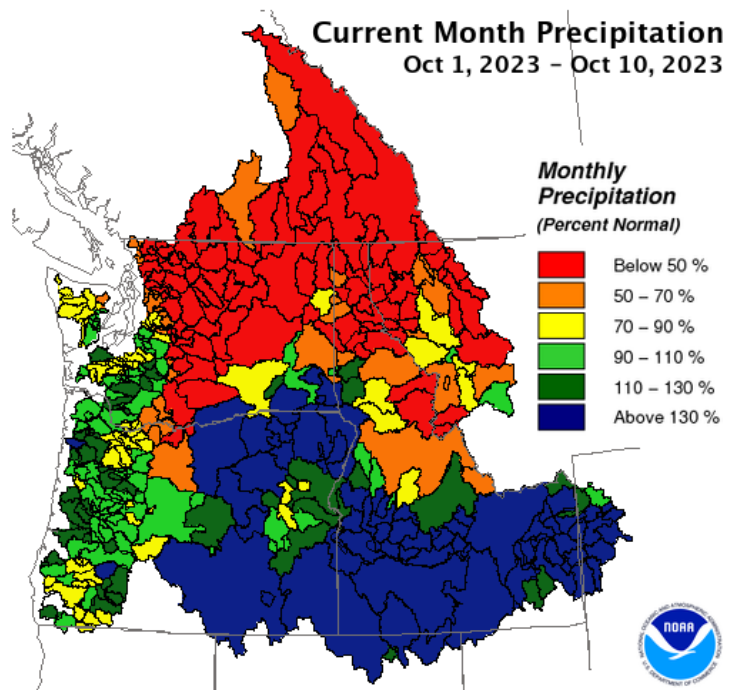
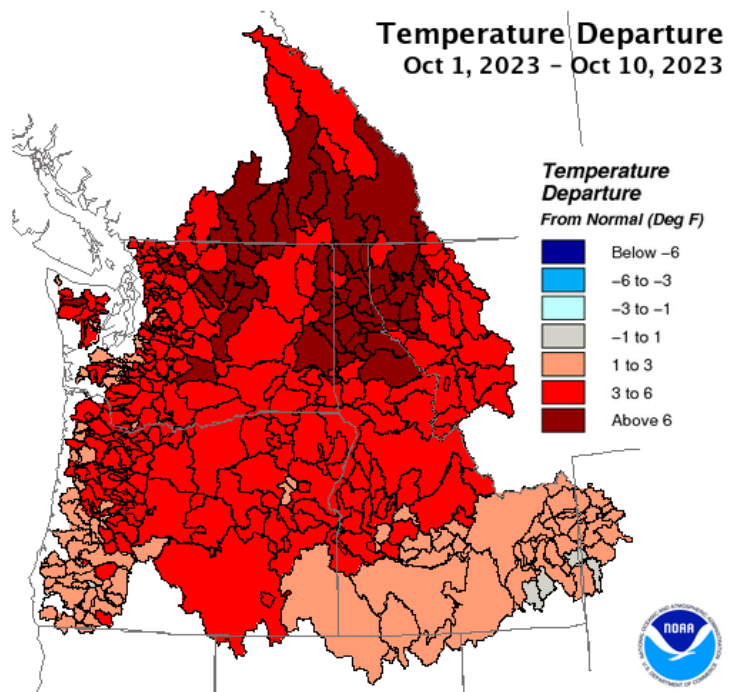
U.S. Drought Monitor Class Change - Northwest RFC 52 Week



| |
|---------------------|
| 5 Class Degradation |
| 4 Class Degradation |
| 3 Class Degradation |
| 2 Class Degradation |
| 1 Class Degradation |
| No Change |
| 1 Class Improvement |
| 2 Class Improvement |
| 3 Class Improvement |
| 4 Class Improvement |
| 5 Class Improvement |

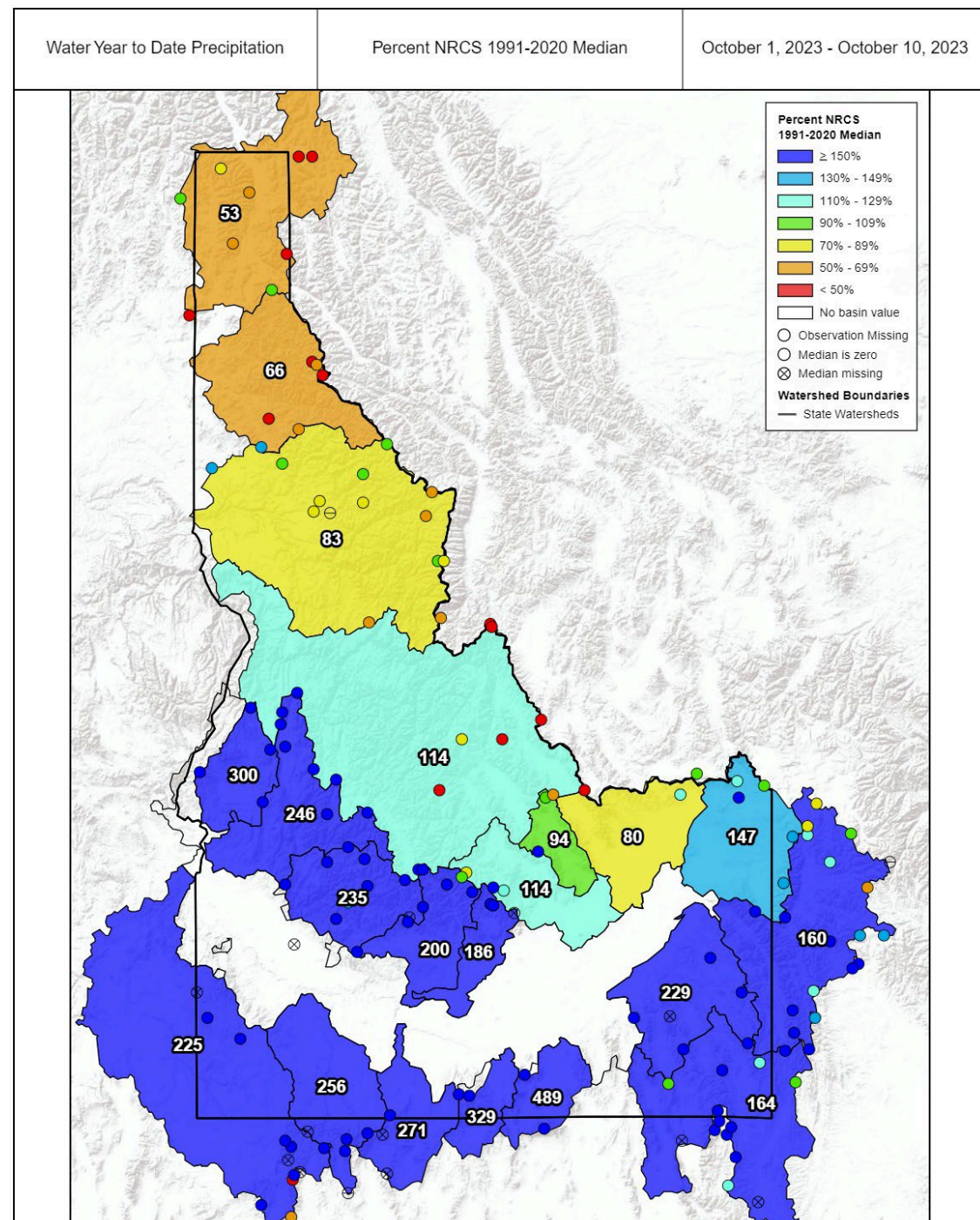
October 3, 2023
compared to
October 4, 2022

droughtmonitor.unl.edu



Creation Time: Wednesday, Oct 11, 2023

Northwest River Forecast Center

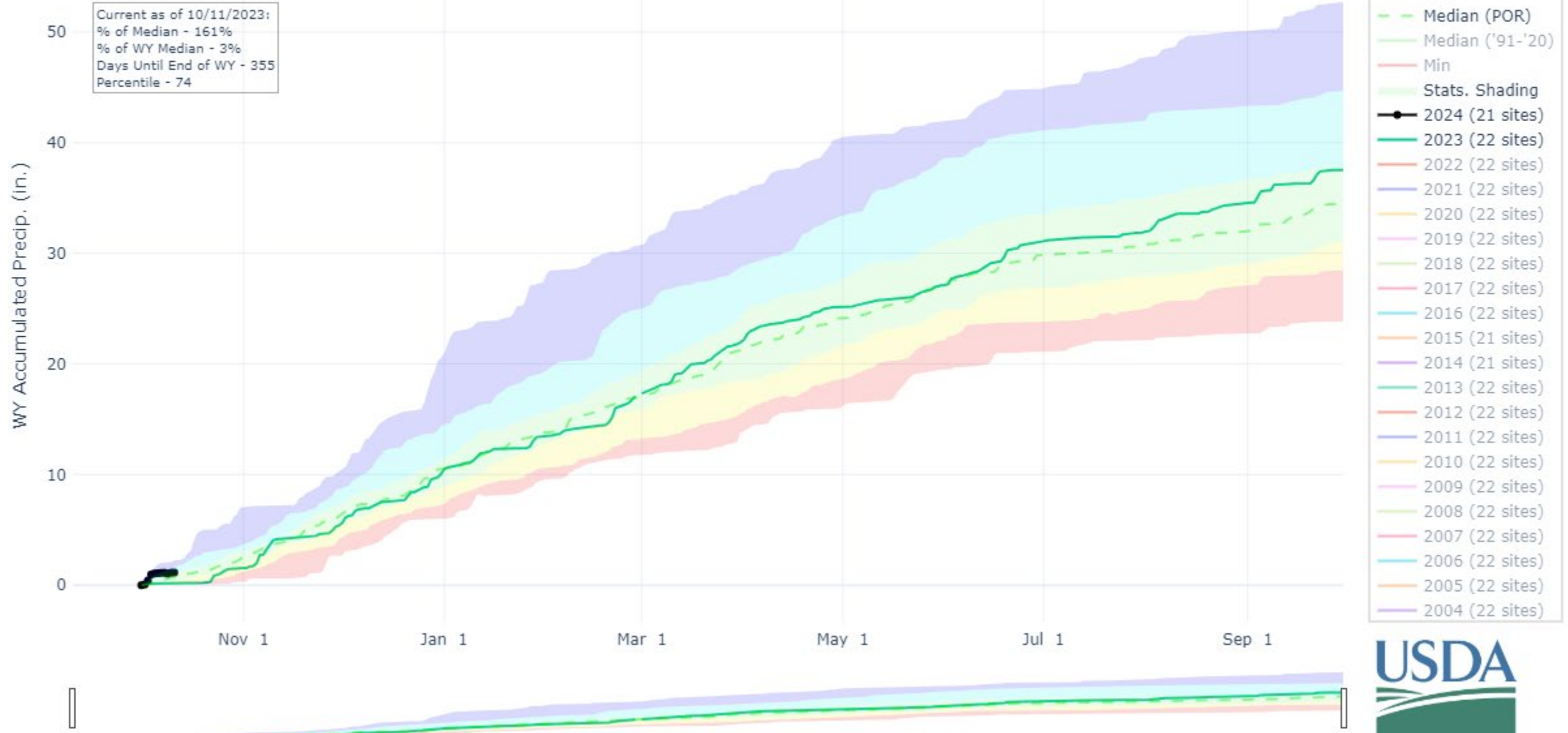


PRECIPITATION IN SNAKE RIVER ABOVE HEISE

Reset Range

[Link to data: CSV / JSON](#)

Station List



SNOW WATER EQUIVALENT IN UPPER SNAKE

Reset Range

Link to data: CSV / JSON

Station List

30

Current as of 10/11/2023:
% of Median - 119%
% Median Peak - 0%
Days Until Median Peak - 178
Percentile - 38

- ✖ Median Peak SWE
- Max
- Median (POR)
- Median ('91-'20)
- Min



Nov 1

Jan 1

Mar 1

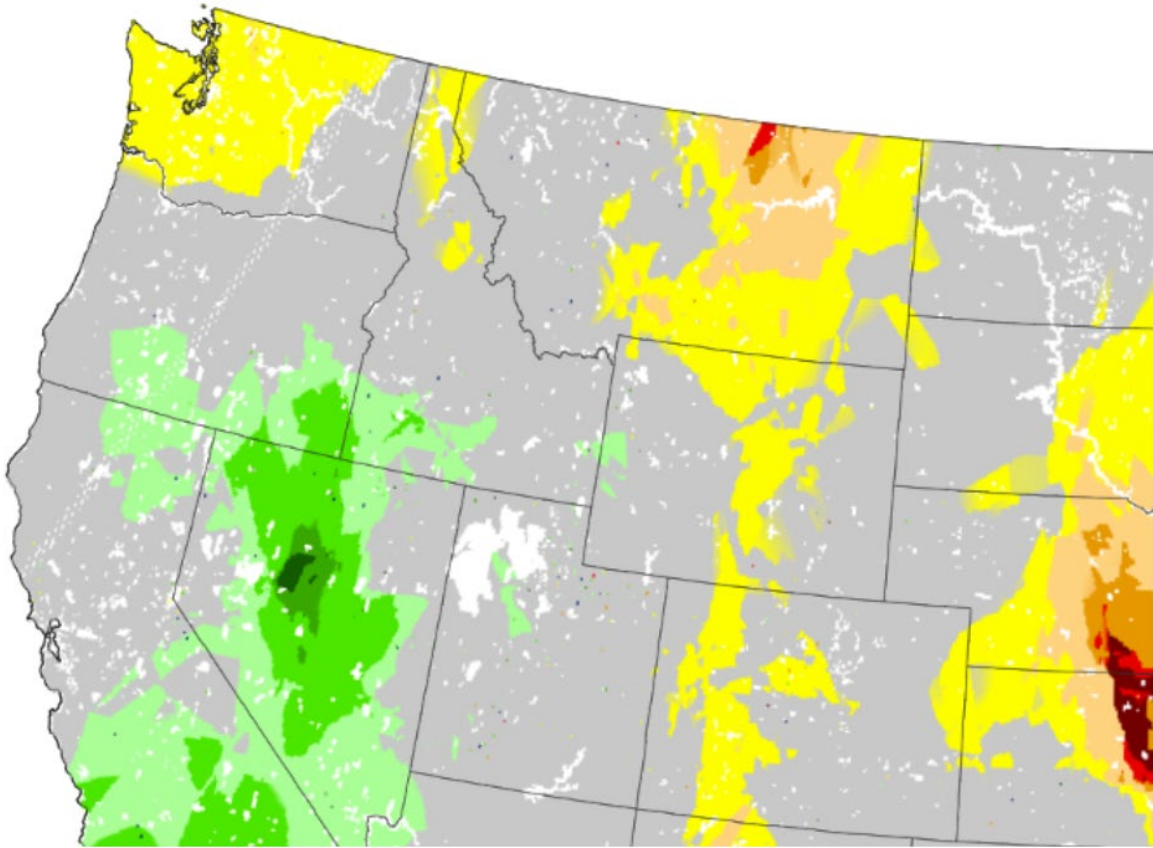
May 1

Jul 1

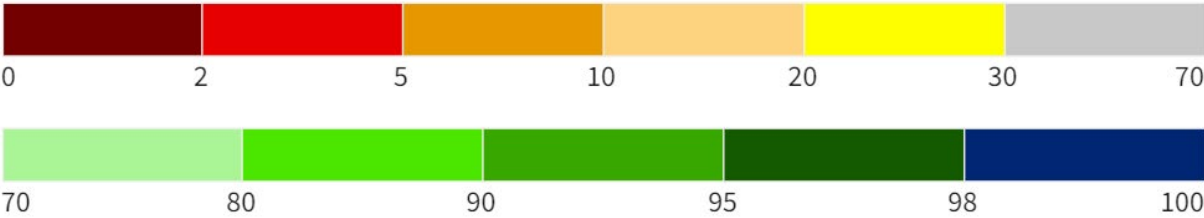
Sep 1



20 cm Soil Moisture Percentile



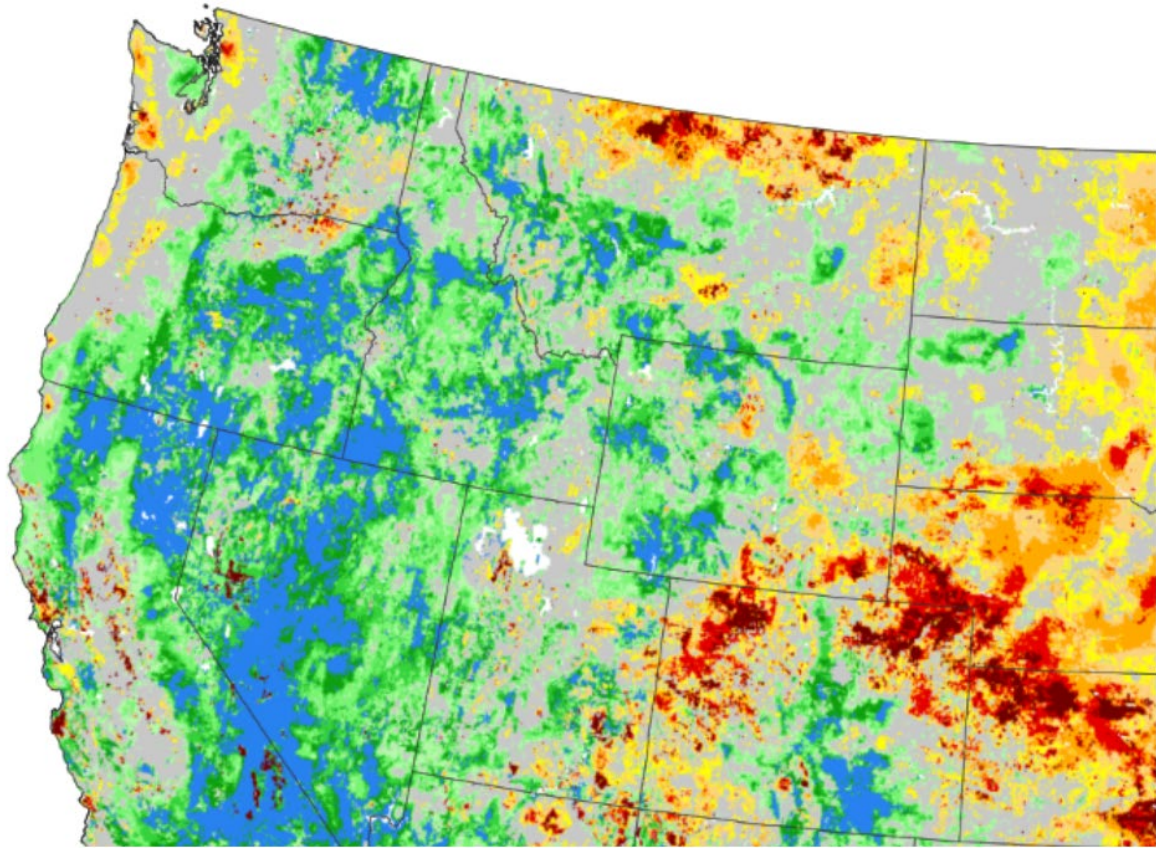
20 cm Soil Moisture Percentile



Source(s): NationalSoilMoisture.com
Data Valid: 10/09/23

Drought.gov

0-100 cm Soil Moisture Percentile

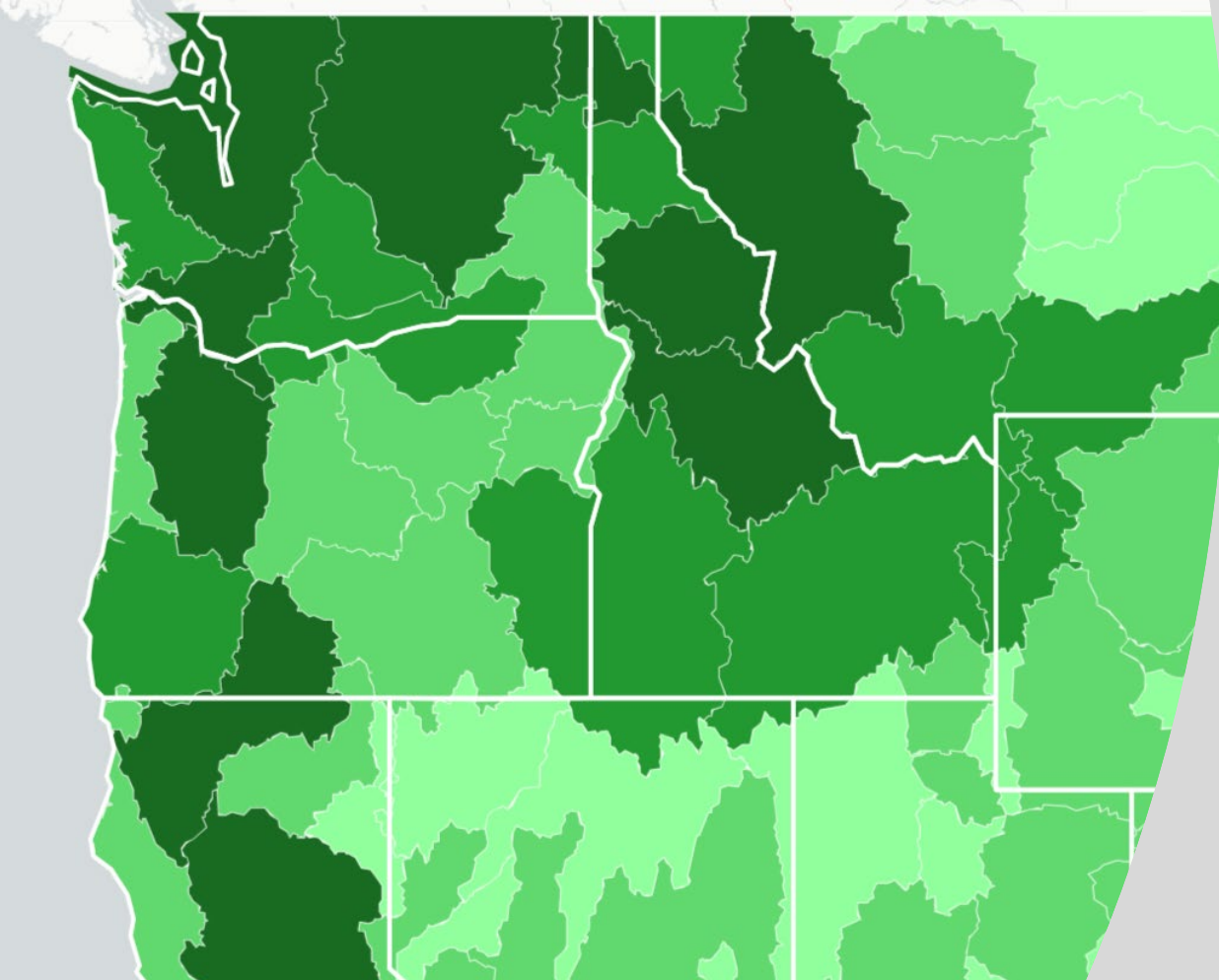


0-100 cm Soil Moisture Percentile



Source(s): NASA
Data Valid: 10/11/23

Drought.gov

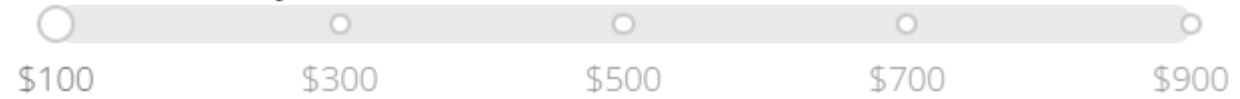


Present Value of the next 75 years of a lost snow water resource



states on/off

Present-day cost of water (acre/ft): **\$100**



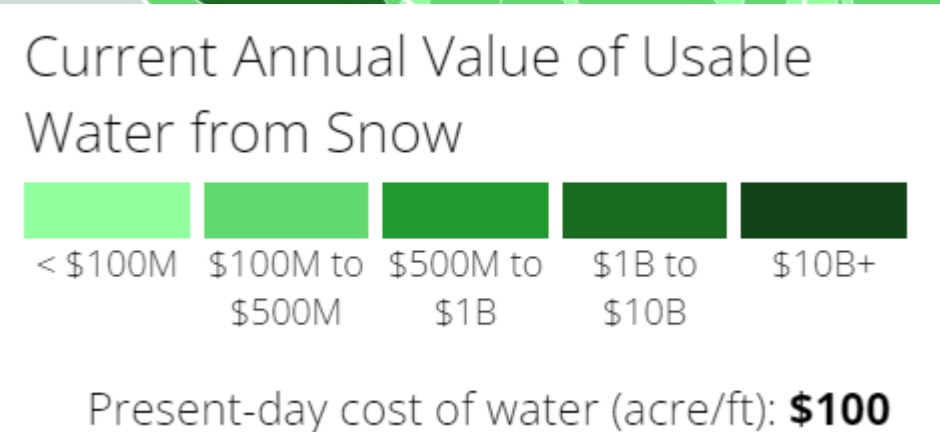
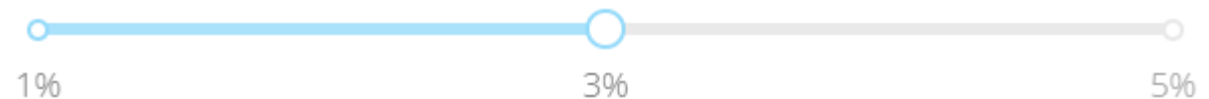
Years until snow to rain transition is complete: **50**



Years projected into future: **75**



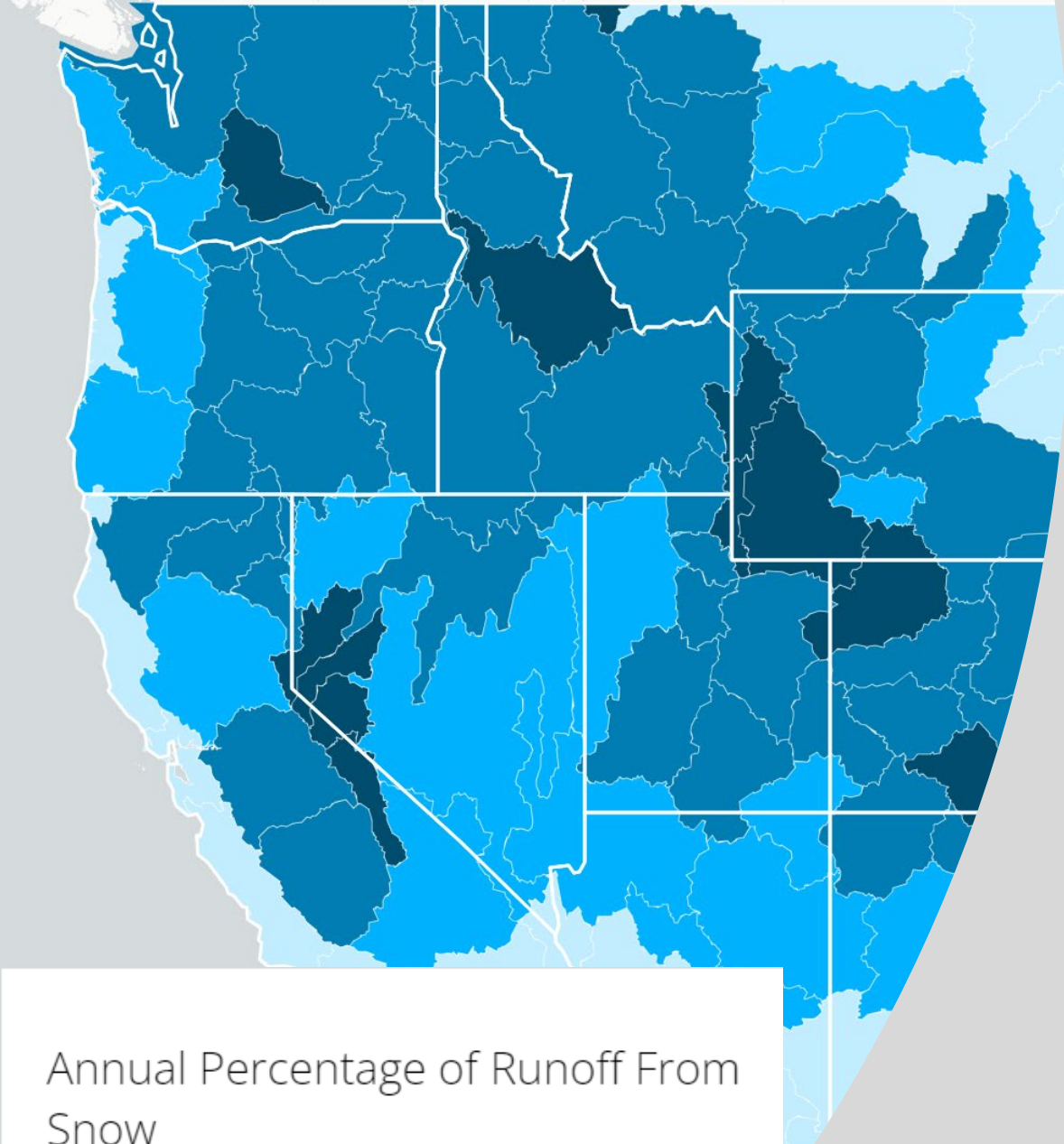
Real Discount Rate: **3%**



<http://depts.washington.edu/sinter/basinSnow/>

Upper Snake
\$169 Million/ year

Snake Headwaters
\$190 Million/ year



Annual Percentage of Runoff From Snow



Upper Snake

ANNUAL BASIN STATISTICS:

VOLUME OF RUNOFF FROM SNOW
AND RAIN:

7.97M acre-feet

PERCENT OF RUNOFF FROM
SNOW:

64.4%

VOLUME OF RUNOFF FROM SNOW:

5.13M acre-feet

VOLUME OF RUNOFF FROM RAIN:

2.84M acre-feet

Snake Headwaters

ANNUAL BASIN STATISTICS:

VOLUME OF RUNOFF FROM SNOW
AND RAIN:

6.98M acre-feet

PERCENT OF RUNOFF FROM
SNOW:

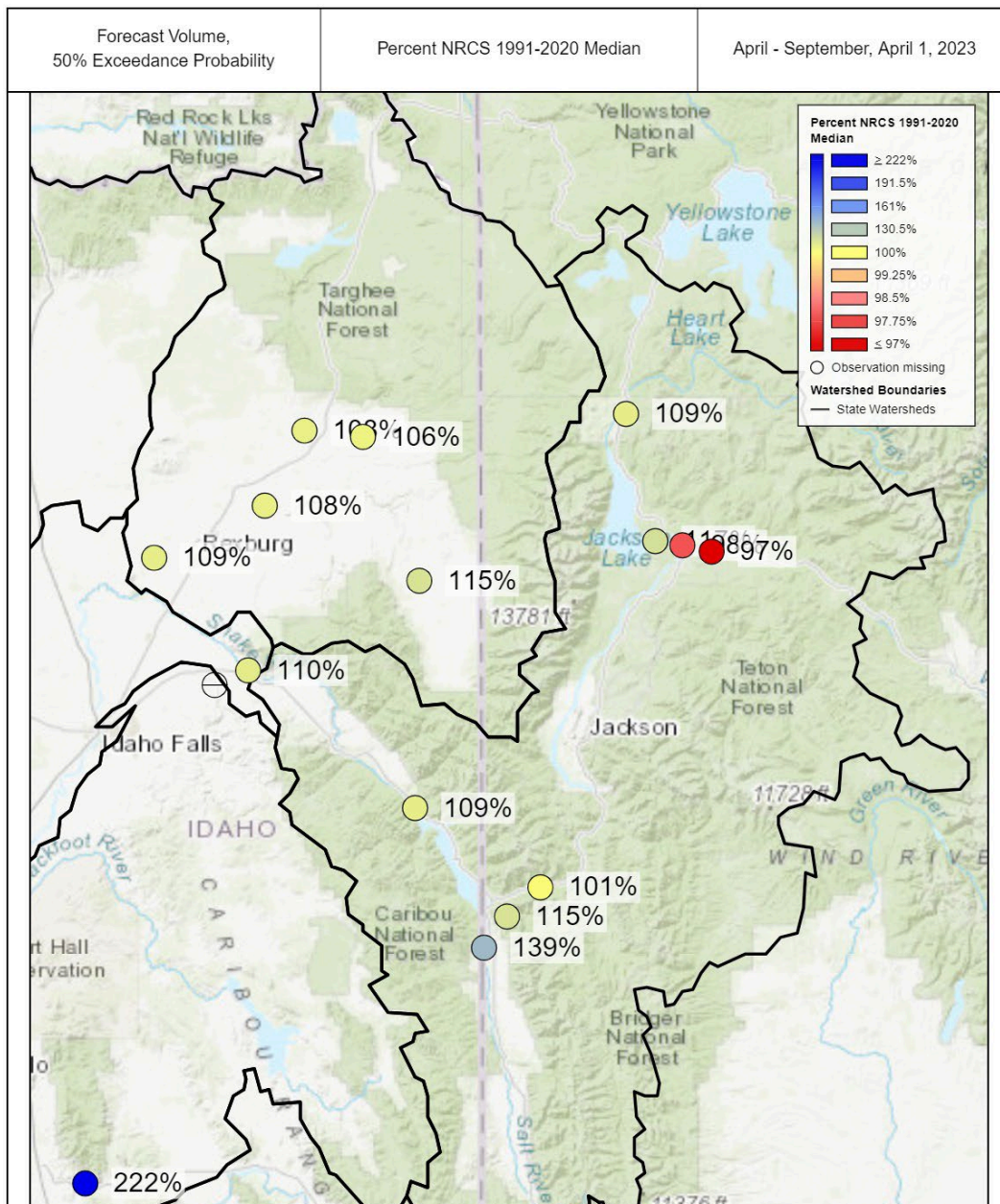
82.5%

VOLUME OF RUNOFF FROM SNOW:

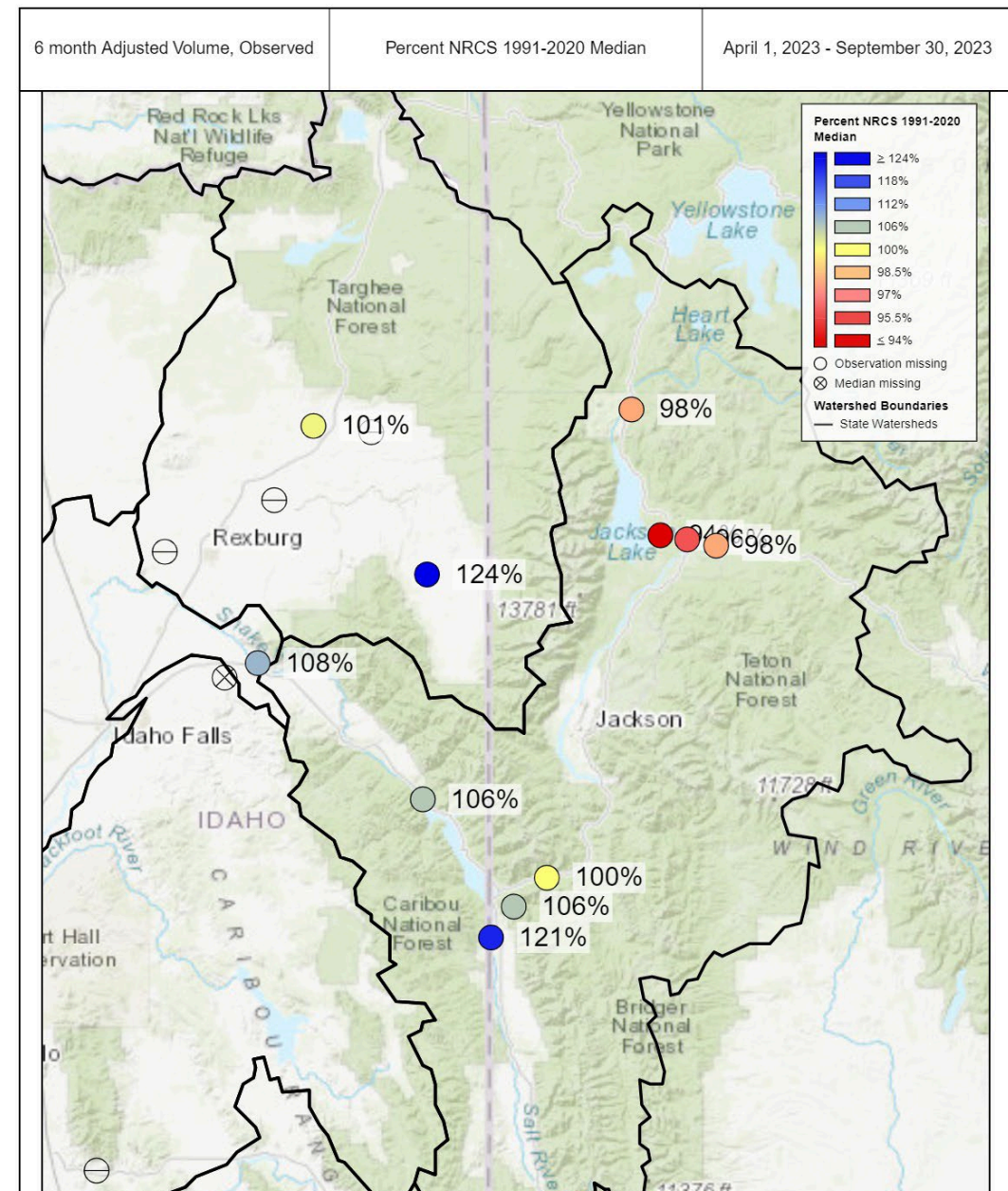
5.76M acre-feet

VOLUME OF RUNOFF FROM RAIN:

1.22M acre-feet

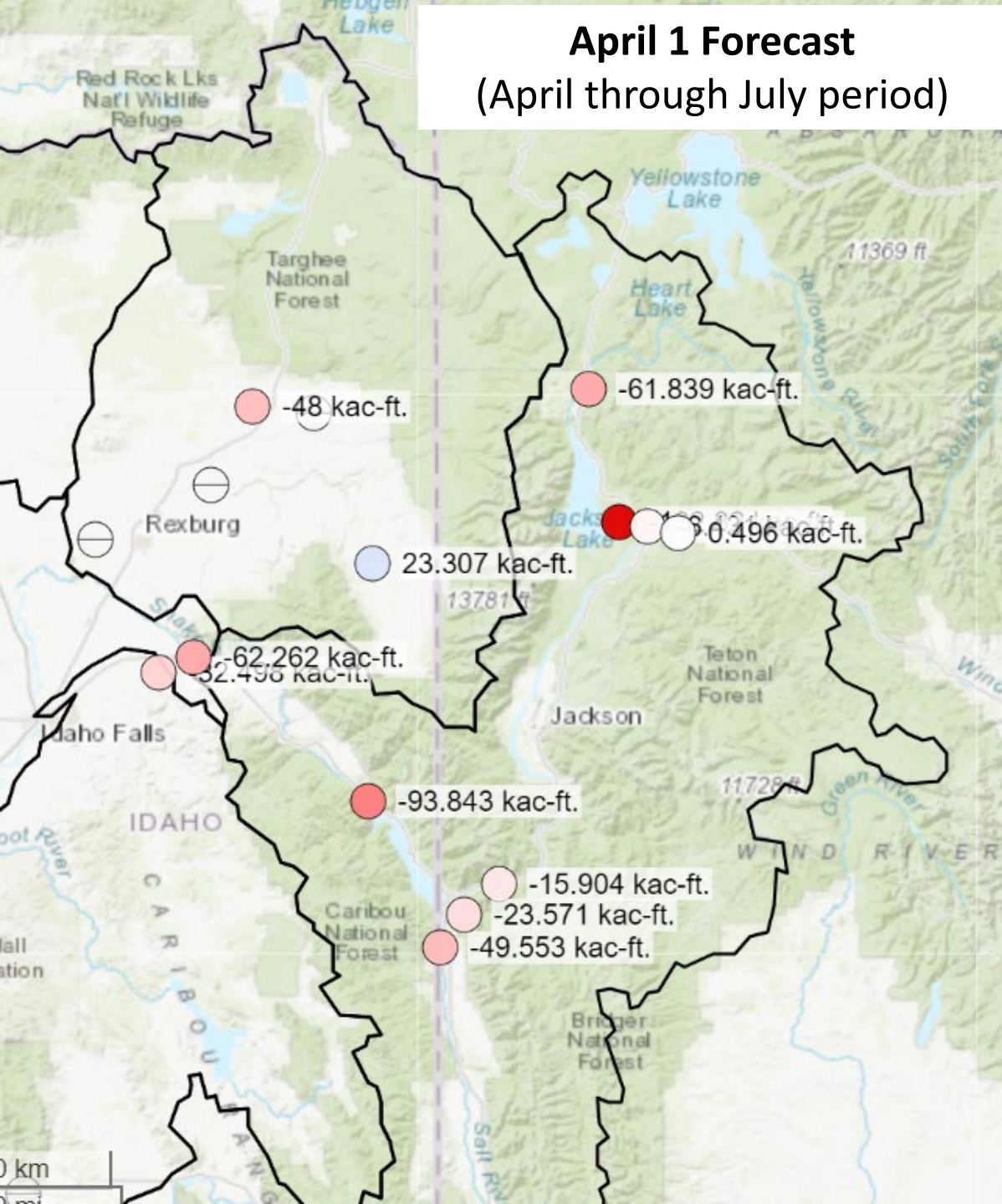


Forecasted streamflow



Observed streamflow

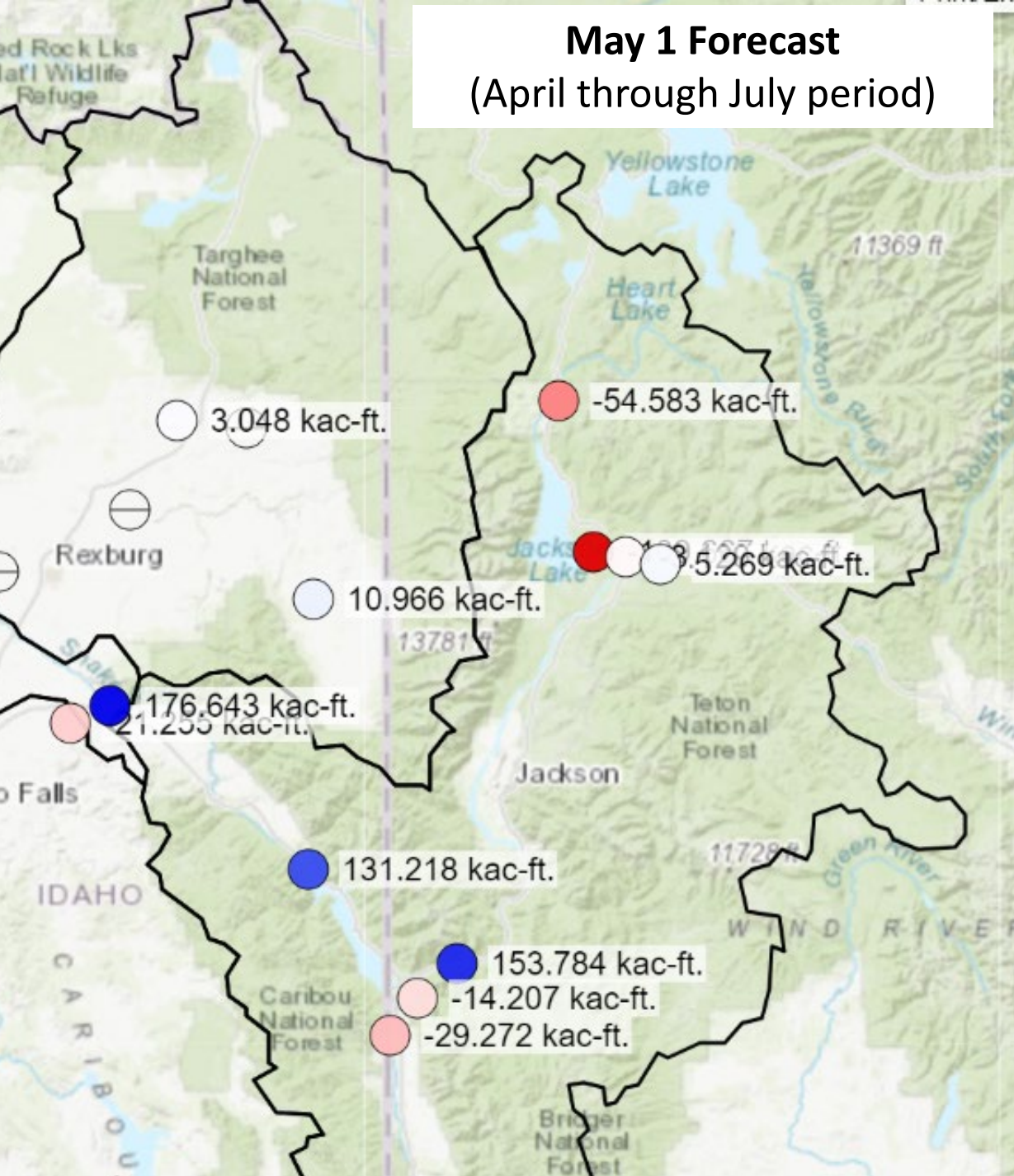
April 1 Forecast (April through July period)



Snake River Above Heise

| April - July | | | | |
|--------------|----------------|----------------|------------------|---------------|
| | Forecast (KAF) | Observed (KAF) | Difference (KAF) | Percent Error |
| April 1 | 3,430 | 3,368 | -62 | -2% |
| May 1 | 3,191 | 3,368 | 177 | 5% |
| June 1 | 3,211 | 3,368 | 157 | 5% |

| April - September | | | | |
|-------------------|----------------|----------|------------|---------------|
| | Forecast (KAF) | Observed | Difference | Error percent |
| April 1 | 4,020 | 3,943 | -77 | -2% |
| May 1 | 3,781 | 3,943 | 162 | 4% |
| June 1 | 3,661 | 3,943 | 282 | 7% |

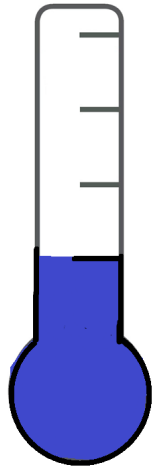


May 1 Forecast
(April through July period)

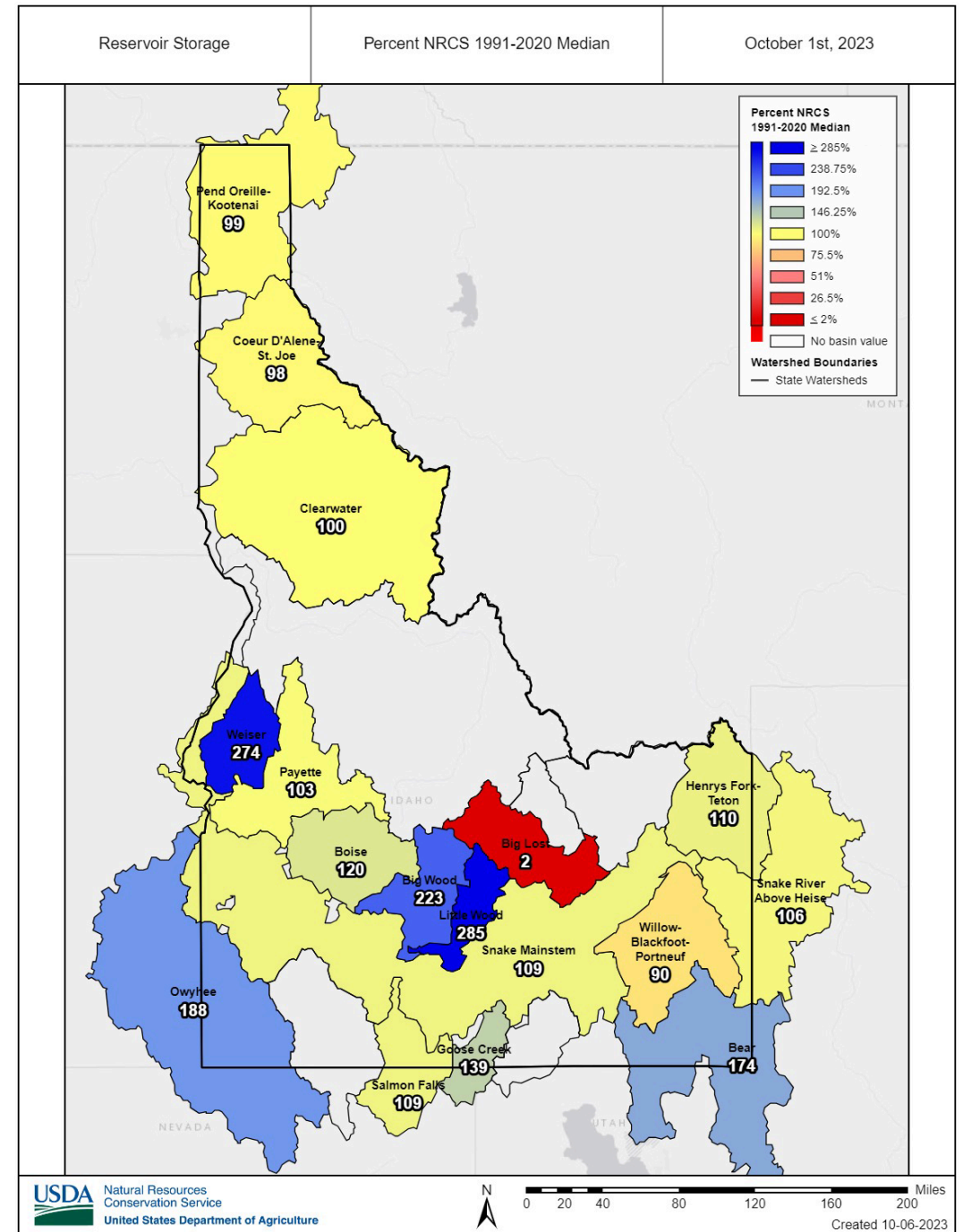
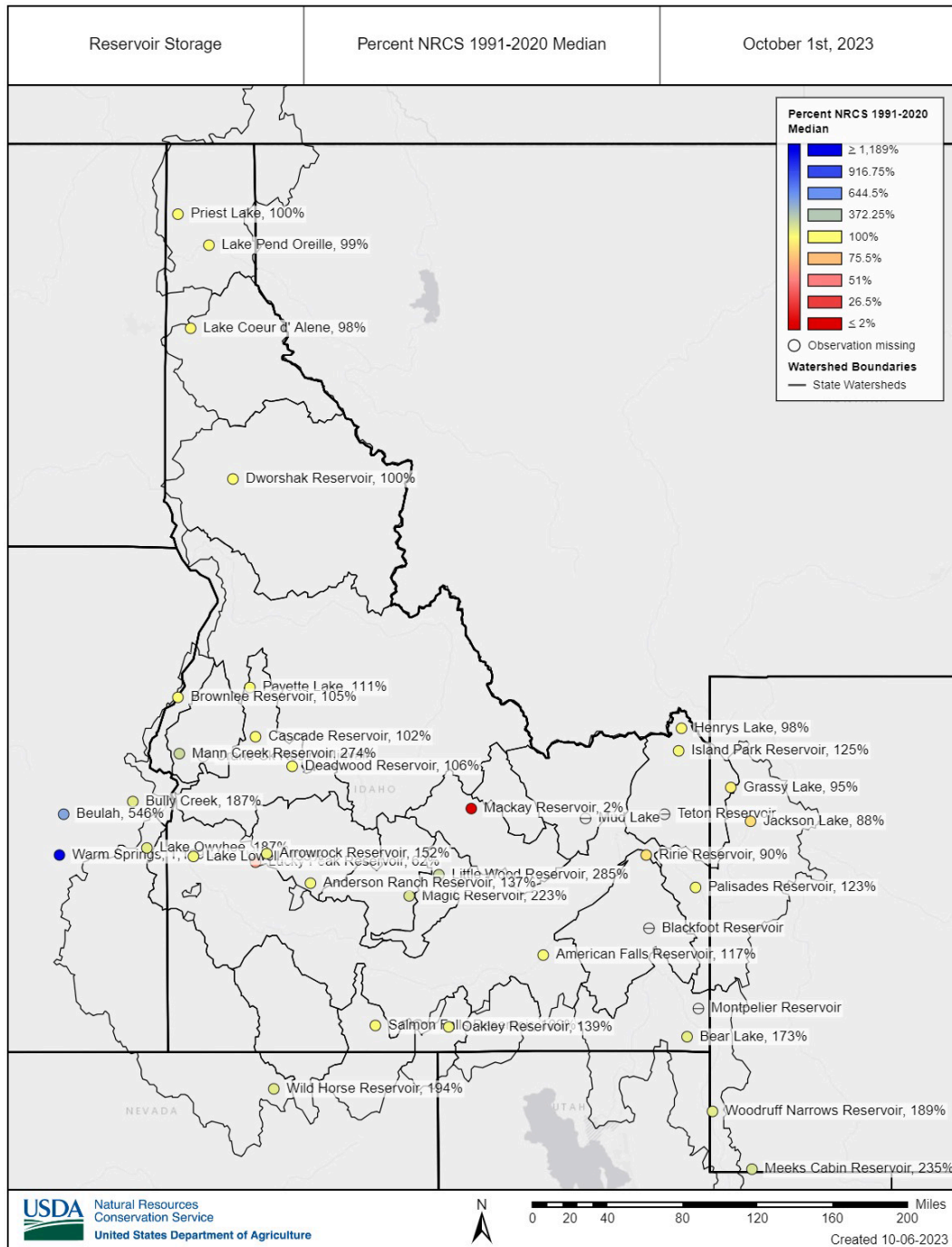
Snake River Above Heise

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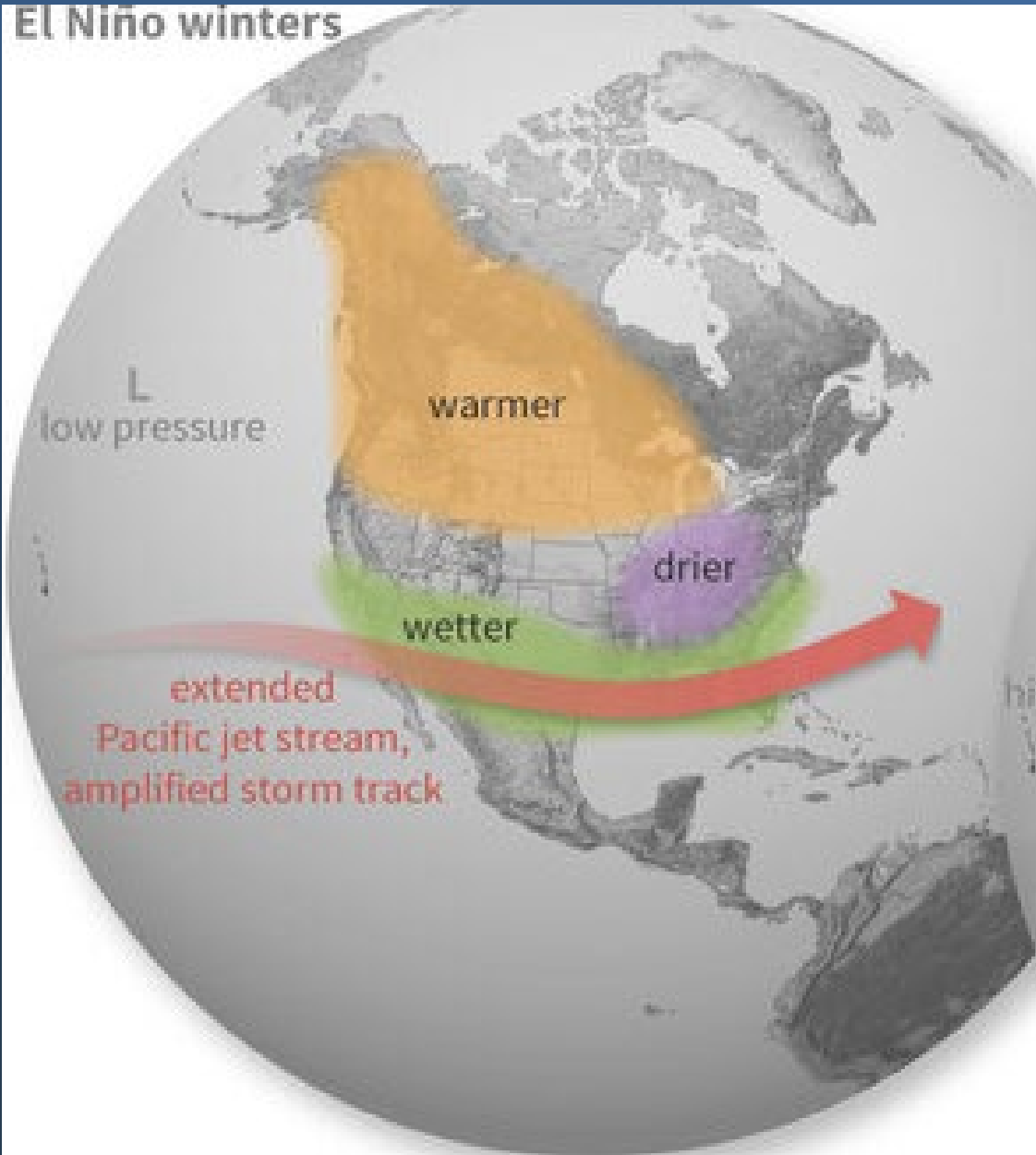


Reservoir Storage



El Niño anticipated to continue through January - March 2024

El Niño winters



La Niña winters

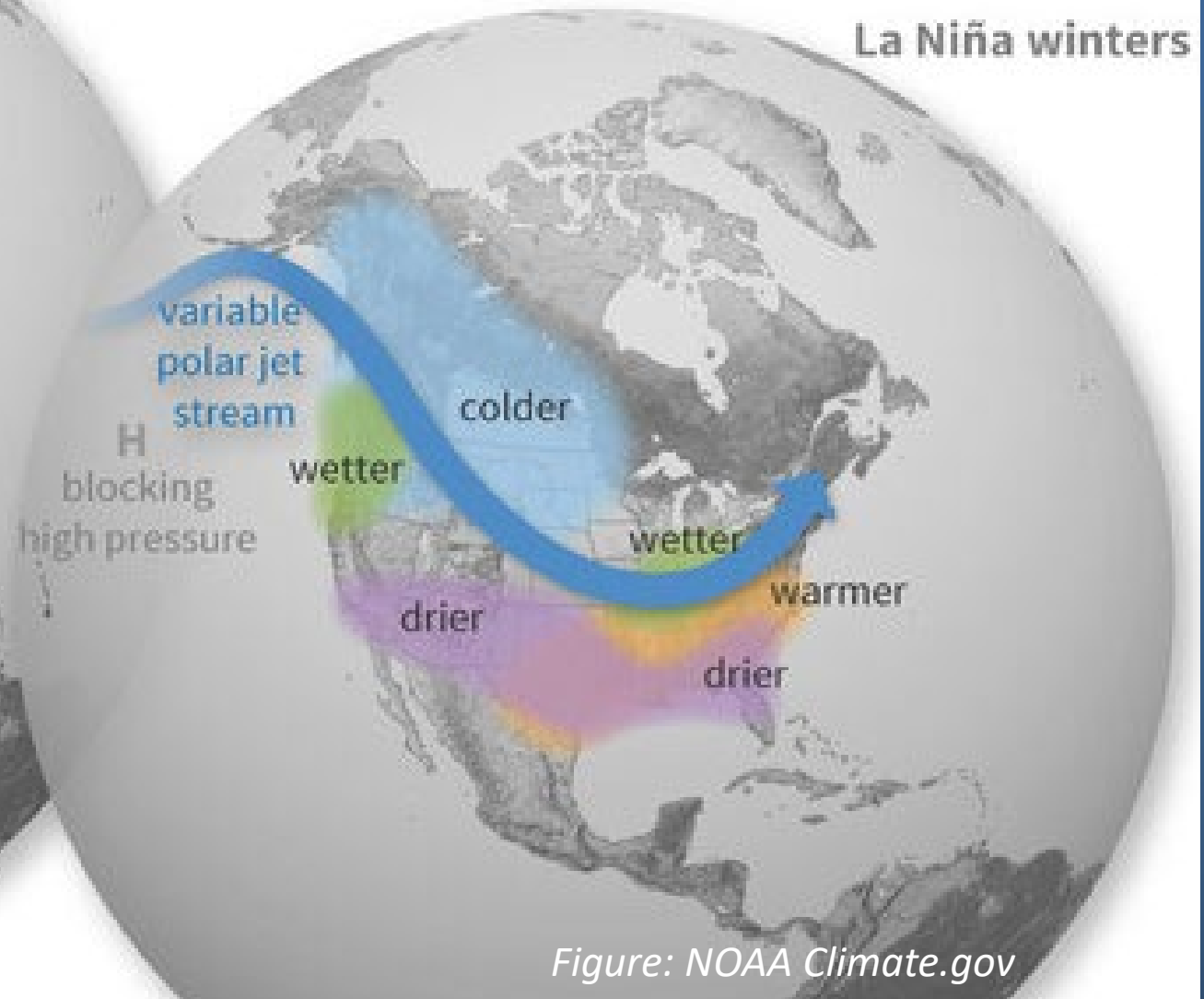
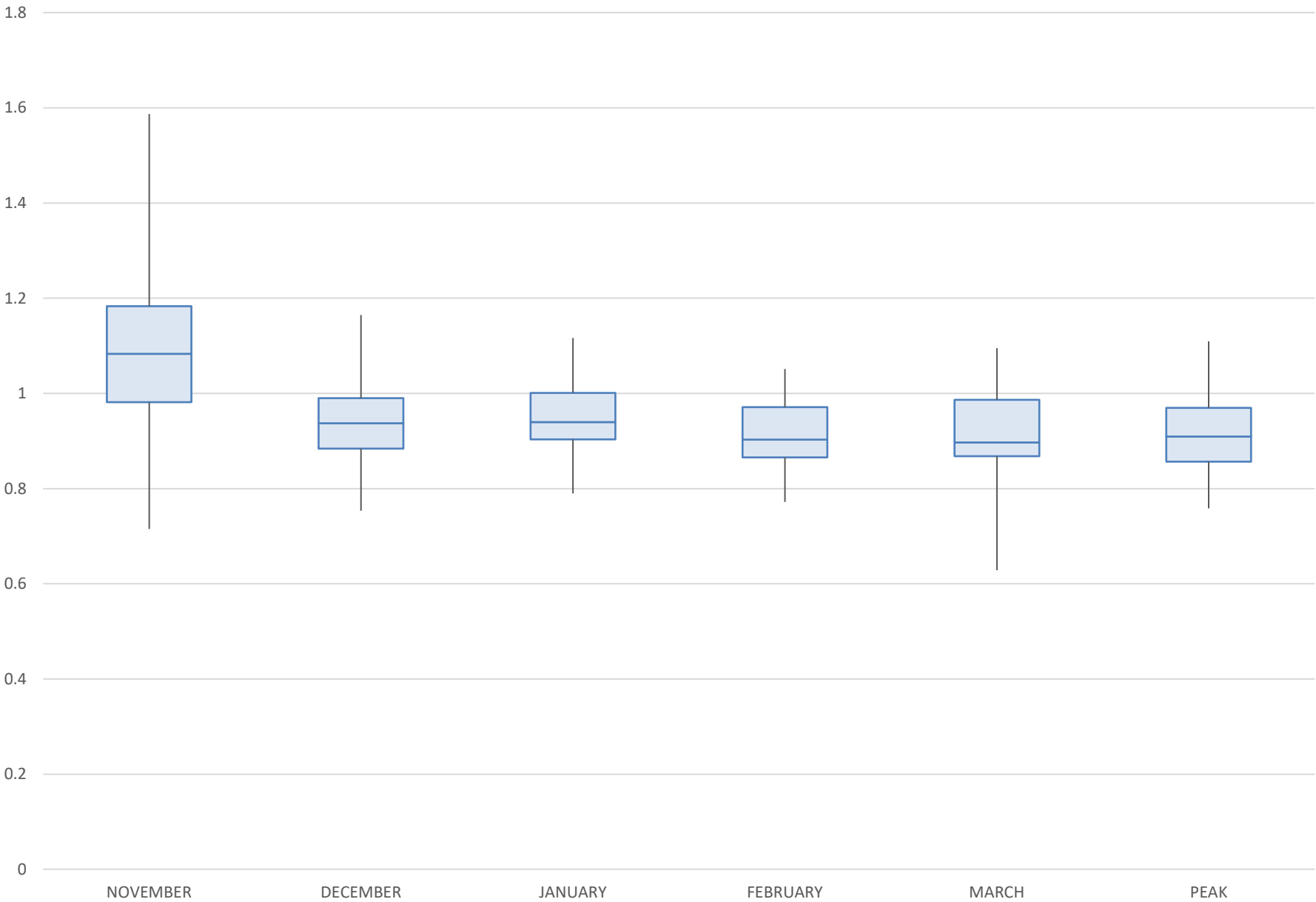


Figure: NOAA Climate.gov

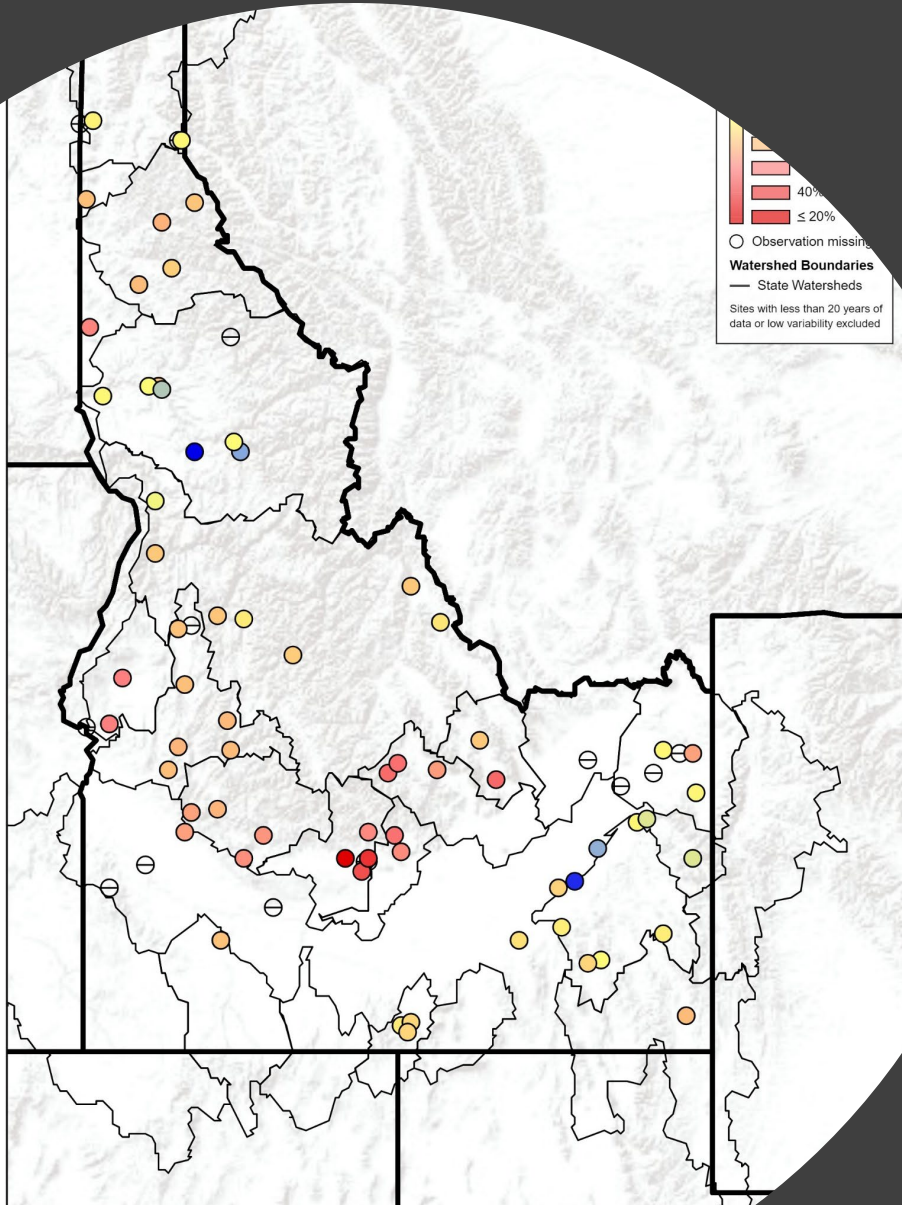
El Nino SWE / 91-20 Median SWE - HUC 1704



Monthly SWE Comparison by Watershed

| Month/ Watershed | NOV | DEC | JAN | FEB | MAR |
|--|------|------|------|------|------|
| 1701 (Kootenai-Pend Oreille - Spokane) | 1.23 | 1.06 | 1.01 | 0.94 | 0.96 |
| 1704 (Upper Snake) | 1.04 | 0.91 | 0.93 | 0.90 | 0.90 |
| 1705 (Middle Snake) | 1.31 | 1.10 | 1.05 | 1.01 | 1.04 |
| 1706 (Lower Snake) | 1.18 | 1.02 | 0.98 | 0.93 | 0.95 |

Thank you!



Idaho Snow Survey - NRCS



Erin Whorton



erin.whorton@usda.gov



208-685-6983



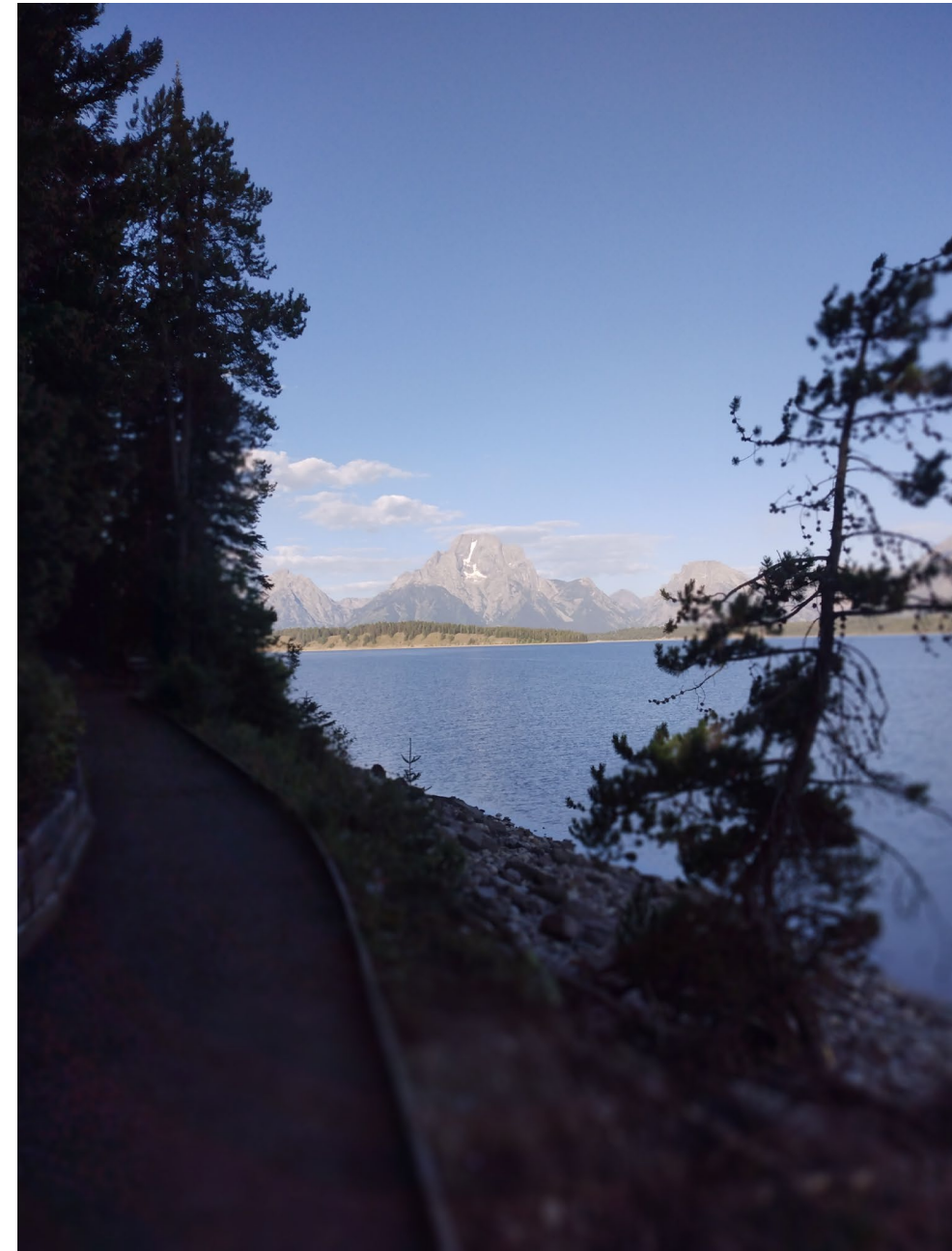
— BUREAU OF —
RECLAMATION

Water Operations

Upper Snake

Upper Snake Advisory Committee Meeting

October 12, 2023



Overview

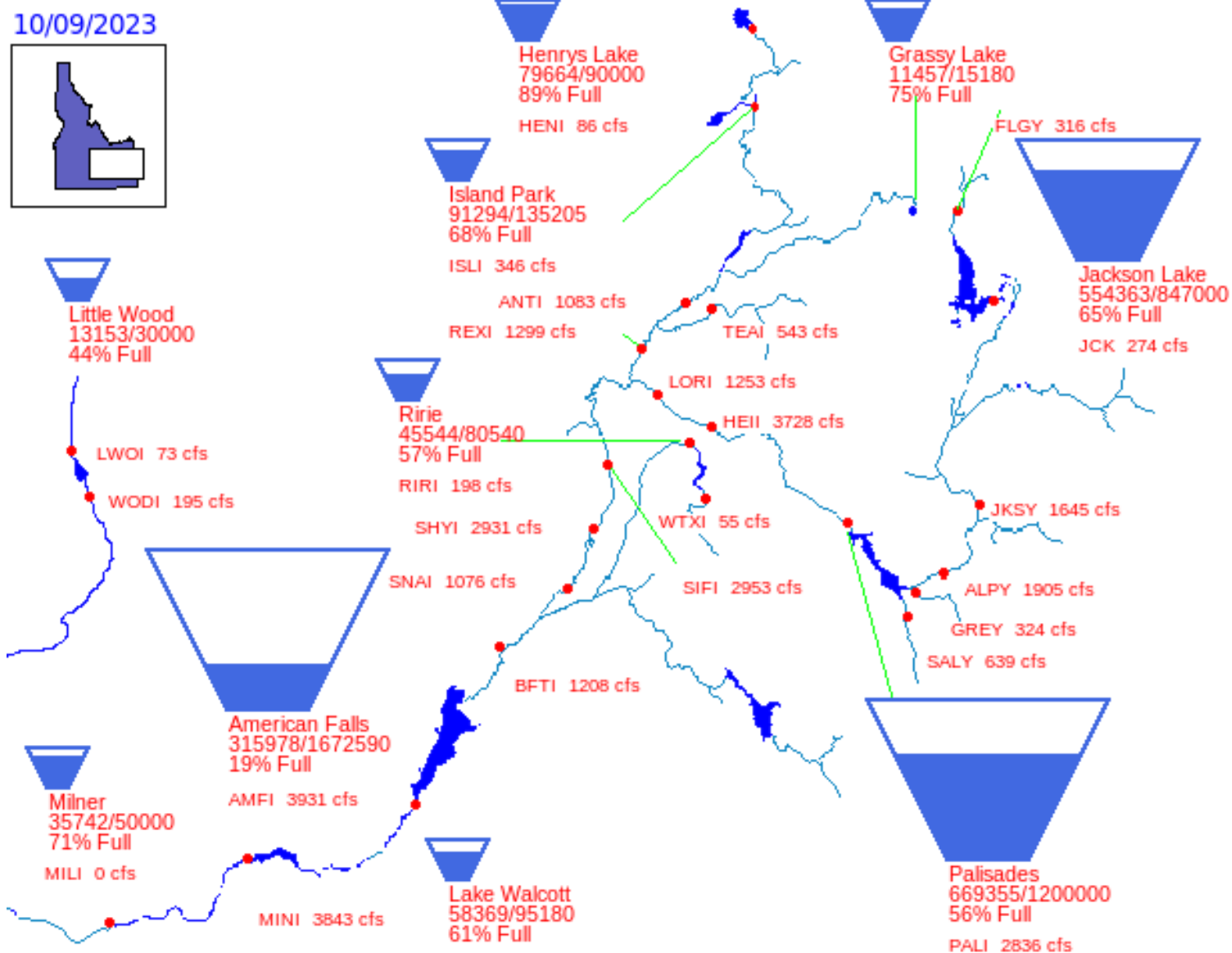
- Current Conditions
- Year In Review
- Upcoming Winter Outlook
- FRM Potential



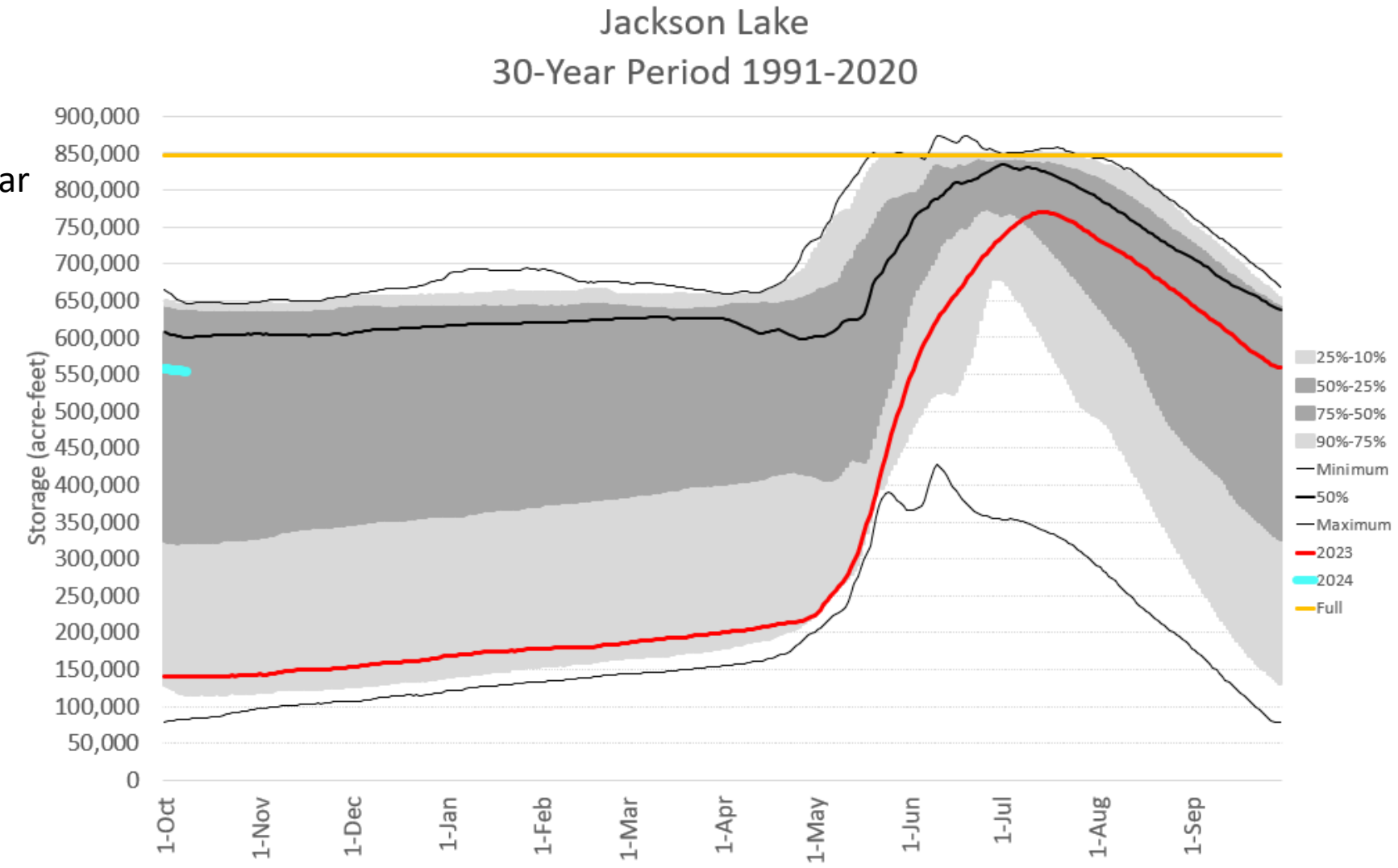
Basin Conditions

System:

- 121% Median
- 118 % Average
- 1.25 MAF more than last year

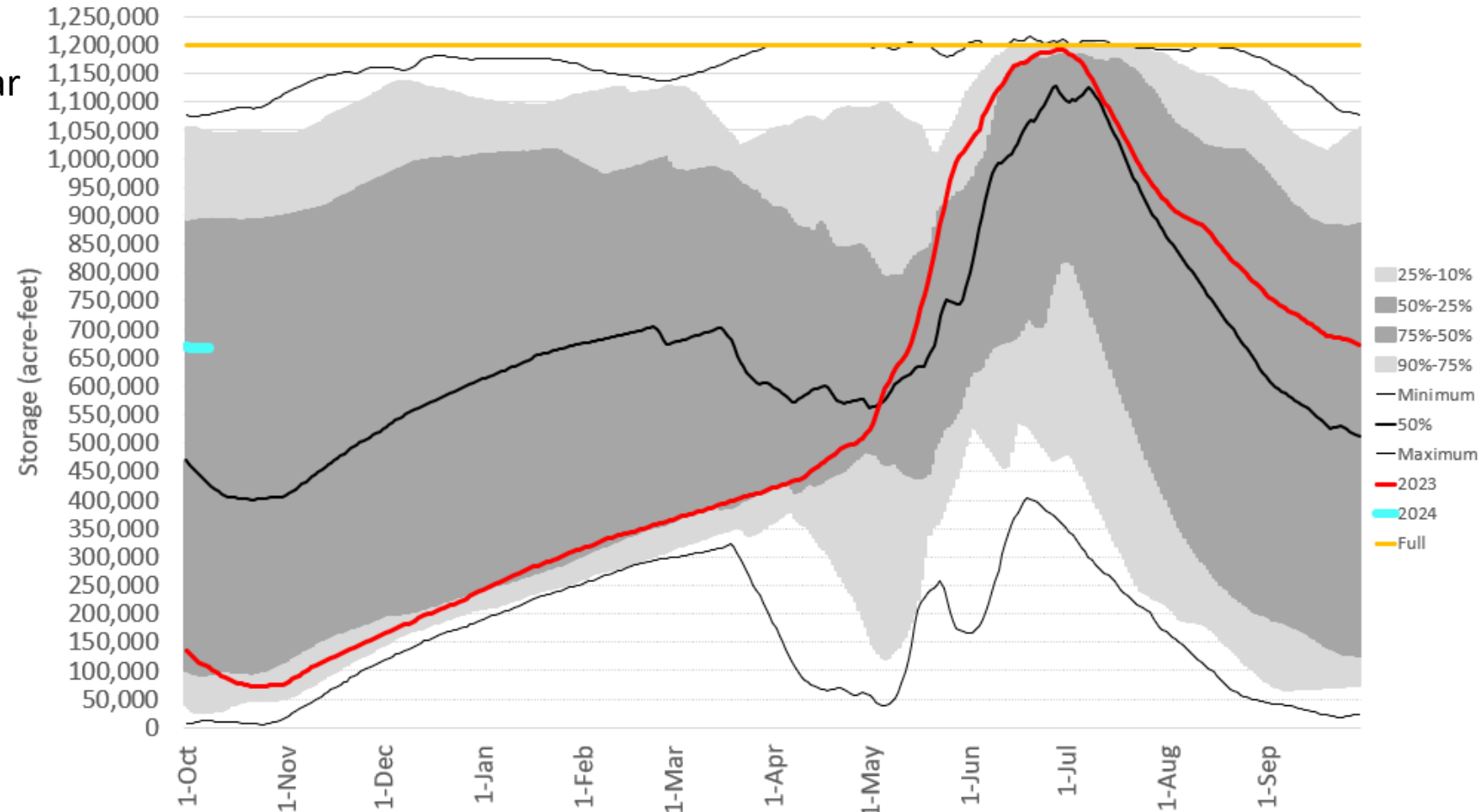


- 92% of Median
- 413 KAF More than Last Year



Palisades Reservoir 30-Year Period 1991-2020

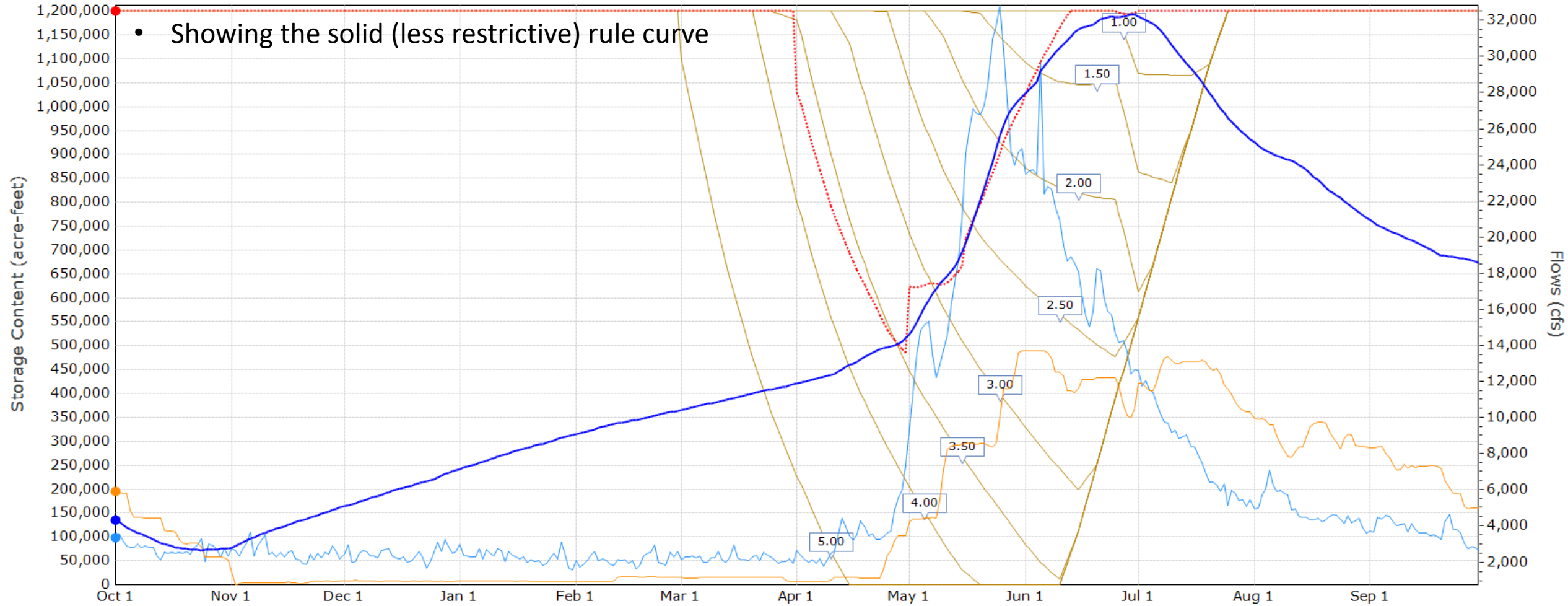
- 156% of Median
- 563 KAF More than Last Year



PAL - Palisades

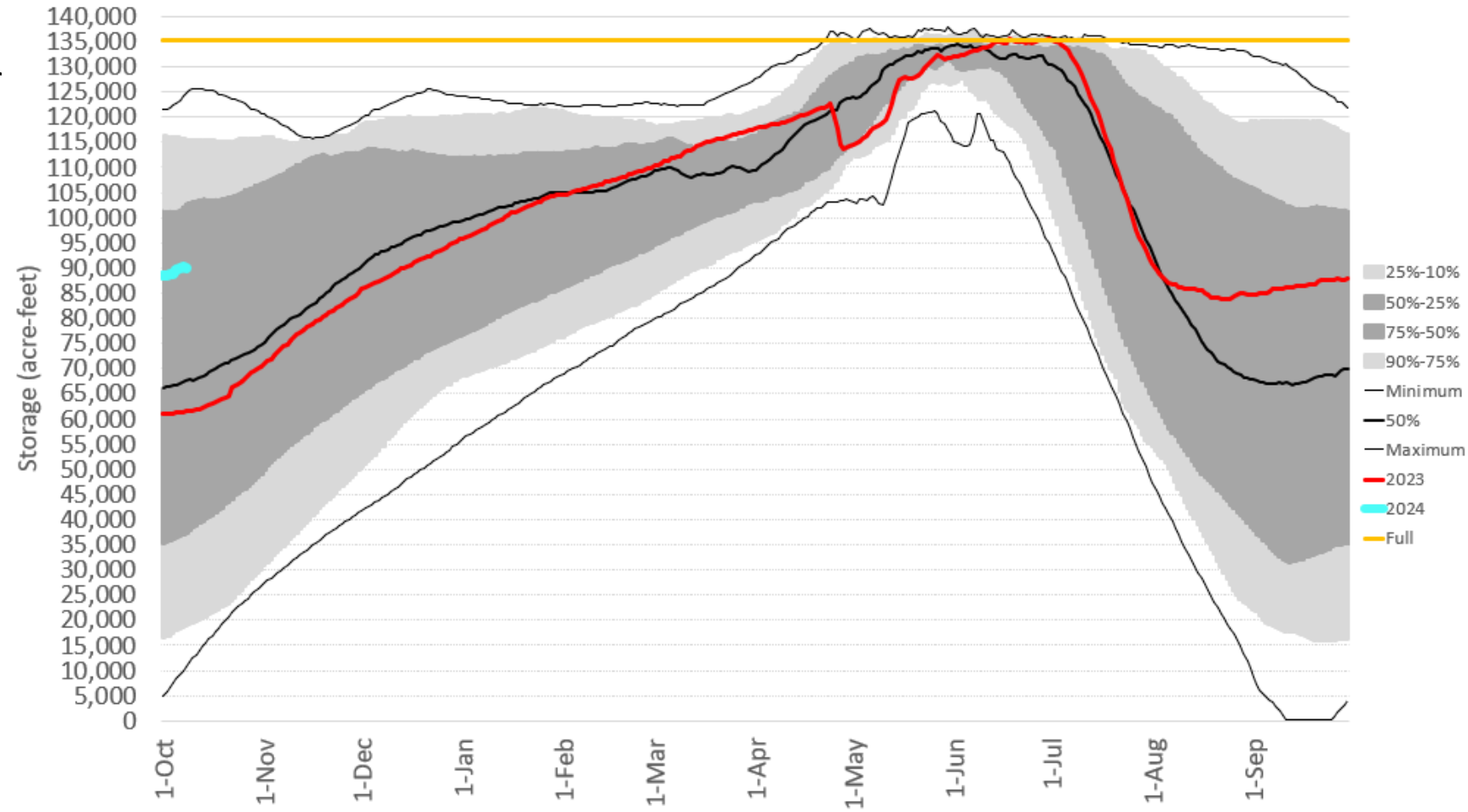
☒ 2023 PALI QU ☒ 2023 PALI QD ☒ 2023 Required ☒ 2023 Actual Storage

- Showing the solid (less restrictive) rule curve

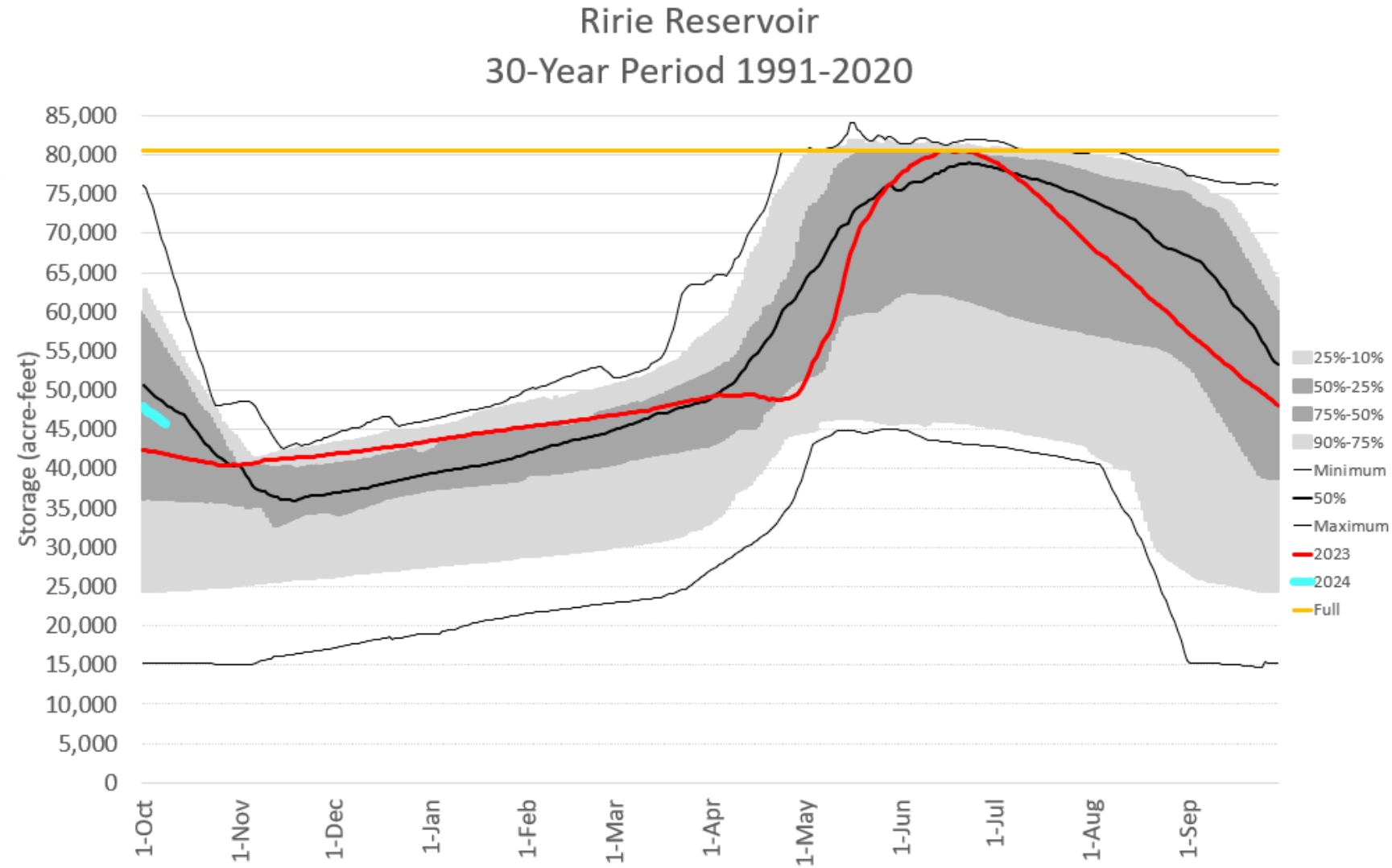


Island Park Reservoir 30-Year Period 1991-2020

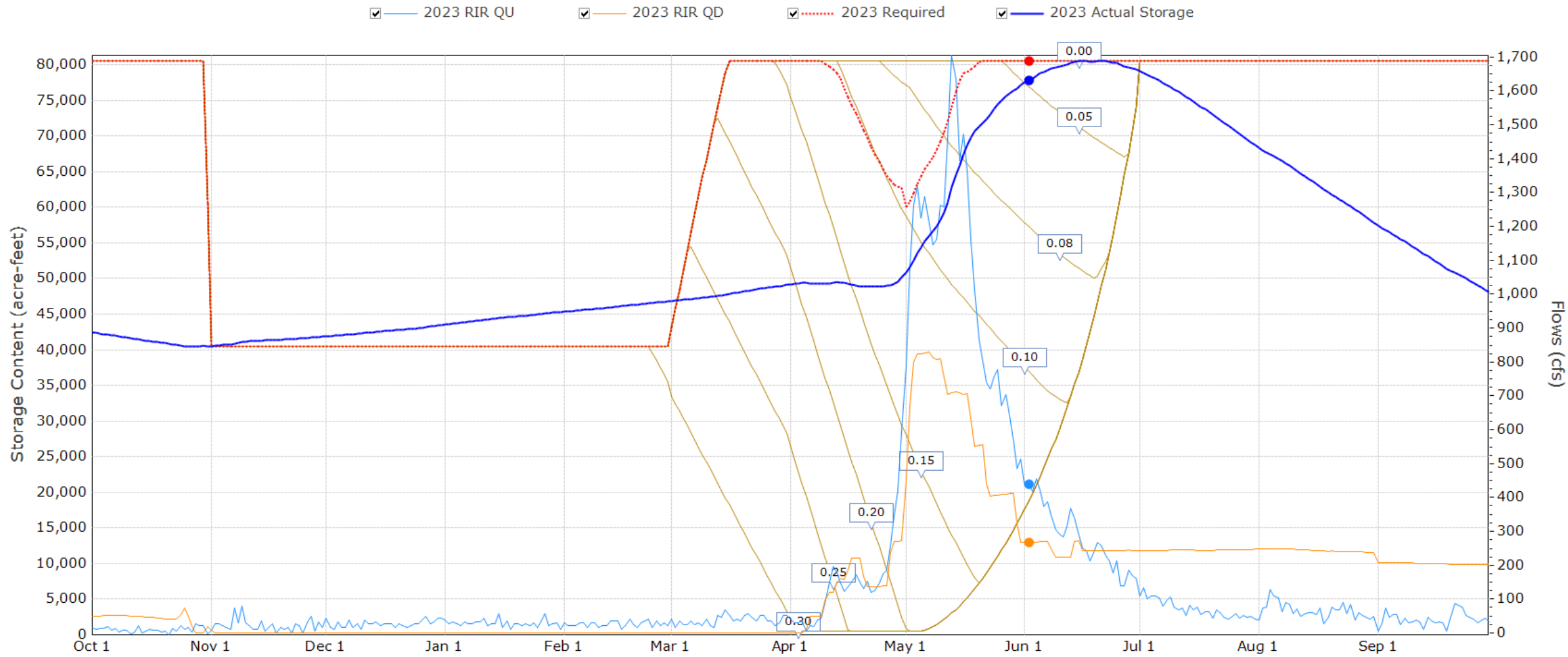
- 133% of Median
- 28 KAF More than Last Year



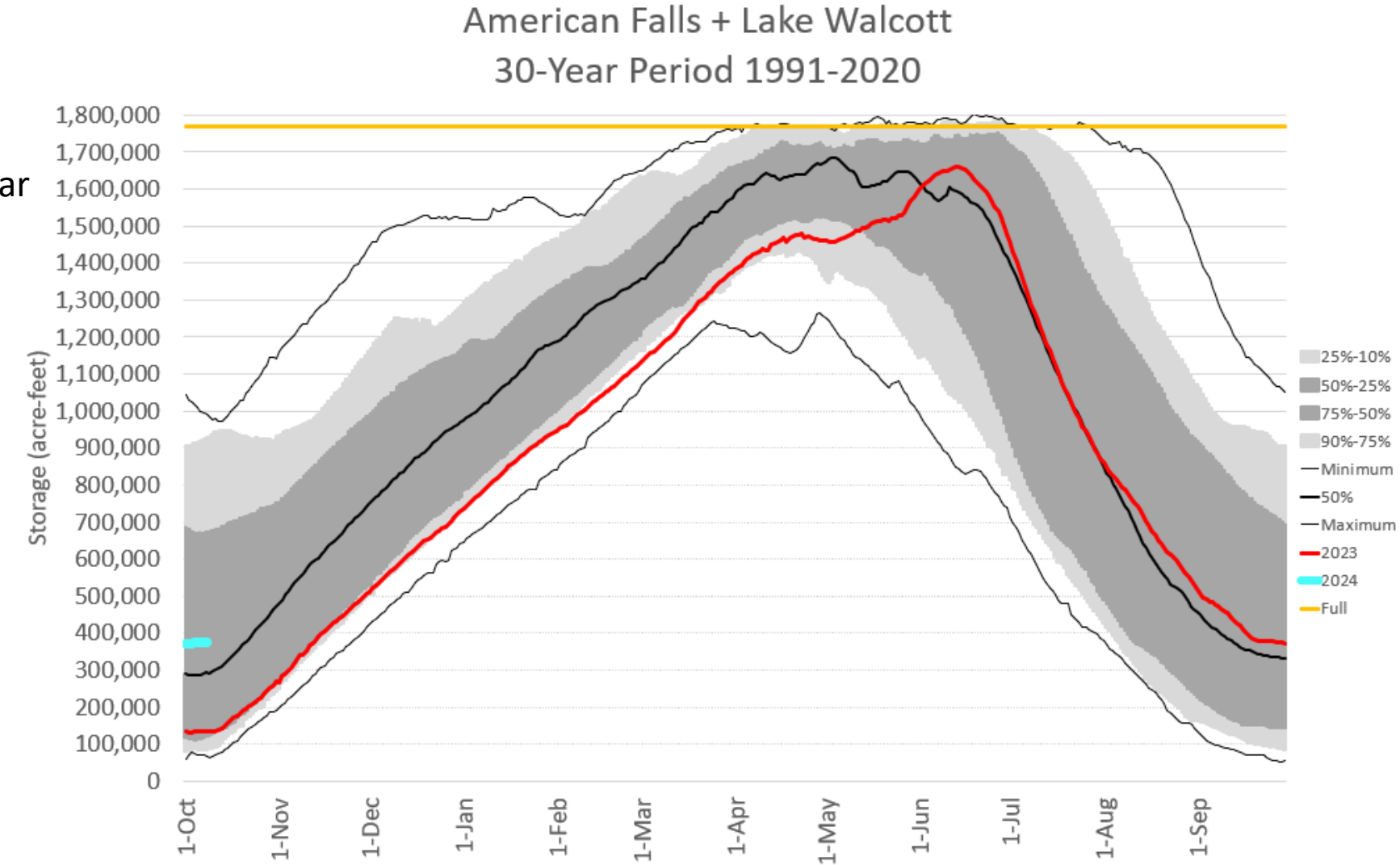
- 95% of Median
- 3.9 KAF More than Last Yea



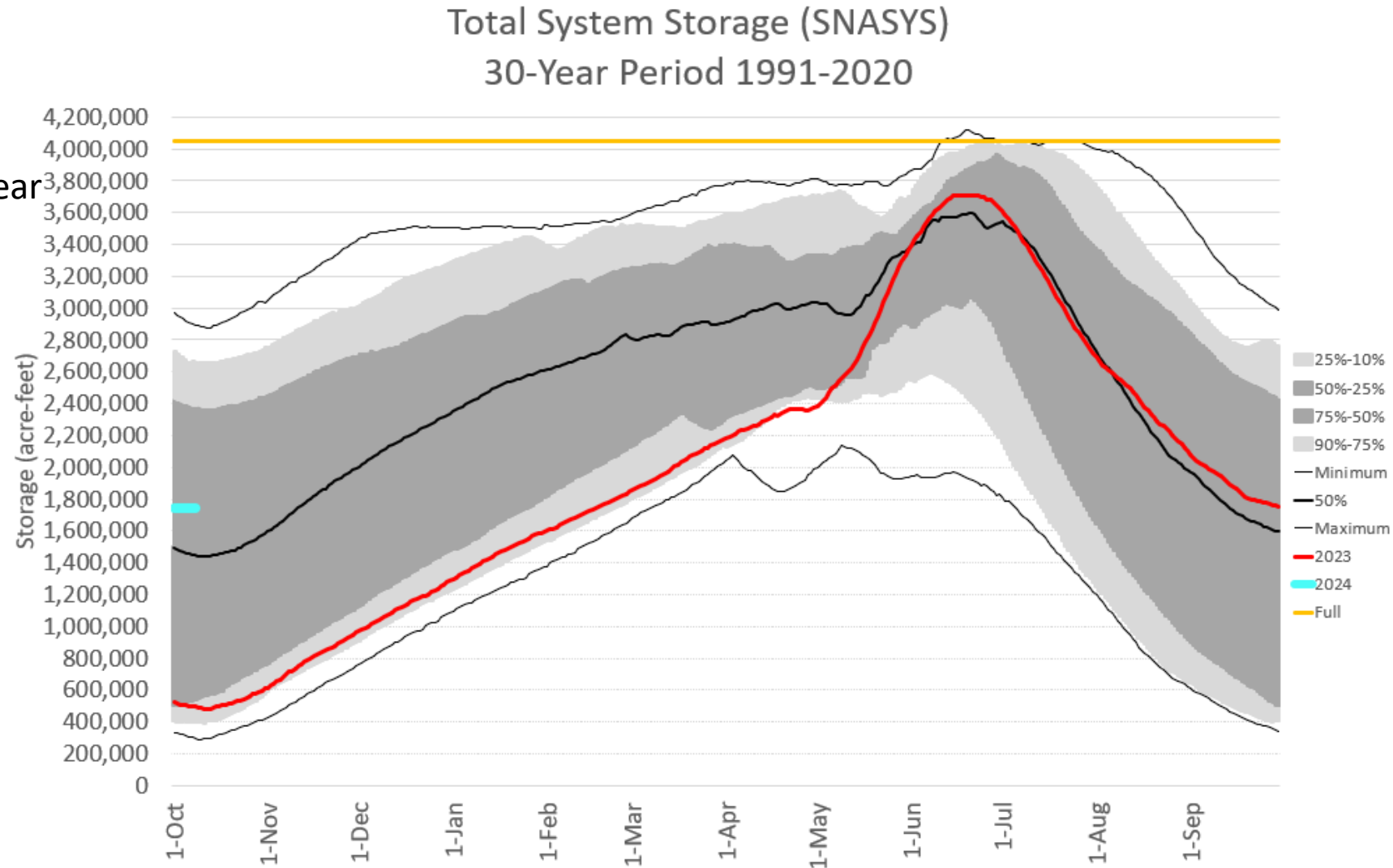
RIR - Ririe



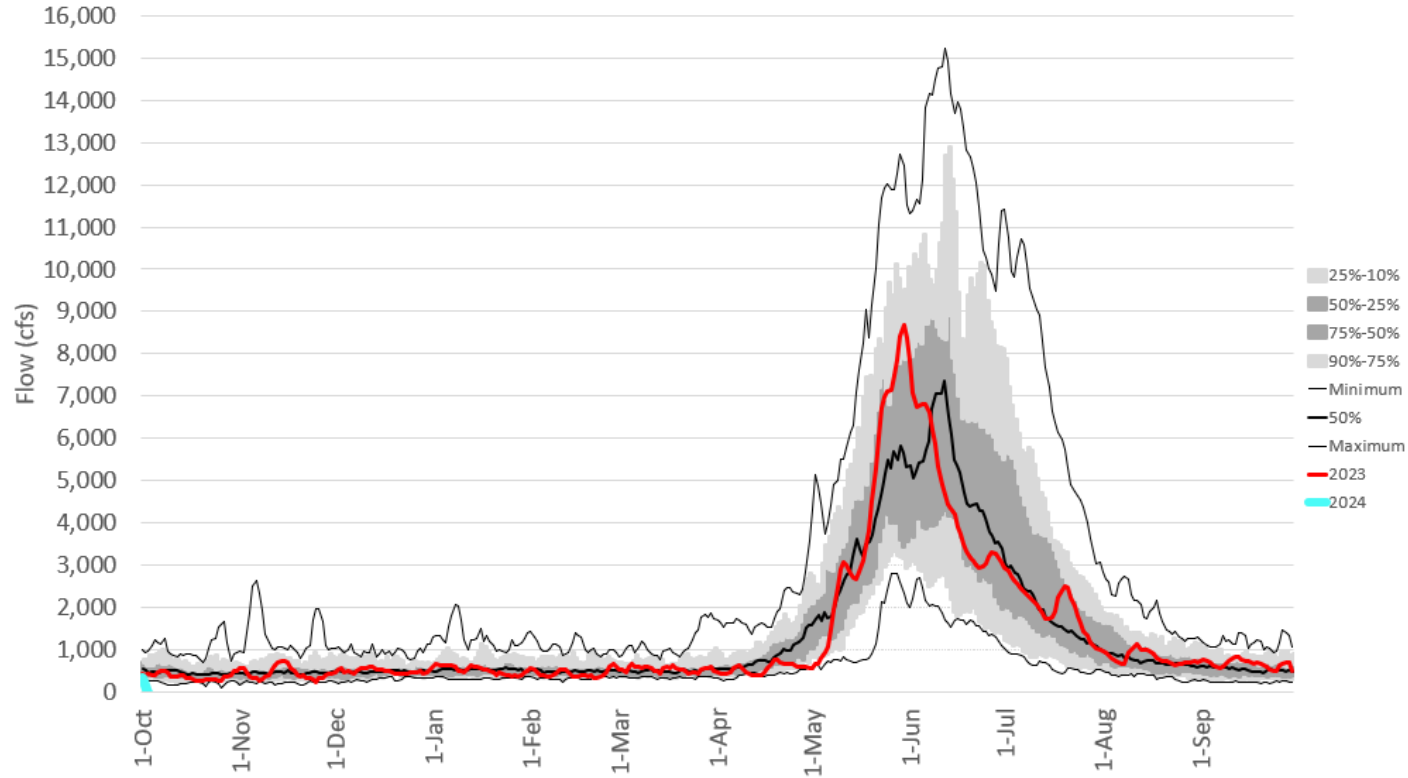
- 128% of Median
- 239 KAF More than Last Year



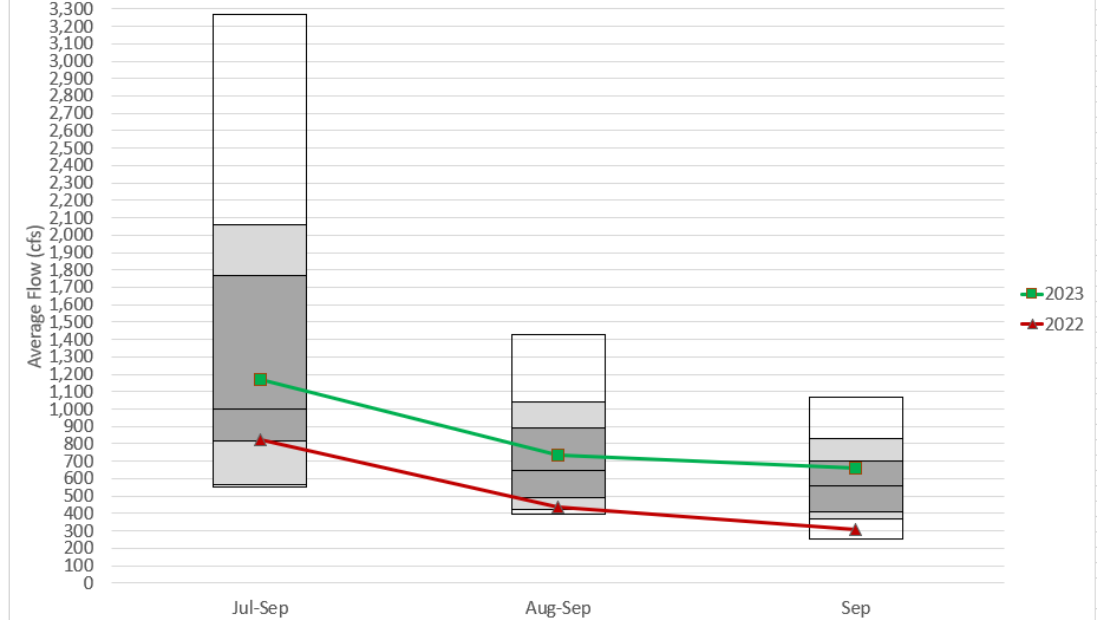
- 121% of Median
- 1.25 MAF More than Last Year



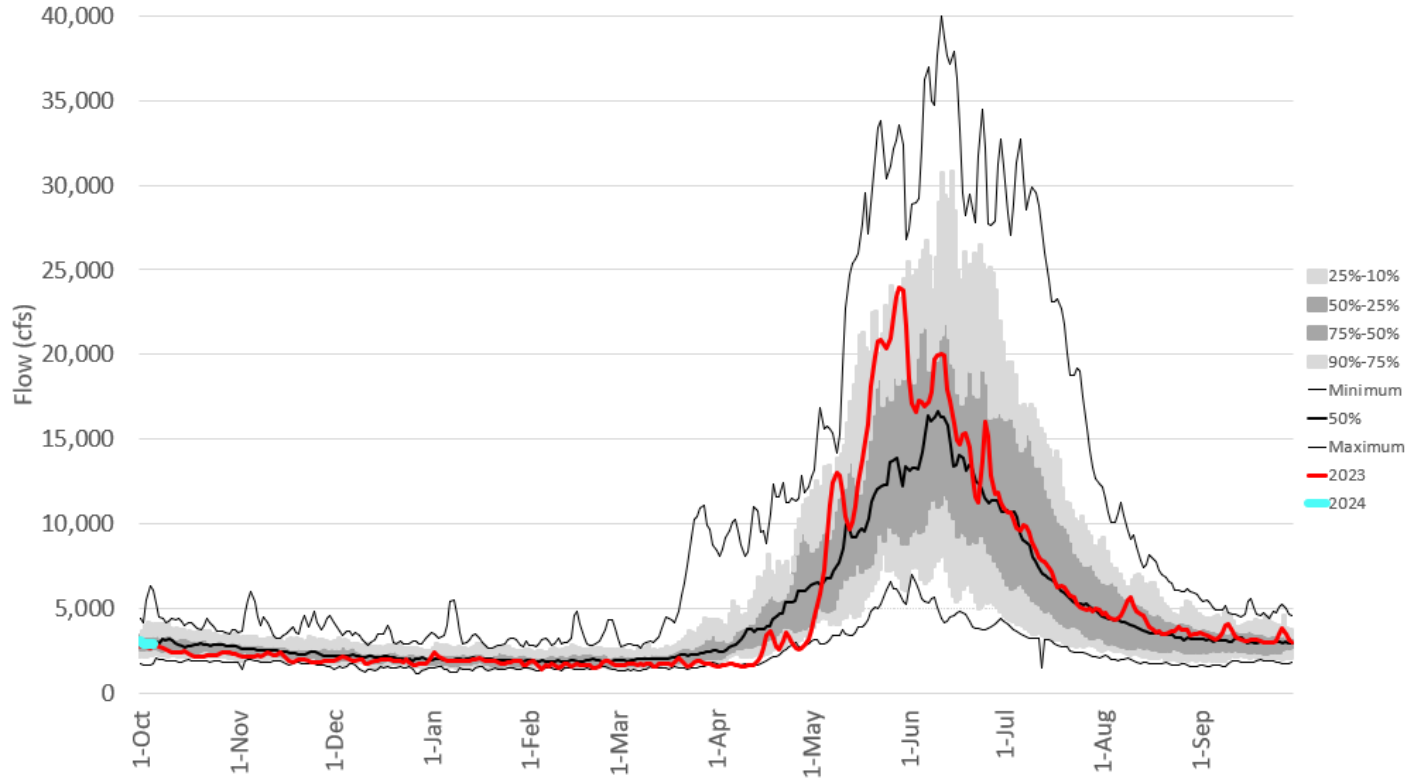
Snake River Gains to Moran 30-Year Period 1991-2020



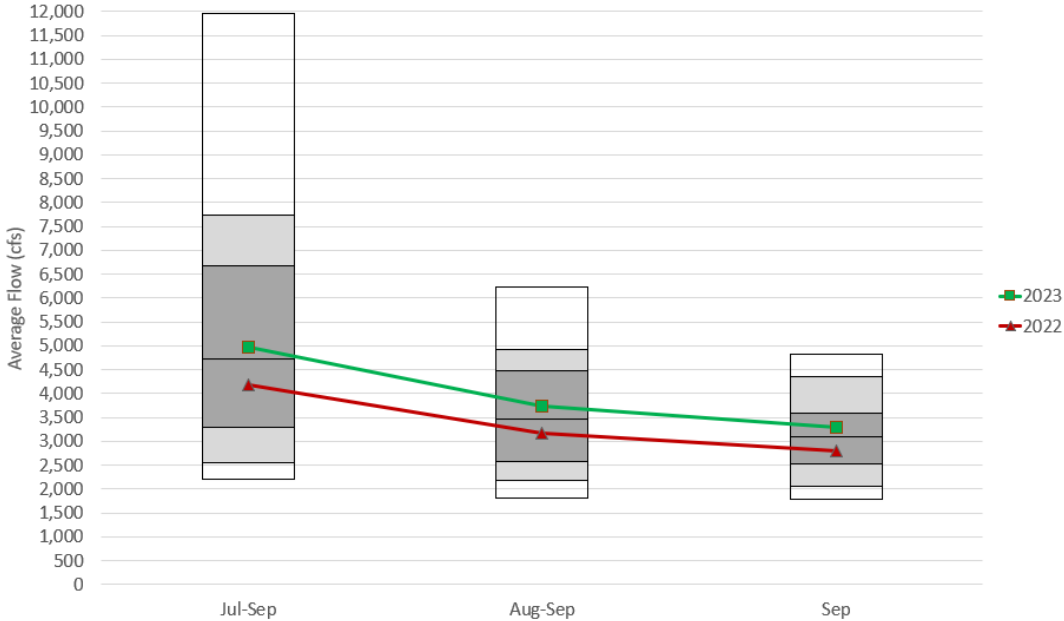
Fall Snake River Gains to Moran 30-Year Period 1991-2020



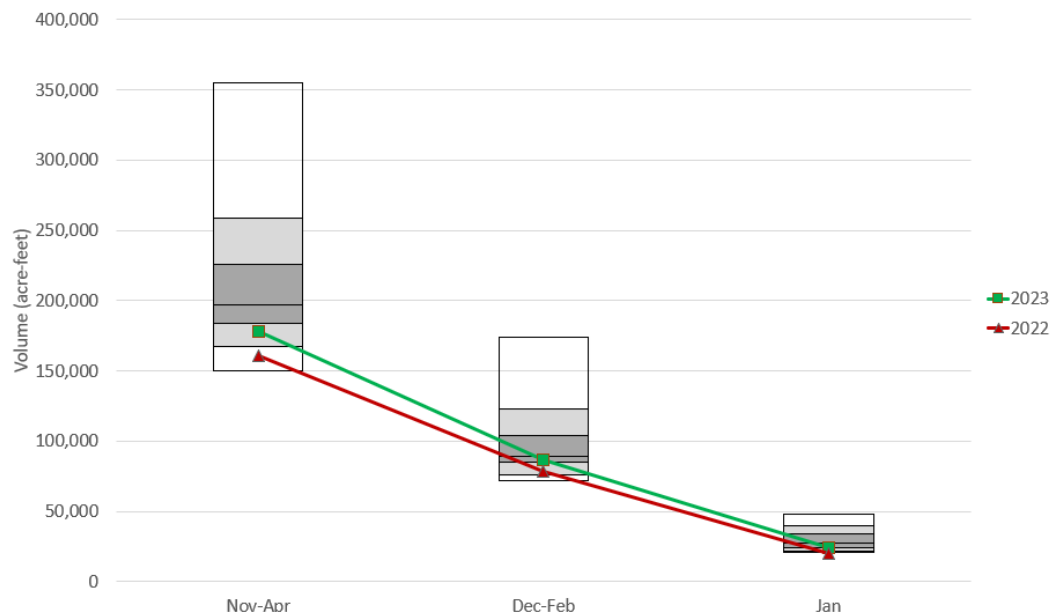
Snake River Gains Moran to Irwin 30-Year Period 1991-2020



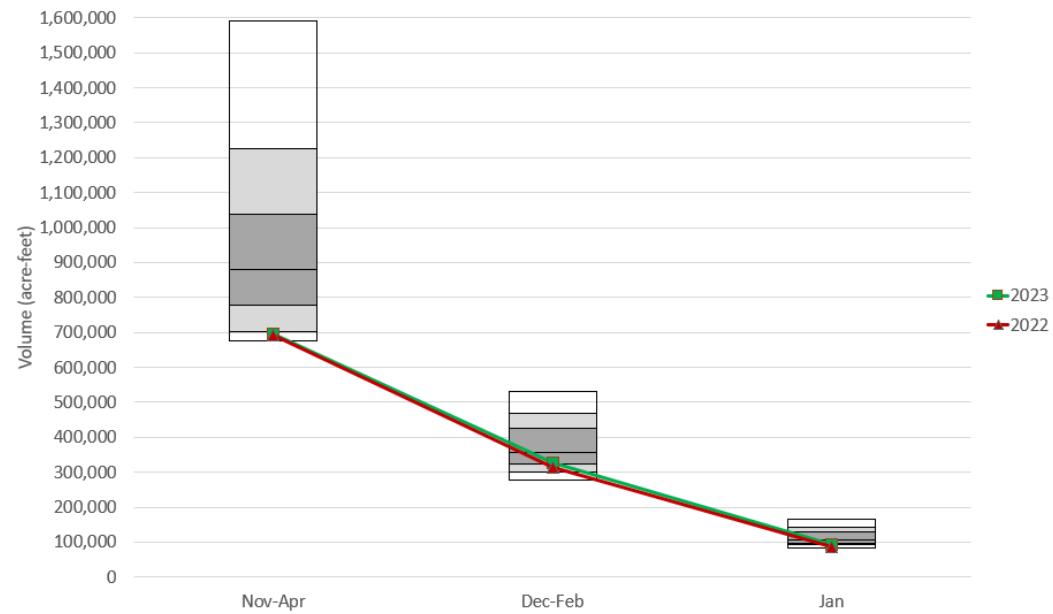
Fall Snake River Gains Moran to Irwin 30-Year Period 1991-2020



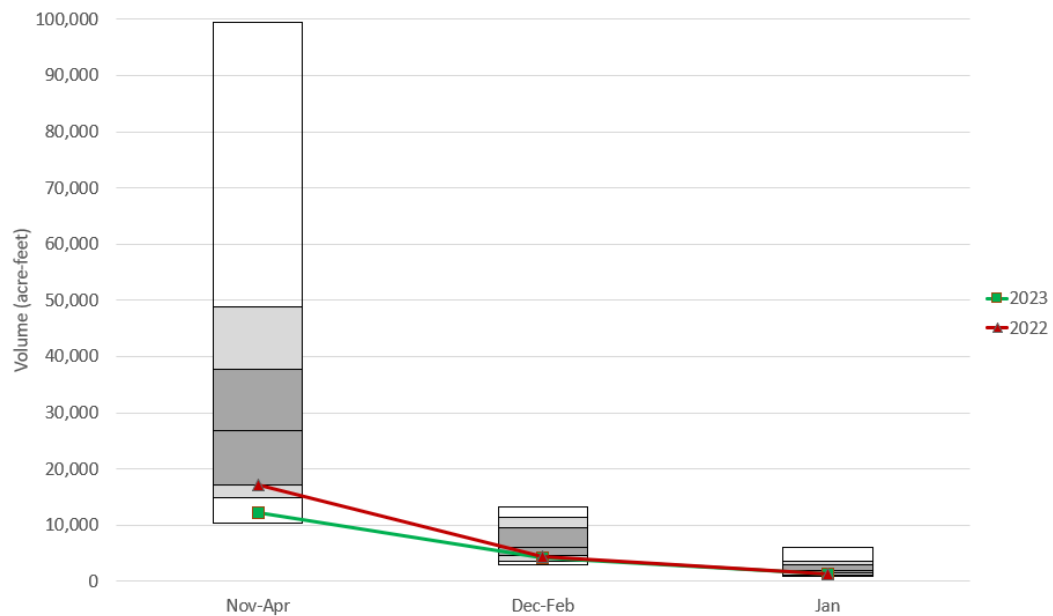
Winter Snake River Gains to Moran
30-Year Period 1991-2020



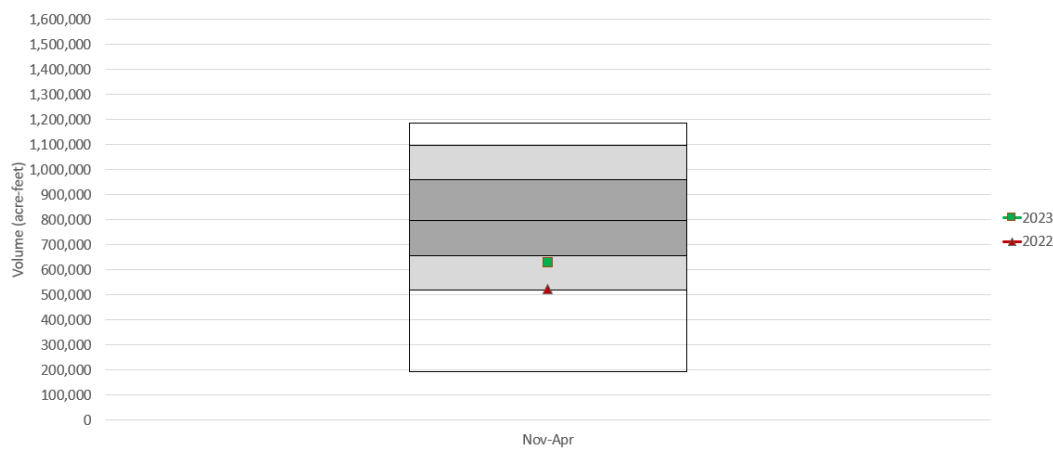
Winter Snake River Gains Moran to Irwin
30-Year Period 1991-2020



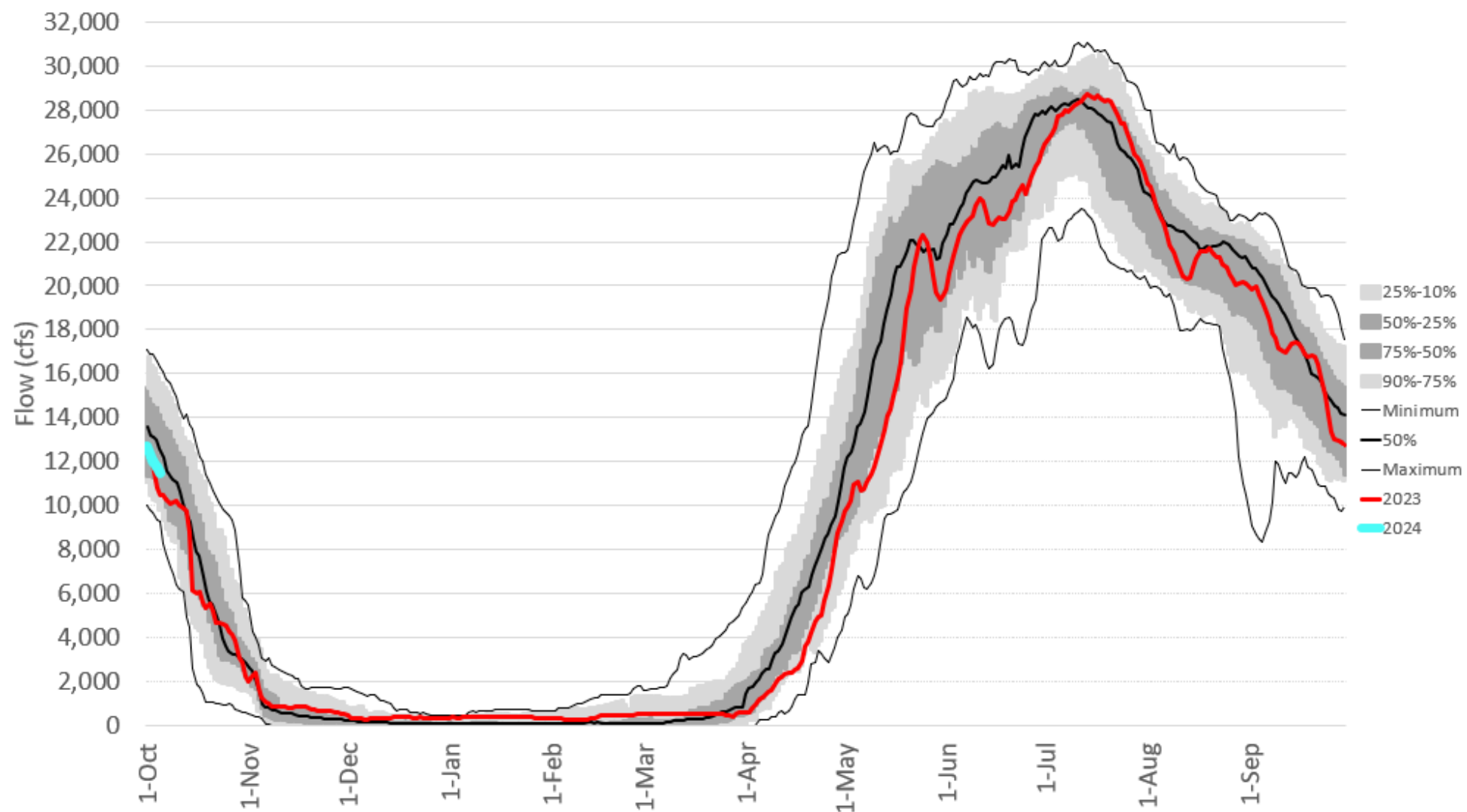
Winter Unregulated Gains Into Ririe Reservoir
30-Year Period 1991-2020



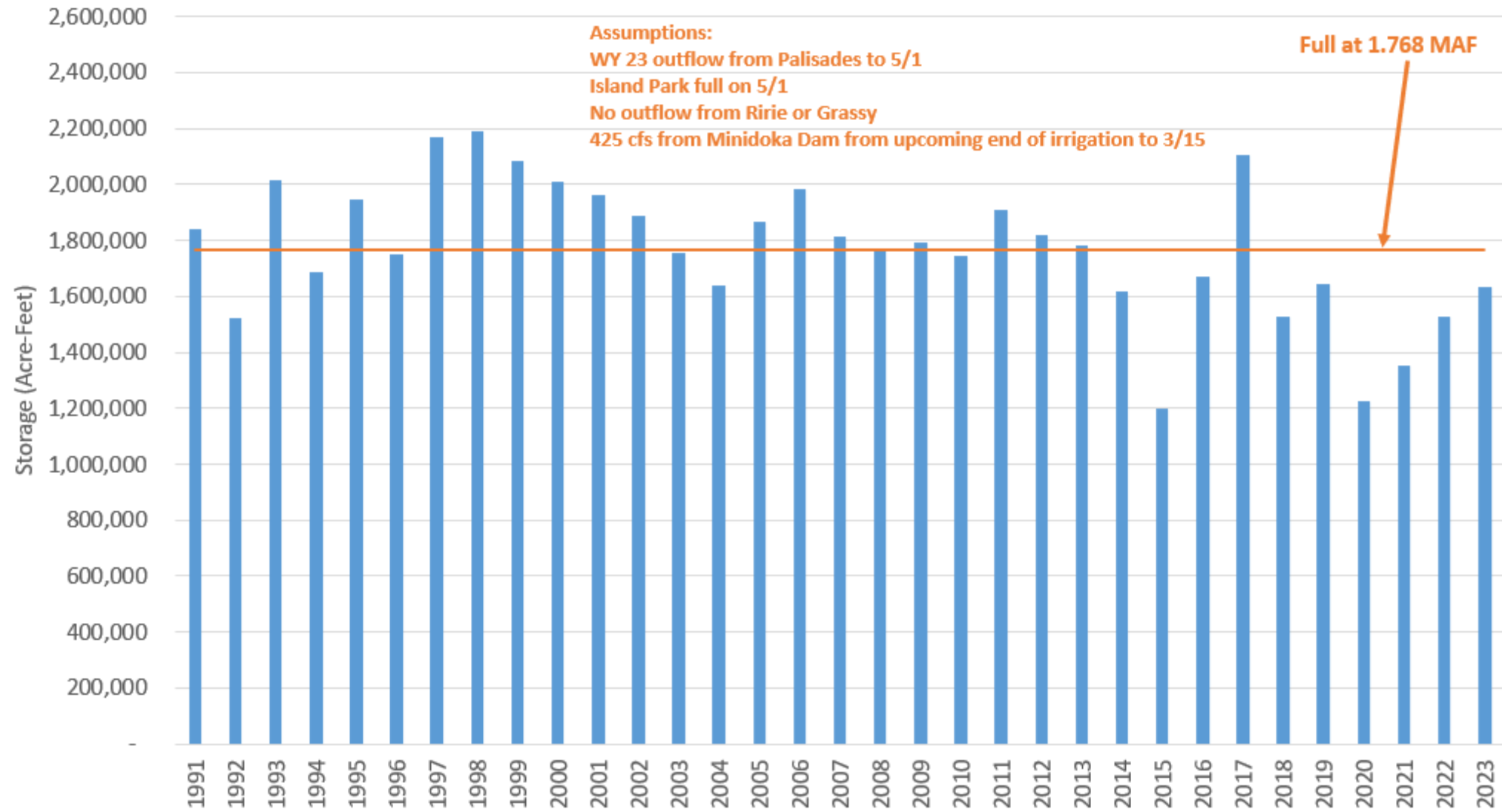
Available Gains Into American Falls and Lake Walcott
Local Inflow to American Falls (AMF Gain) subtracting out ISL/GRS/RIR QD and lower system diversions
AMF Gain - ISL/GRS/RIR QD - NMCI - SMCI - PNMLDI - (425 cfs from MIN from 10/23-3/15)
30-Year Period 1991-2020



Upper Snake System Diversions 30-Year Period 1991-2020



Current Potential For Lower Valley Reservoirs to Fill By May 1 2024 using Analog Year Conditions



Upcoming Winter Flow Plans*

| Current Plan for 2024 Winter Flows (early November onwards) | Flow (cfs) | Notes |
|---|------------|--|
| Jackson Lake Dam | 280 | *currently 96,200 acre-feet below the maximum winter pool |
| Palisades Dam | 900 | *getting to 900 cfs when possible in early November |
| Island Park Dam | 200 | *manage fill to around 126,000 acre-feet by approximately April 28 (max. desirable before ice-off). 200 cfs on Mon. 10/16. Then increase to approximately 400-450 cfs on 12/1. |
| Ririe Dam | 0 | *beginning winter at 40,500 acre-feet |
| American Falls and Minidoka Dam | 425 | *425 cfs target from Minidoka Dam |

*Subject to change over the winter depending on developing outlook



FRM Potential

PRECIPITATION IN SNAKE HEADWATERS

Reset Range

HUC 6 – upstream of the Heise Gage

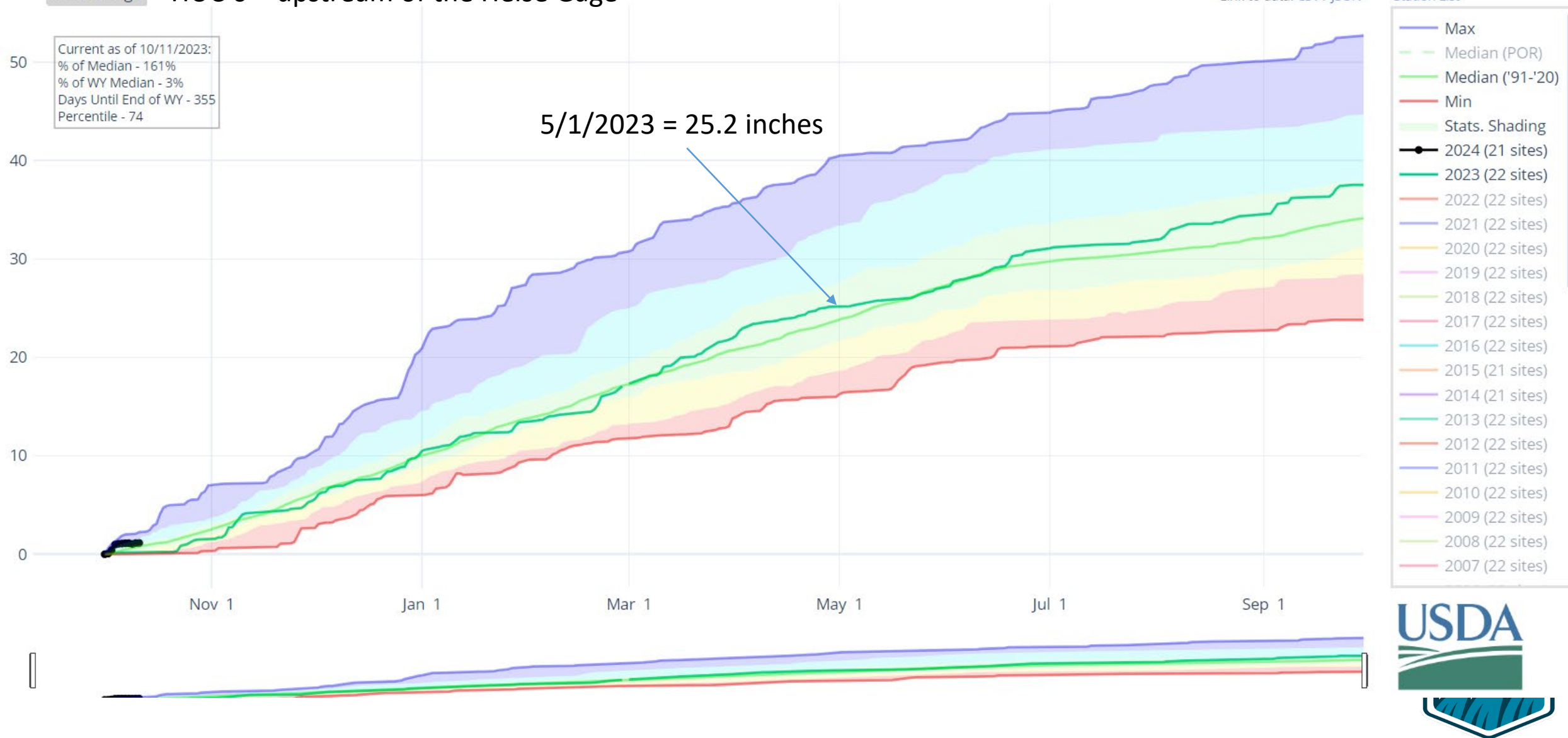
[Link to data: CSV / JSON](#)

[Station List](#)

Current as of 10/11/2023:
% of Median - 161%
% of WY Median - 3%
Days Until End of WY - 355
Percentile - 74

5/1/2023 = 25.2 inches

WY Accumulated Precip. (in.)



FRM Potential

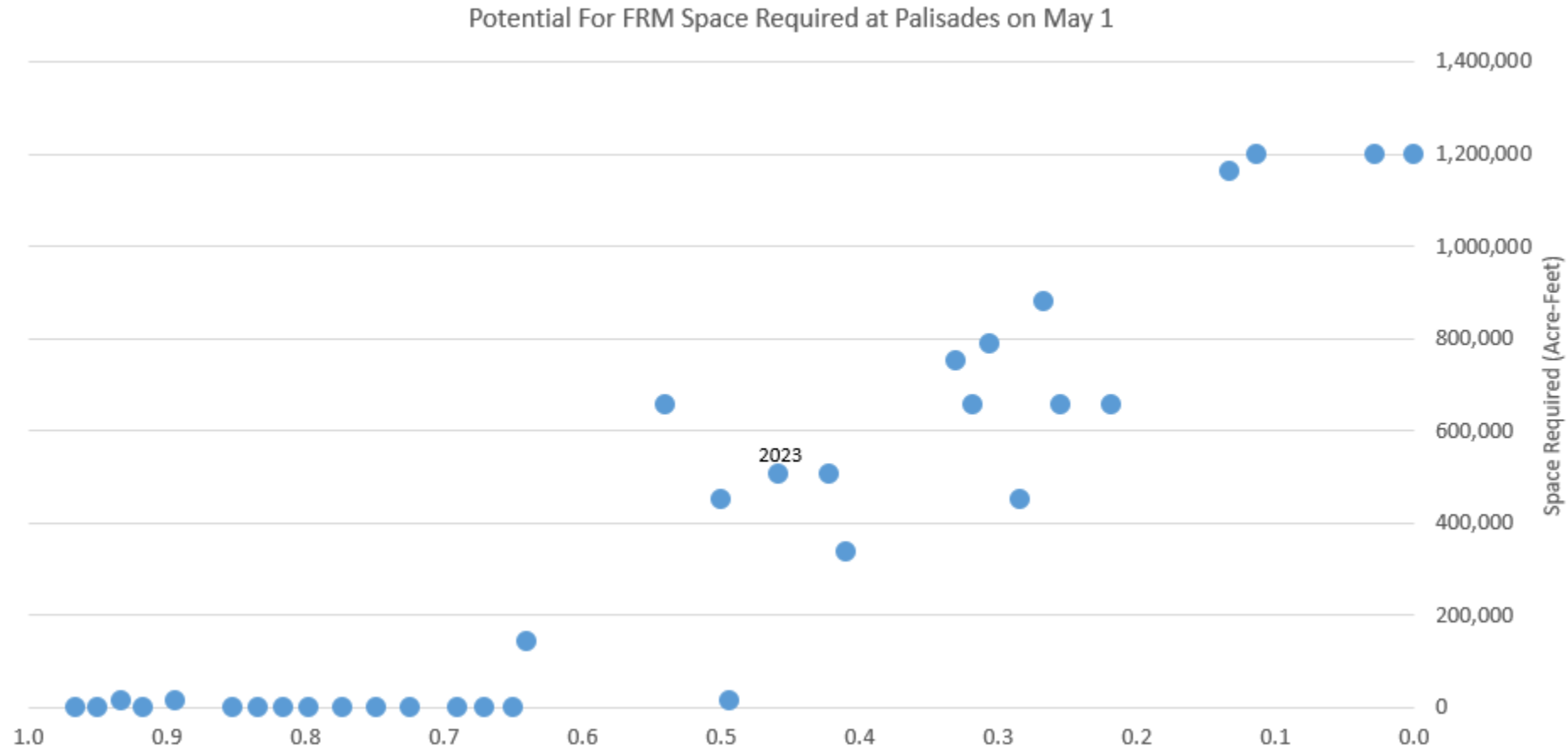
| Year | 5/1 NRCS Headwaters Precipitation | Chance of Reaching based on NRCS Projections | 5/1-7/31 HEII QU | Solid Line Total Space Required | Jackson Space | Palisades Space |
|------|-----------------------------------|--|------------------|---------------------------------|---------------|-----------------|
| 1997 | 38.7 | 0.0280 | 5,559,781 | 1600000 | 400000 | 1200000 |
| 2011 | 33.5 | 0.1131 | 5,048,707 | 1600000 | 400000 | 1200000 |
| 2017 | 40.5 | 0.0000 | 4,590,002 | 1600000 | 400000 | 1200000 |
| 1996 | 32.9 | 0.1328 | 4,446,637 | 1550000 | 387500 | 1162500 |
| 1999 | 28.8 | 0.2672 | 3,865,922 | 1175000 | 293750 | 881250 |
| 2018 | 27.7 | 0.3061 | 3,674,811 | 1050000 | 262500 | 787500 |
| 2009 | 27.3 | 0.3303 | 3,561,012 | 1000000 | 250000 | 750000 |
| 2014 | 30.3 | 0.2180 | 3,462,017 | 875000 | 218750 | 656250 |
| 1995 | 29.2 | 0.2541 | 3,452,883 | 875000 | 218750 | 656250 |
| 2008 | 27.5 | 0.3182 | 3,450,596 | 875000 | 218750 | 656250 |
| 1998 | 24.1 | 0.5400 | 3,434,533 | 875000 | 218750 | 656250 |
| 1993 | 25.8 | 0.4212 | 3,192,400 | 675000 | 168750 | 506250 |
| 2023 | 25.2 | 0.4576 | 3,131,671 | 675000 | 168750 | 506250 |
| 2006 | 28.3 | 0.2836 | 3,029,883 | 600000 | 150000 | 450000 |
| 2020 | 24.5 | 0.5000 | 3,019,705 | 600000 | 150000 | 450000 |
| 2019 | 26 | 0.4091 | 2,871,236 | 450000 | 112500 | 337500 |
| 1991 | 23.1 | 0.6400 | 2,590,747 | 190000 | 47500 | 142500 |
| 2005 | 19.3 | 0.8939 | 2,377,374 | 20000 | 5000 | 15000 |
| 2010 | 18.4 | 0.9327 | 2,323,734 | 20000 | 5000 | 15000 |
| 2012 | 24.6 | 0.4939 | 2,305,773 | 20000 | 5000 | 15000 |
| 2015 | 20.3 | 0.8333 | 2,275,541 | 0 | 0 | 0 |
| 2000 | 20.9 | 0.7970 | 2,167,348 | 0 | 0 | 0 |
| 2022 | 22.1 | 0.7242 | 2,164,276 | 0 | 0 | 0 |
| 2003 | 22.6 | 0.6900 | 2,158,691 | 0 | 0 | 0 |
| 2016 | 22.8 | 0.6700 | 2,102,451 | 0 | 0 | 0 |
| 2002 | 23 | 0.6500 | 2,049,587 | 0 | 0 | 0 |
| 2013 | 21.7 | 0.7485 | 2,011,354 | 0 | 0 | 0 |
| 2004 | 20.6 | 0.8152 | 1,999,797 | 0 | 0 | 0 |
| 2021 | 20 | 0.8515 | 1,879,992 | 0 | 0 | 0 |
| 1994 | 18.8 | 0.9164 | 1,632,664 | 0 | 0 | 0 |
| 2007 | 21.3 | 0.7727 | 1,572,066 | 0 | 0 | 0 |
| 2001 | 17.6 | 0.9655 | 1,415,407 | 0 | 0 | 0 |
| 1992 | 18 | 0.9491 | 1,377,887 | 0 | 0 | 0 |

*Static 200 KAF
space until 5/1



FRM Potential

- Approximately 60-65% chance of needing some FRM space on May 1



For More Information

Snake River Area Office

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Upper Snake Field Office

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Snake River Operations Web Sites

Upper Snake water information site -

<http://www.usbr.gov/pn/hydromet/uppersnake/index.html>

USBR HydroMet - <http://www.usbr.gov/pn/hydromet/>

Northwest River Forecast Center - <http://www.nwrfc.noaa.gov/rfc/>

NRCS SNOTEL Data - <http://www.id.nrcs.usda.gov/snow/>

