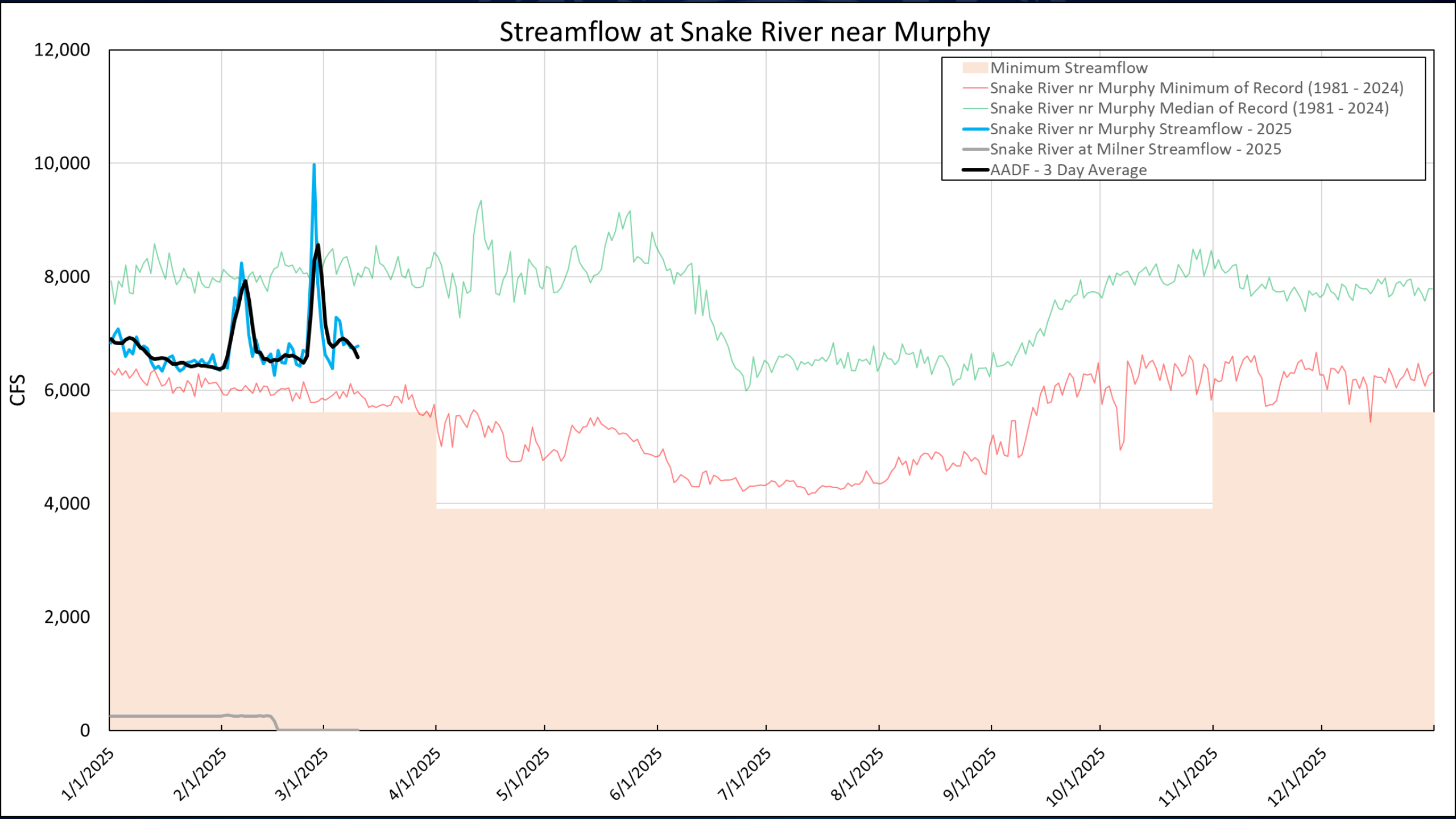
IDAHO Department of Water Resources

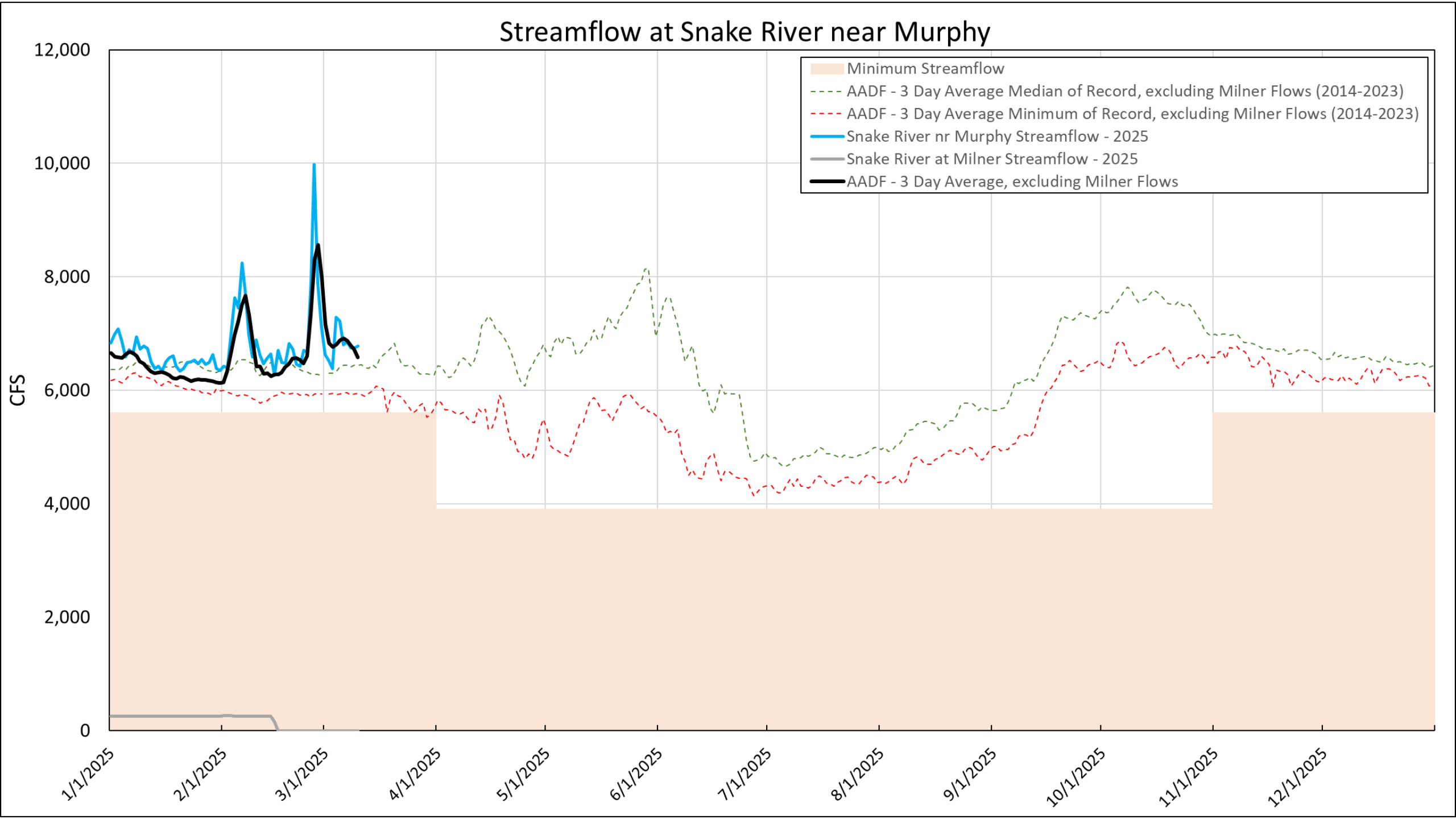
IDAHO DEPARTMENT OF WATER RESOURCES

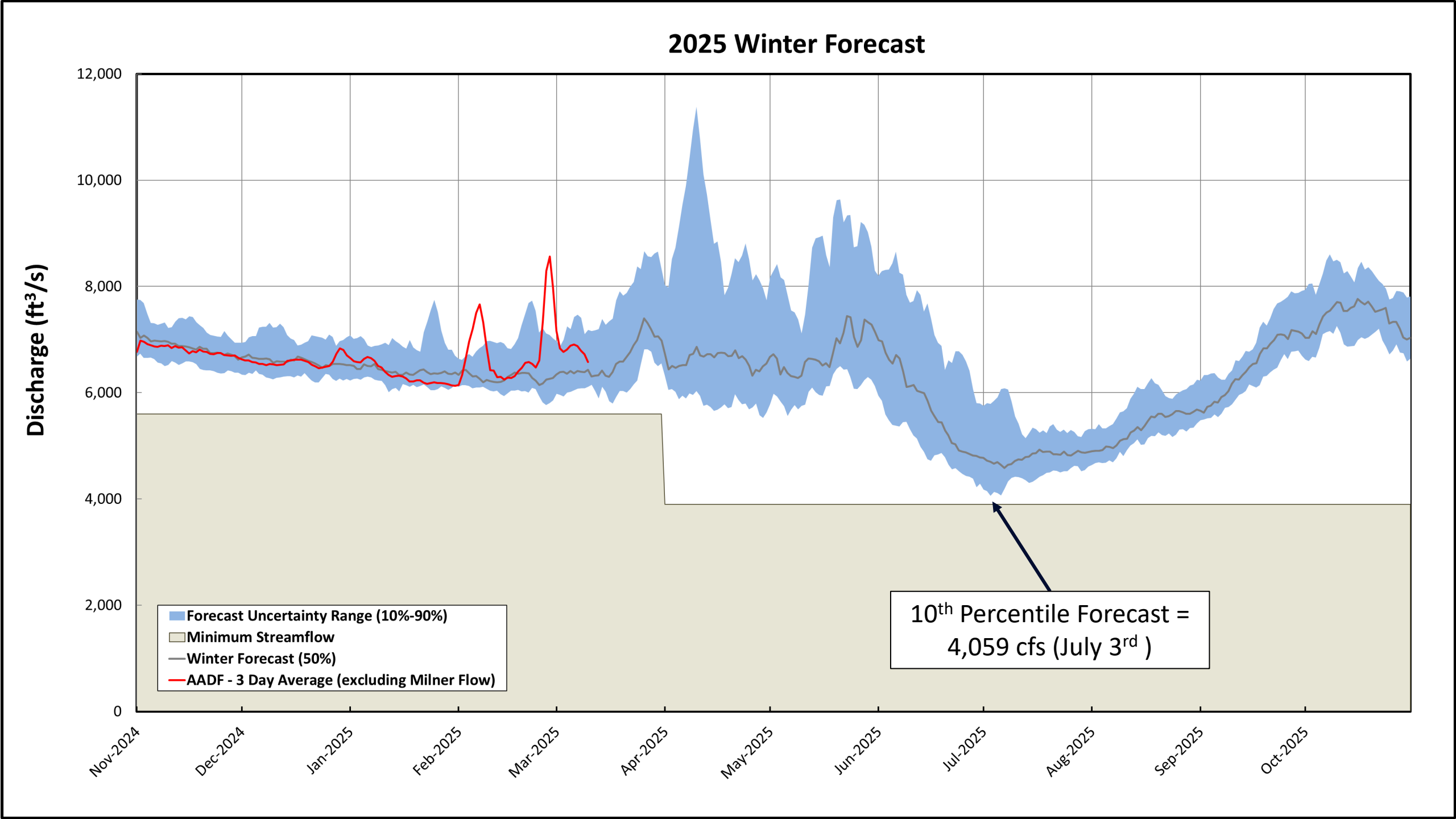
Swan Falls AADF Update

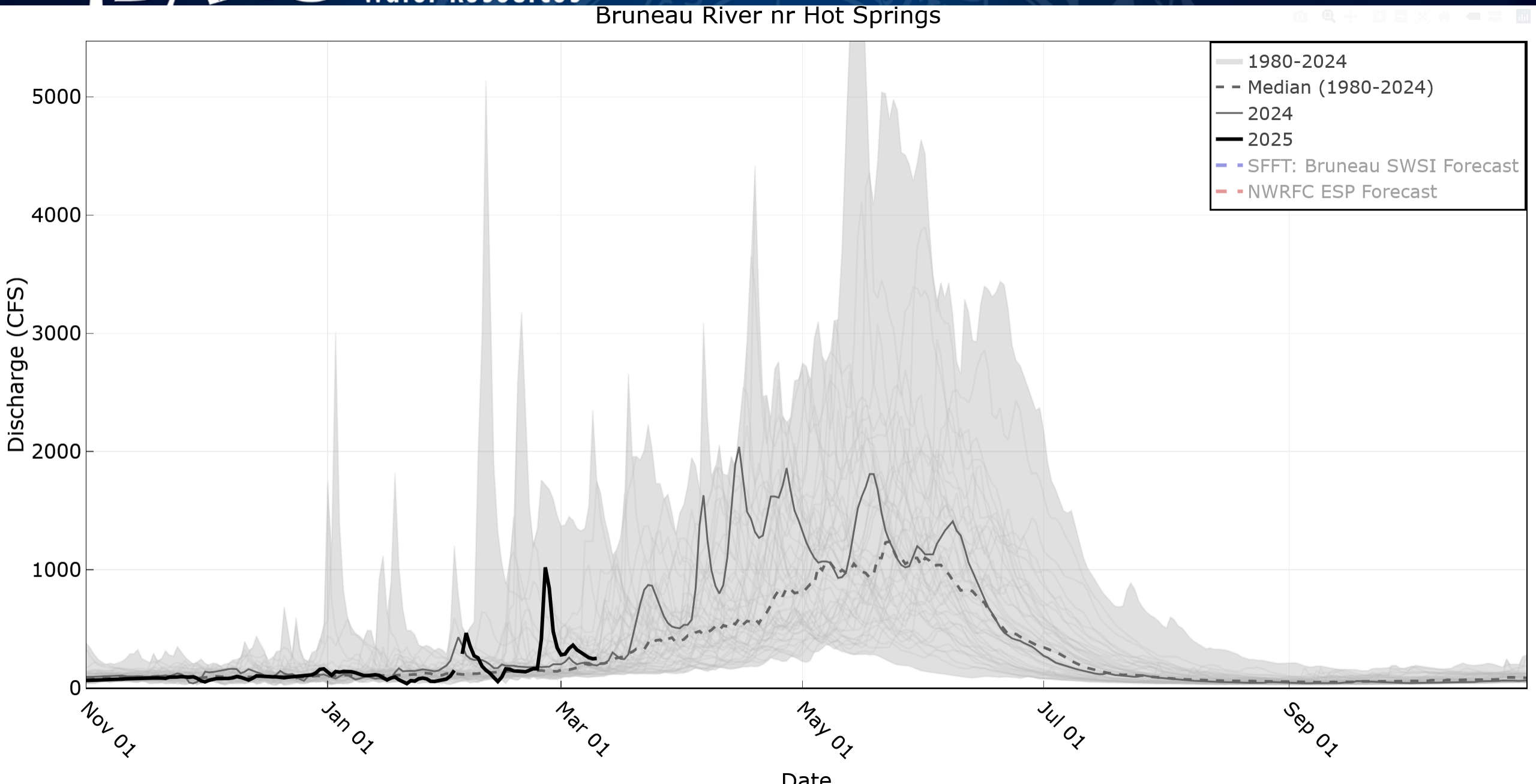
Presented by Ethan Geisler

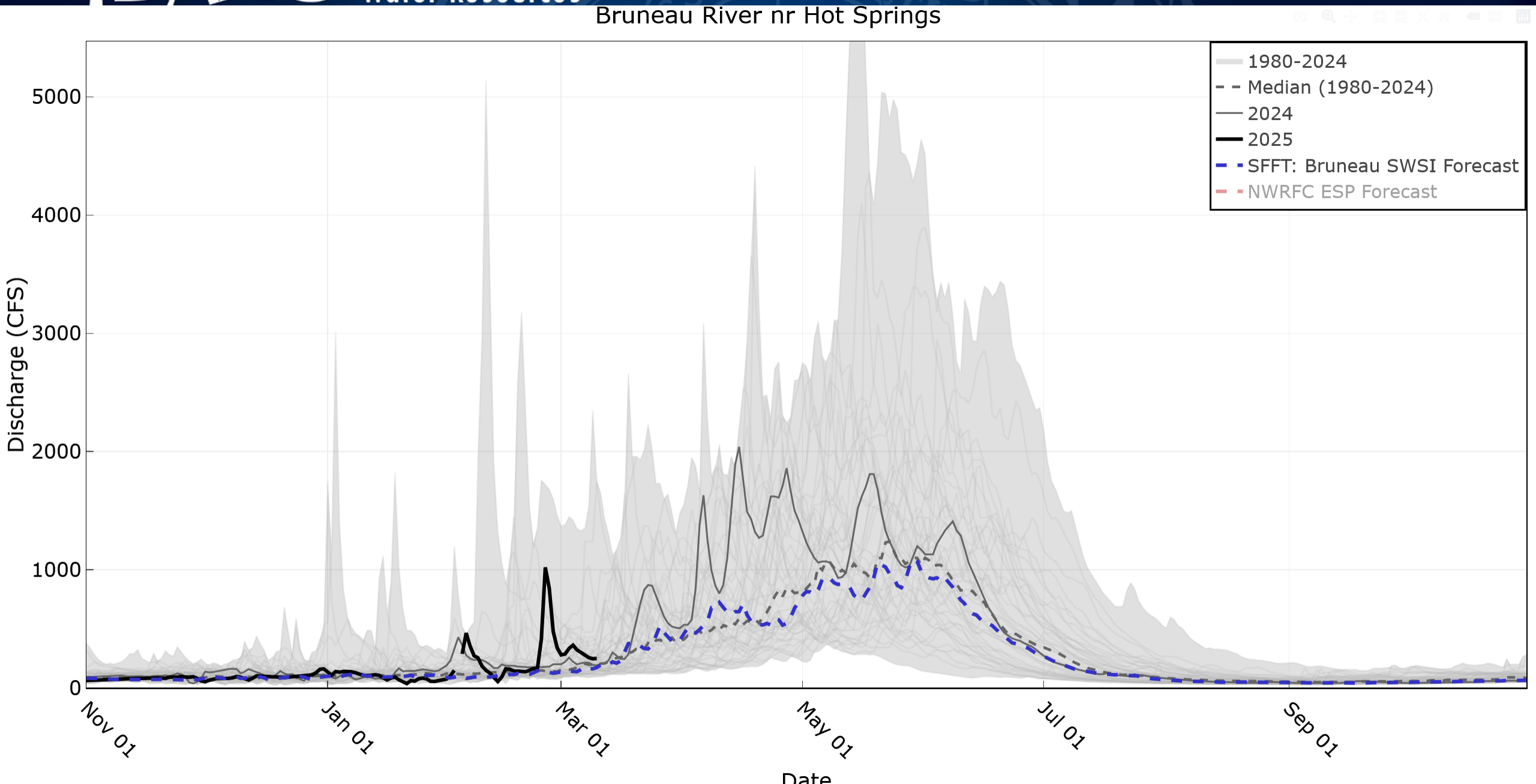
March 11th, 2025


Streamflow at Snake River near Murphy
12,000
10,000
8,000
6,000
4,000
2,000
0
CFS
Minimum Streamflow
Snake River nr Murphy Minimum of Record (1981 - 2024)
Snake River nr Murphy Median of Record (1981 - 2024)
Snake River nr Murphy Streamflow - 2025
Snake River at Milner Streamflow - 2025
AADF - 3 Day Average
1/1/2025
2/1/2025
3/1/2025
4/1/2025
5/1/2025
6/1/2025
7/1/2025
8/1/2025
9/1/2025
10/1/2025
11/1/2025
12/1/2025


Streamflow at Snake River near Murphy
12,000
10,000
8,000
6,000
4,000
2,000
0
CFS
Minimum Streamflow
AADF - 3 Day Average Median of Record, excluding Milner Flows (2014-2023)
AADF - 3 Day Average Minimum of Record, excluding Milner Flows (2014-2023)
Snake River nr Murphy Streamflow - 2025
Snake River at Milner Streamflow - 2025
AADF - 3 Day Average, excluding Milner Flows
1/1/2025
2/1/2025
3/1/2025
4/1/2025
5/1/2025
6/1/2025
7/1/2025
8/1/2025
9/1/2025
10/1/2025
11/1/2025
12/1/2025


2025 Winter Forecast
Discharge (ft³/s)
12,000
10,000
8,000
6,000
4,000
2,000
0
Nov-2024
Dec-2024
Jan-2025
Feb-2025
Mar-2025
Apr-2025
May-2025
Jun-2025
Jul-2025
Aug-2025
Sep-2025
Oct-2025
Forecast Uncertainty Range (10%-90%)
Minimum Streamflow
Winter Forecast (50%)
AADF - 3 Day Average (excluding Milner Flow)
10th Percentile Forecast = 4,059 cfs (July 3rd)


Bruneau River nr Hot Springs
1980-2024
Median (1980-2024)
2024
2025
SFFT: Bruneau SWSI Forecast
NWRFC ESP Forecast
Discharge (CFS)
5000
4000
3000
2000
1000
0
Nov 01
Jan 01
Mar 01
May 01
Jul 01
Sep 01
Date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2024
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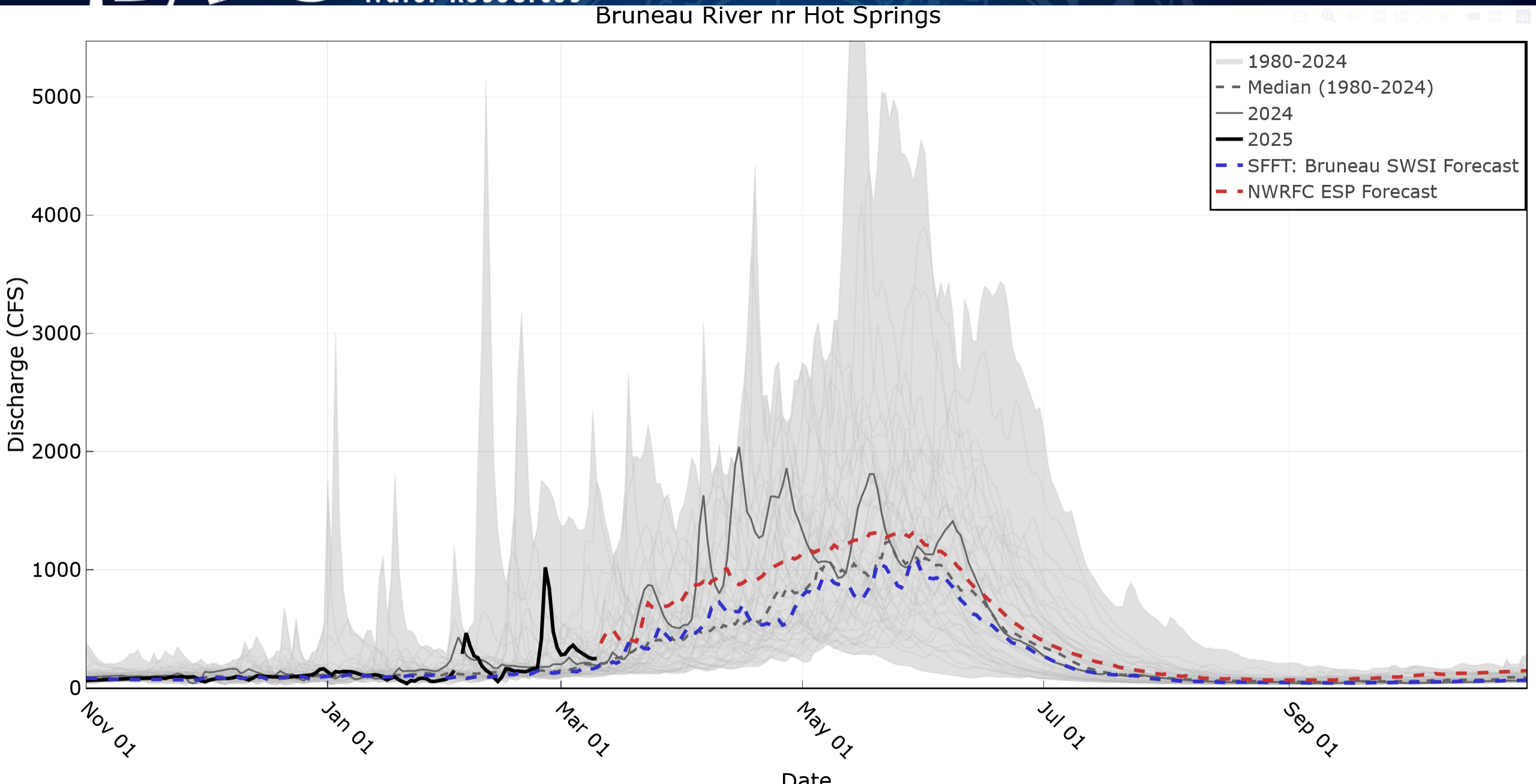
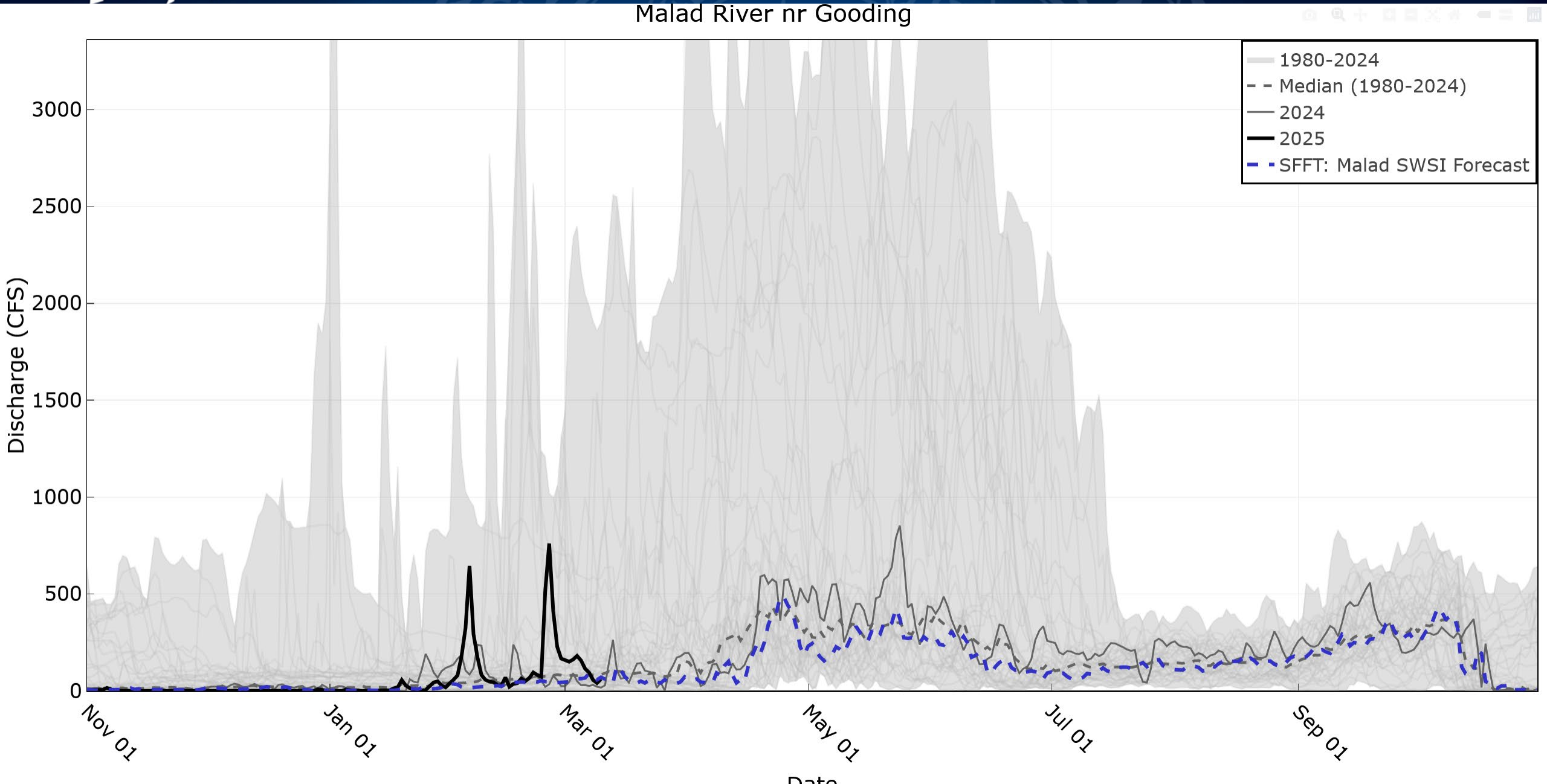
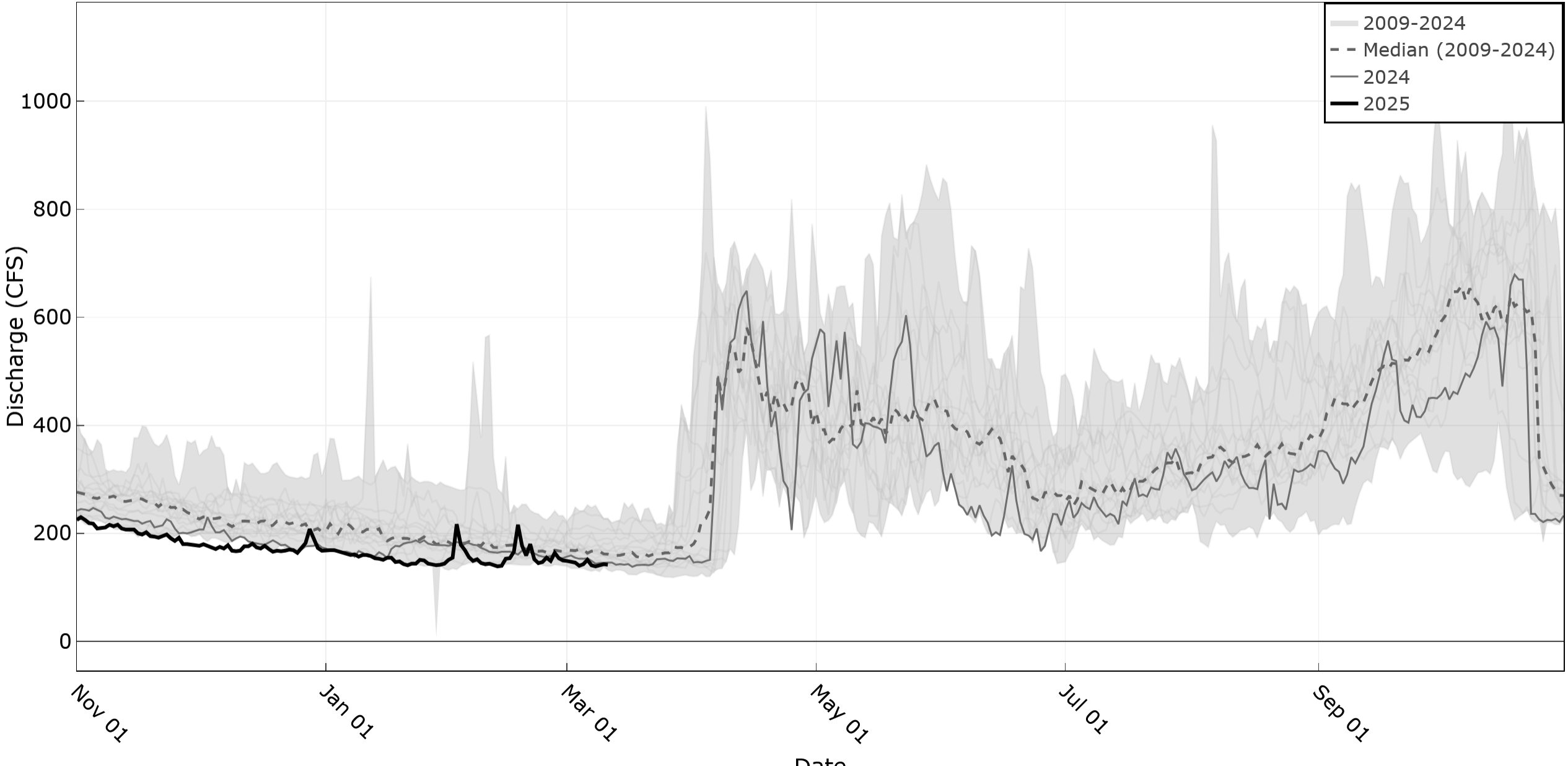
NWRFC ESP Forecast
Discharge (CFS)
5000
4000
3000
2000
1000
0
Nov 01
Jan 01
Mar 01
May 01
Jul 01
Sep 01
Date

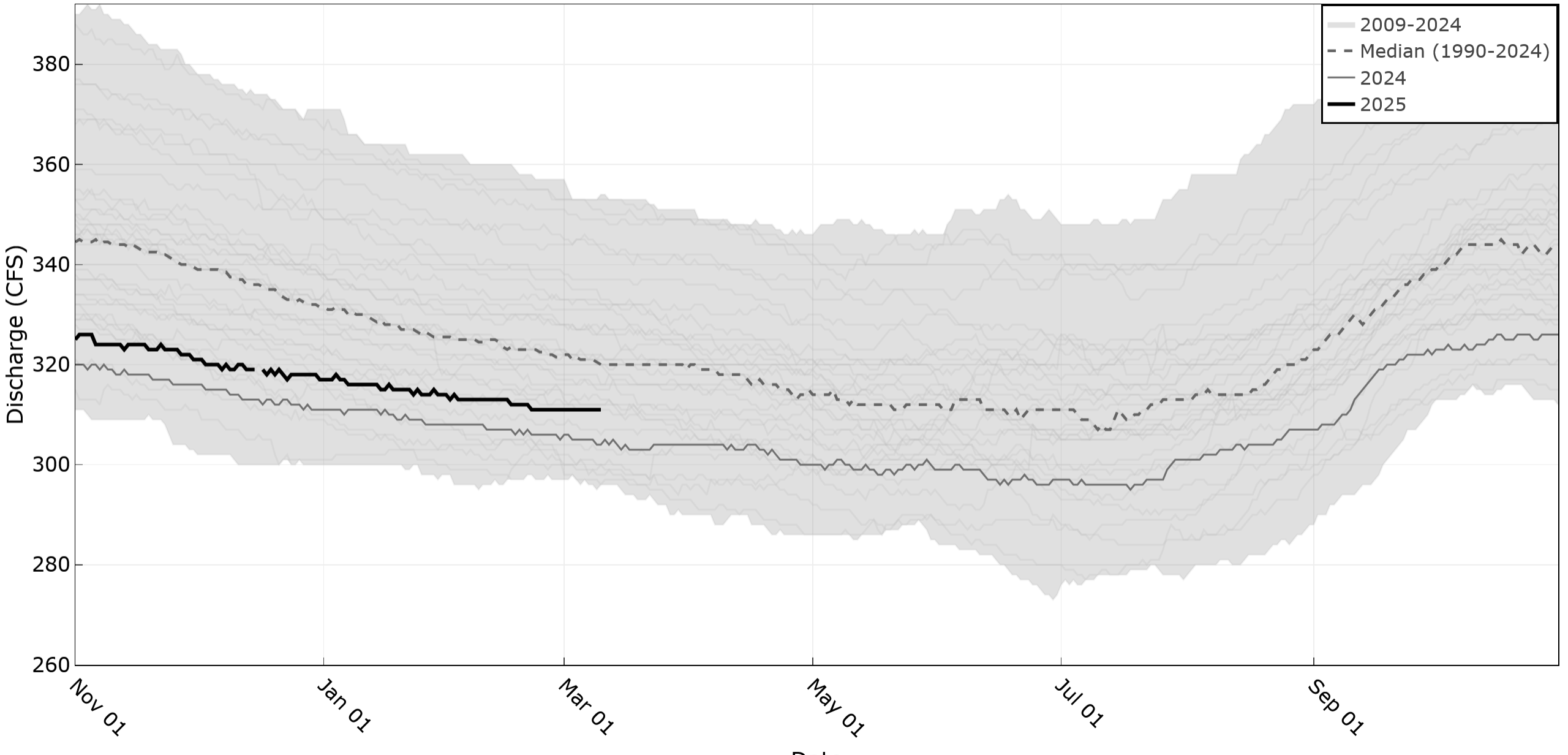

Bruneau River nr Hot Springs
1980-2024
Median (1980-2024)
2024
2025
SFFT: Bruneau SWSI Forecast
NWRFC ESP Forecast
Discharge (CFS)
5000
4000
3000
2000
1000
0
Nov 01
Jan 01
Mar 01
May 01
Jul 01
Sep 01
Date

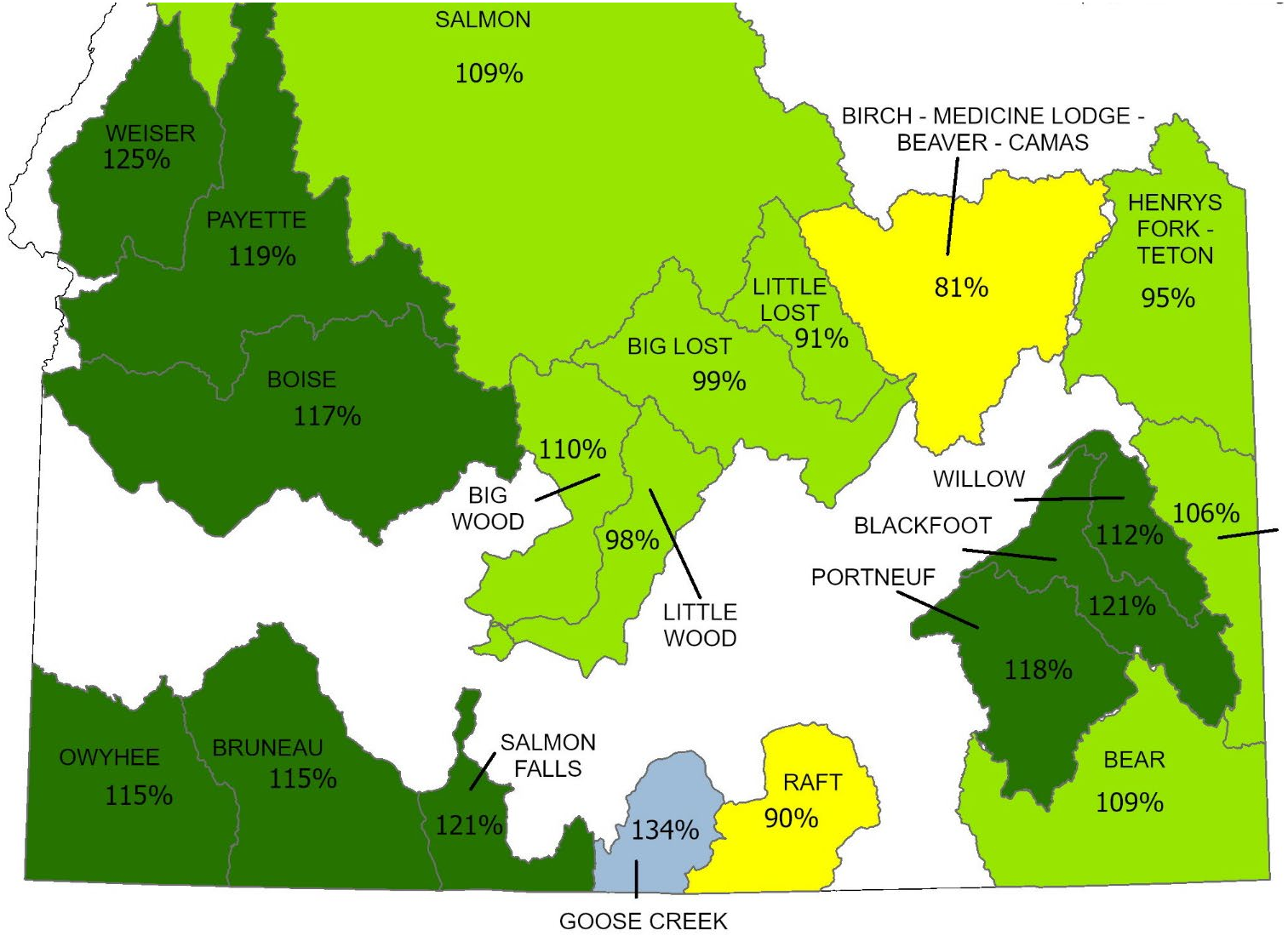

Malad River nr Gooding
1980-2024
Median (1980-2024)
2024
2025
SFFT: Malad SWSI Forecast
Discharge (CFS)
3000
2500
2000
1500
1000
500
0
Nov 01
Jan 01
Mar 01
May 01
Jul 01
Sep 01
Date

Snake River Southside Return Flows



Box Canyon Spring nr Wendell





Mountain Snow Water Equivalent

As of Monday, March 10, 2025
Idaho NRCS SNOTEL Data

Percent of Median (1991-2020)

0	91 - 110
1 - 25	111 - 125
26 - 50	126 - 150
51 - 70	151 - 175
71 - 90	176 - 200
	201 - 500

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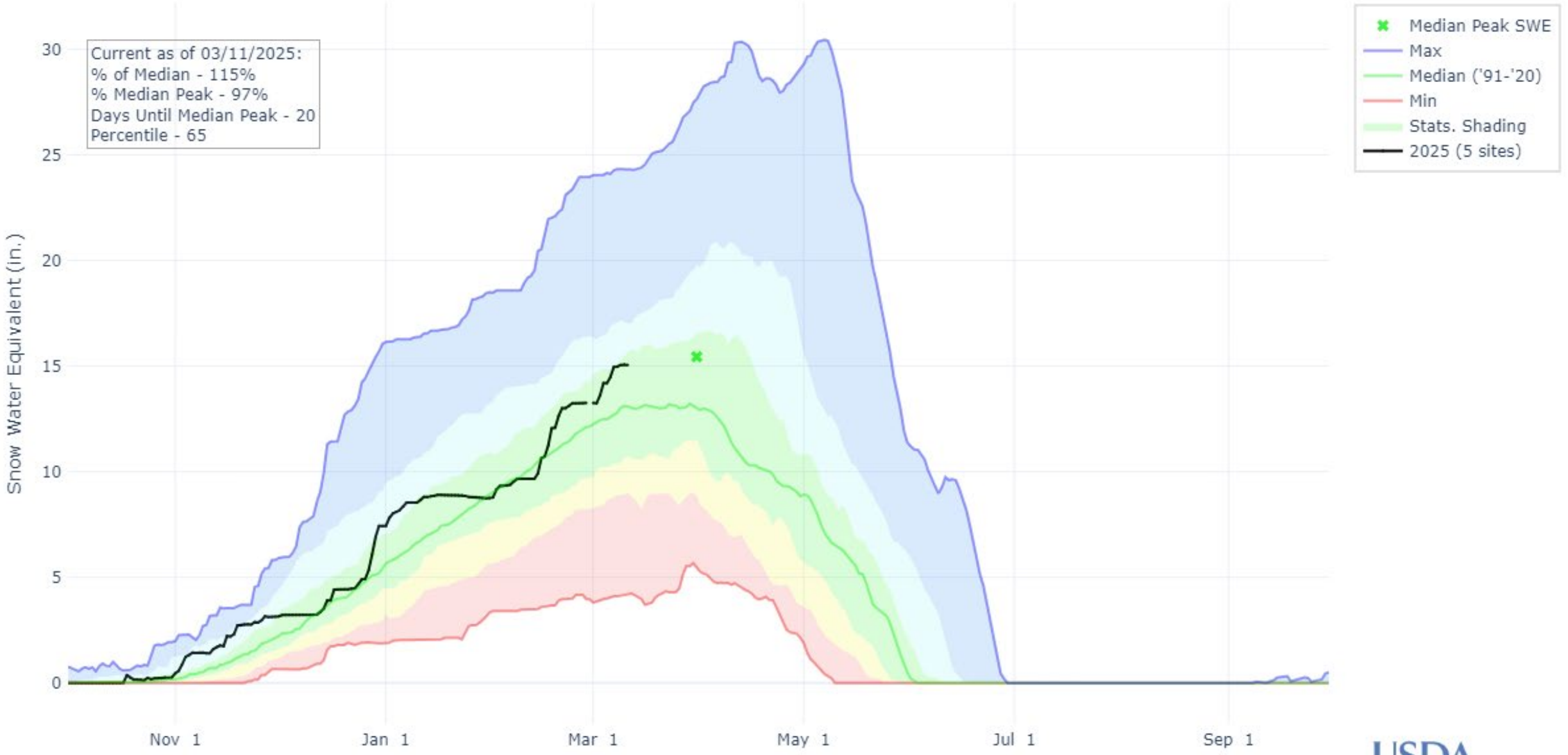
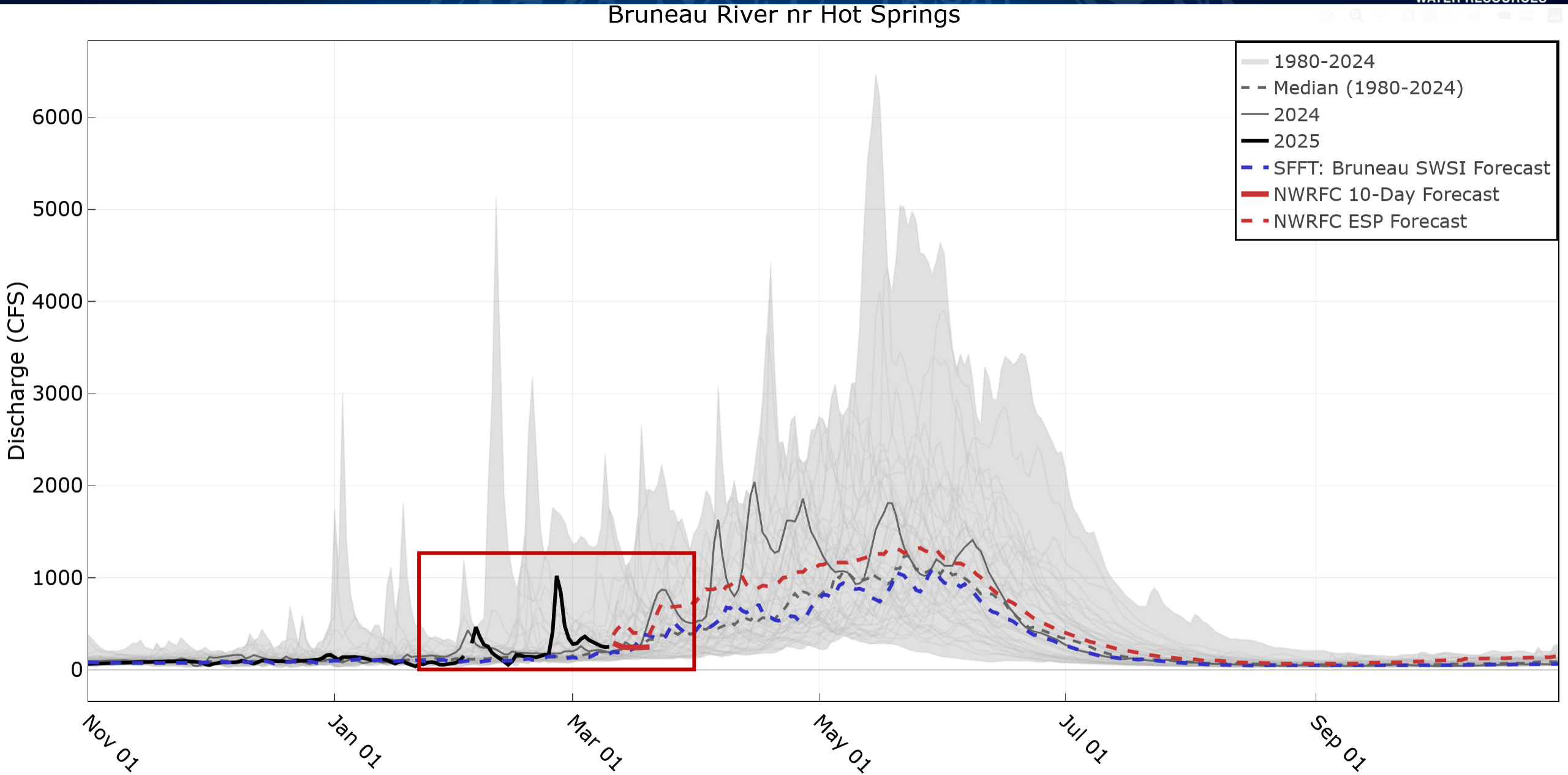
Data for this map is provided by the Idaho Snow Survey

SNOW WATER EQUIVALENT IN BRUNEAU



USDA


Bruneau River nr Hot Springs
1980-2024
Median (1980-2024)
2024
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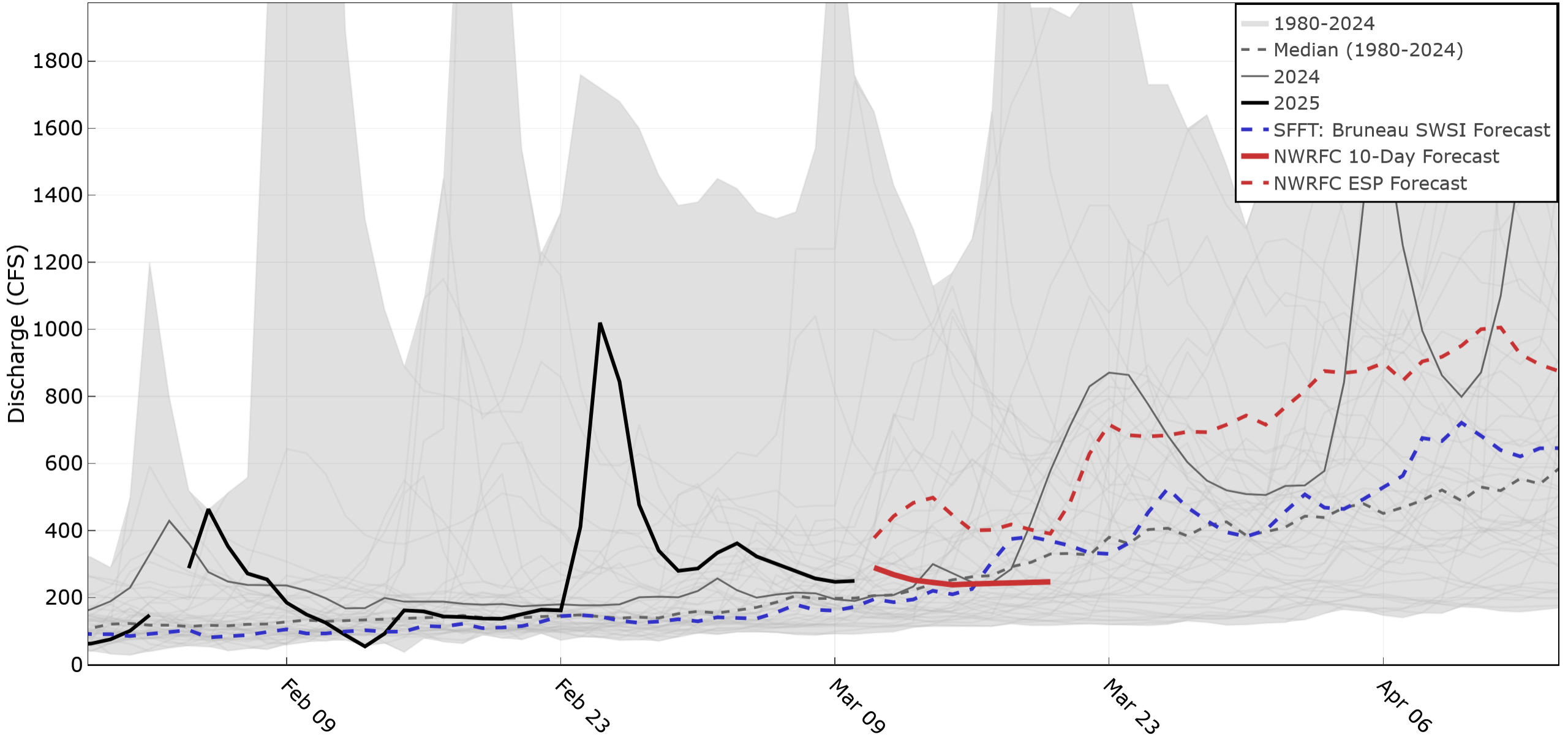
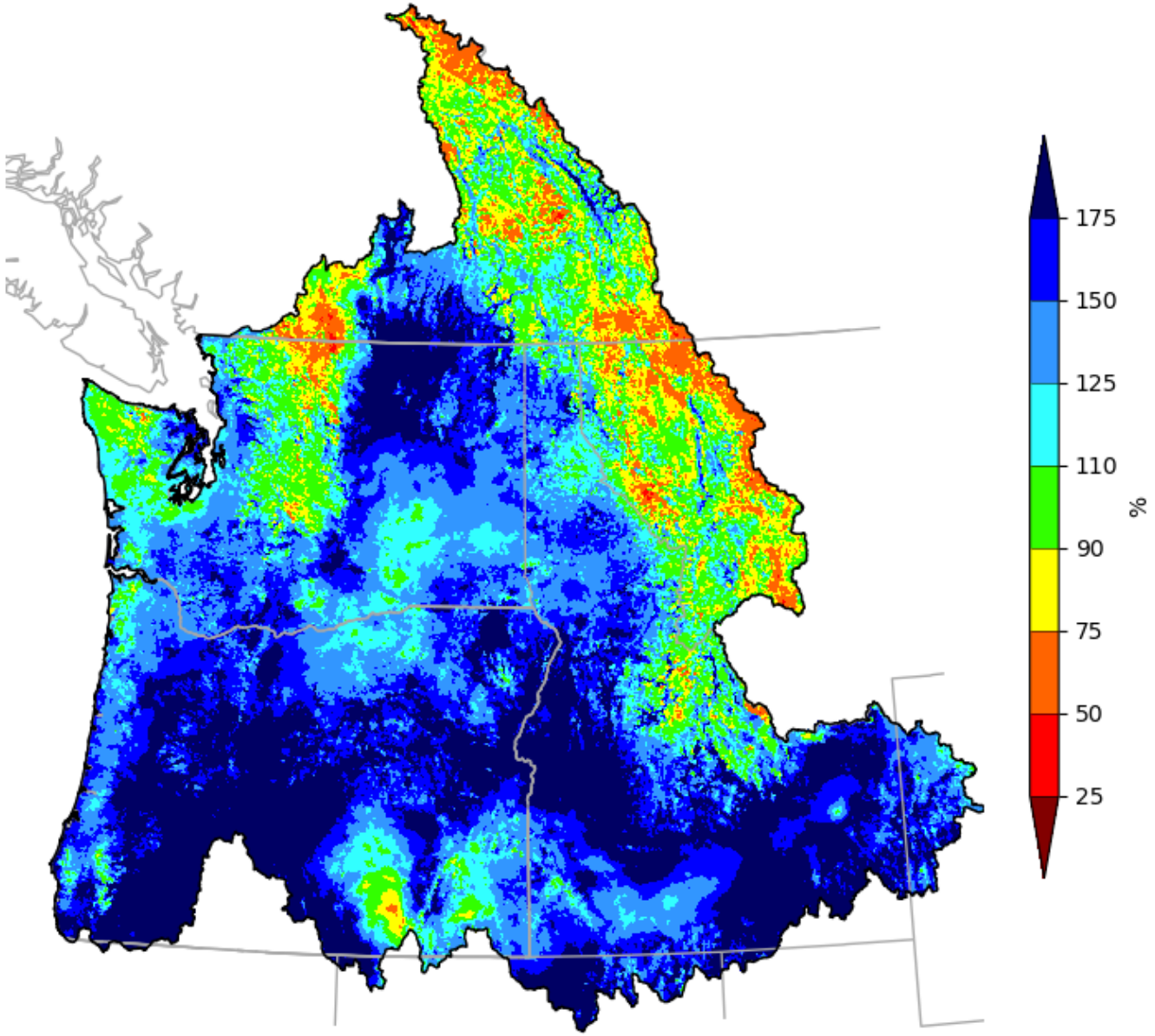
SFFT: Bruneau SWSI Forecast
NWRFC 10-Day Forecast
NWRFC ESP Forecast
Discharge (CFS)
6000
5000
4000
3000
2000
1000
0
Nov 01
Jan 01
Mar 01
May 01
Jul 01
Sep 01

Bruneau River nr Hot Springs



Northwest River Forecast Center

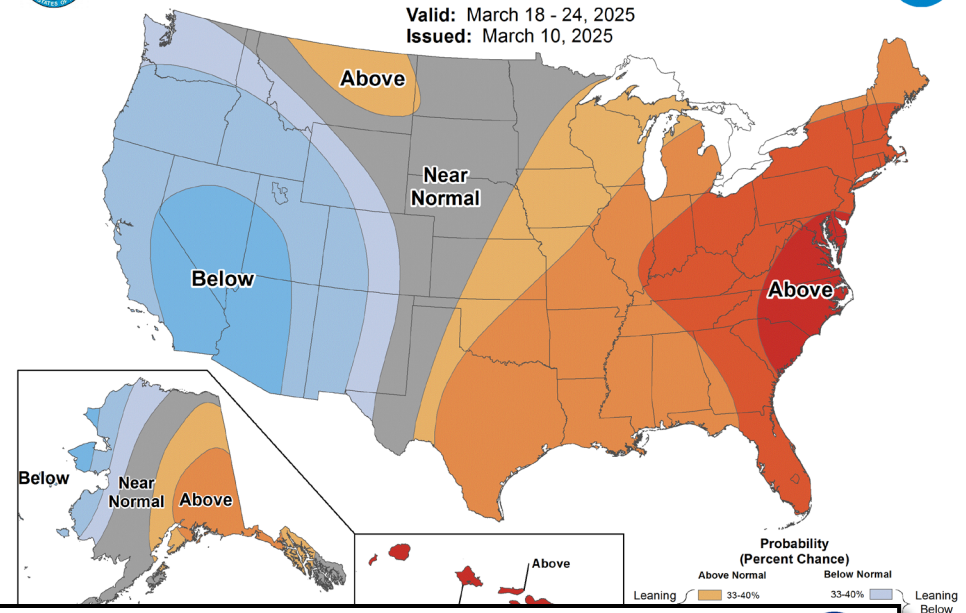
10 Day QPF (Percent of Climatology), Ending 12Z, 03/20/25



Creation Time: Mon Mar 10 21:21:08 UTC 2025

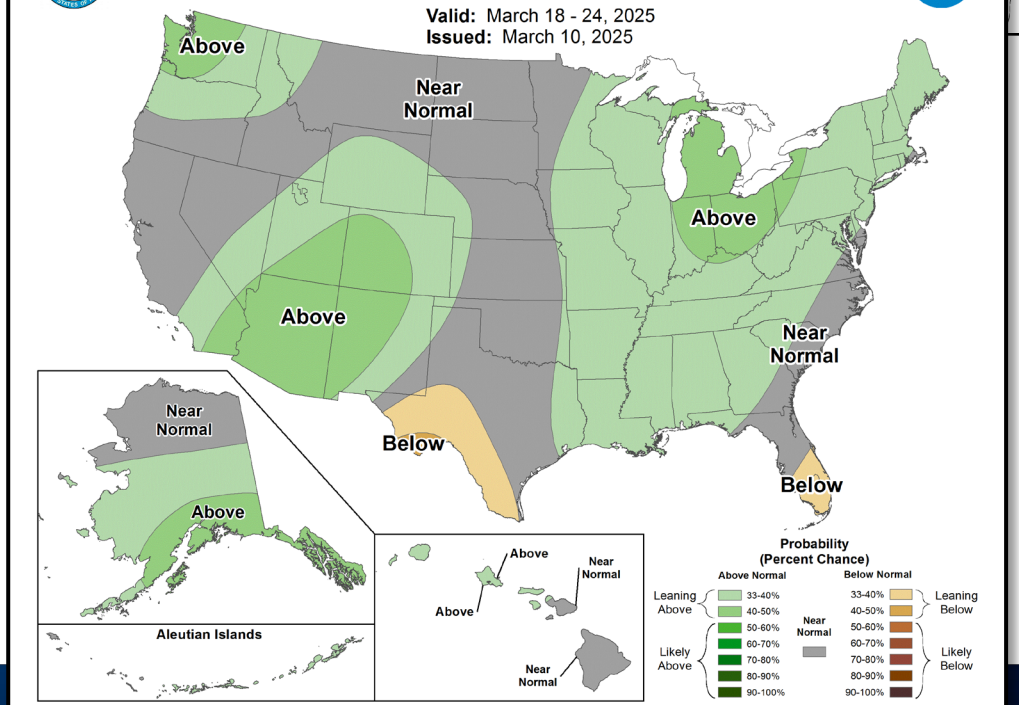
8-14 Day Temperature Outlook

Valid: March 18 - 24, 2025
Issued: March 10, 2025



8-14 Day Precipitation Outlook

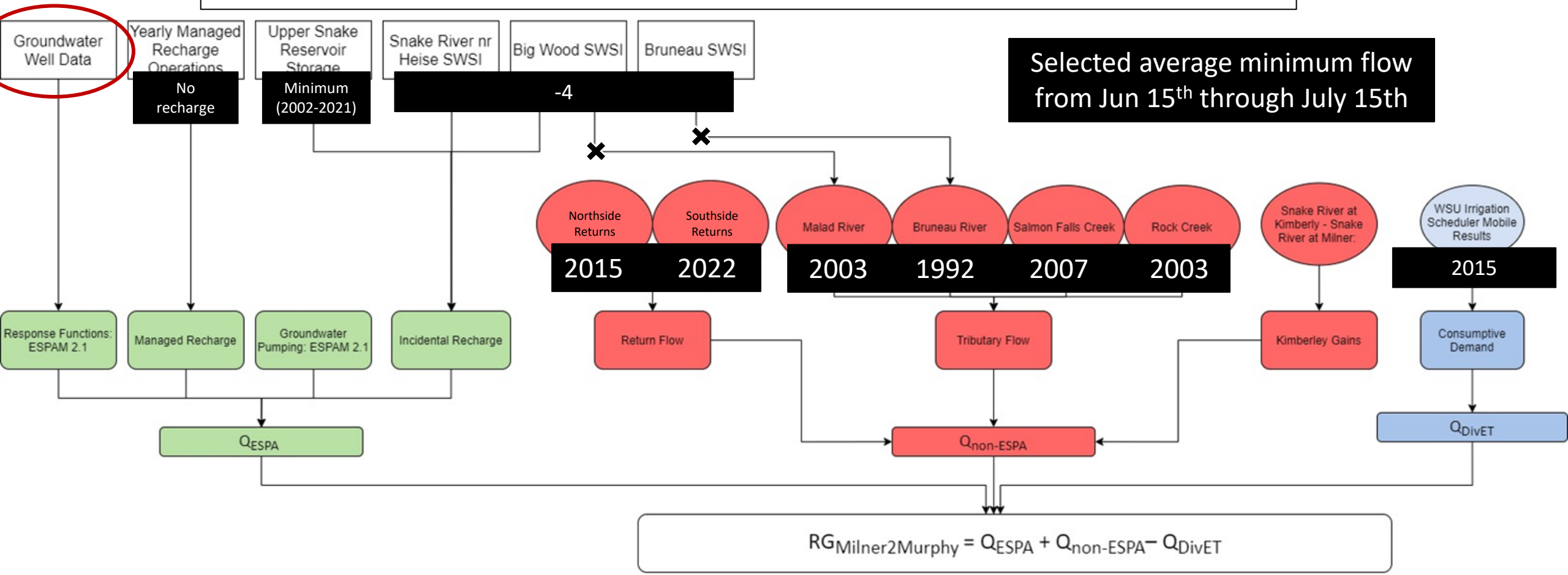
Valid: March 18 - 24, 2025
Issued: March 10, 2025



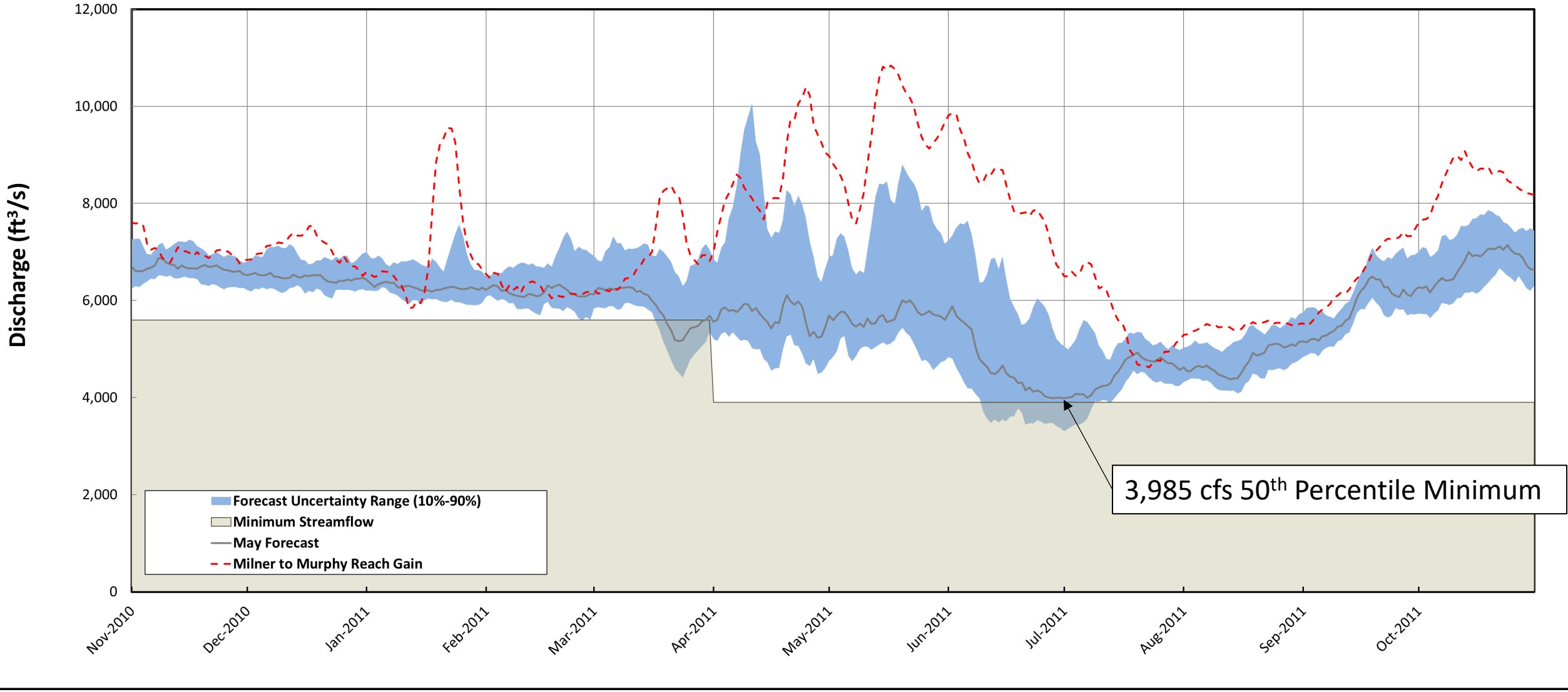
SFIG Q5

- Sophia Sigstedt Comment #5
- referenced March 16th, 2023, presentation
- That analysis used the Spring forecast tool to Hindcast from 2002-2022 for different scenarios
  - Scenario reference was “Minimum years” – lowest individual years
  - Used the 50th percentile and plotted against Spring Water Level head change

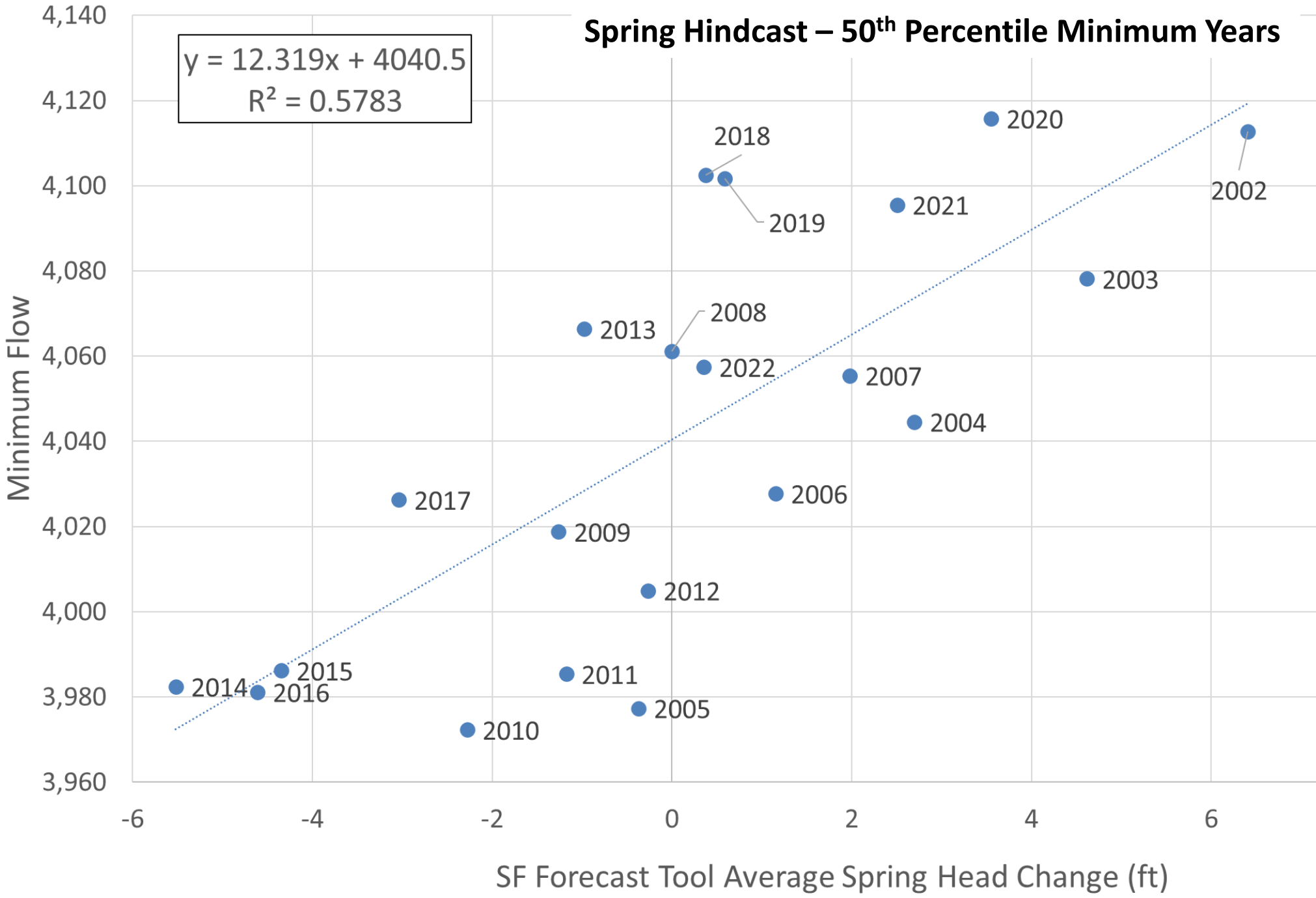
Swan Falls Forecast Tool (SFFT) Inputs



2011 Spring Hindcast – Minimum Years

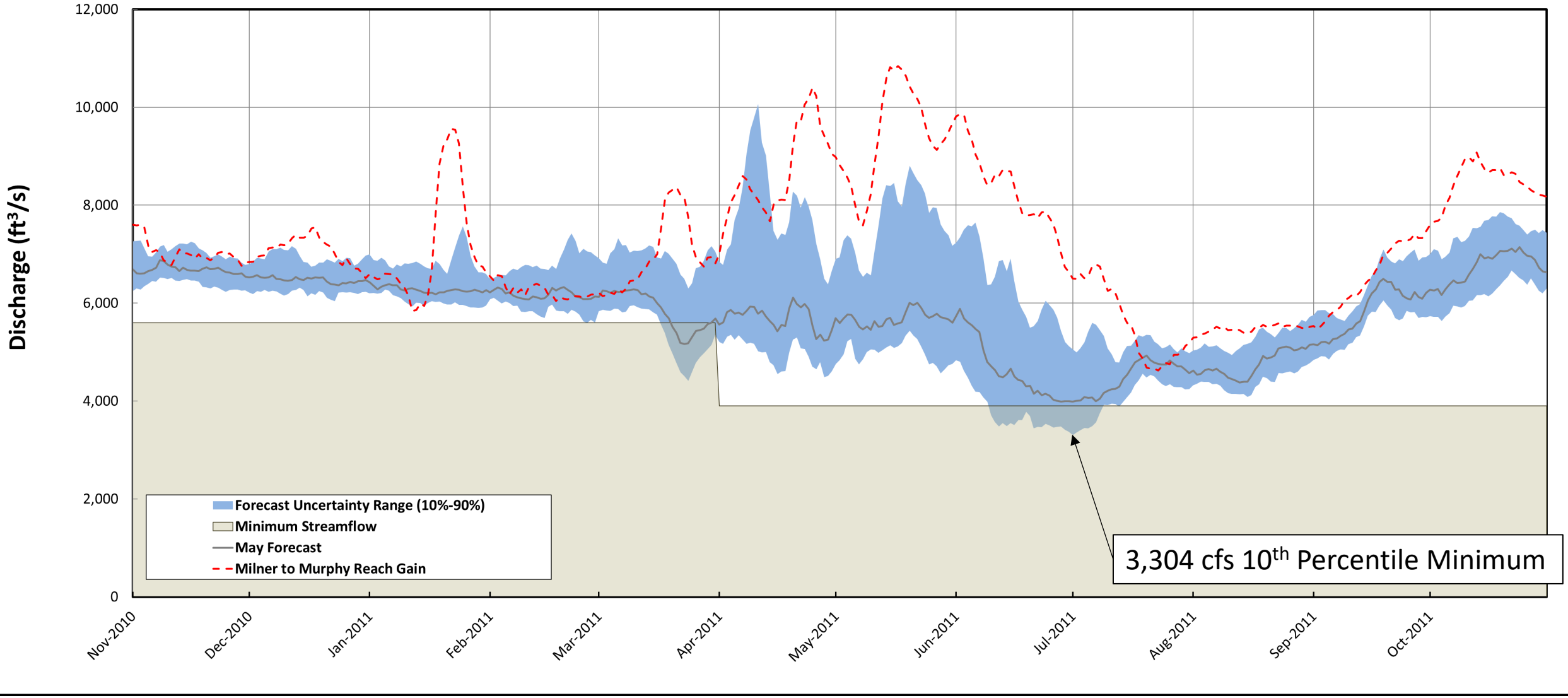


Spring Hindcast – 50th Percentile Minimum Years

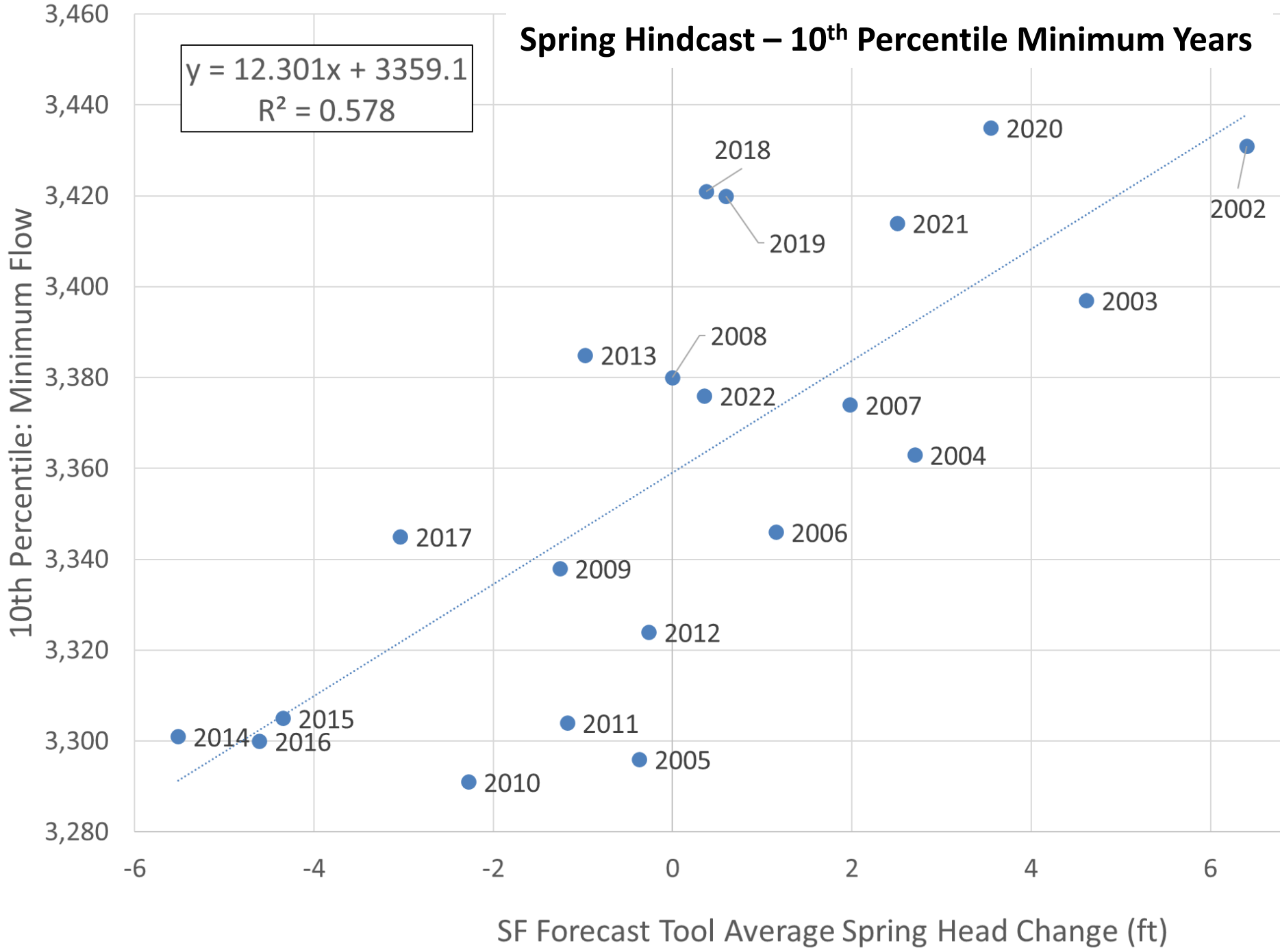


	Spring Water Level Change	Minimum Forecasted Flow (50%)
2002	6.4	4113
2003	4.6	4078
2004	2.7	4045
2005	-0.4	3977
2006	1.2	4028
2007	2.0	4055
2008	0.0	4061
2009	-1.3	4019
2010	-2.3	3972
2011	-1.2	**3985**
2012	-0.3	4005
2013	-1.0	4066
2014	-5.5	3982
2015	-4.3	3986
2016	-4.6	3981
2017	-3.0	4026
2018	0.4	4103
2019	0.6	4102
2020	3.6	4116
2021	2.5	4096
2022	0.4	4057

2011 Spring Hindcast – Minimum Years



Spring Hindcast – 10th Percentile Minimum Years



	Spring Water Level Change	Minimum Forecasted Flow (10%)
2002	6.4	3431
2003	4.6	3397
2004	2.7	3363
2005	-0.4	3296
2006	1.2	3346
2007	2.0	3374
2008	0.0	3380
2009	-1.3	3338
2010	-2.3	3291
2011	-1.2	**3304**
2012	-0.3	3324
2013	-1.0	3385
2014	-5.5	3301
2015	-4.3	3305
2016	-4.6	3300
2017	-3.0	3345
2018	0.4	3421
2019	0.6	3420
2020	3.6	3435
2021	2.5	3414
2022	0.4	3376

SFIG Q5

- Sophia Sigstedt Comment #5
- referenced March 16th, 2023, presentation
- That analysis used the Spring forecast tool to Hindcast from 2002-2022 for different scenarios
  - Scenario reference was “Minimum years” – lowest individual years
  - Used the 50th percentile and plotted against Spring Water Level head change
  - We discussed that Minimum years were probably not the most representative
  - Also discussed how we were going to handle the uncertainty range – ultimately moved on to using a minimum 3-day average of observed values
    - Easier to explain using that minimum 3-day average of observed values and ESPAM 2.2 directly.

IPC Comment

- A range of conditions were analyzed for non-ESPA inflow and consumptive diversion demand between 2002 – 2022 for the month of July
  - Comment: “Does July produce the lowest net change? Do we need to confirm that June or August don’t produce a lower value?”

- Non-ESPA inflow 2002-2022
  - 16 years, July produces the lowest value
  - 4 years, June (>24th) produces the lowest value (Average 81 cfs lower)
  - 1 year, August (1st) produces the lowest value

  Does not affect the 90th, 95th, or 99th percent exceedance for Non-ESPA inflows

- Kimberly to King Hill monthly Reach Gain 2002-2022
  - 13 years, July is the lowest
  - 8 years, June is lower (Average 120 cfs lower)