

Yellowtail Dam Water Supply and Projected Operations



— BUREAU OF —
RECLAMATION

October 2022



Bighorn River Basin Map Source: DEMIS Mapserver

October Operating Range			
Forecast	Minimum	Median	Maximum
Monthly Average Inflow (cfs)	2,355	2,530	2,885
Monthly Average River Release (cfs)	2,500	2,500	2,530
End of October Elevation (feet)	3633.0	3634.0	3635.8
October 2022 Inflow Forecast (kaf)			
October Volume			155
Percent of Average			94
Water Year	Historic Inflow		Rank
2022	154		37
2021	145		41
2020	202		17
2019	175		29
30 Year Average	166		

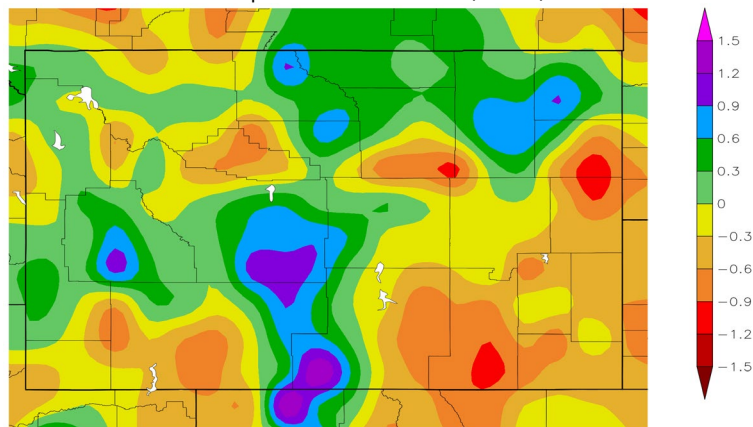


Climate Departure from Normal

September 1 through September 30, 2022

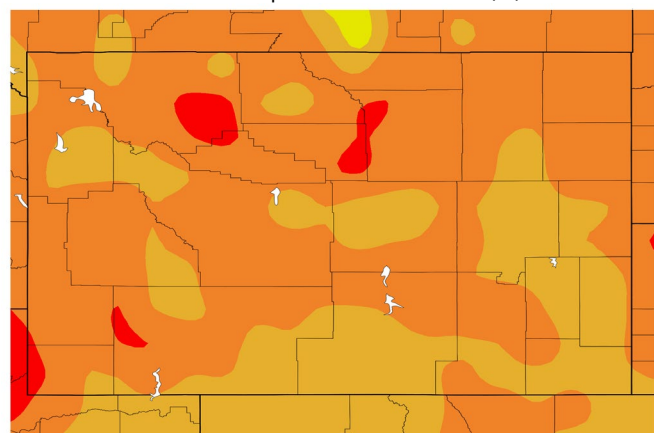
Precipitation

Departure from Normal (inches)



Temperature

Departure from Normal (°F)



HPRCC using provisional data from NOAA Regional Climate Centers

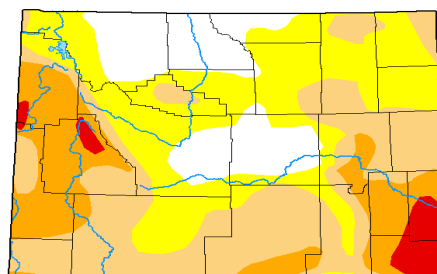
CLIMATE SUMMARY

There was a mix of above and below average precipitation in the Bighorn Basin during September. Temperatures were above average. Abnormally dry conditions persist in some areas of the Basin.

The Bighorn River Basin has near equal chances for below, near, or above average precipitation during October. There is a 50 to 60 percent change temperatures will be above average.

Wyoming Drought Monitor Map

September 27, 2022



Intensity

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



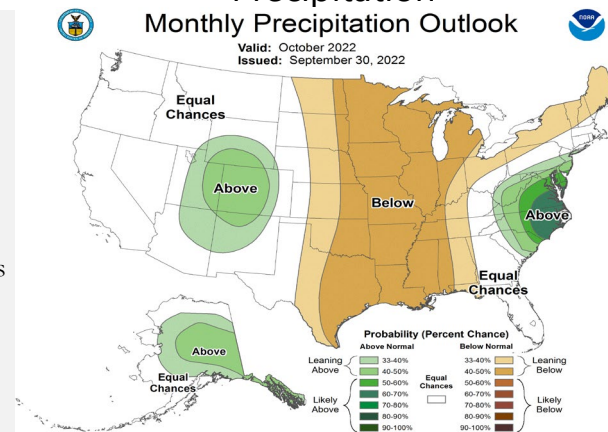
droughtmonitor.unl.edu

October Climate Outlook

Precipitation

Monthly Precipitation Outlook

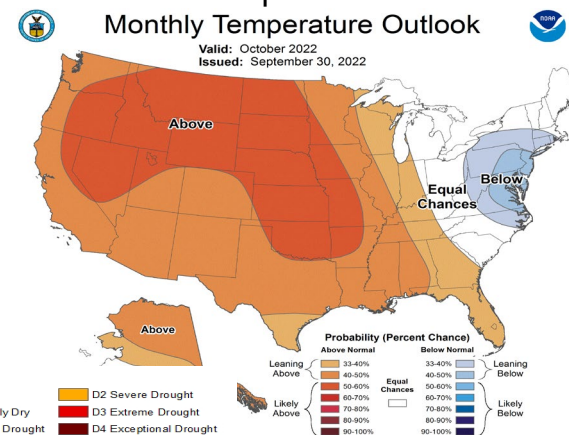
Valid: October 2022
Issued: September 30, 2022



Temperature

Monthly Temperature Outlook

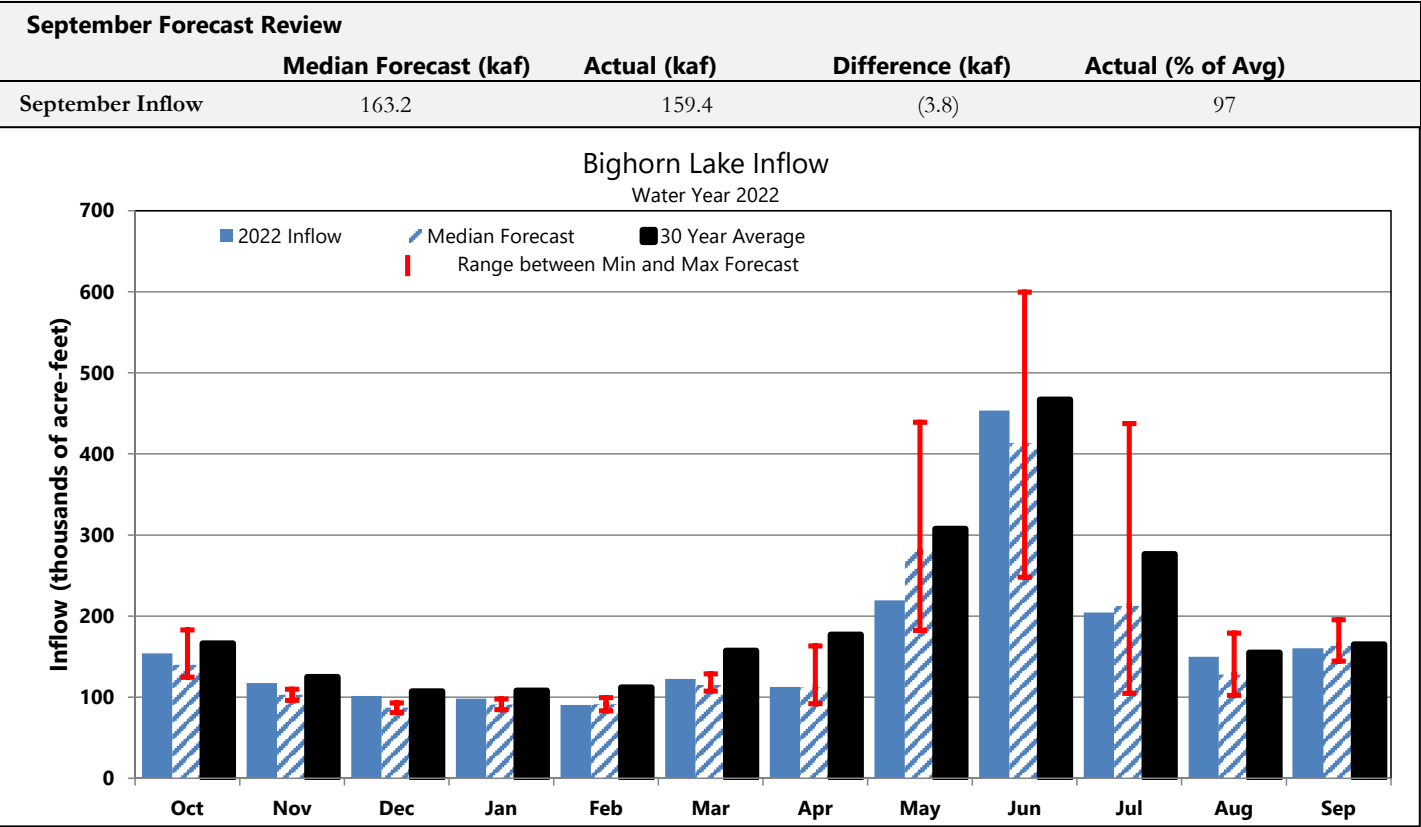
Valid: October 2022
Issued: September 30, 2022



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.aspx>

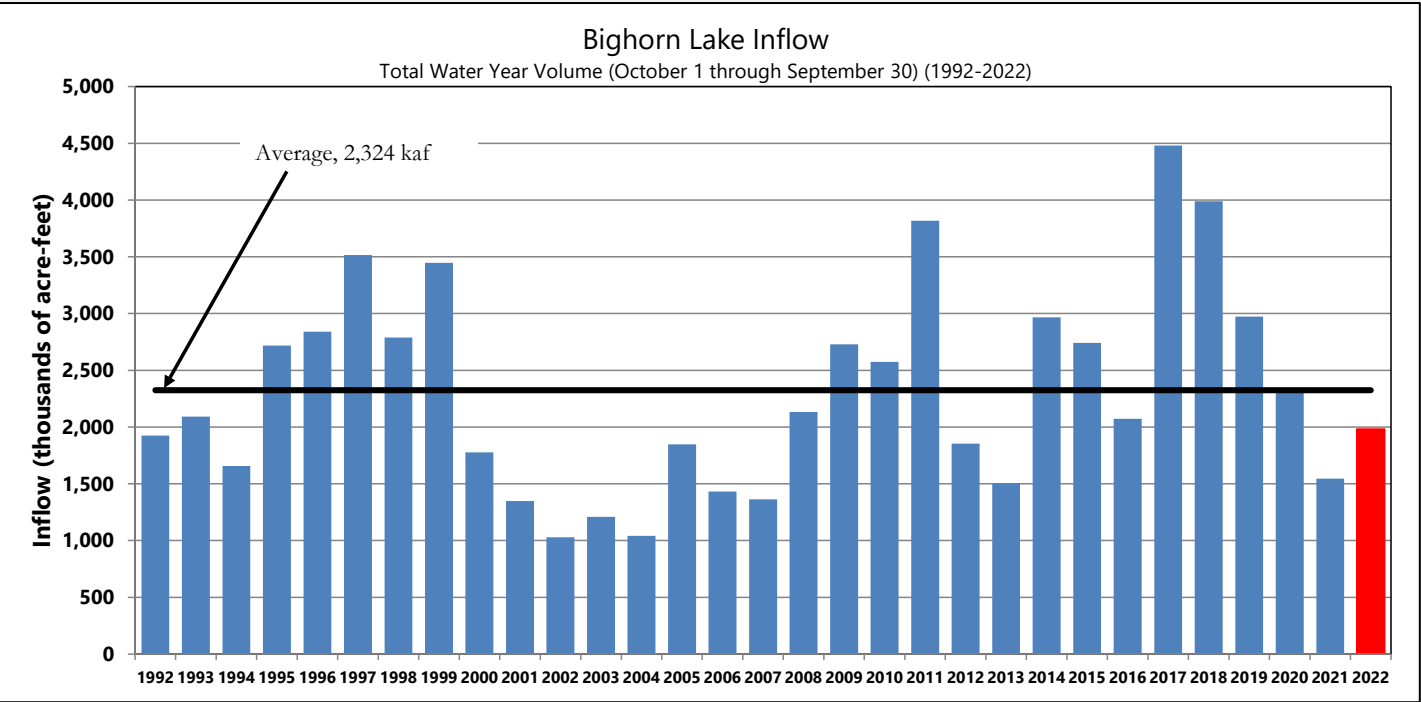
FORECAST SUMMARY

Streamflow data and planned releases from Boysen and Buffalo Bill Reservoirs are used to compute an inflow forecast for Bighorn Lake. Actual September inflow was slightly below the median inflow forecast.



Water Year Total Volume Inflow Comparison (October 1 through September 30)

The total volume of inflow during Water Year 2022 was 1,983 kaf, 85 percent of average. This volume was 437 kaf greater than last year. On average, this was approximately 600 cfs per day greater than the previous year.



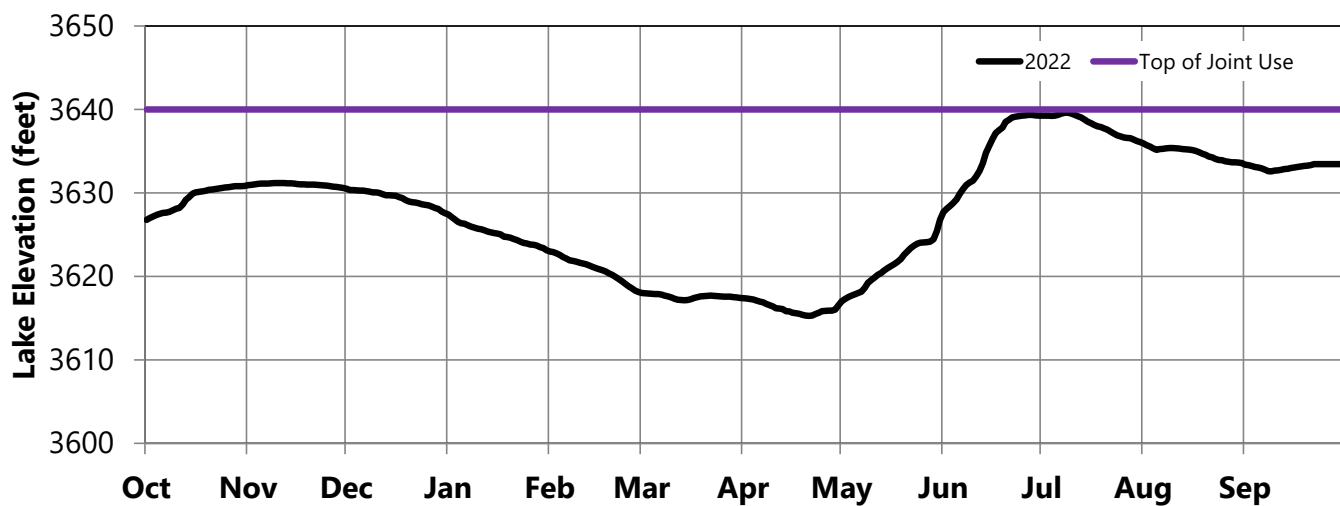
OPERATIONS REVIEW (October 1, 2021 through September 30, 2022)

River releases were maintained at 2,500 cfs based on actual inflow, forecasted inflow, and storage in Bighorn Lake. Storage in Bighorn Lake was relatively stable during the month of September.

October 1 Storage Conditions

	Elevation feet	Storage acre-feet	Percent of Average	Percent Full
Bighorn Lake	3633.5	931,130	106	92
Buffalo Bill	5370.5	471,935	108	73
Boysen	4719.7	643,074	116	87

Bighorn Lake Operations Water Year 2022



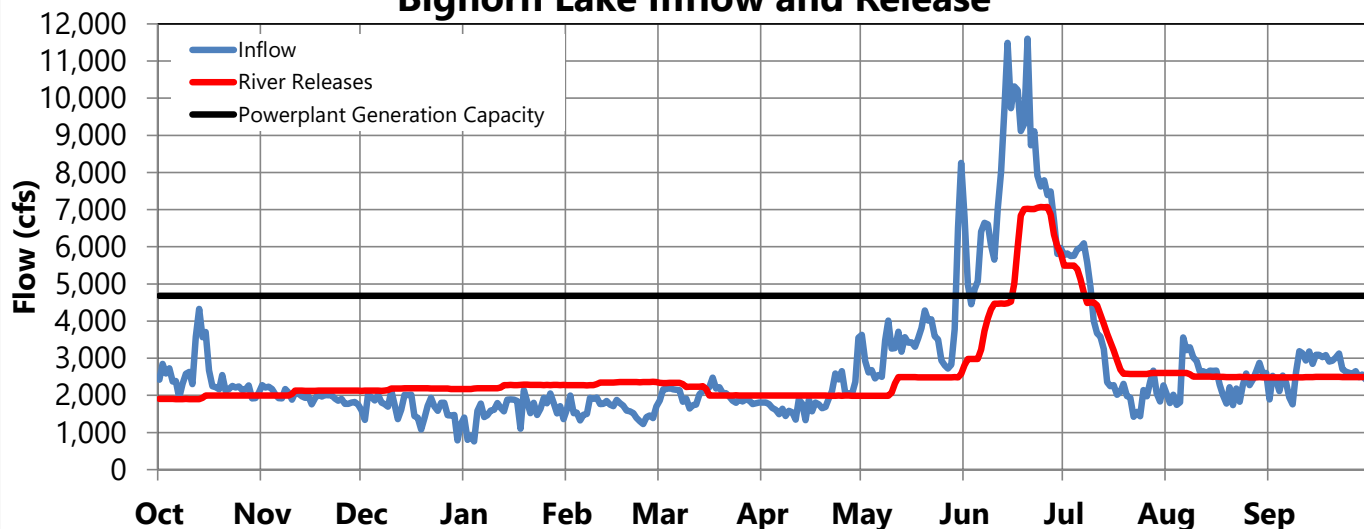
Average September Inflow

	Monthly Avg cfs	Percent of Average
Bighorn Lake	2,680	97
Buffalo Bill	450	106
Boysen	700	91

Average September Release

	Monthly Avg cfs	Percent of Average
Bighorn River	2,490	98
Buffalo Bill Total Release	1,625	110
Boysen Release	1,100	102

Bighorn Lake Inflow and Release



OPERATIONS OUTLOOK (October 1, 2022 through March 31, 2023)

Releases to the Bighorn River will remain at 2,500 cfs during October under median and minimum inflow conditions. Winter releases to the Bighorn River are forecasted to be between 2,360 and 2,800 cfs based on forecasted inflows and end of March storage target of 3617.0 feet. Forecasted end of March elevations depend on April through July inflows forecasted for 2023.

Median Inflow Conditions

	Oct	Nov	Dec	Jan	Feb	Mar
Boysen Release (cfs)	900	900	900	900	900	900
Buffalo Bill Release (cfs)	725	205	205	205	205	220
Tributary Gain (cfs)	903	877	555	628	805	1,025
Monthly Inflow (cfs)	2,528	1,982	1,660	1,733	1,910	2,145
Monthly Inflow (kaf)	155.4	118.0	102.0	106.5	106.1	131.9
Monthly Release (kaf)	153.7	144.2	149.0	149.0	134.6	158.9
Afterbay Release (cfs)	2,500	2,423	2,423	2,423	2,423	2,584
River Release (cfs)	2,500	2,423	2,423	2,423	2,423	2,584
End-of-Month Content (kaf)	937.1	915.1	872.4	834.3	809.7	786.9
End-of-Month Elevation (feet)	3634.0	3631.9	3627.3	3622.5	3619.0	3615.4

Minimum Inflow Conditions

	Oct	Nov	Dec	Jan	Feb	Mar
Boysen Release (cfs)	900	900	900	900	900	800
Buffalo Bill Release (cfs)	725	205	205	205	205	205
Tributary Gain (cfs)	729	872	550	623	799	1,020
Monthly Inflow (cfs)	2,354	1,977	1,655	1,728	1,904	2,025
Monthly Inflow (kaf)	144.7	117.7	101.7	106.2	105.8	124.5
Monthly Release (kaf)	153.7	140.4	145.0	145.0	131.0	123.0
Afterbay Release (cfs)	2,500	2,359	2,359	2,359	2,359	2,000
River Release (cfs)	2,500	2,359	2,359	2,359	2,359	2,000
End-of-Month Content (kaf)	926.4	907.9	868.9	834.4	813.1	818.9
End-of-Month Elevation (feet)	3633.0	3631.2	3626.9	3622.5	3619.5	3620.3

Maximum Inflow Conditions

	Oct	Nov	Dec	Jan	Feb	Mar
Boysen Release (cfs)	900	900	900	900	900	1,251
Buffalo Bill Release (cfs)	725	356	205	205	205	1,195
Tributary Gain (cfs)	1,259	887	563	636	817	1,034
Monthly Inflow (cfs)	2,884	2,143	1,668	1,741	1,922	3,480
Monthly Inflow (kaf)	177.3	127.5	102.5	107.0	106.8	214.0
Monthly Release (kaf)	155.7	166.7	172.3	172.3	166.6	215.2
Afterbay Release (cfs)	2,532	2,802	2,802	2,802	3,000	3,500
River Release (cfs)	2,532	2,802	2,802	2,802	3,000	3,500
End-of-Month Content (kaf)	957.1	922.1	856.6	795.7	739.8	742.9
End-of-Month Elevation (feet)	3635.8	3632.6	3625.4	3616.8	3607.1	3607.7

OPERATIONS OUTLOOK (October 1, 2022 through March 31, 2023)

There is approximately 70 cfs of gain between Yellowtail Dam and Yellowtail Afterbay Dam from springs flowing into Yellowtail Afterbay. Total release from Yellowtail Dam is 70 cfs less than total release from Yellowtail Afterbay Dam. Two of the four units of the Yellowtail Powerplant are currently unavailable due to maintenance.

Irrigation Demands Outlook

Bighorn Canal (cfs)

	Oct	Nov	Dec	Jan	Feb	Mar
Median Forecast	0	0	0	0	0	0
Minimum Forecast	0	0	0	0	0	0
Maximum Forecast	0	0	0	0	0	0

Power Generation Outlook

Current Number of Units Available: 2 of 4
Approximate Yellowtail Powerplant Turbine Capacity: 4,100 cfs
Approximate Yellowtail Powerplant Scheduled Generation Limit: 3,120 cfs

Yellowtail Powerplant Release (cfs)

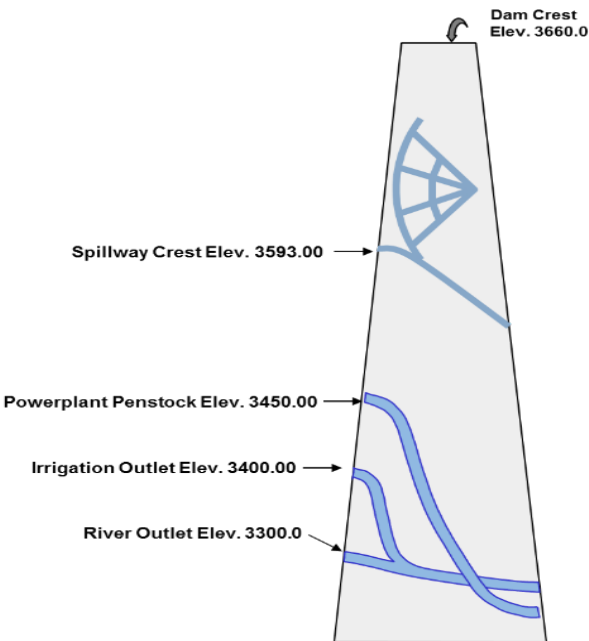
	Oct	Nov	Dec	Jan	Feb	Mar
Median Forecast	2,430	2,353	2,353	2,353	2,353	2,514
Minimum Forecast	2,430	2,289	2,289	2,289	2,289	1,930
Maximum Forecast	2,462	2,732	2,732	2,732	2,930	3,430

Yellowtail Powerplant Generation (gwh)

	Oct	Nov	Dec	Jan	Feb	Mar
Median Forecast	60.3	56.2	57.7	57.2	51.2	60.6
Minimum Forecast	60.2	54.3	55.9	55.4	49.6	46.0
Maximum Forecast	61.3	66.7	68.2	66.9	62.7	79.3

Yellowtail Spill (cfs)

	Oct	Nov	Dec	Jan	Feb	Mar
Median Forecast	0	0	0	0	0	0
Minimum Forecast	0	0	0	0	0	0
Maximum Forecast	0	0	0	0	0	0



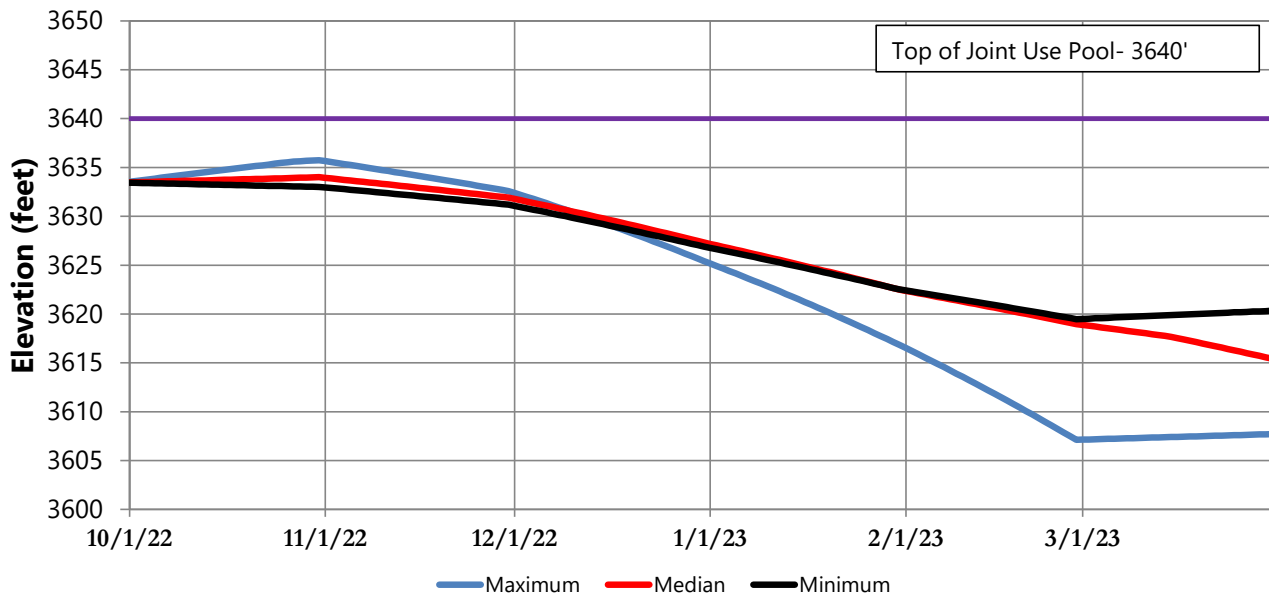
Release Outlook by Outlet

All releases are currently going through the powerplant and are expected to go through the powerplant under all inflow conditions.

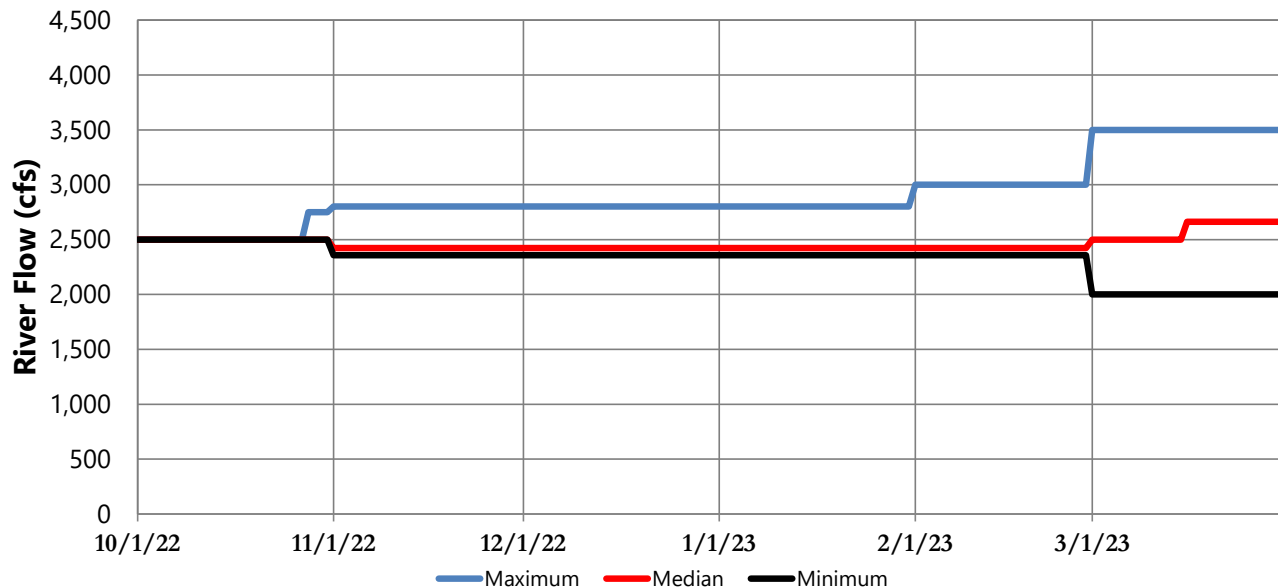
OPERATIONS OUTLOOK (October 1, 2022 through March 31, 2023)

Projected elevations and the range of river releases are based on the median, minimum, and maximum inflow forecasts. End-of-month elevations and river releases vary based on the difference between forecasted inflow scenarios.

Bighorn Lake Elevation



River Release



Contact Us

Anellise Deters
adeters@usbr.gov
406-247-7318

Clayton Jordan
cjordan@usbr.gov
406-247-7334

Stephanie Micek
smicek@usbr.gov
406-247-7320

Chris Gomer
cgomer@usbr.gov
406-247-7307

Monthly Operating Plans, Current Conditions, Snowpack and Other Water Management Information
https://www.usbr.gov/gp/lakes_reservoirs/wareperts/main_menu.html