

Yellowtail Dam Water Supply and Projected Operations



— BUREAU OF —
RECLAMATION

November 2021



Bighorn River Basin Map Source: DEMIS Mapserv

November Operating Range			
Forecast	Minimum	Median	Maximum
Monthly Average Inflow (cfs)	1,615	1,730	1,845
Monthly Average River Release (cfs)	2,090	2,090	2,090
End of November Elevation (feet)	3628.2	3629.0	3629.7
November 2021 Inflow Forecast (kaf)			
November Volume			103
Percent of Average			82
Water Year	Historic Inflow	Rank	
2021	111	43	
2020	173	12	
2019	154	20	
2018	230	3	
30 Year Average	125		

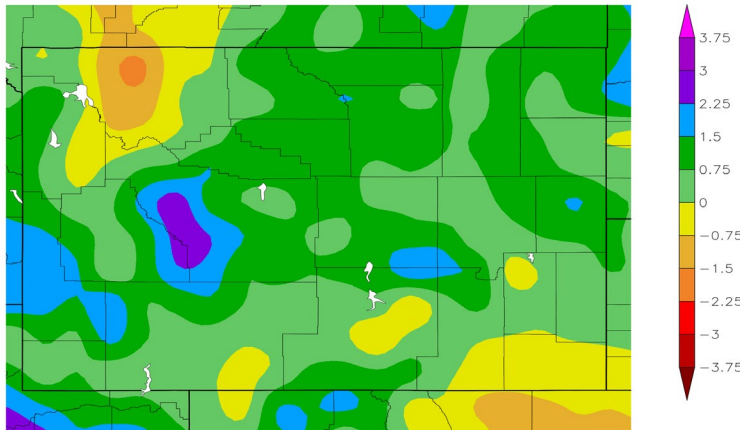


Climate Departure from Normal

October 1 through October 31, 2021

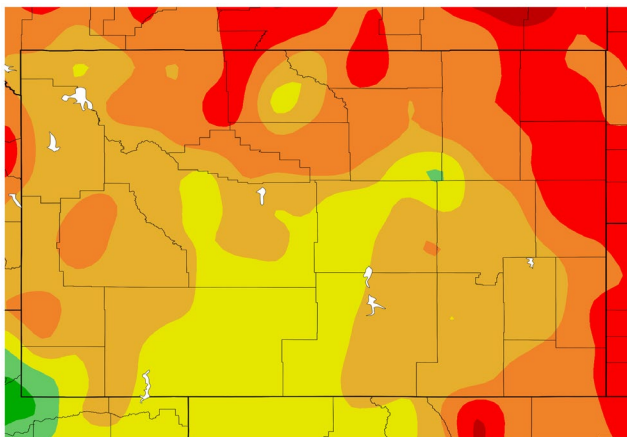
Precipitation

Departure from Normal (inches)



Temperature

Departure from Normal (°F)



HRPCC using provisional data from NOAA Regional Climate Centers

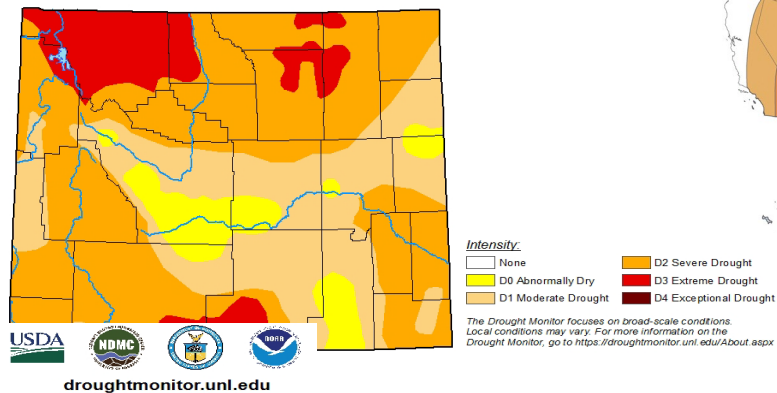
CLIMATE SUMMARY

Precipitation in the Bighorn Basin above Yellowtail Dam was warmer and wetter than average during October. Drought conditions persist throughout the Basin.

The climate outlook shows there is 33 to 40 percent chance temperatures and precipitation will be above average.

Wyoming Drought Monitor Map

November 2, 2021

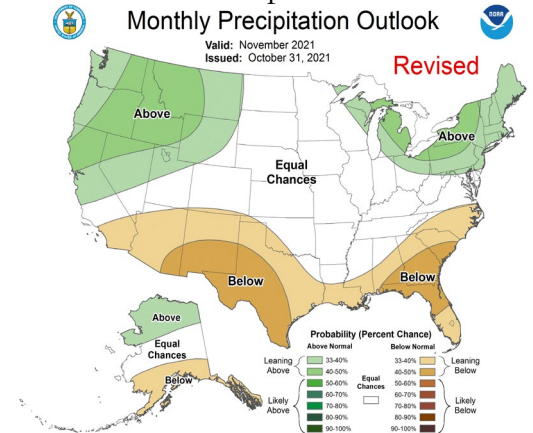


November Climate Outlook

Precipitation

Monthly Precipitation Outlook

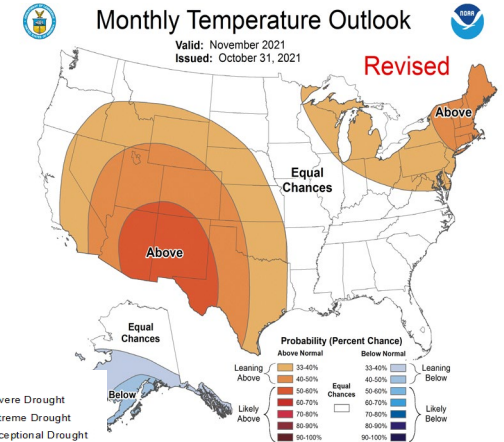
Valid: November 2021
Issued: October 31, 2021



Temperature

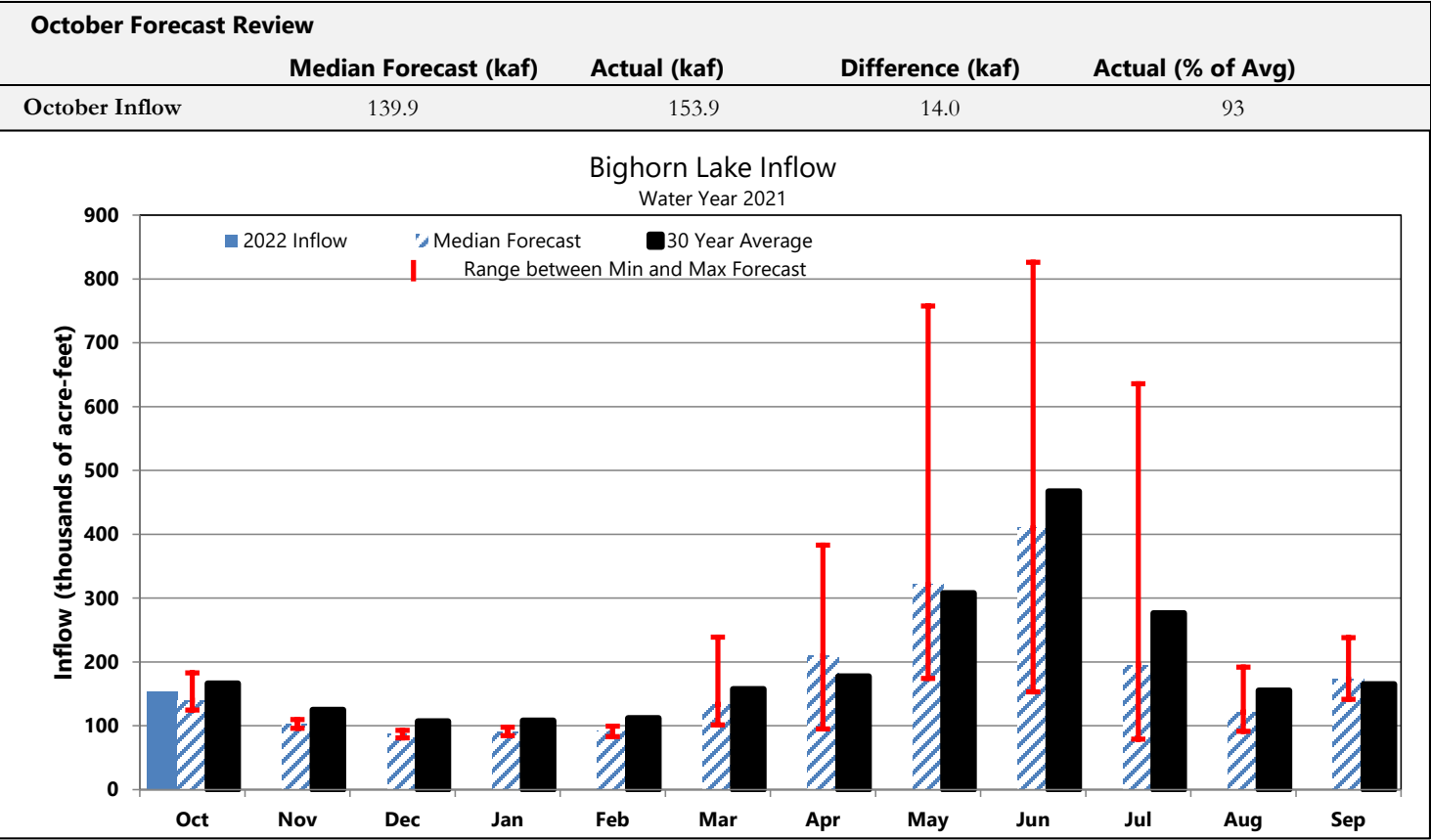
Monthly Temperature Outlook

Valid: November 2021
Issued: October 31, 2021



FORECAST SUMMARY

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



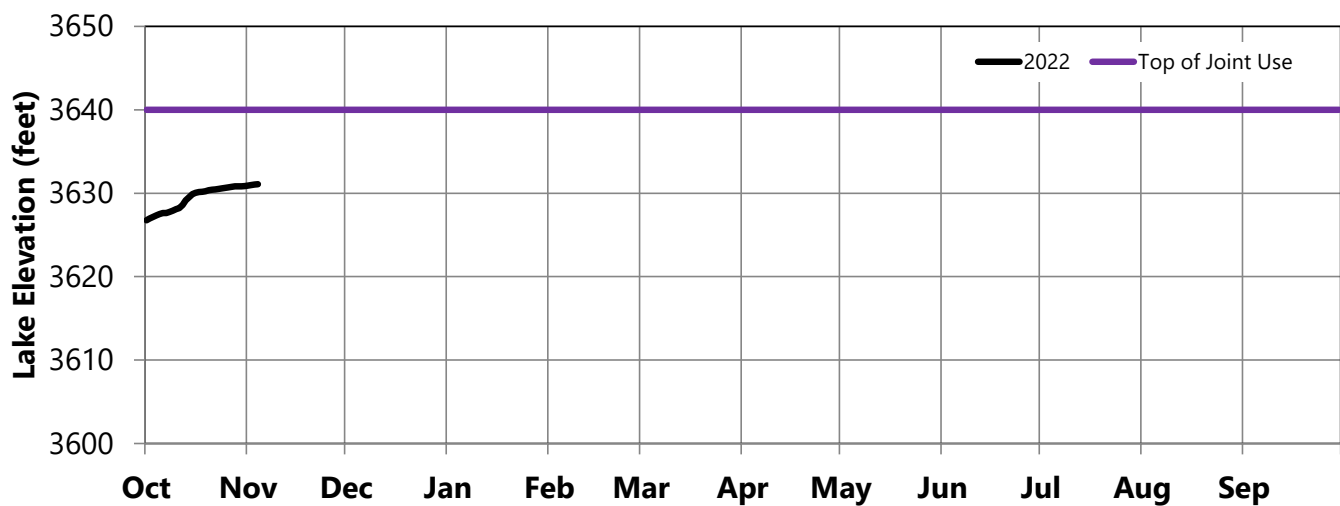
OPERATIONS REVIEW (October 1, 2021 through October 31, 2021)

River releases were increased to 2,000 cfs during October based on inflows and the March 31, 2022 carryover storage target of 3617 feet. The storage in Bighorn Lake increased 4.2 feet during October.

November 1 Storage Conditions

	Elevation feet	Storage acre-feet	Percent of Average	Percent Full
Bighorn Lake	3630.9	904,505	102	89
Buffalo Bill	5357.5	383,397	92	59
Boysen	4720.0	648,711	116	87

Bighorn Lake Operations Water Year 2022



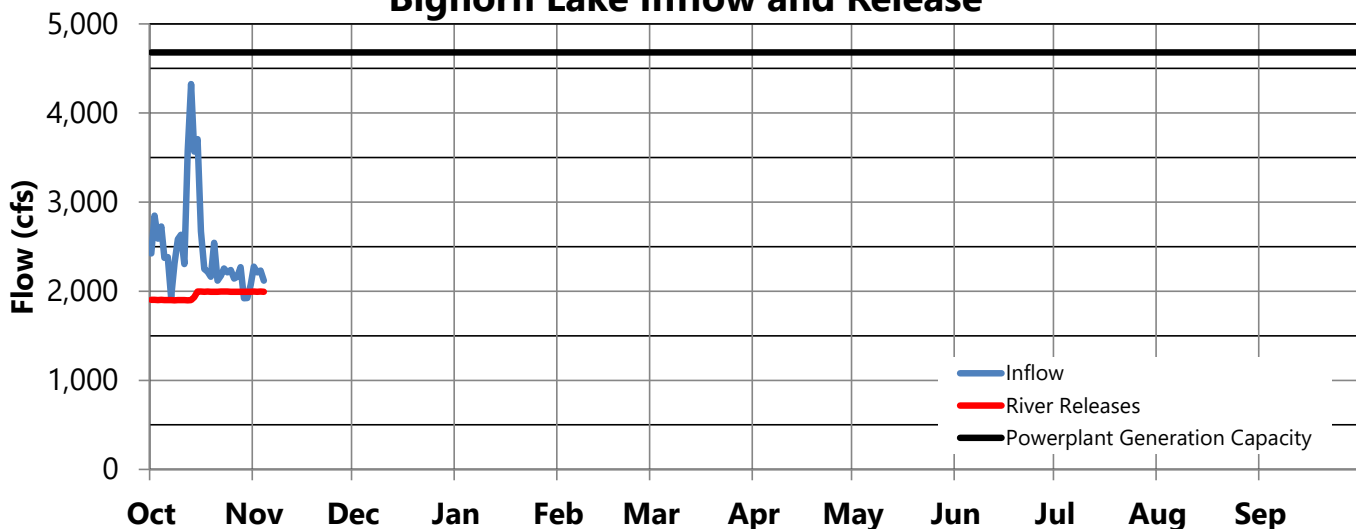
Average October Inflow

	Monthly Avg cfs	Percent of Average
Bighorn Lake	2,505	93
Buffalo Bill	380	81
Boysen	1,010	112

Average October Release

	Monthly Avg cfs	Percent of Average
Bighorn River	1,955	74
Buffalo Bill Total Release	725	104
Boysen Release	790	91

Bighorn Lake Inflow and Release



OPERATIONS OUTLOOK (November 1, 2021 through March 31, 2022)

Releases during November will increase to 2,125 cfs based on the March 31, 2022, storage target of 3617 feet. Forecasted end of March elevation, 3613.3 feet, under the median plan is based on expected drawdown for an average April through July runoff in 2022.

Median Inflow Conditions

	Nov	Dec	Jan	Feb	Mar
Boysen Release (cfs)	701	699	699	700	1,000
Buffalo Bill Release (cfs)	205	205	205	205	205
Tributary Gain (cfs)	825	511	577	738	968
Monthly Inflow (cfs)	1,731	1,415	1,481	1,643	2,173
Monthly Inflow (kaf)	103.0	87.0	91.1	91.3	133.6
Monthly Release (kaf)	124.5	130.7	130.7	118.0	153.4
Afterbay Release (cfs)	2,092	2,125	2,125	2,125	2,495
River Release (cfs)	2,092	2,125	2,125	2,125	2,495
End-of-Month Content (kaf)	887.2	847.8	812.5	789.6	774.1
End-of-Month Elevation (feet)	3629.0	3624.3	3619.4	3615.9	3613.3

Minimum Inflow Conditions

	Nov	Dec	Jan	Feb	Mar
Boysen Release (cfs)	701	699	699	700	600
Buffalo Bill Release (cfs)	205	205	205	205	205
Tributary Gain (cfs)	709	415	472	591	844
Monthly Inflow (cfs)	1,615	1,319	1,376	1,496	1,649
Monthly Inflow (kaf)	96.1	81.1	84.6	83.1	101.4
Monthly Release (kaf)	124.5	128.8	127.0	105.1	107.6
Afterbay Release (cfs)	2,092	2,095	2,065	1,893	1,750
River Release (cfs)	2,092	2,095	2,065	1,893	1,750
End-of-Month Content (kaf)	880.3	836.9	798.8	780.6	778.7
End-of-Month Elevation (feet)	3628.2	3622.8	3617.3	3614.4	3614.1

Maximum Inflow Conditions

	Nov	Dec	Jan	Feb	Mar
Boysen Release (cfs)	701	699	699	700	1,600
Buffalo Bill Release (cfs)	205	205	205	205	1,195
Tributary Gain (cfs)	939	607	685	884	1,090
Monthly Inflow (cfs)	1,845	1,511	1,589	1,789	3,885
Monthly Inflow (kaf)	109.8	92.9	97.7	99.4	238.9
Monthly Release (kaf)	124.5	132.2	134.0	133.3	287.1
Afterbay Release (cfs)	2,092	2,150	2,180	2,400	4,669
River Release (cfs)	2,092	2,150	2,180	2,400	4,669
End-of-Month Content (kaf)	894.0	859.0	826.9	796.9	753.0
End-of-Month Elevation (feet)	3629.7	3625.7	3621.5	3617.0	3609.6

OPERATIONS OUTLOOK (November 1, 2021 through March 31, 2022)

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.

Irrigation Demands Outlook

Bighorn Canal (cfs)

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

Power Generation Outlook

Current Number of Units Available: 3 of 4

Approximate Yellowtail Powerplant Turbine Capacity: 6,150 cfs

Approximate Yellowtail Powerplant Scheduled Generation Limit: 4,680 cfs

Yellowtail Powerplant Release (cfs)

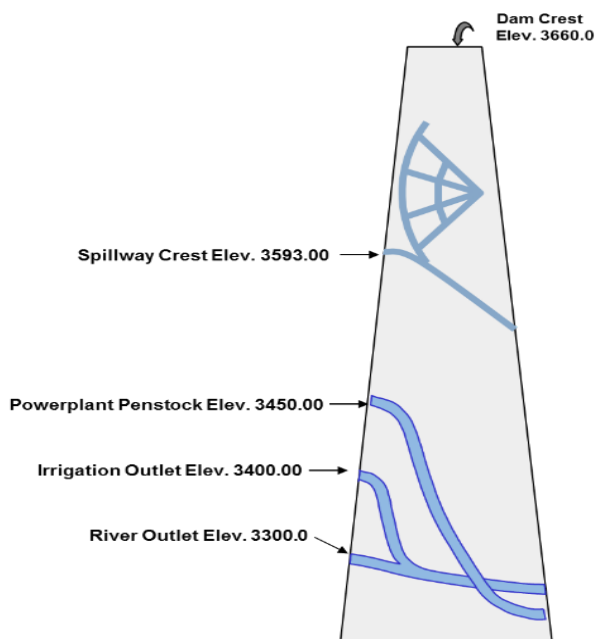
	Nov	Dec	Jan	Feb	Mar
Median Forecast	2,022	2,055	2,055	2,055	2,425
Minimum Forecast	2,022	2,025	1,995	1,823	1,680
Maximum Forecast	2,022	2,080	2,110	2,330	4,480

Yellowtail Powerplant Generation (gwh)

	Nov	Dec	Jan	Feb	Mar
Median Forecast	47.6	49.6	49.0	43.8	57.8
Minimum Forecast	47.6	48.8	47.5	38.9	39.7
Maximum Forecast	47.7	50.3	50.5	50.4	105.1

Yellowtail Spill (cfs)

	Nov	Dec	Jan	Feb	Mar
Median Forecast	0	0	0	0	0
Minimum Forecast	0	0	0	0	0
Maximum Forecast	0	0	0	0	119



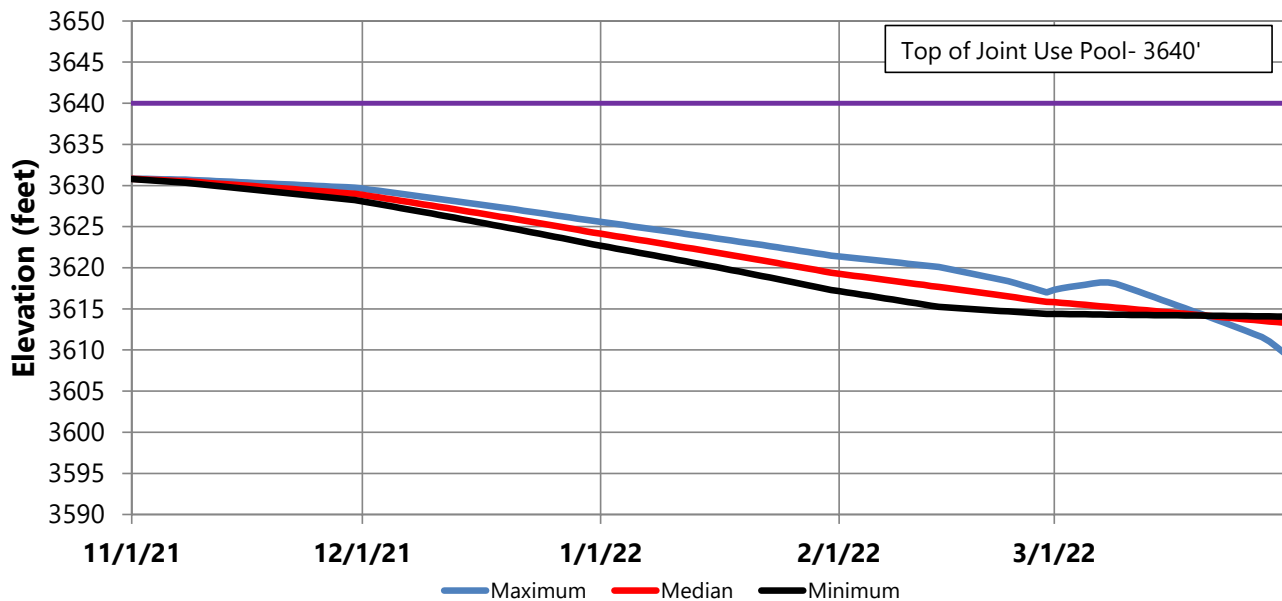
Release Outlook by Outlet

All releases are currently going through the powerplant and are expected to go through the powerplant under median and minimum inflow conditions. Under maximum conditions, a bypass release is expected during March.

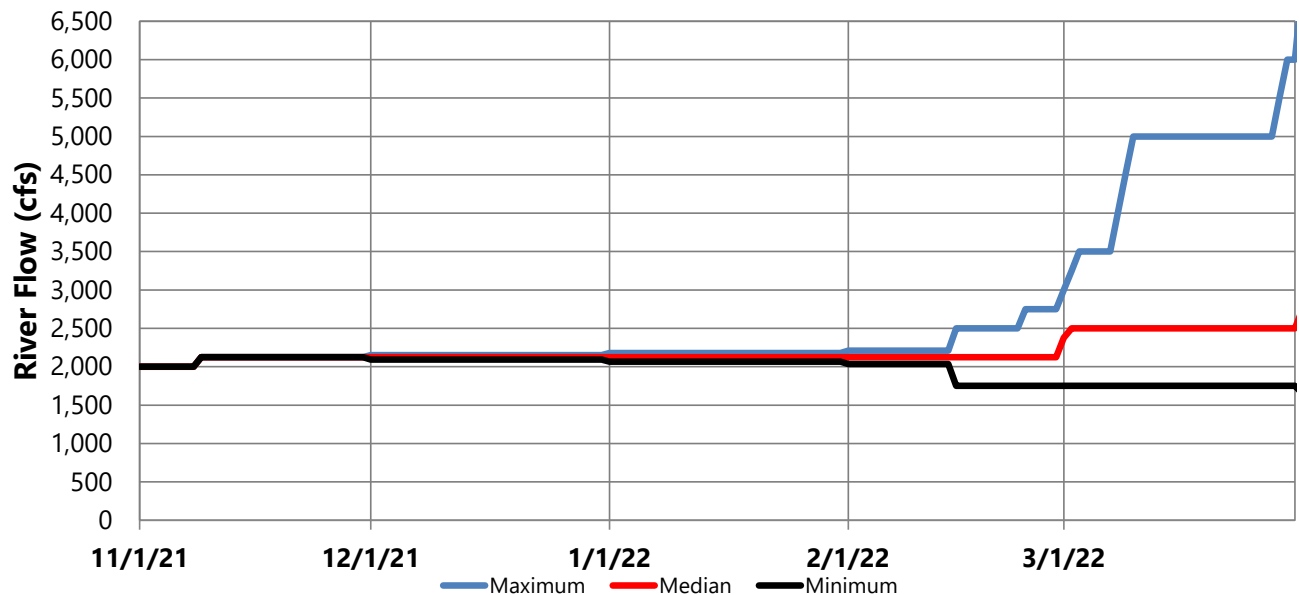
OPERATIONS OUTLOOK (November 1, 2021 through March 31, 2022)

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



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Monthly Operating Plans, Current Conditions, Snowpack and Other Water Management Information
https://www.usbr.gov/en/lakes/reservoirs/warents/main_menu.html