

Yellowtail Dam Water Supply and Projected Operations



— BUREAU OF —
RECLAMATION

November 2020



Bighorn River Basin Map Source: DEMIS Mapserver

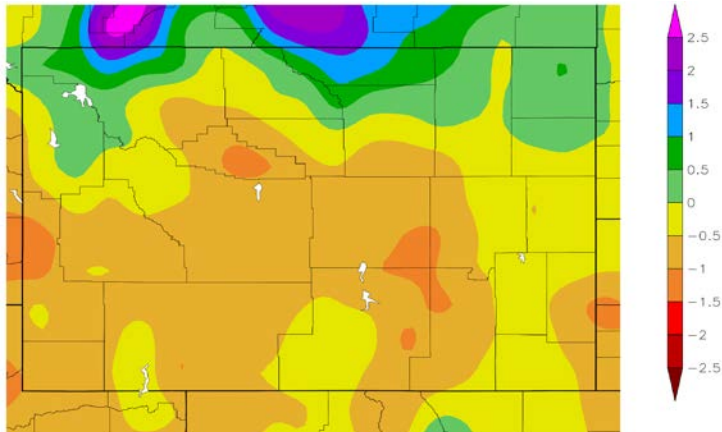
November Operating Range			
Forecast	Minimum	Median	Maximum
Monthly Average Inflow (cfs)	1,545	1,660	1,775
Monthly Average River Release (cfs)	2,085	2,085	2,085
End of November Elevation (feet)	3630.8	3631.5	3632.1
November 2020 Inflow Forecast (kaf)			
November Volume			99
Percent of Average			79
Water Year	Historic Inflow	Rank	
2020	173	12	
2019	154	20	
2018	230	3	
2017	140	28	
30 Year Average	125		

Climate Departure from Normal

October 1 through October 31, 2020

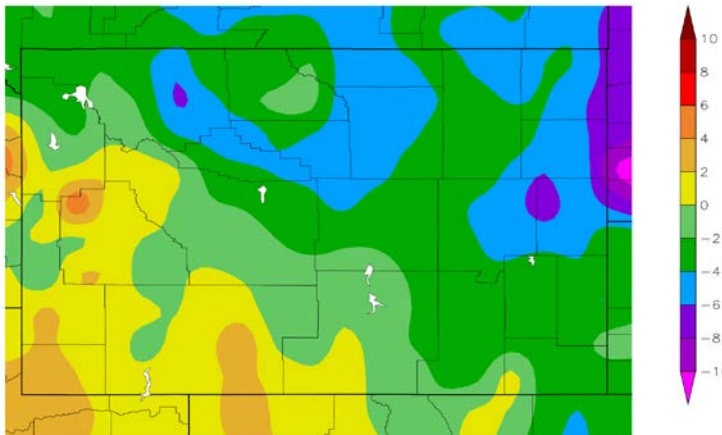
Precipitation

Departure from Normal (inches)



Temperature

Departure from Normal (°F)



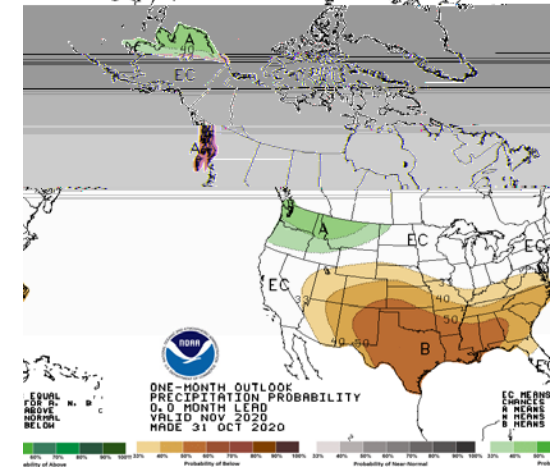
CLIMATE SUMMARY

The climate in the Bighorn Basin above Yellowtail Dam was drier and cooler than average during October.

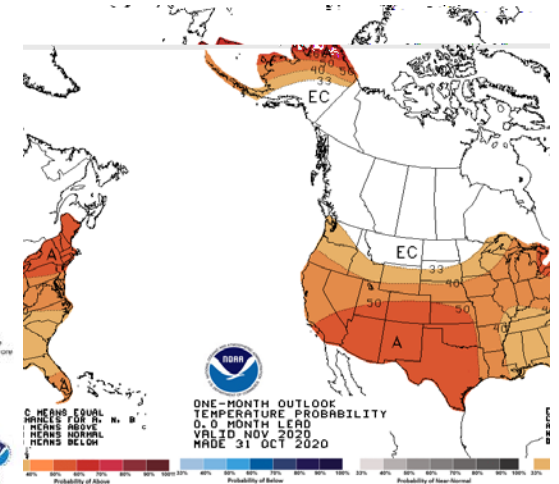
The November climate outlook shows there is an equal chance precipitation will be either average, above average, or below average. There is a 33-40 percent chance temperatures will be above average.

November Climate Outlook

Precipitation

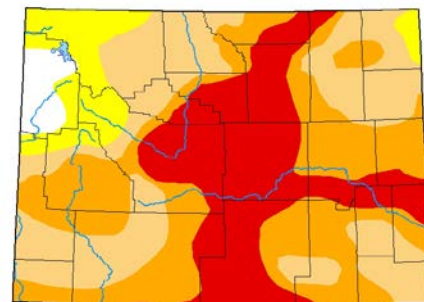


Temperature



Wyoming Drought Monitor Map

October 27, 2020



- Intensity:**
- None
 - D0 Abnormally Dry
 - D1 Moderate Drought
 - D2 Severe Drought
 - D3 Extreme 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 <http://droughtmonitor.unl.edu/About.aspx>

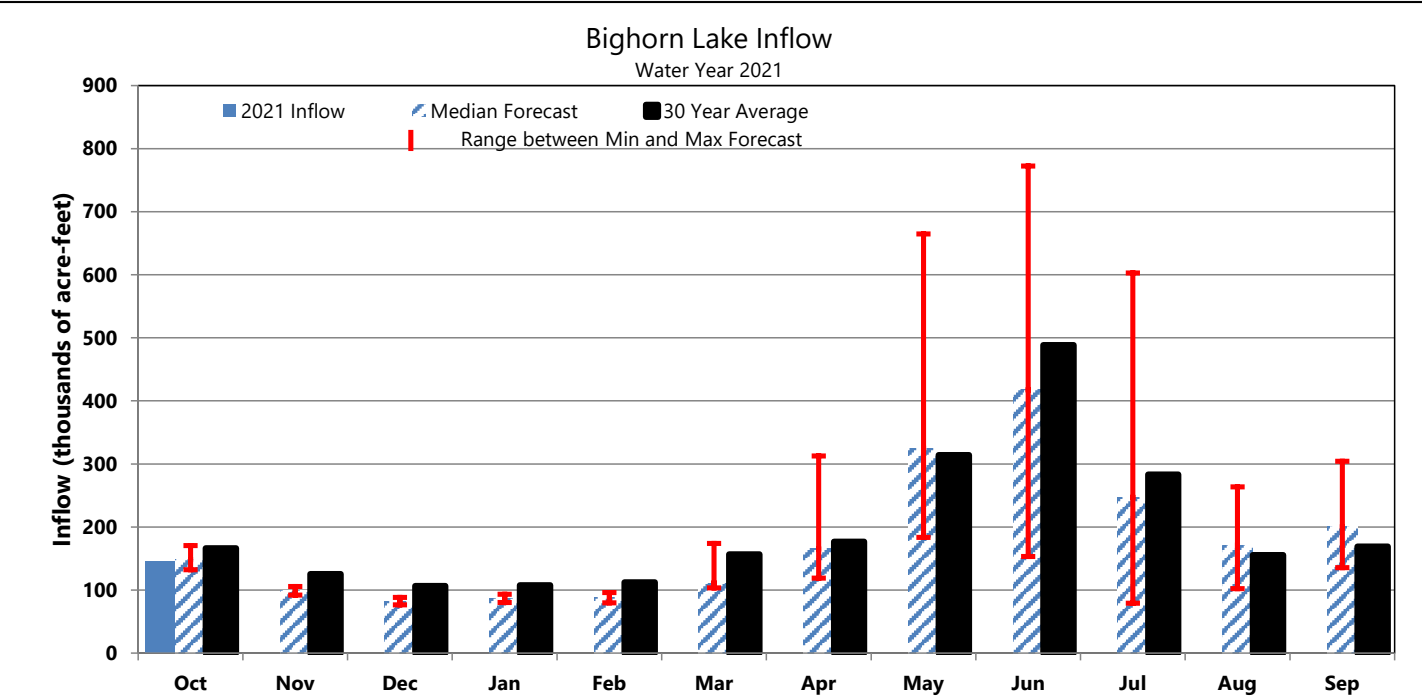
Author:
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NOAA/NWS/NCEP/CPC

USDA
droughtmonitor.unl.edu

FORECAST SUMMARY

SNOTEL data, streamflow data and planned releases from Boysen and Buffalo Bill Reservoirs are used to compute an inflow forecast for Bighorn Lake.

October Forecast Review				
	Median Forecast (kaf)	Actual (kaf)	Difference (kaf)	Actual (% of Avg)
October Inflow	148.3	144.8	(3.5)	87

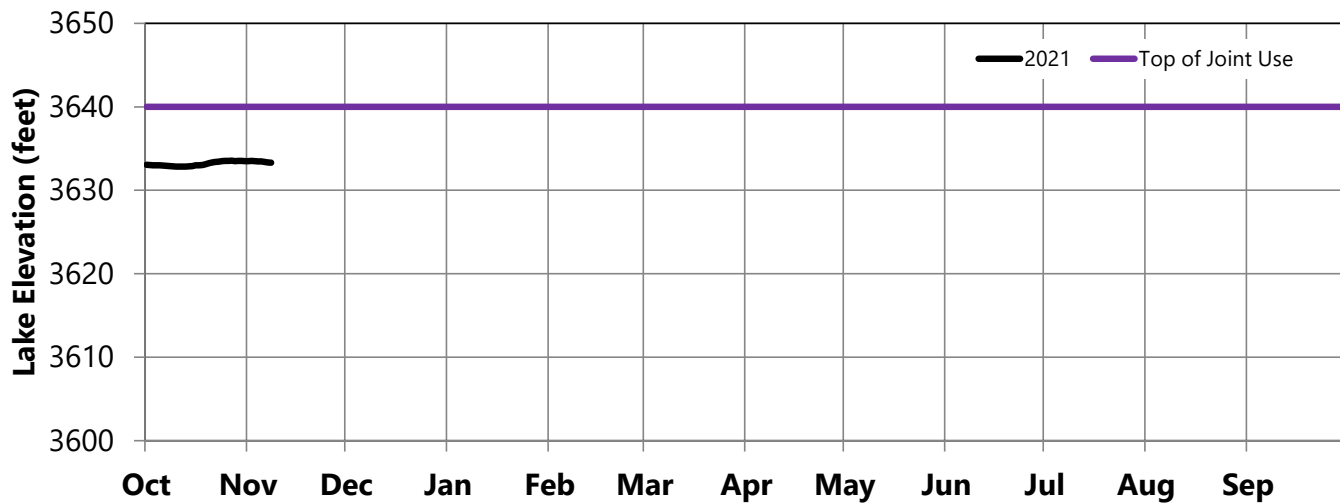


OPERATIONS REVIEW (October 1, 2020 through October 31, 2020)

River releases were decreased to 2,100 cfs during October based on a reduction in forecasted inflows and the March 31, 2021 elevation target of 3617 feet. The elevation of Bighorn Lake increased by 0.45 feet October. A new table that relates reservoir elevation to storage was implemented on October 1, 2020 based on the results from a 2017 sedimentation survey of Bighorn Lake.

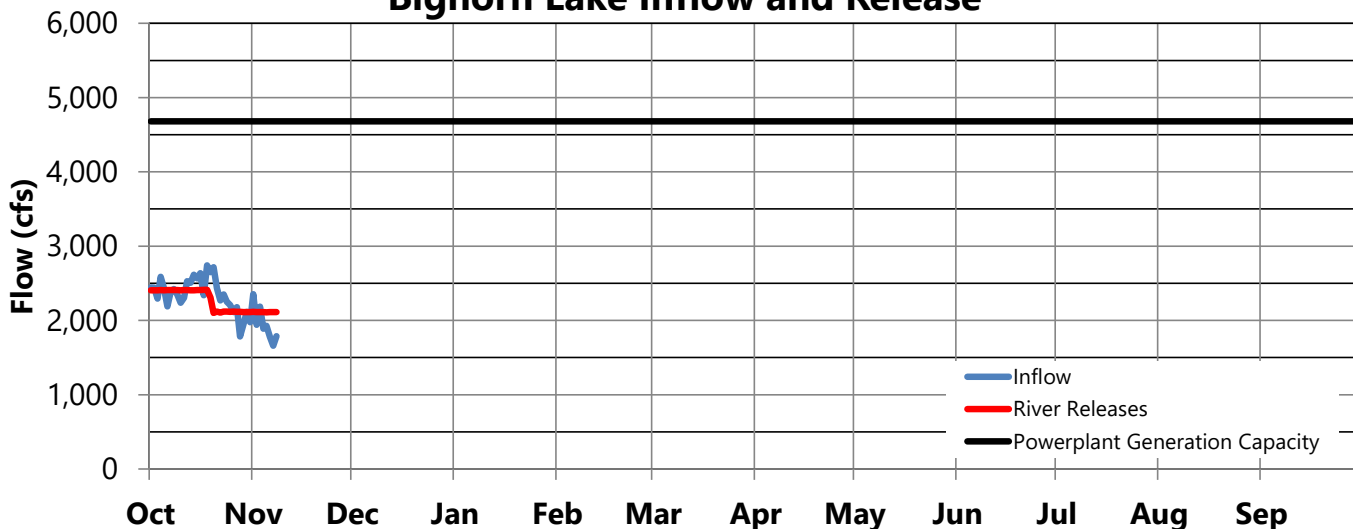
November 1 Storage Conditions				
	Elevation feet	Storage acre-feet	Percent of Average	Percent Full
Bighorn Lake	3633.5	931,670	105	91
Buffalo Bill	5364.1	426,728	99	66
Boysen	4714.7	560,479	97	76

Bighorn Lake Operations Water Year 2020



	Average October Release		Average October Inflow		
	Monthly Avg cfs	Percent of Average	Monthly Avg cfs	Percent of Average	
Bighorn River	2,290	86	Bighorn Lake	2,355	87
Buffalo Bill Total Release	915	133	Buffalo Bill	535	114
Boysen Release	705	81	Boysen	530	58

Bighorn Lake Inflow and Release



OPERATIONS OUTLOOK (November 1, 2020 through March 31, 2021)

River releases are decreasing to 2,080 cfs during November. In accordance with the operating criteria, releases from Yellowtail Dam are set during the early part of November based on forecasted releases from Boysen and Buffalo Dams, forecasted tributary gains, and the March 31 storage target of 3617 feet. As actual inflows vary from the median inflow forecast, releases to the Bighorn River will be adjusted. Releases during March are based on the April through July inflow forecast and the April 30 storage target.

Median Inflow Conditions

	Nov	Dec	Jan	Feb	Mar
Boysen Release (cfs)	600	600	600	600	600
Buffalo Bill Release (cfs)	205	205	205	205	205
Tributary Gain (cfs)	855	535	607	776	1,000
Monthly Inflow (cfs)	1,660	1,340	1,412	1,581	1,805
Monthly Inflow (kaf)	98.8	82.4	86.8	87.8	111.0
Monthly Release (kaf)	124.0	127.7	127.7	115.4	151.6
Afterbay Release (cfs)	2,085	2,077	2,077	2,077	2,465
River Release (cfs)	2,085	2,077	2,077	2,077	2,465
End-of-Month Content (kaf)	910.6	869.6	832.9	809.3	773.0
End-of-Month Elevation (feet)	3631.5	3627.0	3622.3	3618.9	3613.1

Minimum Inflow Conditions

	Nov	Dec	Jan	Feb	Mar
Boysen Release (cfs)	600	600	600	600	600
Buffalo Bill Release (cfs)	205	205	205	205	205
Tributary Gain (cfs)	741	439	499	630	877
Monthly Inflow (cfs)	1,546	1,244	1,304	1,435	1,682
Monthly Inflow (kaf)	92.0	76.5	80.2	79.7	103.4
Monthly Release (kaf)	124.1	126.0	124.2	108.3	110.7
Afterbay Release (cfs)	2,086	2,050	2,020	1,950	1,800
River Release (cfs)	2,086	2,050	2,020	1,950	1,800
End-of-Month Content (kaf)	903.7	858.5	818.8	794.1	791.1
End-of-Month Elevation (feet)	3630.8	3625.6	3620.3	3616.6	3616.1

Maximum Inflow Conditions

	Nov	Dec	Jan	Feb	Mar
Boysen Release (cfs)	600	600	600	600	1,499
Buffalo Bill Release (cfs)	205	205	205	205	1,499
Tributary Gain (cfs)	970	631	712	924	1,124
Monthly Inflow (cfs)	1,775	1,436	1,517	1,729	2,828
Monthly Inflow (kaf)	105.6	88.3	93.3	96.0	173.9
Monthly Release (kaf)	124.1	129.7	131.6	138.8	227.5
Afterbay Release (cfs)	2,085	2,110	2,140	2,500	3,700
River Release (cfs)	2,085	2,110	2,140	2,500	3,700
End-of-Month Content (kaf)	917.4	880.2	846.3	807.3	758.0
End-of-Month Elevation (feet)	3632.1	3628.2	3624.1	3618.6	3610.5

OPERATIONS OUTLOOK (November 1, 2020 through March 31, 2021)

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. Yellowtail Powerplant is limited to 3 units due to on-going refurbishment project.

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 Generation Limit: 4,615 cfs

Yellowtail Powerplant Release (cfs)

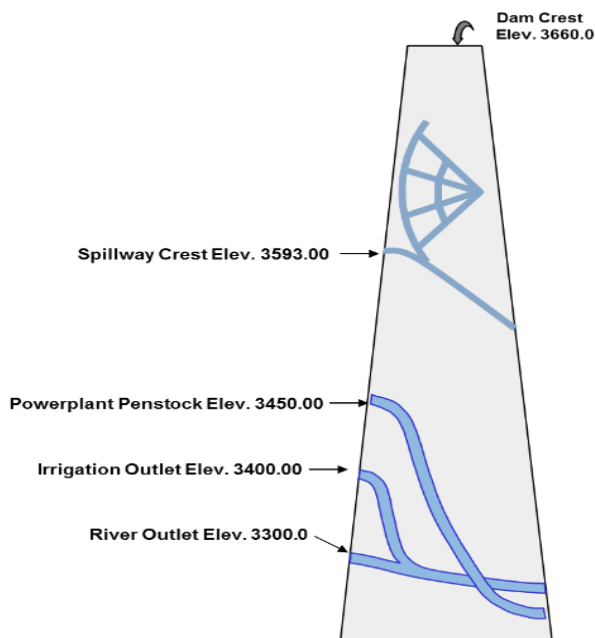
	Nov	Dec	Jan	Feb	Mar
Median Forecast	2,015	2,007	2,007	2,007	2,395
Minimum Forecast	2,016	1,980	1,950	1,880	1,730
Maximum Forecast	2,015	2,040	2,070	2,430	3,630

Yellowtail Powerplant Generation (gwh)

	Nov	Dec	Jan	Feb	Mar
Median Forecast	47.7	48.8	48.3	43.2	57.2
Minimum Forecast	47.7	48.1	46.8	40.4	41.1
Maximum Forecast	47.7	49.6	49.9	53.2	85.5

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	0



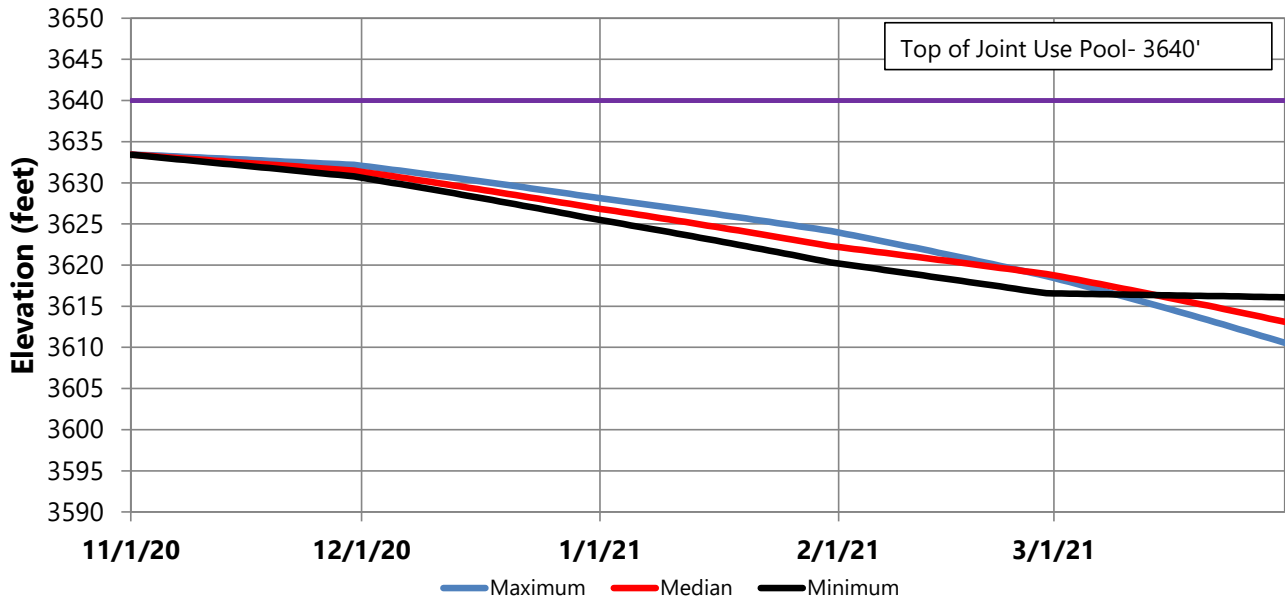
Release Outlook by Outlet

All releases are currently going through the powerplant and are expected to go through the powerplant through the end of March.

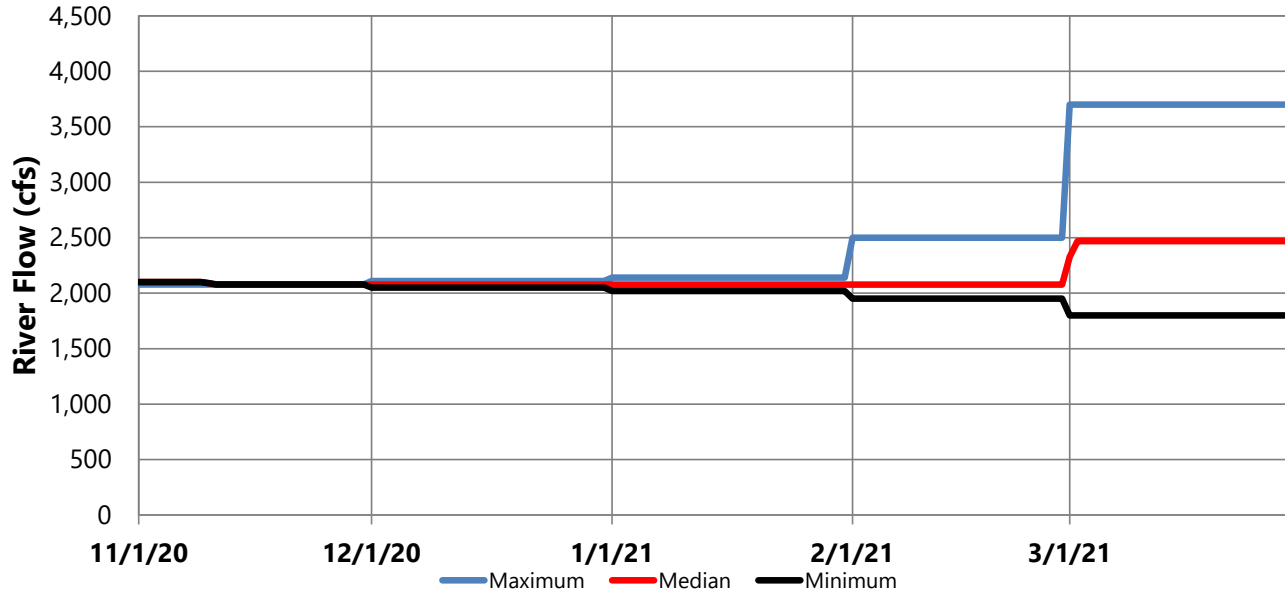
OPERATIONS OUTLOOK (November 1, 2020 through March 31, 2021)

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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