

# Yellowtail Dam Water Supply and Projected Operations



— BUREAU OF —  
RECLAMATION

August 2021



Bighorn River Basin Map Source: DEMIS Mapserver

August Operating Range			
Forecast	Minimum	Median	Maximum
Monthly Average Inflow (cfs)	1,300	1,485	2,120
Monthly Average River Release (cfs)	1,710	1,750	1,750
End of August Elevation (feet)	3616.2	3617.6	3623.4
August 2021 Inflow Forecast (kaf)			
August Volume			91
Percent of Average			59
Water Year	Historic Inflow	Rank	
2020	133	34	
2019	207	14	
2018	171	23	
2017	216	12	
30 Year Average	155		

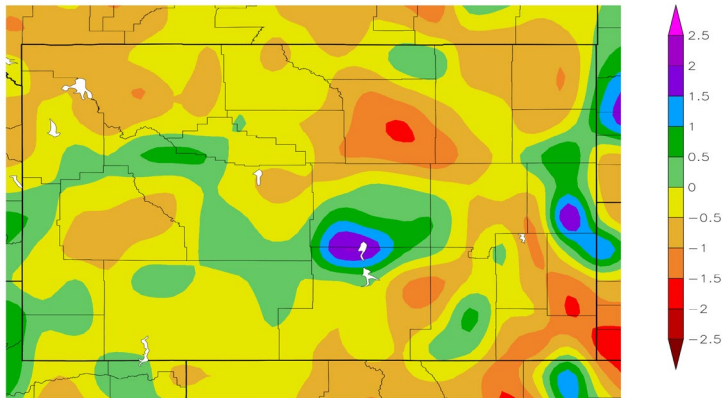


## Climate Departure from Normal

July 1 through July 31, 2021

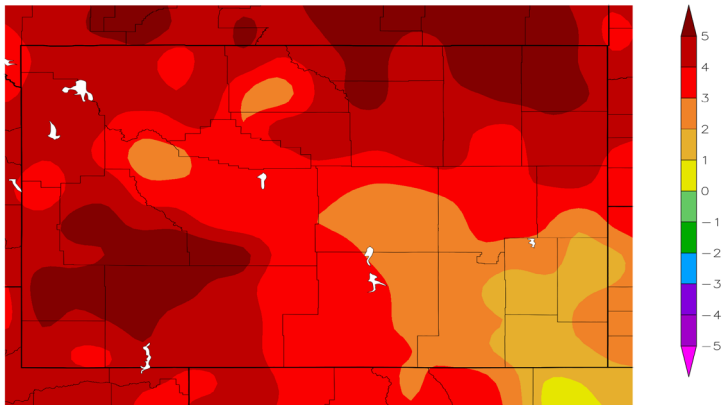
### Precipitation

Departure from Normal (inches)



### Temperature

Departure from Normal (°F)



HPRCC using provisional data from NOAA Regional Climate Centers

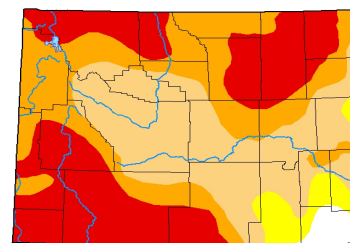
## CLIMATE SUMMARY

Precipitation in the Bighorn Basin above Yellowtail Dam was mostly drier than average during July. The entire Basin was warmer than average.

The climate outlook shows there is an equal chance precipitation will be above, below, or average during August. There is a 50 to 60 percent chance temperatures will be above average.

## Wyoming Drought Monitor Map

July 27, 2021



#### Intensity:

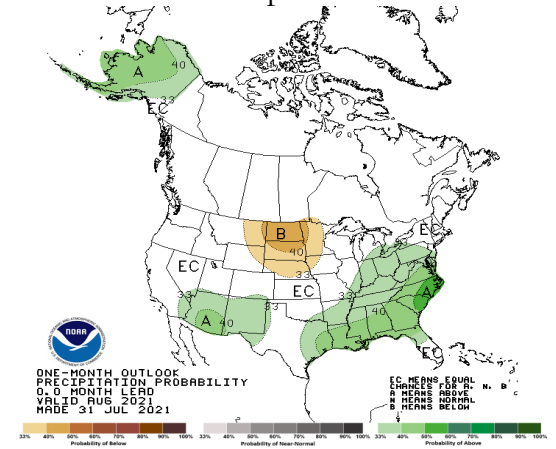
- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

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

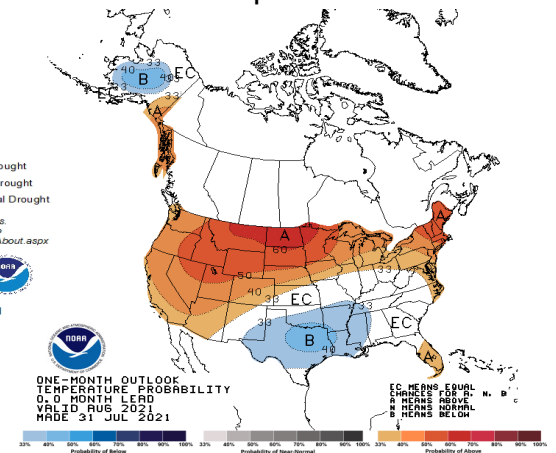


## August Climate Outlook

### Precipitation

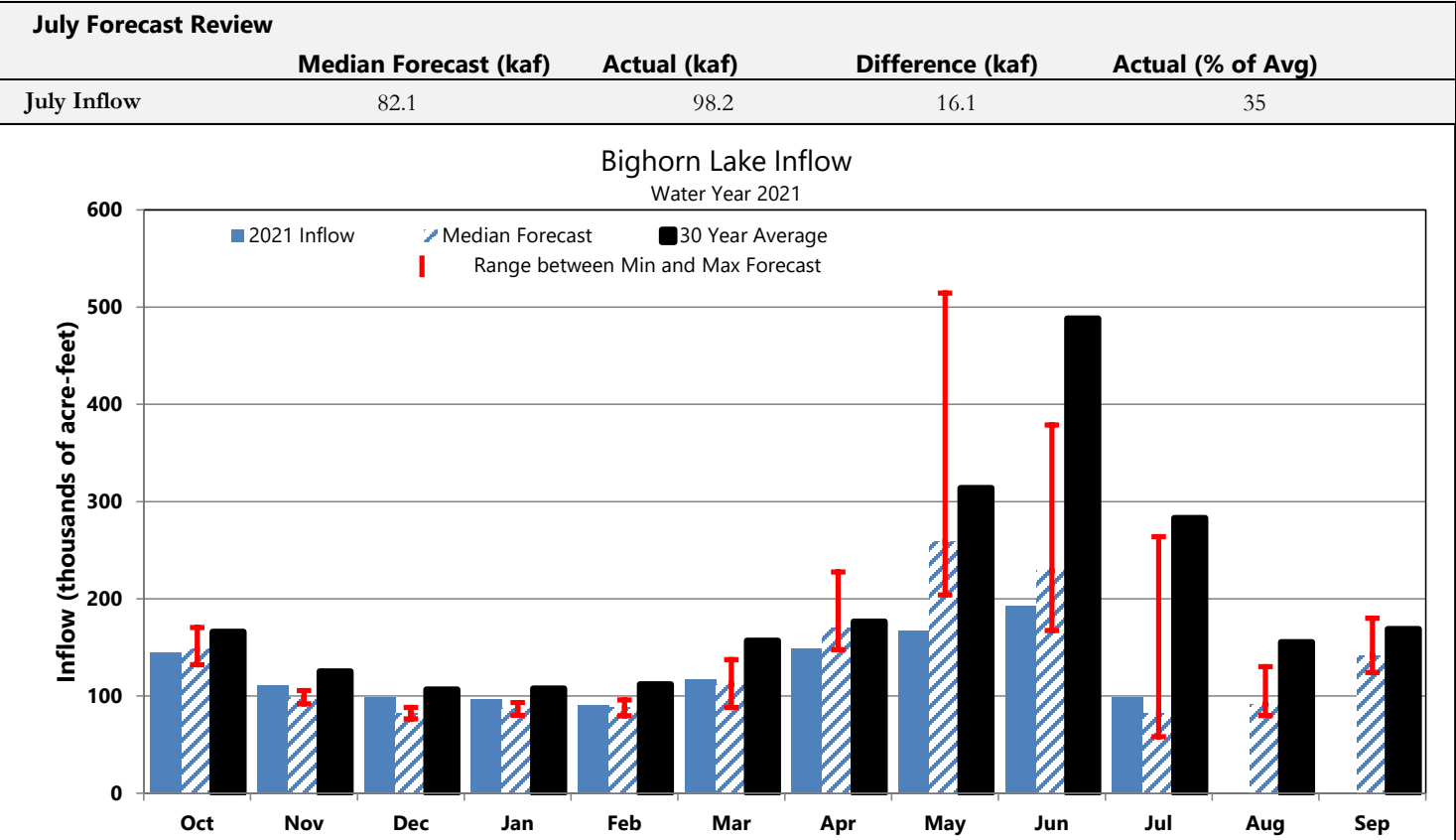


### Temperature



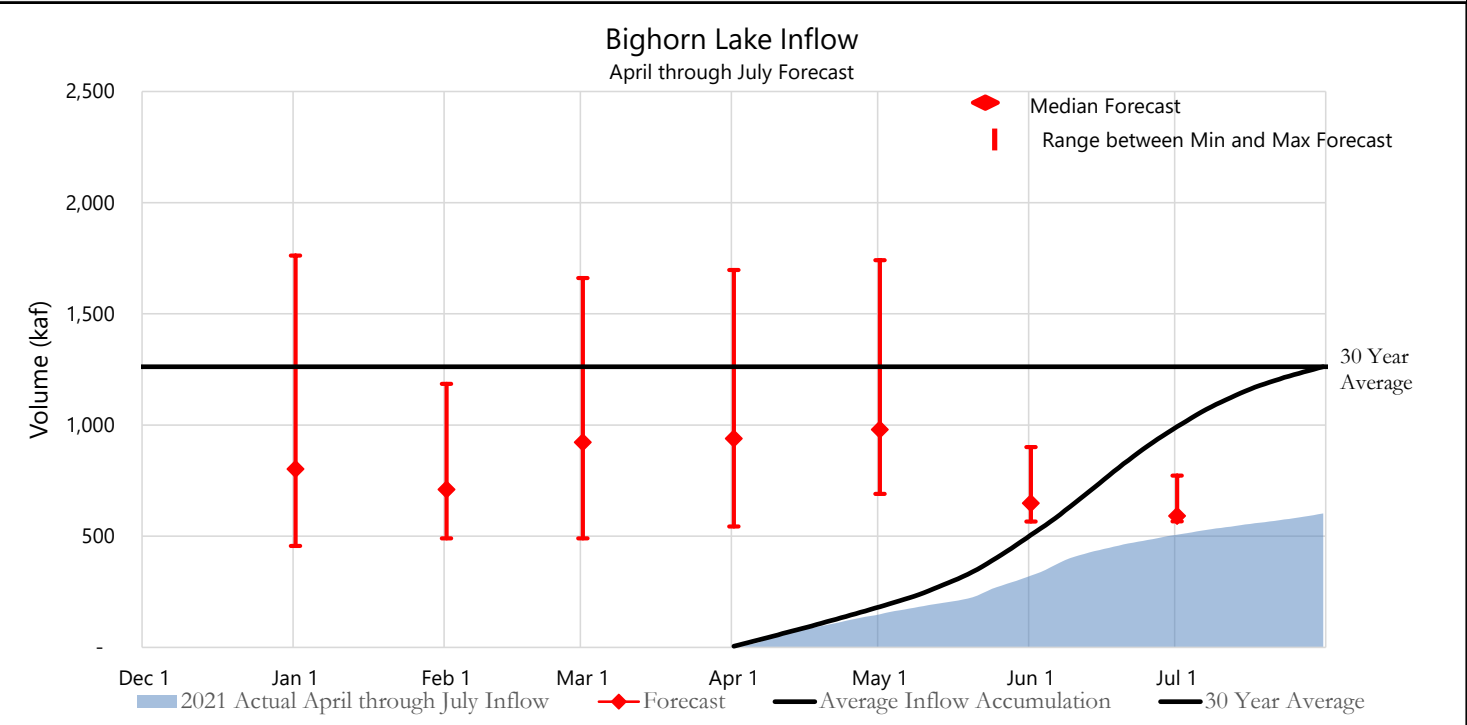
# FORECAST SUMMARY

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



April through July Inflow Forecast Review

April through July Inflow	607 kaf	48 percent of 30 year average	30 Yr Average	1,262 kaf
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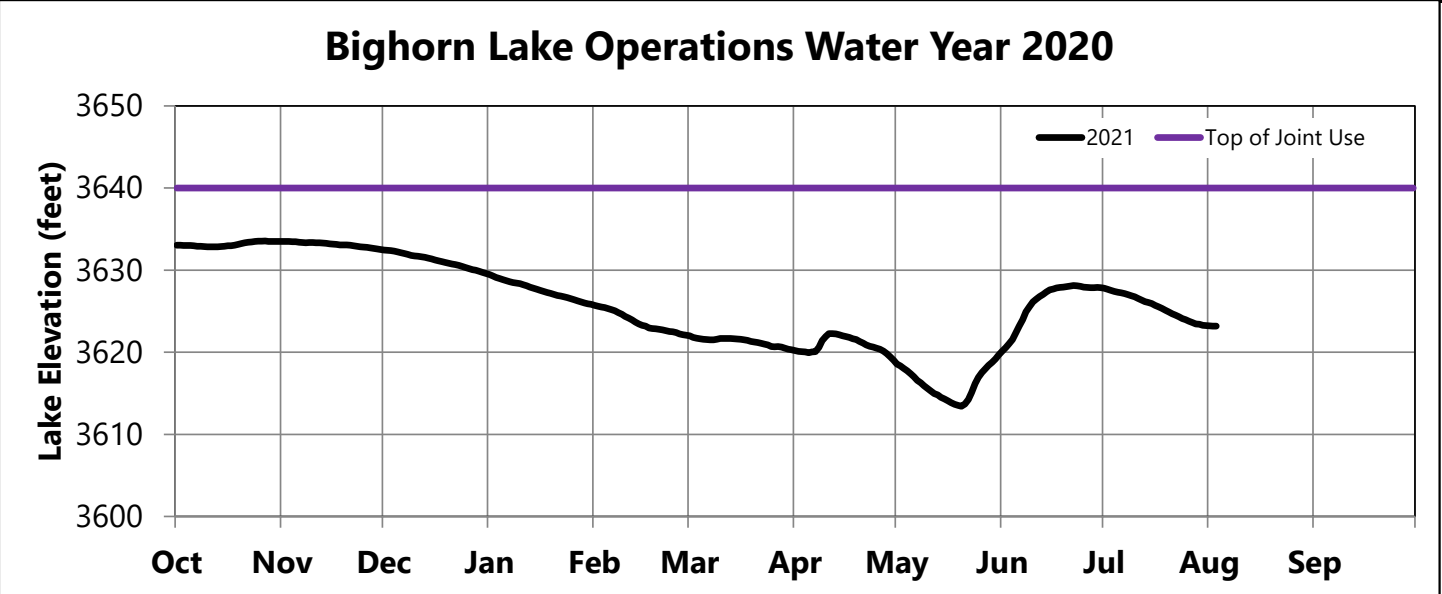




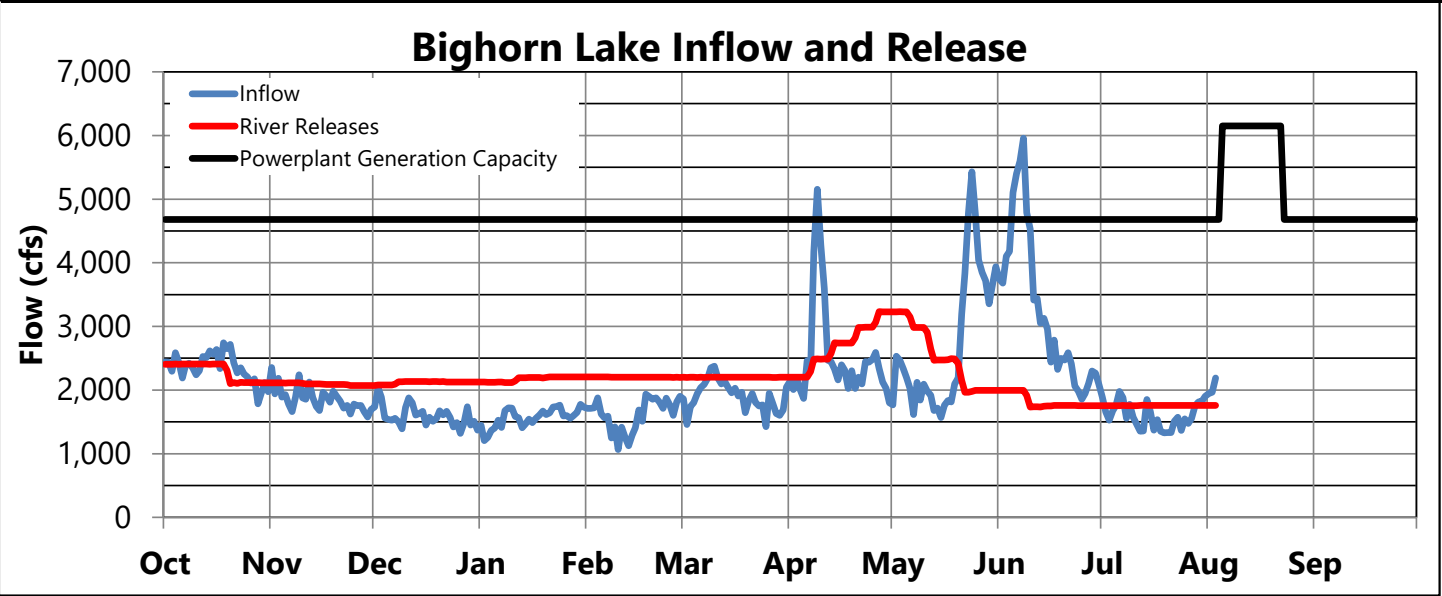
# OPERATIONS REVIEW (October 1, 2020 through July 31, 2021)

River releases were maintained at 1,750 cfs during July based on inflows and the March 31, 2022 carover storage target of 3617 feet. The storage in Bighorn Lake decreased 4.6 feet during July.

August 1 Storage Conditions				
	Elevation feet	Storage acre-feet	Percent of Average	Percent Full
Bighorn Lake	3623.3	839,926	92	83
Buffalo Bill	5381.8	554,788	96	86
Boysen	4722.4	691,545	113	93



Average July Inflow			Average July Release		
	Monthly Avg cfs	Percent of Average		Monthly Avg cfs	Percent of Average
Bighorn Lake	1,595	35	Bighorn River	1,755	39
Buffalo Bill	1,030	36	Buffalo Bill Total Release	2,015	70
Boysen	645	29	Boysen Release	1,195	47



# OPERATIONS OUTLOOK (August 1, 2021 through March 31, 2022)

Storage in Bighorn Lake is expected to decrease until September under median and minimum inflow conditions. Releases will be adjusted as needed based on actual inflows and the March 31, 2022, storage target of 3617 feet. Releases during August may be between 1,650 and 1,750 cfs based on the minimum, median, and maximum inflow forecasts.

## Median Inflow Conditions

	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Boysen Release (cfs)	1,150	1,101	600	600	600	600	600	1,000
Buffalo Bill Release (cfs)	1,687	1,499	696	205	205	205	205	205
Tributary Gain (cfs)	-1,350	-222	729	800	490	555	706	942
Monthly Inflow (cfs)	1,487	2,378	2,025	1,605	1,295	1,360	1,511	2,147
Monthly Inflow (kaf)	91.4	141.5	124.5	95.5	79.6	83.6	83.9	132.0
Monthly Release (kaf)	135.3	121.7	110.7	107.5	111.1	111.1	100.4	138.3
Afterbay Release (cfs)	2,200	2,045	1,800	1,807	1,807	1,807	1,807	2,250
River Release (cfs)	1,750	1,750	1,750	1,807	1,807	1,807	1,807	2,250
End-of-Month Content (kaf)	800.4	824.4	842.5	834.6	807.4	784.2	771.7	769.6
End-of-Month Elevation (feet)	3617.6	3621.1	3623.6	3622.5	3618.6	3615.0	3612.9	3612.5

## Minimum Inflow Conditions

	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Boysen Release (cfs)	1,150	1,000	600	600	600	600	600	600
Buffalo Bill Release (cfs)	1,687	1,499	696	205	205	205	205	205
Tributary Gain (cfs)	-1,537	-412	433	783	475	538	684	922
Monthly Inflow (cfs)	1,300	2,087	1,729	1,588	1,280	1,343	1,489	1,727
Monthly Inflow (kaf)	79.9	124.2	106.3	94.5	78.7	82.6	82.7	106.2
Monthly Release (kaf)	132.7	115.7	104.5	95.2	98.3	98.3	88.8	98.4
Afterbay Release (cfs)	2,158	1,945	1,700	1,599	1,599	1,599	1,599	1,600
River Release (cfs)	1,708	1,650	1,650	1,599	1,599	1,599	1,599	1,600
End-of-Month Content (kaf)	791.5	804.1	810.2	813.7	798.3	786.9	784.7	796.8
End-of-Month Elevation (feet)	3616.2	3618.1	3619.0	3619.6	3617.2	3615.4	3615.1	3617.0

## Maximum Inflow Conditions

	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Boysen Release (cfs)	1,251	1,200	1,200	1,200	1,200	1,200	1,199	1,200
Buffalo Bill Release (cfs)	1,761	1,600	696	205	205	205	205	1,195
Tributary Gain (cfs)	-895	227	1,078	834	517	585	747	976
Monthly Inflow (cfs)	2,118	3,027	2,974	2,239	1,922	1,990	2,151	3,371
Monthly Inflow (kaf)	130.2	180.1	182.9	133.2	118.2	122.4	119.5	207.3
Monthly Release (kaf)	133.7	157.1	153.7	164.1	169.6	169.6	166.6	215.2
Afterbay Release (cfs)	2,175	2,640	2,500	2,758	2,758	2,758	3,000	3,500
River Release (cfs)	1,750	2,475	2,500	2,758	2,758	2,758	3,000	3,500
End-of-Month Content (kaf)	840.7	867.9	901.3	874.6	827.5	784.7	741.4	737.8
End-of-Month Elevation (feet)	3623.4	3626.8	3630.5	3627.6	3621.6	3615.1	3607.4	3606.8

# OPERATIONS OUTLOOK (August 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. Yellowtail Powerplant will be limited to 3 units starting August 23 due to on-going refurbishment project.

## Irrigation Demands Outlook

Bighorn Canal (cfs)

	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Median Forecast	450	295	50	0	0	0	0	0
Minimum Forecast	450	295	50	0	0	0	0	0
Maximum Forecast	425	165	0	0	0	0	0	0

## Power Generation Outlook

Current Number of Units Available: 4 of 4

Approximate Yellowtail Powerplant Turbine Capacity: 8,200 cfs

Approximate Yellowtail Powerplant Scheduled Generation Limit: 6,150 cfs

Yellowtail Powerplant Release (cfs)

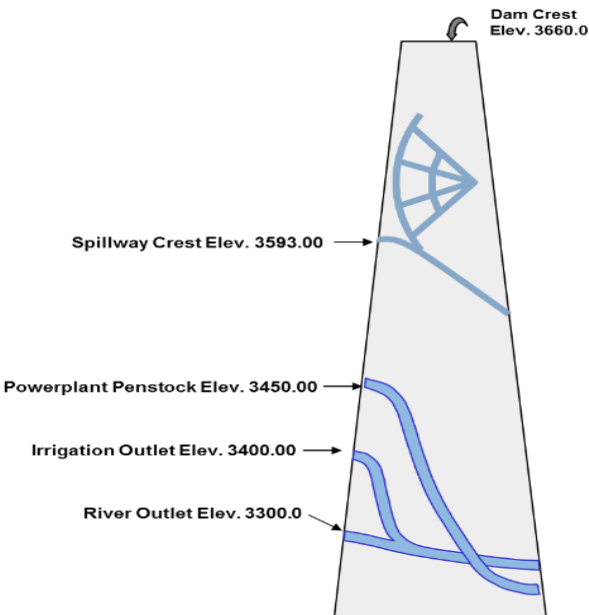
	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Median Forecast	2,130	1,975	1,730	1,737	1,737	1,737	1,737	2,180
Minimum Forecast	2,088	1,875	1,630	1,529	1,529	1,529	1,529	1,530
Maximum Forecast	2,105	2,570	2,430	2,688	2,688	2,688	2,930	3,430

Yellowtail Powerplant Generation (gwh)

	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Median Forecast	50.5	45.4	41.8	40.7	41.8	41.3	37.0	50.9
Minimum Forecast	49.5	43.0	39.1	35.8	36.9	36.6	33.0	36.6
Maximum Forecast	50.3	61.1	59.7	64.8	66.3	65.3	62.5	79.2

Yellowtail Spill (cfs)

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

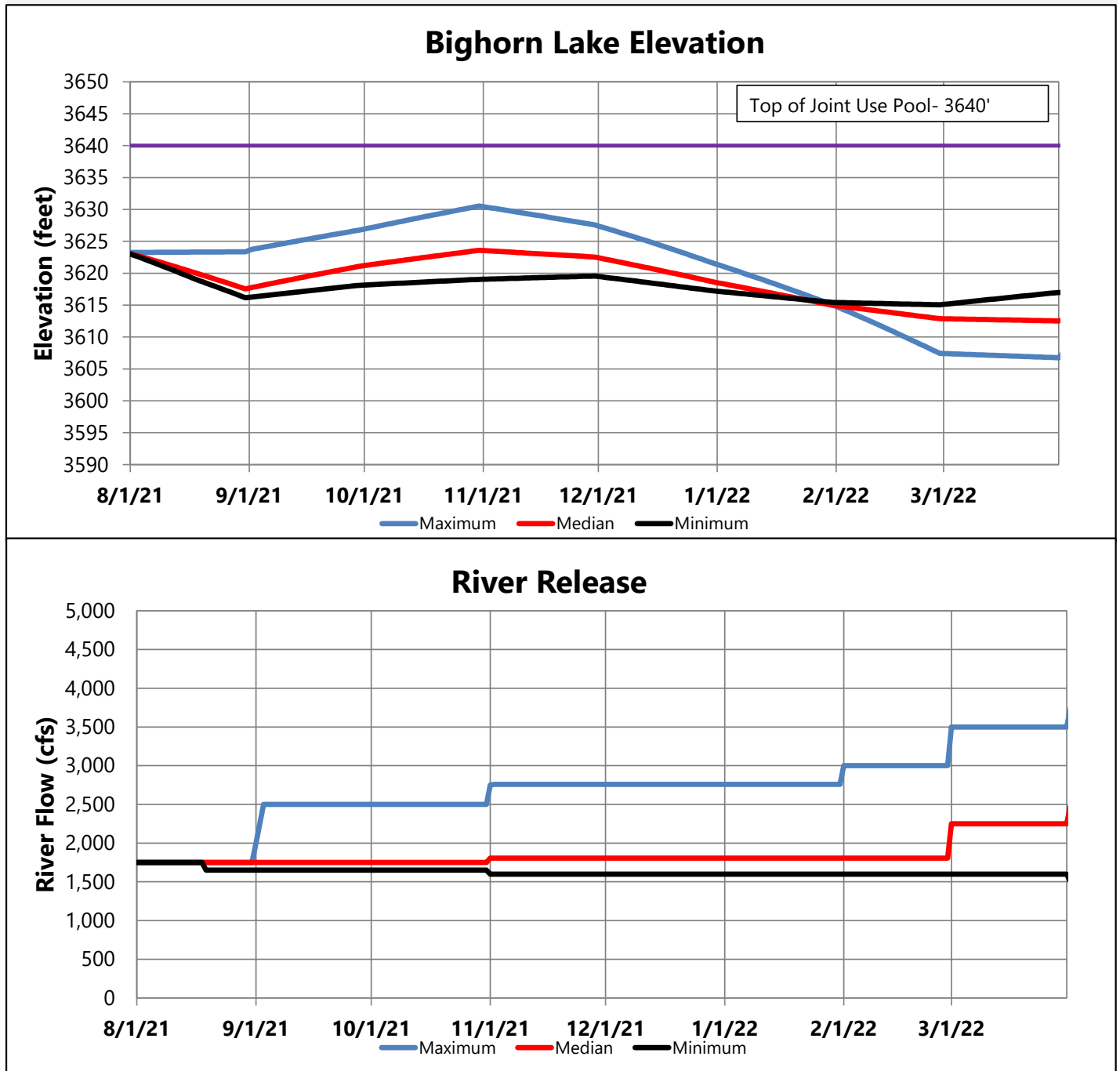


## Release Outlook by Outlet

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

# OPERATIONS OUTLOOK (August 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.



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Monthly Operating Plans, Current Conditions, Snowpack and Other Water Management Information  
[https://www.usbr.gov/gp/lakes\\_reservoirs/warepts/main\\_menu.html](https://www.usbr.gov/gp/lakes_reservoirs/warepts/main_menu.html)