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RECLAMATION

Hungry Horse Dam for Operations TMT

July 14, 2023

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Water Management Operations
Team Supervisor





About 300 miles (480 km) across

Flathead River Drainage

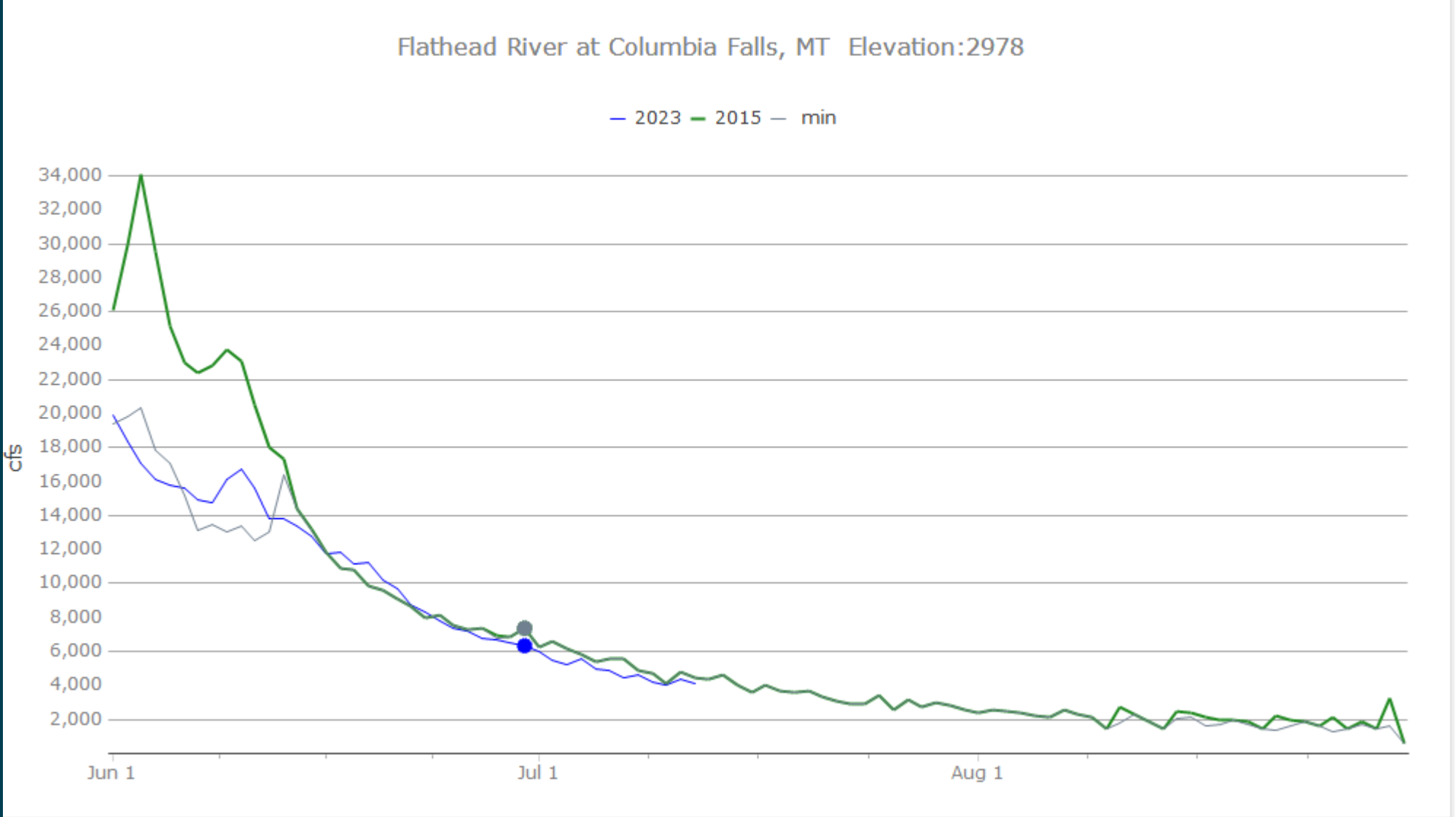
- Flathead River Above Columbia Falls
 - 4,473 square miles
- N.F. Flathead
 - 1,556 square miles
- M.F. Flathead
 - 1,125 square miles
- S.F. Flathead (Hungry Horse Dam)
 - 1668 square miles



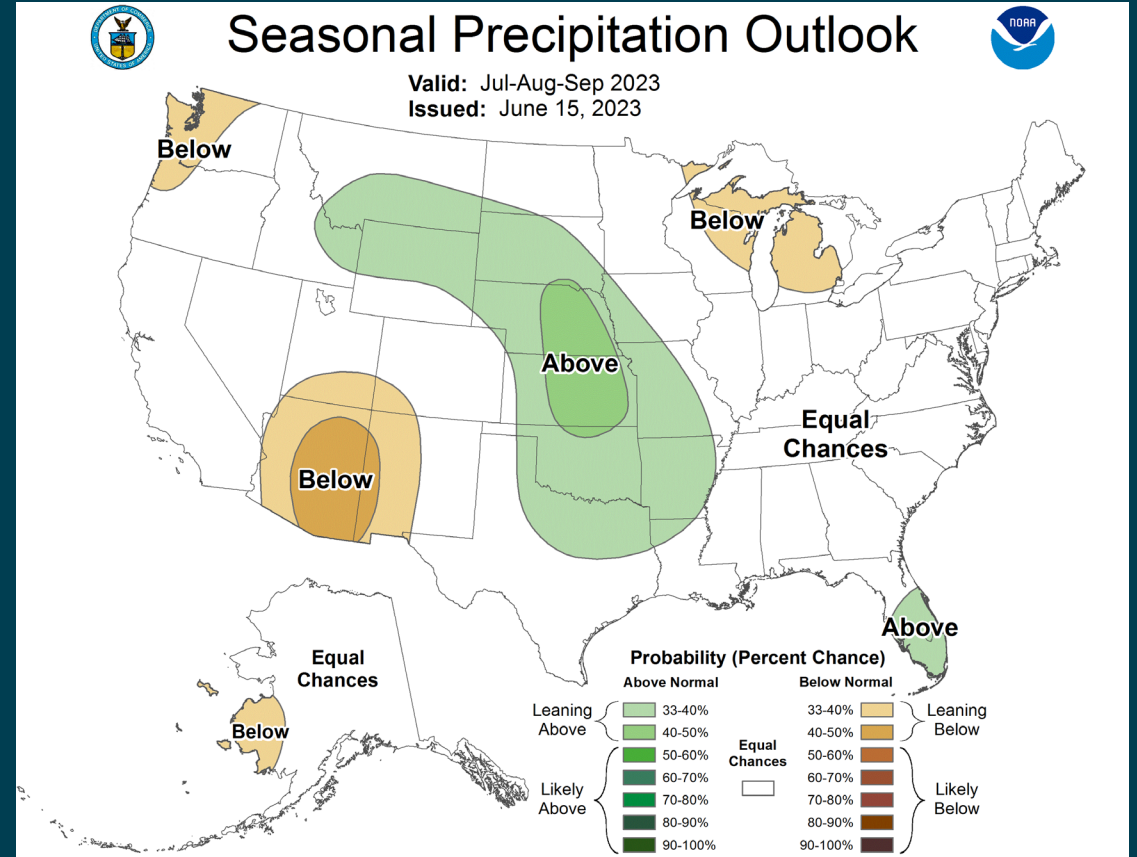
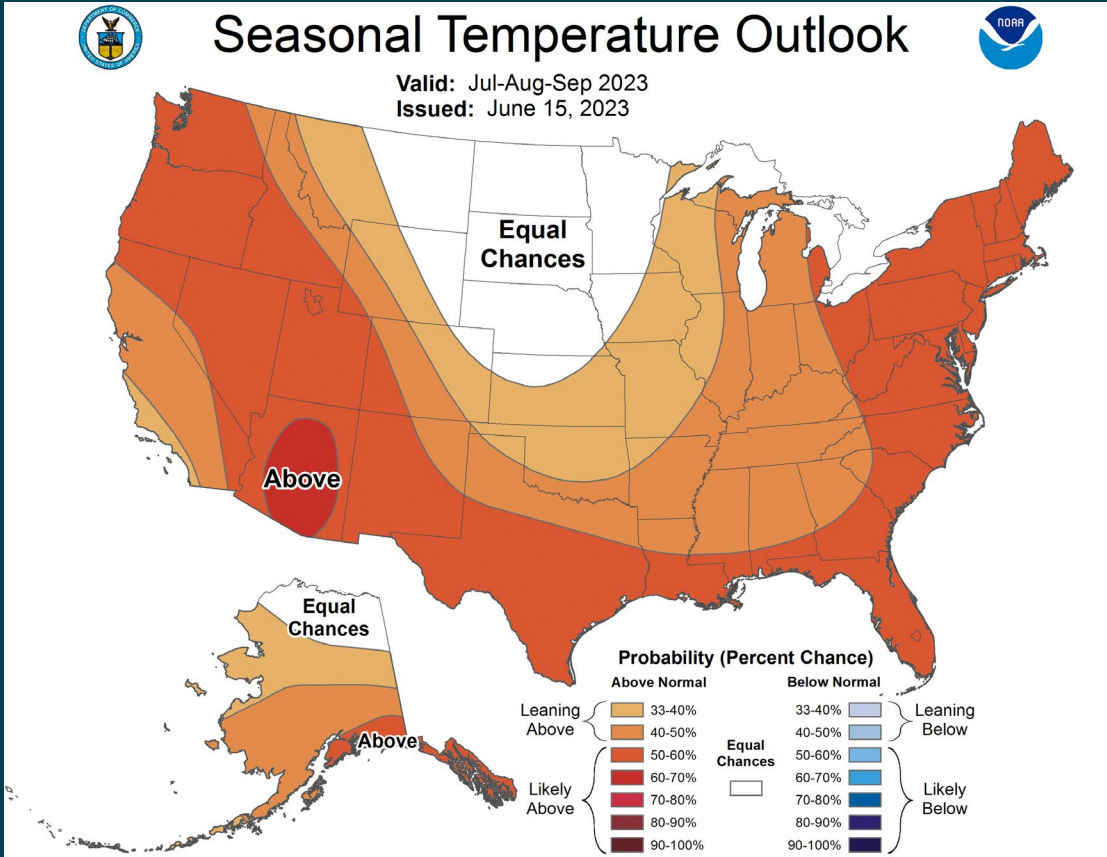
Coordinated TMT Operation June 28

- Keep Releases at 2,000 cfs out
 - Rather than cutting to target 12 ft from full pool (3960 ft) on Sep 30
 - Given dry conditions operating to Columbia Falls minimum of 3500 cfs is very likely
 - This was beneficial to the Southfork because it minimized flow fluctuations
- Reservoir impacts
 - Already likely to draft lower than Sep 30 target because of likelihood of operating to minimums
 - Expected to decrease the elevation on Sep 30 by 1 to 2 feet
 - Secondary benefit of not exacerbating the Flathead Lake elevations

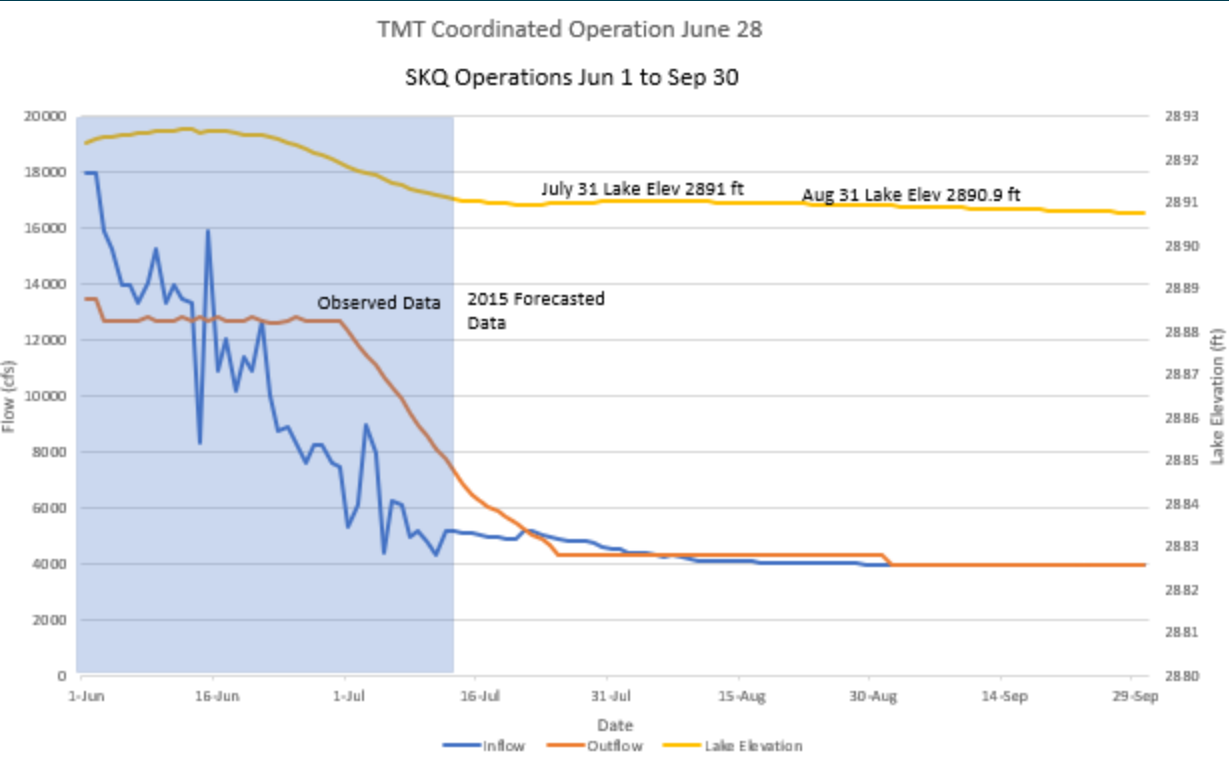
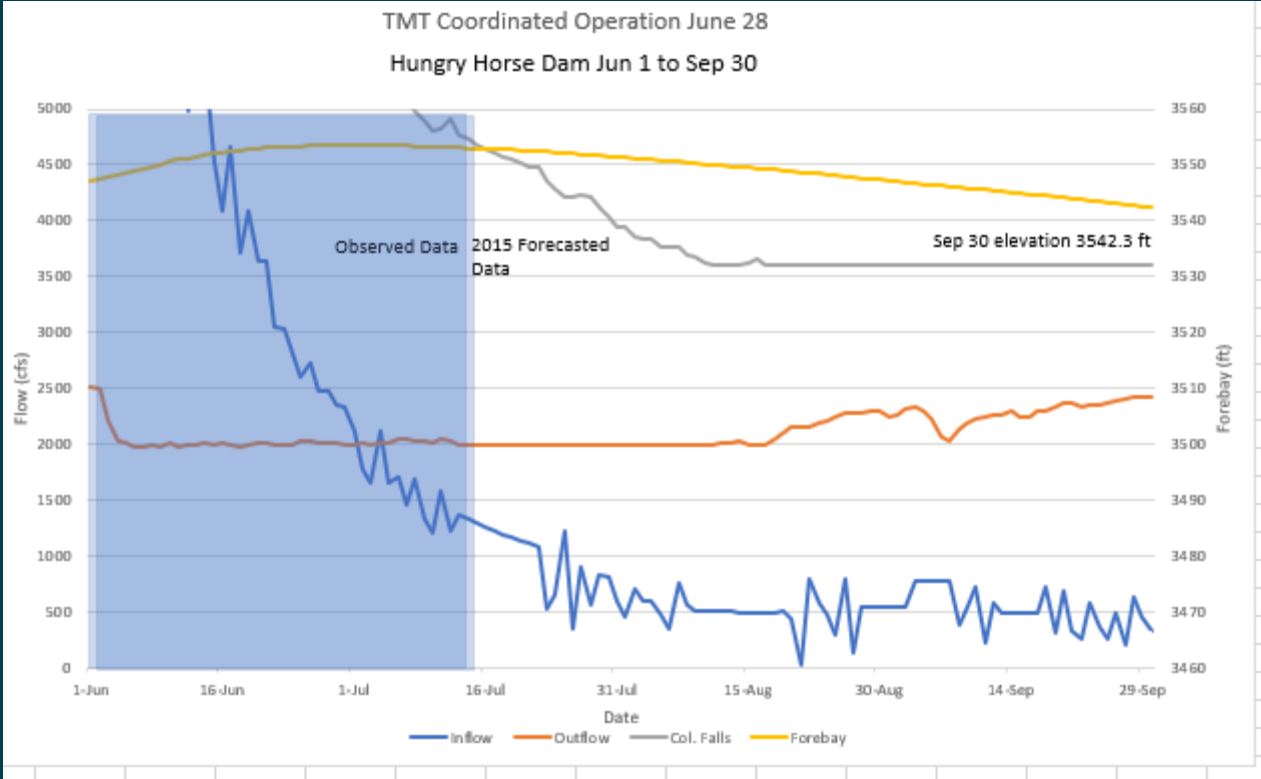
Current Hydrology Similar to 2015



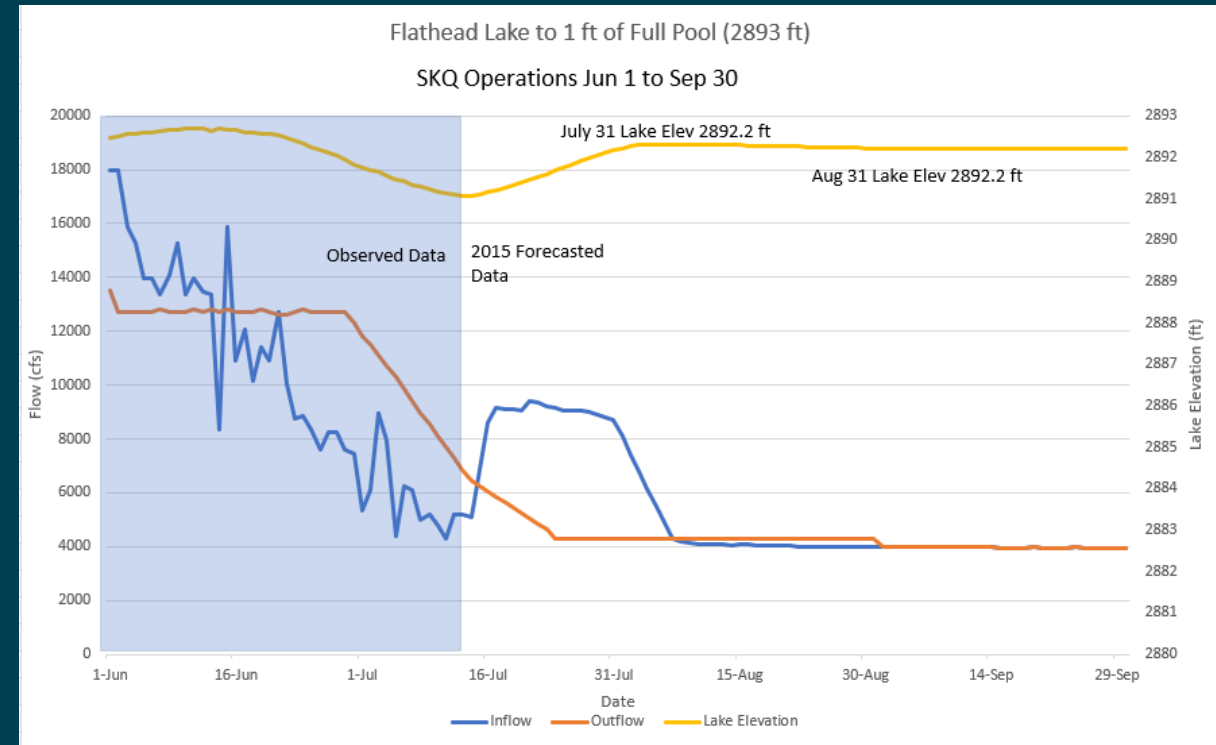
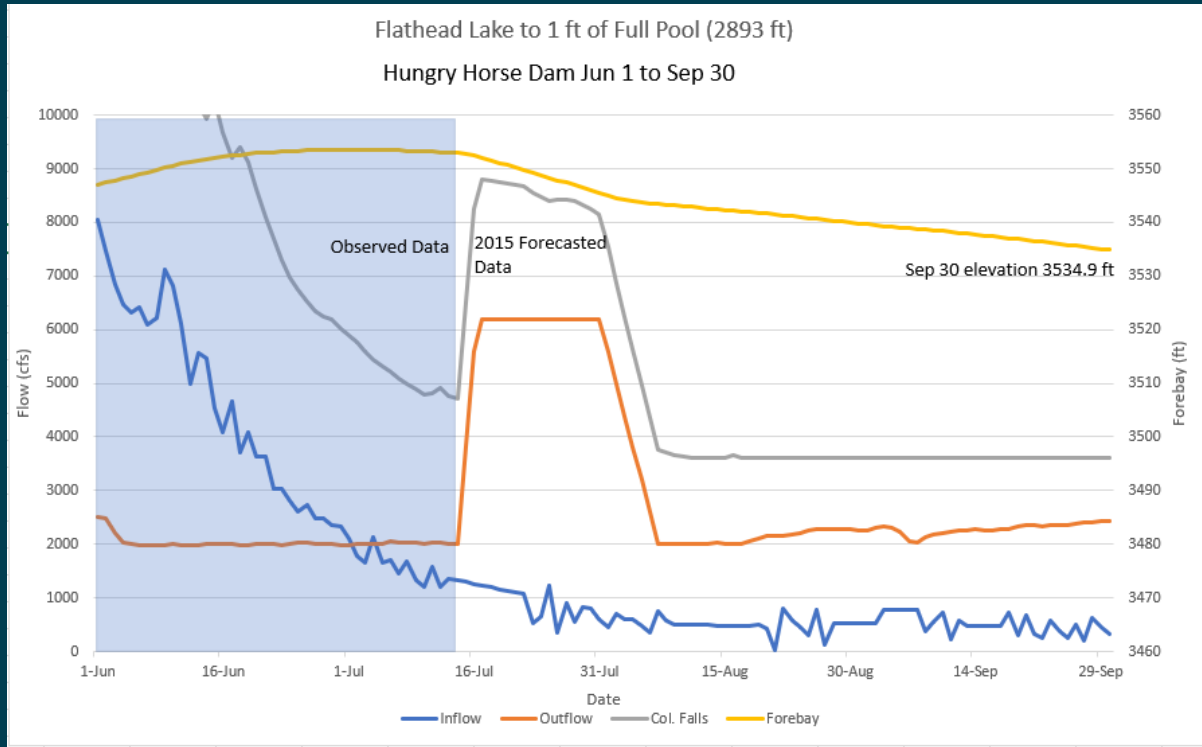
Climate Prediction Center Outlook Jul-Sep



Coordinated Operation



Flathead Lake 1 foot from Full



September Draft Targets

- Set by the may Water Supply Forecast

Table 6. Hungry Horse End of September Elevation Targets

Hungry Horse May-September inflow forecast (KAF)	Hungry Horse forebay target on Sept 30 (ft)
< 1410	3540
1410 – 1580	Interpolate between 3540-3550
> 1580	3550

Operations in September are primarily focused on benefiting ESA-listed bull trout and other resident fish species downstream of the dam. The intent is to maintain steady or gradually declining flows in the Flathead River. Hungry Horse may draft slightly above or below the end of September draft target depending on inflows and minimum flow requirements. Hungry Horse may end the month at an elevation above the end of September draft limit if inflows are higher than were forecasted in the planned operation. Hungry Horse may end the month at an elevation below the end of September draft limit due to minimum flow requirements and if inflows are lower than were forecasted in the planned operation.



Columbia Falls Minimum Flows

- Set by the March Water Supply Forecast
 - Then is set for March through December
 - Jan and Feb are set by their respective forecasts

Table 7. Minimum Flows at Hungry Horse and Columbia Falls.

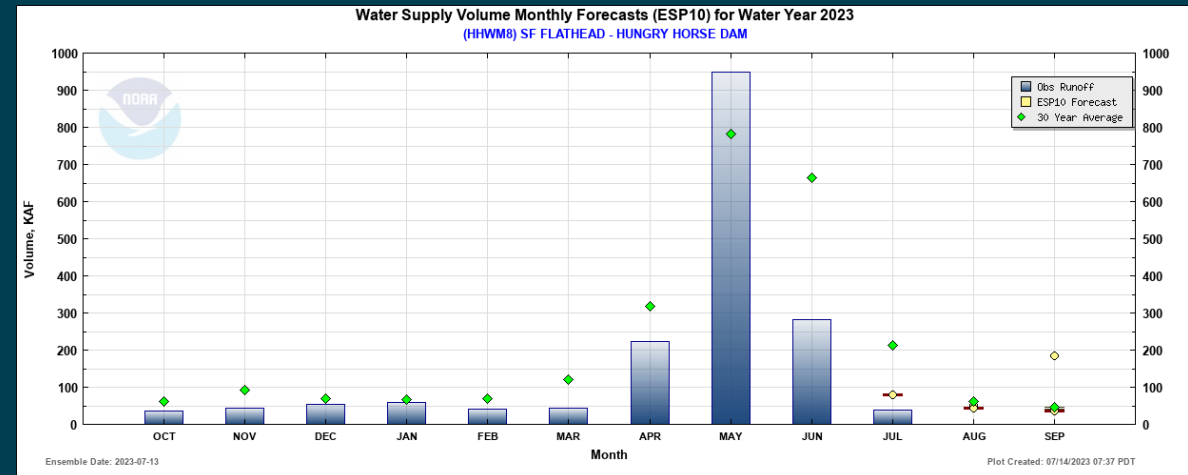
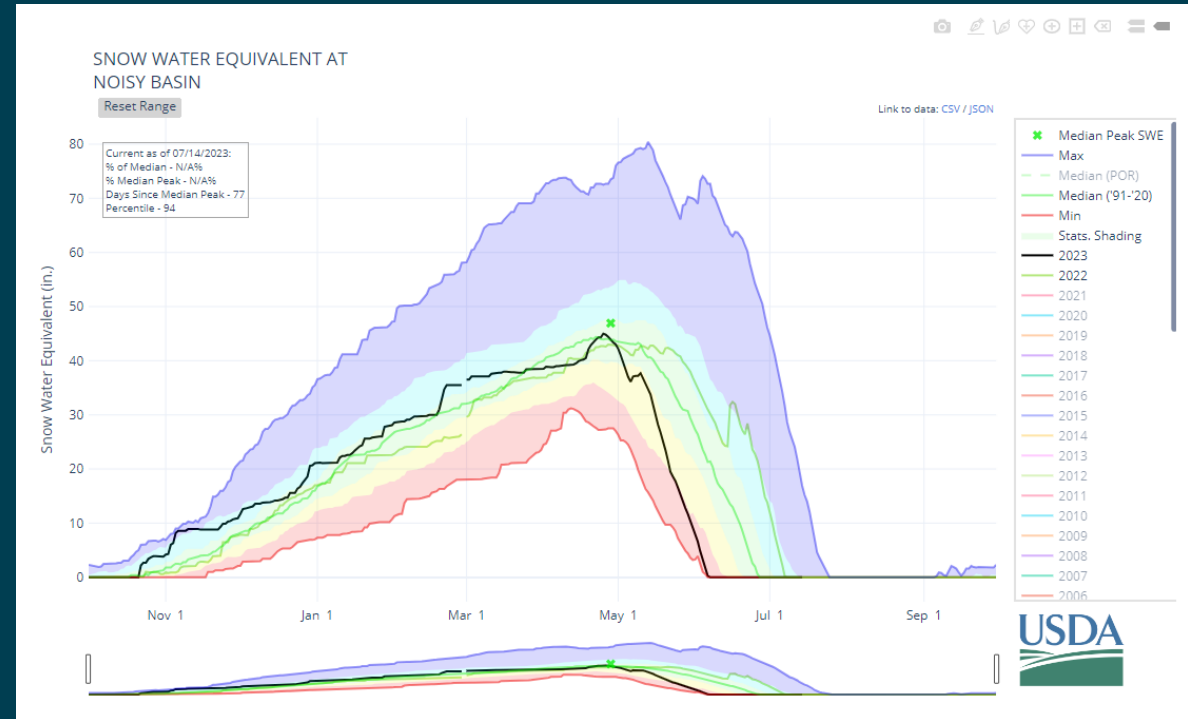
Hungry Horse Apr–Aug inflow forecast (KAF)	Hungry Horse min flow ^a (CFS)	Columbia Falls min flow (CFS)
< 1190	400	3200
1190 - 1790	Interpolate between 400-900	Interpolate between 3200-3500
> 1790	900	3500

a. To prevent or minimize flooding on the Flathead River above Flathead Lake, Hungry Horse discharges can be reduced to a minimum flow of 300 cfs when the stage at Columbia Falls exceeds 13 feet.



2023 Water Supply Forecasts

	Residual Volume Forecast (Kaf)	Percent of Average
Jan	2300	103%
Feb	2050	95%
Mar	1950	93%
Apr	1700	86%
May	1460	88%
Jun	450	51%



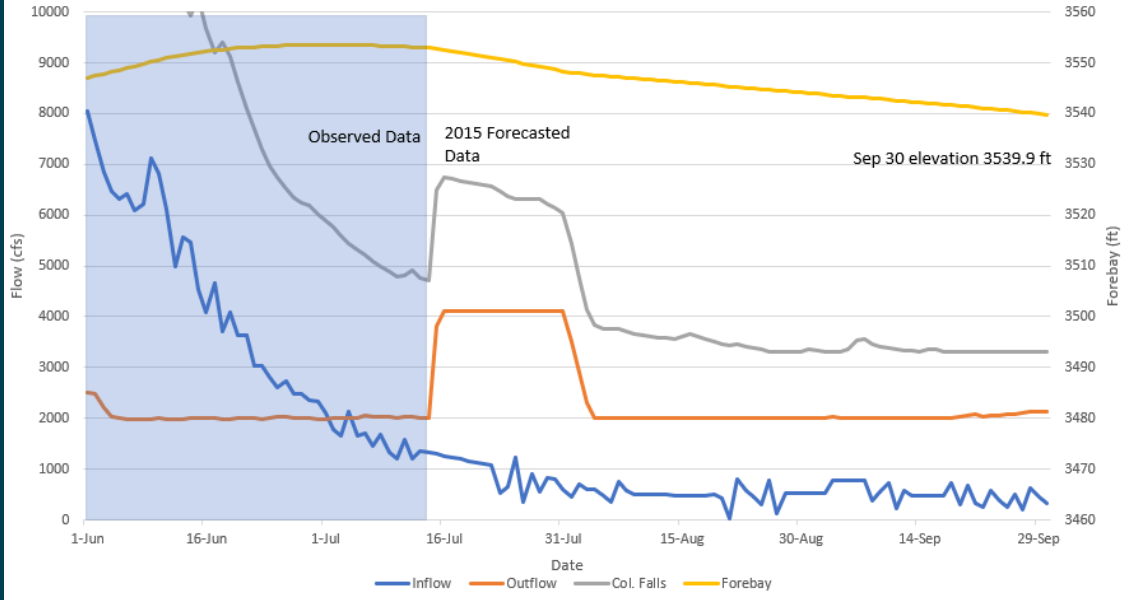
Proposed Operation

- Increase Releases to target being within 1.5 ft of full (2893 ft) at Flathead Lake on July 31
 - Decrease releases to 2,000 cfs or operate to Col. Falls minimums
 - May need to decrease release prior to July 31 if the Lake reaches 1.5 ft from full or forecasts show that Hungry Horse is going to draft below 20 ft from full
- Relax Columbia Falls Minimums from Aug 1 to Dec 31 from 3500 cfs to 3200 cfs
- Target being above 20 ft from full at Hungry Horse Dam with the operation
- This operation would result in a higher flat flow from SKQ through the rest of the summer

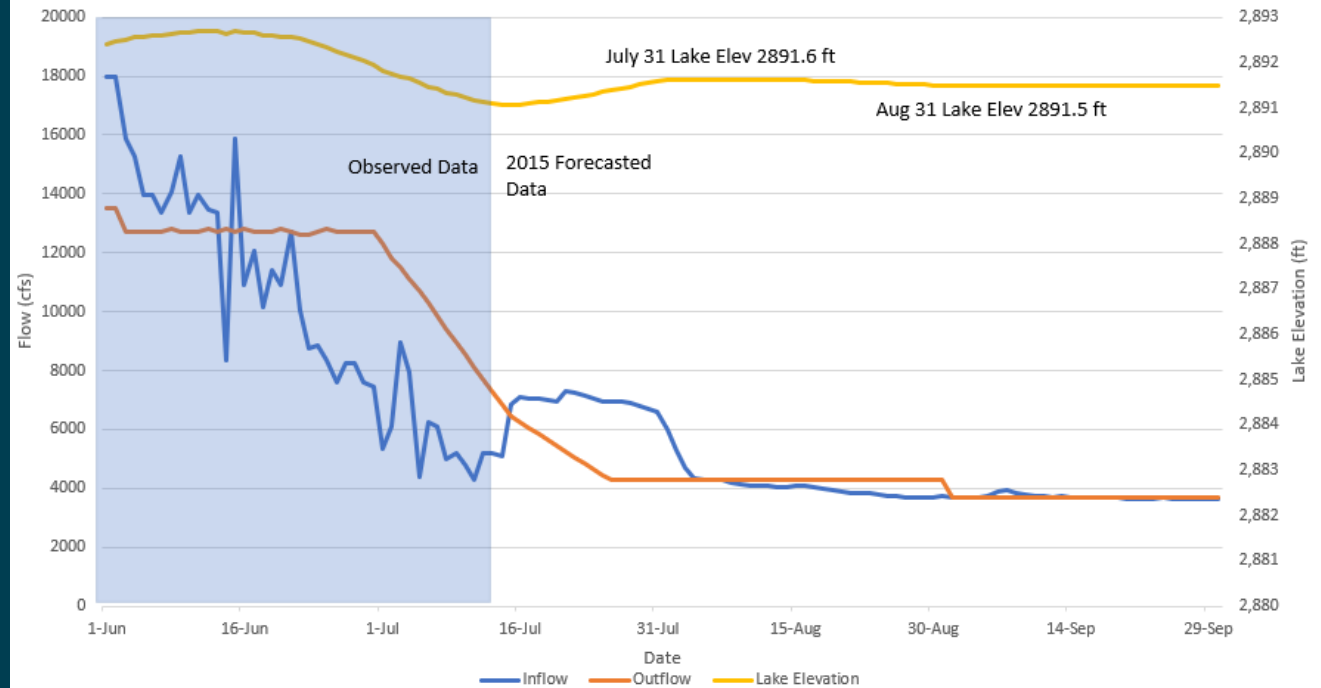


Proposed Operation

Proposed Operation and SKQ 4300 cfs
Hungry Horse Dam Jun 1 to Sep 30



Proposed Operation and SKQ 4300 cfs
SKQ Operations Jun 1 to Sep 30





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Questions?

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