BUREAU OF RECLAMATION

Glen Canyon Monthly Operations Call

Basin Hydrology and Operations

October 21, 2020

Background

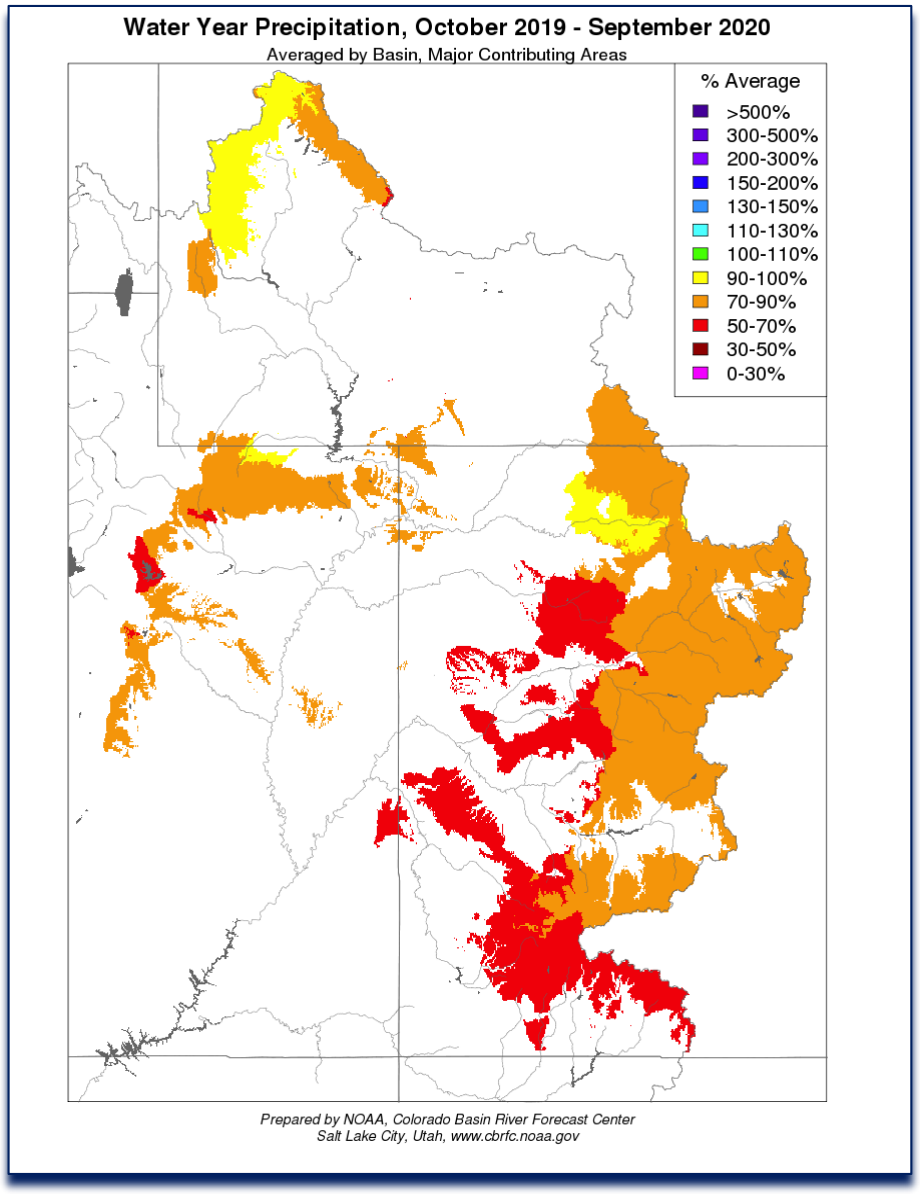
This briefing is being provided consistent with the provision in Section 1.1 of the LTEMP ROD which states:

"Annually, Reclamation will develop a hydrograph based on the characteristics above. Reclamation will seek consensus on the annual hydrograph through monthly operational coordination calls with governmental entities, and regular meetings of the GCDAMP Technical Working Group (TWG) and AMWG. Reclamation will conduct monthly Glen Canyon Dam operational coordination meetings or calls with the DOI bureaus (USGS, NPS, FWS, and BIA), WAPA, and representatives from the Basin States and UCRC. The purpose of these meetings or calls is for the participants to share and seek information on Glen Canyon Dam operations. One liaison from each Basin State and from the UCRC may participate in the monthly operational coordination meetings or calls."

Upper Colorado Basin

Water Year 2020 Observed Hydrology

WY2020 Precipitation and Observed Inflow



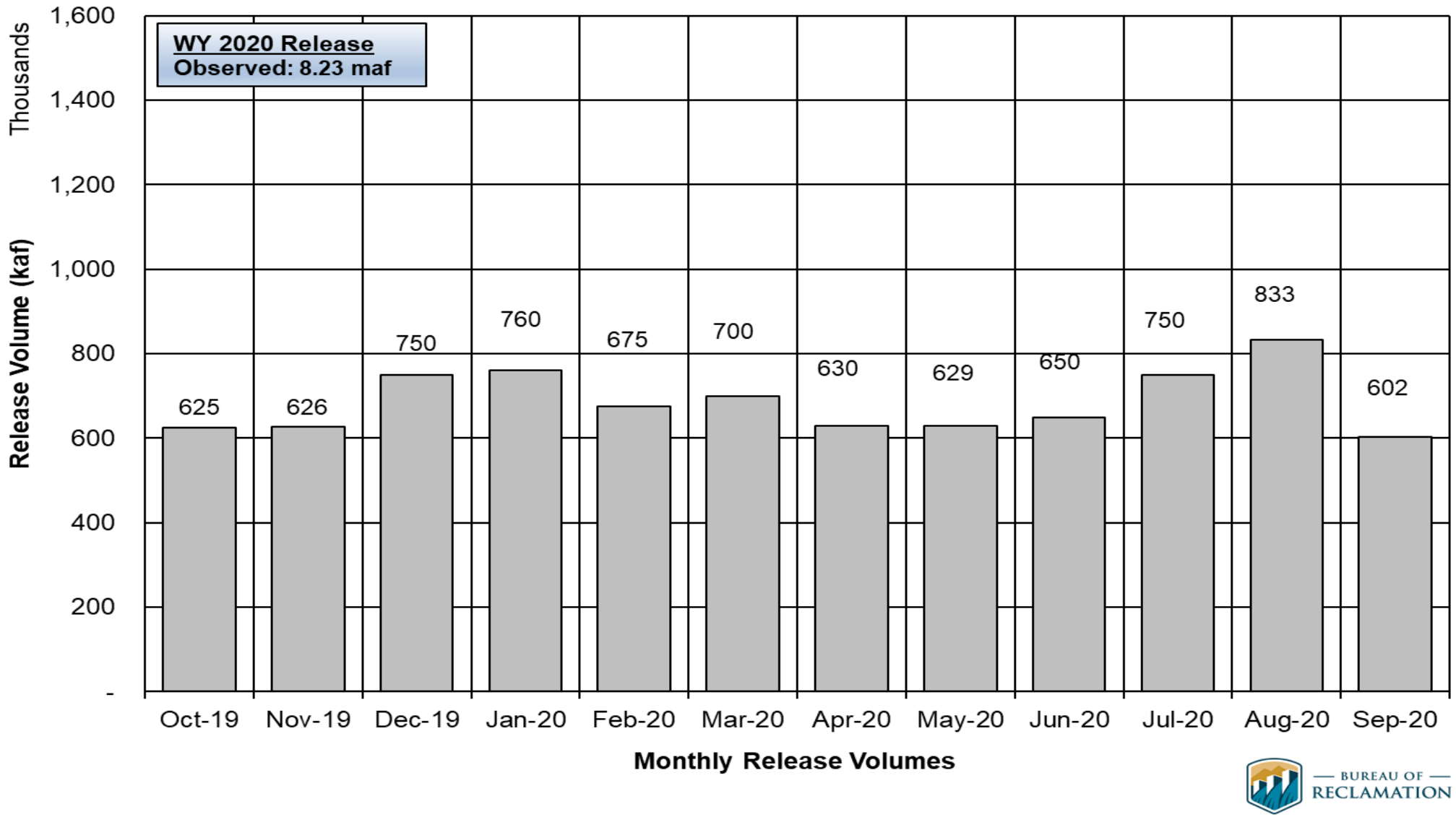
Water Year 2020
Observed Unregulated Inflow
as of October 1, 2020

Reservoir	Unregulated Inflow (kaf)	Percent of Average[1]
Fontenelle	997	92
Flaming Gorge	1,250	86
Blue Mesa	608	64
Navajo	430	40
Powell	5,847	54

[1] Percent of average based on the period of record from 1981-2010.

Potential Lake Powell Monthly Release Volume Distribution

Based on Observed WY2020 Releases



BUREAU OF RECLAMATION

Upper Colorado Basin

24-MS/MTOM Integration and Statistical Out-Year Update to 24-Month Study

Integrated Mid-term Modeling System

	24-Month Study Mode	MTOM Mode
Primary Use	AOP tier determinations and projections of current conditions	Risk-based operational planning and analysis
Probabilistic or Deterministic	Deterministic – single hydrologic trace	Probabilistic 35 (or more) hydrologic traces
Simulated Reservoir Operations	Operations input manually	Rule-driven operations
Time Horizon (years)	1 - 2	1 - 5
Frequency of Publication	Monthly	Monthly

WY 2021 Source of Monthly Unregulated Inflow for Upper Colorado Reservoirs in the 24 Month Study

Most Probable

Month Issued	Jan	Feb	Mar	April-July Unregulated Inflow: Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Jan	RFC	RFC	RFC	Official A-J	Official A-J	Official A-J	Official A-J	ESP Jan	ESP Jan	inter-polate	inter-polate	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med											
Feb		RFC	RFC	RFC	Official A-J	Official A-J	Official A-J	ESP Feb	ESP Feb	inter-polate	inter-polate	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med										
Mar			RFC	RFC	RFC	Official A-J	Official A-J	ESP Mar	ESP Mar	inter-polate	inter-polate	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med									
Apr				RFC	RFC	RFC	Official A-J	ESP Apr	ESP Apr	inter-polate	inter-polate	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med							
May					RFC	RFC	RFC	ESP May	ESP May	inter-polate	inter-polate	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med						
Jun						RFC	RFC	RFC	ESP Jun	ESP Jun	ESP Jun	ESP Jun	ESP Jun	ESP Jun	ESP Jun	ESP Jun	ESP Jun	ESP Jun	ESP Jun	ESP Jun	ESP Jun	ESP Jun	ESP Jun	ESP Jun	inter-polate	inter-polate	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med			
Jul							RFC	RFC	RFC	ESP Jul	ESP Jul	ESP Jul	ESP Jul	ESP Jul	ESP Jul	ESP Jul	ESP Jul	ESP Jul	ESP Jul	ESP Jul	ESP Jul	ESP Jul	ESP Jul	ESP Jul	ESP Jul	inter-polate	inter-polate	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med			
Aug								RFC	RFC	RFC	ESP Aug	ESP Aug	ESP Aug	ESP Aug	ESP Aug	ESP Aug	ESP Aug	ESP Aug	ESP Aug	ESP Aug	ESP Aug	ESP Aug	ESP Aug	ESP Aug	ESP Aug	inter-polate	inter-polate	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med		
Sep									RFC	RFC	RFC	ESP Sep	ESP Sep	ESP Sep	ESP Sep	ESP Sep	ESP Sep	ESP Sep	ESP Sep	ESP Sep	ESP Sep	ESP Sep	ESP Sep	ESP Sep	ESP Sep	inter-polate	inter-polate	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med		
Oct										RFC	RFC	RFC	ESP Oct	ESP Oct	ESP Oct	ESP Oct	ESP Oct	ESP Oct	ESP Oct	ESP Oct	ESP Oct	ESP Oct	ESP Oct	ESP Oct	ESP Oct	inter-polate	inter-polate	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med		
Nov											RFC	RFC	RFC	ESP Nov	ESP Nov	ESP Nov	ESP Nov	ESP Nov	ESP Nov	ESP Nov	ESP Nov	ESP Nov	ESP Nov	ESP Nov	ESP Nov	inter-polate	inter-polate	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	
Dec												RFC	RFC	RFC	ESP Dec	ESP Dec	ESP Dec	ESP Dec	ESP Dec	ESP Dec	ESP Dec	ESP Dec	ESP Dec	ESP Dec	ESP Dec	inter-polate	inter-polate	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med

RFC values are issued by the Colorado Basin River Forecast Center (RFC) as the official forecast values for the next three-month period of time. The values are calculated using Ensemble Streamflow Predictions (ESP) modeling. This official forecast has the least amount of error associated with it.

Official A-J values are official forecast values issued by the RFC for the April-July runoff period using ESP. Apr-Jul water supply forecast volume is disaggregated by the RFC.

81-15 Med values are the monthly median inflow values generated from water years 1981-2015 calculated using the database maintained by the Bureau of Reclamation Upper Colorado Region (UCBOR). A water year begins October 1 and ends September 30.

Interpolated values are calculated by UCBOR and are based on percent of the 81-15 median. The method takes the precent of median of the previous month's forecast value and interpolates over two months to the percent of median for the month following the interpolation period. This is done to smoothly transition between the end of the current water year and the next water year.

ESP monthly values are generated using the RFC ESP forecasted volume for the water year using the current month's initial hydrological conditions. The RFC provides monthly volumes consistent with the 3-month forecast and the water year ESP volume.

* Light grey text indicates that the model is run in this month, however, only results for the first 24 months of the model run (black text) are published in the 24 Month Study report

WY 2021 Source of Monthly Unregulated Inflow for Upper Colorado Reservoirs in the 24 Month Study

Minimum Probable

Month Issued	Jan	Feb	Mar	April-July Unregulated Inflow: Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Jan	RFC	RFC	RFC	Coord A-J 10th %ile	Coord A-J 10th %ile	Coord A-J 10th %ile	Coord A-J 10th %ile	inter-polate	inter-polate	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	inter-polate	inter-polate	81-15 Med										
Feb																																			
Mar																																			
Apr				Coord A-J 10th %ile	Coord A-J 10th %ile	Coord A-J 10th %ile	Coord A-J 10th %ile	inter-polate	inter-polate	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	inter-polate	inter-polate	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	
May																																			
Jun																																			
Jul																																			
Aug								RFC	RFC	RFC	10th %ile Aug ESP	10th %ile Aug ESP	10th %ile Aug ESP	10th %ile Aug ESP	10th %ile Aug ESP	10th %ile Aug ESP	10th %ile Aug ESP	10th %ile Aug ESP	10th %ile Aug ESP	10th %ile Aug ESP	10th %ile Aug ESP	10th %ile Aug ESP	inter-polate	inter-polate	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	
Sep																																			
Oct										RFC	RFC	RFC	10th %ile Oct ESP	10th %ile Oct ESP	10th %ile Oct ESP	10th %ile Oct ESP	10th %ile Oct ESP	10th %ile Oct ESP	10th %ile Oct ESP	10th %ile Oct ESP	10th %ile Oct ESP	10th %ile Oct ESP	inter-polate	inter-polate	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	25th %ile of 81-15	
Nov																																			
Dec																																			

RFC values are issued by the Colorado Basin River Forecast Center (RFC) as the official forecast values for the next three-month period of time. The values are calculated using Ensemble Streamflow Predictions (ESP) modeling. This official forecast has the least amount of error associated with it.

Coord A-J 10th %ile values are the official forecast of the total April-July volume issued by the RFC for the April-July runoff period using SWS and ESP. Monthly values are disaggregated using the 81-15 average monthly distribution.

25th %ile of 81-15 values are the monthly 25th percentile (75% exceedance) inflow values generated from water years 1981-2015 calculated using the database maintained by the Bureau of Reclamation Upper Colorado Region (UCBOR). A water year begins October 1 and ends September 30.

Interpolated values are calculated by UCBOR and are based on percent of the 81-15 median. The method takes the precent of average of the previous month's forecast value and interpolates over two months to the percent of median for the month following the interpolation period. This is done to smoothly transition between the end of the current water year and the next water year.

10th %ile Jan/Apr/Aug/Oct ESP values are generated using the RFC ESP forecasted volume for the water year using the monthly initial hydrological conditions. Monthly values are disaggregated from the total water year ESP volume using the median 81-15 statistical monthly distribution, consistent with the 3-month forecast. ESP forecasts are issued for each month of the base flow period to the end of the current water year for the 24-month study.

* Light grey text indicates that the model is run in this month, however, only results for the first 24 months of the model run (black text) are published in the 24 Month Study report

WY 2021 Source of Monthly Unregulated Inflow for Upper Colorado Reservoirs in the 24 Month Study

Maximum Probable

Month Issued	Jan	Feb	Mar	April-July Unregulated Inflow: Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Jan	RFC	RFC	RFC	A-J Coord 90th %ile	A-J Coord 90th %ile	A-J Coord 90th %ile	A-J Coord 90th %ile	inter-polate	inter-polate	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	inter-polate	inter-polate	81-15 Med										
Feb																																			
Mar																																			
Apr				A-J Coord 90th %ile	A-J Coord 90th %ile	A-J Coord 90th %ile	A-J Coord 90th %ile	inter-polate	inter-polate	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	inter-polate	inter-polate	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	81-15 Med	
May																																			
Jun																																			
Jul																																			
Aug								RFC	RFC	RFC	90th %ile Aug ESP	90th %ile Aug ESP	90th %ile Aug ESP	90th %ile Aug ESP	90th %ile Aug ESP	90th %ile Aug ESP	90th %ile Aug ESP	90th %ile Aug ESP	90th %ile Aug ESP	90th %ile Aug ESP	90th %ile Aug ESP	90th %ile Aug ESP	inter-polate	inter-polate	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	
Sep																																			
Oct										RFC	RFC	RFC	90th %ile Oct ESP	90th %ile Oct ESP	90th %ile Oct ESP	90th %ile Oct ESP	90th %ile Oct ESP	90th %ile Oct ESP	90th %ile Oct ESP	90th %ile Oct ESP	90th %ile Oct ESP	90th %ile Oct ESP	inter-polate	inter-polate	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	75th %ile of 81-15	
Nov																																			
Dec																																			

RFC values are issued by the Colorado Basin River Forecast Center (RFC) as the official forecast values for the next three-month period of time. The values are calculated using Ensemble Streamflow Predictions (ESP) modeling. This official forecast has the least amount of error associated with it.

Coord A-J 90th %ile are the official forecast of the total April-July volume issued by the RFC for the April-July runoff period using ESP. Monthly values are disaggregated using the 81-15 median monthly distribution.

75th %ile of 81-15 values are the monthly 75th percentile (25% exceedance) inflow values generated from water years 1981-2015 calculated using the database maintained by the Bureau of Reclamation Upper Colorado Region (UCBOR). A water year begins October 1 and ends September 30.

Interpolated values are calculated by UCBOR and are based on percent of the 81-15 median. The method takes the precent of average of the previous month's forecast value and interpolates over two months to the percent of median for the month following the interpolation period. This is done to smoothly transition between the end of the current water year and the next water year.

90th %ile Jan/Apr/Aug/Oct ESP values are generated using the RFC ESP forecasted volume for the water year using the monthly initial hydrological conditions. Monthly values are disaggregated from the total water year ESP volume using the median 81-15 statistical monthly distribution, consistent with the 3-month forecast. ESP forecasts are issued for each month of the base flow period to the end of the current water year for the 24-month study.

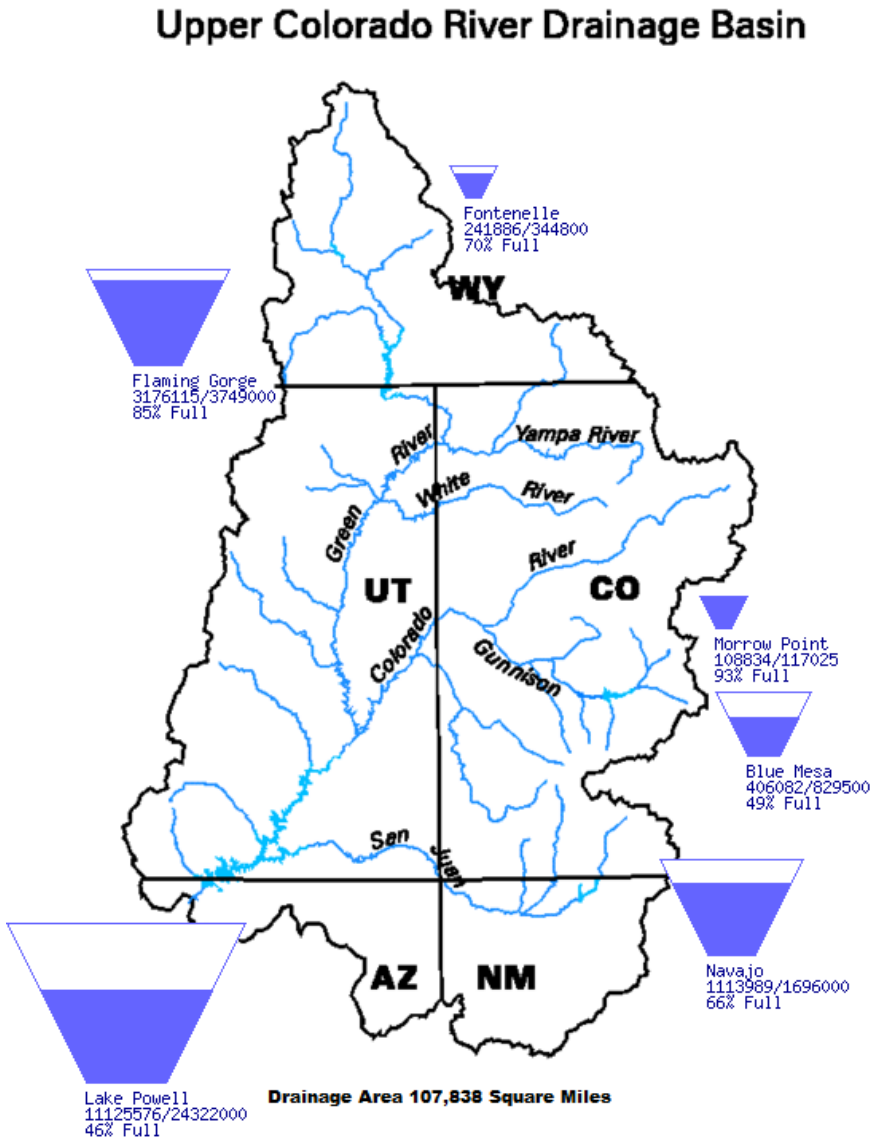
* Light grey text indicates that the model is run in this month, however, only results for the first 24 months of the model run (black text) are published in the 24 Month Study report

Upper Colorado Basin

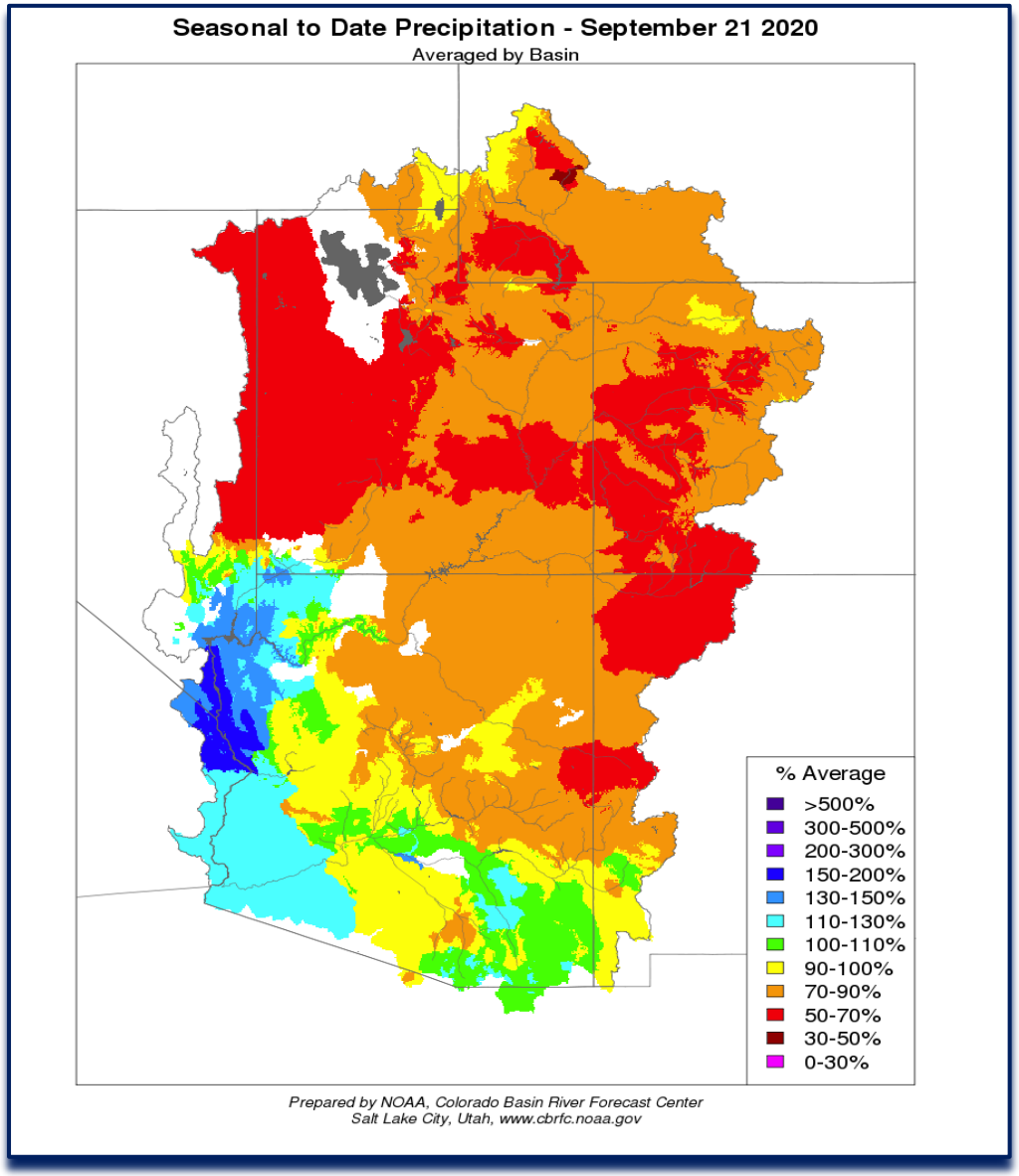
Projected Operations for Water Year 2021 Based on October 2020 Modeling

Upper Basin Storage (as of October 19, 2020)

Reservoir	Percent Full	Storage (maf)	Elevation (feet)
Fontenelle	70	0.242	6,492.18
Flaming Gorge	85	3.18	6,025.43
Blue Mesa	49	0.406	7,465.51
Navajo	66	1.11	6,040.11
Lake Powell	46	11.12	3,593.34



Seasonal Precipitation and WY2021 Forecast

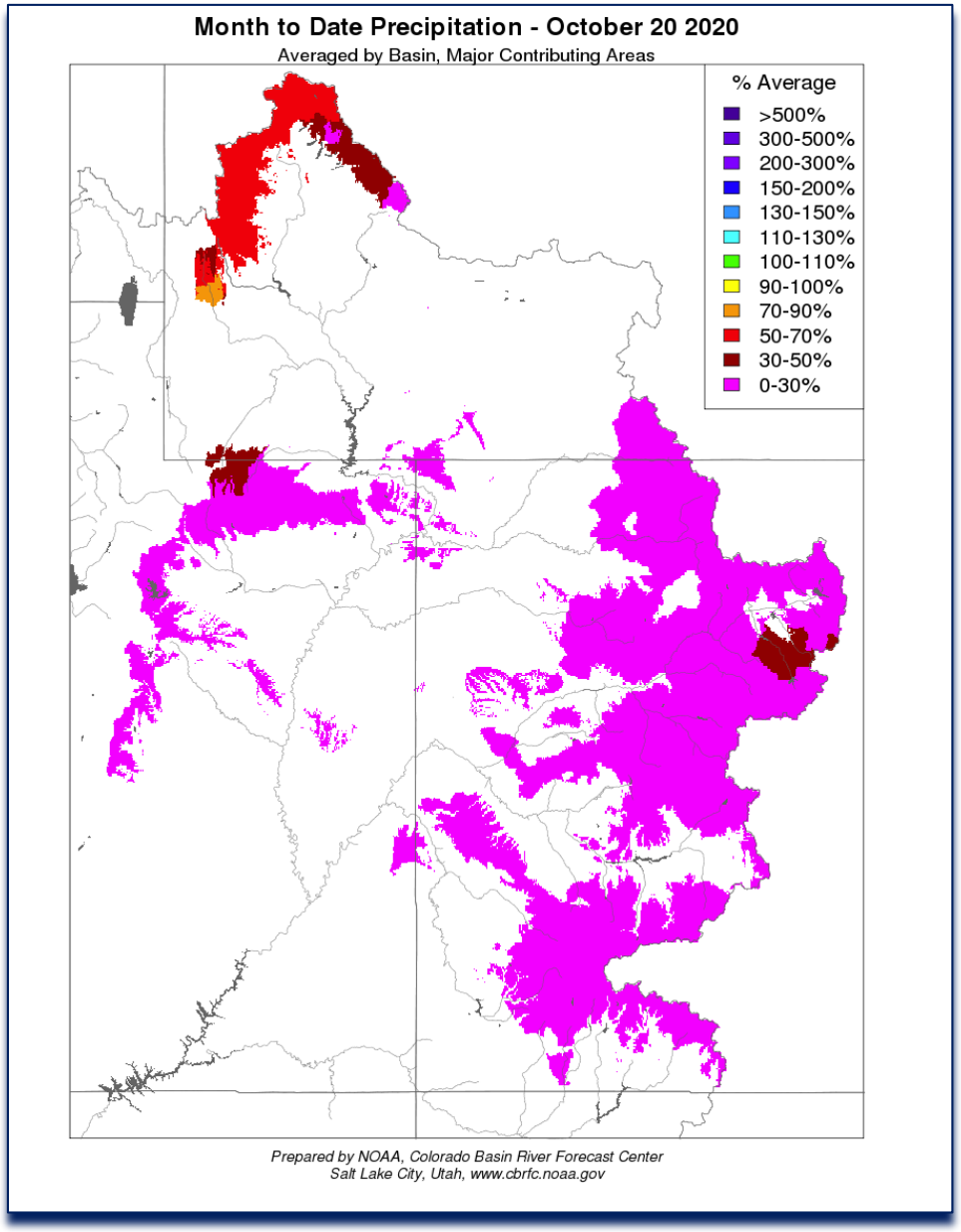


Water Year 2021
Forecasted Unregulated Inflow
as of September 1, 2020

Reservoir	Forecast (kaf)	Percent of Average[1]
Fontenelle	945	87
Flaming Gorge	1,230	85
Blue Mesa	805	84
Navajo	785	73
Powell	8,500	78

[1] Percent of average based on the period of record from 1981-2010.

Seasonal Precipitation and WY2021 Forecast



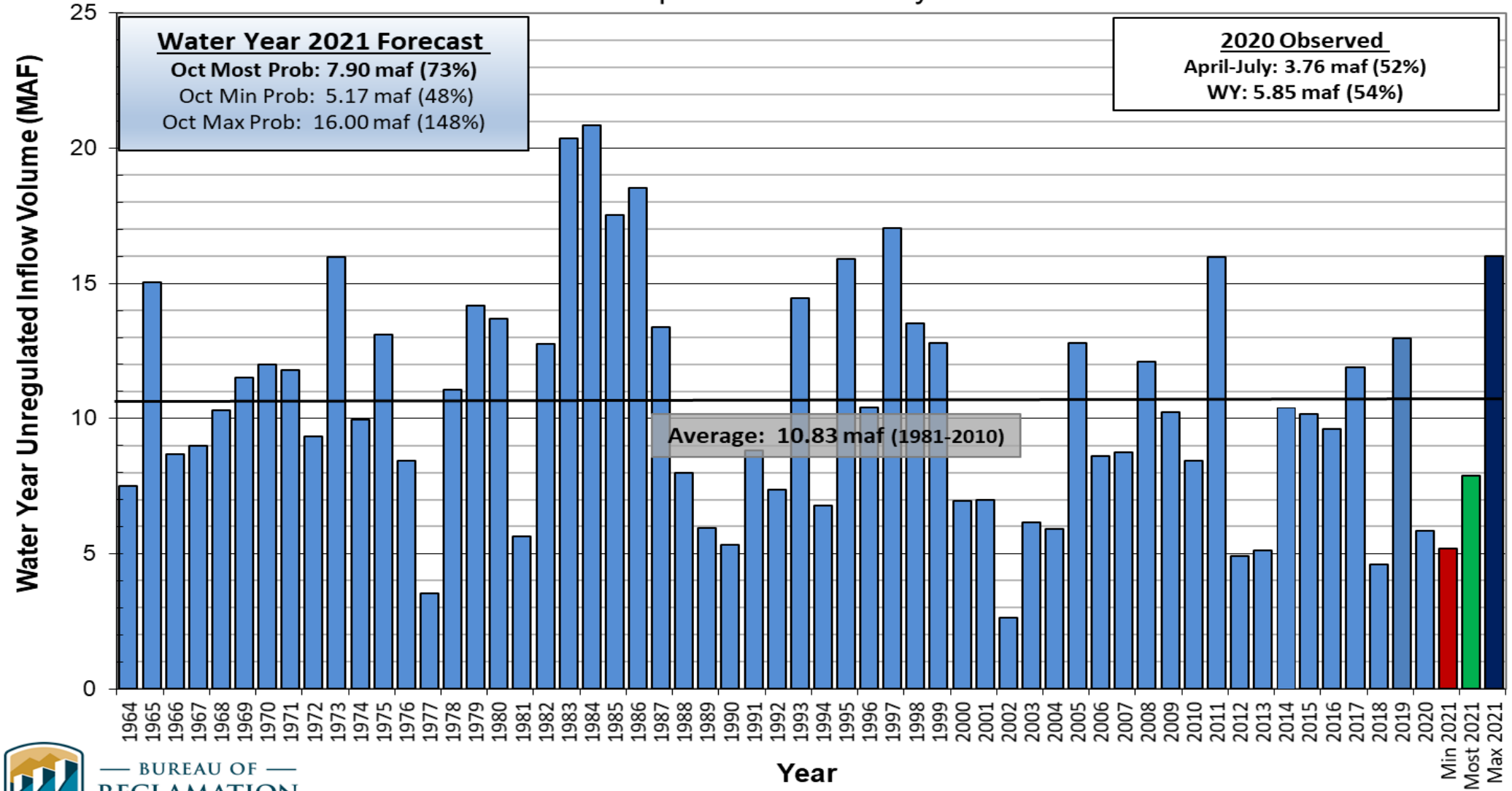
Water Year 2021 Forecasted Unregulated Inflow

as of October 1, 2020

Reservoir	Unregulated Inflow (kaf)	Percent of Average[1]
Fontenelle	890	82
Flaming Gorge	1,115	77
Blue Mesa	755	84
Navajo	705	66
Powell	7,900	73

[1] Percent of average based on the period of record from 1981-2010.

Lake Powell Unregulated Inflow
Water Year 2021 Forecast *(issued October 1)*
Comparison with History



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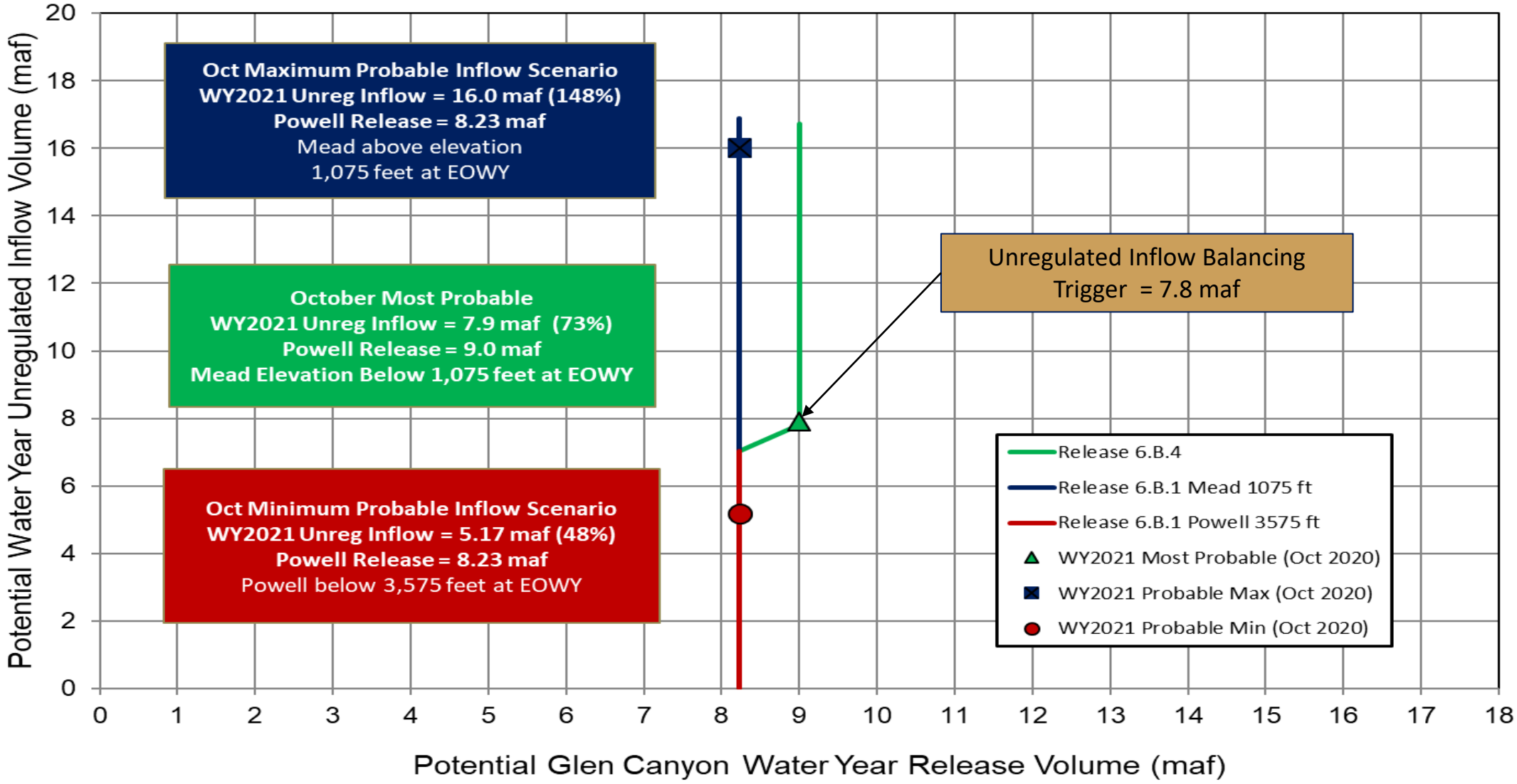
Lake Powell Release Scenarios under Section 6.B

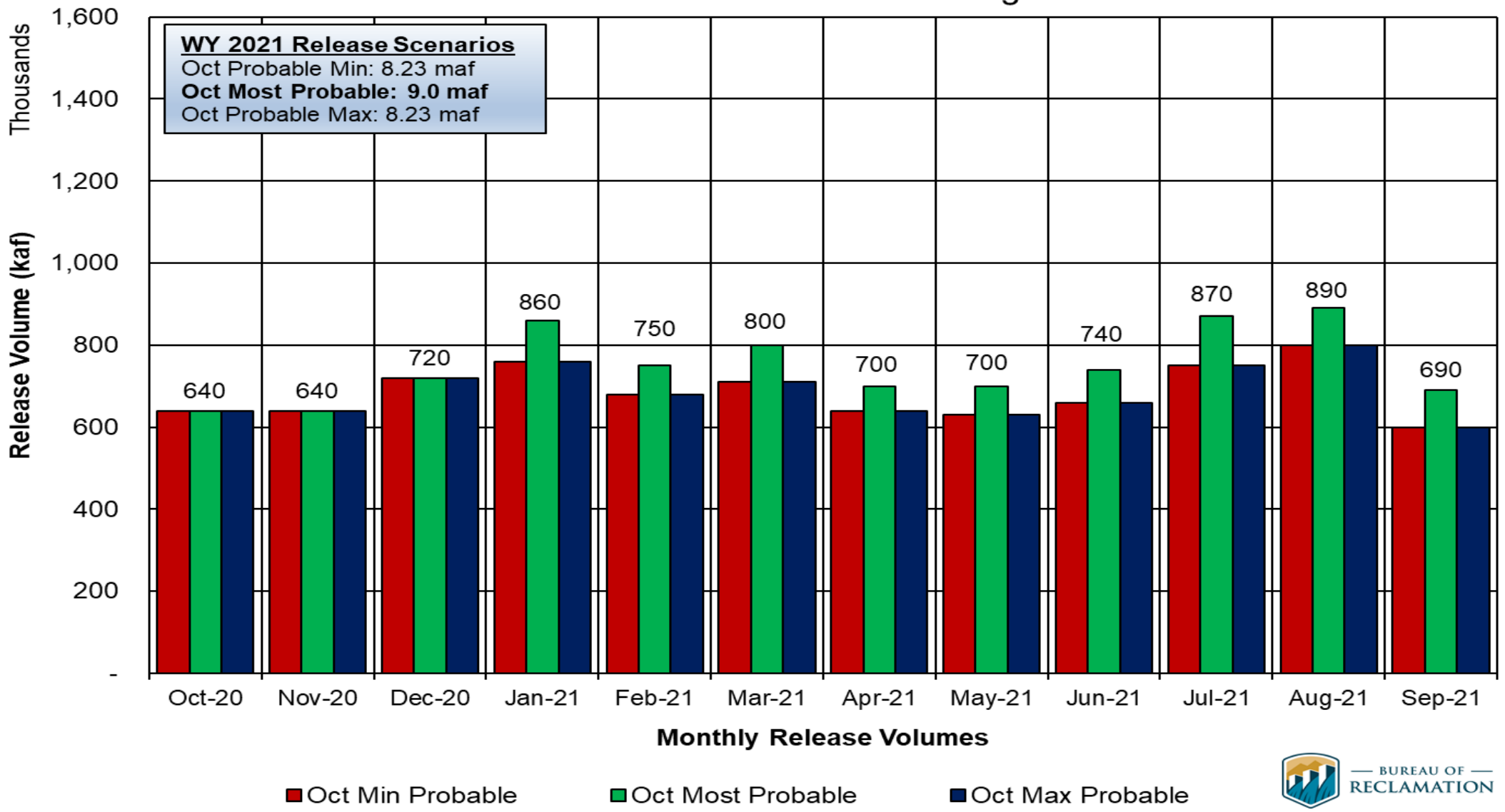
Water Year 2021 Release Volume as a Function of Upper Elevation Balancing Tier
based on October 2020 24-Month Study Conditions



Potential Lake Powell Monthly Release Volume Distribution

Release Scenarios for Water Year 2021

Based on October 2020 Modeling



BUREAU OF RECLAMATION

LTEMP Operational Flexibility

1.2 OPERATIONAL FLEXIBILITY UNDER ALTERNATIVE D

Reclamation retains the authority to utilize operational flexibility at Glen Canyon Dam because hydrologic conditions of the Colorado River Basin (or the operational conditions of Colorado River reservoirs) cannot be completely known in advance. Consistent with current operations, Reclamation, in consultation with WAPA, will make specific adjustments to daily and monthly release volumes during the water year. Monthly release volumes may be rounded for practical implementation or for maintenance needs. In addition, when releases are actually implemented, minor variations may occur regularly for a number of operational reasons that cannot be projected in advance.

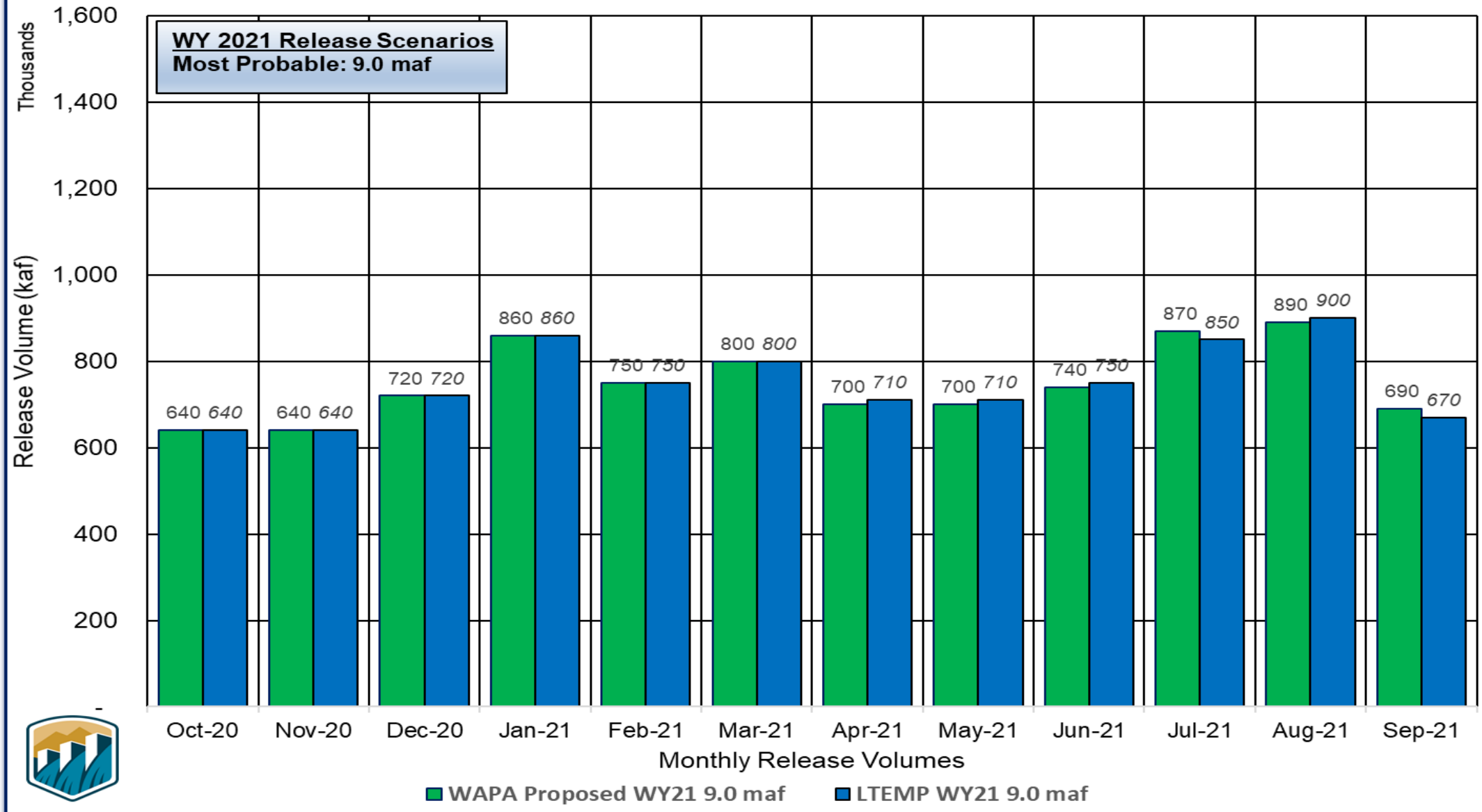
Reclamation also will make specific adjustments to daily and monthly release volumes, in consultation with other entities as appropriate, for a number of reasons, including operational, resource-related, and hydropower-related issues. Examples of these adjustments may include, but are not limited to, the following:

- For water distribution purposes, volumes may be adjusted to allocate water between the Upper and Lower Basins consistent with the Law of the River as a result of changing hydrology;
- For resource-related issues that may occur uniquely in a given year, release adjustments may be made to accommodate nonnative species removal, to assist with aerial photography, or to accommodate other resource considerations separate from experimental treatments under the LTEMP;
- For hydropower-related issues, adjustments may occur to address issues such as electrical grid reliability, actual or forecasted prices for purchased power, transmission outages, and experimental releases from other Colorado River Storage Project dams.

In addition, Reclamation may make modifications under circumstances that may include operations that are prudent or necessary for the safety of dams, public health and safety, other emergency situations, or other unanticipated or unforeseen activities arising from actual operating experience (including, in coordination with the Basin States, actions to respond to low reservoir conditions as a result of drought in the Colorado River Basin). In addition, the Emergency Exception Criteria established for Glen Canyon Dam will continue under this alternative. (See, e.g., Section 3 of the Glen Canyon Operating Criteria at 62 FR 9448, March 3, 1997.)

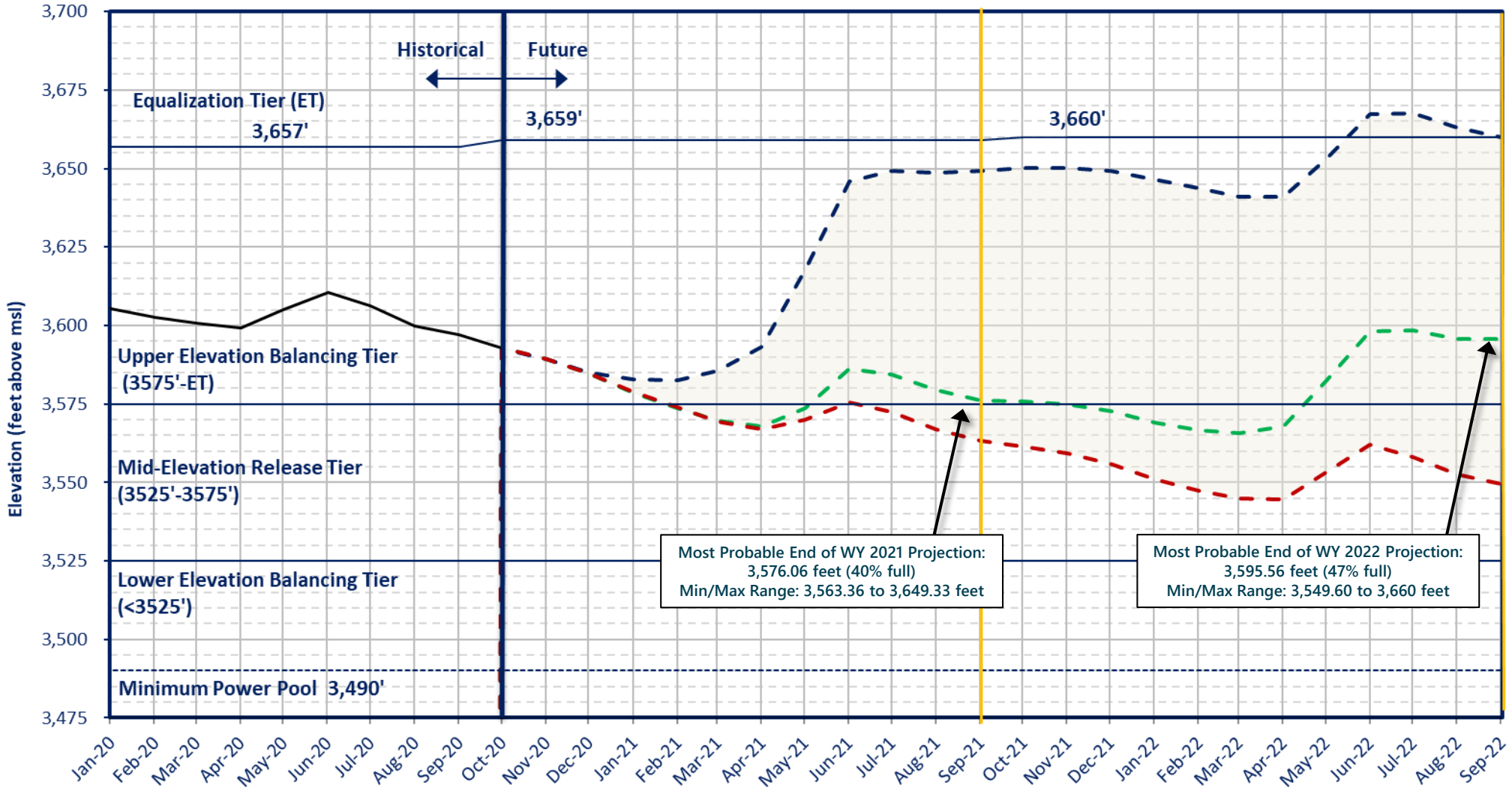
Lake Powell Monthly Release Volume Distribution

WAPA Proposed 9.0 maf Pattern for Water Year 2021



Lake Powell End of Month Elevations

Historic and Projected based on October 2020 24-Month Study Inflow Scenarios



Oct 2020 Most Probable - Lake Powell release of 9.0 maf in WY2021 and 7.48 maf in WY2022

Oct 2020 Max Probable - Lake Powell release of 8.23 maf in WY2021 and 11.67 maf in WY2022

Oct 2020 Min Probable - Lake Powell release of 8.23 maf in WY2021 and 7.48 maf in WY2022

Historical Elevations

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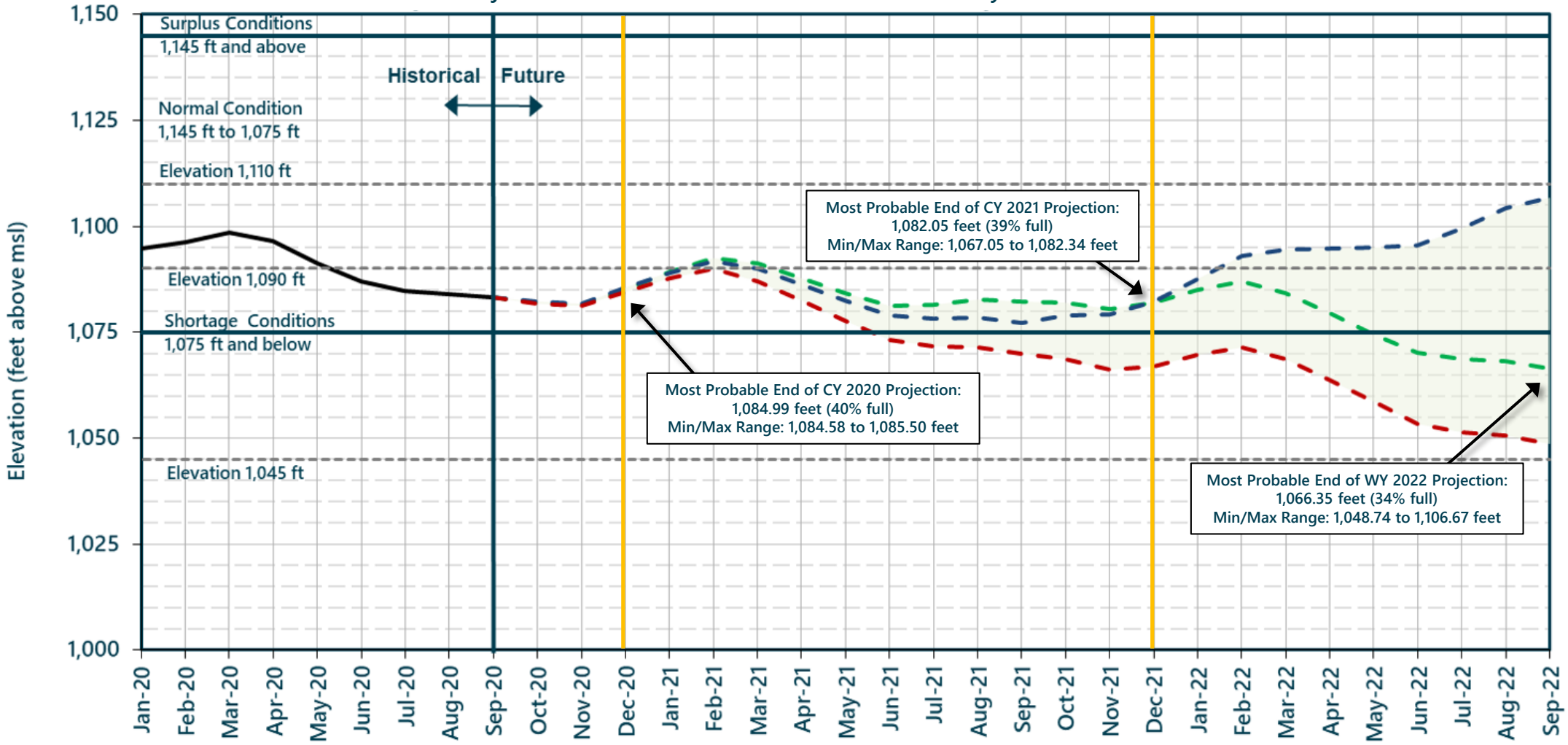
Lake Mead End of Month Elevations

Projections from the October 2020 24-Month Study Inflow Scenarios



Historical Elevations

October 2020 Most Probable Inflow with a Lake Powell release of 9.00 maf in WY 2021 and 7.48 maf in WY 2022

October 2020 Maximum Probable Inflow with a Lake Powell release of 8.23 maf in WY 2021 and 11.67 maf in WY 2022

October 2020 Minimum Probable Inflow with a Lake Powell release of 8.23 maf in WY 2021 and 7.48 maf in WY 2022

Glen Canyon Power Plant Planned Unit Outage Schedule for Water Year 2021

Unit Number	Oct 2020	Nov 2020	Dec 2020	Jan 2021	Feb 2021	Mar 2021	Apr 2021	May 2021	Jun 2021	Jul 2021	Aug 2021	Sep 2021	
1													
2													
3													
4													
5													
6													
7													
8													
Units Available	5	5/4	6	6	6	6	6	6	6	6	6	6/4	
Capacity (cfs)	16,400	16,300 /12,400	19,800	19,700	19,500	19,400	19,400	19,500	19,900	19,800	19,700	19,600 /12,400	OCT MOST[3]
Capacity (kaf/month)	1,040	1,140	1,250	1,220	1,100	1,220	1,220	1,270	1,260	1,310	1,340	1,100	OCT MAX
Max (kaf) [2]	640	640	720	760	680	710	640	630	660	750	800	600	8.23
Most (kaf) [1]	640	640	720	860	750	800	710	710	740	870	890	690	9.0
Min (kaf) [2]	640	640	720	760	680	710	640	630	660	750	800	600	8.23
										(updated 10-20-2020)			

1 Projected release, based on October 2020 Most Probable Inflow Projections and 24-Month Study model runs.
2 Projected release, based on October 2020 Min and Max Probable Inflow Projections and 24-Month Study model runs.
3 Dependent upon availability to shift contingency reserves, which will increase capacity by 30-40MW (3%) at current efficiency.

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Glen Canyon Power Plant Planned Unit Outage Schedule for Water Year 2022

Unit Number	Oct 2021	Nov 2021	Dec 2021	Jan 2022	Feb 2022	Mar 2022	Apr 2022	May 2022	Jun 2022	Jul 2022	Aug 2022	Sep 2022	
1													
2													
3													
4													
5													
6													
7													
8													
Units Available	4	4/5	5/8	8	6	6/8	8	7	8	8	8	8/6	
Capacity (cfs)	12,400	12,400 /16,000	16,000/ 26,700	26,500	19,400	19,300/ 26,400	26,500	23,400	27,600	27,600	27,500	27,500 /20,100	OCT MOST[3]
Capacity (kaf/month)	870	970	1,350	1,770	1,210	1,390	1,720	1,600	1,760	1,820	1,810	1,340	OCT MAX
Max (kaf) [2]	640	640	720	950	950	1,100	1,050	1,050	1,075	1,250	1,280	968	11.67
Most (kaf) [1]	480	500	600	720	640	675	600	600	630	710	760	565	7.48
Min (kaf) [2]	480	500	600	720	640	675	600	600	630	710	760	565	7.48
										(updated 10-20-2020)			

1 Projected release, based on October 2020 Most Probable Inflow Projections and 24-Month Study model runs.
2 Projected release, based on October 2020 Min and Max Probable Inflow Projections and 24-Month Study model runs.
3 Dependent upon availability to shift contingency reserves, which will increase capacity by 30-40MW (3%) at current efficiency.

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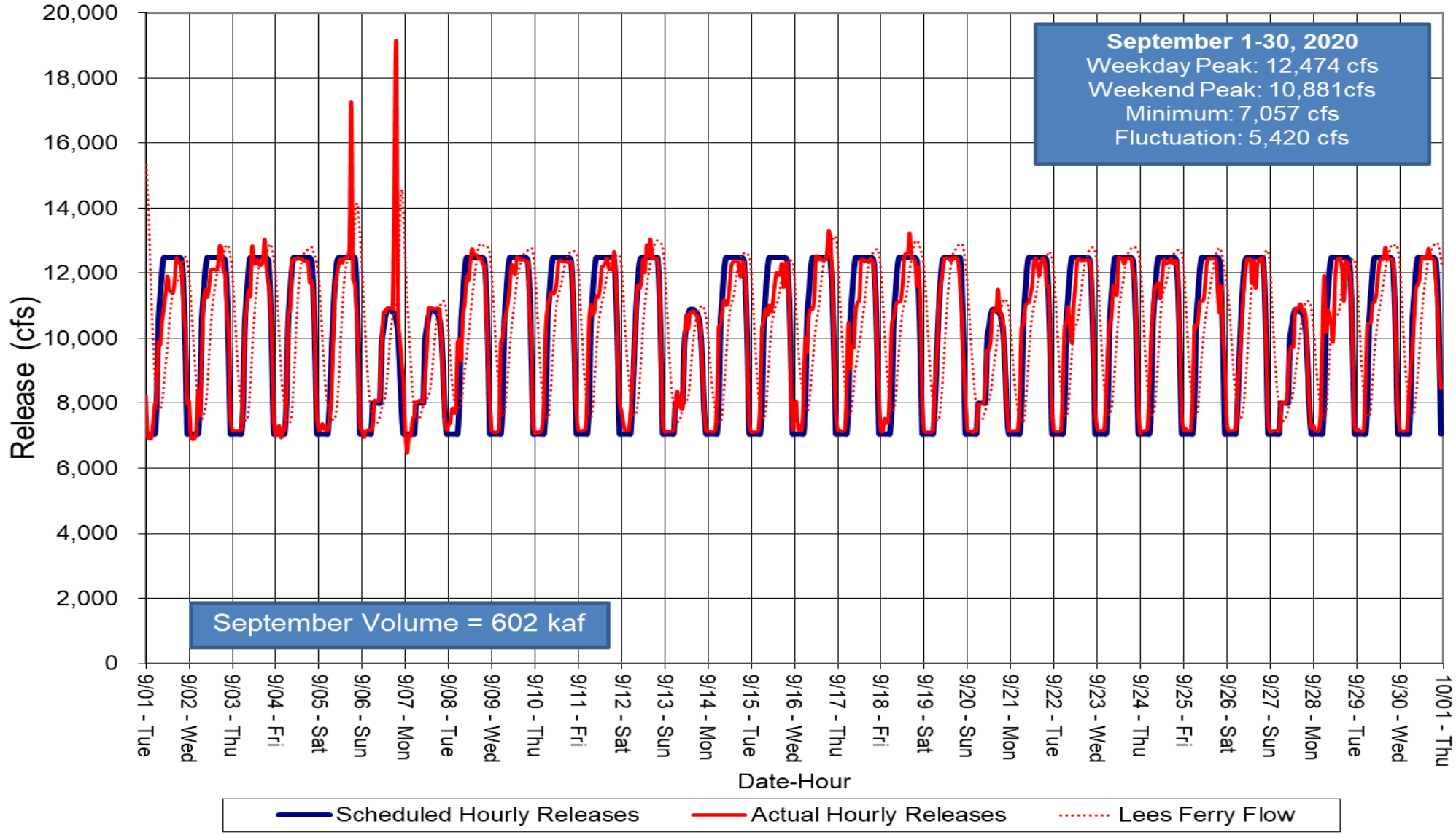
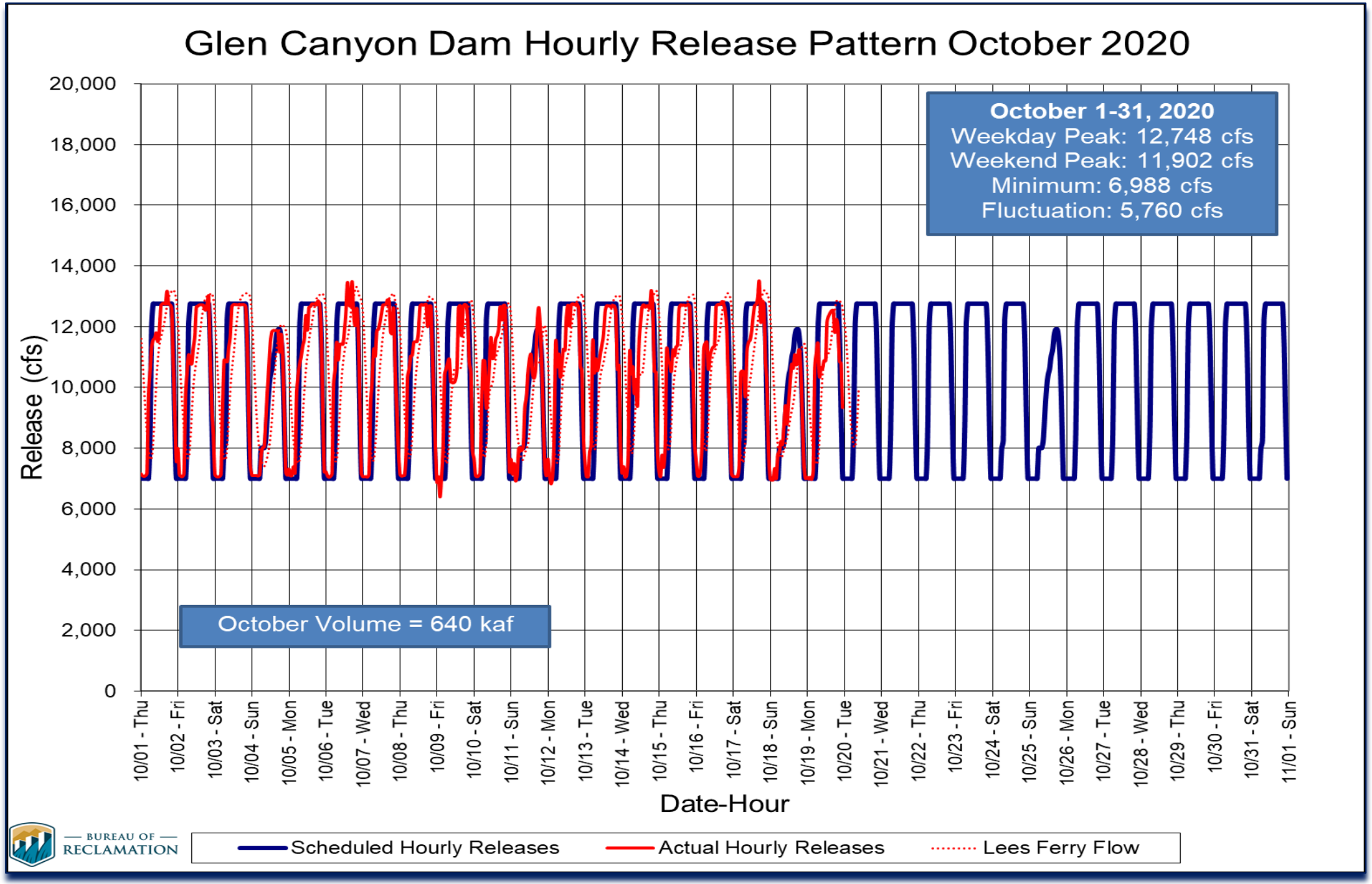
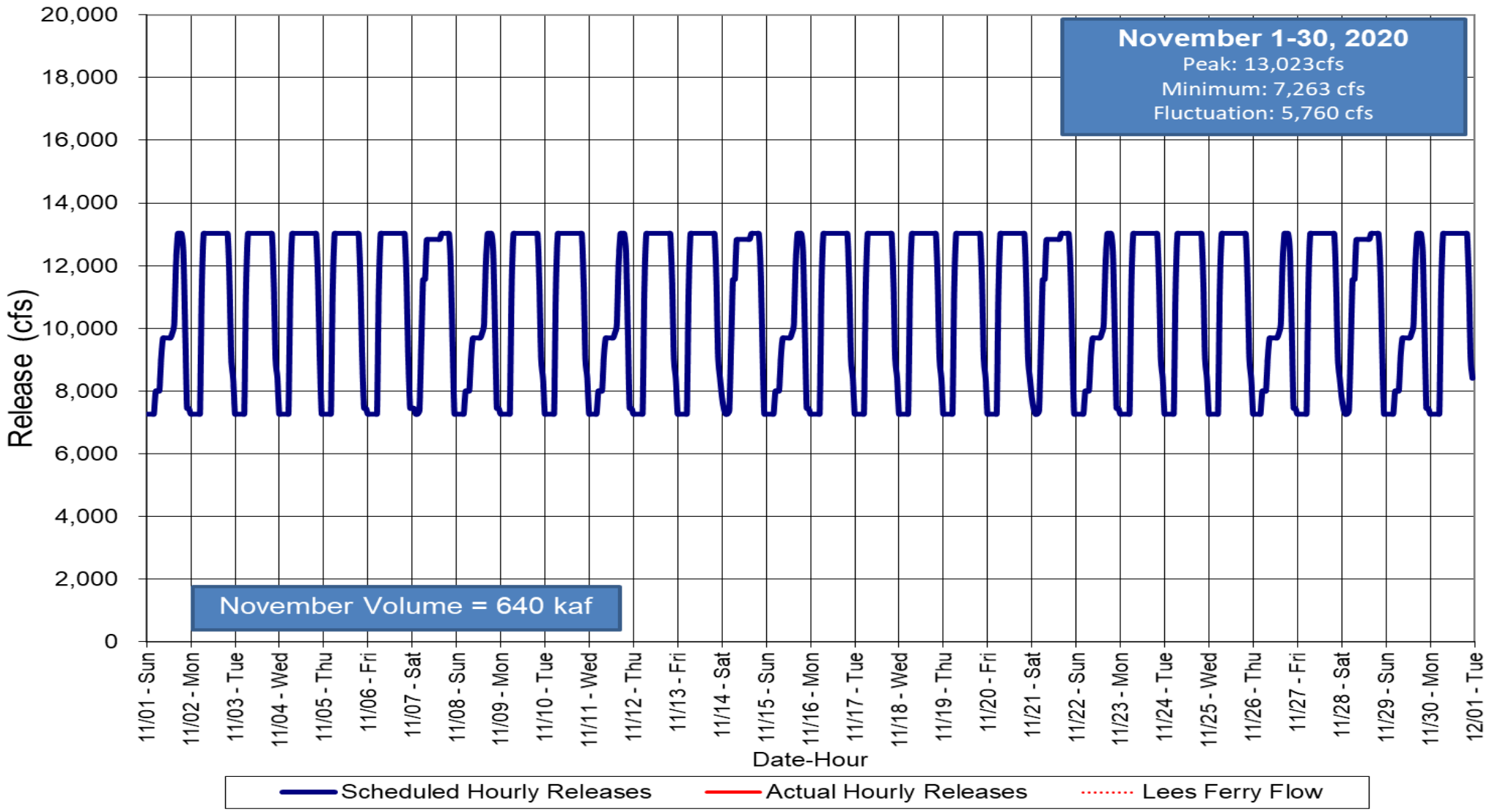
Glen Canyon Dam Hourly Release Pattern September 2020



BUREAU OF RECLAMATION


Glen Canyon Dam Hourly Release Pattern October 2020
October 1-31, 2020
Weekday Peak: 12,748 cfs
Weekend Peak: 11,902 cfs
Minimum: 6,988 cfs
Fluctuation: 5,760 cfs
October Volume = 640 kaf
Release (cfs)
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
10/01 - Thu
10/02 - Fri
10/03 - Sat
10/04 - Sun
10/05 - Mon
10/06 - Tue
10/07 - Wed
10/08 - Thu
10/09 - Fri
10/10 - Sat
10/11 - Sun
10/12 - Mon
10/13 - Tue
10/14 - Wed
10/15 - Thu
10/16 - Fri
10/17 - Sat
10/18 - Sun
10/19 - Mon
10/20 - Tue
10/21 - Wed
10/22 - Thu
10/23 - Fri
10/24 - Sat
10/25 - Sun
10/26 - Mon
10/27 - Tue
10/28 - Wed
10/29 - Thu
10/30 - Fri
10/31 - Sat
11/01 - Sun
Date-Hour
BUREAU OF RECLAMATION
Scheduled Hourly Releases
Actual Hourly Releases
Lees Ferry Flow

Glen Canyon Dam Hourly Release Pattern November 2020



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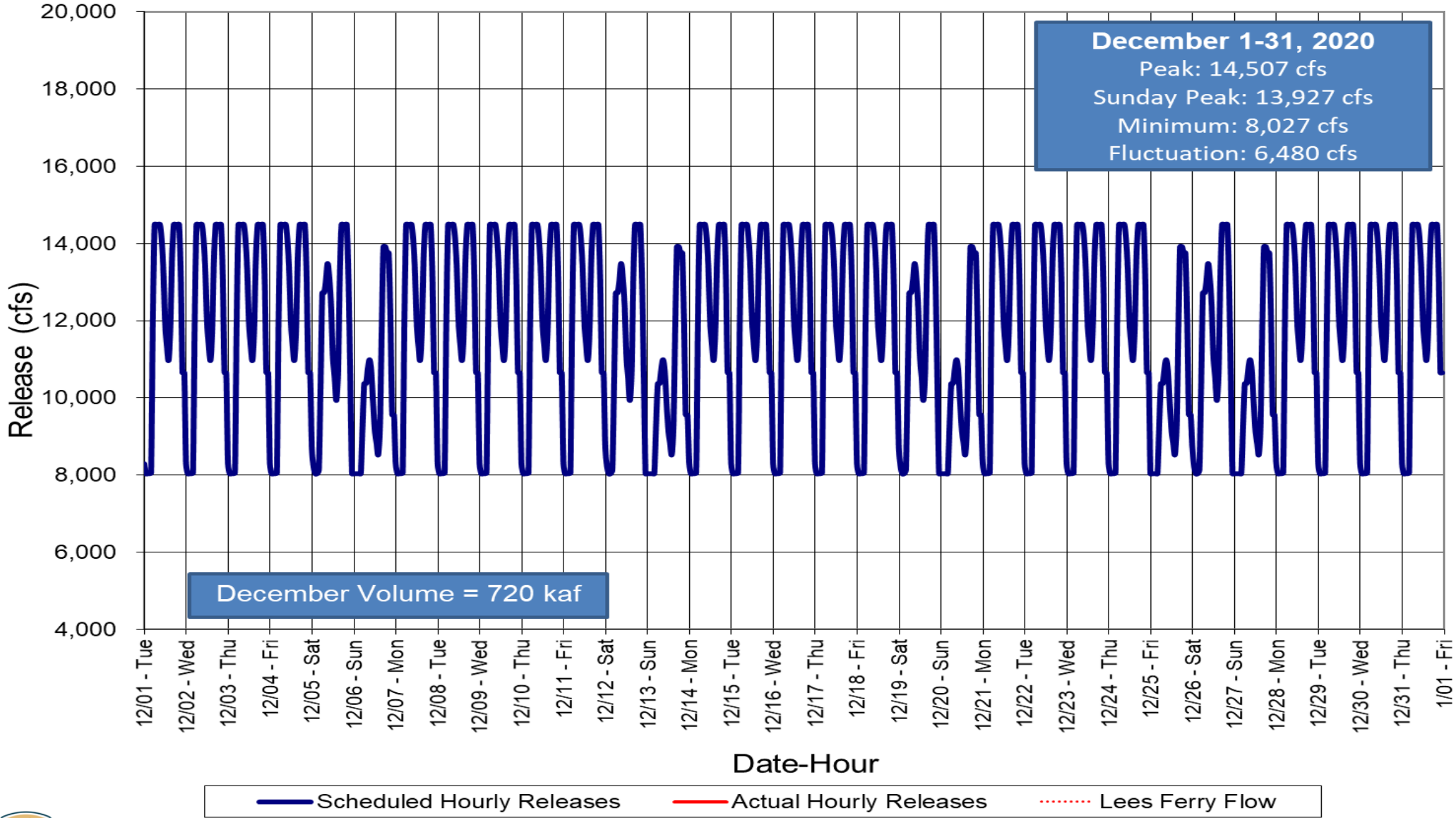
Glen Canyon Dam Hourly Release Pattern December 2020



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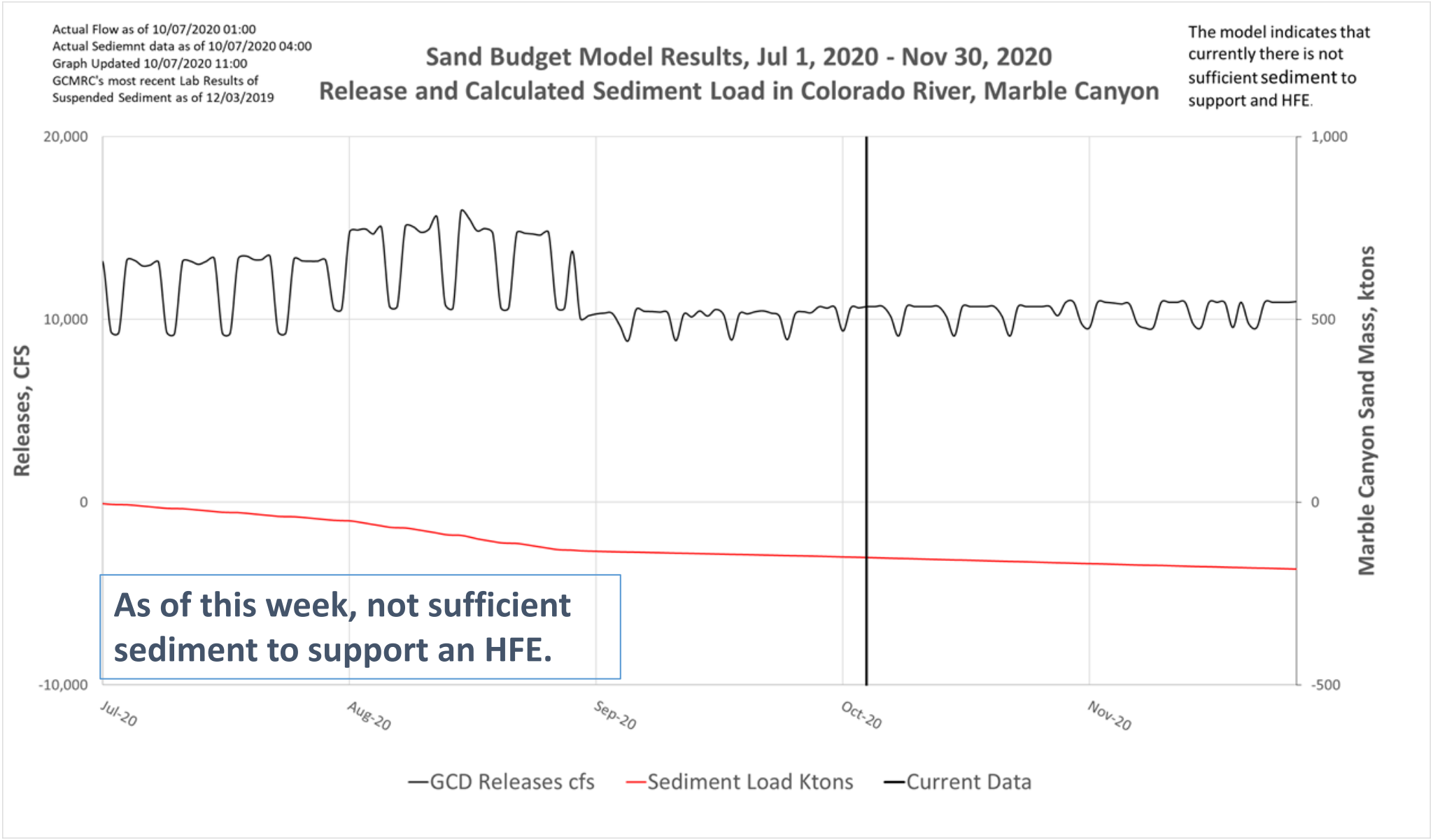
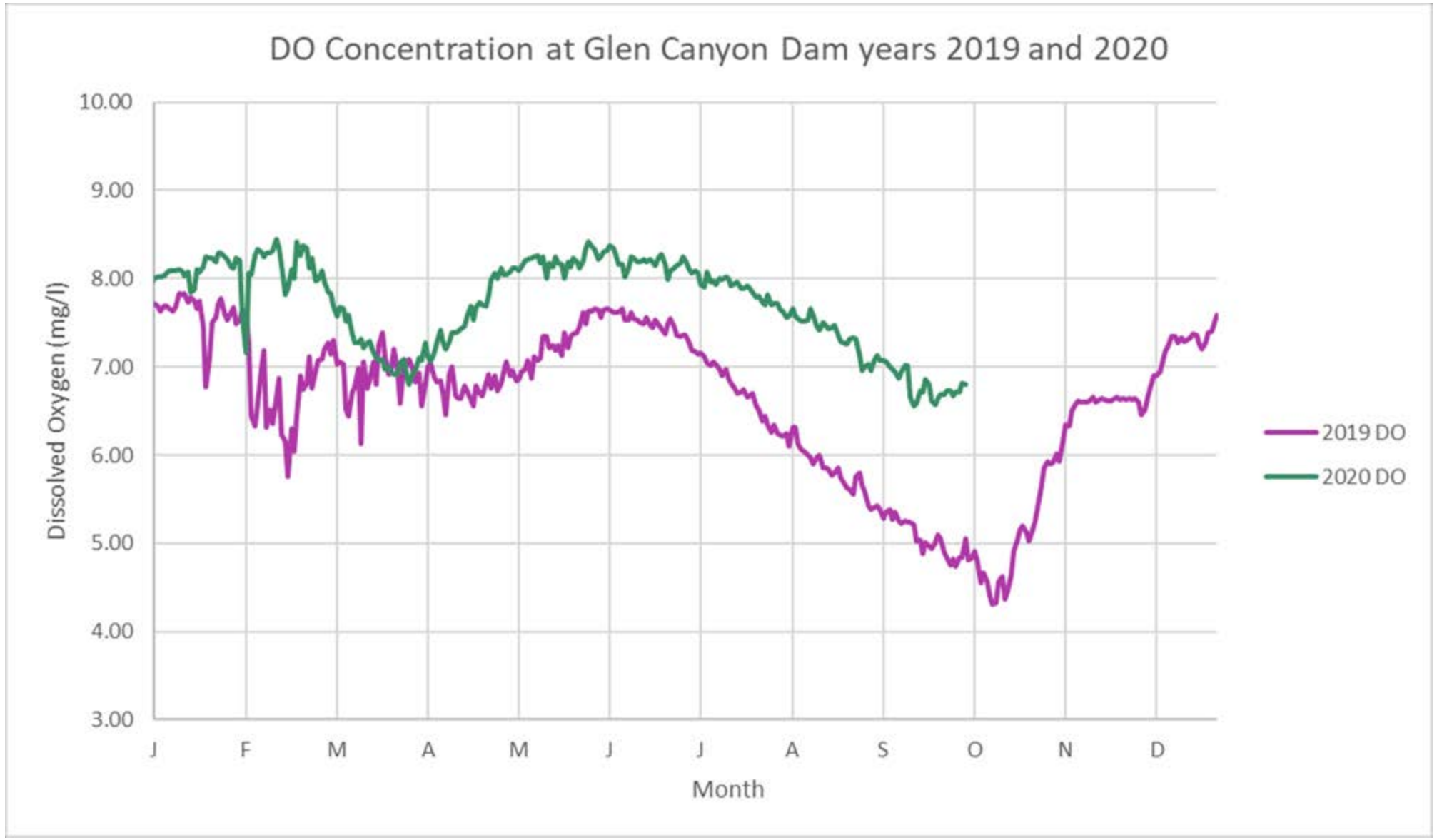
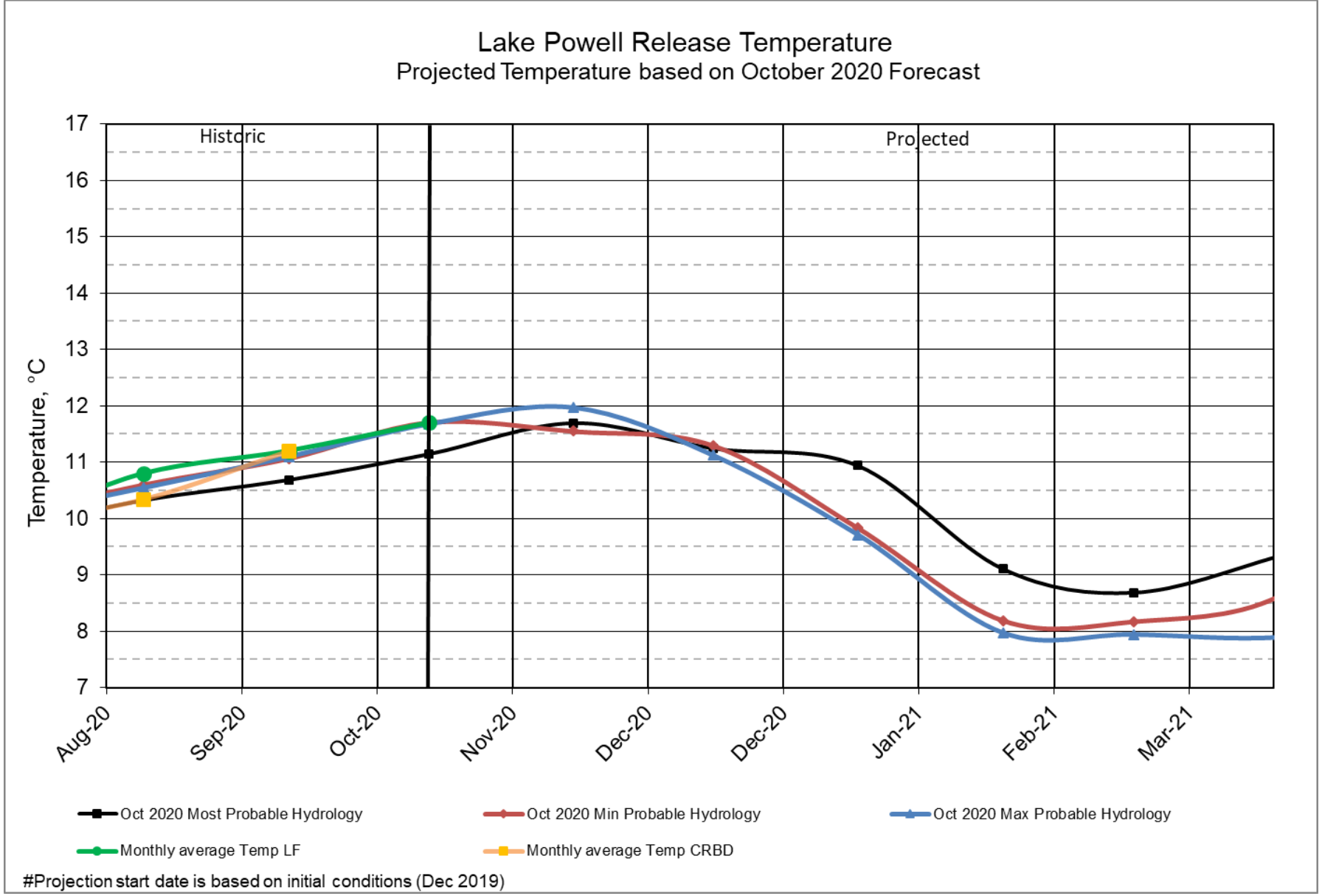
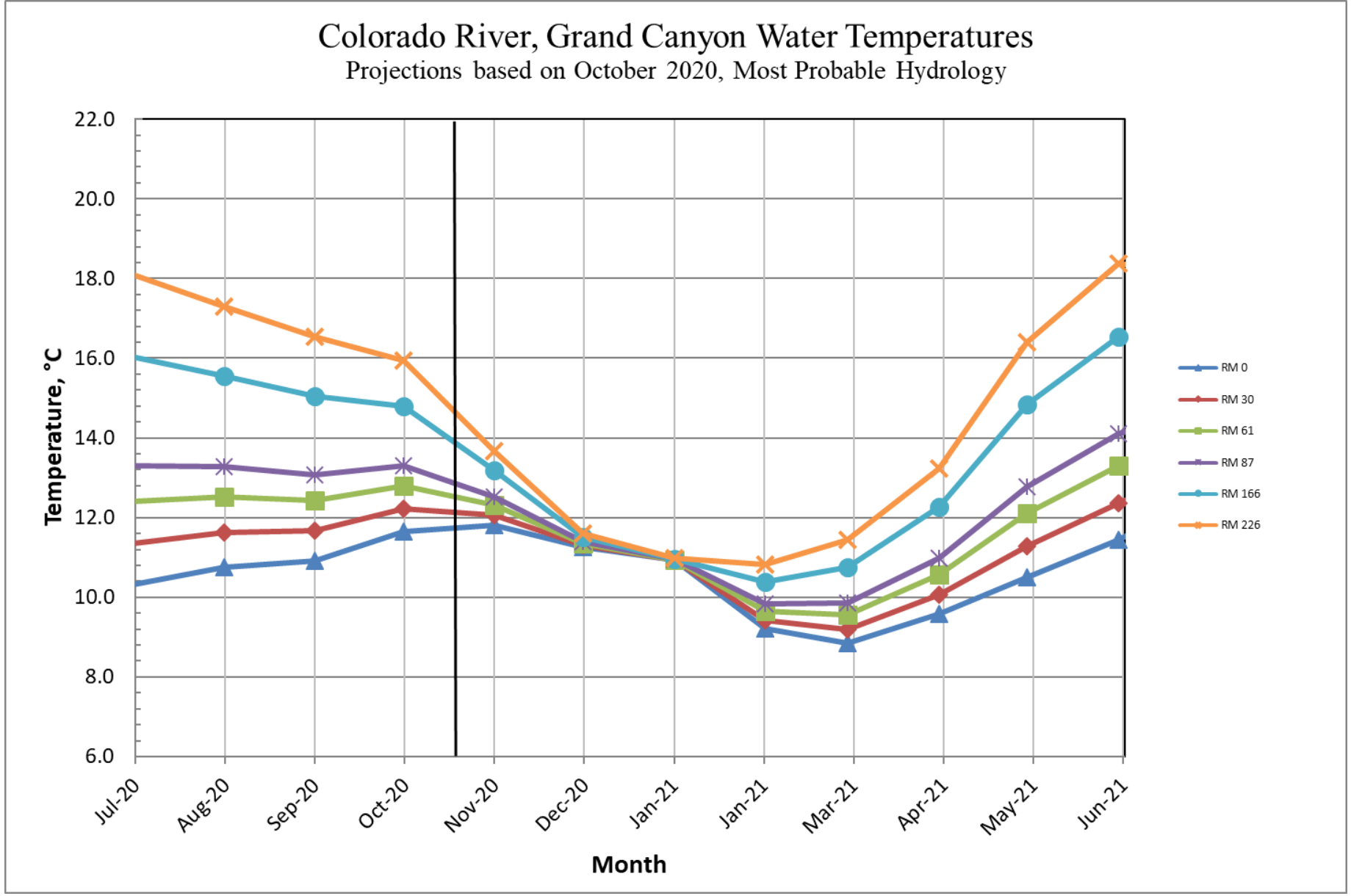
Water Quality

Sand Budget Model Results – October 7, 2020

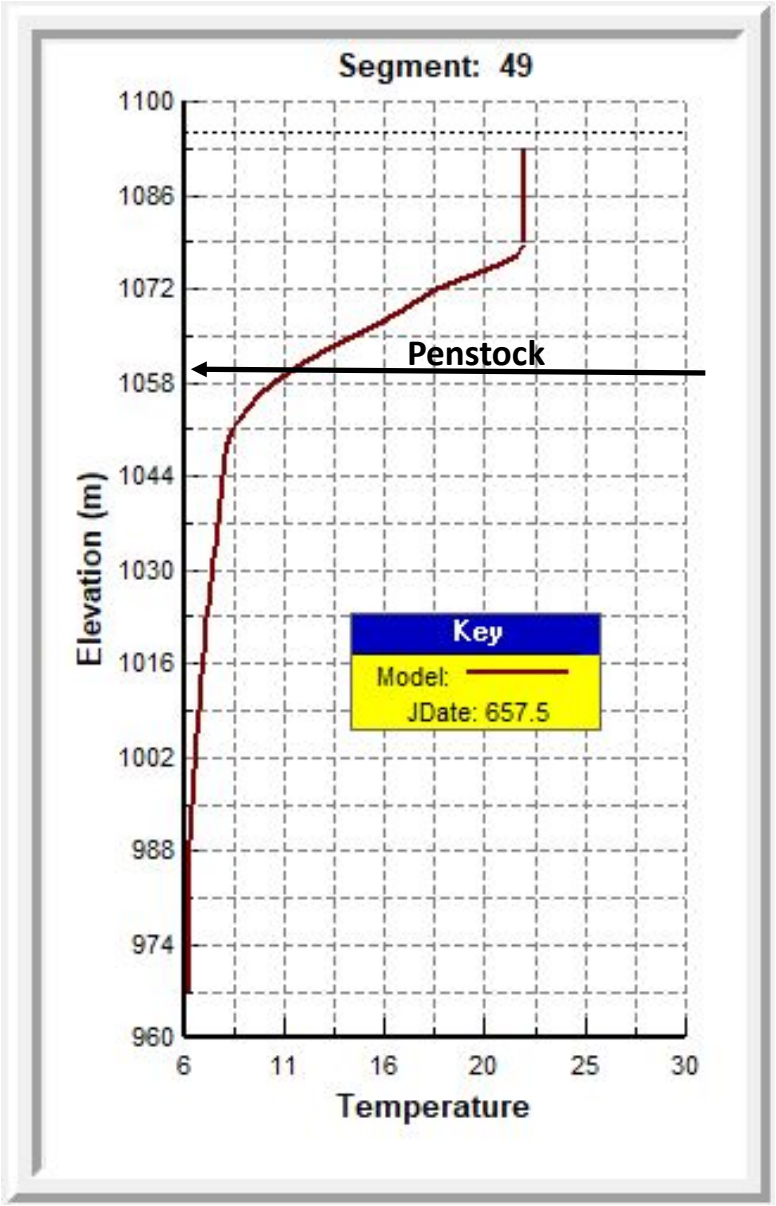



DO Concentration at Glen Canyon Dam years 2019 and 2020
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
Dissolved Oxygen (mg/l)
J
F
M
A
M
J
J
A
S
O
N
D
Month
2019 DO
2020 DO

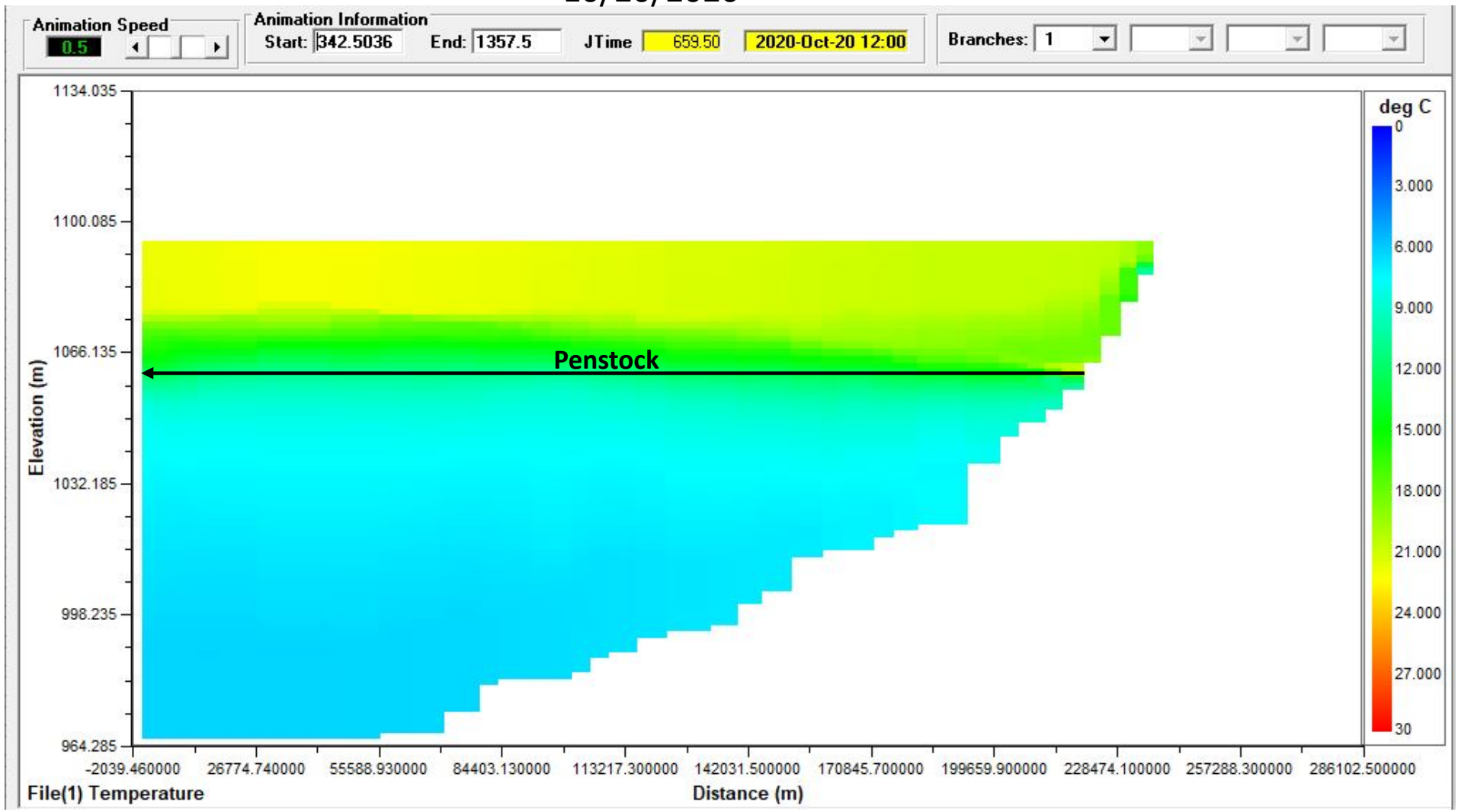

Lake Powell Release Temperature
Projected Temperature based on October 2020 Forecast
Historic
Projected
Temperature, °C
17
16
15
14
13
12
11
10
9
8
7
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
Dec-20
Jan-21
Feb-21
Mar-21
Oct 2020 Most Probable Hydrology
Oct 2020 Min Probable Hydrology
Oct 2020 Max Probable Hydrology
Monthly average Temp LF
Monthly average Temp CRBD
#Projection start date is based on initial conditions (Dec 2019)


Colorado River, Grand Canyon Water Temperatures
Projections based on October 2020, Most Probable Hydrology
Temperature, °C
22.0
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
Jan-21
Jan-21
Mar-21
Apr-21
May-21
Jun-21
Month
RM 0
RM 30
RM 61
RM 87
RM 166
RM 226

Temperature Profile of Lake Powell near GC Dam
10/18/2020



Cross Sectional Temperature Profile of Lake Powell
10/20/2020



Questions/Discussion

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