Hydrology Report – January 2023

UPDATE ON DISCUSSIONS

- **General Update on Negotiations for Near Term Actions**

The Secretary of the Interior's office issued a Register Notice for the preparation of a Supplemental Environmental Impact Statement (SEIS) to revise the December 2007 Record of Decision for the 2007 Interim Guidelines (Interim Guidelines) to create additional operational flexibility over the next few years, including potentially releasing less than 7 million-acre feet from Glen Canyon Dam. Comments on the scope of the SEIS were due on December 20, 2022. SNWA and the CRC submitted a comment letter on December 20, 2022, in which Nevada proposed an operational alterative for Reclamation and the other basin states to consider for a consensus based alternative. Key components of the Nevada proposed alternative include:

1. Ensuring water deliveries from Glen Canyon are not compromised;
2. Protecting intentionally created surplus volumes stored in Lake Mead;
3. Protecting critical elevations;
4. Providing sufficient storage in Lake Mead for 18 months of deliveries necessary to protect public health, safety and welfare;
5. Analysis and consideration of impacts of operational decisions on hydropower generation;
6. Comity with Mexico;
7. Sufficient environmental compliance to support the SEIS;
8. More restrictive shortage conditions resulting in Interim Guideline shortages and Drought Contingency Plan contributions to be made at higher elevation levels than currently provided, as well as the possibility of additional reductions;
9. Equitable sharing of lower basin evaporation and system losses;
10. Continued Drought Response Operation Actions and additional reductions in the upper basin; and
11. Adjusting tier balancing between the upper and lower basin reservoirs and providing for reductions below critical elevation.

Negotiations are taking place amongst the lower basin and upper basin parties on an expedited schedule this month in the hopes of having a 7 basin states consensus alternative to submit to Reclamation by the end of January. This is the latest time frame Reclamation requires if it is to have ample time to consider it and issue a draft SEIS by spring of 2023.

[1] Link to SNWA and CRC joint comment letter submitted on December 20, 2022.
https://s3.documentcloud.org/documents/23473174/southern-nevada-water-authority-seis-letter.pdf

HYDROLOGY UPDATE

- **Upper Basin precipitation and Temperature**

In December, there were several large storms in the upper basin that resulted in 152% of average precipitation for the month, which increased the cumulative precipitation to 107% of average for the year. Upper basin temperatures in December were 3-5 degrees below normal resulting in good conditions for snowpack accumulation. The majority of the Colorado River Basin continues to have moderate to severe drought designations in the U.S. Drought Monitor.

- **Upper Basin Snowpack and runoff**

Current basin snowpack accumulation is 146% of the seasonal median. The forecasted runoff was increased to 99% of average for the year due to above average snowpack conditions.

- **Current reservoir status**

As of January 3, 2023, Lake Mead is at a current elevation of 1,045.0 feet and has about 7.3 million acre-feet in storage (28% capacity). As of January 3, 2023, Lake Powell is at a current elevation of 3,524.8 feet and has about 5.5 million acre-feet in storage (24% capacity). Since this time last year, Lake Mead has decreased in elevation about 22 feet and Lake Powell has decreased about 13 feet. Total system storage for the upper and lower basin is around 19.0 million acre-feet (33% capacity).

- **2023 Reservoir Operations and Drought Operations**

In calendar year 2023, there is a Level 2a shortage under the 2007 Guidelines and there is a required Drought Contingency Plan contribution for Nevada and Arizona. Accordingly, in 2023, Nevada's consumptive use will be reduced by 17,000 acre-feet under the 2007 Interim Guidelines and Nevada will make a Drought Contingency Plan contribution of 8,000 acre-feet. Arizona and Mexico are also required to take shortage and make a water savings contribution in 2023. Those amounts are significantly larger than Nevada's obligations. The total combined volumes for Arizona, Nevada, and Mexico are 721,000 acre-feet in calendar year 2023, which will save the equivalent of about 10 feet in elevation in Lake Mead. The reductions and contributions for calendar year 2023 are highlighted in Figure 1.

Lake Mead Elevation (feet msl)	2007 Interim Guidelines Shortages		Minute 323 Delivery Reductions	Total Combined Reductions	DCP Water Savings Contributions			Binational Water Scarcity Contingency Plan Savings	Combined Volumes by Country *US: (2007 Interim Guidelines Shortages + DCP Contributions)* *Mexico: (Minute 323 Delivery Reductions + Binational Water Scarcity Contingency Plan Savings)*					Total Combined Volumes
	AZ	NV	Mexico	***Lower Basin States + Mexico***	AZ	NV	CA	Mexico	*AZ Total*	*NV Total*	*CA Total*	*Lower Basin States Total*	*Mexico Total*	***Lower Basin States + Mexico***
1,090 - 1,075	0	0	0	***0***	192	8	0	41	192	8	0	*200*	*41*	***241***
1,075 – 1,050	320	13	50	***383***	192	8	0	30	512	21	0	*533*	*80*	***613***
1,050 - 1,045	400	17	70	***487***	192	8	0	34	592	25	0	*617*	*104*	***721***
1,045 - 1,040	400	17	70	***487***	240	10	200	76	640	27	200	*867*	*146*	***1,013***
1,040 - 1,035	400	17	70	***487***	240	10	250	84	640	27	250	*917*	*154*	***1,071***
1,035 - 1,030	400	17	70	***487***	240	10	300	92	640	27	300	*967*	*162*	***1,129***
1,030 - 1,025	400	17	70	***487***	240	10	350	101	640	27	350	*1,017*	*171*	***1,188***
<1,025	480	20	125	***625***	240	10	350	150	720	30	350	*1,100*	*275*	***1,375***

Figure 1. The reductions and contributions for calendar year 2023.

- **Water Use in Southern Nevada**

Southern Nevada's consumptive use in January through November of 2022 was 215,470 acre-feet, which is a 7.1% decrease in water use compared to last year. In 2021, southern Nevada consumed less Colorado River water than its 300,000 acre-feet entitlement: specifically, 49,832 (17%) acre feet less. The Southern Nevada Water Authority stored the unused water in Lake Mead to help maintain critical lake levels. This stored water is accessible to southern Nevada in the future if necessary. The Southern Nevada Water Authority has been aggressively reducing consumptive uses through turf removal and conservation programs allowing thus far over 2.3 million acre-feet in total to be stored for future use.

- **Reclamation's Lake Mead Projection [2]**

Reclamation uses computer models to forecast reservoir elevations based on planned water use and anticipated runoff. Figure 2 shows that the December 24 Month Study is forecasting Lake Mead to end the calendar year between 1,021.05 to 1,016.18 feet in elevation.

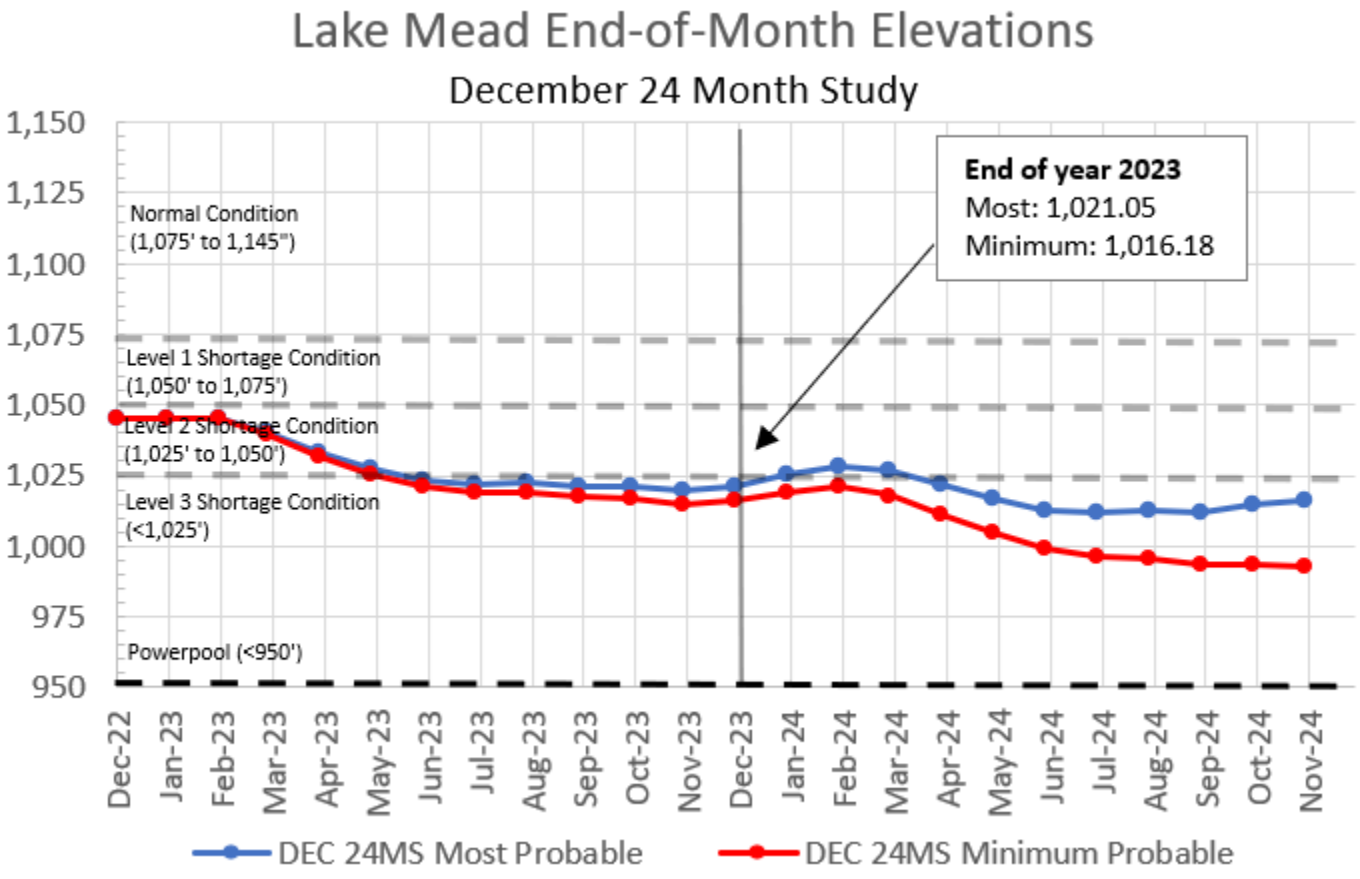


Figure 2. Reclamations November 24 Month Study projections for Lake Mead.

- **Reclamation's Lake Powell Projection [2]**

Reclamations December 24 Month Study is forecasting Lake Powell's elevation to be between 3,527.00 and 3,489.18 feet by the end of the year (Figure 3). The driest scenario (red line) is showing Lake Powell going below power pool between December 2023 and May 2024.

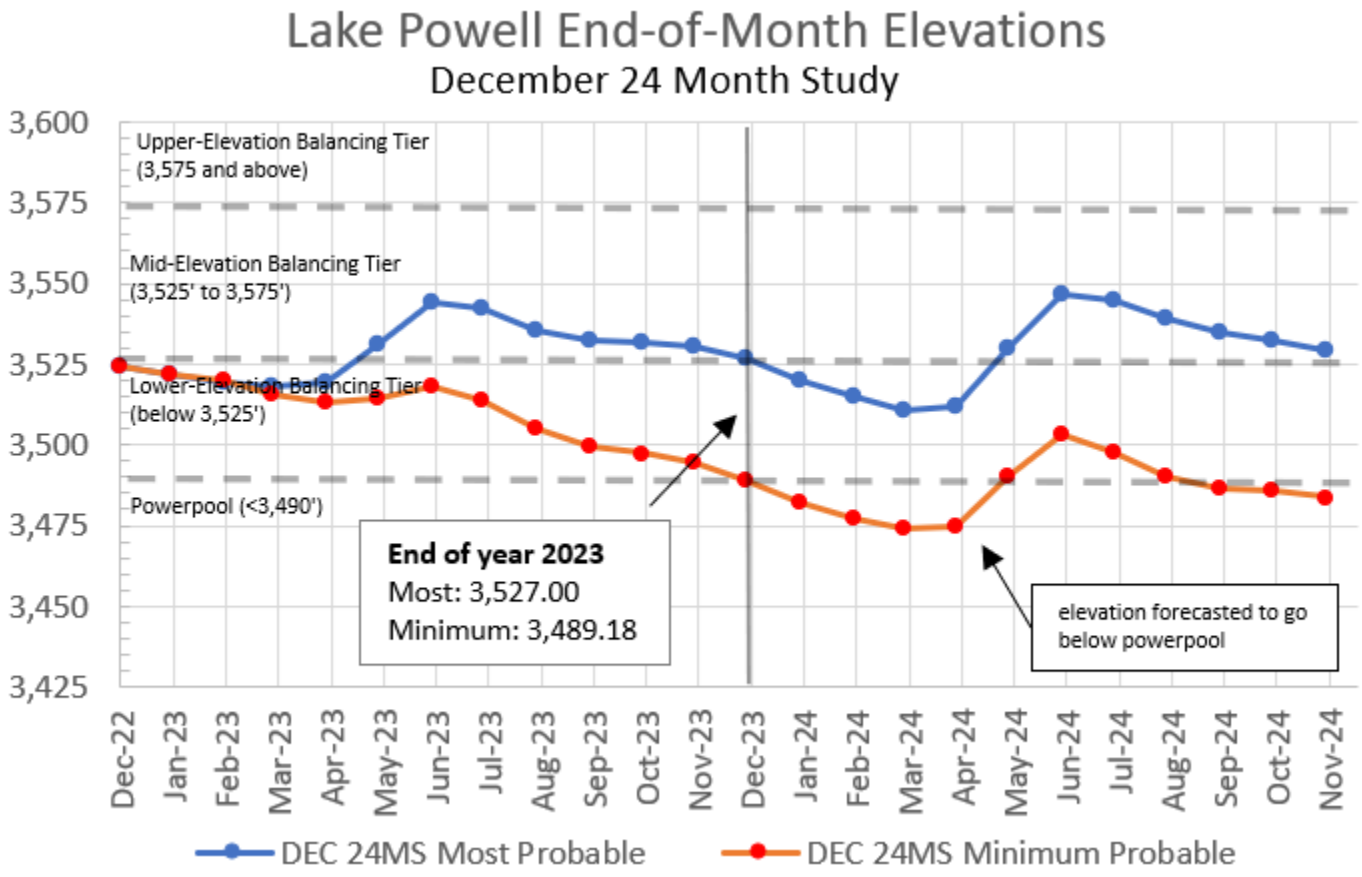


Figure 3. Reclamations November 24 Month Study projections for Lake Powell.

[2] Reclamation modeling assumes the current operational guidelines and planned conservation activities. Forecasts could improve by implementing additional actions.

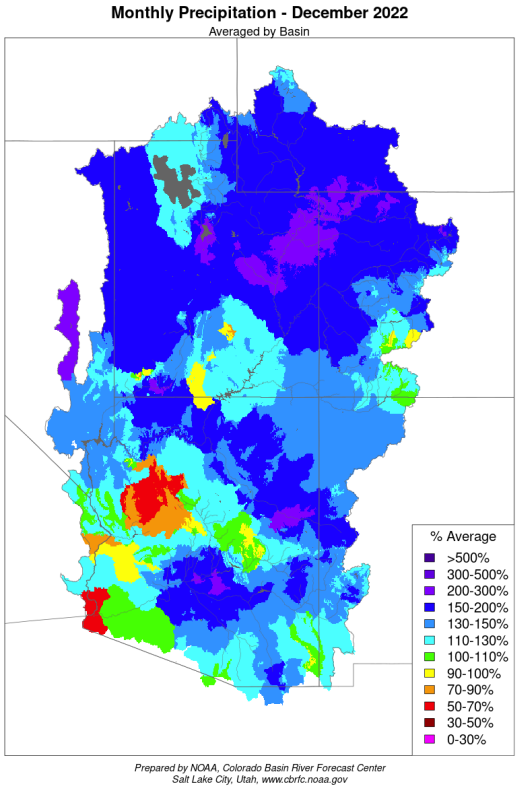
Colorado River Commission of Nevada

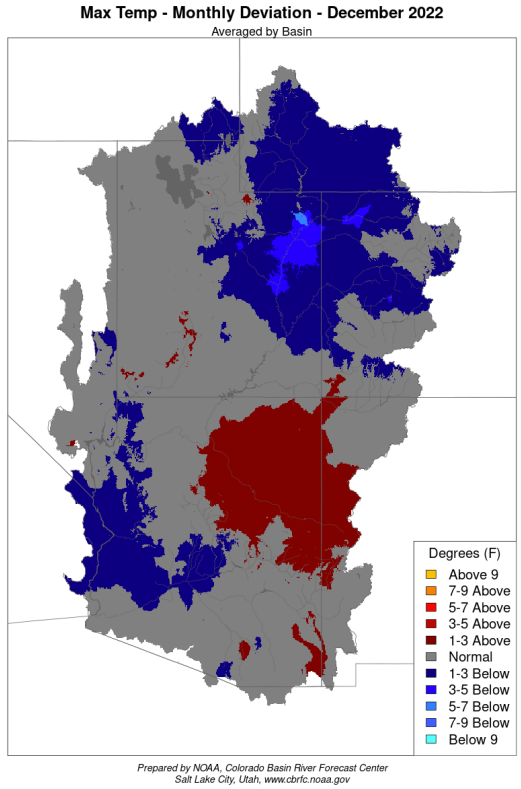
Hydrology and River Updates

Warren Turkett

January 10, 2023

Precipitation and Temperature





Lake Powell %Average Precipitation Water Year 2023

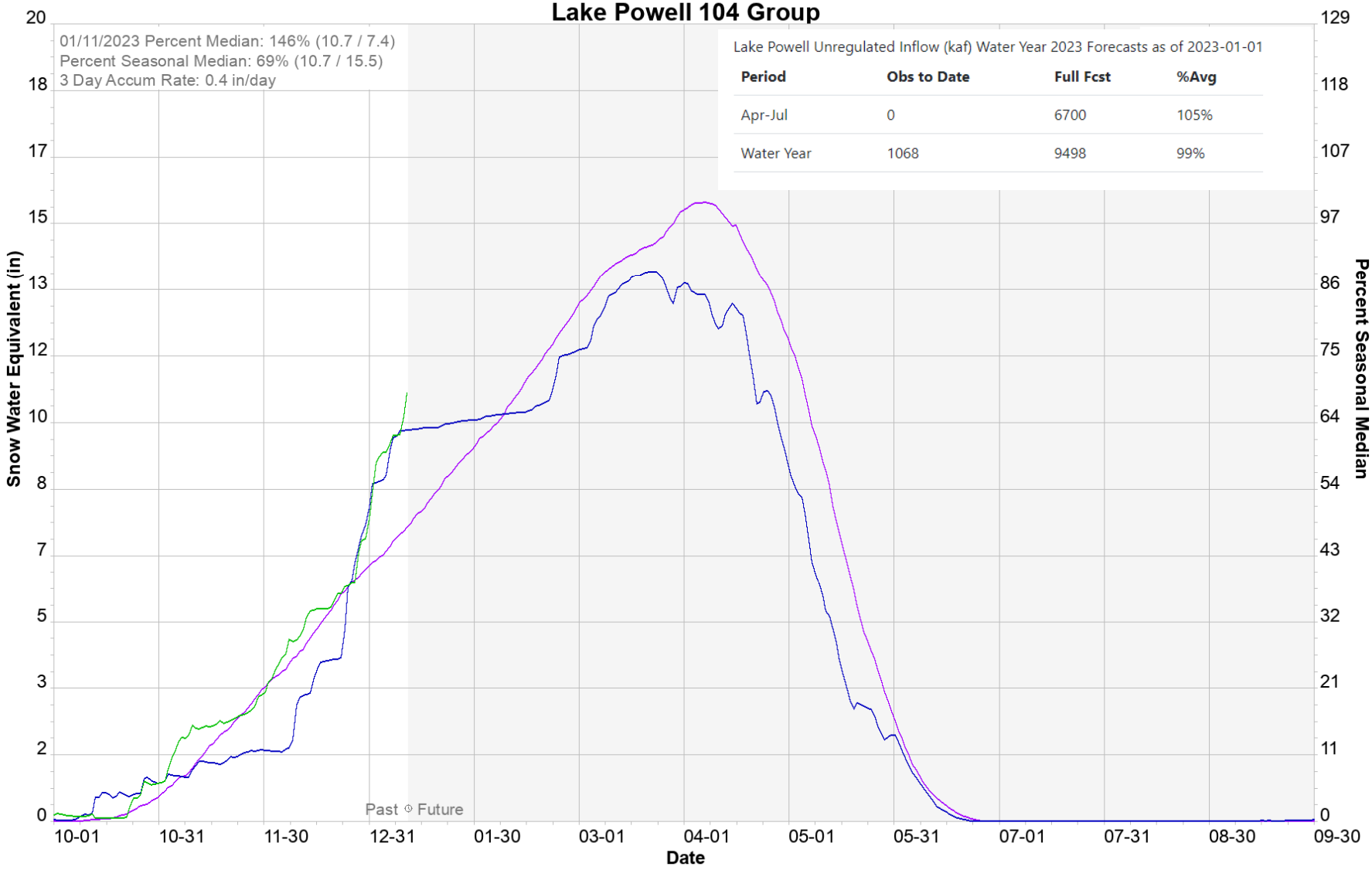
Area	Oct	Nov	Dec	Water Year
UC-Powell	84	82	152	107

Colorado Basin River Forecast Center
Lake Powell 104 Group

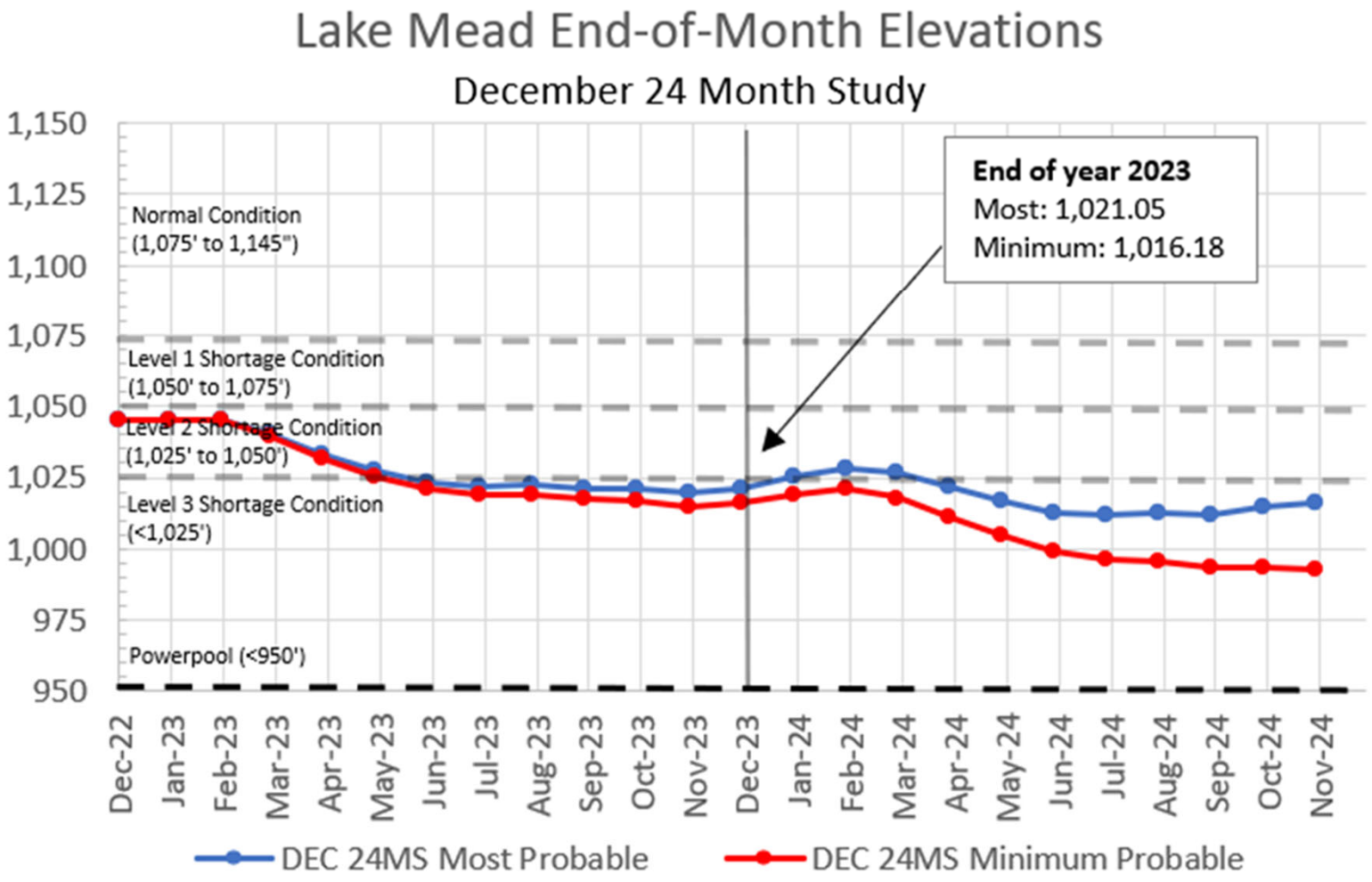
01/11/2023 Percent Median: 146% (10.7 / 7.4)
Percent Seasonal Median: 69% (10.7 / 15.5)
3 Day Accum Rate: 0.4 in/day

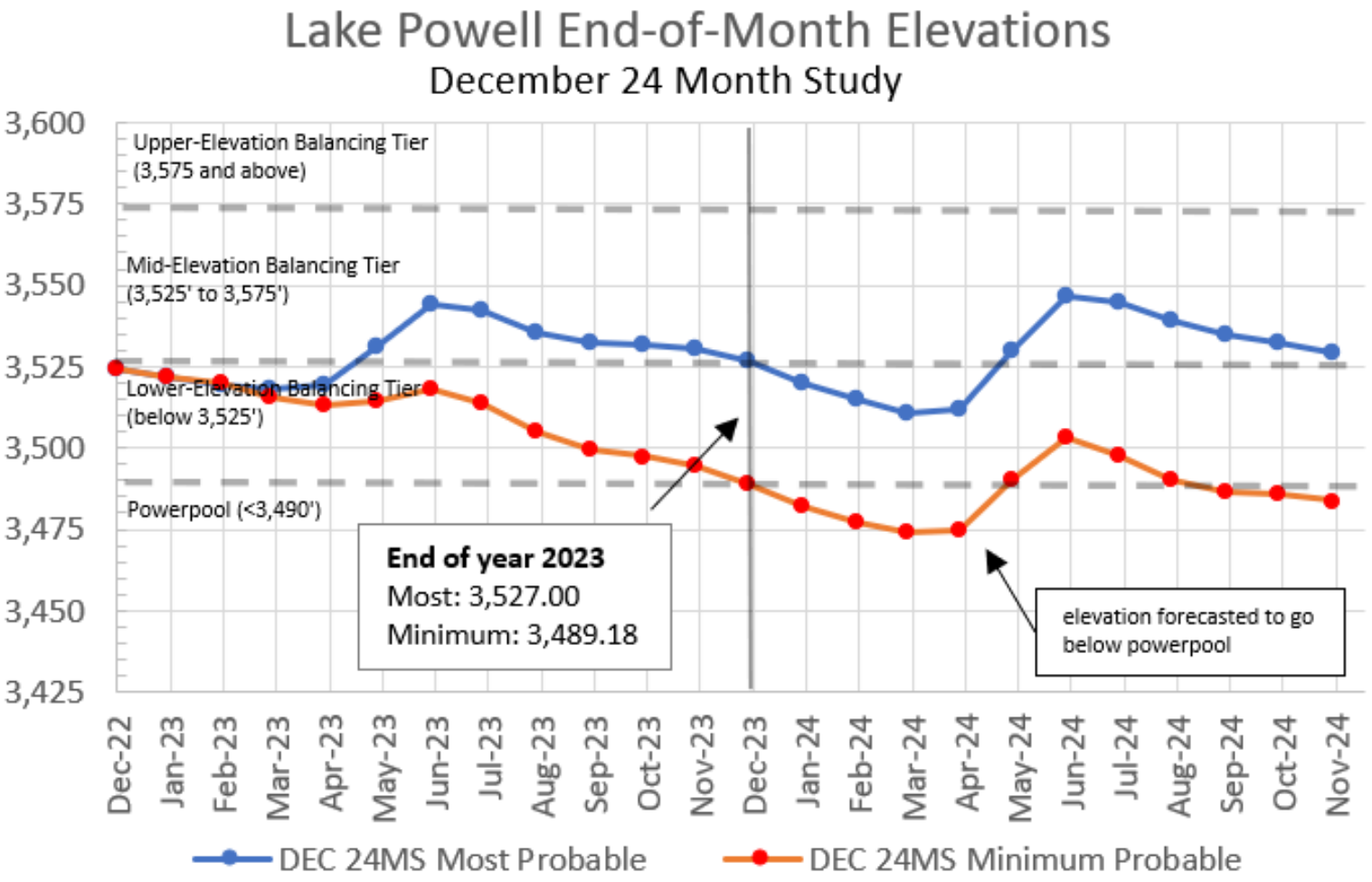
Lake Powell Unregulated Inflow (kaf) Water Year 2023 Forecasts as of 2023-01-01

Period	Obs to Date	Full Fcst	%Avg
Apr-Jul	0	6700	105%
Water Year	1068	9498	99%



Median 1991-2020 *2022* *2023*


Lake Mead End-of-Month Elevations
December 24 Month Study
1,150
1,125
1,100
1,075
1,050
1,025
1,000
975
950
Normal Condition
(1,075' to 1,145')
Level 1 Shortage Condition
(1,050' to 1,075')
Level 2 Shortage Condition
(1,025' to 1,050')
Level 3 Shortage Condition
(<1,025')
Powerpool (<950')
End of year 2023
Most: 1,021.05
Minimum: 1,016.18
Dec-22
Jan-23
Feb-23
Mar-23
Apr-23
May-23
Jun-23
Jul-23
Aug-23
Sep-23
Oct-23
Nov-23
Dec-23
Jan-24
Feb-24
Mar-24
Apr-24
May-24
Jun-24
Jul-24
Aug-24
Sep-24
Oct-24
Nov-24
DEC 24MS Most Probable
DEC 24MS Minimum Probable


Lake Powell End-of-Month Elevations
December 24 Month Study
3,600
3,575
3,550
3,525
3,500
3,475
3,450
3,425
Upper-Elevation Balancing Tier
(3,575 and above)
Mid-Elevation Balancing Tier
(3,525' to 3,575')
Lower-Elevation Balancing Tier
(below 3,525')
Powerpool (<3,490')
End of year 2023
Most: 3,527.00
Minimum: 3,489.18
elevation forecasted to go
below powerpool
Dec-22
Jan-23
Feb-23
Mar-23
Apr-23
May-23
Jun-23
Jul-23
Aug-23
Sep-23
Oct-23
Nov-23
Dec-23
Jan-24
Feb-24
Mar-24
Apr-24
May-24
Jun-24
Jul-24
Aug-24
Sep-24
Oct-24
Nov-24
DEC 24MS Most Probable
DEC 24MS Minimum Probable

Negotiations and Updates

Supplemental Environmental Impact Statement for 2007 Guidelines

- CRCNV and SNWA filed a joint comment letter on December 20, 2022 proposing
- an operational alternative for Reclamation and the Basin States to consider including:

  -strategies to manage the severity of river conditions and reduced water supplies

  -evaluation of impacts on hydropower generation resulting from further reductions.
- A consensus alternative must be submitted to Reclamation by the end of January for consideration.
- Basin States negotiations are taking place on an expedited schedule.
- If consensus is not reached, Reclamation will move forward with its own operational alternative.