



— BUREAU OF —
RECLAMATION

Colorado River Basin: System Status Update

June 28, 2022

Colorado River Basin Storage

(as of June 26, 2022)

Reservoir	Percent Full	Storage (maf)	Elevation (feet)
Lake Powell	28%	6.85	3,539.36
Lake Mead	28%	7.21	1,043.41
Total System Storage	35%	20.87	- - -

Total system storage was 42% of capacity, or 24.79 maf in storage, at this time last year.



Water Year Snowpack and Precipitation^{1,2} as of June 27, 2022

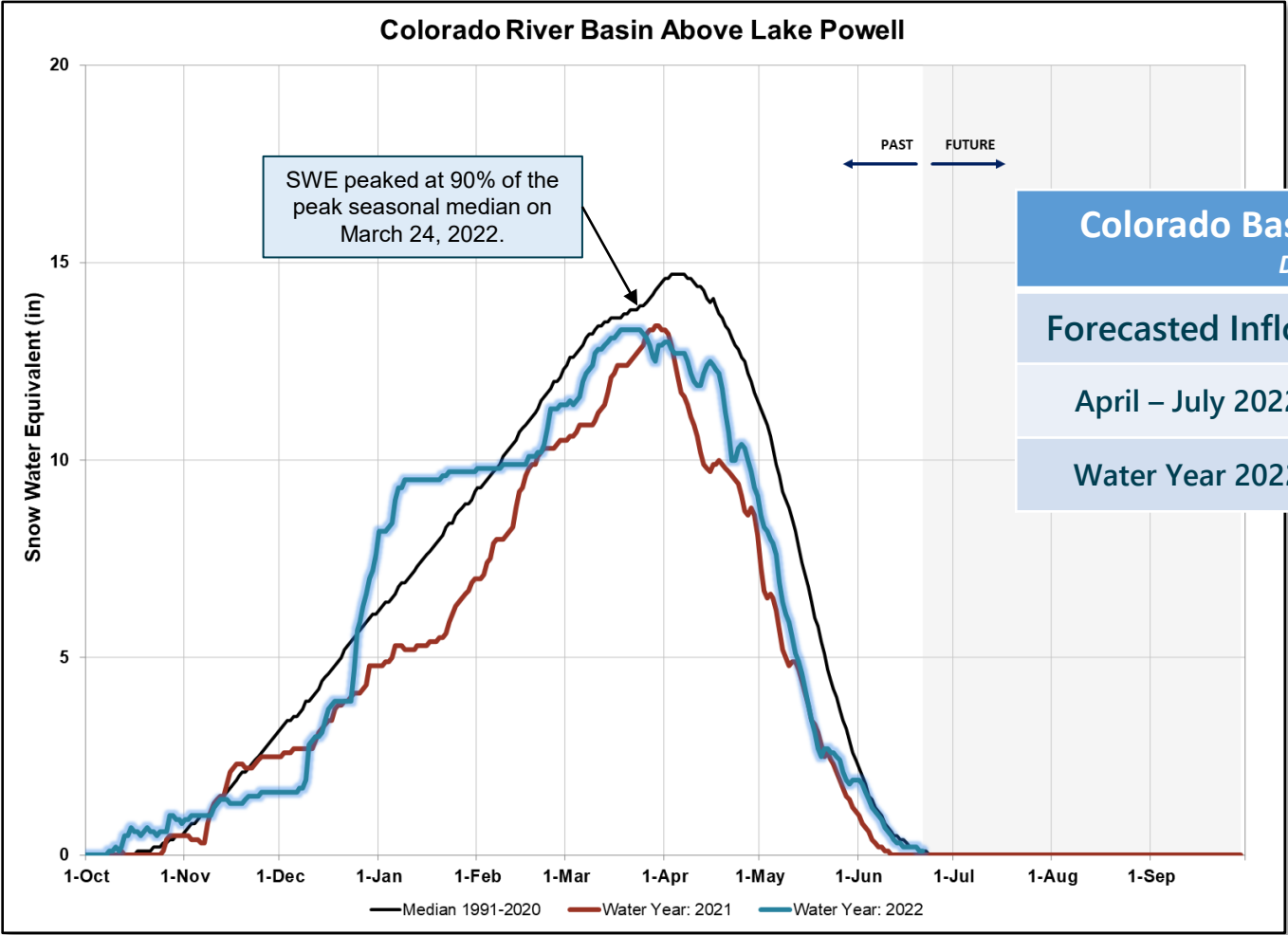
Colorado River Basin
above Lake Powell

Water Year 2022
Precipitation
(year-to-date)

95% of average

Current Snowpack

NA% of median



Colorado Basin River Forecast Center		
Dated June 3, 2022		
Forecasted Inflow	MAF	% of Average
April – July 2022	3.50	55%
Water Year 2022	5.61	58%

¹Percent of normal precipitation is based on an arithmetic mean, or average; percent of normal snowpack is based on the median value for a given date.

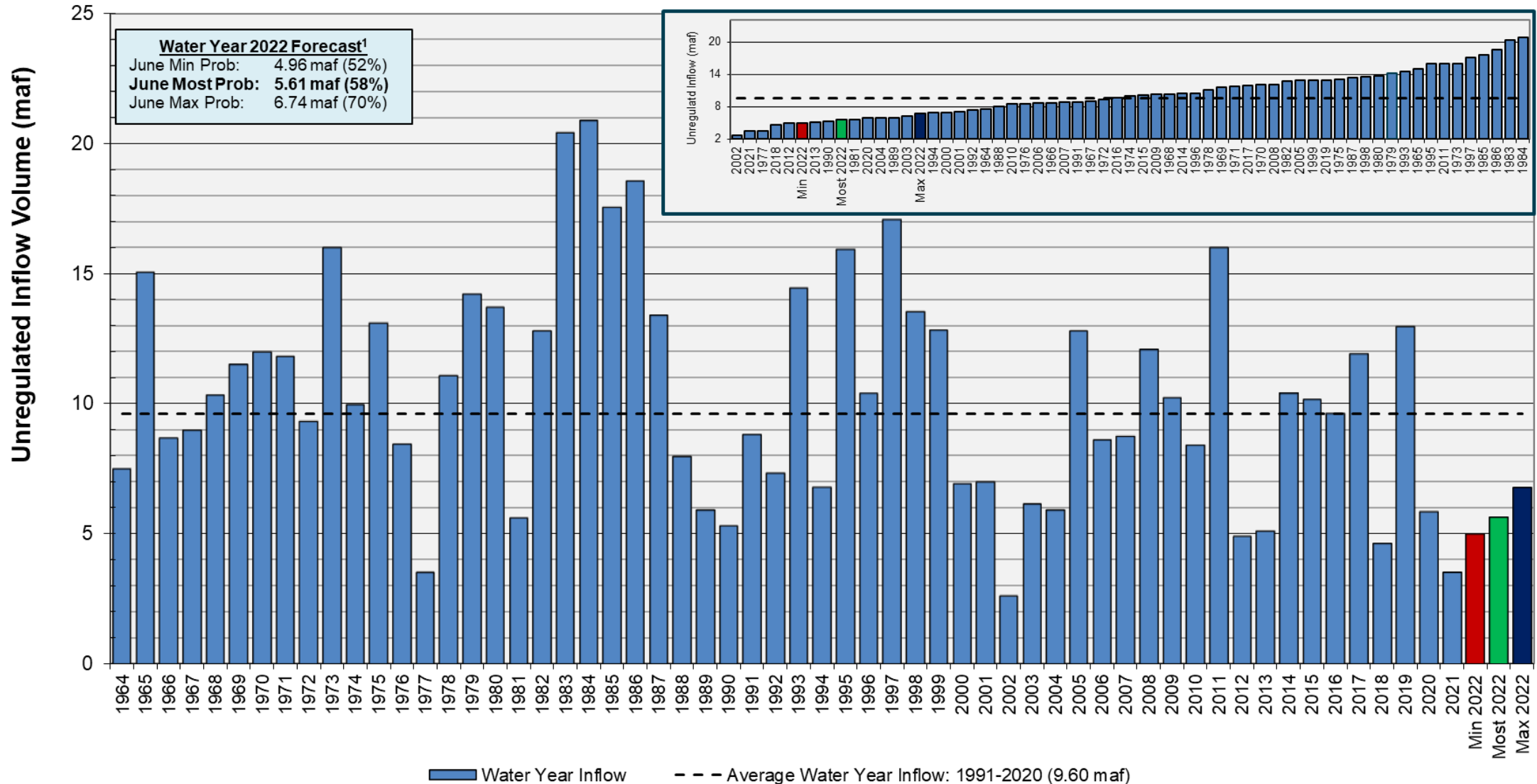
²Statistics are based on the 30-year period of record from 1991-2020.



Lake Powell Water Year Unregulated Inflow¹

Forecast as of June 3, 2022

Comparison with History

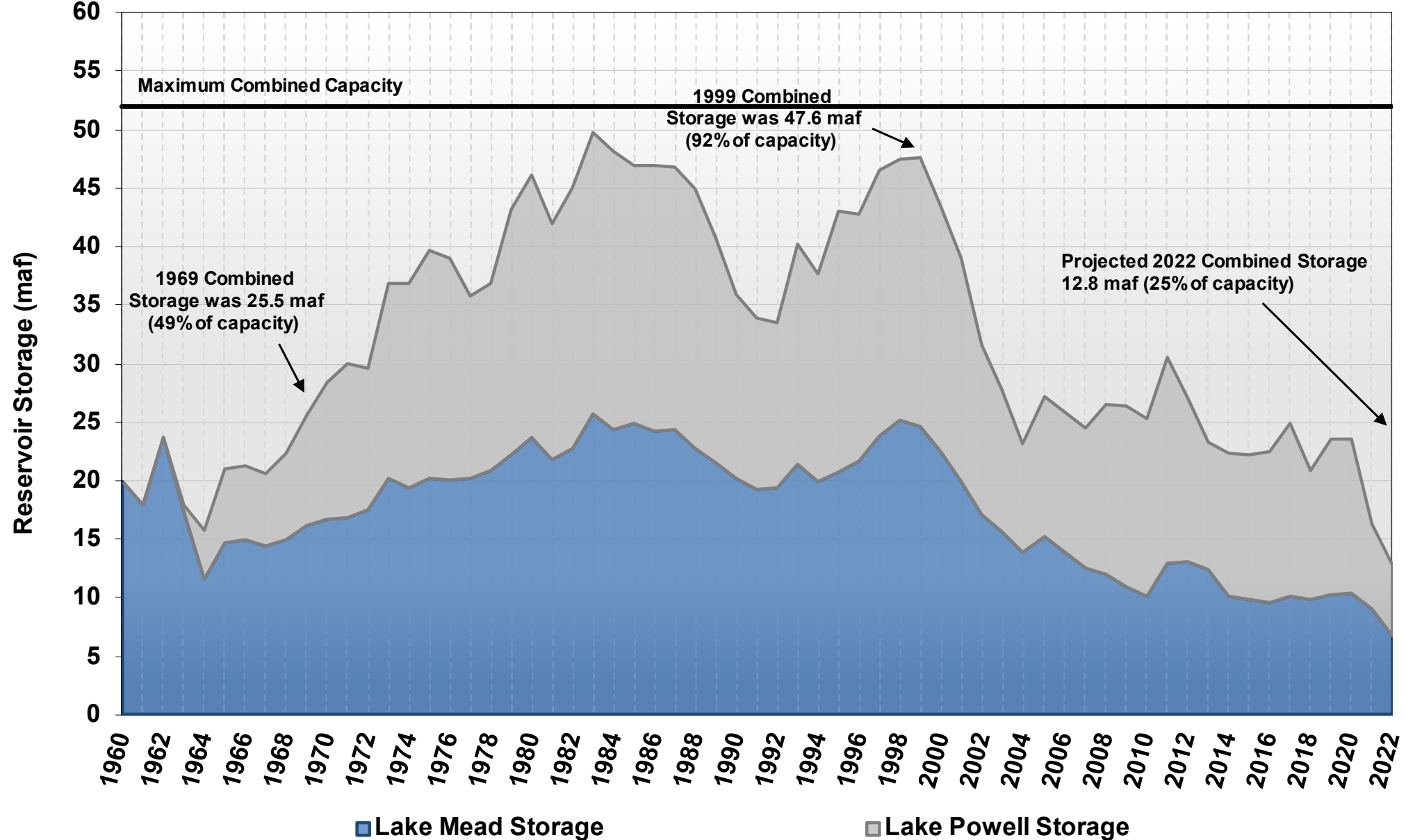


¹Water Year 2022 statistics are based on the 30-year period of record from 1991-2020.



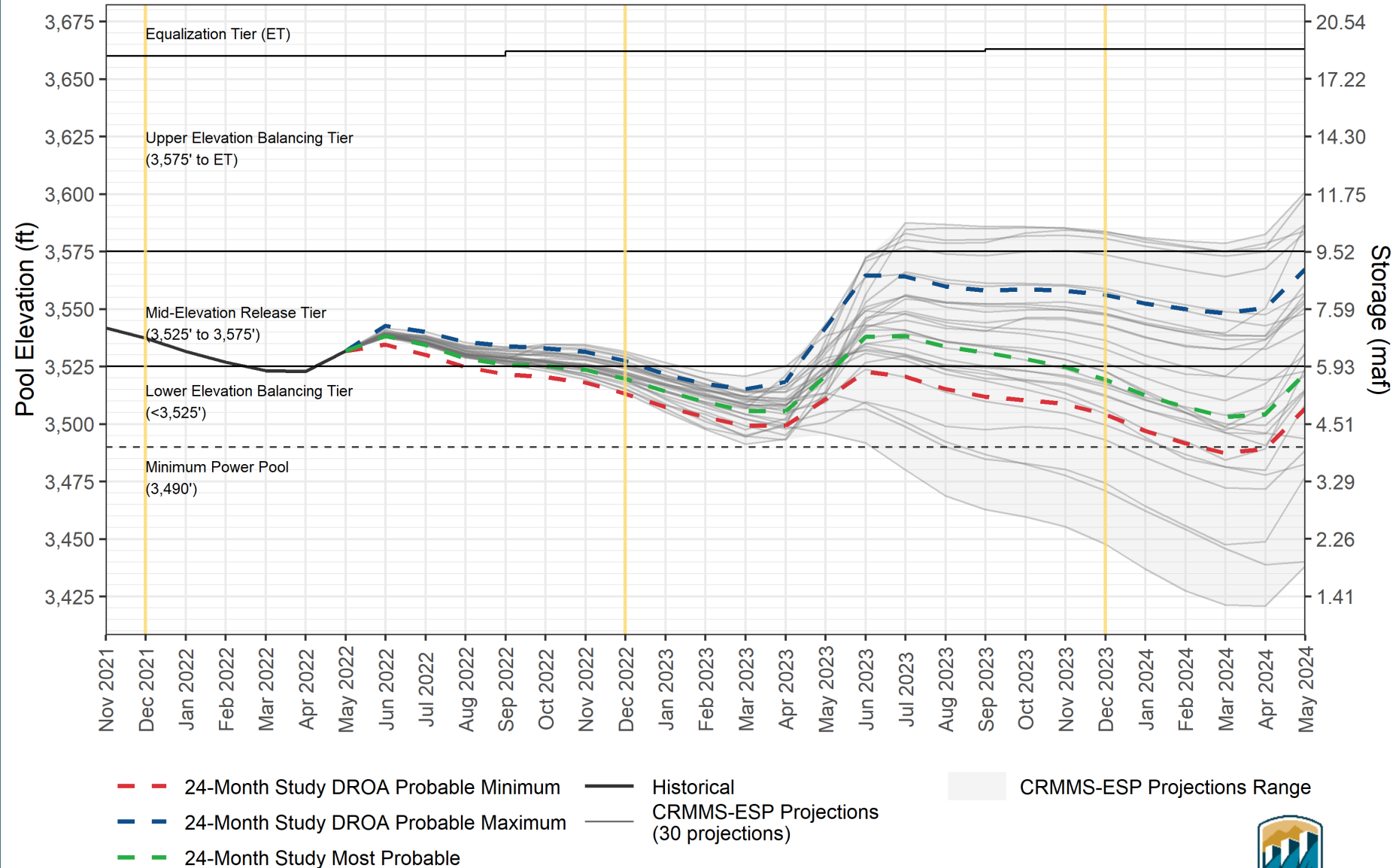
Lake Powell and Lake Mead End of Water Year Storage

Water Years 1960 through 2022



Lake Powell End-of-Month Elevations

CRMMS Projections from June 2022

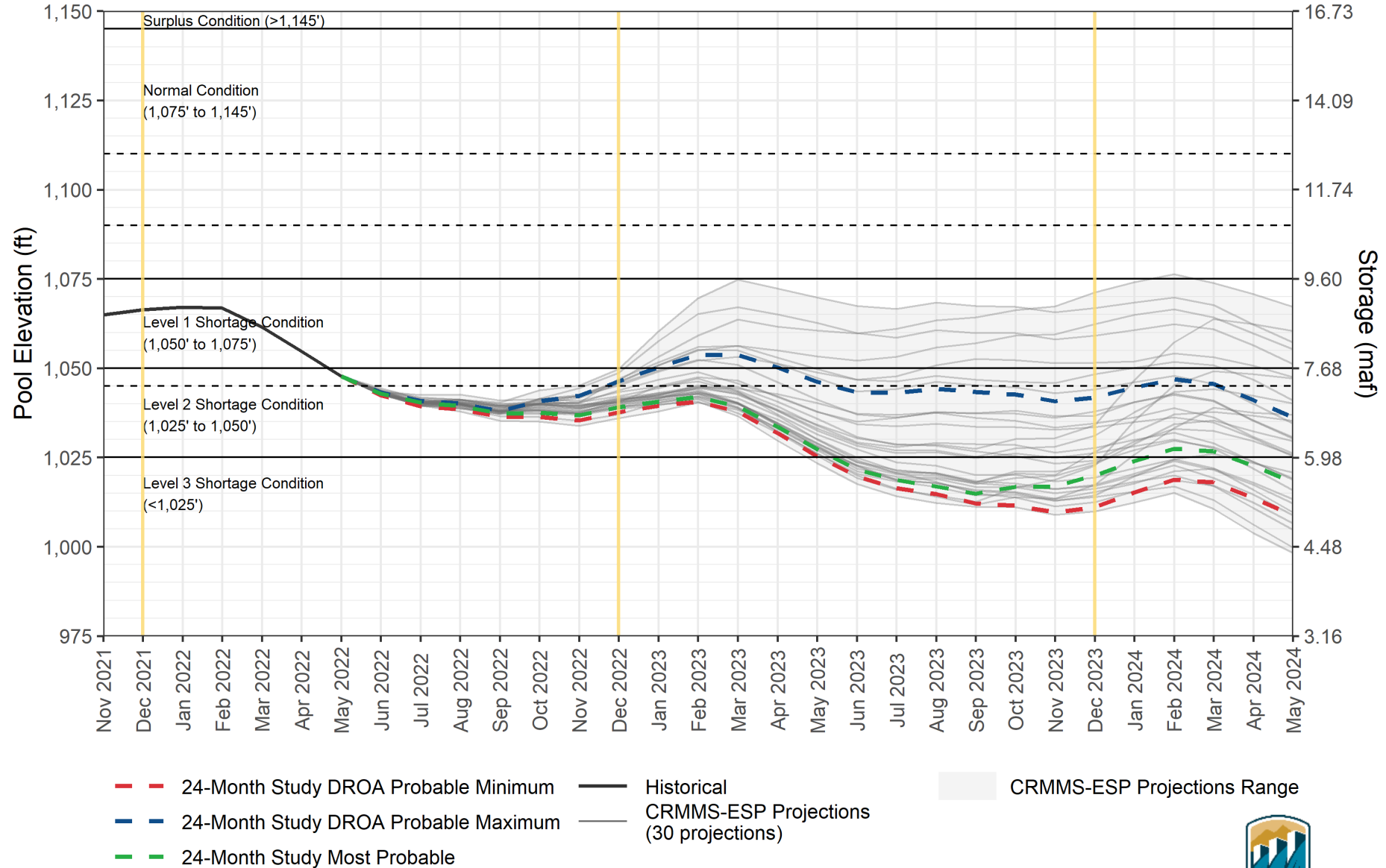


* Projected Lake Powell end-of-month physical elevations from the June CRMMS-ESP and 24-Month Study inflow scenarios.



Lake Mead End-of-Month Elevations

CRMMS Projections from June 2022



* Projected Lake Mead end-of-month physical elevations from the June CRMMS-ESP and 24-Month Study inflow scenarios.

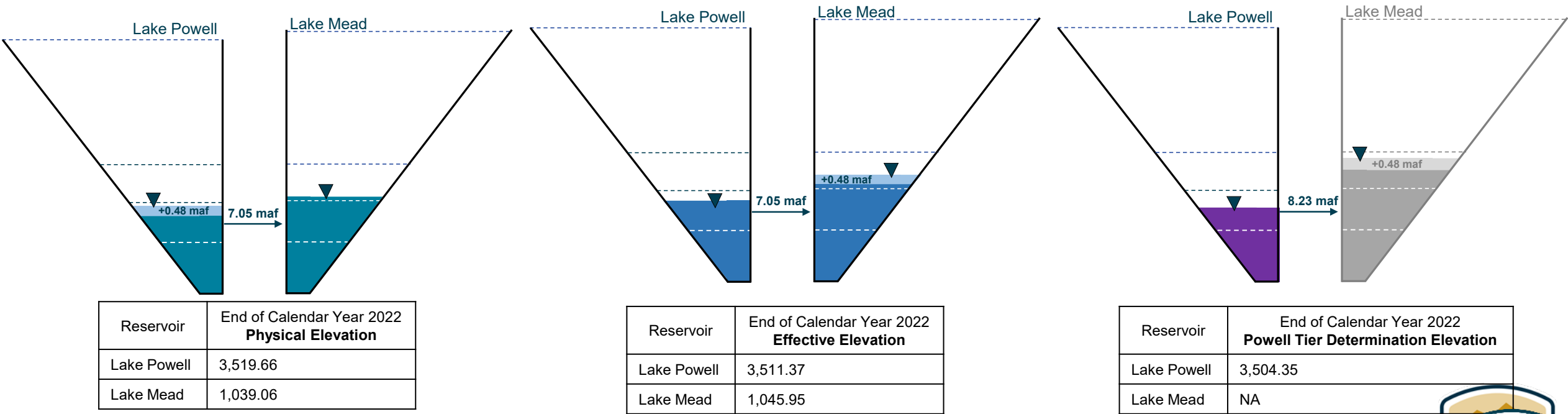


End of Calendar Year 2022 Lake Powell and Lake Mead Elevations^{1,2,3}

Physical Elevations: Real-time or projected elevations based on a 7.00 maf release from Lake Powell in WY 2022 and 7.05 maf in WY 2023.

Effective Elevation & Mead Operating Condition Determination: Projected elevation “as if” the additional 0.48 maf were released from Powell in WY 2022, with an adjusted WY 2023 Powell release of 7.05 maf.

Powell Tier Determination: Projected elevation “as if” the additional 0.48 maf were released from Powell in WY 2022 and with an 8.23 maf WY 2023 Powell release.



¹ For more information: <https://www.usbr.gov/uc/DocLibrary/Plans/20220503-2022DROA-GlenCanyonDamOperationsDecisionLetter-508-DOI.pdf>.

² Both the Powell Tier Determination and Effective Elevations are “as if” the additional 0.48 maf were released from Powell in WY 2022. Powell’s Tier Determination elevation is used to set the WY 2023 operating tier. For Mead, the Effective Elevation is used to set the CY 2023 operating condition. The Department of Interior and Reclamation will work with the Basin States to determine the manner in which to operate Glen Canyon Dam to ensure the benefits of these actions are preserved.

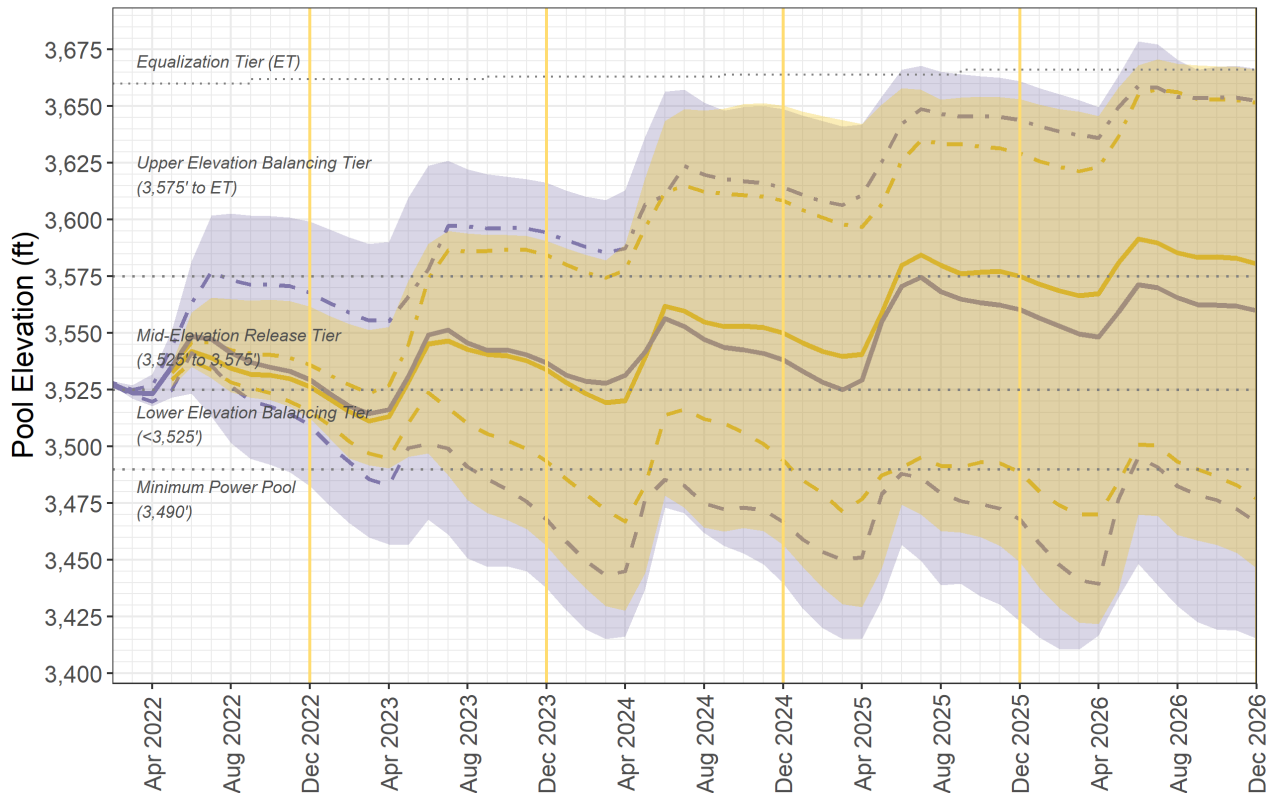
³ Images are **not** to scale.



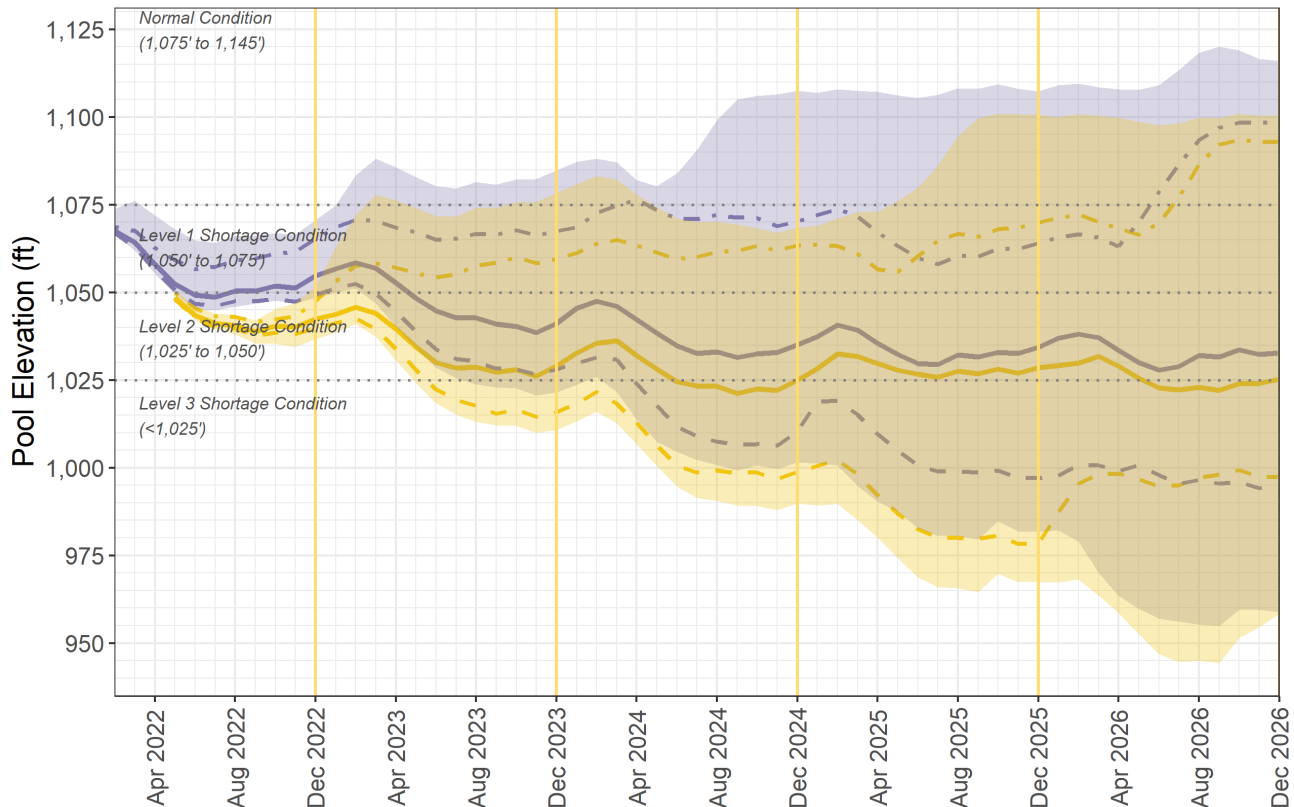
May 2022 vs. February 2022 CRMMS-ESP 5-Year Projections

End-of-Month Pool Elevations

Lake Powell



Lake Mead



Percentile

—

 May 2022

—

 February 2022

 10th

—

 50th

 90th

May 2022 Range

February 2022 Range

* These projected elevations may not be representative of the full range of future possibilities that could occur. These projections rely on future hydrology from the CBRFC's ESP method; other methods may result in a wider range of future hydrology and elevations.

* The chart above displays projected physical elevations.



Protection Volume Analysis & Results



Protection Volume Analysis

Objective: quantify the volume of additional water needed to maintain, i.e., “absolutely protect”, specific elevations at Lake Powell and Lake Mead for the next 4 years (2023-2026) based on plausible hydrologic futures

Preliminary analysis considers two protections levels:

- 3,525 feet at Lake Powell and 1,020 feet at Lake Mead
- 3,500 feet at Lake Powell and 1,000 feet at Lake Mead

Approach

- Quantify the volume of water necessary to keep Powell and Mead at these elevations by injecting this “protection volume” water into the system at Powell and Mead
 - Not assigned to anyone
 - In addition to Lower Basin Shortages, DCP contributions, and Minute 323 Reductions and Savings volumes
- Use three different hydrologic futures to quantify volumes:
 - "Stress Test" - resample historical record from 1988-2019
 - Resample historical record from 2000-2019
 - Climate change-based hydrology
- Initial conditions (December 31, 2022) incorporate this year's DROA and reduced release from Glen Canyon Dam



Lake Powell Elevations and Necessary Protection Volumes

2023-2026 Average Lake Powell Inflow	Avg Lake Powell End-of-Year Elevation Without Action (ft)				Annual Volumes (maf) Needed to Protect:	
Percent of 1991-2020 Avg*	2023	2024	2025	2026	Powell 3,525' & Mead 1,020' Avg (Min – Max)	Powell 3,500' & Mead 1,000' Avg (Min – Max)
Greater than 95%	3,545	3,571	3,590	3,605	0.6 (0.3 – 2.0)	0.2 (0.0 – 1.4)
80% - 95%	3,509	3,515	3,517	3,513	1.3 (0.3 – 2.8)	0.6 (0.0 – 2.1)
64% - 79%	3,501	3,488	3,464	3,447	2.1 (1.1 – 3.1)	1.3 (0.4 – 2.3)
50% - 63%	3,481	3,431	3,411	3,409	3.5 (2.5 – 4.5)	2.7 (1.7 – 3.7)
Less than 50%	3,441	3,401	3,403	3,404	4.2 (4.2 – 4.2)	3.5 (3.5 – 3.5)

3,500' < Pool Elevation < 3,525'

Pool Elevation < 3,500'

* 1991-2020 Avg = 9.46 maf
 2000-2021 Avg = 8.31 maf
 2018-2021 Avg = 6.86 maf (73% of 1991-2020)
 2022 = ~6.0 maf (63% of 1991-2020)

Powell Elevation (ft)	Storage (maf)	% Capacity
3,525	5.9	24.4
3,500	4.5	18.5
3,490	4.0	16.4
3,370	0.0	0.0



Lake Mead Elevations and Necessary Protection Volumes

2023-2026 Average Lake Powell Inflow	Avg Lake Mead End-of-Year Elevation Without Action (ft)				Annual Volumes (maf) Needed to Protect:	
Percent of 1991-2020 Avg*	2023	2024	2025	2026	Powell 3,525' & Mead 1,020' Avg (Min – Max)	Powell 3,500' & Mead 1,000' Avg (Min – Max)
Greater than 95%	1,049	1,052	1,059	1,066	0.6 (0.3 – 2.0)	0.2 (0.0 – 1.4)
80% - 95%	1,028	1,025	1,020	1,021	1.3 (0.3 – 2.8)	0.6 (0.0 – 2.1)
64% - 79%	1,028	1,017	998	983	2.1 (1.1 – 3.1)	1.3 (0.4 – 2.3)
50% - 63%	1,018	988	943	914	3.5 (2.5 – 4.5)	2.7 (1.7 – 3.7)
Less than 50%	1,006	917	895	896	4.2 (4.2 – 4.2)	3.5 (3.5 – 3.5)

1,000' < Pool Elevation < 1,020'

Pool Elevation < 1,000'

* 1991-2020 Avg = 9.46 maf
 2000-2021 Avg = 8.31 maf
 2018-2021 Avg = 6.86 maf (73% of 1991-2020)
 2022 = ~6.0 maf (63% of 1991-2020)

Mead Elevation (ft)	Storage (maf)	% Capacity
1,020	5.7	21.7
1,000	4.5	17.1
950	2.0	7.7
895	0.0	0.0



Summary

- We do not know what runoff will be next year, but if it is below average, we are vulnerable to falling below the 3,525'/1,020' combined storage volume if we do not act.
- Even with a good year, we can quickly be back in the same position we are in today, or worse.
- If 2023 inflow is like 2022, Lake Powell and Lake Mead together need an additional 2.5 maf to stay above the 3,525'/1,020' combined storage volume.
- Each year we fall short of protecting whatever elevations we choose to protect, the volumes needed to stabilize the system in future years increase.



Discussion



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