



— BUREAU OF —
RECLAMATION

Colorado River Basin: Hydrology & Protection Volume Analysis

Salton Sea Authority Board Meeting

June 23, 2022

Colorado River Basin Storage

(as of June 20, 2022)

Reservoir	Percent Full	Storage (maf)	Elevation (feet)
Lake Powell	28%	6.79	3,538.51
Lake Mead	28%	7.27	1,044.25
Total System Storage	35%	20.85	- - -

Total system storage was 42% of capacity, or 24.96 maf in storage, at this time last year.



Water Year Snowpack and Precipitation^{1,2} as of June 21, 2022

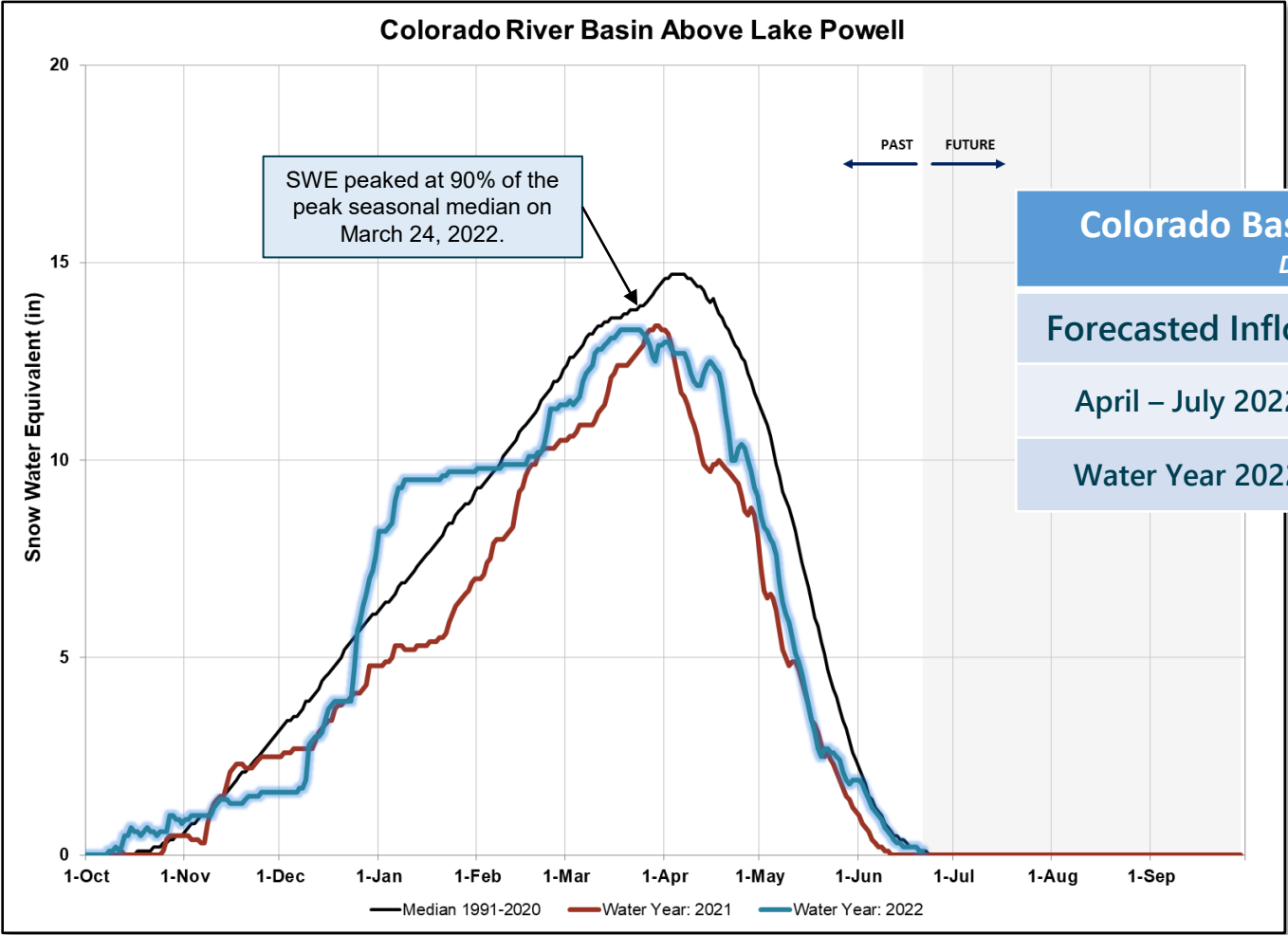
Colorado River Basin
above Lake Powell

Water Year 2022
Precipitation
(year-to-date)

93% 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.

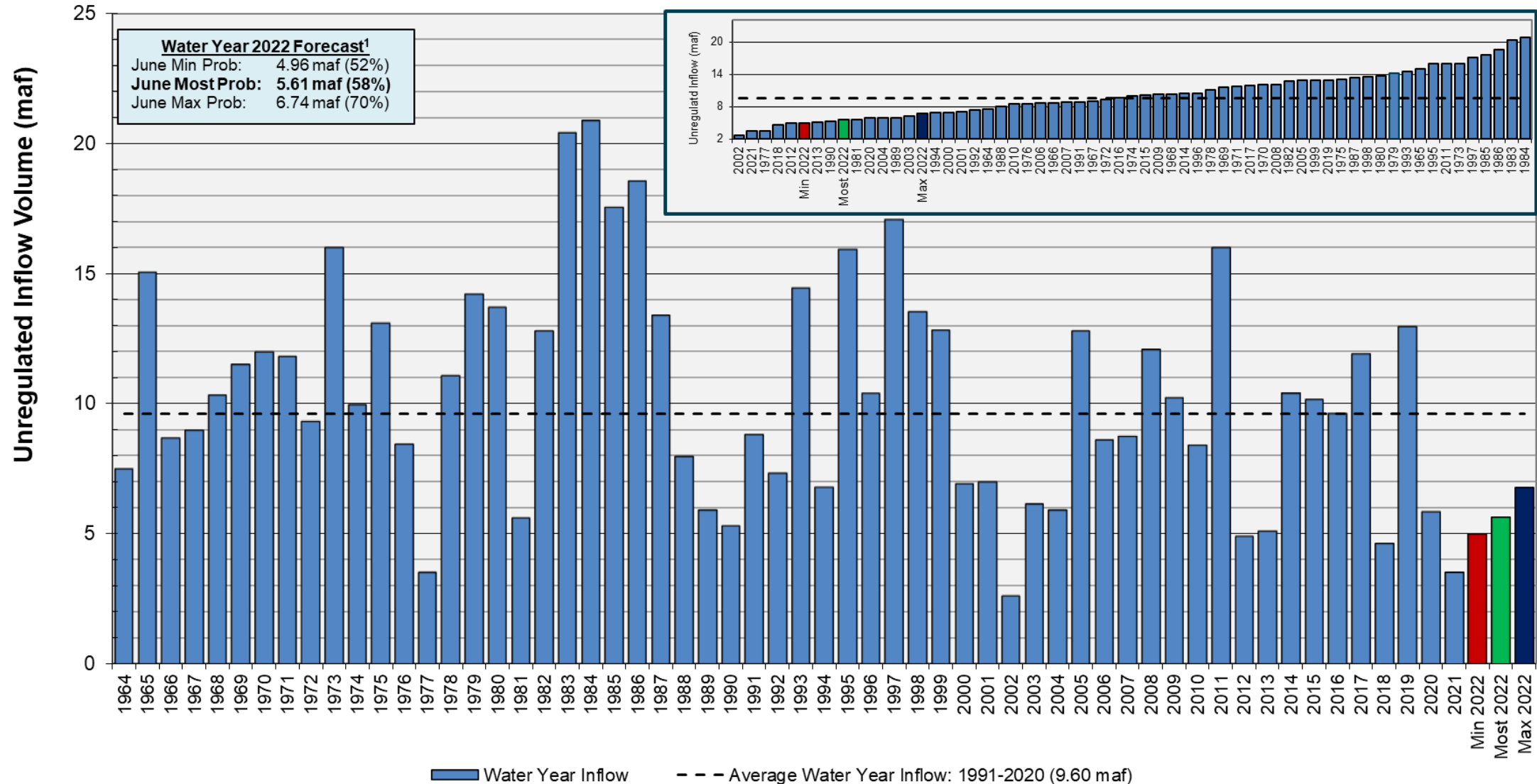
²Statistics are based on the 30-year period of record from 1991-2020.



Lake Powell Water Year Unregulated Inflow¹

Forecast as of June 3, 2022

Comparison with History

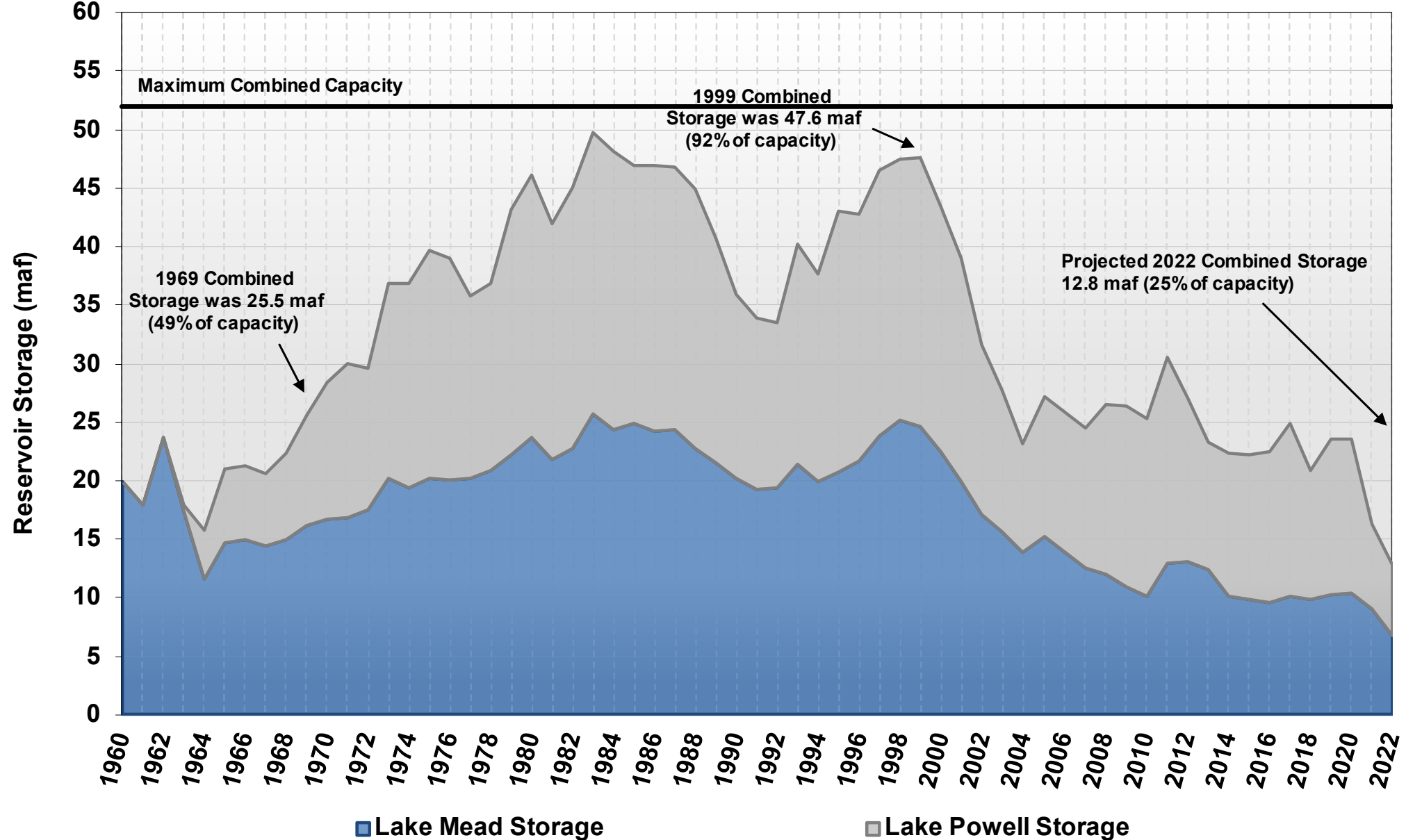


¹Water Year 2022 statistics are based on the 30-year period of record from 1991-2020.



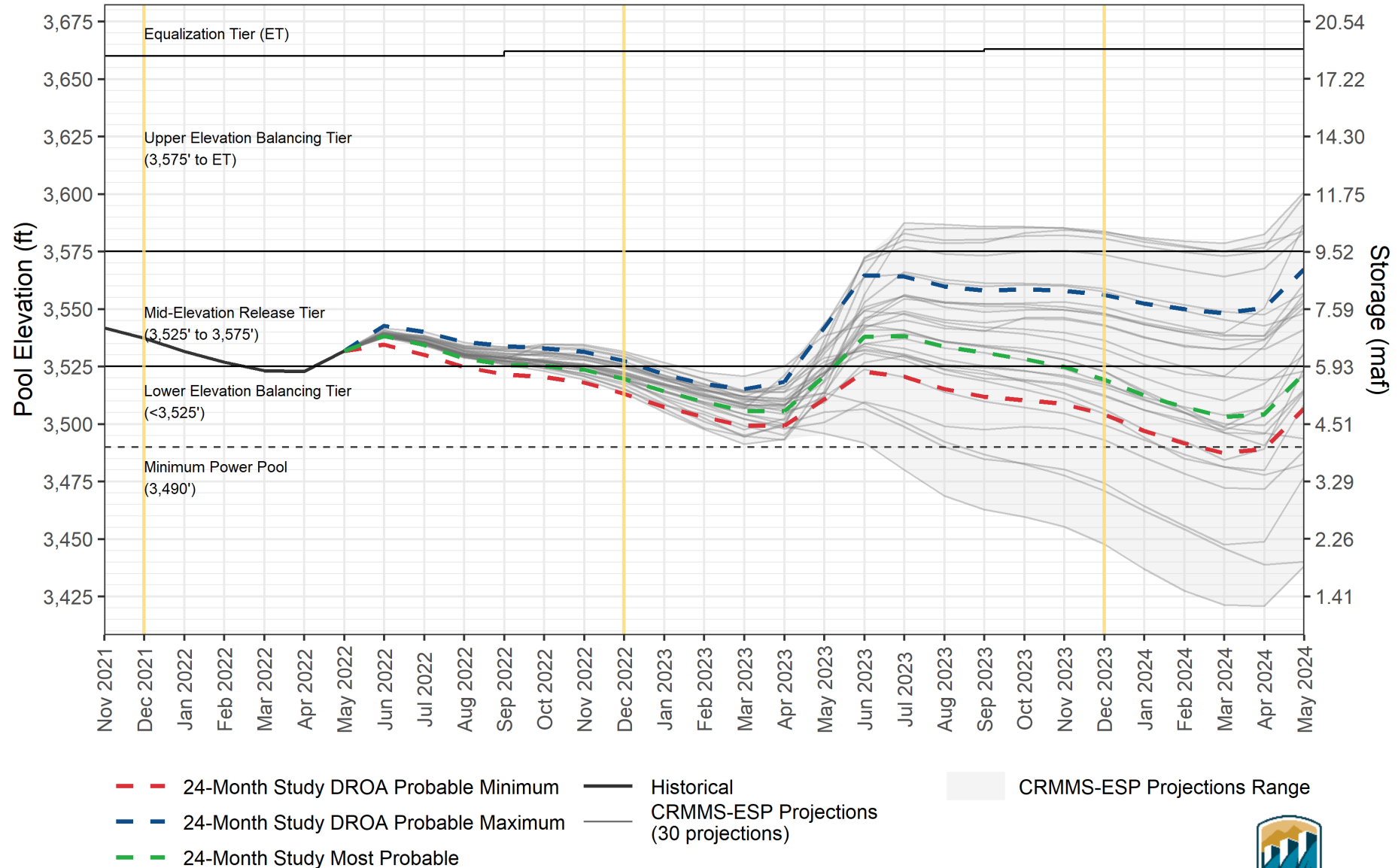
Lake Powell and Lake Mead End of Water Year Storage

Water Years 1960 through 2022



Lake Powell End-of-Month Elevations

CRMMS Projections from June 2022

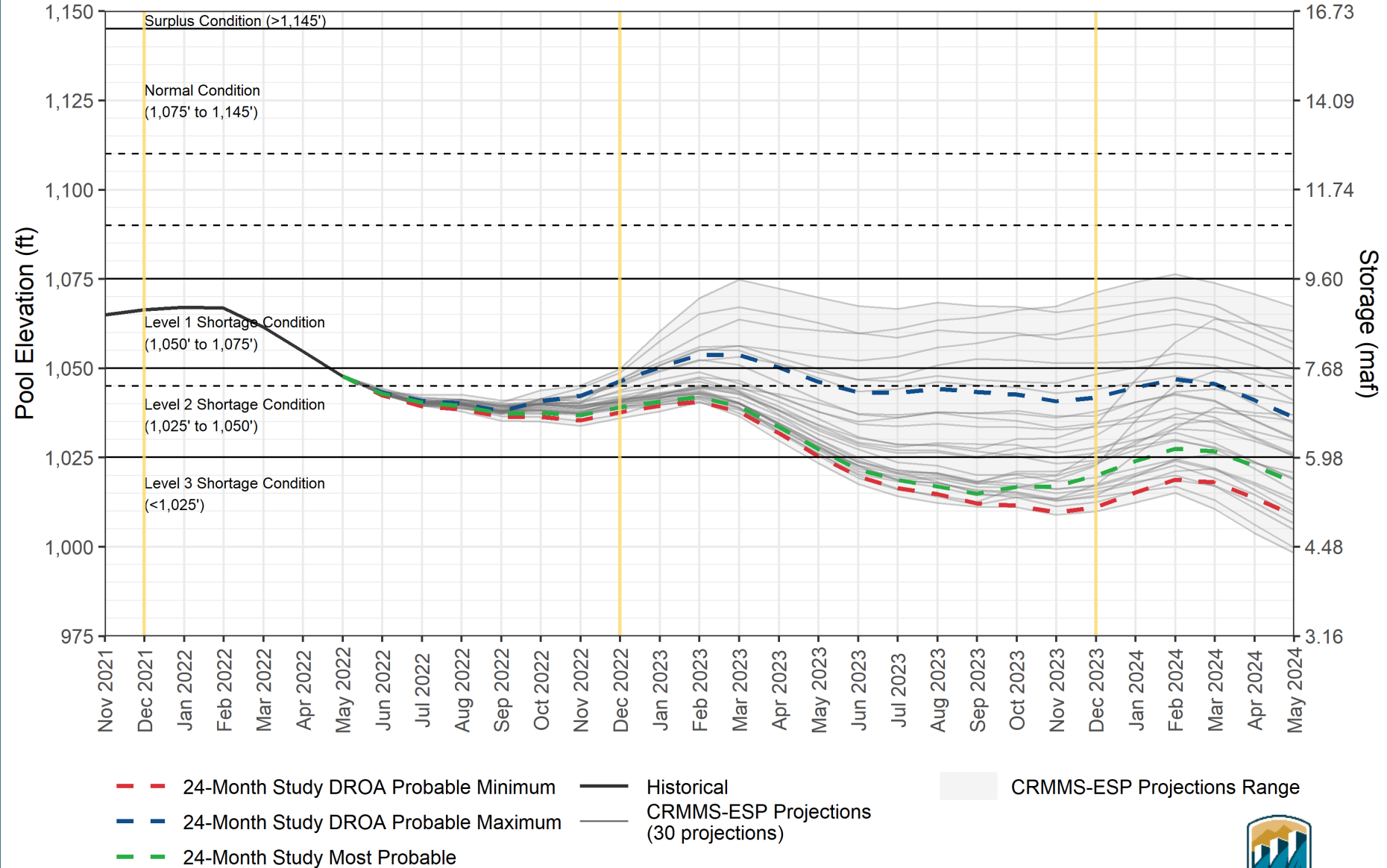


* Projected Lake Powell end-of-month physical elevations from the June CRMMS-ESP and 24-Month Study inflow scenarios.



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.



2007 Interim Guidelines, Minute 323, Lower Basin Drought Contingency Plan, and Binational Water Scarcity Contingency Plan

Total Volumes (kaf)

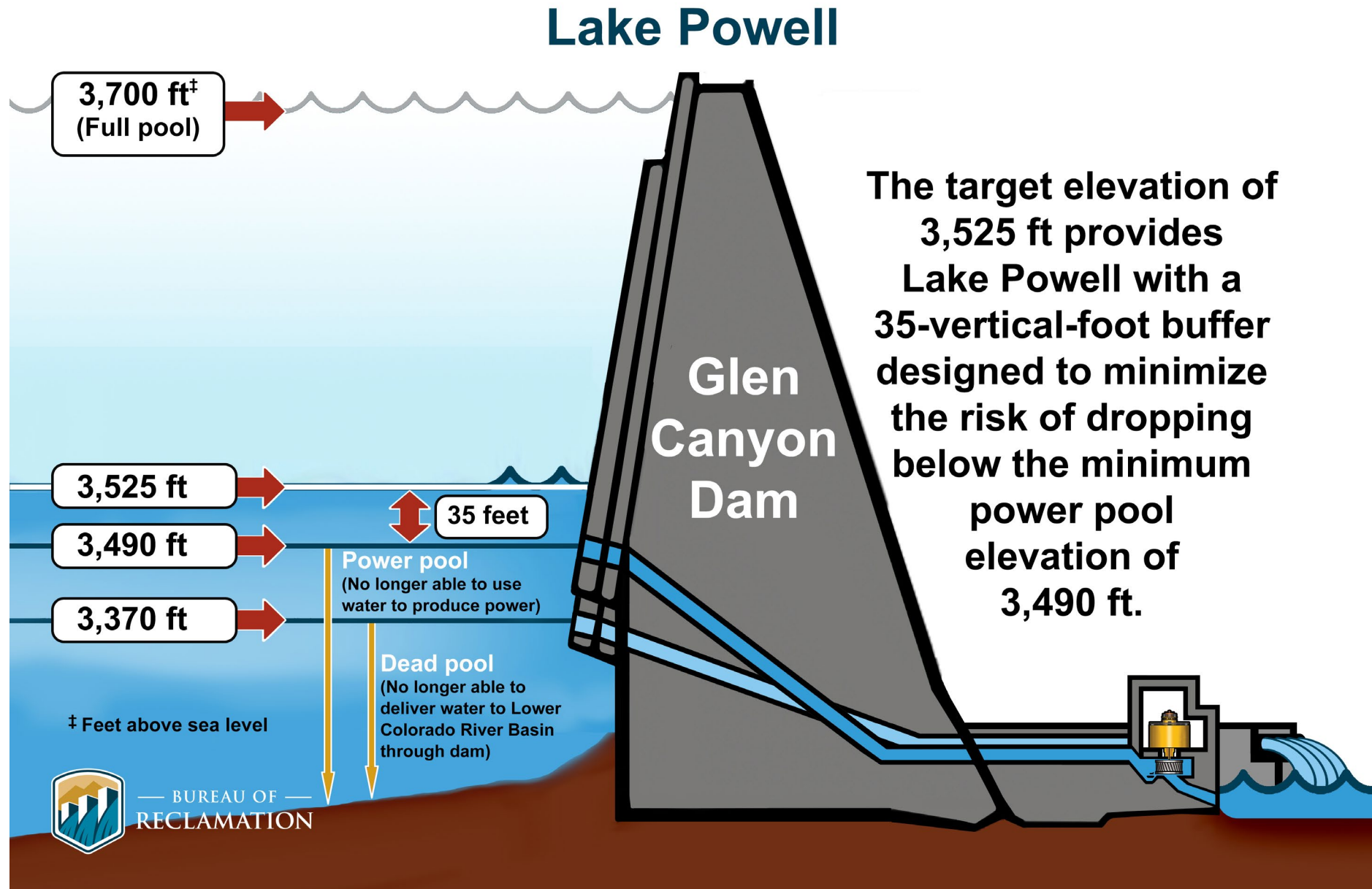
Lake Mead Elevation (feet msl)	2007 Interim Guidelines Shortages		Minute 323 Delivery Reductions	Total Combined Reductions	DCP Water Savings Contributions			Binational Water Scarcity Contingency Plan Savings	Combined Volumes by Country <i>US: (2007 Interim Guidelines Shortages + DCP Contributions)</i> <i>Mexico: (Minute 323 Delivery Reductions + Binational Water Scarcity Contingency Plan Savings)</i>					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
Tier 1 → 1,075 - 1,050	320	13	50	383	192	8	0	30	512	21	0	533	80	613
Tier 2a → 1,050 - 1,045	400	17	70	487	192	8	0	34	592	25	0	617	104	721
Tier 2b { 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
Tier 3 → <1,025	480	20	125	625	240	10	350	150	720	30	350	1,100	275	1,375

+ 108 kaf
+ 292 kaf
+ 400 kaf

The Secretary of the Interior will take affirmative actions to implement programs designed to create or conserve 100,000 acre-ft per annum or more of Colorado River System water to contribute to conservation of water supplies in Lake Mead and other Colorado River reservoirs in the lower basin. All actions taken by the United States shall be subject to applicable law, including availability of appropriations.



Lake Powell Key Elevations



Actions to Protect Glen Canyon Dam

2021

- 2021 DROA release from UB Reservoirs (161 kaf)

2022

- Powell monthly release adjustments
- 2022 DROA release from UB Reservoirs (500 kaf)
- Powell WY 2022 Annual Release Reduction (480 kaf)

Future Actions

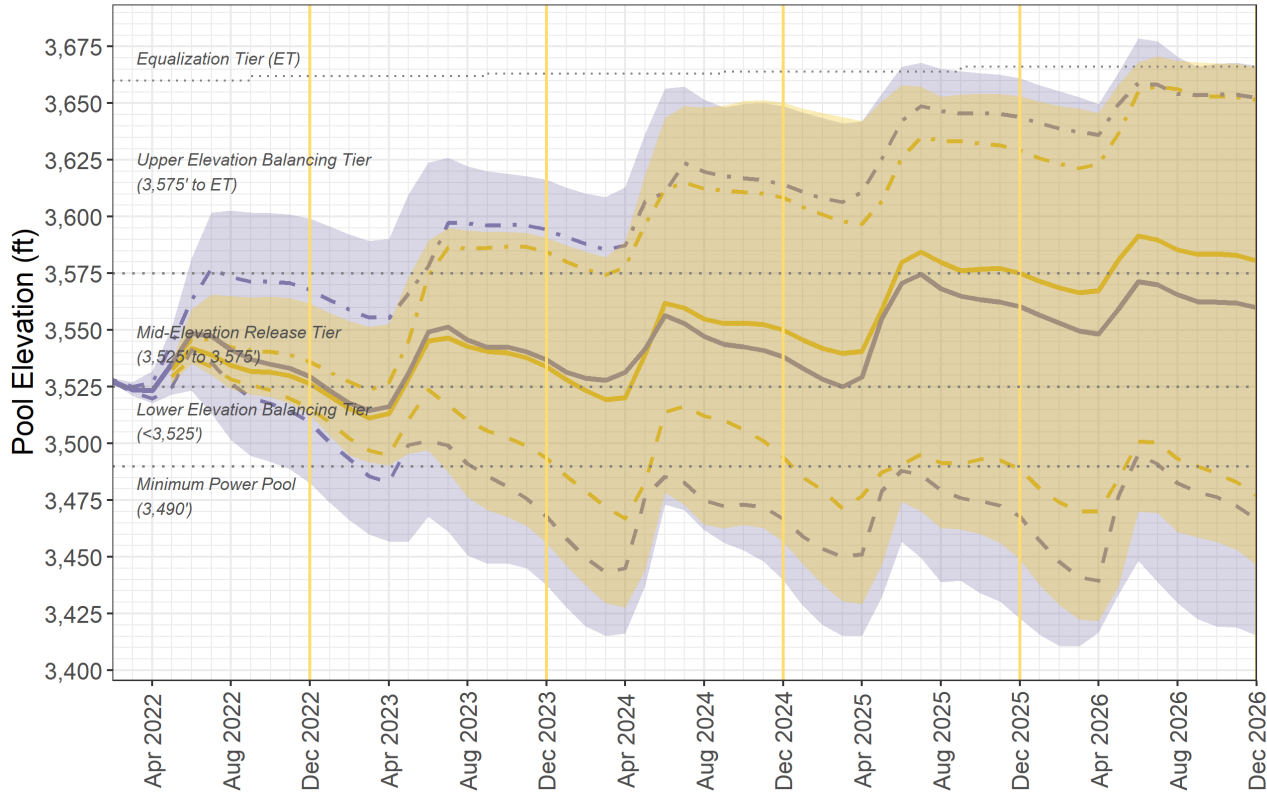
- Potential 2023 DROA release from UB Reservoirs
- Potential other evaluations and actions



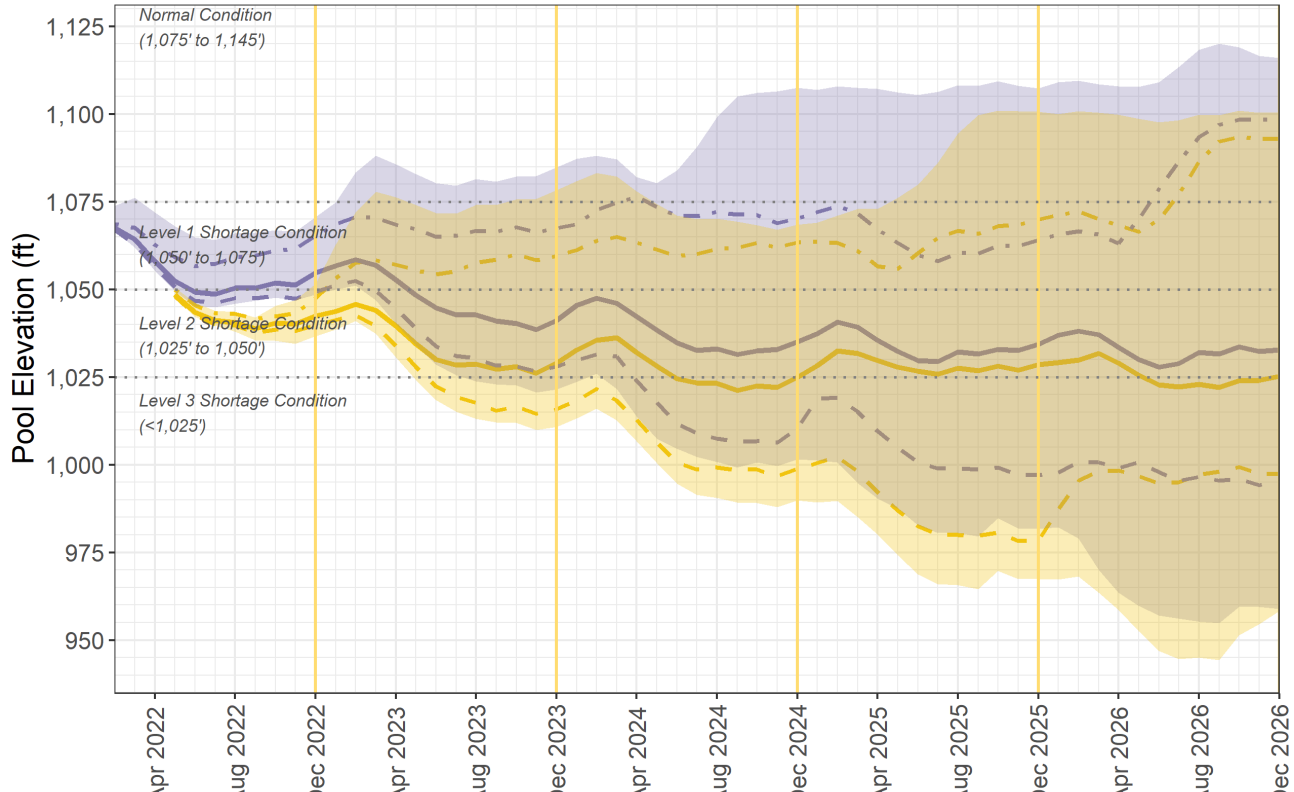
May 2022 vs. February 2022 CRMMS-ESP 5-Year Projections

End-of-Month Pool Elevations

Lake Powell



Lake Mead



—

 May 2022

—

 February 2022

- -

 10%

—

 50%

- - -

 90%

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

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)

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

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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)

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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



Post-2026 "Pre-scoping" Federal Register Notice

- Purpose of the Notice is to ask for input on both the stakeholder engagement process and the substantive elements and strategies for post-2026
- Target publication the week of June 20
- Comments and input will be welcomed through September 1
- The publication of this Notice is not the start of the NEPA process
 - Targeting initiating the formal process in early 2023 with a Notice of Intent to Prepare an EIS



Questions?



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