



— BUREAU OF —
RECLAMATION

Colorado River Basin: System Status and Outlook

Colorado River Citizens Forum in Yuma, Arizona
January 22, 2020

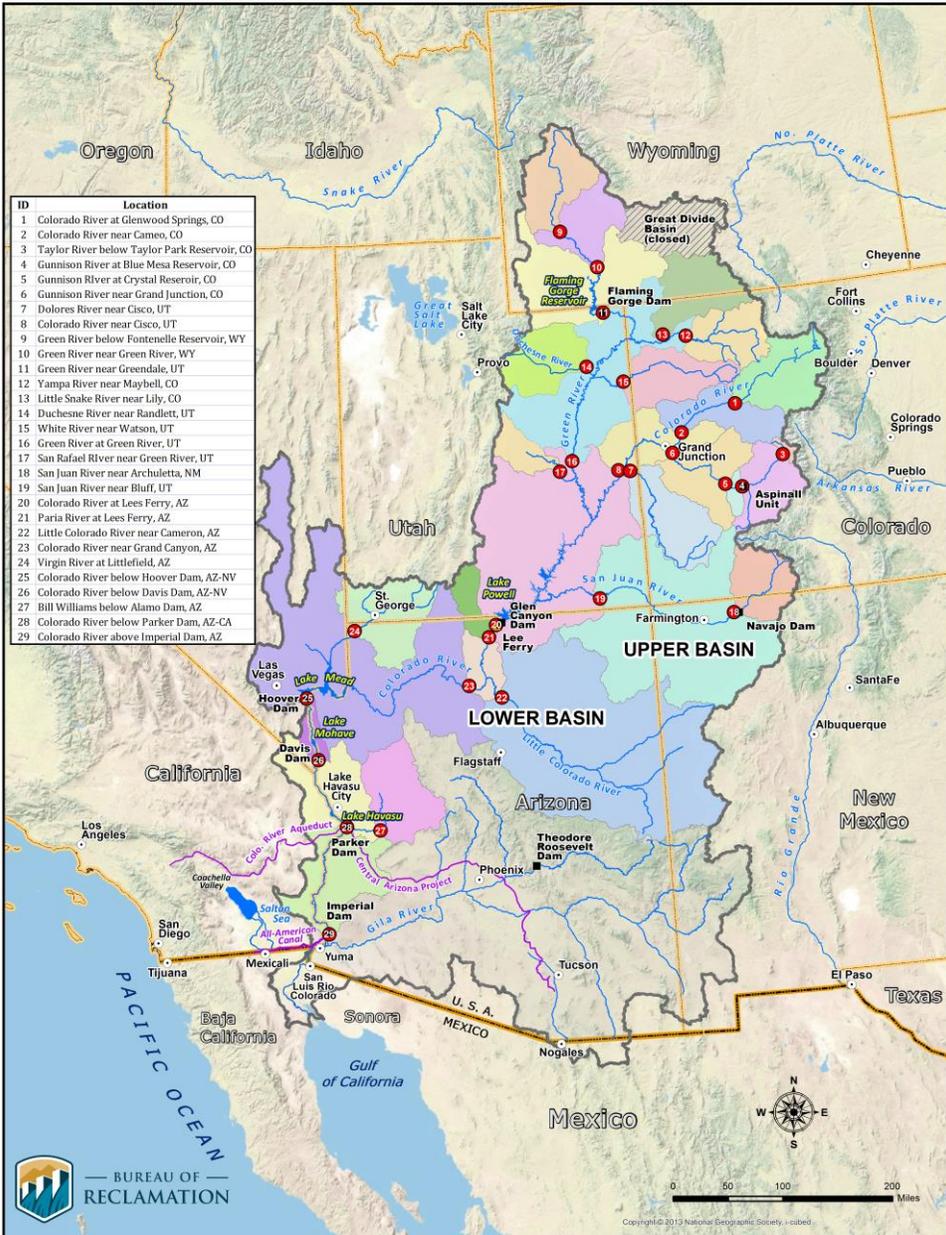


Topics

- Overview of the Colorado River Basin
- Projected Conditions
- Colorado River Drought Update
- Drought Response Activities
- Conclusions



Overview of the Colorado River System



- 16.5 million acre-feet (maf) allocated annually
- 7.5 maf each to Upper and Lower Basins and 1.5 maf to Mexico
- 13 to 14.5 maf of basin-wide consumptive use annually
- 16 maf average annual “natural flow” (based on historical record)
- 14.8 maf in the Upper Basin and 1.3 maf in the Lower Basin
- Inflows are highly variable year to year
- 60 maf of storage (nearly 4-times the annual inflow)
- The System is operated on a tight hydrologic budget



Water Budget at Lake Mead

- Given current water demands in the Lower Basin and Mexico, and a minimum objective release from Lake Powell (8.23 maf), Lake Mead storage declines by about 1.2 maf annually (equivalent to about 12 feet in elevation).

Inflow 9.0 maf

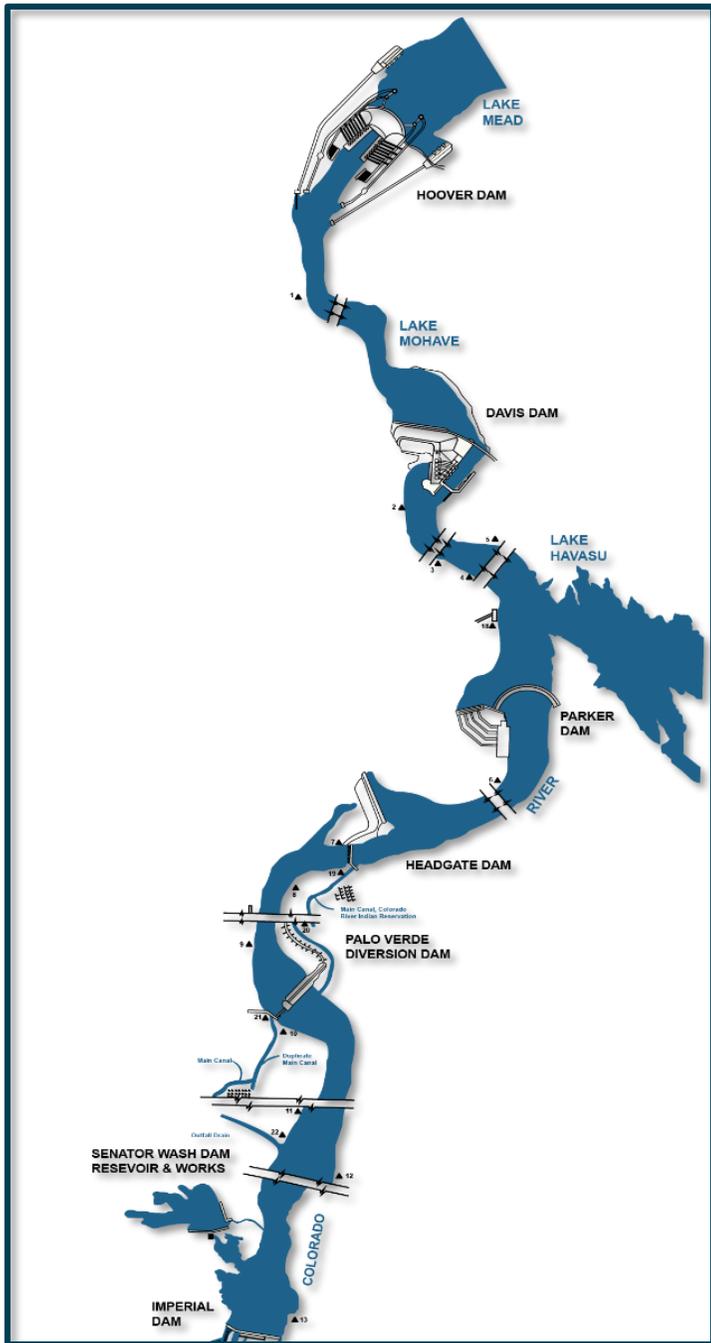
(Powell release + side inflows above Mead)

Outflow -9.6 maf

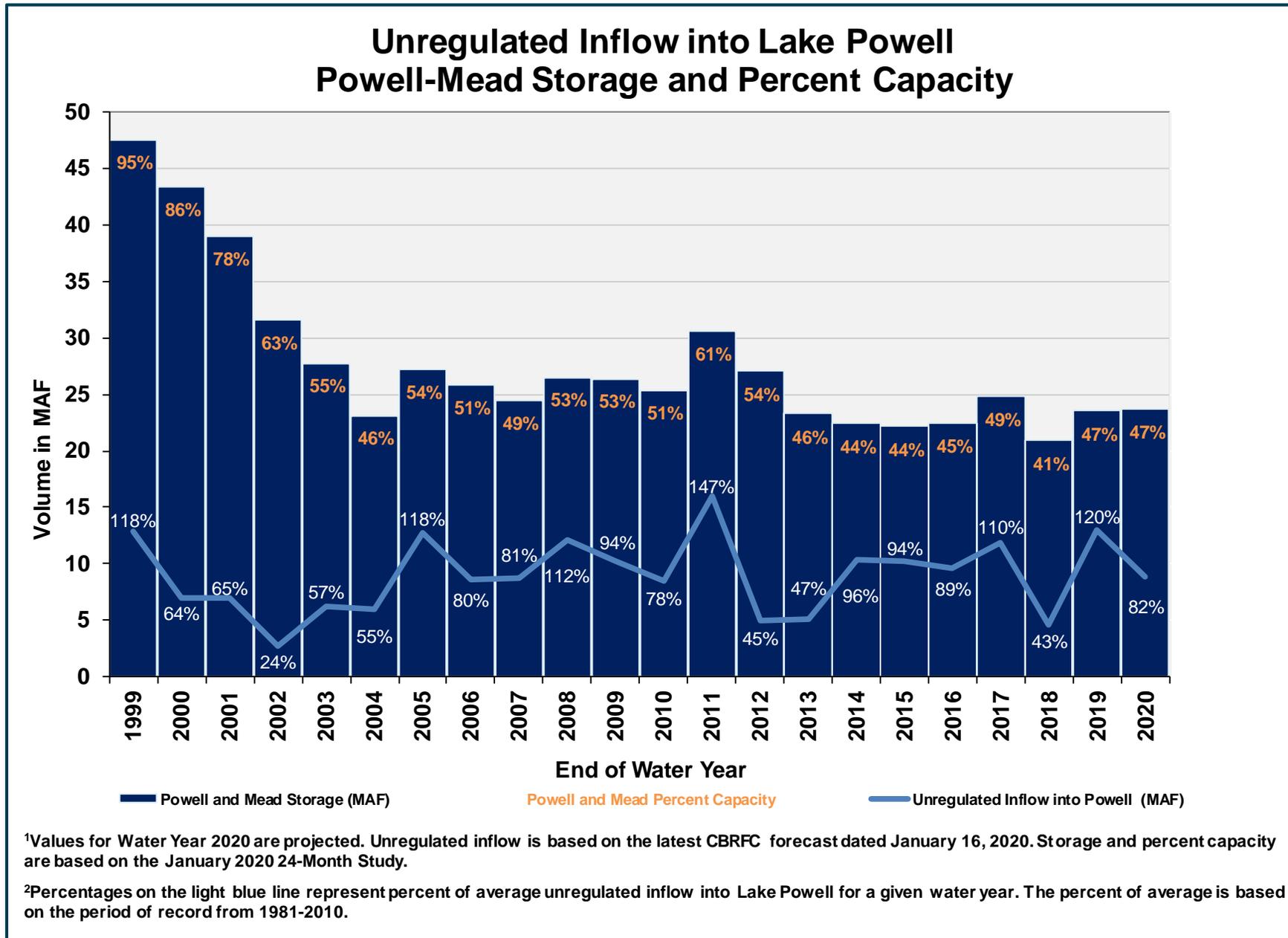
(Lower Division State apportionments and Mexico Treaty allocation, plus balance of downstream regulation, gains, and losses)

Mead evaporation loss -0.6 maf

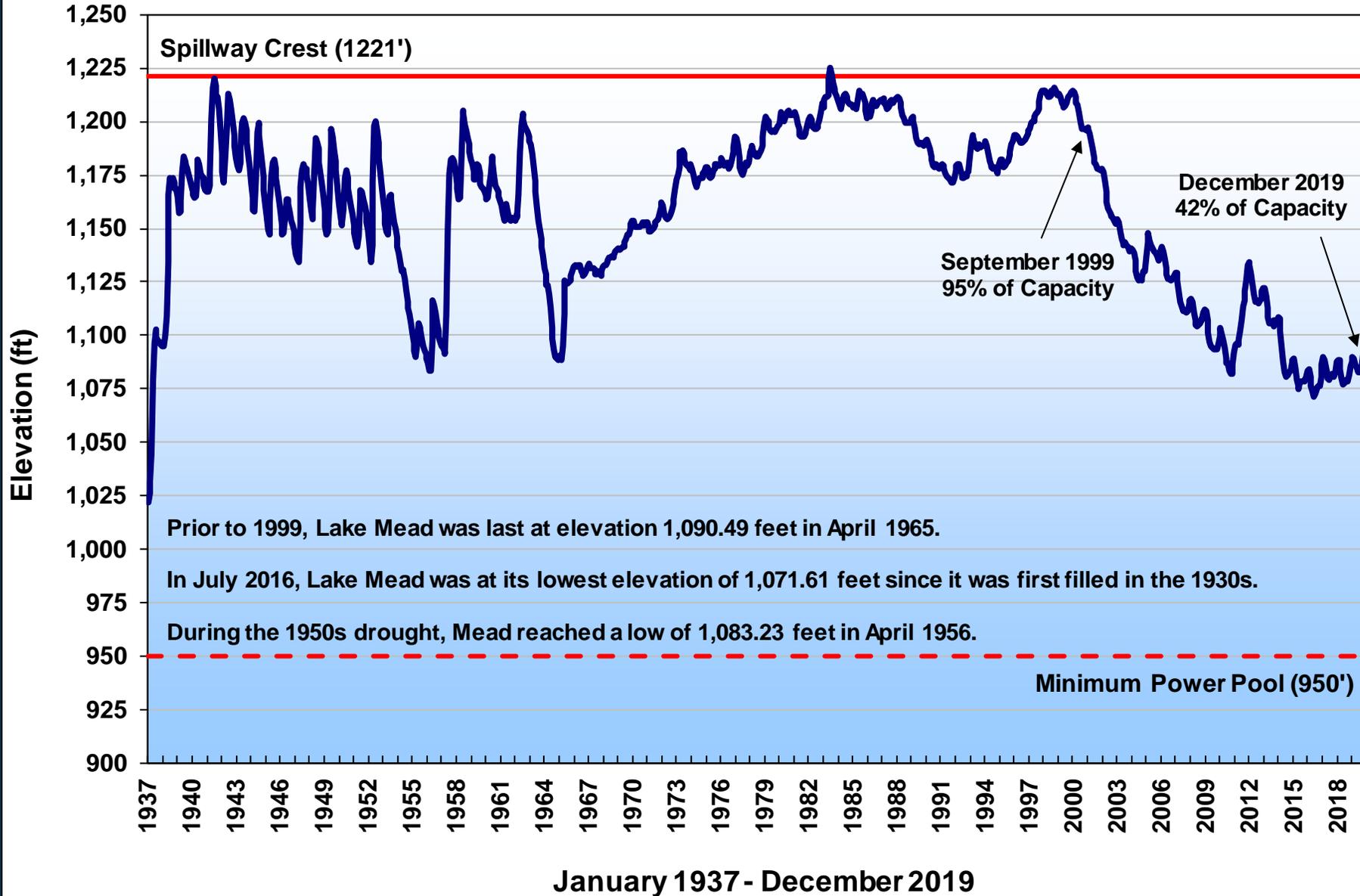
Balance -1.2 maf



State of the System (Water Years 1999-2020)^{1,2}



Lake Mead End of Month Elevation





Lake Mead near Hoover Dam in 2000



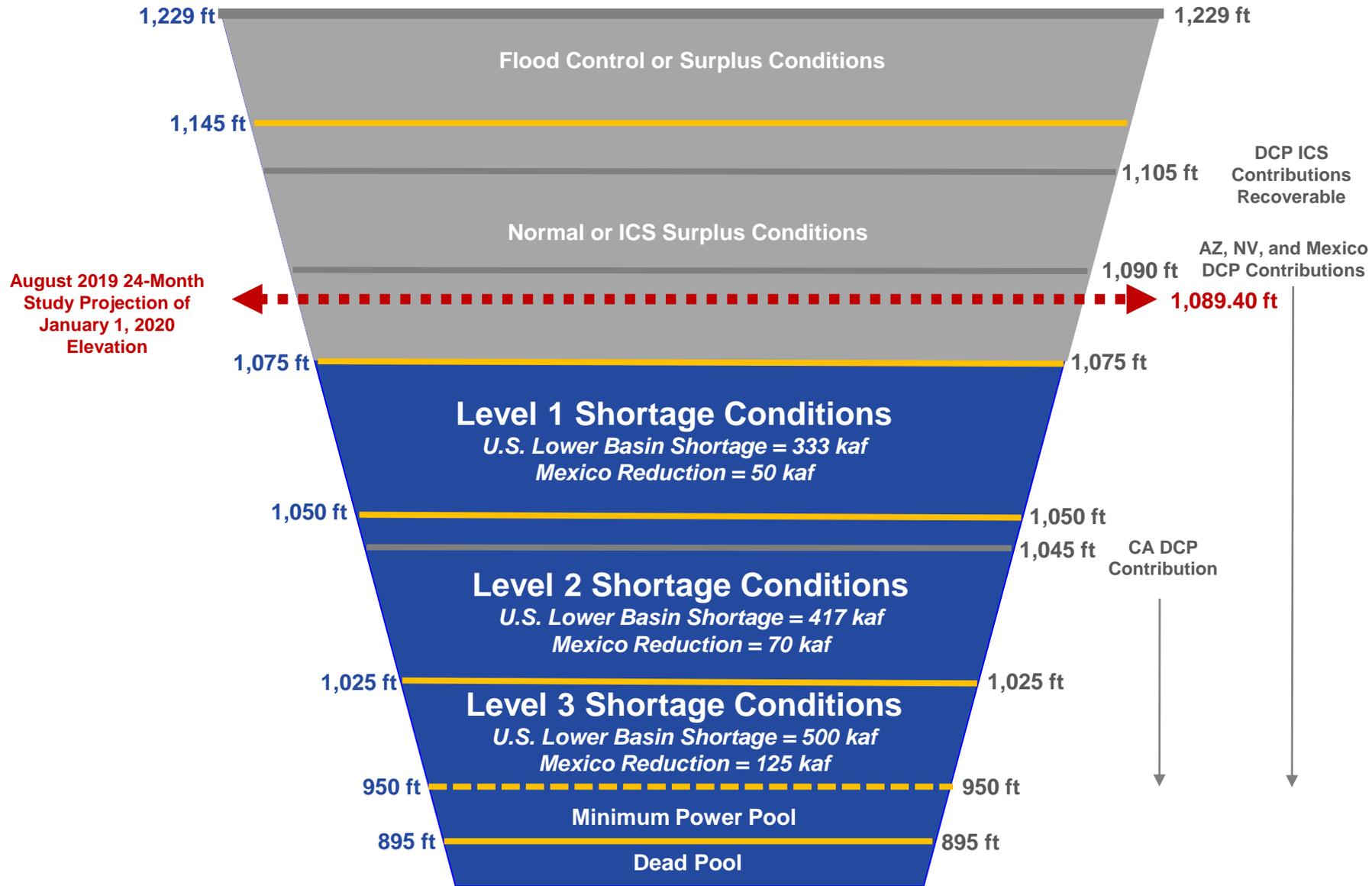
Lake Mead near Hoover Dam in 2016

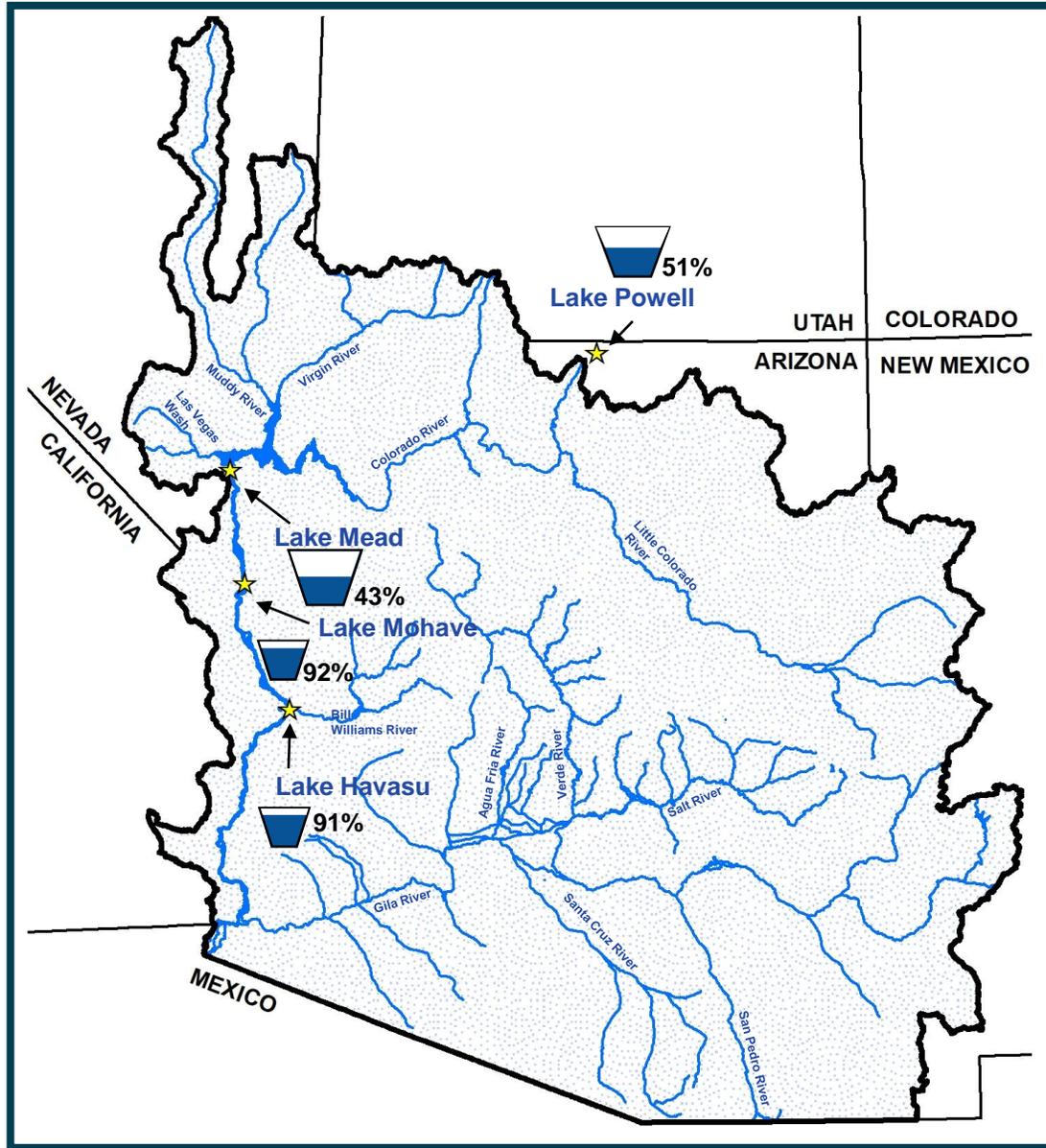


Lake Mead – Key Elevations

2007 Interim Guidelines

DCP Contribution Tiers





Colorado River System Conditions as of January 20, 2020

Reservoir	Percent Full	Storage (maf)	Elevation (feet)
Lake Powell	51	12.39	3,606.57
Lake Mead	43	11.15	1,093.37
Lake Mohave	92	1.66	641.43
Lake Havasu	91	0.56	446.98
Total System Storage	52	31.23	-
<i>Total System Storage (at this time last year)</i>	<i>45</i>	<i>27.01</i>	<i>-</i>

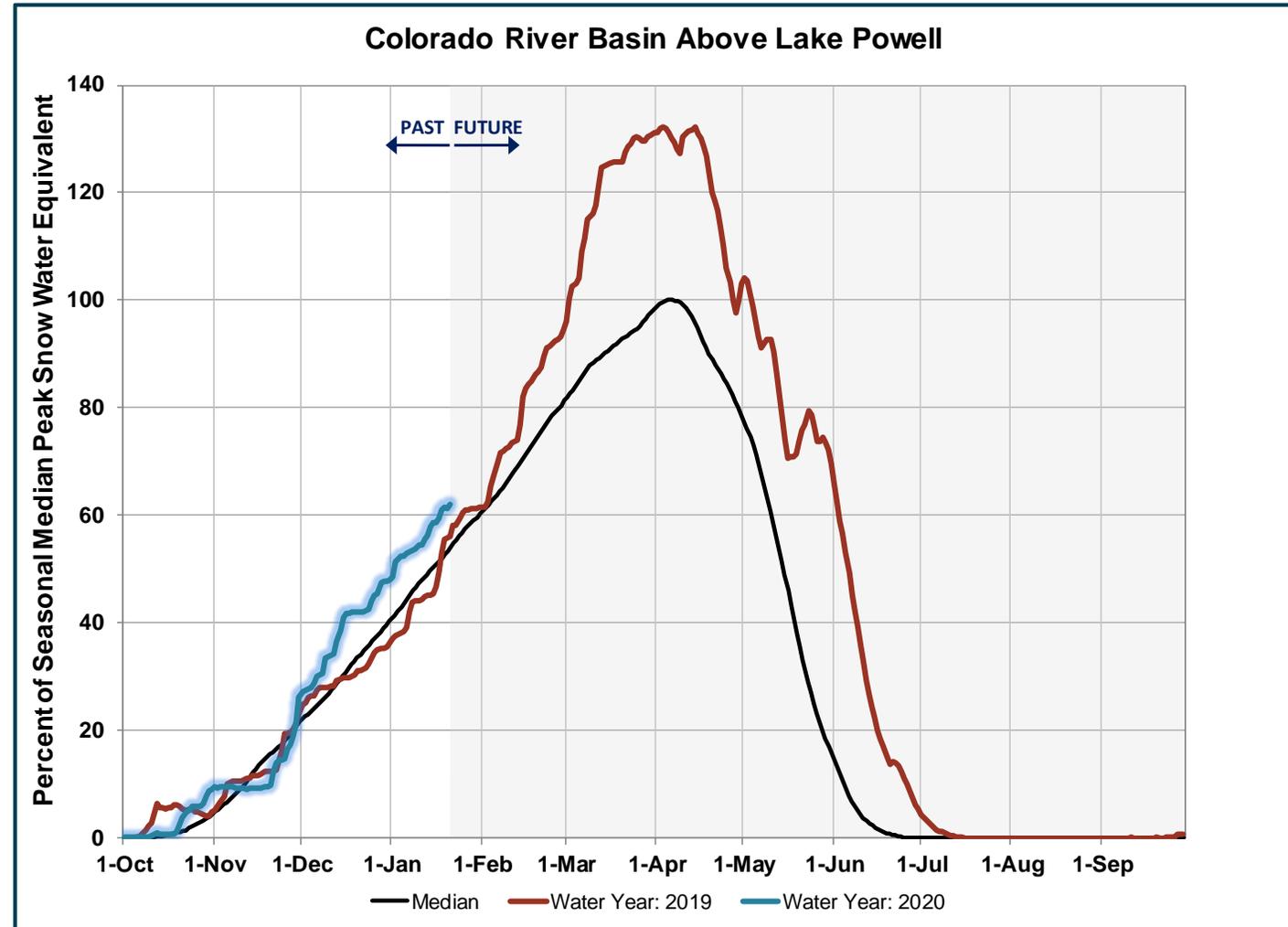


Water Year Snowpack and Precipitation as of January 21, 2020¹

Colorado River Basin above Lake Powell

Water Year 2020
Precipitation
(year-to-date)
92% of average

Current Snowpack
114% of median

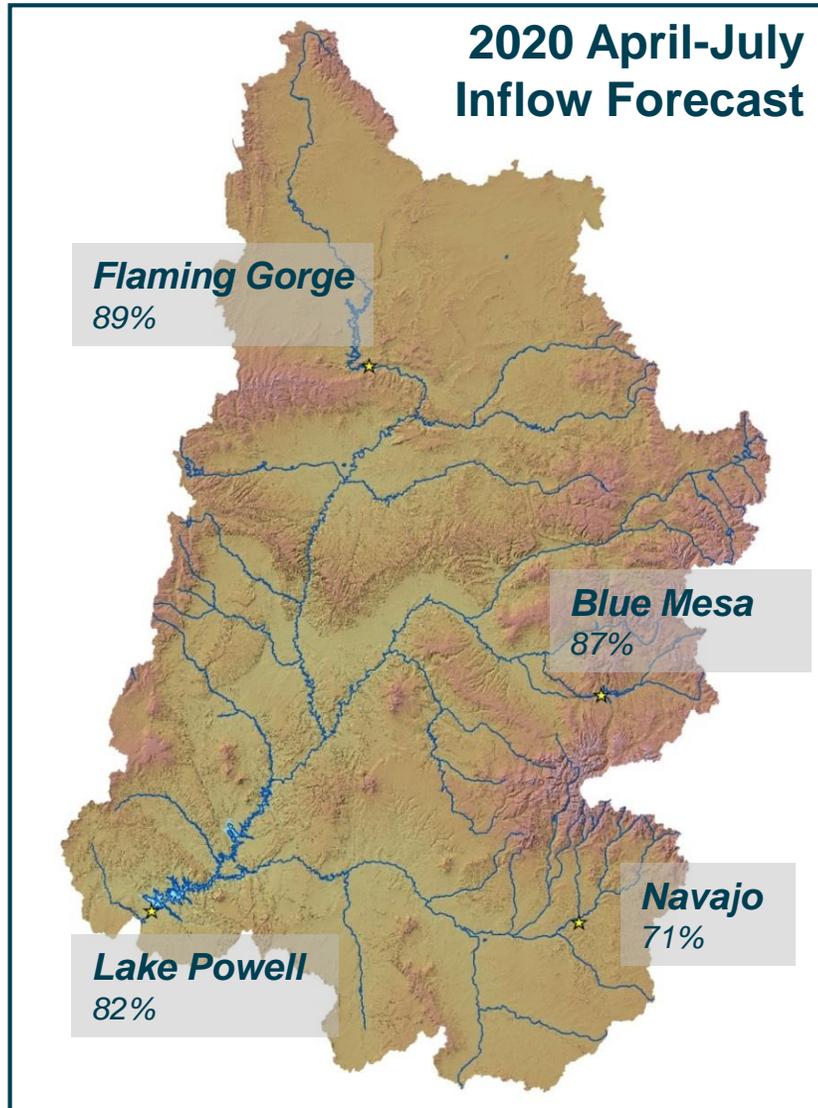


¹Percent of normal precipitation is based on an arithmetic mean, or average; percent of normal snowpack is based on the median value for a given date.



CBRFC Unregulated Inflow Forecast

Dated January 16, 2020

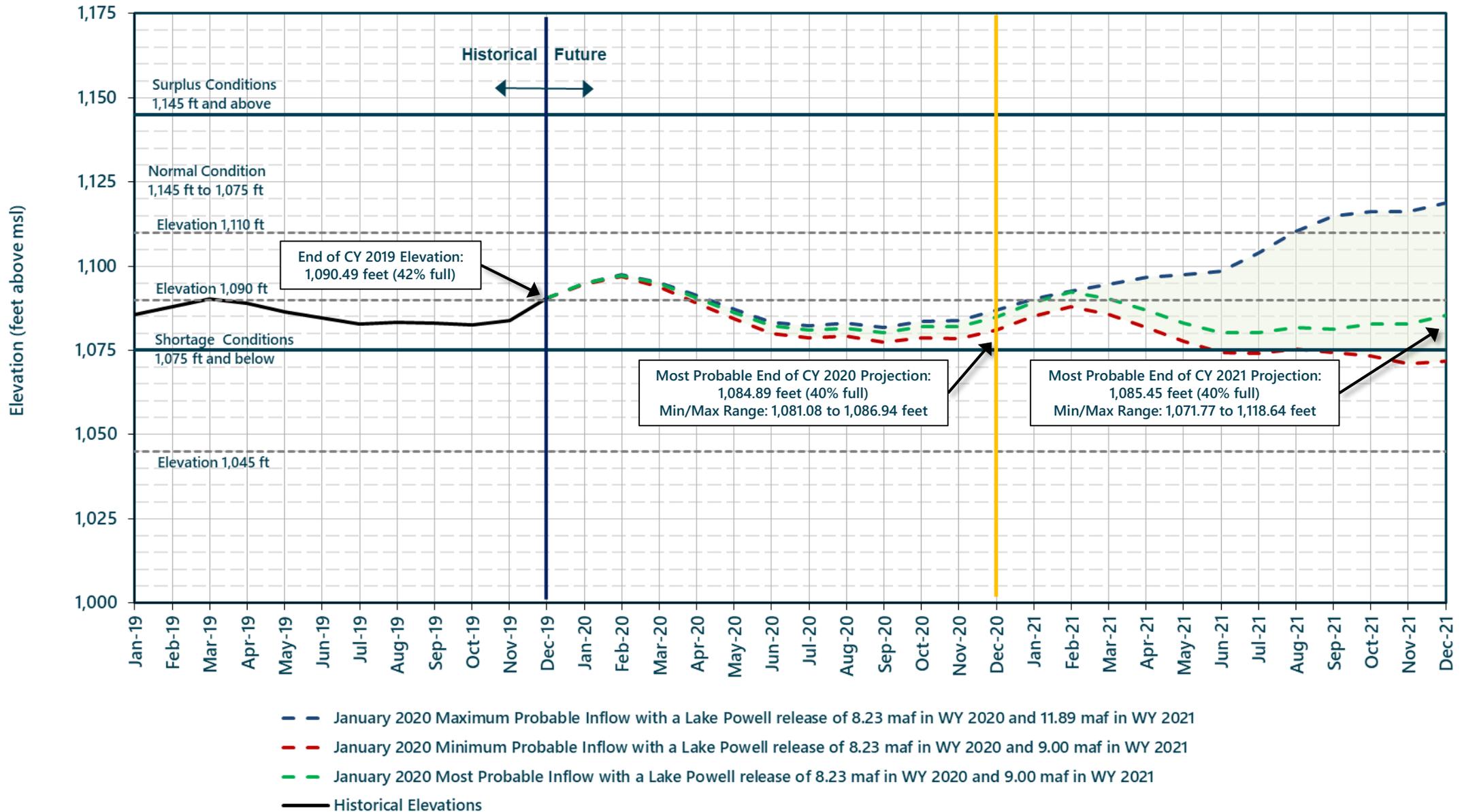


Powell Unregulated Inflow Forecast		
Month/Period	Inflow (kaf)	Percent of Average
Dec 2019 <i>(Observed)</i>	353	97
Jan 2020	260	72
Feb 2020	360	92
Mar 2020	560	84
2020 Apr-Jul	5,900	82
WY 2020	8,876	82



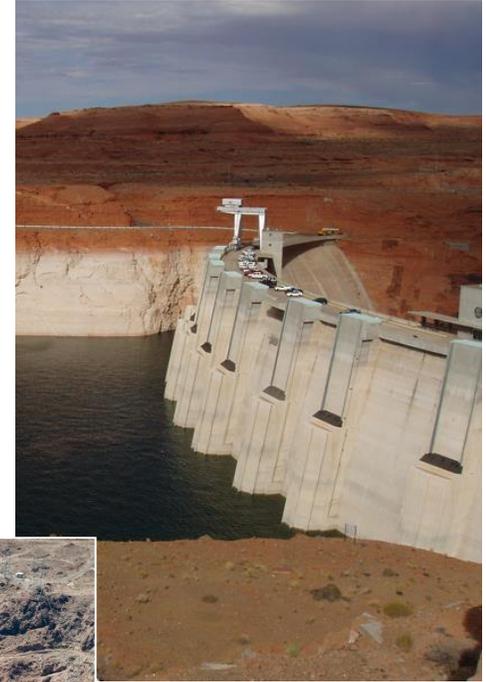
Lake Mead End of Month Elevations

Projections from the January 2020 24-Month Study Inflow Scenarios



Drought Contingency Planning

- Actions are in addition to the 2007 Interim Guidelines
- Goals:
 - Reduce risk of Lake Mead and Lake Powell reaching critically low elevations (1,020 feet and 3,490/3,525 feet, respectively)
- Key Elements:
 - Additional contributions of water by Lower Basin States
 - Additional flexibility for water storage and recovery to incentivize conservation
 - Drought operations and demand management in Upper Basin



**2007 Interim Guidelines, Minute 323, Lower Basin Drought Contingency Plan &
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 Contributions			Binational Water Scarcity Contingency Plan Savings	Combined Volumes by Country <i>US: (2007 Interim Guidelines Shortages + DCP Contributions) 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
1,075 - 1050	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

The US will work to create or conserve 100,000 af or more of Colorado River system water on an annual basis to contribute to conservation of water supplies in Lake Mead and other Colorado River reservoirs. All actions taken by the United States shall be subject to applicable federal law, including availability of appropriations.



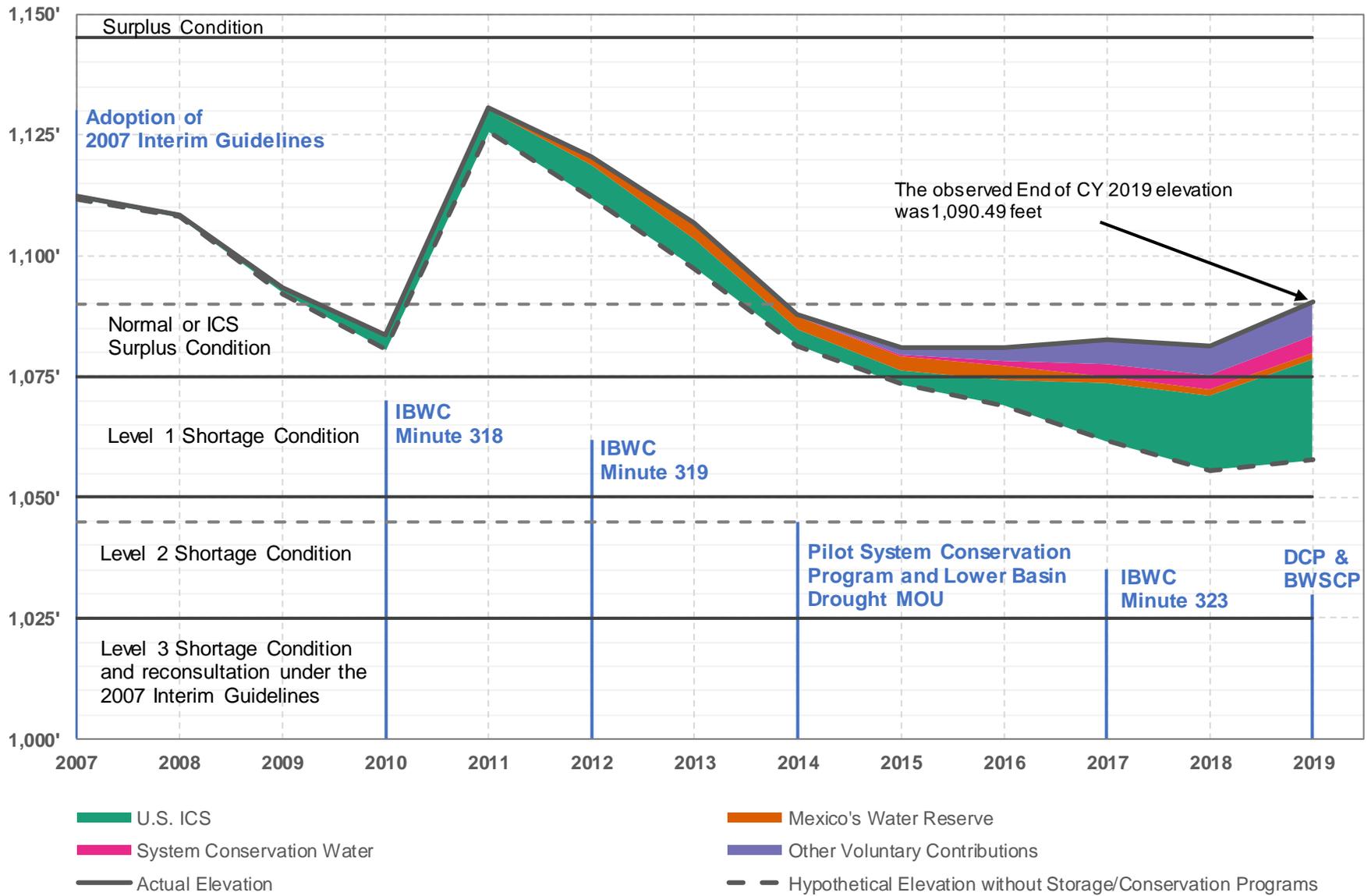


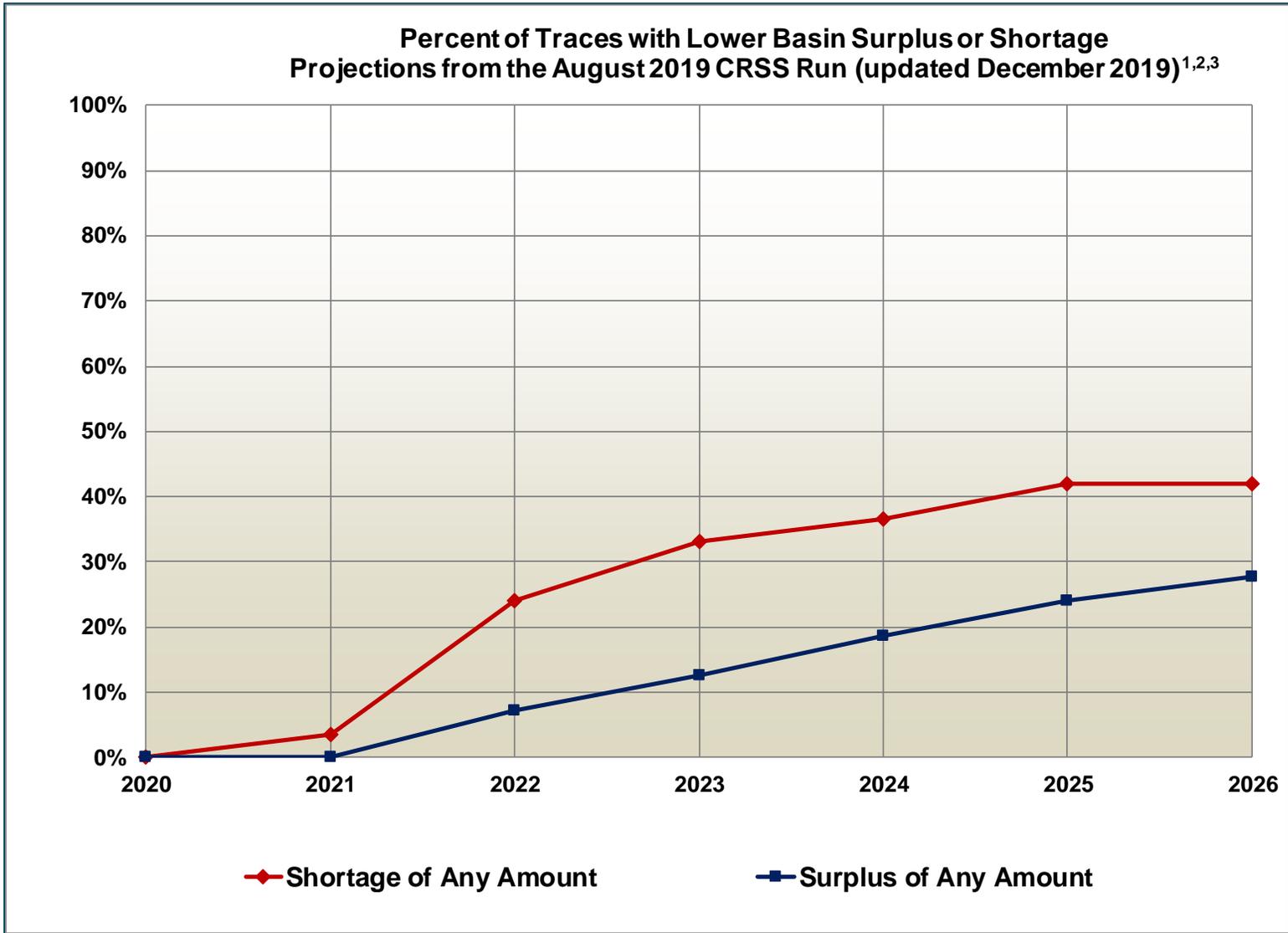
Drought Response Activities

- Through 2019, storage and conservation programs have resulted in about 35 feet of additional elevation in Lake Mead
 - U.S. Intentionally Created Surplus
 - Mexican deferred delivery
 - Lower Basin Drought MOU voluntary protection volumes
 - Pilot System Conservation Program
 - Other system conservation agreements



Lake Mead End of Calendar Year Elevation





¹ Reservoir initial conditions on December 31, 2019 were simulated using the August 2019 Most Probable 24 Month Study.

² Full Hydrology uses 112 hydrologic inflow sequences based on resampling of the observed natural flow record from 1906-2017 for a total of 112 traces analyzed.

³ Percentages shown in this table may not be representative of the full range of future possibilities that could occur with different modeling assumptions.





Summary

- The Colorado River Basin continues to experience an unprecedented drought
- Even with above average inflow and a slight improvement in system conditions in 2019, there is a chance for Lower Basin shortage as early as 2022
- Cooperation and collaboration will be key in finding sustainable solutions and addressing current and future challenges



Lower Colorado River Operations

For further information: <https://www.usbr.gov/lc/riverops.html>

Email: bcoowaterops@usbr.gov



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