Colorado River Commission of Nevada

Hydrology and Water Use Update

Warren Turkett

June 8, 2021

Summary

Lake Powell

- Water Year 2021[1] is one of the driest in recorded history.
- Unregulated inflow for water year 2021 is forecasted at 31% of average.
- Upper Basin cumulative precipitation is 73% of the seasonal average.

Lake Mead

- Lake Mead is forecasted to decrease about 8 feet in elevation by the end of calendar year 2021.
- Reclamation models are indicating that in August there will be a federally declared shortage under the 2007 Guidelines for the Lower Basin.

Nevada Water Supply

- Southern Nevada has about 9 years of water supply banked. [2]
- **In 2020, Southern Nevada used 44,432 af less than our annual allocation.**

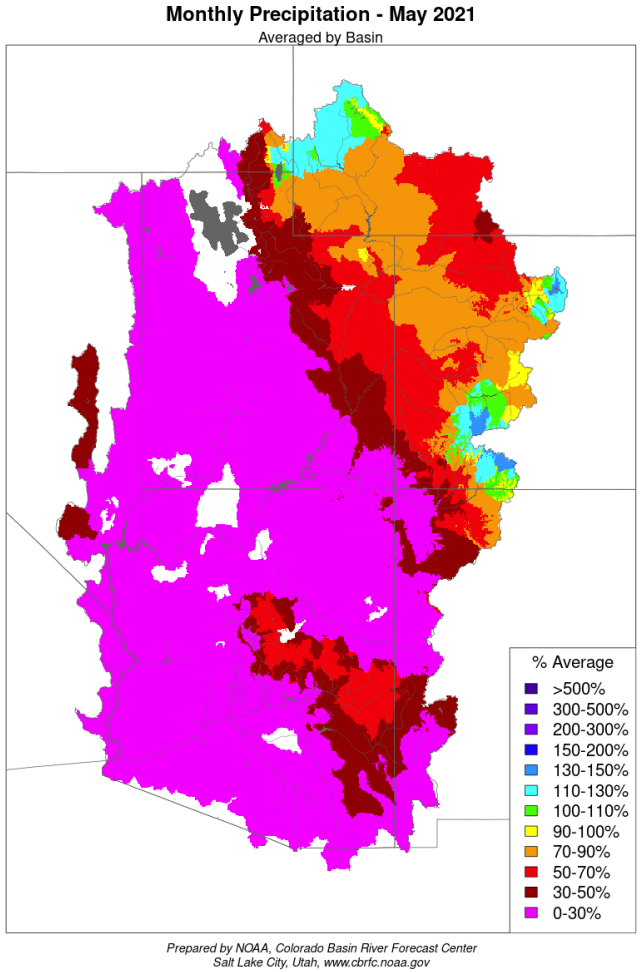
Storage	Elevation (f)	% Capacity	Change since last year
Lake Mead	1,073.5	36%	-17.7 ft
Lake Powell	3,560.6	34%	-44.6 ft

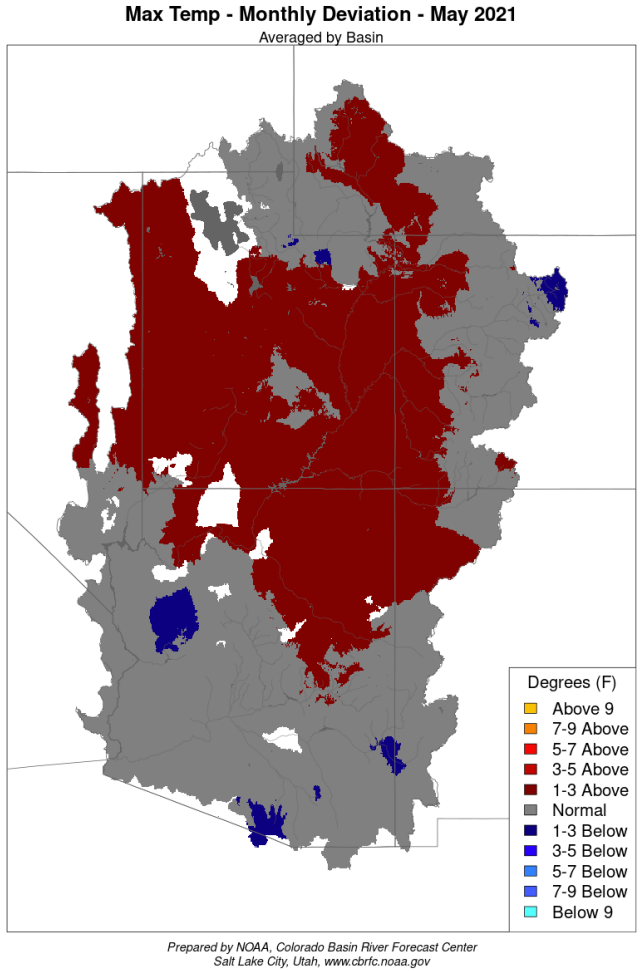
Data retrieved June 1, 2021

[1] Water year is defined as October through September.

[2] Based on 2020 consumptive use and storage volumes through 2020.

Precipitation and Temperature





Above Lake Powell May precipitation: 80%

Above Lake Powell water year 2021 cumulative precipitation: 73%

Colorado Basin River Forecast Center
Lake Powell 104 Group

06/04/2021 Percent Median: 49% (1.0 / 2.0)
Percent Seasonal Median: 6% (1.0 / 16.1)
3 Day Melt Rate: -0.1 in/day

Created 06/04.02:59 GMT
NOAA/CBRFC, 2021

Water year 2021 (green line) peaked at 83% of the seasonal average

Snow Water Equivalent (in)

20 18 17 15 13 12 10 8 7 5 3 2 0

Percent Seasonal Median

124 114 104 93 83 73 62 52 41 31 21 10 0

Past Future

10-01 10-31 11-30 12-31 01-30 03-01 04-01 05-01 05-31 07-01 07-31 08-30 09-30

Date

Average 1981-2010 *2021* *2020*

Unregulated Inflow, Current and Projected Reservoir Status

Projected unregulated inflow to Lake Powell	Acre-Feet	% Average
Water Year 2021	3,367,000	31%
April thru July 2021	1,800,000	25%

Reservoir	Current Elevation	Current Storage Acre-Feet	Current % Capacity	Projected Elevation on 1/1/2022[1]
Lake Mead	1,073.5	9,480,000	36%	1,065.8
Lake Powell	3,560.6	8,366,000	34%	3,536.7

Data retrieved June 1, 2021

[1] Based on Reclamation's May 2020 24 Month Study Most Probable Inflow.

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 *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***

Projected 2022 Reductions + Contributions

The Secretary of the Interior will take affirmative actions to implement programs designed to create or conserve 100,000 acre-ft per year 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.

Water Use In Southern Nevada

Southern Nevada Water Use	2020 Actual Use in Acre-Feet
Nevada Annual Allocation	300,000
Diversion	478,969
Return Flows	223,401
Consumptive Use	255,568
Unused Allocation Available for Banking	44,432 (15%)

Southern Nevada Water Use	Diversions	Return Flows	Consumptive Use
January – April 2021	132,634	75,894	56,740

Banked Water (through end of 2020)	Acre-Feet
Ground Water Recharge in So. Nevada	357,643
Banked in Lake Mead	865,741
Banked in California and Arizona	944,071
Total	2,167,455

Cloud Seeding in Colorado River Basin

Cloud seeding is a form of weather modification that introduces silver iodide into storm clouds to assist in ice particle formation that can cause precipitation. Cloud seeding can be performed with land-based generators or airplanes. Cloud seeding requires certain conditions to be effective, including storm clouds, wind direction, and temperature.

- In 2015, a study in Colorado by the National Center for Atmospheric Research determined that cloud seeding conducted under the right conditions can increase snowfall by 5-15%. The authors calculated an average increase of about 60,000 acre-feet in the targeted area.
- The Wyoming Water Development Office conducted a 10 year study beginning in 2004 to evaluate the effectiveness of cloud seeding in Wyoming. The results indicated that cloud seeding is a viable technology with positive seeding effects of 10-15%.
- Colorado River Basin Weather Modification Agreement – In 2018, the Central Arizona Water Conservation District, Southern Nevada Water Authority, Six Agency Committee of California, and New Mexico Interstate Stream Commission entered into a funding agreement for weather modification. The agreement runs through 2026 and provides for the agencies to share in expenses of up to 1.5 million annually for weather modification programs in Utah, Wyoming, and Colorado.