Hydrology Report – November 2022

UPDATE ON DISCUSSIONS

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

The Commissioner of Reclamation requested in June of 2022, that the seven basin states come up with reductions in the use of Colorado River water ranging from 2–4-million-acre feet and to have a plan by mid-August. The states were not able to come to agreement by August. That remains the case to date, although negotiations are still ongoing.

The Secretary of the Interior's office, however, is moving forward in its effort to develop necessary responses to the critical state of Lakes Powell and Mead. On October 28, 2022, the Secretary of the Interior issued a press release that it was initiating "Significant Action to Protect Colorado River System."[1] That effort consists of Reclamation preparing a Supplemental Environmental Impact Statement (SEIS) to revise the December 2007 Record of Decision for the 2007 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. Reclamation is hopeful to have a draft SEIS by spring of 2023. This process does not negate and ultimately seeks to include a basin states consensus alternative of actions.

In addition to but separate from this interim effort, Reclamation is moving forward with the post 2026 guidelines development process as well as preparing an informational report in 2023 to outline and discuss potential methodologies for assessing evaporation and losses in the lower basin, something that has not been done to date.

HYDROLOGY UPDATE

- **Upper Basin precipitation and Temperature**

October received 84% average precipitation in the upper basin. Upper basin temperatures were average for most of Colorado, but 3-7 degrees warmer in portions of Wyoming and Utah.

- **Upper Basin Snowpack and runoff**

The upper basin is getting colder and starting to receive snow. Current basin snowpack accumulation is 155% of the seasonal median. With less than average precipitation in October and dry upper basin soil conditions, the runoff is forecasted at 83% of average for this year.

- **Current reservoir status**

As of October 24, 2022, Lake Mead is at a current elevation of 1,046.4 feet and has about 7.4 million acre-feet in storage (28% capacity). As of October 24, 2022, Lake Powell is at a current elevation of 3,529.9 feet and has about 5.8 million acre-feet in storage (25% capacity). Since this time last year, Lake Mead has decreased in

[1] http://www.doi.gov/pressreleases/interior-department-initiates-significant-action-protect-colorado-river-system

elevation about 19 feet and Lake Powell has decreased about 113 feet. Total system storage for the upper and lower basin is around 19.5 million acre-feet (33% capacity).

- **2022 Reservoir Operations and Drought Operations**

In calendar year 2022, there is a Level 1 shortage under the 2007 Guidelines and there is a required Drought Contingency Plan contribution for Nevada and Arizona. Accordingly, in 2022, Nevada's consumptive use will be reduced by 13,000 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 2022. Those amounts are significantly larger than Nevada's obligations. The total combined volumes for Arizona, Nevada, and Mexico are 613,000 acre-feet in calendar year 2022, which will save the equivalent of about 8 feet in elevation in Lake Mead.

On August 16, Reclamation released the results of the August 24 Month Study, which is used to determine the operations of the upcoming water year for both reservoirs. The August 24 Month Study projected the January 1, 2023, elevation for Lake Powell to be below 3,525 feet elevation indicating next year will be operated in the Lower Elevation Balancing Tier with an initial release of 7.0 million acre-feet. Lake Mead was projected to be below 1,050 feet and above 1,045 feet, indicating a Level 2a Shortage Condition for the lower basin. Thus, in 2023 (not including any additional requirements that may be imposed under the SEIS), Nevada will have a 17,000 acre-feet reduction from the 2007 Interim Guidelines and an 8,000 acre-feet Drought Contingency Plan contribution in calendar year 2023. 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 based on the August 2022 24 Month Study.

- **Water Use in Southern Nevada**

Southern Nevada's consumptive use in January through September of 2022 was 190,107 acre-feet. 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**

Reclamation uses computer models to forecast reservoir elevations based on planned water use and anticipated runoff. The most current model (October 24 Month Study Most Probable Inflow) is forecasting Lake Mead to be at a projected elevation of 1,026.2 feet by the end of calendar year 2023.

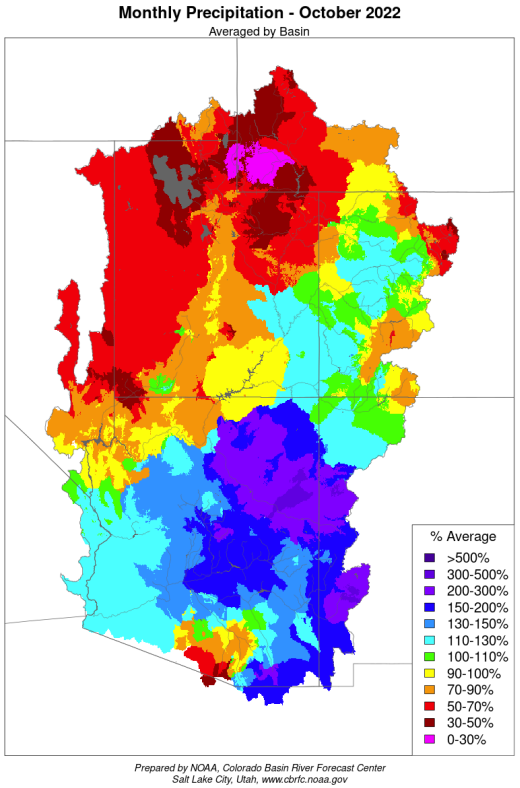
Colorado River Commission of Nevada

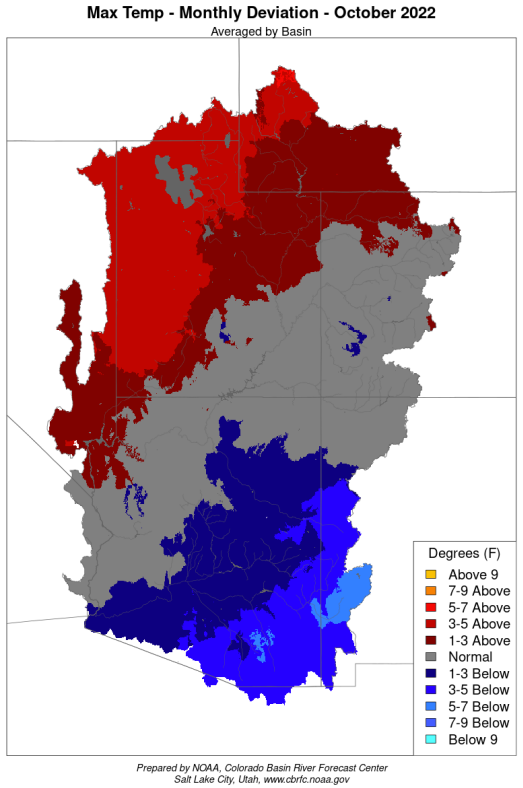
Hydrology and Water Use Update

Warren Turkett

November 8, 2022

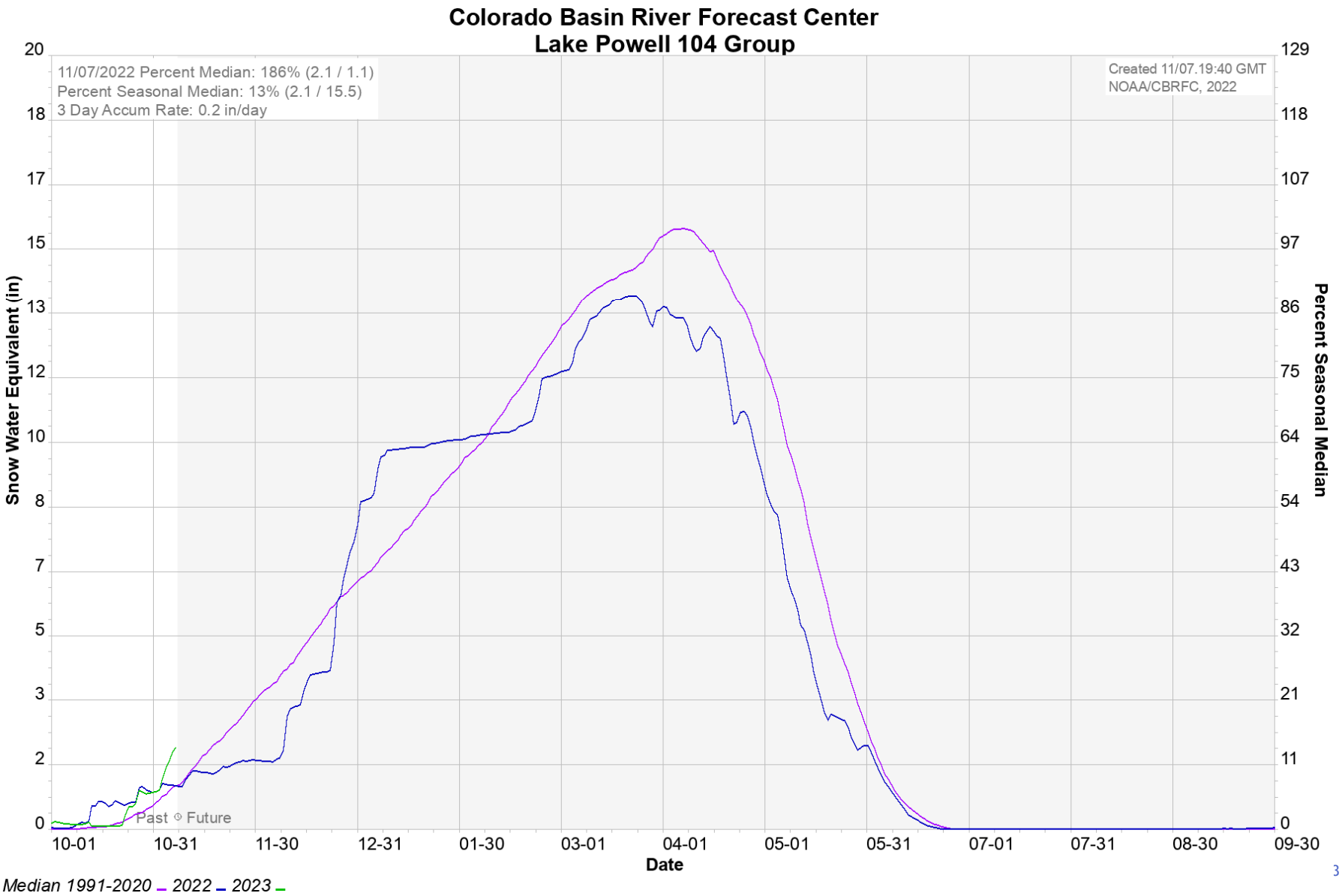
Precipitation and Temperature





Lake Powell %Average Precipitation Water Year 2023

Area	Oct	Water Year
UC-Powell	84	84


Colorado Basin River Forecast Center
Lake Powell 104 Group
11/07/2022 Percent Median: 186% (2.1 / 1.1)
Percent Seasonal Median: 13% (2.1 / 15.5)
3 Day Accum Rate: 0.2 in/day
Created 11/07.19:40 GMT
NOAA/CBRFC, 2022
Snow Water Equivalent (in)
Percent Seasonal Median
Past
Future
Date
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
Median 1991-2020
2022
2023

Unregulated Inflow, Current and Projected Reservoir Status

Projected unregulated inflow to Lake Powell	Acre-Feet	% Average
Water Year 2023	8,000,000	83%
April thru July 2023	5,285,000	83%

Reservoir	Current Elevation	Current Storage Acre-Feet	Current % Capacity	Projected Actual Elevation on 1/1/2024[1]
Lake Mead	1,046.4	7,422,000	28%	1,026.2
Lake Powell	3,529.9	5,834,000	25%	3,523.9

Data retrieved October 24, 2022

[1] Based on Reclamation's October 2022 24 Month Study Most Probable Inflow.

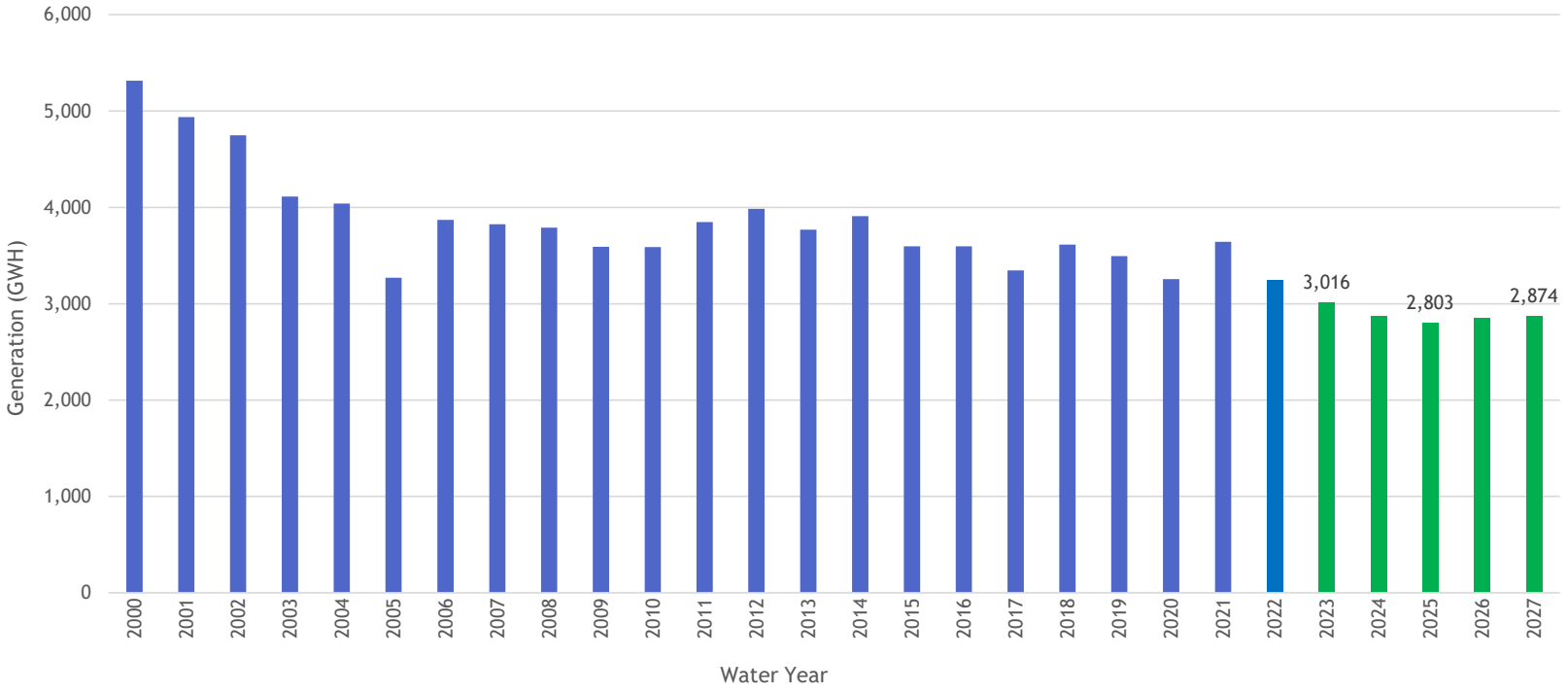
Water Use In Southern Nevada

2021 Southern Nevada Water Use	Acre-Feet
Nevada Annual Allocation	300,000
2021 Drought Contingency Plan contribution	-8,000
Diversions	481,079
Return Flow Credits	238,911
Consumptive Use	242,168
Unused Allocation Available for Banking	49,832 (17%)

2022 January - September Southern Nevada Water Use	Acre-Feet
Nevada Annual Allocation	300,000
2022 Drought Contingency Plan contribution	-8,000
Interim Guidelines Shortages	-13,000
Diversions	369,909
Return Flow Credits	179,802
Consumptive Use	190,107

Banked Water (through end of 2021)	2,250,684

Historical and Forecast of Hydropower Generation at Hoover



Historical generation at Hoover Dam in blue and forecasted generation from Reclamation's October 2022 CRMMS model in green. [1]

[1] Hydropower customer receive a percentage of available generation.

Summary

Lake Powell

- Water year 2023[1] began in October. Upper basin is currently above average for seasonal snowpack accumulation.
- Unregulated inflow for water year 2023 is forecasted to be 83% of average.

Lake Mead

- On August 16, Reclamation announced the 2023 operating conditions for Lake Powell and Lake Mead. In 2023, Lake Powell will start with an initial release of 7 million acre-feet and Lake Mead will operate in a Level 2a Shortage Condition.

Nevada Water Supply

- Southern Nevada has about 9 years of water supply banked.[2]
- **In 2021, southern Nevada used 57,832 af less than its annual allocation.**

Storage	Current Elevation (f)	% Capacity	Change since last year
Lake Mead	1,046.4	28%	-18.9 ft
Lake Powell	3,529.9	25%	-12.5 ft

Data retrieved October 24, 2022.
[1] Water year is defined as October through September.
[2] Based on 2021 consumptive use and storage volumes through 2021.