

# Nevada Drought Update - SEPTEMBER 2022

Drafted September 5, 2022

Prepared by S. McAfee, State Climatologist

**A wet summer brought improvements, but reservoir levels are still low in the Colorado and Humboldt basins, and subsoil estimates remain dry in parts of Nevada.**

## Current drought conditions in Nevada and across the West

After abundant summer rains, Nevada is free of D4 - Exceptional Drought for the first time since September 2020 (Fig. 1, Table 1). In parts of southern Nevada, the US Drought Monitor improved two classes, from D4 to D2, in the last month (Fig. 2).

Owing to long-term precipitation deficits, significant drought is still widespread. Central and southern Nevada, as well as the far north-western and northeastern corners of the state are still in D3 - Extreme Drought. The rest of the state remains in D2 - Severe drought (Fig. 1).

Westside, drought is not as significant as it was late last summer. Over 10% of the West is experiencing normal or wet conditions (Fig. 1). Only small areas of D4 - Exceptional drought remain, primarily in southern California. Drought conditions continued to improve in the Southwest, owing to the very wet monsoon (Fig. 2).

Date	8/31 2021	5/31	7/26	8/30
None	0.0	0.0	0.0	0.0
Abornmally Dry-D0	0.0	0.0	0.0	0.0
Moderate Drought-D1	4.8	0.5	0.5	0.5
Severe Drought-D2	27.4	44.2	36.0	47.3
Extreme Drought-D3	41.5	34.0	33.8	52.2
Exceptional Drought-D4	26.3	21.3	29.8	0.0

Table 1. Percent of Nevada in each drought class from the [US Drought Monitor](https://droughtmonitor.unl.edu).

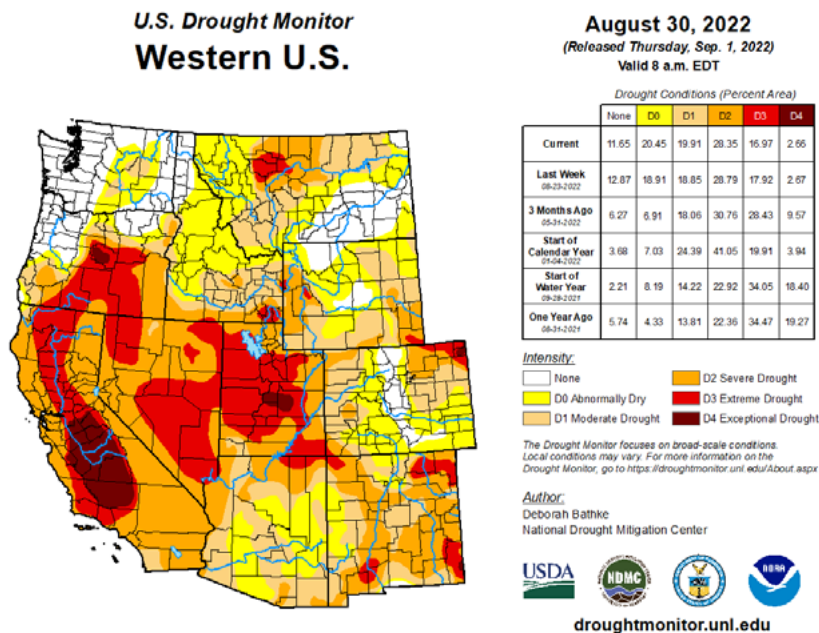


Fig. 1. Drought Monitor map for the western US, released on September 1, 2022, reflecting conditions as of August 30.

## U.S. Drought Monitor Class Change - Western U.S. 4 Week

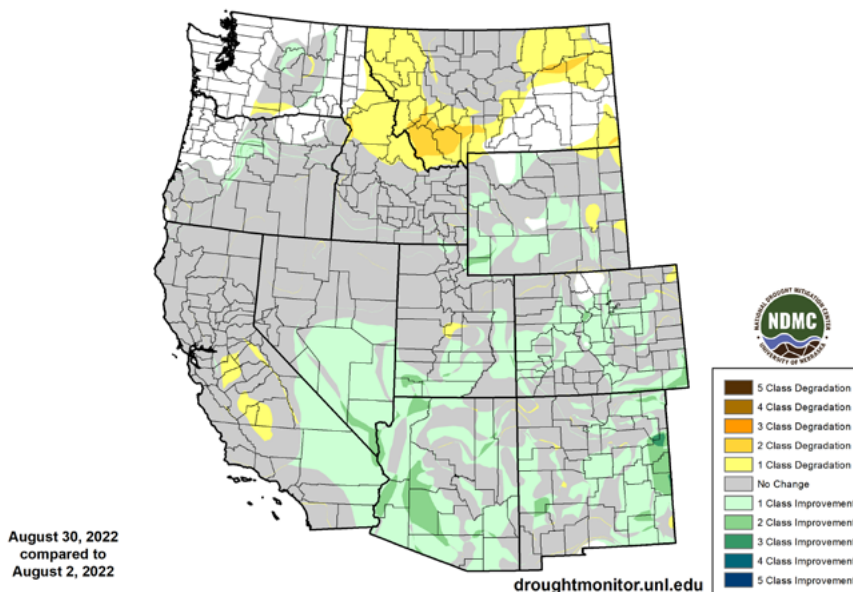


Fig. 2. Drought Monitor change map showing places where drought conditions improved (green) or worsened (yellow to brown) between early and late August 2022.

# August Temperature, Precipitation & Soil Moisture

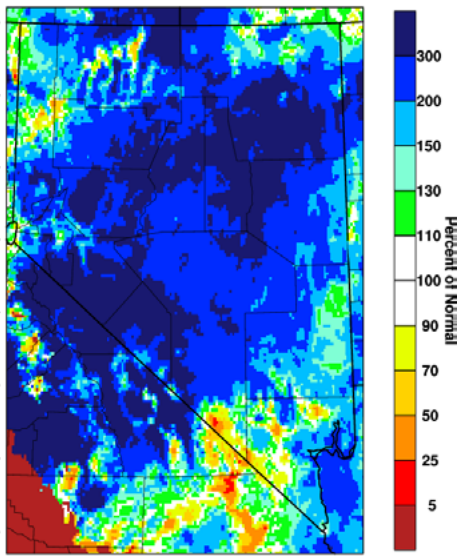


Fig. 3. Percent of average (1981-2010) August precipitation in 2022. PRISM from [Westwide Drought Tracker](#).

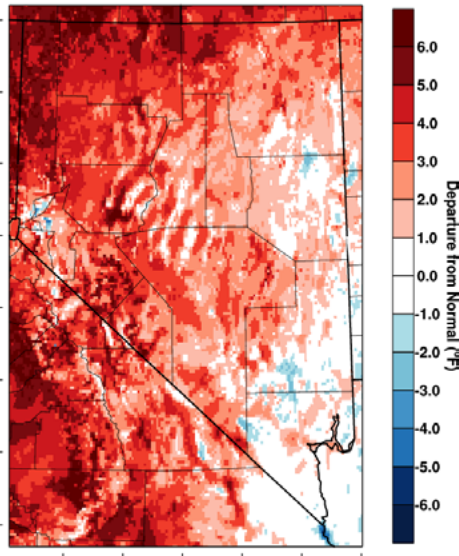


Fig. 4. Difference from average (1981-2010) August temperature (°F) in 2022. PRISM from [Westwide Drought Tracker](#).

August was another wet month, and this time northern Nevada didn't miss out (Fig. 3). Many areas received over 200% of normal precipitation. In much of Nevada, August is not typically wet, but many weather stations reported more than 2" of rain this month. As usual for summer storms, rain was spotty. Minden received 2.8" of rain, Carson City only 0.1". At high elevations in the Spring Mountains, over 4" of rain fell. The Laughlin COOP station, reported only 0.13" of rain (two days of data were missing).

Temperatures were within a degree or so of normal in Clark, Lincoln, White Pine, and southeastern Elko counties (Fig. 4). Central and northeastern Nevada were somewhat warmer than normal. Northwestern Nevada was hot. In some parts of Washoe, Humboldt, and western Elko counties, temperatures were more than 5°F higher than normal. Preliminary estimates rank this August as the warmest on record in parts of northwestern Nevada (Fig. 5).

By late August, both surface subsoils were wetter than normal over central and eastern Nevada (Fig. 6). Soils remain drier than usual along the border with California, from northern Clark County through Washoe. Subsoils are also dry along Nevada's northern border. Note that these data rely heavily on the physical model as the satellite that normally contributes data went into "safe mode."

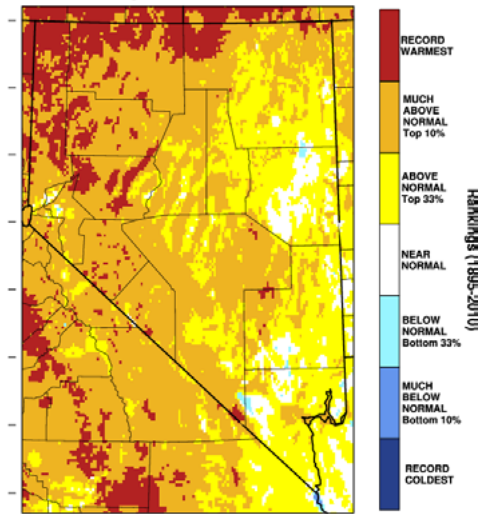


Fig. 5. August temperature rankings. PRISM from [Westwide Drought Tracker](#).

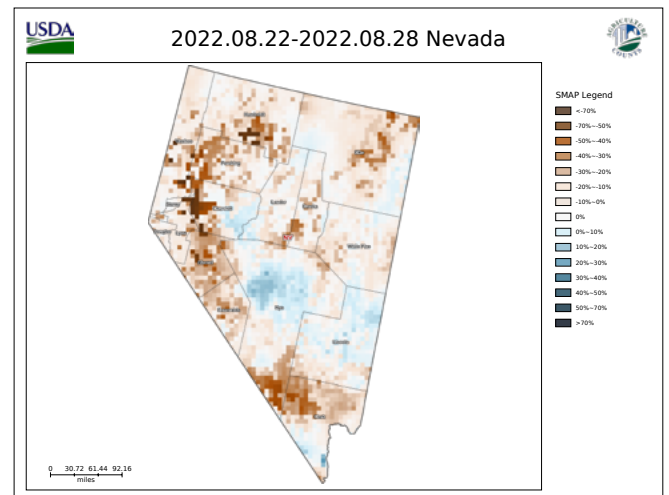
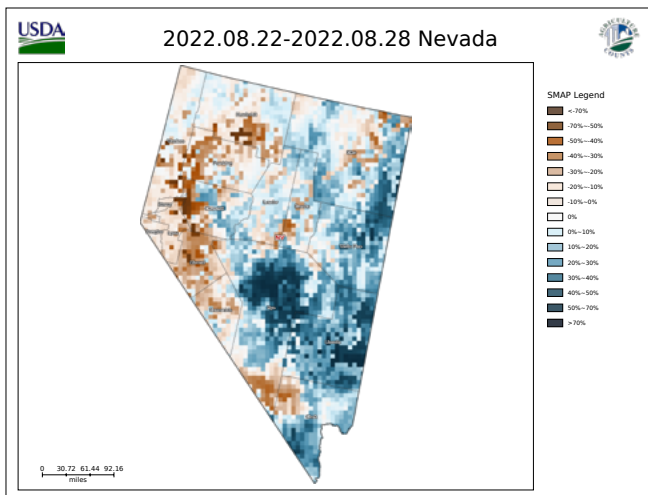


Fig. 6. Topsoil (left) and subsoil (right) moisture anomalies from 9km SMAP for late August 2022. Maps from [Crop-CASMA](#).

# Water Resources

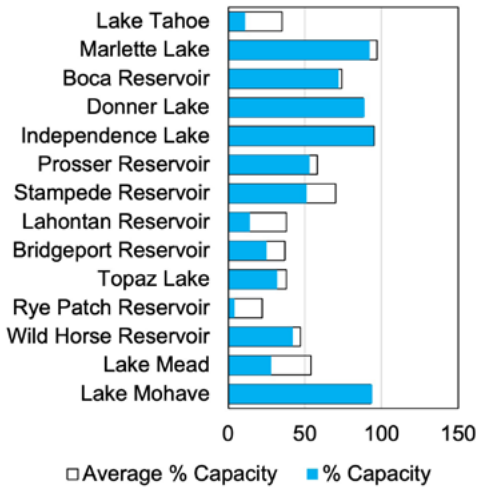


Fig. 7. Current and average percent capacity in Nevada's reservoirs at the end of August 2022. Data from the [Natural Resources Conservation Service](#).

At the end of August, reservoir levels remained much lower than normal in Lake Tahoe, Lahontan and Rye Patch Reservoirs, and Lake Mead (Fig. 7). Rye Patch is in the worst shape, at 4% of capacity; normally it would be at 22% of capacity in late August. The reservoir portion of Lake Tahoe is at 11% of capacity and Lahontan is at 14% of capacity. Most of the reservoirs in the Truckee system are doing well, at just over 50% to 95% of capacity. Bridgeport Reservoir, Topaz Lake, and Wild Horse Reservoir are at less than half of capacity, but that is not unusual at this time of year.

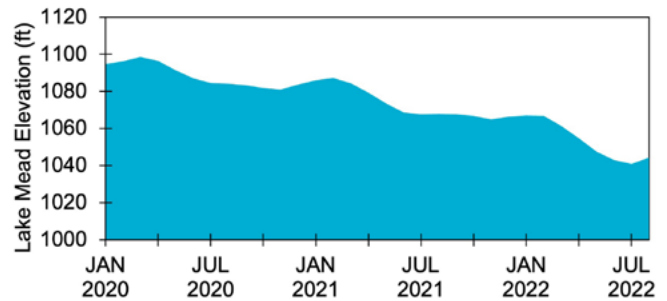


Fig. 8. End-of-month Lake Mead elevation, January 2020 - August 2022. Data from the [US Bureau of Reclamation](#).

Lake Mead levels remain low (Figs. 7-8). However, in the last month, water levels have risen. At the end of July, Lake Mead was at 1,040.9 feet. At the end of August, water levels were 1,044.3 feet. According to [KLAS interviews with the Bureau of Reclamation](#), [rain and reduced demand both helped bolster water levels](#). The amount of water released from Lake Powell was (very) slightly higher in August than in July (Fig. 9), but this was not a major input.

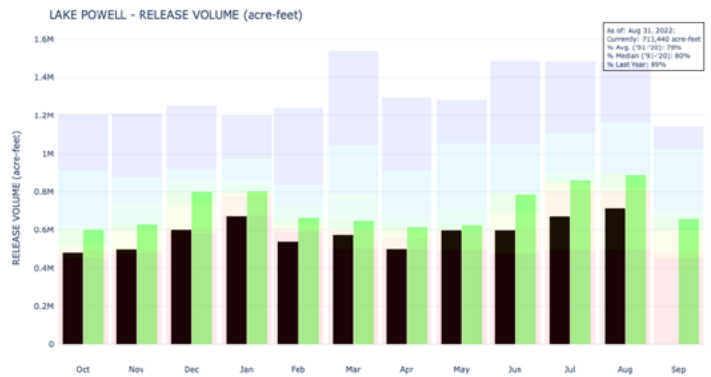
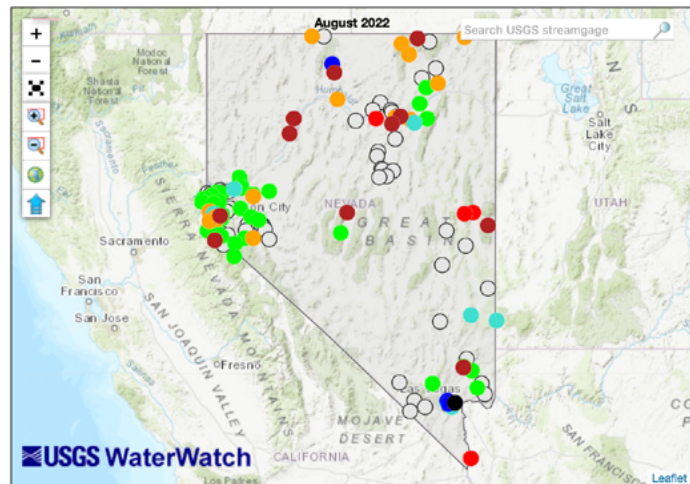


Fig. 9. Releases from Lake Powell by month. Black bars show the releases so far in water-year 2022 (September 2021 - August 2022). Green bars show the 1991 - 2020 median release, and background shading, the range of release volumes. Image from [US Bureau of Reclamation](#).



Explanation - Percentile classes							
●	●	●	●	●	●	●	○
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

Fig. 10. August average stream flow relative to usual August conditions. From [USGS Water Watch](#). You can find more information on the [percentile classes from the USGS](#).

August streamflows ranged from highest on record to lowest reported (Fig. 10). In general, streamflows were near normal in the Truckee, Carson, and Walker systems. They were mostly below or much-below normal in northern Nevada. Flows were more likely to be near or above normal in southern Nevada, but there are a few streams with below normal flows.

## Vegetation & Fire

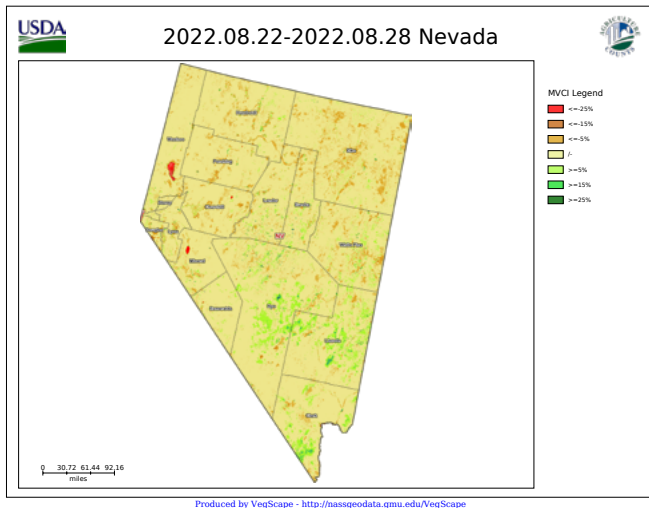


Fig. 11. Mean Vegetation Condition Index for late August. Negative values (brown) indicate places where vegetation is less robust than usual; positive values (green) where vegetation is doing better than usual. From [USDA Crop-CASMA](#).

Across Nevada, most vegetation is in normal late summer condition, according to the Mean Vegetation Condition Index (Fig. 11). Vegetation is doing better than normal in patches of Nye, Lincoln, and Clark counties. Vegetation is doing worse than usual in a few places in the north. According to the August 29 [USDA Crop Progress Report](#) 15% of Nevada's pasture and range are in Very Poor condition, 25% are in Poor condition, 50% are in Fair condition. Only 10% are in Good condition.

It has thankfully, been a light fire year for Nevada. The almost 16,000 acre Cherry Gulch fire which started in northwestern Nevada, not too far north the Black Rock Desert, was notable. But it was quickly contained.

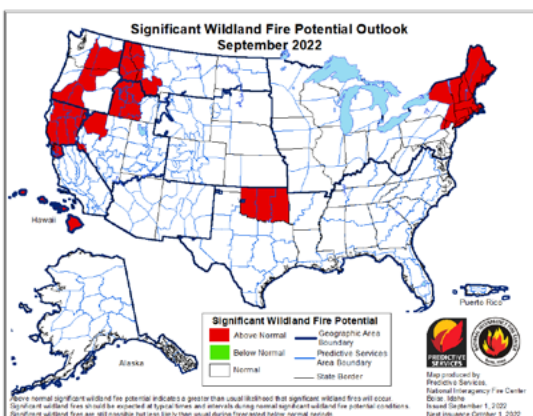


Fig. 12. Significant wildland fire potential outlook for September 2022. For October - November, visit [NIFC Predictive Services](#).

The Significant Wildland Fire Outlook (Fig. 12) suggests that the risk of large and impactful fires is higher than normal in northwestern Nevada and in much of northern California. Some of these areas got enough rain earlier in the summer to have seen decent grass growth. However, it has recently been hot and dry, September is typically a dry month, and the [Climate Prediction Center](#) is forecasting decent odds of warmer than normal temperatures in September.

## Drought Outlook

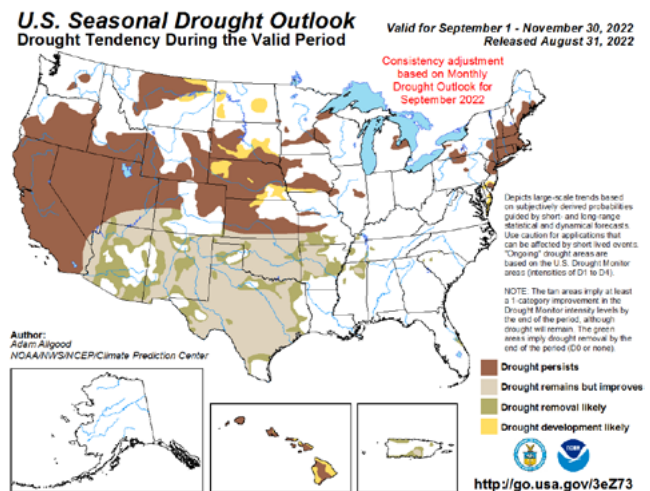


Fig. 13. Drought outlook through November. From the [Climate Prediction Center](#).

Drought is expected to continue through the fall (Fig. 13). Summer rains were helpful, but did not resolve the drought, and fall weather outlooks do not suggest a cool, wet season.

For several months, there have been indications that La Niña would extend into the fall. Recent observations have confirmed [it](#). La Niña falls are often drier than normal in southern Nevada. They are, on average, slightly wetter than normal in northern California and far northwestern Nevada, but there have been wet, dry and normal La Niña autumns. The Western Regional Climate Center has a [thorough treatment](#). NOAA hosts a [blog](#) that digs into the El Niño-Southern Oscillation, the for the system that produces El Niño and La Niña events.

As always, your drought observations are critical! Share them at [CMOR](#) or email [climate@unr.edu](mailto:climate@unr.edu).