

# **Monthly Climate Report**



NWS Reno Issued: 08/07/2023 Includes previous Drought update (DGT) and Hydro Report (E5)

## Synopsis:

July was more typical with plenty of warm to hot days and generally dry weather. The month finished with temperatures around 2 to 6 degrees above average (Figure 1) and with below average precipitation (Figure 2). We had one notable heatwave that arrived during the weekend of July 15-16, which included Reno matching their all time high of 108 degrees on the 16th and warmest overnight low of 77 degrees on the 17th. July was mostly dry, with the exception of isolated storms in far NE CA early morning of the 18th. More widespread showers and thunderstorms from Mono county northward across west central NV on the 18th-19th. Elevated flows with lingering minor flooding continued on some Mono county streams and portions of the Walker River system through the first 2 weeks of July, followed by general decrease in flows through the end of the month as the high Sierra snowpack continued to melt off.

## Weather Events:

July started on the warm side throughout the region with temperatures between 5 to 10 degrees above average. Reno as well as most of the inner basins reached the first 100 degree day of the year on the 2nd as we experienced a brief warm period that lasted through the 5th. Temperatures returned to near average readings from the 6th all the way through the 14th, with typical afternoon breezes and continued dry weather.

After a nice stretch of comfortable conditions, we experienced our first intense heat wave of the year from the 15th through the 17th with several temperature records being set or tied. Notable records in Reno include 106 degrees on the 15th (daily record) and 108 degrees on 16th (Daily record, ties all-time record). Additionally, on the 17th we tied the warmest night on record at 77 degrees and the highest one day average temperatures at 89 degrees. Lastly, maximum temperatures recorded the hottest weekend on record and also tied the 3rd hottest 2 day period at 107 degrees from the 15th-16th.

Showers and thunderstorms with heavy rainfall mainly in Mineral, Lyon, and Mono Counties July 18-19, including overnight storms. Additional more isolated t-storms for Pershing-Churchill counties on the 19th. Further information on the impacts is in the hydrology section below. There was one lightning fire started in July due to these thunderstorms; the Cowtrack Fire south of Mono Lake (Figure 3) completed at 323 acres as of August 1st (Photo 1). Another short period of enhanced heat July 21-23, although not quite as hot compared to the July 15-16 weekend. Still, Reno airport set two more daily records of 105 degrees on the 22nd and 104 degrees on the 23rd. Dry weather with near average temperatures returned from the 24th through the remainder of July. The first set of Red Flag Warnings were issued in the summer on the 24th, 26th, and 29th. In particular, the greatest fire weather concern was in northeast CA and western NV due to enhanced westerly breezes and low minimum and maximum relative humidity.

# Hydrology:

Summer finally returned in full swing in July with dry weather. However, with the very significant high elevation snowpack remaining in the Sierra to start the month, it took around a couple weeks to finally melt enough snow to end flooding concerns in Mono County small streams and along the forks and mainstem of the Walker River. The last flood product related to 2022-23' winter snowmelt was issued on the 18th. This marked 131 days in a row with some type of flood product in the Reno Hydrologic Service area (HSA). Fun fact, on July 1st the Leavitt Lake SNOTEL site still had over 120% of its median seasonal peak snow water equivalent (SWE). Despite the remaining high elevation snowpack and a hot start to the month, the reduced snow covered area in July was not able to produce peak flows as high as had been observed earlier in May and June This helped minimize flood impacts in early July along Mono County small streams, and combined with a transition to filling Topaz and Bridgeport reservoirs, helped reduce flows and prevent any new flooding along the Walker River.

#### Notable flash flooding events.

Unlike May and June, July just experienced one short period of thunderstorms with flash flooding. The influx of monsoon moisture mid-month allowed for thunderstorms to impact portions of eastern Mono, Lyon, and Mineral counties on the 18th and 19th. On the 18th, flash flooding led to the closure of NV-338 from the CA state line to NV-829 (Photo 2) and damaged Pine Grove Rd from NV-208 to the Flying M airport (Photo 3 and Figure 4). There were also reports of minor flooding in portions of rural Smith Valley (Photo 4) from Desert Creek. The estimated 3-hour rainfall estimated by the radar and MRMS dataset was between 3-4" (Figure 5). Additional flash flooding occurred on the 19th, mainly impacting areas of Mineral and Pershing counties. NV-359 was closed during the afternoon of the 19th near milepost 25 in Mineral County.

#### Water Supply and Reservoir conditions

The remaining high elevation snowpack helped maintain well above normal July streamflows throughout the region (Figure 6). The observed April-July seasonal runoff volumes ranged from near average on the Pit River to 400% of normal on the East Walker, with most areas near double the average volume (Figure 7 left side). Preliminary data indicates many locations exceeding previous record April-July volumes. These locations include the East Fork of the Carson at Markleville and Gardnerville, the mainstem of the Carson at Carson city and Fort Churchill, and the East Fork of the Walker at Bridgeport. Note, the West Walker and West fork of the Carson did not exceed the 2017 April to July volume despite greater peak snowpack volume this year. Most major area reservoirs observed their peak levels during July and have started to drop somewhat with decreasing inflows and increasing evaporation. Still all major reservoirs are above average storage for the end of July, and most are above 80% of capacity (Figure 8). The Walker basin reservoirs gained significant storage in July, due to delayed filling after the snowmelt flood risk passed, and peaked early August.

## Drought/Climate Update:

As of the end of July, there are no areas of drought or even abnormally dry conditions in the Reno HSA (Figure 9). Although we didn't have much precipitation during the month, we are in the typical dry season in the western US. Water year precipitation to date still remains at 100-150% of normal in northern Washoe, Lassen, and Pershing counties, and 200-300% of normal in the remainder of the HSA (Figure 10). The short (30-90 day) and longer term (90 days or more) <u>Standard Precipitation-Evapotranspiration Index (SPEI)</u> remains positive areawide, and the latest Palmer Drought Severity index is also mostly at a 3.0 or greater (Figure 11).

## Additional Information on Drought and Climate:

Report Drought conditions here Nevada statewide Drought update NV Living with Drought Drought Monitor New Drought.gov California Nevada Drought Early Warning System NOAA CPC Drought page-CNAP Drought tracker California Nevada River Forecast Center WRCC Drought Tracker WRCC Enso page WRCC Enso page WRCC Monthly Climate Summaries Evaporative Demand Drought Index US Seasonal Drought Outlook

#### Contact NWS Reno Climate Team

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### Photos:



Photo 1: Cowtrack night operations on 7-26-23. Image courtesy of Inciweb.



Photo 2: Flood impacts on July 18th along NV 338 near Nye Canyon. Photo credits: Lyon County roads (left) and NDOT (right)



Photo 3. July 18th flood impacts along Pine Grove Road. Photo credit: Lyon County Roads.



Photo 4. July 18th flooding on Albright lane in Smith Valley. Photo credit: Walker River Irrigation District

# Figures.

July 2023 Percent of 1981-2010 Normal 42°N 300 200 40°N · 150 **4** 1 ... 130 Percent of Normal 90 38°N — 36°N -70 50 34°N -25 5 32°N ا 122°W ا 118°W I Т I 124°W 120°W 116°W WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 5 AUG 2023



July 2023 Departure from 1981-2010 Normal



WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 5 AUG 2023

Figure 2. Departure from normal temperatures for July 2023. Data courtesy of WestWideDroughtTracker (<u>WWDT</u>)



Figure 3: Cowtrack fire progression map. Image courtesy of Inciweb.



Figure 4. Map of the reported flash flooding locations impacted in Lyon County on the 18th.



Figure 5. <u>Multi-Radar Multi-Sensor (MRMS)</u> 3 hour precipitation estimate for 7/18 Lyon County event (note time is in UTC, subtract 7 hours for PDT).



Figure 6: July <u>Monthly USGS streamflow</u> Note, the only red dot in western NV is the Truckee Canal which is closed for construction.



Figure 7: <u>CNRFC</u> observed April to July volume (left) and Water Year flow to date for early August (right).



Figure 8: End of month reservoir storage relative to capacity and average for this month and last month.



Figure 9: End of July Drought Monitor Status for NWS Reno Service area. (Drought Monitor).



Figure 10: Current water year to date precipitation percent of normal. Data courtesy of WestWideDroughtTracker (<u>WWDT</u>)



Figure 11: Current Palmer Drought Severity Index at the end of July. Data courtesy of WestWideDroughtTracker (<u>WWDT</u>)