

# **Rainfall & Flood Event Report**

## **July 27-28, 2022**

prepared by

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On July 27, 2022, Clark County was already experiencing high dewpoints in the mid 60's and had abundant atmospheric moisture. Daytime warming triggered isolated thunderstorms around the higher elevations around Southern Nevada. Clockwise circulation around high pressure in northern Nevada created northeasterly flow in southern Nevada. Historically, when afternoon convection occurs in Lincoln County, Nevada and/or Washington County, Utah with this flow pattern, strong thunderstorms develop and move into Clark County, often reaching the Las Vegas Valley. Storms producing heavy rainfall and strong winds are common with this pattern. This cycle of thunderstorms developing and pushing through Southern Nevada lasted three days, with the biggest flooding impacts occurring on July 28, 2022.

### **July 27, 2022**

Storms in Lincoln and Washington Counties began rapidly moving southwestward towards Mesquite, Nevada. By 7:00 pm, storms had reached Valley of Fire with most District Flood Threat Recognition System (FTRS) gauges reporting 0.50 inches of rain or less (one exception was Bunkerville registering 0.98 inches). At 7:30pm, showers were developing over Frenchman Mountain, east of Nellis AFB. By 8:00pm severe thunderstorms, with winds exceeding 58 mph, were developing around the Las Vegas Valley:

- Harry Reid International – 60 mph at 7:40pm.
- North Las Vegas Airport – 59 mph at 7:30pm.
- Nellis AFB – 60 mph at 7:52pm.

Around 8:30pm, a line of convection formed and extended from Frenchman Mountain to Eastern Avenue and Sunset Road. The line intensified as it moved south southeastward for 30 minutes. By 9:00pm this line was rapidly decreasing in strength. Most storms in the valley weakened after 9:30pm resulting in light rain until midnight.

Flamingo Wash at Eastern (sensor 4734) reported a peak rainfall intensity of 0.43 inches in 30 minutes and Las Vegas Wash at Pabco Road (sensor 4544) reported 0.47 inches in 30 minutes. The two year return interval threshold is 0.44 inches in 30 minutes.

Date and Time	Interval	4734	4674	4659	4739	4759	4684	4749	4694	4544
Units		in	in	in	in	in	in	in	in	in
07/27/2022 15:45:00	30 minutes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/27/2022 16:15:00	30 minutes	0.00	0.00	0.16	0.04	0.00	0.31	0.00	0.00	0.00
07/27/2022 16:45:00	30 minutes	0.00	0.00	0.12	0.04	0.00	0.04	0.00	0.00	0.00
07/27/2022 17:15:00	30 minutes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/27/2022 17:45:00	30 minutes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/27/2022 18:15:00	30 minutes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/27/2022 18:45:00	30 minutes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/27/2022 19:15:00	30 minutes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/27/2022 19:45:00	30 minutes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/27/2022 20:15:00	30 minutes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/27/2022 20:45:00	30 minutes	0.36	0.16	0.08	0.00	0.00	0.00	0.00	0.04	0.00
07/27/2022 21:15:00	30 minutes	0.43	0.08	0.28	0.40	0.43	0.12	0.39	0.20	0.47
07/27/2022 21:45:00	30 minutes	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.31
07/27/2022 22:15:00	30 minutes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00
07/27/2022 22:45:00	30 minutes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
07/27/2022 23:15:00	30 minutes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/27/2022 23:45:00	30 minutes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Figure 1 - Storm Rainfall Rates Near Whitney Ranch

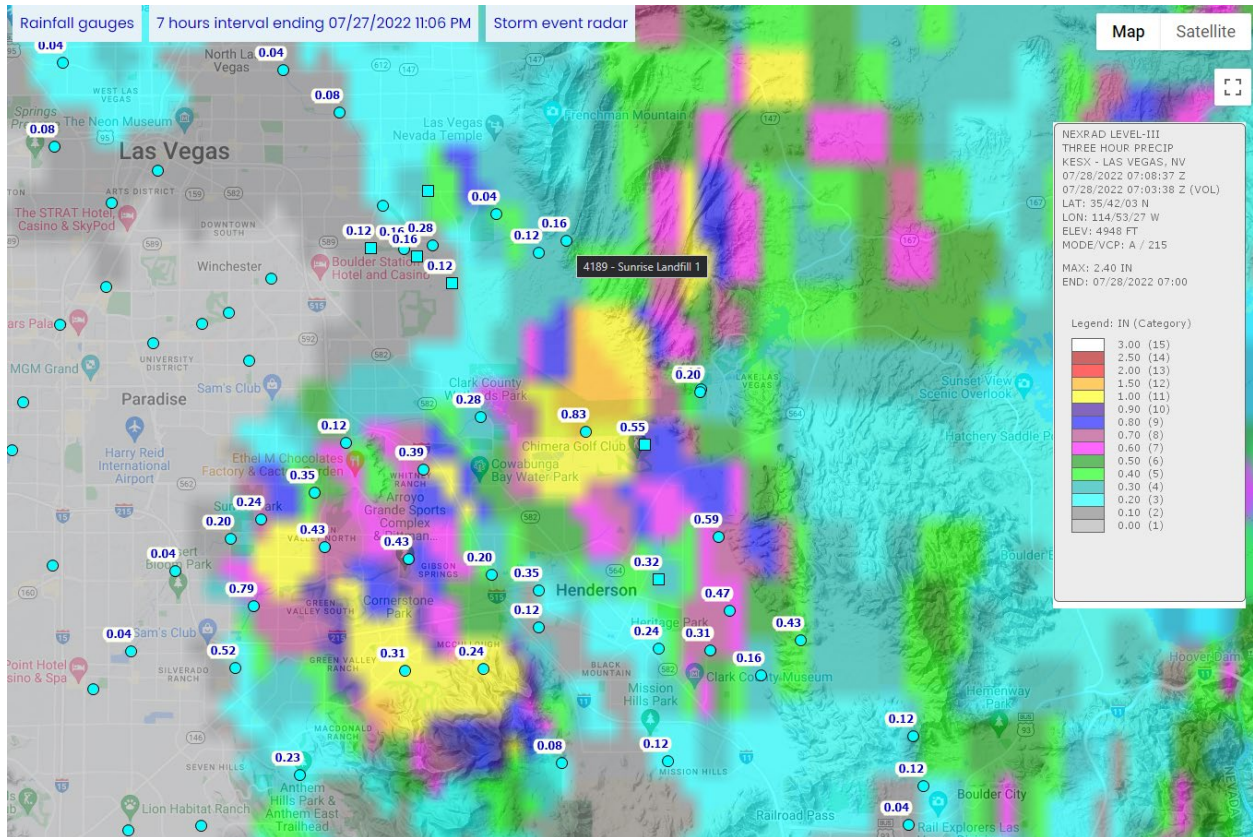


Figure 2 - Seven Hour Rain Gauge Totals and Three Hour Radar Totals

One impact from this evening involved backed up runoff in the Whitney Channel causing damage to nearby properties. The channel is under construction to increase capacity of the structure to carry additional storm runoff.

Runoff entered a residential property near Athens Avenue and Racetrack Road in Henderson. Rainfall rates and totals were similar to those at Whitney Ranch.

The District's FTRS repeater in Mesquite transmit antenna. It was repaired one week later.

## July 28, 2022

The second night of storms originated from the north and northeast of Clark County. One unique feature of the evening was that the line of thunderstorms that developed over the Sheep Mountains moved southward. It is more common to see storms moving towards Las Vegas to arrive along the I-15 corridor, or occasionally via the US 95 corridor.

At 6:30 pm storms again began forming in the Gold Butte area as additional storms in Lincoln County, Nevada, and Washington County, Utah, were moving towards Las Vegas. By 8:15 pm a line of north to south orientated severe thunderstorms storms over the Sheep Range were moving southward into North Las Vegas and would eventually reach downtown Las Vegas. At 9:00 pm the District's downtown weather station began reporting rainfall. Thunderstorms over downtown Las Vegas begin merging with the storms from Gold Butte, adding additional energy, and thus creating new storms in the southern Las Vegas Valley and Boulder City.

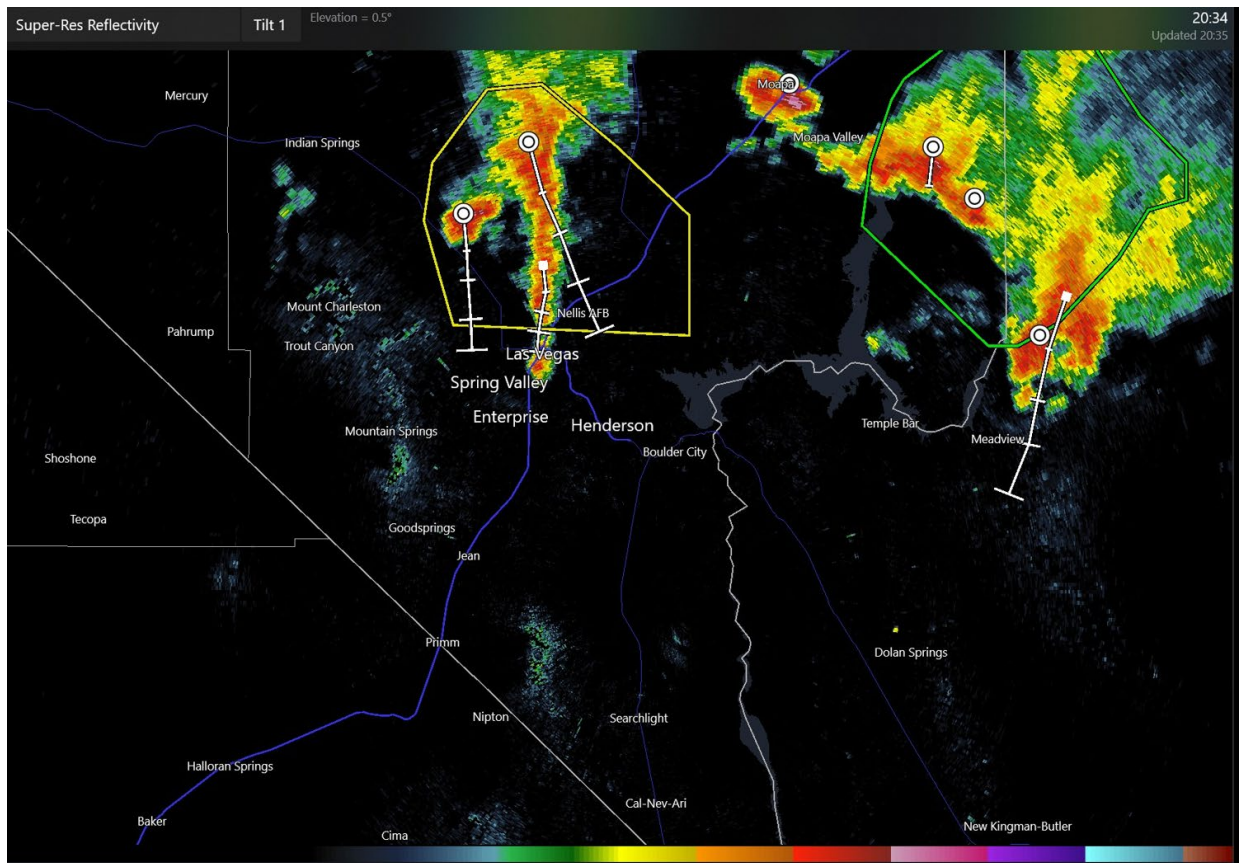


Figure 3 - Severe Thunderstorms Moving Towards Downtown Las Vegas. Additional Storms In Moapa & Gold Butte.

Date and Time	Interval	4294	4274	4289	4386	4384	4484	4574	4374
Units		in	in	in	in	in	in	in	in
07/28/2022 20:30:00	30 minutes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/28/2022 21:00:00	30 minutes	0.04	0.04	0.12	0.00	0.16	0.00	0.00	0.00
07/28/2022 21:30:00	30 minutes	0.28	0.87	0.59	0.20	0.63	0.47	0.35	0.59
07/28/2022 22:00:00	30 minutes	0.00	0.00	0.04	0.24	0.28	0.47	0.43	0.31
07/28/2022 22:30:00	30 minutes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/28/2022 23:00:00	30 minutes	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00
07/28/2022 23:30:00	30 minutes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/28/2022 24:00:00	30 minutes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Figure 4 - Rainfall Rates At District Gauges

The highest rainfall rate at the District’s gauges occurred Downtown (Clark Place, sensor 4274). This rate exceeded the five-year return interval.

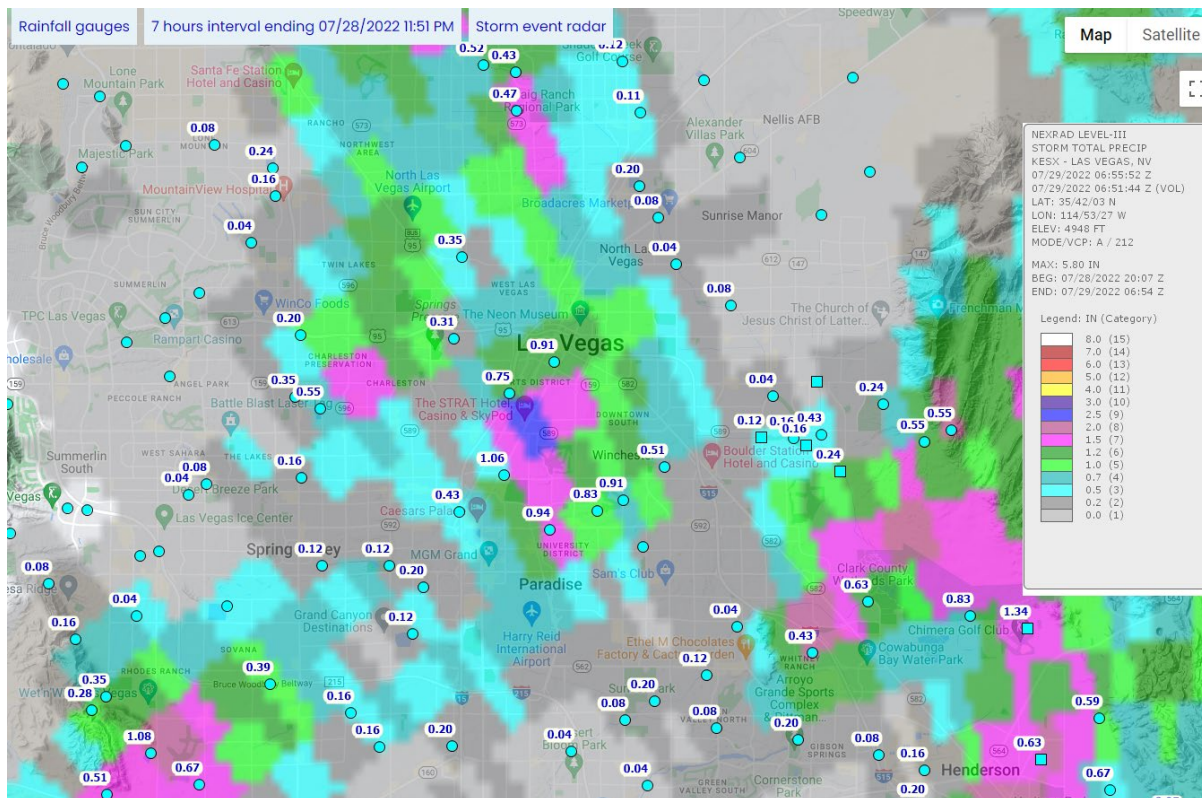


Figure 5 - Rainfall Totals Downtown

Date and Time	Interval	4694	4544	4554	4094	4099	4549	4784	4779	4754	4794	4789	4799
Units		in	in	in	in	in	in	in	in	in	in	in	in
07/28/2022 21:40:00	10 minutes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/28/2022 21:50:00	10 minutes	0.16	0.04	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/28/2022 22:00:00	10 minutes	0.24	0.63	0.43	0.35	0.16	0.04	0.00	0.00	0.00	0.00	0.04	0.08
07/28/2022 22:10:00	10 minutes	0.16	0.16	0.79	0.35	0.20	0.31	0.27	0.28	0.24	0.31	0.47	0.51
07/28/2022 22:20:00	10 minutes	0.00	0.00	0.04	0.08	0.20	0.24	0.32	0.67	0.43	0.31	0.43	0.32
07/28/2022 22:30:00	10 minutes	0.08	0.00	0.00	0.00	0.08	0.00	0.00	0.04	0.08	0.04	0.04	0.04
07/28/2022 22:40:00	10 minutes	0.00	0.00	0.00	0.00	0.08	0.00	0.04	0.00	0.00	0.00	0.00	0.00
07/28/2022 22:50:00	10 minutes	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/28/2022 23:00:00	10 minutes	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Figure 6 - Rainfall Rates In Henderson

Rainfall rates in Henderson were higher than downtown Las Vegas. East C-1 DB (4799) had a return interval storm exceeding 5-years, Las Vegas Wash at Pabco Road (4544) and C-1 Channel near Boulder Highway experienced 10-year return interval storms, while the USGS gauge at Lower C-1 Channel reported a 25-year return interval storm.

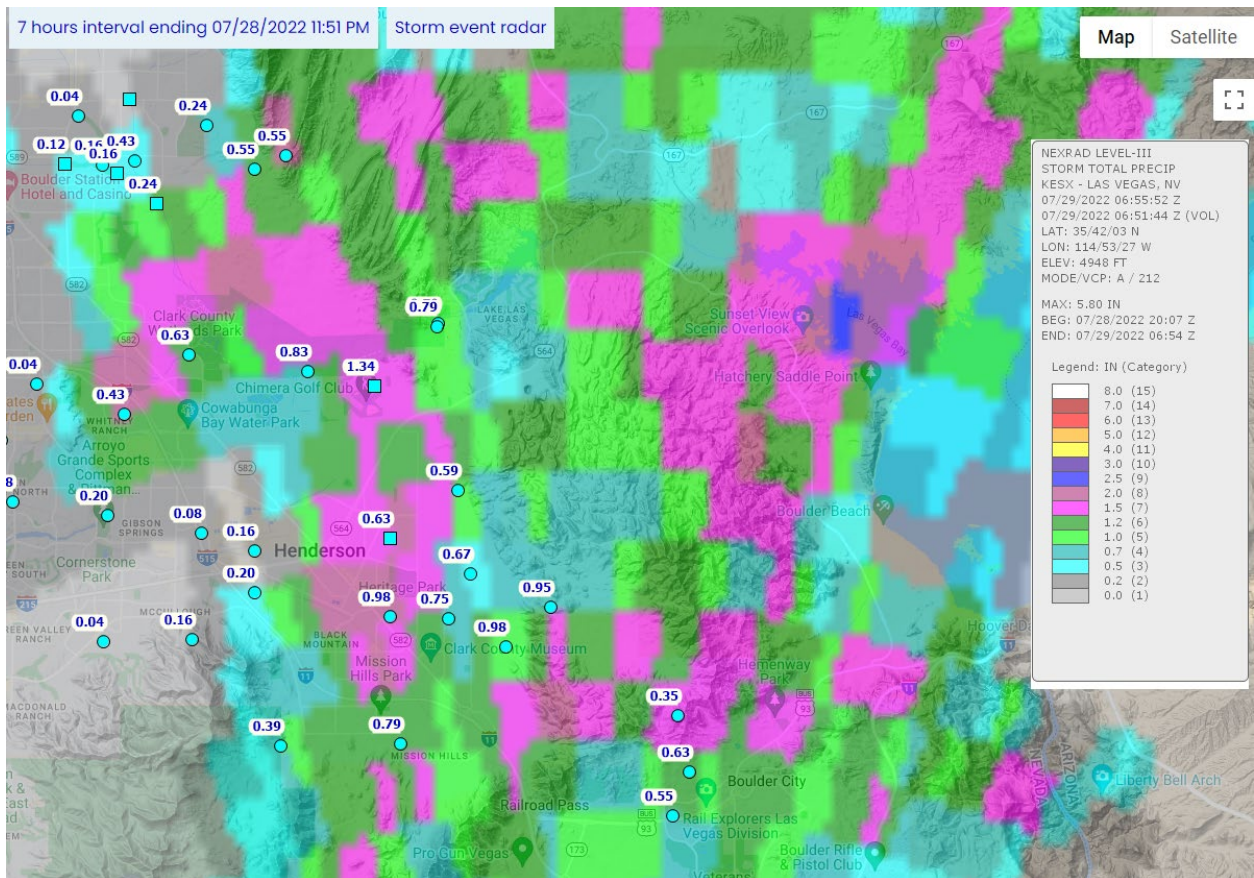


Figure 7 - Rainfall Totals For Henderson And Boulder City

Listed below are damage reports received by the District.

- A swift water rescue involving a woman who fell into Lower Las Vegas Wash near Craig Ranch Park. She was pulled out near Losee Road after travelling approximately two miles.
- Nevada Power reported 7,300 residents were without power in the central and eastern valley, including The Freemont Street Experience.
- Water entered the Circa, Casers Palace, and Planet Hollywood casinos, primarily through the ceilings.
- North Las Vegas Police reported 15 intersections and/or streets closed due to water on the roads.
- The City of Las Vegas reported 330 calls for service and rescues.
- The Clark County Fire Department reports they performed six swift water rescues.
- Eight vehicle crashes reported around the valley.
- One vehicle reported under water at Commerce & Charleston.
- The DMV office at Decatur delayed opening on July 29<sup>th</sup> due to water damage.
- Local media reported Lake Mead water level rose by three inches. Some of this rise is probably attributable to a schedule water release from Lake Powell.

Additionally, the City of Las Vegas created a separate report of impacts.