17,500 earthquakes in Nevada in 2015

Cracks developed from the magnitude 7.3 Pleasant Valley earthquake in 1915. It was Nevada's largest earthquake; located south of Winnemucca. Photo/Carl Stoddard/courtesy of UNR

By Mike Wolterbeek

More than 17,500 earthquakes were recorded in 2015 by the

UNR’s Nevada Seismological Laboratory. That includes the 231 recent quakes in south Reno and the magnitude 4.8 in Caliente that shook Las Vegas in January.

“While the Reno shaking is fresh in our minds, what’s really bumping the number up from the background rates is the energetic sequence in far northwestern Nevada, the Sheldon sequence,” Graham Kent, director of the Nevada Seismological Lab said.

Through 2015 there have been 4,511 earthquakes recorded in the remote Sheldon Wildlife Refuge near Vya, east of Cedarville, Calif. The earthquake activity that began there in July 2014 has produced 234 earthquakes greater than magnitude 3.0, and 24 earthquakes of magnitude 4.0 or larger, including the largest, a magnitude 4.8 on Sept. 14 and a magnitude 4.6 just before Christmas.

That leaves more than 13,000 other Nevada and eastern California earthquakes, including swarms as well as less prolonged mainshock-aftershock sequences in Caliente, Carson City and Virginia City. Outside of the persistent Sheldon sequence, Nevada was hit with 54 magnitude 3 or greater earthquakes or about one per week.

Overall, there have been 19 earthquakes of magnitude 4.0 and larger and the university’s seismological lab has reported 160 earthquakes between magnitude 3.0 and 3.9.

“The south Reno swarm that just happened produced about 30 earthquakes in two days and about 200 more in the days that followed,” Kent said. “For our entire network, we are averaging about 50 located earthquakes a day.”

They aren’t all part of identifiable swarms like Sheldon, South Reno or Virginia City.

“Many of the earthquake clusters in the Walker Lake area in 2015 were more typical sequences and not like Sheldon that has

now continued for more than a year," Ken Smith, associate director of the Nevada Seismological Lab said. "Just as the Caliente 4.8 that startled Las Vegas in May or the 4.8 at Scotty's Castle at Death Valley in February with their fairly extensive aftershocks, in Nevada we wouldn't be surprised to see a significant event anywhere."

The Nevada Seismological Lab is a public service and research department in the university's College of Science tasked by the state to operate a monitoring network and report earthquake information for activity throughout the state. The Seismology Lab's data are provided to the USGS, other national data centers and shared with adjacent network operators in California, Utah, Washington and Oregon.

"All of our earthquake data are fed to the USGS," Smith said. "We work with the Nevada Department of Emergency Management, county emergency managers, FEMA and even the California Office of Emergency Services. We have special reporting requirements for magnitude 3 and higher quakes. We had 179 earthquakes of magnitude 3.0 and larger in 2015, the most of any seismic network operation in the lower 48."

The lab operates, maintains and monitors 185 real-time seismograph stations across Nevada and along the Sierra Nevada mountain range of eastern California. The seismological lab crew has been upgrading and expanding the network, including adding 15 broadband stations in southern Nevada this year and are looking for funding to match or exceed that expansion rate in 2016.

"We're looking to the USGS, state of Nevada and others for support to bring seismograph coverage to more of the state," Kent said. "What we've done for the Vegas area already has been critical for our response capabilities in southern Nevada Despite the number of earthquakes we track – compared to other western states – support for statewide earthquake monitoring in Nevada is far below that of similar western U.S. seismic

networks. That said, we've added new analysts and reorganized our 24/7 monitoring team to keep up with the volume. But maintaining this level of effort isn't really sustainable without additional funding."

Though the third most seismically active state behind California and Alaska, Nevada has not had a magnitude 7.0 earthquake in 60 years.

Mike Wolterbeek works for UNR.