



College of Science
University of Nevada, Reno

July 12, 2019

Governor Steve Sisolak
State of Nevada

Dear Governor Sisolak:

The recent sequence of earthquakes in the Ridgecrest, California area is an important reminder that we live in a very seismically active region. These earthquakes occurred along a system of faults known as the eastern California shear zone in the south and Walker Lane in the north. This system of faults actually accommodates approximately 20% of the motion between the Pacific and North American plates, which amounts to about 1 cm per year of displacement across the region. The San Andreas Fault takes up the other 80% of that plate motion. However, there is evidence that the long term trend is for the Walker Lane to accommodate increasing amounts of the overall plate motion. In fact, over a period of many millions of years, the Walker Lane could one day become the primary tectonic boundary between the Pacific and North American plates. This dynamic tectonic setting makes Nevada the third most seismically active state, as the Walker Lane extends through much of the region. Large earthquakes have occurred periodically along and near the Walker Lane and will continue to do so in the future.

It is important to note that Yucca Mountain lies in the eastern part of the Walker Lane. Multiple young faults and volcanic centers are present in the vicinity of Yucca Mountain. Although these faults and volcanic centers were studied extensively in the 1980s and 1990s, there are several tools that have been refined or developed over the past couple decades that could greatly enhance our understanding of these geologic hazards. These include the following: 1) high-resolution topographic imaging of the Earth's surface through LiDAR (light detection and ranging), which greatly facilitates mapping of young faults and analysis of seismic hazards; 2) enhanced techniques for dating geologic surfaces, which enable very careful analysis of the age and frequency of past earthquakes; 3) refined geophysical techniques, allowing for better imaging of the subsurface, which is important for analyzing both the volcanic and earthquake hazards; and 4) enhanced techniques for documenting ground shaking associated with seismicity and modeling such shaking for both proximal and distant earthquakes. As seen in the recent Ridgecrest earthquake sequence, even distant earthquakes can cause significant shaking in southern Nevada.

In summary, Yucca Mountain lies in a very dynamic, seismically active region, as evidenced by the Ridgecrest earthquakes as well as other historical temblors. Thus, there is a strong need for more modern and thorough research and analysis to fully understand both the seismic and volcanic hazards of the Yucca Mountain area. In the opinion of Nevada's State Geologist and State Seismologist, these modern studies must be carried out before any determination can be made as to whether this site might be suitable for nuclear waste storage. The Ridgecrest earthquake sequence, which began July 4 and has yet to subside, clearly highlights the importance of such studies.

Sincerely,

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