

## ABSTRACT

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**Project title:** Paleoseismic studies in the central Nevada seismic belt: 1954 Rainbow Mountain

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The central Nevada seismic belt (CNSB) is a semi-continuous zone of historical surface faulting Province produced by eight moderate- to large-magnitude earthquakes in the last century that extends for more than 300 km in the western Basin and Range. This study examines the paleoseismic history of the 1954 Rainbow Mountain fault by conducting detailed chronostratigraphic studies, exploratory trenching, and age dating in order to better understand contemporary and paleoseismic processes in the CNSB.

Two exploratory trenches were excavated across the main trace of the 1954 Rainbow Mountain fault. The trenches exposed a faulted sequence of subaerial and lacustrine sedimentary deposits ranging in age from mid- to late Seho (< 30 ka) in age. Two pre-1954 events are recognized based on fault-stratigraphic relations: the triultimate event occurred between 11.8-14.5 ka based on the ages of faulted subaerial deposits containing a buried paleoroot horizon and unfaulted organic mid-Seho lake clay deposits. The penultimate event is dated between 6.3-8.0 ka based on the ages of faulted late Seho subaerial deposits and unfaulted late Seho shoreline deposits. Based on measured offsets of displaced units in the trenches, the earlier events had event offsets of 1-1.5 m each; together with the 30 cm 1954 displacement a cumulative vertical displacement of 2.5-3.0 m has occurred during the last 14.5-17.8 ka. The three events had strong components of right-oblique slip with an estimated vertical-to-horizontal slip ratio of 1:1.6; accounting for the oblique slip component, the net slip rate from the three events is estimated at 0.3-0.4 mm/yr. An average interseismic interval is on the order of 7,000 years.