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Quaternary Fault and Fold Database of the United States

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Seven Troughs Range fault zone (Class A) No. 1627

Last Review Date: 1999-03-10

citation for this record: **Adams, K., and Sawyer, T.L., compilers, 1999, Fault number 1627, Seven Troughs Range fault zone, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 12/14/2020 02:27 PM.**

Synopsis	This mostly continuous zone is comprised of range-front faults that bound nearly the entire eastern front of the Seven Troughs Range to east of Olson Meadow Spring. A few piedmont faults also are present near the south end of the range where Sage Valley joins Granite Springs Valley. Range-front faults juxtaposes piedmont-slope deposits against bedrock and are expressed as abrupt front of the Seven Troughs Range. The northernmost piedmont fault is marked by an east-facing scarp on Pleistocene alluvium near the mouth of Egbert Canyon. The intermontane fault is expressed by aligned small drainage valleys and a ridge-crest saddle. Reconnaissance photogeologic mapping and regional geologic mapping are the sources of data. Trench investigations and detailed studies of scarp morphology have not been conducted.

Name comments	Refers to faults along east front of the Seven Troughs Range from near southern tip north to east of Shingle Spring that extend northward as a short intermontane fault and a piedmont fault to the east of Olson Meadow Spring. A few piedmont faults also are present near the southern end of the range where Sage Valley joins Granite Springs Valley. dePolo (1998 #2845) referred to these faults as the Seven Troughs Range fault; the term Seven Troughs Range fault zone is used herein. **Fault ID:** Refers to fault LL18 of dePolo (1998 #2845).
County(s) and State(s)	PERSHING COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* Fault locations are primarily based on 1:250,000-scale map of Dohrenwend and others (1991 #285), which was produced by analysis of 1:58,000-nominal-scale color-infrared photography transferred directly to 1:100,000-scale topographic quadrangle maps enlarged to scale of the photographs. Additional faults were located from 1:250,000-scale photogeologic map of Slemmons (1974, unpublished Lovelock 1:250,000-scale map). Fault locations checked against 1:250,000-scale map of Johnson (1977 #2569).
Geologic setting	This mostly continuous zone is comprise of range-front faults that bound nearly the entire east front of the Seven Troughs Range. These continue northward as a short intermontane fault and still further northward as a piedmont fault to east of Olson Meadow Spring (Slemmons, 1974, unpublished Lovelock 1:250,000-scale map; Johnson, 1977 #2569; Dohrenwend, 1991 #285).
Length (km)	37 km.
Average strike	N22°E
Sense of movement	Normal *Comments:* Inferred from topography and as shown by Dohrenwend and others (1991 #285).

Dip Direction	E
Paleoseismology studies	
Geomorphic expression	The range-front faults are expressed as the abrupt bedrock front of the Seven Troughs Range (Johnson, 1977 #2569; Dohrenwend and others, 1991 #285). The northernmost piedmont fault is marked by an east-facing scarp on Pleistocene alluvium near the mouth of Egbert Canyon Valley (Slemmons, 1974, unpublished Lovelock 1:250,000-scale map; Johnson, 1977 #2569; Dohrenwend, 1991 #285). dePolo (1998 #2845) reports a maximum preferred basal fault facet height of 130 m (110–150 m).
Age of faulted surficial deposits	Pleistocene alluvium is offset along faults in the zone (Dohrenwend and others, 1991 #285).
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* Although timing of most recent event is not well constrained, a Pleistocene time is suggested based on reconnaissance photogeologic mapping of Dohrenwend and others (1991 #285).
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* No detailed data exists to determine slip rates for this fault. dePolo (1998 #2845) assigned a reconnaissance vertical slip rate of 0.242 mm/yr based on an empirical relationship between his preferred maximum basal facet height and vertical slip rate. The size of the facets (tens to hundreds of meters, as measured from topographic maps) indicates they are the result of many seismic cycles, and thus the derived slip rate reflects a long-term average. However, the late Quaternary characteristics of this fault (overall geomorphic expression, continuity of scarps, age of faulted deposits, etc.) suggest the slip rate during this period is of a lesser magnitude. Accordingly, the less than 0.2 mm/yr slip-rate category has been assigned to this fault.

Date and Compiler(s)	1999 Kenneth Adams, Piedmont Geosciences, Inc. Thomas L. Sawyer, Piedmont Geosciences, Inc.
References	#2845 dePolo, C.M., 1998, A reconnaissance technique for estimating the slip rate of normal-slip faults in the Great Basin, and application to faults in Nevada, U.S.A.: Reno, University of Nevada, unpublished Ph.D. dissertation, 199 p. #285 Dohrenwend, J.C., McKittrick, M.A., and Moring, B.C., 1991, Reconnaissance photogeologic map of young faults in the Lovelock 1° by 2° quadrangle, Nevada and California: U.S. Geological Survey Miscellaneous Field Studies Map MF-2178, 1 sheet, scale 1:250,000. #2569 Johnson, M.G., 1977, Geology and mineral deposits of Pershing County, Nevada: Nevada Bureau of Mines and Geology Bulletin 89, 115 p., scale 1:250,000.