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Quaternary Fault and Fold Database of the United States

As of January 12, 2017, the USGS maintains a limited number of metadata fields that characterize the Quaternary faults and folds of the United States. For the most up-to-date information, please refer to the interactive fault map.

Western Granite Range fault (Class A) No. 1610

Last Review Date: 1999-03-06

citation for this record: **Adams, K., and Sawyer, T.L., compilers, 1999, Fault number 1610, Western Granite Range fault, 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 02:35 PM.**

Synopsis	This nearly continuous group of northwest-striking range-front normal faults bounds the abrupt west side of Granite Mountain. Apparently the faults are locally marked by scarps, but most of the faults juxtapose Quaternary piedmont-slope deposits against the granitic bedrock. 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Name comments	Refers to faults mapped by Bonham (1969 #2999), Slemmons (1974, unpublished Lovelock 1:250,000-scale map), and Dohrenwend and others (1991 #285) along the western side of Granite Mountain from Granite Point near Gerlach to west of Wagon Tire Pass. dePolo (1998 #2845) referred to the structure as the Western Granite Range fault, which is accepted herein.

	Fault ID: Refers to fault LL8 of dePolo (1998 #2845).
County(s) and State(s)	WASHOE 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 Additional faults compiled from 1:250,000-scale map of Slemmons (1974, unpublished Lovelock 1:250,000-scale map) and checked against 1:250,000-scale bedrock map of Bonham (1969 #2999).
Geologic setting	This nearly continuous group of northwest-striking range-bounding normal faults bounds the abrupt west front of Granite Mountain from Granite Point near Gerlach north to west of Wagon Tire Pass (Slemmons, 1974, unpublished Lovelock 1:250,000-scale map) and (Dohrenwend and others, 1991 #285). The Granite Range is an east-tilted fault block.
Length (km)	26 km.
Average strike	N13°W
Sense of movement	Normal *Comments:* Shown as normal faults on published maps (Stewart, 1978 #2866; Dohrenwend and others, 1991 #285).
Dip Direction	W
Paleoseismology studies	
Geomorphic expression	dePolo (1998 #2845) reported fault scarps are present along the western front of the Granite Mountain; however, Dohrenwend and others (1991 #285) show no scarps on their map. dePolo (1998 #2845) reports a maximum preferred basal fault facet height of 427 m (402–451 m), which is the largest one in his data set.

Age of faulted surficial deposits	Little is known about the age of faulted deposits, other than they are Quaternary (undifferentiated).
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* Although timing of most recent event is not well constrained, a Quaternary time is suggested based on reconnaissance photogeologic mapping of Slemmons (1974, unpublished Lovelock 1:250,000-scale map), Dohrenwend and others (1991 #285), and Dohrenwend and others (1996 #2846).
Recurrence interval	
Slip-rate category	Between 0.2 and 1.0 mm/yr *Comments:* dePolo (1998 #2845) assigned a reconnaissance vertical displacement rate of 1.503 mm/yr based on an empirical relationship between his preferred maximum basal facet height and vertical 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 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 0.2–1.0 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	#2999 Bonham, H.F., 1969, Geology and mineral deposits of Washoe and Storey Counties, Nevada: Nevada Bureau of Mines and Geology Bulletin 70, 140 p., 1 pl., scale 1:250,000. #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. #2846 Dohrenwend, J.C., Schell, B.A., Menges, C.M., Moring, B.C., and McKittrick, M.A., 1996, Reconnaissance photogeologic map of young (Quaternary and late Tertiary) faults in Nevada, *in* Singer, D.A., ed., Analysis of Nevada's metal-bearing mineral resources: Nevada Bureau of Mines and Geology Open-File Report 96-2, 1 pl., scale 1:1,000,000. #2866 Stewart, J.H., 1978, Basin-range structure in western North America—A review, *in* Smith, R.B., and Eaton, G.P., eds., Cenozoic tectonics and regional geophysics of the western cordillera: Geological Society of America Memoir 152, p. 1-31, scale 1:2,500,000.