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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.

San Emidio fault zone (Class A) No. 1613

Last Review Date: 1999-03-06

citation for this record: **Sawyer, T.L., and Adams, K., compilers, 1999, Fault number 1613, San Emidio 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 02:35 PM.**

Synopsis	This nearly continuous zone includes (1) primarily range-bounding normal faults that bound the west side of the Lake Range northward along east side of the San Emidio Desert to the north end of the range; (2) similar faults bounding northwest side of a bedrock spur ridge that extends into White Sage Flat at south end of the desert; and (3) piedmont faults extending discontinuously along east side of the desert and along upper part of San Emidio Canyon. The San Emidio Desert appears to be an east-tilted half graben related to the eastward-tilted Fox Range homocline, which projects beneath the desert valley. Piedmont faults are expressed as west-facing scarps on Quaternary piedmont-slope deposits and the range-bounding faults, which juxtapose Quaternary alluvium against bedrock, are expressed by abrupt range-front escarpments. 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Name comments	Refers to faults mapped by Bonham (1969 #2999), Slemmons (1974, unpublished Lovelock 1:250,000-scale map), and Dohrenwend and others (1991 #285) that in part bound the west side of the Lake Range adjacent to and south of the San Emidio Desert. dePolo (1998 #2845) referred to these faults as the San Emidio fault zone. **Fault ID:** Refers to fault LL11 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 from 1:250,000-scale bedrock map of Bonham (1969 #2999). Fault locations were checked against 1:250,000-scale photogeologic map of Slemmons (1974, unpublished Lovelock 1:250,000-scale map).
Geologic setting	This nearly continuous zone includes (1) primarily range-bounding normal faults bounding west side of the Lake Range from headwaters of San Emidio Canyon west of Tohakum Peak, northward along east side of the San Emidio Desert to the north end of the range; (2) similar faults bounding northwest side of a bedrock spur ridge that extends into White Sage Flat at south end of the desert; and (3) piedmont faults extending discontinuously along east side of the desert and along upper part of San Emidio Canyon (Dohrenwend and others, 1991 #285; Slemmons, 1974, unpublished Lovelock 1:250,000-scale map). The San Emidio Desert appears to be an east-tilted half graben related to the eastward-tilted Fox Range homocline (Stewart, 1978 #2866) which projects beneath the desert.

Length (km)	32 km.
Average strike	N15°E
Sense of movement	Normal *Comments:* Shown as normal faults on maps (Bonham, 1969 #2999; Dohrenwend and others, 1991 #285).
Dip Direction	W
Paleoseismology studies	
Geomorphic expression	Piedmont faults are expressed as west-facing scarps and a short lineament on Quaternary piedmont-slope deposits and the range-bounding faults, which juxtapose Quaternary alluvium against bedrock, are expressed by abrupt range-front escarpments (Dohrenwend and others, 1991 #285). dePolo (1998 #2845) reports a maximum preferred basal fault facet height of 219 m (219–244 m).
Age of faulted surficial deposits	Little is known about the specific age of faulted deposits, but Dohrenwend and others (1991 #285) reported fault that displace late Quaternary and undifferentiated Quaternary piedmont-slope deposits. Slemmons (1974, unpublished Lovelock 1:250,000-scale map) evidently mapped faults in deposits as young as latest Pleistocene.
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) *Comments:* The timing of most recent event is not well constrained and the two map sources differ. Slemmons (1974, unpublished Lovelock 1:250,000-scale map) suggests that faulting may have occurred in the latest Quaternary. Dohrenwend and others (1991 #285) show scarps on deposits as young as late Quaternary. The assigned age category is based on the sole published source.
Recurrence interval	
Slip-rate category	Between 0.2 and 1.0 mm/yr

	Comments: dePolo (1998 #2845) assigned a reconnaissance vertical slip rate of 0.419 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. Even though, the late Quaternary characteristics of this fault (overall geomorphic expression, continuity of scarps, age of faulted deposits, etc.) indicate young movement, there exists no data to indicate recurrent movement in the latest Quaternary. Nevertheless, the 0.2–1.0 mm/yr slip-rate category has been assigned to this fault, pending determination of direct geologic slip rates
Date and Compiler(s)	1999 Thomas L. Sawyer, Piedmont Geosciences, Inc. Kenneth Adams, 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. #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.

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