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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.

West Long Valley fault (Class A) No. 1278

Last Review Date: 2000-11-30

citation for this record: **Redsteer, M.H., compiler, 2000, Fault number 1278, West Long Valley 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 02:16 PM.**

Synopsis	This long fault consists of a series of lineaments and scarps with down-to-the-east displacement of bedrock against Quaternary sediment. The fault extends from the northern end of Alligator Ridge, southward to 5 km south of Dry Mountain. Reconnaissance photogeologic mapping and limited analysis of scarp morphology are the sources of data for the West Long Valley fault. Trench investigations and detailed studies of scarp morphology have not been completed.
Name comments	Refers to the West Long Valley fault of Schell (1981 #2843). Later named the Dry Mountain fault by dePolo (1998 #2845). This structure was also mapped by Dohrenwend and others (1991 #2480). **Fault ID:** Refers to fault 69 (East Long Valley fault) of Schell (1981 #2843), and fault EY14 of dePolo (1998 #2845).

County(s) and State(s)	WHITE PINE COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* Location based on 1:250,000-scale map of Dohrenwend and others (1992 #2480). Mapping based on photogeologic analysis of 1:24,000-scale color aerial photography supplemented with 1:60,000-scale black-and-white aerial photography transferred to 1:62,500-scale topographic maps and photographically reduced and transferred to 1:250,000-scale topographic maps. Subsequent mapping by photogeologic 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.
Geologic setting	The West Long Valley fault is typical of Basin and Range extensional faulting. Although it is not clearly a range front fault to a single mountain range, it defines the eastern margin of Long Valley. Folded and deformed Paleozoic bedrock from Middle Devonian to Pennsylvanian age capped by Eocene to Oligocene volcanic rock (as old as 43 Ma) are exposed in the mountains by uplift along the Butte Mountains fault [1277] (Hose and Blake, 1976 #4341; Stewart, 1980 #3056; Pancoast, 1986 #4345).
Length (km)	36 km.
Average strike	N4°E
Sense of movement	Normal
Dip Direction	E
Paleoseismology studies	
Geomorphic expression	The fault is marked by an abrupt change in relief that coincides with a linear series of ridges and mountains along the western margin of Long Valley.
Age of faulted surficial	Late Pleistocene (Schell, 1981 #2844), possible late Pleistocene in one location (Dohrenwend and others, 1991 #2480), Paleozoic

deposits	and Tertiary (Hose and Blake, 1976 #4341).
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) *Comments:* Although timing of most recent prehistorical event is not well constrained, geomorphic criteria by Dohrenwend and others (1992 #2480) suggests a single possible late Pleistocene scarp. In addition, work by Schell (1981 #2843; 1981 #2844) shows that the youngest units offset are late Pleistocene. However, most of the fault consists of prominent topographic escarpments where Quaternary sediment juxtaposes bedrock, thus only allowing a generalized determination of Quaternary movement.
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 0.01 mm/yr for the fault based on the presence of scarps on alluvium and the absence of basal facets. Low slip-rate category is assigned on the basis of poor geomorphic preservation, lack of mapped fault scarps, and relative inactivity of similar distributed faults in the Basin and Range province.
Date and Compiler(s)	2000 Margaret Hisa Redsteer, U.S. Geological Survey
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. #2480 Dohrenwend, J.C., Schell, B.A., and Moring, B.C., 1992, Reconnaissance photogeologic map of young faults in the Ely 1° by 2° quadrangle, Nevada and Utah: U.S. Geological Survey Miscellaneous Field Studies Map MF-2181, 1 sheet, scale 1:250,000. #4341 Hose, R.K., and Blake, M.C., Jr., 1976, Geology and mineral resources of White Pine County, Nevada: Nevada Bureau of Mines and Geology Bulletin 85, 105 p.

#4345 Pancoast, L.E., 1986, Geology of the east flank of Alligator Ridge, White Pine County, Nevada: Moscow, University of Idaho, unpublished M.S. thesis, 162 p.

#2843 Schell, B.A., 1981, Faults and lineaments in the MX Sitting Region, Nevada and Utah, Volume I: Technical report to U.S. Department of [Defense] the Air Force, Norton Air Force Base, California, under Contract FO4704-80-C-0006, November 6, 1981, 77 p.

#2844 Schell, B.A., 1981, Faults and lineaments in the MX Siting Region, Nevada and Utah, Volume II: Technical report to U.S. Department of [Defense] the Air Force, Norton Air Force Base, California, under Contract FO4704-80-C-0006, November 6, 1981, 29 p., 11 pls., scale 1:250,000.

#3056 Stewart, J.H., 1980, Geology of Nevada—A discussion to accompany the geologic map of Nevada: Nevada Bureau of Mines and Geology Special Publication 4, 136 p.