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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.

Edna Mountain fault (Class A) No. 1137

Last Review Date: 2000-07-19

citation for this record: **Anderson, R.E., compiler, 2000, Fault number 1137, Edna Mountain 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 02:18 PM.**

Synopsis	The Edna Mountain fault is a discontinuous north-northeast- to northeast-striking structure that forms the structural boundary between the basin beneath Pumpernickel Valley and the Edna Mountain and Sonoma Range blocks. Although it is mapped as a discontinuous major range-front fault, bedrock escarpments vary greatly in height, shape, length, trend, and most lack the abrupt piedmont-to-range break in slope typical of active major mountain fronts. Aligned well-formed facets are absent. The general geomorphic expression is one of a relatively inactive fault front.
Name comments	Name modified from Wallace (1979 #203) who referred to it as the Edna Mountain scarps. It was referred to as the Pumpernickel Valley fault zone by dePolo (1998 #2845). The fault extends from about 3.5 km south of Interstate 80 on the east flank of Edna Mountain southwest to the vicinity of Sheep Ranch Canyon on

	the eastern slope of the southern part of the Sonoma Range. The southern part of the fault, south of Gregg Canyon, was not mapped by Wallace, and is taken from the photogeologic reconnaissance map of Dohrenwend and Moring (1991 #282). **Fault ID:** Referred to as fault WI4 by dePolo (1998 #2845).
County(s) and State(s)	PERSHING COUNTY, NEVADA HUMBOLDT COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* Most fault traces taken from the 1:125,000-scale map of young fault scarps by Wallace (1979 #203). That map was compiled mostly from a combination of photogeologic and field mapping on 1:60,000 aerial photographs. The southern part was compiled from the 1:250,000-scale map by Dohrenwend and Moring (1991 #284), 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. Wallace (1979 #203) does not show that part of the fault.
Geologic setting	The Edna Mountain fault is a discontinuous north-northeast- to northeast-striking structure that forms the structural boundary between the basin beneath Pumpernickel Valley and the Edna Mountain and the Sonoma Range blocks.
Length (km)	33 km.
Average strike	N26°E
Sense of movement	Normal *Comments:* No specific data are available; sense inferred from location and orientation in extensional tectonic province. The fault is within the Shoshone extensional area of dePolo (1998 #2845), a tectonic subprovince characterized by NE- and NNE-striking normal faults.
Dip Direction	SE; E
Paleoseismology	

studies	
Geomorphic expression	The Edna Mountain fault is mapped mostly as a discontinuous major range-front fault that juxtaposes Quaternary alluvium against bedrock with short (<2 km) intermittent parts marked by east-facing scarps formed on Quaternary surficial deposits or erosion surfaces (Dohrenwend and Moring, 1991 #282). Bedrock escarpments vary greatly in height, shape, length, and trend along the fault. Most lack the abrupt piedmont-to-range break in slope typical of active mountain fronts, and aligned well-formed facets are absent. The general geomorphic expression is one of a relatively inactive fault front. dePolo (1998 #2845) reported a preferred maximum basal facet height of 128 m (116-140 m). Although, C.M. dePolo (2002, written commun.) suggests these values could be too high.
Age of faulted surficial deposits	Surficial deposits or erosion surfaces on which the short intermittent scarps are formed are estimated to be Pleistocene (10 ka to 1.5 Ma) or late Pleistocene (10-130 ka) (Dohrenwend and Moring, 1991 #282).
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) *Comments:* Wallace (1979 #203) estimated the last scarp-forming event was >12 ka, which is consistent with age estimates of surficial deposits or erosion surfaces made by Dohrenwend and Moring (1991 #282).
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 0.239 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)	2000 R. Ernest Anderson, U.S. Geological Survey, Emeritus
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. #282 Dohrenwend, J.C., and Moring, B.C., 1991, Reconnaissance photogeologic map of young faults in the Winnemucca 1° by 2° quadrangle, Nevada: U.S. Geological Survey Miscellaneous Field Studies Map MF-2175, 1 sheet, scale 1:250,000. #284 Dohrenwend, J.C., and Moring, B.C., 1991, Reconnaissance photogeologic map of young faults in the McDermitt 1° by 2° quadrangle, Nevada, Oregon, and Idaho: U.S. Geological Survey Miscellaneous Field Studies Map MF-2177, 1 sheet, scale 1:250,000. #203 Wallace, R.E., 1979, Map of young fault scarps related to earthquakes in north-central Nevada: U.S. Geological Survey Open-File Report 79-1554, 2 sheet, scale 1:125,000.