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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.

Marys Mountain fault (Class A) No. 1154

Last Review Date: 2000-06-02

citation for this record: **Anderson, R.E., compiler, 2000, Fault number 1154, Marys 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 Marys Mountain fault is a slightly sinuous, north-striking fault along the eastern base of the Tuscarora Mountains, west of Carlin, Nevada. It separates bedrock of the range (on the west) from erosionally dissected tuffaceous sedimentary rock of mainly Miocene age (on the east); little is known about its Quaternary history. A general paucity of Quaternary deposits or erosion surfaces along the fault, together with a generally weak geomorphic expression of the range margin, makes assessment of Quaternary faulting history difficult.
Name comments	The name taken from dePolo (1998 #2845) refers to a fault east of Marys Mountain along the eastern base of the Tuscarora Mountains. It was mapped by Dohrenwend and Moring (1991 #282) as extending from the vicinity of Soap Creek in a sinuous trace south to about 5 km south of Interstate Highway 80 (I-80), near Emigrant Pass. They showed the south part as three main

	traces, but recent 1:24,000-scale quadrangle mapping in that area by Henry and Faulds (1999 #4358) does not show the eastern and western faults, whereas the middle fault is entirely in bedrock. Thus, as compiled here, the Marys Mountain fault is restricted to the main eastern-flanking fault of Marys Mountain. **Fault ID:** Referred to as fault WI19 by dePolo (1998 #2845).
County(s) and State(s)	EUREKA 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 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. It is not shown on the 1:125,000-scale map of young fault scarps by Wallace (1979 #203).
Geologic setting	This north-striking fault is mapped as a major range-front structure that bounds the tectonically active southeastern margin of the Tuscarora Mountains, west of Carlin, Nevada (Dohrenwend and Moring, 1991 #282). Marys Mountain is a part of the Tuscaroras where the Paleozoic sedimentary rock of the range are bounded on the east by tuffaceous sedimentary rock of mainly Miocene age (thus proving Neogene movement). The Tertiary strata form a large area of erosionally dissected lowlands generally lacking in Quaternary surficial deposits. Stewart and Carlson (1978 #3413) showed the fault as being overlapped by Miocene rhyolite lava flows.
Length (km)	19 km.
Average strike	N6°W
Sense of movement	Normal *Comments:* No specific data available; sense inferred from location and orientation in extensional tectonic province.

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Paleoseismology studies	
Geomorphic expression	Dohrenwend and Moring (1991 #282) mapped the Marys Mountain fault as a major range-bounding structure along the eastern margin of Marys Mountain. The range/piedmont margin at the eastern base of Marys Mountain is fairly distinct, but geomorphic features typical of major range margins, such as abrupt piedmont-hillslope transitions, steep bedrock slopes, faceted spurs, and wineglass valleys are absent. The piedmont east of the fault is highly dissected, possibly as a result of base level lowering by downcutting along the Humboldt River directly to the south, leaving the area with sparse poorly developed Quaternary erosion surfaces. A general paucity of Quaternary deposits or erosion surfaces, together with a generally weak geomorphic expression of the range margin, makes assessment of the fault's Quaternary history difficult. dePolo (1998 #2845) indicates that there are no scarps on alluvium and no basal fault facets.
Age of faulted surficial deposits	Dohrenwend and Moring (1991 #282) do not map the Marys Mountain fault as cutting Quaternary deposits, nor did Wallace (1979 #203) recognize young fault scarps along the eastern margin of Marys Mountain. Additionally, Stewart and Carlson (1978 #3413) show the fault as overlapped by Miocene rhyolite lava flows. However, a recent 1:24,000-scale quadrangle map by Henry and Faulds (1999 #4358) shows Pleistocene alluvium cut by two closely spaced strands of the fault. That map also shows a Holocene landslide deposit cut by the fault, but the displacement direction violates the stratigraphic order suggesting an error in cartographic line work. Thus, the evidence for Holocene displacement is considered questionable.
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* No specific data on faulting history are reported; a Quaternary age is inferred from the mapping 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 0.001 mm/yr for the fault based on the absence of scarps on alluvium and the absence of basal facets. The late Quaternary characteristics of this fault (overall geomorphic expression, continuity of scarps, age of faulted deposits, etc.) support a low slip rate. 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. #4358 Henry, C.D., and Faulds, J.E., 1999, Geologic map of the Emigrant Pass quadrangle, Nevada: U.S. Geological Survey Open-File Report 99-9, 1 sheet, scale 1:24,000. #3413 Stewart, J.H., and Carlson, J.E., 1978, Geologic map of Nevada: U.S. Geological Survey, Special Geologic Map, 1, scale 1:500,000. #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.

Questions or comments?