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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.

Northern Fish Creek Mountains faults (Class A) No. 1146

Last Review Date: 2000-07-06

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Synopsis	The Northern Fish Creek Mountains faults are apparently block-bounding structures of lesser rank than range-bounding faults. They include three faults with highly contrasting geomorphic expression and moderate to small, down-to-the-west displacement. The western faults may separate a basin beneath Buffalo Valley from the Fish Creek Mountains. The eastern fault is marked by a west-facing relatively planar bedrock escarpment into which several gullies are etched but across which no transverse drainages flow. The western fault is on the piedmont west of the Fish Creek Mountains and is expressed mostly as a low west-northwest-facing scarp on Quaternary surficial deposits or erosion surfaces. The northern fault is strongly concave-southeast as it wraps around the north end of the Fish Creek Mountains. Along most of its trace, it separates Quaternary alluvium from bedrock, but at each end, it is apparently expressed

	as short (<2 km) scarps formed on Quaternary surficial deposits or erosion surfaces.
Name comments	Modified from dePolo (1998 #2845) who applied the name "northwestern Fish Creek Mountains fault" to an irregular fault mapped by Wallace (1979 #203) at the northern end of the Fish Creek Mountains, adjacent to Buffalo Valley. The fault extends from the northern tip of the Fish Creek Mountains southwest along their western margin to the latitude of Buffalo Valley Hot Springs. Included here is a fault within the northern Fish Creek Mountains by Wallace (1979 #203) that is mapped as having a north-trending lineament and some discontinuous scarps. **Fault ID:** Referred to as fault WI12 by dePolo (1998 #2845).
County(s) and State(s)	LANDER COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* The fault locations are taken from the 1:125,000-scale map of young fault scarps by Wallace (1979 #203). That map was compiled mostly from field and photogeologic study of 1:60,000-scale aerial photos.
Geologic setting	The Northern Fish Creek Mountains faults have moderate to small down-to-the-west displacement and are apparently block-bounding structures of lesser rank than range-bounding faults (Stewart and Carlson, 1978 #3413; Dohrenwend and Moring, 1991 #282). The faults were not mapped by Ferguson and others (1951 #4355). The western faults may separate a basin beneath Buffalo Valley from the Fish Creek Mountains.
Length (km)	11 km.
Average strike	N53°E
Sense of movement	Normal *Comments:* No specific slip-sense data are reported, normal sense is inferred from location and orientation in an extensional tectonic province.

Dip Direction	E
Paleoseismology studies	
Geomorphic expression	The Northern Fish Creek Mountains faults include three structures with highly contrasting geomorphic expression. The eastern fault is a block-bounding structure marked by a west-facing relatively planar bedrock escarpment into which several gullies are etched but across which no transverse drainages flow. It lacks faceted spurs or ridges. Dohrenwend and Moring (1991 #282) show the north part as marked by scarps on Quaternary surficial deposits or erosion surfaces, whereas Wallace (1979 #203) shows that part as a lineament and the south part as marked by discontinuous scarps. Both maps show the central part as lacking scarps on young deposits or erosion surfaces. The western fault strikes northeast on the piedmont mostly as a low west-northwest-facing scarp on Quaternary surficial deposits or erosion surfaces (Dohrenwend and Moring, 1991 #282). Its northeast part is along a west-facing erosionally dissected bedrock escarpment that lacks fault-front facets. The northern fault is strongly concave-southeast: it wraps around the north end of the Fish Creek Mountains. Along most of its trace, it separates Quaternary alluvium from bedrock, but at each end, it is apparently expressed as short (<2 km) scarps formed on Quaternary surficial deposits or erosion surfaces. There are no fault-front facets apparent on the north-striking part, but there are three weakly developed aligned facets on the east-striking part representing about 20 percent of the total length of the east-west trace. dePolo (1998 #2845) reported a preferred basal facet height of 73 m (61-85 m) from an unknown location along the Northern Fish Creek Mountains faults.
Age of faulted surficial deposits	On the basis of reconnaissance photogeologic mapping, Dohrenwend and Moring (1991 #282) mapped the sparse scarps on surficial deposits or erosion surfaces of possible late Pleistocene age (10-130 ka).
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) *Comments:* Based on the Dohrenwend and Moring (1991 #282) estimate that scarps are formed on deposits or surfaces of

	questionable late Pleistocene age.
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 0.171 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. 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 low. 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. #4355 Ferguson, H.G., Muller, S.W., and Roberts, R.J., 1951, Geology of the Mount Moses quadrangle, Nevada: U.S. Geological Survey Geologic quadrangle Map GQ-0012, 1 sheet, scale 1:125,000. #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.