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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 Snake Mountains fault (Class A) No. 1726

Last Review Date: 1998-10-07

citation for this record: **Sawyer, T.L., Oswald, J.A., Rowley, P.C., and Anderson, R.E., compilers, 1998, Fault number 1726, Northern Snake Mountains 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 02:26 PM.**

Synopsis	This fault bounds the western front of the Snake Mountains and juxtaposes Quaternary alluvium against bedrock and form scarps and lineaments on Quaternary alluvium adjacent to the range front and on piedmont slopes. No detailed paleoseismic study has been conducted. Reconnaissance and detailed geologic study and photogeologic mapping of fault related features are the main sources of data.
Name comments	The fault as represented here refers to the Northern Snake Mountains fault and Northern Marys River fault swarm of dePolo (1998 #2845) and his northernmost part of the Ruby Mountains fault system. Fault bounds western side of the Snake Mountains and has numerous faults on the piedmont slopes and on the bolson

	of the northern part of Marys River valley. Fault extends from 3 km south of Wildcat Spring southward to the Humboldt River. **Fault ID:** Referred to fault numbers EK5A (part of Ruby Mountains fault system), WE6 (Northern Marys River fault swarm), WE7A and WE7B (Northern Snake Mountains fault) by dePolo (1998 #2845).
County(s) and State(s)	ELKO 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 *Comments:* Location based on 1:250,000-scale maps of Dohrenwend and others (1991 #290) and Slemmons (1964, unpublished Wells 1? X 2? sheet). Mapping by Dohrenwend and others (1991 #290) based on 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. Quaternary fault map of Slemmons (1964, unpublished Wells 1? X 2? sheet) is based on analysis of 1:60,000-scale AMS photography transferred to mylar overlay on a 1:250,000-scale topographic map using proportional dividers.
Geologic setting	The Northern Snake Mountains fault is the northernmost part of a long , north to north east striking system of faults that extends nearly 180 km through north central Nevada (dePolo, 1998 #2845). The faults that bound the western front of the Snake Mountains have range front and piedmont traces. The Snake Mountains are a northeast tilted block (Stewart, 1978 #2866).
Length (km)	55 km.
Average strike	N0°E
Sense of movement	Normal *Comments:* As shown by geologic mapping (Slemmons, 1964, unpublished Wells 1? X 2? sheet; Garside, 1968 #2863; Dohrenwend and others, 1991 #290).
Dip Direction	W

Paleoseismology studies	
Geomorphic expression	The fault is expressed by scarps on early to possibly late Pleistocene piedmont slope and bolson surfaces, as range-front faults that juxtapose Quaternary alluvium against bedrock, and as lineaments on Quaternary alluvium or erosional surfaces (Slemmons, 1964, unpublished Wells 1? X 2? sheet; Dohrenwend and others, 1991 #290). dePolo (1998 #2845) reports a maximum preferred basal fault facet height of 110 m (85-122 m) along the southern part of the fault.
Age of faulted surficial deposits	Possibly late Pleistocene, early to middle Pleistocene, and early Pleistocene. Ages of faulted alluvium interpreted from photogeologic mapping to be early Pleistocene, early to middle Pleistocene, possibly late Pleistocene (Dohrenwend and others, 1991 #290).
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* The timing of most recent event is not well constrained and the two map sources differ greatly. Slemmons (1966, unpublished Wells 1? X 2? sheet) suggested a late Pleistocene time (10-130 ka). Dohrenwend and others (1991 #290) mapped one scarp near Tabor Creek on a deposit of possible late Pleistocene age, and they show the part of the fault that Slemmons suggests as young as early and middle Quaternary. The assigned age category is based on the sole published source.
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 0.214 mm/yr for his fault EK5A (the southern part of this fault) and 0.01 mm/yr for the rest of the fault 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)	1998 Thomas L. Sawyer, Piedmont Geosciences, Inc. John A. Oswald, Piedmont Geosciences, Inc. Peter C. Rowley, U.S. Geological Survey, Retired R. Ernest Anderson, U.S. Geological Survey, Emeritus
References	#2861 Coats, R.R., 1987, Geology of Elko County, Nevada: Nevada Bureau of Mines and Geology Bulletin 101, 112 p., 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. #290 Dohrenwend, J.C., McKittrick, M.A., and Moring, B.C., 1991, Reconnaissance photogeologic map of young faults in the Wells 1° by 2° quadrangle, Nevada, Utah, and Idaho: U.S. Geological Survey Miscellaneous Field Studies Map MF-2184, 1 sheet, scale 1:250,000. #2863 Garside, L.J., 1968, Geology of the Bishop Creek area, Elko County, Nevada: Reno, University of Nevada, unpublished M.S. thesis, 52 p. #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.