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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.

Antelope Range-Kingsley Mountains fault zone (Class A) No. 1261

Last Review Date: 2000-11-24

citation for this record: **Redsteer, M.H., and Anderson, R.E., compilers, 2000, Fault number 1261, Antelope Range-Kingsley Mountains fault zone, 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	The Antelope Range-Kingsley Mountains fault zone is comprised of down-to-the-east normal faults that separate the basin beneath Antelope Valley from the Antelope Range on the south and the Kingsley Mountains on the north. The Kingsley Mountains form an en echelon fault block that represents a northern extension of the Antelope Range, where it bends northwestward. The faults along the Antelope Range are mapped as major range-front structures, but along the Kingsley Mountains they are mapped as significantly less extensive block-bounding structures. Along the northern part of the Antelope Range, the fault zone is expressed as short (mostly <3 km long) east facing scarps on surficial deposits or erosional surfaces alternating with longer (up to 8 km long) traces defined by fault juxtaposition of Quaternary alluvium against bedrock. The overall fault trace is at a sharp break in slope between the upper piedmont of western Antelope Valley and the

	precipitous east-facing bedrock escarpment of the Antelope Range. Elsewhere, the fault zone has mixed geomorphic expression; partly as indistinct east-facing alluvial scarps on the piedmont east of Stockade Spring and partly at the east base of the Kingsley Mountains. No morphometric data are reported for alluvial scarps. Most are formed on surficial deposits or erosion surfaces of late Pleistocene (10-130 ka), but they are also present on early to middle and (or) late Pleistocene (10 ka-1.6 Ma) to latest Pleistocene and (or) Holocene (0-30 ka) deposits. Reconnaissance photogeologic mapping is the source of data. Trench investigations and detailed studies of scarp morphology have not been completed.
Name comments	Name from dePolo (1998 #2845) who refers to it as Antelope Range-Kingsley Mountains fault zone (EY12). The fault trends south to southwest and extends along the west margin of Antelope Valley from the north end of the Kingsley Mountains to the southern end of low foothills that extend south from the Antelope Range at Twelvemile Summit. **Fault ID:** Referred to as fault EY12 by dePolo (1998 #2845).
County(s) and State(s)	ELKO COUNTY, NEVADA 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 maps by Dohrenwend and others (1991 #286; 1992 #2480) that was accomplished by photogeologic analysis of primarily 1:24,000-scale color aerial photography supplemented with 1:60,000-scale black-and-white aerial photography, transferred by inspection to 1:62,500-scale topographic maps and photographically reduced and directly 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 Antelope Range-Kingsley Mountain fault zone is mapped by Dohrenwend and others (1991 #286; 1992 #2480) as a structure

	that juxtaposes Quaternary sediments against carbonate bedrock and volcanic deposits in the western Antelope Valley. Most of the fault zone is at the east base of the Antelope Range and bounds the basin beneath Antelope Valley and the ranges to the west. At the north end it extends across a piedmont east of Stockade Spring to the eastern base of the Kingsley Mountains. The fault along Antelope Range is mapped as a major range-front structure (Dohrenwend and others, 1992 #2480). Along the Kingsley Mountains it is mapped as a significantly less extensive block-bounding structure (Dohrenwend and others, 1991 #286). The eastern margin of these mountains is composed of Cambrian to Permian clastic and carbonate rocks, and Eocene to Oligocene volcanic rocks (Nutt and Thorman, 1994). Tertiary to Quaternary unconsolidated sediment in the region includes recent alluvium associated with streams and alluvial-fan sediment that has been incised, suggesting recent uplift. The Antelope Range is within part of the Great Basin that was compressed during Jurassic and Late Cretaceous orogenies and later extended during the middle to late Tertiary (Nutt and Thorman, 1994).
Length (km)	65 km.
Average strike	N9°E
Sense of movement	Normal
Dip Direction	E
Paleoseismology studies	
Geomorphic expression	Along the northern Antelope Range the fault zone is expressed as short (mostly <3 km) east-facing scarps on surficial deposits or erosional surfaces alternating with longer (< 8 km) traces defined by fault juxtaposition of Quaternary alluvium and bedrock (Dohrenwend and others, 1992 #2480). The overall trace is at a sharp break in slope between the piedmont of western Antelope Valley and the precipitous east-facing bedrock escarpment of the Antelope Range. Scarps are present along the piedmont of the Antelope Range at several locations where the fault splays basinward. At the north end, the fault has a mixed geomorphic expression; partly as indistinct east facing alluvial scarps on the piedmont east of Stockade Spring and partly at the east base of the Kingsley Mountains. dePolo (1998 #2845) indicates there are scarps on alluvium and only relict basal fault facets.

Age of faulted surficial deposits	Quaternary, Tertiary, and Paleozoic. Most of the fault scarps are formed on surficial deposits or erosional surfaces of late Pleistocene (10–130 ka) but they are also present on early to middle and (or) late Pleistocene (10 ka–1.6 Ma, Dohrenwend and others, 1991 #286; 1992 #2480).
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) *Comments:* On the basis of photogeologic reconnaissance, Dohrenwend and others (1992 #2480; 1991 #286) show alluvial scarps distributed along the full length of the fault zone. They estimate the age of surficial deposits or erosion surfaces on which most of those scarps are formed to be late Pleistocene (10–130 ka). Some parts of the fault include scarps on sediment which may be late Quaternary (0–30 ka).
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* 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. 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 Margaret Hisa Redsteer, U.S. Geological Survey 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. #286 Dohrenwend, J.C., Schell, B.A., and Moring, B.C., 1991, Reconnaissance photogeologic map of young faults in the Elko 1° by 2° quadrangle, Nevada and Utah: U.S. Geological Survey Miscellaneous Field Studies Map MF-2179, 1 sheet, scale 1:250,000.

	#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. #4400 Nutt, C.J., and Thorman, C.H., 1994, Geologic map of the Weaver Canyon quadrangle, Nevada and Utah, and parts of the Ibapah Peak quadrangle, Utah, and Tippett Canyon quadrangle, Nevada: U.S. Geological Survey Open-File Report 96-635, scale 1:24,000.