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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.

Kawich Range fault (Class A) No. 1085

Last Review Date: 1998-12-08

citation for this record: **Anderson, R.E., compiler, 1998, Fault number 1085, Kawich Range 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 02:19 PM.**

Synopsis	The Kawich Range fault is a northerly striking structure that separates the uplifted southern Kawich Range on the east from the deepest part of the basin beneath Gold Flat on the west. Geomorphic evidence for Quaternary displacement is sparse and consists of short, discontinuous, low scarps along only 3.6 km of trace length with a possible extension to 7.4 km if a 10-m-long scarp of questionable tectonic origin is included. There is no direct evidence for multiple-event surface offsets, and the last event is estimated to be late Pleistocene. The sinuous, embayed range-front morphology, the common presence of a gravel-capped pediment transected by range-front fault segments, and the weak development of scarps on surficial deposits all suggest a relatively inactive range-front fault. The possibility exists that the sparse low (<3 m) scarps reflect displacement that was sympathetic to a displacement event on the Belted Range fault [1084] to the east.

Name comments	Name applied by Piety (1995 #915) to a 80- to 84-km-long group of discontinuous, partly overlapping, and generally unaligned faults that tend to form the west structural margin of the Kawich Range. Only the southern part of the zone of features shown as Kawich Range fault by Piety (1995 #915) shows obvious evidence of Quaternary activity (Dohrenwend and others, 1992 #289; Reheis, 1992 #1604). This southern part was referred to as the Gold Flat fault by dePolo (1998 #2845). The name Kawich Range fault is retained herein, but restricted to the southern part of the Kawich Range fault of Piety (1995 #915), where the fault is present along the eastern margin of Gold Flat and western flank of the southern part of the Kawich Range and shows evidence of Quaternary activity. The Kawich Range fault as used herein, extends discontinuously along the west side of the southern part of the Kawich Range, northward from near the mouth of Silent Canyon to west of Trailer Pass. **Fault ID:** Shown as KR by Piety (1995 #915) and as G15 by dePolo (1998 #2845).
County(s) and State(s)	NYE COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* Location is from Reheis (1992 #1604) who mapped photogeologically at 1:100,000 using aerial photos at 1:60,000 and 1:80,000.
Geologic setting	The Kawich Range fault, as shown here, is a range-front structure separating the uplifted southern Kawich Range from the basin beneath Gold Flat. The Gold Flat basin is delimited by gravity contours (Ekren and others, 1971 #1505) that suggest that the deepest part of the basin is directly west of the part of the range margin where Anderson and others (1995 #897) identified scarps on surficial materials.
Length (km)	30 km.
Average strike	N2°E
Sense of	Normal

movement	*Comments:* A normal sense is inferred from its tectonic setting and from gravity contours (Ekren and others, 1971 #1505).
Dip Direction	W *Comments:* Probably a moderately- to steeply-dipping fault typical of Basin and Range faults. Based on west-facing scarps (Reheis, 1992 #1604) and on basin and range configuration (Ekren and others, 1971 #1505).
Paleoseismology studies	
Geomorphic expression	Scarps and lineaments on Quaternary deposits, surfaces, and range-front fault segments that juxtapose Quaternary deposits against bedrock of the range are shown on photogeologic maps by Dohrenwend and others (1992 #289) and Reheis (1992 #1604). Field and photogeologic studies by Anderson and others (1995 #897) identified short (<1 km), discontinuous, low (<3 m), scarps on surficial materials over a strike length of about 7.4 km, only about 3.6 km of which was identified as tectonic in origin. This limited geomorphic expression may not justify extending the fault into mountain-front zones where evidence of Quaternary faulting is absent or not apparent. The morphology of the western flank of the Kawich Range is complex, sinuous, and deeply embayed and, in most places, does not reflect characteristics typically associated with active range fronts in the Basin and Range (Anderson and others, 1995 #897). Anderson and others (1995 #897) reported that much of the piedmont is characterized by bedrock beneath a thin veneer of pediment gravel and by high-standing outcrops of bedrock, which are present as much 1 km west of the range front; the veneer and bedrock outcrops commonly extend west of the fault traces shown by Reheis (1992 #1604) and west of scarps studied by Anderson and others (1995 #897). These relations probably indicate a very low, long-term rate of activity. The present restriction of the Kawich Range fault to the area west of the southern part of the Kawich Range is consistent with the compilations of Quaternary faults by Schell (1981 #2843) and Dohrenwend and others (1992 #289), neither of which show faults in the northern Kawich Range. Also, Reheis (1992 #1604, p. 10) suggested that evidence is sparse or absent for Quaternary displacement on faults along the northern part of the Kawich Range.

Age of faulted surficial deposits	Unknown, probably late Pleistocene (Anderson and others, 1995 #897)
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) *Comments:* Anderson and others (1995 #897) noted that the morphology of the sparse scarps on surficial deposits are broadly similar to those of the Belted Range fault [1084] and suggested that they may have formed in response to earthquake activity along the Belted Range fault.
Recurrence interval	*Comments:* On the basis of faint geomorphic expression across pedimented surfaces, the fault probably has a very long recurrence interval (Anderson and others, 1995 #897).
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 0.01 mm/yr for the fault based on the presence of scarps on alluvium and the absence of basal facets. Based on this estimate and studies of scarps by Anderson and others (1995 #897), the slip rate may be much less than 0.2 mm/yr.
Date and Compiler(s)	1998 R. Ernest Anderson, U.S. Geological Survey, Emeritus
References	#897 Anderson, R.E., Bucknam, R.C., Crone, A.J., Haller, K.M., Machette, M.N., Personius, S.F., Barnhard, T.P., Cecil, M.J., and Dart, R.L., 1995, Characterization of Quaternary and suspected Quaternary faults, regional studies, Nevada and California: U.S. Geological Survey Open-File Report 95-599, 70 p., 2 sheets. #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. #289 Dohrenwend, J.C., Schell, B.A., McKittrick, M.A., and Moring, B.C., 1992, Reconnaissance photogeologic map of young

	faults in the Goldfield 1° by 2° quadrangle, Nevada and California: U.S. Geological Survey Miscellaneous Field Studies Map MF-2183, 1 sheet, scale 1:250,000. #1505 Ekren, E.B., Anderson, R.E., Rogers, C.L., and Noble, D.C., 1971, Geology of the northern Nellis Air Force Base Bombing and Gunnery Range, Nye County, Nevada: U.S. Geological Survey Professional Paper 651, 91 p., 1 pl., scale 1:125,000. #915 Piety, L.A., 1995, Compilation of known and suspected Quaternary faults within 100 km of Yucca Mountain, Nevada and California: U.S. Geological Survey Open-File Report 94-112, 404 p., 2 pls., scale 1:250,000. #1604 Reheis, M.C., 1992, Aerial photographic interpretation of lineaments and faults in late Cenozoic deposits in the Cactus Flat and Pahute Mesa 1:100,000 quadrangles and the western parts of the Timpahute Range, Pahranagat Range, Indian Springs, and Las Vegas 1:100,000 quadrangles, Nevada: U.S. Geological Survey Open-File Report 92-193, 14 p., 3 pls., scale 1:100,000. #2843 Schell, B.A., 1981, Faults and lineaments in the MX Sitting Region, Nevada and Utah, Volume I: Technical report to U.S. Department of [Defense] the Air Force, Norton Air Force Base, California, under Contract FO4704-80-C-0006, November 6, 1981, 77 p.