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Quaternary Fault and Fold Database of the United States

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White River Valley fault zone (Class A) No. 1398

Last Review Date: 1998-06-29

citation for this record: **Sawyer, T.L., and Redsteer, M.H., compilers, 1998, Fault number 1398, White River Valley 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 02:05 PM.**

Synopsis	This long normal fault zone bounds the western front of the Egan Range and also has piedmont faults along the east side of the White River Valley. Reconnaissance photogeologic mapping of the fault zone and limited studies of scarp morphology are the sources of data.
Name comments	Mapped by and part of fault zone originally named the Egan fault by Schell (1981 #2844); however, subsequently named the White River Valley fault by dePolo (1998 #2845); the later name will be used herein. This long fault zone extends along the eastern edge of White River Valley, from Gap Mountain northward along the front of the southern Egan Range to Ward Mountain. Fault is divided into distinct sections by Schell (1981 #2843; 1981 #2844), but are interpreted as a discontinuous linear series of

	scarps by Dohrenwend and others (1991 #287; 1992 #2480). We follow the mapping of Dohrenwend and others (1991 #287; 1992 #2480) due to the lack of evidence for different timing of surface faulting or slip rate along strike. **Fault ID:** Refers to fault 141 on Plates A6 and A3 of Schell (1981 #2844) and to faults LD5A and LD5 of dePolo (1998 #2845).
County(s) and State(s)	LINCOLN COUNTY, NEVADA WHITE PINE COUNTY, NEVADA NYE 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 Schell (1981 #2844) and of Dohrenwend and others (1991 #287; 1992 #2480). Mapping by Schell (1981 #2843; 1981 #2844) based on 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 supplemented by field verification. Mapping by Dohrenwend and others (1991 #287; 1992 #2480) 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.
Geologic setting	This long normal fault zone bounds the western front of the Egan Range and has piedmont faults along the east side of the White River Valley.
Length (km)	100 km.
Average strike	N7°E
Sense of movement	Normal *Comments:* Schell (1981 #2843; 1981 #2844)
Dip Direction	W

Paleoseismology studies	
Geomorphic expression	The fault is marked by abrupt, well-defined fault scarps on surficial deposits and the juxtaposition of Quaternary alluvium against bedrock, and by lineaments on Quaternary alluvium (Schell, 1981 #2844; Dohrenwend and others, 1991 #287; 1992 #2480). Schell (1981 #2844) reported maximum scarp heights of 17 m with slope angles approximately 19°; the location of these scarps is uncertain. At Sawmill Canyon University of Nevada, Reno students measured a 3-m-high single-event scarp. dePolo (1998 #2845) reports a highly eroded maximum preferred basal fault facet height of 317 m.
Age of faulted surficial deposits	Paleozoic to latest Pleistocene and (or) Holocene (0-30 ka), late Pleistocene (10–130 ka), early Pleistocene (0.13–1.5 Ma)
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) *Comments:* Although timing of most recent prehistorical event is not well constrained, Dohrenwend and others (1991 #287; 1996 #2846) suggested a latest Pleistocene to Holocene time based on photogeologic interpretation. Schell (1981 #2844) suggest the probable time of last movement as late Pleistocene based on surface morphology, areal distribution, and development of desert pavement, desert varnish, and soils (Schell, 1981 #2843). We assign herein the most conservative age as suggested by reconnaissance photogeologic mapping of Schell (1981 #2844).
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* The single-event, 3-m-high scarps at Sawmill Canyon is on a surface estimated to be Sangamon in age (74–200 ka) estimated by J. Yount based on soil and surface development (reported in dePolo, 1998 #2845). These data yield a limiting maximum slip rate reported by (dePolo, 1998 #2845) of 0.02–0.07 mm/yr. Due to the fact that this calculation is based on a probable single-event displacement, these values have little meaning and may not represent even an approximation of the true

	slip rate.
Date and Compiler(s)	1998 Thomas L. Sawyer, Piedmont Geosciences, Inc. Margaret Hisa Redsteer, U.S. Geological Survey
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. #287 Dohrenwend, J.C., Schell, B.A., and Moring, B.C., 1991, Reconnaissance photogeologic map of young faults in the Lund 1° by 2° quadrangle, Nevada and Utah: U.S. Geological Survey Miscellaneous Field Studies Map MF-2180, 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. #2846 Dohrenwend, J.C., Schell, B.A., Menges, C.M., Moring, B.C., and McKittrick, M.A., 1996, Reconnaissance photogeologic map of young (Quaternary and late Tertiary) faults in Nevada, *in* Singer, D.A., ed., Analysis of Nevada's metal-bearing mineral resources: Nevada Bureau of Mines and Geology Open-File Report 96-2, 1 pl., scale 1:1,000,000. #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. #2844 Schell, B.A., 1981, Faults and lineaments in the MX Siting Region, Nevada and Utah, Volume II: 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, 29 p., 11 pls., scale 1:250,000.