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Quaternary Fault and Fold Database of the United States

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Big Sand Springs Valley fault, southern section (Class A) No. 1372b

Last Review Date: 1998-06-30

citation for this record: **Sawyer, T.L., compiler, 1998, Fault number 1372b, Big Sand Springs Valley fault, southern section, 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 02:14 PM.**

Synopsis	**General:** This moderately long down-to-the-west normal fault zone bounds the west flank of the north-northeast-trending Pancake Range adjacent to Big Sand Springs Valley. Reconnaissance photogeologic mapping of the fault and two site-specific studies of scarp morphology are the sources of data. Trench investigations and detailed studies of scarp morphology along the entire length of the fault zone have not been completed. **Sections:** This fault has 2 sections. Two possible sections are suggested by differences in the rupture histories along the fault although detailed work has not been conducted along the entire fault zone.
Name comments	**General:** dePolo (1998 #2845) first called this fault the Big Sand Springs Valley fault. We use that name herein; however, the fault

	shown in this compilation is slightly longer than the one depicted by dePolo (1998 #2845). Earlier, the southern part of the fault was referred to as the Portuguese Mountain fault by Schell (1981 #2844). The fault zone extends from about 3 km north of Brown Summitt, south along the eastern margins of Big Sand Springs Valley, to about 6 km south of the Red Hills. **Section:** This informally named section refers to the southern part of the Portuguese Mountain fault on Plate A6 of Schell (1981 #2844) and the Big Sand Springs Valley fault of dePolo (1998 #2845). This section of the fault bounds the flank of small hills in Sand Springs Valley, including Red Hills, extends across the piedmont slope of the Pancake Range, and bounds Portuguese Mountain. **Fault ID:** Refers to fault 5 on Plate A6 of Schell (1981 #2844) and to LD1 (Big Sand Springs Valley fault) of 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 based on 1:250,000-scale maps of Schell (1981 #2844) and of Dohrenwend and others (1991 #287). Original 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, and field verification. Mapping by Dohrenwend and others (1991 #287) 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 moderately long down-to-the-west normal fault zone bounds the west flank of the north-northeast-trending Pancake Range at the east margin of Big Sand Springs Valley.

Length (km)	This section is 22 km of a total fault length of 41 km.
Average strike	N29°E (for section) versus N21°E (for whole fault)
Sense of movement	Normal *Comments:* (Schell, 1981 #2844; Dohrenwend and others, 1991 #287)
Dip Direction	NW
Paleoseismology studies	
Geomorphic expression	This part of the fault is characterized by scarps and lineaments on Quaternary deposits and by abrupt well-defined fault scarps juxtaposing Quaternary alluvium against bedrock (Schell, 1981 #2844; Dohrenwend and others, 1991 #287). Schell (1981 #2844) described large (27 m high) steep (less than or equal to 23?) scarps along the fault but location(s) is (are) uncertain. Measurements may have been made along an adjacent section to the north [1371b]. dePolo (1999 #2845) reports there are no basal fault facets along this part of the fault.
Age of faulted surficial deposits	Late Pleistocene (Schell, 1981 #2843) and early to middle Pleistocene and (or) late Pleistocene (Dohrenwend and others, 1991 #287).
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) *Comments:* Although timing of the most recent event is not well constrained, reconnaissance studies by Schell (1981 #2843; 1981 #2844) and Dohrenwend and others (1991 #287) suggest late Pleistocene based on scarp morphology and soil development.
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 0.01 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)	1998 Thomas L. Sawyer, Piedmont Geosciences, Inc.
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. #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.