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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.

Shoshone Lake faults (Class A) No. 751

Last Review Date: 2001-10-18

citation for this record: **Machette, M.N., and Pierce, K.L., compilers, 2001, Fault number 751, Shoshone Lake faults, 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 01:59 PM.**

Synopsis	This is a group of three short faults strike north-south on both sides of Shoshone Lake. The two eastern faults from a graben within the south-central part of the 0.63 Ma Yellowstone caldera (U.S. Geological Survey, 1972 #639; Christiansen and Blank, 1974 #2264; 2001 #1784) and offset the Dry Creek rhyolite flow and the tuff of Bluff Point, whose ages are about 160 ka (Christiansen, 2001 #1784). The western fault offsets the Spring Creek rhyolite flow, which is somewhat older than flows dated 160 ka.
Name comments	This group of three subparallel faults is near Shoshone Lake for which they are named (Case and others, 1997 #3449; Case, 1997 #3450; Wong and others, 2000 #4484). The two longer (main) faults trend north-south. The third (shorter) fault cuts across low hills that project into the northern part of Shoshone Lake, west of the Cement Hills (Christiansen, 2001 #1784).

County(s) and State(s)	TETON COUNTY, WYOMING
Physiographic province(s)	MIDDLE ROCKY MOUNTAINS
Reliability of location	Good Compiled at 1:125,000 scale. *Comments:* Faults were mapped at 1:62,500 scale by Christiansen (1974 #2264) and more recently published by Christiansen (2001 #1784) at 1:125,000 scale. Fault traces recompiled at 1:125,000 scale on map with topographic base.
Geologic setting	These faults strike north-south and form scarps in Quaternary rhyolitic flows (Spring Creek and Dry Creek rhyolites and tuff of Bluff Point) within the central part of the 0.64 Ma Yellowstone caldera (U.S. Geological Survey, 1972 #639; U.S. Geological Survey, 1972 #1057; Christiansen, 2001 #1784). These rhyolite flows are generally about 160 ka (Christiansen, 2001 #1784).
Length (km)	6 km.
Average strike	N15°W
Sense of movement	Normal
Dip Direction	E; W *Comments:* Considered to be high-angle faults by Wong and others (2000 #4484).
Paleoseismology studies	
Geomorphic expression	The two main (eastern) faults form scarps on rhyolite flows. These two scarps face each other, forming a broad graben east of Shoshone Lake. The third fault forms a scarp on rhyolite north of the lake and east of the graben. No morphometric data or information on scarp heights has been reported.
Age of faulted surficial deposits	The eastern fault scarps offset the Dry Creek flow and the tuff of Bluff Point, whose ages are probably about 160 ka (Obradovich, 1992 #2268; Christiansen, 2001 #1784). No post-glacial (<15 ka) materials appear to be offset (Richmond, 1973 #2286).

Historic earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) *Comments:* Faulting is younger than about 160 ka (latest middle Quaternary), and may be late Pleistocene (10-130 ka), although it is probably older than the last major glacial scouring that occurred in the area (Pinedale, 15 ka).
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Wong and others (2000 #4484) suggested a slip rate of 0.08 mm/yr based on an assumption that the faults had the same activity as the Polecat Creek faults (part of the Snake River caldera faults [765]). A low slip rate is inferred from the relative inactivity of the faults. On the basis of these data, the faults are assigned to the <0.2 mm/yr slip-rate category.
Date and Compiler(s)	2001 Michael N. Machette, U.S. Geological Survey, Retired Kenneth L. Pierce, U.S. Geological Survey, Emeritus
References	#3450 Case, J.C., 1997, Earthquakes and active faults in Wyoming: Geological Survey of Wyoming Preliminary Hazard Report 97-2, 58 p. #3449 Case, J.C., Larsen, L.L., Boyd, C.S., and Cannia, J.C., 1997, Earthquake epicenters and suspected active faults with surficial expression in Wyoming: Geological Survey of Wyoming Preliminary Hazards Report 97-1, 1 sheet, scale 1:1,000,000. #1784 Christiansen, R.L., 2001, The Quaternary and Pliocene Yellowstone Plateau volcanic field of Wyoming, Idaho, and Montana: U.S. Geological Survey Professional Paper 729-G, 145 p., 3 pls., scale 1:125,000. #2264 Christiansen, R.L., and Blank, H.R., Jr., 1974, Geologic map of the Old Faithful quadrangle, Yellowstone, National Park, Wyoming: U.S. Geological Survey Geologic quadrangle Map GQ-1189, scale 1:62,500. #2268 Obradovich, J.D., 1992, Geochronology of the late

	Cenozoic volcanism of Yellowstone National Park and adjoining areas, Wyoming and Idaho: U.S. Geological Survey Open-File Report 92-408, 45 p. #2286 Richmond, G.M., 1973, Surficial geologic map of the West Thumb quadrangle, Yellowstone National Park, Wyoming: U.S. Geological Survey Miscellaneous Geologic Investigations I-643, scale 1:62,500. #1057 U.S. Geological Survey, 1972, Surficial geologic map of Yellowstone National Park: U.S. Geological Survey Miscellaneous Geologic Investigations I-710, 1 sheet, scale 1:125,000. #639 U.S. Geological Survey, 1972, Geologic map of Yellowstone National Park: U.S. Geological Survey Miscellaneous Geologic Investigations I-711, 1 sheet, scale 1:125,000. #4484 Wong, I., Olig, S., and Dober, M., 2000, Preliminary probabilistic seismic hazard analyses—Island Park, Grassy Lake, Jackson Lake, Palisades, and Ririe Dams: U.S. Department of the Interior, Bureau of Reclamation Technical Memorandum D8330-2000-17.