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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.

Western Snake River Plain fault system (Class A) No. 635

Last Review Date: 2003-06-19

Compiled in cooperation with the Idaho Geological Survey

citation for this record: **Personius, S.F., compiler, 2003, Fault number 635, Western Snake River Plain fault system, 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 03:03 PM.**

Synopsis	The Western Snake River Plain fault system consists of numerous northwest-striking, northeast- and southwest-dipping normal faults that offset older (Plio-Pleistocene) fluvial deposits (Glenns Ferry Formation, Tuana Gravels, Tenmile Gravel) associated with the Snake River, and isolated volcanic and sedimentary rocks of the Snake River Group, in southwestern Idaho. Some faults form asymmetric linear ridges as much as 30-m-high of Plio-Pleistocene deposits and some early Quaternary deposits and surfaces are tilted or downwarped, but most have subdued expressions on the floor of the Snake River Plain. No detailed

	studies on the age of faulted deposits have been published, but most fault traces are confined to older Quaternary deposits on the western Snake River Plain, so the faults are herein assigned a Quaternary age until further detailed studies are conducted.
Name comments	Parts of the Western Snake River Plain fault system have been mapped by Savage (1958 #5910), Wood and Anderson (1981 #5913), Gilbert and others (1983 #5887), and Othberg and Stanford (1992 #5902). This complex fault system consists of numerous northwest-striking faults that mostly lie on the floor of the Snake River Plain in southwestern Idaho. Original use of the name is unknown, but it has been in use at least since publication of Gilbert and others (1983 #5887). Named faults in the zone include the Lake Lowell fault of Wood and Anderson (1981 #5913).
County(s) and State(s)	PAYETTE COUNTY, IDAHO ADA COUNTY, IDAHO CANYON COUNTY, IDAHO
Physiographic province(s)	COLUMBIA PLATEAU
Reliability of location	Good Compiled at 1:125,000 scale. *Comments:* Fault locations are from 1:250,000-scale mapping of Gilbert and others (1983 #5887), 1:125,000-scale mapping of Ostenaa (October 2, 1985 #6038), which is based on 1:62,500-scale mapping of Wood and Anderson (1981 #5913) and 1:100,000-scale mapping of Othberg and Stanford (1992 #5902).
Geologic setting	The Western Snake River Plain fault system consists of numerous northwest-striking, northeast- and southwest-dipping normal faults that mostly lie on the floor of the Snake River Plain in southwestern Idaho (Wood and Anderson, 1981 #5913; Gilbert and others, 1983 #5887; Othberg and Stanford, 1992 #5902; Othberg, 1994 #5901).
Length (km)	74 km.
Average strike	N53°W
Sense of movement	Normal *Comments:* The Western Snake River Plain fault system is

	mapped as a series of normal faults by Wood and Anderson (1981 #5913), Gilbert and others (1983 #5887), and Othberg and Stanford (1992 #5902).
Dip	55-88° NE *Comments:* Range of dip measurements of fault exposures from Wood and Anderson (1981 #5913).
Paleoseismology studies	
Geomorphic expression	Most faults in this zone have subdued expressions on the floor of the Snake River Plain, and some are mapped in the subsurface and have little surface expression. Faults form asymmetric linear ridges as much as 30 m high of Plio-Pleistocene deposits, and some early Quaternary deposits and surfaces are tilted or downwarped (Wood and Anderson, 1981 #5913; Othberg and Stanford, 1992 #5902; Ostenaa, October 2, 1985 #6038).
Age of faulted surficial deposits	Faults in the Western Snake River Plain fault system offset older (Plio-Pleistocene) fluvial deposits (Glenns Ferry Formation, Tuana Gravels, Tenmile Gravel) associated with the Snake River, and isolated volcanic and sedimentary rocks of the Snake River Group (Wood and Anderson, 1981 #5913; Gilbert and others, 1983 #5887; Othberg and Stanford, 1992 #5902; Othberg, 1994 #5901). Othberg (1994 #5901) noted that fault movements are older than the sediments underlying the Whitney Terrace; Wood and Anderson (1981 #5913) used soil development to infer an age of more than 100 ka for these deposits.
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* No detailed studies on the age of faulted deposits have been published. The fault zone is mapped as a lesser Quaternary (<1.6 Ma) structure by Breckenridge and others (2003 #5878). Most fault traces are confined to older Quaternary deposits on the western Snake River Plain (Wood and Anderson, 1981 #5913; Othberg and Stanford, 1992 #5902; Ostenaa, October 2, 1985 #6038), so the faults are herein assigned a Quaternary age until further detailed studies are conducted.

Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* No slip rates have been described, but the weak geomorphic expression of these faults indicates very low rates of long-term slip.
Date and Compiler(s)	2003 Stephen F. Personius, U.S. Geological Survey
References	#5878 Breckenridge, R.M., Lewis, R.S., Adema, G.W., and Weisz, D.W., 2003, Miocene and younger faults in Idaho: Idaho Geological Survey Map 8, 1 sheet, scale 1:1,000,000. #5887 Gilbert, J.D., Piety, L., and LaForge, R., 1983, Seismotectonic study for Black Canyon Dam, Boise project, Idaho: U.S. Bureau of Reclamation Seismotectonic Report 83-7, 73 p., 8 pl. #6038 Ostenaa, D., 1985, Memorandum to Chief, Division of Dam and Waterway Design, U.S. Bureau of Reclamation, Seismotectonic considerations for Modification Decision Analysis-Deer Flat Dams-Boise Project, Idaho, dated October 2, 1985, p. 10. #5901 Othberg, K.L., 1994, Geology and geomorphology of the Boise Valley and adjoining areas, western Snake River Plain, Idaho: Idaho Geological Survey Bulletin 29, 54 p. #5902 Othberg, K.L., and Stanford, L.R., 1992, Geologic map of the Boise Valley and adjoining areas, western Snake River Plain, Idaho: Idaho Geological Survey Geologic Map Series, scale 1:100,000. #5910 Savage, C.N., 1958, Geology and mineral resources of Ada and Canyon Counties: Idaho Bureau of Mines and Geology County Report No. 3, 94 p., 2 pls., scale 1:125,000. #5913 Wood, S.H., and Anderson, J.E., 1981, Chapter 2-Geology, *in* Mitchell, J.C., ed., Geological, hydrological, geochemical and geophysical investigations of the Nampa-Caldwell and adjacent areas, southwestern Idaho: Idaho Department of Water Resources Water Information Bulletin No. 30, Geothermal Investigations in Idaho, Part 11, p. 9-31.

Questions or comments?

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