Jump to Navigation

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.

unnamed faults on Dry Mountain (Class B) No. 817

Last Review Date: 2002-12-03

citation for this record: **Personius, S.F., compiler, 2002, Fault number 817, unnamed faults on Dry Mountain, 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 03:17 PM.**

Synopsis	These two northwest-trending high-angle faults form an inset graben in a swarm of faults that form a larger graben in Oligocene to Miocene andesitic rocks on the southeast flank of the Dry Mountain shield volcano northwest of Riley in central Oregon. These faults are parallel to and may be included in the northern margin of the Brothers fault zone, but they are localized in volcanic rocks and thus may be related to volcanic processes associated with formation of the Dry Mountain shield volcano. Given their short length, association with an andesitic shield volcano, and poor documentation of offset in Quaternary deposits, the faults are herein classified as Class B structures until further studies are conducted.
Name	These unnamed high-angle faults are located on the southeast

comments	flank of Dry Mountain, northwest of Riley in central Oregon (Greene and others, 1972 #3560; Hawkins and others, 1988 #2946; Walker and MacLeod, 1991 #3646; Pezzopane, 1993 #3544; Geomatrix Consultants Inc., 1995 #3593; Madin and Mabey, 1996 #3575; Weldon and others, 2002 #5648).
County(s) and State(s)	HARNEY COUNTY, OREGON
Physiographic province(s)	COLUMBIA PLATEAU
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* Fault locations are from 1:100,000-scale mapping of Weldon and others (2002 #5648) based on 1:250,000-scale mapping of Greene and others (1972 #3560) and 1:500,000-scale mapping of Pezzopane (1993 #3544).
Geologic setting	These two northwest-striking high-angle faults form an inset graben in a swarm of faults that form a larger graben in Oligocene to Miocene andesitic rocks on the southeast flank of the Dry Mountain shield volcano (Greene and others, 1972 #3560; Walker and MacLeod, 1991 #3646) northwest of Riley in central Oregon. These faults are parallel to and may be included in the northern margin of the Brothers fault zone (Lawrence, 1976 #3506), but they are localized in volcanic rocks and thus may be related to volcanic processes associated with formation of the Dry Mountain shield volcano.
Length (km)	6 km.
Average strike	N44°W
Sense of movement	Normal, Right lateral *Comments:* These structures are depicted as high-angle, presumably normal faults on maps of Greene and others (1972 #3560), Hawkins and others (1988 #2946), Walker and MacLeod (1991 #3646), and Pezzopane (1993 #3544). If these faults are part of the Brothers fault zone, they may represent part of the surface manifestations of a regional right-lateral shear zone (Lawrence, 1976 #3506).
Dip Direction	SW; NE

Paleoseismology studies	
Geomorphic expression	No details on the geomorphic expression of these faults has been reported. However, linear scarps less than 5 meters high on Quaternary deposits shown on 1:24,000-scale maps of the area may be coincident with the southeastern ends of the mapped fault traces.
Age of faulted surficial deposits	Greene and others (1972 #3560), Hawkins and others (1988 #2946), and Walker and MacLeod (1991 #3646) show these faults buried by Quaternary (Pleistocene and Holocene) sedimentary deposits consisting primarily of lacustrine and minor fluvial sediments. No offsets in Quaternary deposits have been described.
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* Pezzopane (1993 #3544) used airphoto analysis to infer middle or late Quaternary (<700 ka) displacement on the faults on Dry Mountain. Subsequent compilations (Geomatrix Consultants Inc., 1995 #3593; Madin and Mabey, 1996 #3575; Weldon and others, 2002 #5648) also show these faults as active in the middle or late Quaternary (<780 ka). However, given their short length, association with an andesitic shield volcano, and poor documentation of offset in Quaternary deposits, the faults are herein classified as Class B structures until further studies are conducted.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* No published slip rates are available for the unnamed faults on Dry Mountain
Date and Compiler(s)	2002 Stephen F. Personius, U.S. Geological Survey
References	#3571 Brown, D.E., McLean, G.D., Black, G.L., and Riccio, J.F., 1980, Preliminary geology and geothermal resource potential of the western Snake River Plain, Oregon: State of Oregon, Department of Geology and Mineral Industries Open-File Report O-80-5, 114 p., 4 pls., scale 1:62,500.

#3593 Geomatrix Consultants, Inc., 1995, Seismic design mapping, State of Oregon: Technical report to Oregon Department of Transportation, Salem, Oregon, under Contract 11688, January 1995, unpaginated, 5 pls., scale 1:1,250,000.

#3560 Greene, R.C., Walker, G.W., and Corcoran, R.E., 1972, Geologic map of the Burns quadrangle, Oregon: U.S. Geological Survey Miscellaneous Geologic Investigations I-680, 2 sheet, scale 1:250,000.

#2946 Hawkins, F.F., LaForge, R.C., Templeton, M., and Gilbert, J.D., 1988, Seismotectonic study for Arthur R. Bowman and Ochoco Dams, Crooked River Project, Oregon: U.S. Bureau of Reclamation Seismotectonic Report 88-10, 57 p., 2 pls.

#3506 Lawrence, R.D., 1976, Strike-slip faulting terminates the Basin and Range province in Oregon: Geological Society of America Bulletin, v. 87, p. 846-850.

#3575 Madin, I.P., and Mabey, M.A., 1996, Earthquake hazard maps for Oregon: State of Oregon, Department of Geology and Mineral Industries Geological Map Series GMS-100, 1 sheet.

#3544 Pezzopane, S.K., 1993, Active faults and earthquake ground motions in Oregon: Eugene, Oregon, University of Oregon, unpublished Ph.D. dissertation, 208 p.

#3646 Walker, G.W., and MacLeod, N.S., 1991, Geologic map of Oregon: U.S. Geological Survey, Special Geologic Map, 2 sheets, scale 1:500,000.

#5648 Weldon, R.J., Fletcher, D.K., Weldon, E.M., Scharer, K.M., and McCrory, P.A., 2002, An update of Quaternary faults of central and eastern Oregon: U.S. Geological Survey Open-File Report 02-301 (CD-ROM), 26 sheets, scale 1:100,000.

Questions or comments?

Facebook Twitter Google Email
Hazards
Design Ground MotionsSeismic Hazard Maps & Site-Specific DataFaultsScenarios
EarthquakesHazardsDataEducationMonitoringResearch

Search...
Search
HomeAbout UsContactsLegal