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 fault near Polk Butte (Class B) No. 813

Last Review Date: 2002-12-03

citation for this record: Personius, S.F., compiler, 2002, Fault number 813, unnamed fault near Polk Butte, 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 01:58 PM.

Synopsis	These east-trending, down-to-the-north faults parallel the northern flank of the Maury Mountains in central Oregon. The area is underlain by Eocene to Oligocene volcanic and volcaniclastic rocks of the Clarno Formation. These faults are not shown on any existing geologic maps, and no detailed information on geomorphic expression or Quaternary offset is available. Herein we classify these faults as Class B structures until further studies are conducted.
Name comments	These unnamed faults are located near Polk Butte in central Oregon (Pezzopane, 1993 #3544; Geomatrix Consultants Inc., 1995 #3593).
County(s) and	CROOK COUNTY, OREGON

State(s)	CROOK COUNTY, OREGON
Physiographic province(s)	COLUMBIA PLATEAU
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* Fault location is from 1:100,000-scale mapping of Weldon and others (2002 #5648), based on 1:500,000-scale mapping of Pezzopane (1993 #3544).
Geologic setting	The east-trending, down-to-the-north faults near Polk Butte parallel the northern flank of the Maury Mountains in central Oregon. The area is underlain by Eocene to Oligocene volcanic and volcaniclastic rocks of the Clarno Formation (Swanson, 1969 #3592). These faults are not shown on any published geologic maps (Waters, 1968 #3558; Swanson, 1969 #3592; Newcomb, 1970 #3761; Walker and MacLeod, 1991 #3646), or included in older earthquake hazards studies (U.S. Army Corps of Engineers, 1983 #3484; Hawkins and others, 1988 #2946) in the region.
Length (km)	5 km.
Average strike	N80°W
Sense of movement	Normal, Reverse *Comments:* These structures as depicted as normal or high-angle faults on the map of Pezzopane (1993 #3544), but their orientation may suggest reverse slip (Nakata and others, 1992 #3524).
Dip Direction	N; S
Paleoseismology studies	
Geomorphic expression	No information on geomorphic expression is available. Nakata and others (1992 #3524) used airphoto analysis to include faults south of Crooked River in a group of potentially active faults in central Oregon.
Age of faulted surficial deposits	

Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* Existing geologic maps do not show these faults. Pezzopane (1993 #3544) and subsequent compilations (Geomatrix Consultants Inc., 1995 #3593; Madin and Mabey, 1996 #3575; Weldon and others, 2002 #5648) infer middle and late Quaternary displacement (<700-780 ka), but do not describe the evidence used to infer this age. Herein we classify these faults 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 near Polk Butte, but the omission of these faults on existing geologic maps suggests low rates of long-term slip.
Date and Compiler(s)	2002 Stephen F. Personius, U.S. Geological Survey
References	#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. #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. #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. #3524 Nakata, T., Weldon, R.J.I., Pezzopane, S., Rosenfeld, C., and Yeats, R.S., 1992, Preliminary aerial photo-interpretation of active faults in Oregon: Geological Society of America Abstracts with Programs, v. 24, no. 5, p. 72. #3761 Newcomb, R.C., 1970, Tectonic structure of the main part of the basalt of the Columbia River Group Washington, Oregon,

and Idaho: U.S. Geological Survey Miscellaneous Geologic Investigations I-587, 1 sheet, scale 1:500,000.

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

#3592 Swanson, D.A., 1969, Reconnaissance geologic map of the east half of the Bend quadrangle, Crook, Wheeler, Jefferson, Wasco, and Deschutes Counties, Oregon: U.S. Geological Survey Miscellaneous Geologic Investigations I-568, 1 sheet, scale 1:250,000.

#3484 U.S. Army Corps of Engineers, 1983, Cougar and Blue River Lakes earthquake and fault study—Design memorandum 19: U.S. Army Corps of Engineers, Portland District, v. 19, 90 p., 11 pls.

#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.

#3558 Waters, A.C., 1968, Reconnaissance geologic map of the Post quadrangle Crook County, Oregon: U.S. Geological Survey Miscellaneous Geologic Investigations I-542, 1 sheet, scale 1:62,500.

#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.

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