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Quaternary Fault and Fold Database of the United States

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Southeast Newberry fault zone (Class A) No. 835

Last Review Date: 2016-04-05

citation for this record: **Personius, S.F., compiler, 2016, Fault number 835, Southeast Newberry fault zone, 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 03:15 PM.**

Synopsis	This northwest-trending fault zoned is a group of relatively short, mostly normal that form small escarpments and fault scarps on Plio-Pleistocene volcanic rocks a Pleistocene and Holocene sediments on the floor of Fort Rock Valley. The most-r events on at least two faults in the zone, the Viewpoint and Crack-In-The-Ground faults, occurred in the Holocene.
Name comments	This fault zone was named by Pezzopane (1993 #3544) for a group of northwest-trending faults that lie southeast of Newberry Volcano; named faults in this zone include Crack-In-The-Ground, Viewpoint (or Viewpoint Ranch), and Fandango Canyon faults (Donath, 1962 #3771; Peterson and Groh, 1964 #3777; Pezzopane #3544). **Fault ID:** This group of structures consists of fault numbers 32 and 33 of Pezzop (1993 #3544) and fault number 48 of Geomatrix Consultants, Inc. (1995 #3593).

County(s) and State(s)	LAKE COUNTY, OREGON DESCHUTES COUNTY, OREGON
Physiographic province(s)	COLUMBIA PLATEAU
Reliability of location	Poor Compiled at 1:100,000 and 1:250,000 scale. *Comments:* Location of fault from ORActiveFaults (http://www.oregongeology.org/arcgis/rest/services/Public/ORActiveFaults/MapS downloaded 06/02/2016) attributed to Walker and others, 1967 #3564. Supplemer traces are from 1:100,000-scale mapping of Weldon and others (2002 #5648), bas 1:500,000-scale mapping of Pezzopane (1993 #3544).
Geologic setting	This northwest-trending fault zone is a group of relatively short, mostly normal fa that offset Plio-Pleistocene volcanic rocks and Pleistocene and Holocene sedimer the floor of Fort Rock Valley (Donath, 1962 #3771; Peterson and Groh, 1964 #37 Hampton, 1964 #3790; Walker and others, 1967 #3564; Walker and MacLeod, 19 #3646; Pezzopane and Weldon, 1993 #149; Pezzopane, 1993 #3544).
Length (km)	58 km.
Average strike	N34°W
Sense of movement	Normal, Left lateral *Comments:* These faults are presumed to be primarily normal, with a component left-lateral strike slip apparent on some faults in the zone (Pezzopane, 1993 #354 Geomatrix Consultants Inc., 1995 #3593).
Dip	70–90° SW *Comments:* Dip based on exposures of Viewpoint fault (Pezzopane, 1993 #3544; Geomatrix Consultants Inc., 1995 #3593); Geomatrix Consultants, Inc. (1995 #3 used a dip of 70° in their analysis of earthquake hazards associated with faults in Southeast Newberry fault zone.
Paleoseismology studies	Three trenches at one site on the Viewpoint fault (site 835-1) near the southern en the Southeast Newberry fault zone were excavated; apparently only one of these trenches (trench 3) was logged (Pezzopane, 1993 #3544). Site 835-1. All the trenches exposed anastomosing, high-angle fault zones that juxtapose late Quaternary lacustrine, eolian, and colluvial sediments against basa bedrock (Weldon and others, 1992 #3540; Pezzopane, 1993 #3544; Pezzopane an

	Weldon, 1993 #149). The lowest units in the hanging wall are deep-water lacustri sediments that have been intensely deformed and liquefied during earlier earthqua when the trench site was under water. The deformed lacustrine deposits are overla several packages of eolian sand and colluvium; the lower two units are faulted de of eolian sand, the lower of which contained a camel bone which yielded a radioc age of 11,050±160 yr BP. The faulted units are overlain by two thin unfaulted dep of colluvium, possibly reworked by lake waters. The sequence is capped by an ec deposit containing possible fragments of reworked Mazama pumice. Pezzopane (#3544) and (S.K. Pezzopane, written commun., 1994, in Geomatrix Consultants I 1995 #3593) interprets these relations as evidence of several late Pleistocene surf faulting events; the most recent event occurred in the early to middle Holocene.
Geomorphic expression	Individual faults in the Southeast Newberry fault zone form small escarpments ar fault scarps on Plio-Pleistocene volcanic rocks and late Quaternary alluvial and lacustrine deposits on the floor of Fort Rock basin (Weldon and others, 1992 #354 Pezzopane, 1993 #3544; Geomatrix Consultants Inc., 1995 #3593). Weldon and c (2002 #5648) map lineaments across Quaternary deposits based on interpretation 1:100,000-scale DEMs of the area.
Age of faulted surficial deposits	Fault scarps are formed on Pleistocene and Holocene alluvial and lacustrine depo and Holocene volcanic rocks of the Four Craters volcanic center (Peterson and G 1964 #3777; Hampton, 1964 #3790; Walker and others, 1967 #3564; Walker and MacLeod, 1991 #3646; Pezzopane, 1993 #3544). Crack-In-The-Ground offsets 7 ka Green Mountain lava flows but offset of post-Mazama Four Corners lava flow equivocal (Jordan and others, 2002 #5167). Pezzopane (1993 #3544), and Pezzop and Weldon (1993 #149) infer Holocene movement based on offset of the Four Corners lava.
Historic earthquake	
Most recent prehistoric deformation	latest Quaternary (<15 ka) *Comments:* Pezzopane (1993 #3544) and (S.K. Pezzopane, written commun., 199 Geomatrix Consultants Inc., 1995 #3593) found evidence for Holocene displacen on the Viewpoint fault; displacement along the Crack-In-The-Ground fault is equ in Holocene volcanic rocks of the Four Craters volcanic center (Peterson and Gro 1964 #3777; Hampton, 1964 #3790; Walker and others, 1967 #3564; Walker and MacLeod, 1991 #3646; Pezzopane, 1993 #3544; Jordan and others, 2002 #5167). Pezzopane (1993 #3544) and subsequent compilations (Geomatrix Consultants In 1995 #3593; Madin and Mabey, 1996 #3575) infer middle or late Quaternary (<7 780 ka) displacements on the rest of the faults in the Southeast Newberry fault zo Weldon and others (2002 #5648) infer late Quaternary (<120 ka) displacement or faults in this zone.

Recurrence interval	
Slip-rate category	Between 0.2 and 1.0 mm/yr *Comments:* Slip rate estimates of 0.1–0.5 mm/yr across the Viewpoint and Crack-The-Ground faults have been determined by Pezzopane and Weldon (1993 #149) Geomatrix Consultants, Inc. (1995 #3593) assigned those rates to the entire South Newberry fault zone.
Date and Compiler(s)	2016 Stephen F. Personius, U.S. Geological Survey
References	#3771 Donath, F.A., 1962, Analysis of Basin-Range structure, south-central Oreg Geological Society of America Bulletin, v. 73, p. 1-16. #3593 Geomatrix Consultants, Inc., 1995, Seismic design mapping, State of Oreg Technical report to Oregon Department of Transportation, Salem, Oregon, under Contract 11688, January 1995, unpaginated, 5 pls., scale 1:1,250,000. #3790 Hampton, E.R., 1964, Geologic factors that control the occurrence and availability of ground water in the Fork Rock Basin Lake County, Oregon: U.S. Geological Survey Professional Paper 383-B, 29 p., 2 pls., scale 1:62,500. #5167 Jordan, B.T., Streck, M.J., and Grunder, A.L., 2002, Bimodal volcanism ar tectonism of the High Lava Plains, Oregon, *in* Moore, G.W., ed., Field guide to geologic processes in Cascadia: State of Oregon, Department of Geology and Mi Industries Special Paper 36, p. 23-46. #3575 Madin, I.P., and Mabey, M.A., 1996, Earthquake hazard maps for Oregon: of Oregon, Department of Geology and Mineral Industries Geological Map Serie GMS-100, 1 sheet. #3777 Peterson, N.V., and Groh, E.A., 1964, Crack-in-the-ground, Lake County, Oregon: The ORE BIN, v. 26, no. 9, p. 158-167. #3544 Pezzopane, S.K., 1993, Active faults and earthquake ground motions in Or Eugene, Oregon, University of Oregon, unpublished Ph.D. dissertation, 208 p. #149 Pezzopane, S.K., and Weldon, R.J., II, 1993, Tectonic role of active faulting central Oregon: Tectonics, v. 12, p. 1140-1169. #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.

	#3564 Walker, G.W., Peterson, N.V., and Greene, R.C., 1967, Reconnaissance ge map of the east half of the Crescent quadrangle Lake, Deschutes, and Crook Cou Oregon: U.S. Geological Survey Miscellaneous Geologic Investigations I-493, 1 scale 1:250,000. #5648 Weldon, R.J., Fletcher, D.K., Weldon, E.M., Scharer, K.M., and McCrory, 2002, An update of Quaternary faults of central and eastern Oregon: U.S. Geolog Survey Open-File Report 02-301 (CD-ROM), 26 sheets, scale 1:100,000. #3540 Weldon, R.J., II, Pezzopane, S.K., Stimac, J.P., and McDowell, P.F., 1992, Guidebook to active faulting in south-central Oregon, *in* Geological Society of America, Cordilleran Meeting Fieldtrip #5, May 8-10, 1992, Guidebook.