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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.

Owl Creek fault (Class A) No. 870

Last Review Date: 2002-05-23

citation for this record: **Personius, S.F., compiler, 2002, Fault number 870, Owl Creek fault, 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 03:14 PM.**

Synopsis	The steeply east-dipping Owl Creek fault is a reverse fault associated with an ant in the Eocene Spencer Formation mapped in the subsurface east of Corvallis on t floor of the southern Willamette Valley. The fault, which has no geomorphic expression, apparently offsets the middle to late Pleistocene Rowland Formation, does not offset the latest Pleistocene Willamette Formation.
Name comments	The Owl Creek fault was mapped and named by Graven (1990 #3990) and Yeats others (1996 #4291) after Owl Creek, a small tributary of the Willamette River th parallels part of the fault trace. **Fault ID:** This fault zone is fault number 35 of Geomatrix Consultants, Inc. (199 #3593).
County(s) and State(s)	LINN COUNTY, OREGON BENTON COUNTY, OREGON
Physiographic province(s)	PACIFIC BORDER

Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* Location of fault from ORActiveFaults (http://www.oregongeology.org/arcgis/rest/services/Public/ORActiveFaults/MapS downloaded 06/02/2016) attributed to 1:250,000-scale mapping of Walker and Du and others (1989 #3581).
Geologic setting	The Owl Creek fault is located in the subsurface east of the Willamette River in th vicinity of Corvallis in the southern Willamette Valley. The steeply east-dipping reverse fault is associated with an anticline in the Eocene Spencer Formation (Gra 1990 #3990; Yeats and others, 1996 #4291). The fault is not shown on older geol maps of the area (Vokes and others, 1954 #4078; Bela, 1979 #4051; Walker and Duncan, 1989 #3581).
Length (km)	15 km.
Average strike	N5°E
Sense of movement	Reverse *Comments:* The Owl Creek fault is mapped as a steeply east-dipping reverse fault Graven (1990 #3990) and Yeats and others (1996 #4291).
Dip	60° *Comments:* Graven (1990 #3990) reported an estimated dip of 60° east, which Geomatrix Consultants, Inc. (1995 #3593) used in their analysis of the Owl Creek fault.
Paleoseismology studies	
Geomorphic expression	The Owl Creek fault has only been identified in the subsurface, and apparently ha geomorphic expression (Graven, 1990 #3990; Yeats and others, 1996 #4291).
Age of faulted surficial deposits	The middle to late Pleistocene Rowland Formation appears to be offset across the Creek fault, but no evidence of offset is apparent in the latest Pleistocene Willame Formation (Graven, 1990 #3990; Yeats and others, 1996 #4291).
Historic earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) *Comments:* The Owl Creek fault apparently offsets the middle to late Pleistocene

	Rowland Formation, but does not appear to offset the latest Pleistocene Willamet Formation (Graven, 1990 #3990; Yeats and others, 1996 #4291). Madin and othe (2001 #5051) infer late Quaternary offset, and Geomatrix Consultants, Inc. (1995 #3593) and Madin and Mabey (1996 #3575) infer middle and late Quaternary (<7 ka) displacement.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Graven (1990 #3990) and Yeats and others (1996 #4291) estimate 72 of offset of the Eocene Spencer Formation across the anticline associated with the Creek fault, but the lack of geomorphic expression along this fault suggests low r of slip. Geomatrix Consultants, Inc. (1995 #3593) and Wong and others (1999 #4 2000 #5137) assigned slip rates of 0.005–0.05 mm/yr in their analyses of the earthquake hazards associated with the Owl Creek fault.
Date and Compiler(s)	2002 Stephen F. Personius, U.S. Geological Survey
References	#4051 Bela, J.L., 1979, Geologic hazards of eastern Benton County, Oregon: Stat Oregon, Department of Geology and Mineral Industries Bulletin 98, 122 p., 5 pls #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. #3990 Graven, E.P., 1990, Structure and tectonics of the southern Willamette Val Oregon: Oregon State University, unpublished M.S. thesis, 119 p., 10 pls. #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. #5051 Madin, I.P., Wang, Z., and Graham, G.B., 2001, Finding Quaternary faults Willamette lowland—Are they dead or just hiding?: Seismological Research Lett 72, no. 2, p. 254. #4078 Vokes, H.E., Myers, D.A., and Hoover, L., 1954, Geology of the west-cent border area of the Willamette Valley, Oregon: U.S. Geological Survey Oil and Ga Investigations Map OM-0150, 1 sheet, scale 1:62,500. #3581 Walker, G.W., and Duncan, R.A., 1989, Geologic map of the Salem 1 by 2 quadrangle, western Oregon: U.S. Geological Survey Miscellaneous Investigatio

	Map I-1893, 1 sheet, scale 1:250,000. #4073 Wong, I., Silva, W., Bott, J., Wright, D., Thomas, P., Gregor, N., Li, S., Ma M., Sojourner, A., and Wang, Y., 1999, Earthquake scenario and probabilistic gro shaking maps for the Portland, Oregon metropolitan area: Technical report to U.S Geological Survey, under Contract 1434-HQ-96-GR-02727, 16 p., 12 pls. #5137 Wong, I., Silva, W., Bott, J., Wright, D., Thomas, P., Gregor, N., Li, S., Ma M., Sojourner, A., and Wang, Y., 2000, Earthquake scenario and probabilistic gro shaking maps for the Portland, Oregon, metropolitan area: State of Oregon, Department of Geology and Mineral Industries Interpretive Map Series IMS-16, pamphlet, scale 1:62,500. #4291 Yeats, R.S., Graven, E.P., Werner, K.S., Goldfinger, C., and Popowski, T.A 1996, Tectonics of the Willamette Valley, Oregon, *in* Rogers, A.M., Walsh, T.J., Kockelman, W.J., and Priest, G.R., eds., Assessing earthquake hazards and reduc risk in the Pacific Northwest: U.S. Geological Survey Professional Paper 1560, v. 183-222.