

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](#).

Eagle Creek thrust fault (Class B) No. 867

Last Review Date: 2016-05-09

citation for this record: Personius, S.F., compiler, 2002, Fault number 867, Eagle Creek thrust 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.

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| Synopsis | This northeast-striking thrust fault is located northwest of Chinidere Mountain in northern Oregon, in Miocene volcanic rocks of the Columbia River Basalt Group Plio-Pleistocene volcanic rocks of the High Cascades Province. Thrust displacement and association with the Eagle Creek Homocline indicate that this structure is part of the Yakima fold belt of south-central Washington and northern Oregon. No detail information on Quaternary offset is available, but limited airphoto analysis suggests possible Quaternary displacement. Given the lack of documented geomorphic expression in Quaternary deposits, herein the fault is classified as Class B until future studies are conducted. |
| Name comments | This fault is located northwest of Chinidere Mountain in northern Oregon (Beeson and others, 1985 #4022; Beeson and others, 1989 #4023; Pezzopane, 1993 #3544; Geomatrix Consultants Inc., 1995 #3593). The fault is associated with and named the Eagle Creek Homocline (Beeson and others, 1985 #4022; Beeson and others, 1989 #4023). |
| County(s) and | |

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|----------------------------------|--|
| County(s) and State(s) | HOOD RIVER COUNTY, OREGON |
| Physiographic province(s) | CASCADE-SIERRA MOUNTAINS |
| Reliability of location | Poor Compiled at 1:100,000 scale. <i>Comments:</i> Location of fault from ORActiveFaults (http://www.oregongeology.org/arcgis/rest/services/Public/ORActiveFaults/Map5 downloaded 06/02/2016) attributed to 1:100,000-scale mapping by Korosec (1987 #4658). |
| Geologic setting | This northeast-striking, southeast-dipping thrust fault is located northwest of Chiloquim Mountain in northern Oregon (Beeson and others, 1985 #4022; Tolan and Reidel, 1989 #3765; Beeson and others, 1989 #4023; Pezzopane, 1993 #3544; Geomatrix Consultants Inc., 1995 #3593), in Miocene volcanic rocks of the Columbia River Basalt Group and Plio-Pleistocene volcanic rocks of the High Cascades Province (Newcomb, 1970 #3761; Swanson and others, 1981 #3496; Bela, 1982 #3584; St. John and Smith, 1989 #3498; Walker and MacLeod, 1991 #3646). Thrust displacement association with the Eagle Creek Homocline (Beeson and others, 1985 #4022; Tolan and Reidel, 1989 #3765; Beeson and others, 1989 #4023) indicate that this structure is part of the Yakima fold belt of central Washington and northern Oregon. |
| Length (km) | 8 km. |
| Average strike | N44°E |
| Sense of movement | Thrust <i>Comments:</i> The Eagle Creek thrust fault is mapped as a southeast-dipping thrust fault by Beeson and others (1985 #4022; 1989 #4023), Tolan and Reidel (1989 #3765), Pezzopane (1993 #3544), and Geomatrix Consultants, Inc. (1995 #3593). However, U.S. Army Corps of Engineers (1983 #3485) show a down-northwest normal fault at the approximate location of the fault. |
| Dip | 29° SE <i>Comments:</i> Dip measurement reported in Beeson and others (1989 #4023). |
| Paleoseismology studies | |
| Geomorphic expression | |

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| Age of faulted surficial deposits | The fault is mapped by Beeson and others (1985 #4022; 1989 #4023), Tolan and Reidel (1989 #3765), Pezzopane (1993 #3544) and Geomatrix Consultants, Inc. (#3593) in Miocene volcanic rocks of the Columbia River Basalt Group and Plio-Pleistocene volcanic rocks of the High Cascades Province (Newcomb, 1970 #376; Swanson and others, 1981 #3496; Bela, 1982 #3584; Sherrod and Smith, 1989 #376; Walker and MacLeod, 1991 #3646). No fault scarps in Quaternary surficial deposits have been described, so herein we classify the fault as Class B until further studies are conducted. |
| Historic earthquake | |
| Most recent prehistoric deformation | undifferentiated Quaternary (<1.6 Ma) <i>Comments:</i> Pezzopane (1993 #3544) used airphoto analysis to infer Quaternary (<1.6 Ma) displacement, and subsequent compilations (Geomatrix Consultants Inc., 1993 #3593; Madin and Mabey, 1996 #3575) also show the fault as active in the Quaternary (<1.6–1.8 Ma). Weldon and others (2002 #5648) do not include this fault in their compilation, and Wong and others (1999 #4073; 2000 #5137) do not include this in their recent analysis of earthquake hazards in the Portland area. Given the lack of documented geomorphic expression in Quaternary deposits, herein we classify the fault as Class B until further studies are conducted. |
| Recurrence interval | |
| Slip-rate category | Less than 0.2 mm/yr <i>Comments:</i> Beeson and others (1985 #4022; 1989 #4023) measured more than 30 cm of vertical offset of Miocene Columbia River Basalt Group rocks across the fault. Data yield low rates of long-term slip. |
| Date and Compiler(s) | 2002 Stephen F. Personius, U.S. Geological Survey |
| References | #4022 Beeson, M.H., Fecht, K.R., Reidel, S.P., and Tolan, T.L., 1985, Regional correlations within the Frenchman Springs member of the Columbia River Basalt Group—New insights into the middle Miocene tectonics of northwestern Oregon Oregon Geology, v. 47, no. 8, p. 87-96. #4023 Beeson, M.H., Tolan, T.L., and Anderson, J.L., 1989, The Columbia River Basalt Group in western Oregon—Geologic structures and other factors that control flow emplacement patterns, in Reidel, S.P., and Hooper, P.R., eds., Volcanism and tectonism in the Columbia River Flood-Basalt Province: Geological Society of America Special Paper 239, p. 223-246. #3584 Bela, J.L., 1982, Geologic and neotectonic evaluation of north-central Ore |

The Dallas 1 x 2 quadrangle: State of Oregon, Department of Geology and Mineral Industries Geologic Map Series GMS-27, 2 sheets, scale 1:250,000.

#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.

#4658 Korosec, M.A., compiler, 1987, Geologic map of the Hood River quadrangle, Washington and Oregon: Washington Division of Geology and Earth Resources (File Report 87-6, 42 p., scale 1:100,000.

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

#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.

#3498 Sherrod, D.R., and Smith, J.G., 1989, Preliminary map of upper Eocene to Holocene volcanic and related rocks of the Cascade Range, Oregon: U.S. Geological Survey Open-File Report 89-14, 20 p., 1 pl., scale 1:500,000.

#3496 Swanson, D.A., Anderson, J.L., Camp, V.E., Hooper, P.R., Taubeneck, W.J., and Wright, T.L., 1981, Reconnaissance geologic map of the Columbia River Basalt Group, northern Oregon and western Idaho: U.S. Geological Survey Open-File Report 81-797, 35 p., 5 pls., scale 1:250,000.

#3765 Tolan, T.L., and Reidel, S.P., 1989, Structure map of a portion of the Columbia River flood-basalt Province, *in* Reidel, S.P., and Hooper, P.R., eds., *Volcanism and tectonism in the Columbia River Flood-Basalt Province*: Geological Society of America Special Paper 239, 1 sheet, scale 1:500,000.

#3485 U.S. Army Corps of Engineers, 1983, Detroit and Big Cliff Lakes earthquake and fault study—Design memorandum 4: U.S. Army Corps of Engineers, Portland District, 93 p., 13 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.

#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. Geological Survey Open-File Report 02-301 (CD-ROM), 26 sheets, scale 1:100,000.

#4073 Wong, I., Silva, W., Bott, J., Wright, D., Thomas, P., Gregor, N., Li, S., Mearns, M., Sojourner, A., and Wang, Y., 1999, Earthquake scenario and probabilistic ground 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., Mearns, M., Sojourner, A., and Wang, Y., 2000, Earthquake scenario and probabilistic ground 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.

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