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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.

Hood River fault zone (Class A) No. 866

Last Review Date: 2016-05-06

citation for this record: **Personius, S.F., compiler, 2002, Fault number 866, Hood River 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 03:16 PM.**

Synopsis	The Hood River fault zone defines the eastern margin of a half graben that forms Upper Hood River Valley in the High Cascades of northern Oregon. This structur be part of an extensive group of graben structures formed in response to subsiden related to extrusion of extensive volcanic rocks in the early Pliocene. The area is underlain by Miocene volcanic rocks of the Columbia Plateau and Pliocene throu Quaternary volcanic rocks of the Cascade Range. No fault scarps on Quaternary deposits have been described, but prominent escarpments on Neogene volcanic rc and a minimum offset of 600 m in Pliocene volcanic rocks suggest that some displacement occurred in the Quaternary.
Name comments	The Hood River fault or fault zone is named after its location along the east side c Hood River Valley (Timm, 1979 #3948). **Fault ID:** This zone is fault number 9 of Pezzopane (1993 #3544) and fault numb of Geomatrix Consultants, Inc. (1995 #3593).
County(s) and	

County(s) and State(s)	HOOD RIVER COUNTY, OREGON
Physiographic province(s)	CASCADE-SIERRA MOUNTAINS COLUMBIA PLATEAU
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 1:100,000-scale mapping of Sherrod and S (1995 #3495) and Korosec (2002 #4658).
Geologic setting	The Hood River fault zone defines the eastern margin of a half graben that forms Upper Hood River Valley in the High Cascades of northern Oregon. This structur be part of an extensive group of graben structures formed in response to subsiden related to extrusion of extensive volcanic rocks in the early Pliocene (Timm, 197 #3948; Williams and others, 1982 #3998; Beeson and others, 1982 #4054; Sherro Pickthorn, 1989 #3599; Beeson and others, 1989 #4023). The area is underlain by Miocene volcanic rocks of the Columbia Plateau and Pliocene through Quaternar volcanic rocks of the High Cascades Province (Newcomb, 1970 #3761; Timm, 19 #3948; Swanson and others, 1981 #3496; Bela, 1982 #3584; Walker and MacLeo 1991 #3646; Sherrod and Scott, 1995 #3495; Sherrod and Smith, 2000 #5165).
Length (km)	44 km.
Average strike	N31°W
Sense of movement	Normal, Right lateral *Comments:* The Hood River fault zone is shown as a normal or high-angle fault c maps of Newcomb (1970 #3761), Swanson and others (1981 #3496), Bela (1982 #3584), Walker (1991 #3646), Pezzopane (1993 #3544), Sherrod and Scott (1995 #3495), and Sherrod and Smith (2000 #5165). Timm (1979 #3948) described one exposure of the fault that shows a vertical fault dip with slickensides indicating b vertical and right-lateral strike-slip.
Dip Direction	W *Comments:* Timm (1979 #3948) described one exposure of the fault that shows a vertical fault dip.
Paleoseismology studies	

Geomorphic expression	The Hood River fault zone forms prominent escarpments on Neogene volcanic ro along the eastern margin of the Upper Hood River Valley and along the east side Hood River Gorge. Weldon and others (2002 #5648) mapped lineaments crossing Quaternary deposits on 1:100,000-scale DEMs of the area. Geomatrix Consultant (1990 #3550; 1995 #3593) break the fault zone into two segments, a northern seg consisting of a complex of short faults that form the eastern margin of the Upper River Valley, and a southern segment consisting of a single fault escarpment on th eastern margin of the Hood River Gorge. U.S. Army Corps of Engineers (1983 #3 shows numerous north-trending lineaments along the trace of the fault zone. No f scarps on Quaternary deposits have been described along either of the segments described by Geomatrix Consultants, Inc. (1990 #3550; 1995 #3593), so herein b parts of the fault zone are included in a single description.
Age of faulted surficial deposits	The Hood River fault zone offsets Miocene Columbia River Basalt Group and Pli volcanic rocks (Timm, 1979 #3948; Swanson and others, 1981 #3496; Bela, 1982 #3584; Walker and MacLeod, 1991 #3646; Sherrod and Scott, 1995 #3495; Sherr and Smith, 2000 #5165), but no fault scarps on Quaternary surficial deposits have described. S.K. Pezzopane (pers. commun., in Geomatrix Consultants Inc., 1995 #3593) notes that locally late Pleistocene (?) lava flows lie unfaulted across the fa zone.
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* The Hood River fault zone offsets Miocene Columbia River Basalt G and Pliocene volcanic rocks (Timm, 1979 #3948; Swanson and others, 1981 #349 Bela, 1982 #3584; Walker and MacLeod, 1991 #3646; Sherrod and Scott, 1995 # Sherrod and Smith, 2000 #5165), but no fault scarps on Quaternary surficial depo have been described. However, Pliocene rocks are offset a minimum of 600 m (Williams and others, 1982 #3998; Sherrod and Pickthorn, 1989 #3599), so some displacement probably extended into the Quaternary. The fault zone was consider not active by Geomatrix Consultants, Inc. (1990 #3550), but was mapped as activ the middle and late Quaternary (<700–780 ka) by Pezzopane (1993 #3544) and Weldon and others (2002 #5648), and as active in the Quaternary (<1.6–1.8 Ma) Geomatrix Consultants, Inc. (1995 #3593) and Madin and Mabey (1996 #3575). the lack of unequivocal evidence of Quaternary displacement, the fault zone is he classified as Quaternary (<1.6 Ma) until further studies are conducted.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr

	Comments: Offsets of 600 m of 3 Ma volcanic rocks along the southern part of th fault zone (Sherrod and Pickthorn, 1989 #3599; Sherrod and Scott, 1995 #3495) suggest low rates of slip. Geomatrix Consultants, Inc. (1995 #3593) used estimate rates of 0.05–0.2 mm/yr in their analysis of earthquake hazards associated with th Hood River fault zone.
Date and Compiler(s)	2002 Stephen F. Personius, U.S. Geological Survey
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