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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.

East Pueblo Valley fault zone (Class A) No. 1490

Last Review Date: 2016-05-10

citation for this record: **Sawyer, T.L., Personius, S.F., and Haller, K.M., compilers, 2016, Fault number 1490, East Pueblo Valley 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 02:50 PM.**

Synopsis	This complex zone of faulting is marked by discontinuous fault scarps on piedmont deposits along the eastern margin of the southern Pueblo Valley and the west flank of the Trout Creek Mountains, from south of Trout Creek in southern Oregon to the southern end of Antelope Valley in northern Nevada. Fault scarps on late Pleistocene and Holocene (?) alluvial deposits indicate that most of the fault trace has been active in the late Quaternary. Trench investigations and detailed studies of scarp morphology have not been conducted, so reconnaissance photogeologic mapping of the fault zone is the primary source of data.
Name comments	The fault zone includes faults mapped by D.B. Slemmons (1966, unpublished Vya 1:250,000-sca;le quadrangle), Dohrenwend and Moring (1991 #281) and Walker (1991 #3646), and includes faults in the East Pueblo Valley fault swarm of dePolo (1998 #2845) and the Pueblo Mountain faults of Pezzopane (1993

	#3544). The fault zone is located in the southern Pueblo Valley flanking Black Mountain, the west slope of Lone Mountain, and along the western piedmont slope of the Trout Creek Mountains in northern Nevada and southern Oregon. **Fault ID:** Parts of this fault zone are included in fault number 48 of Pezzopane (1993 #3544), fault number 62 of Geomatrix Consultants, Inc. (1995 #3593), and fault number V10 of dePolo (1998 #2845).
County(s) and State(s)	HUMBOLDT COUNTY, NEVADA HARNEY COUNTY, OREGON
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:24,000 and 1:250,000 scale. *Comments:* Fault locations in Nevada are chiefly based on the 1:250,000-scale map of Dohrenwend and Moring (1991 #281), which was compiled from photogeologic analysis of 1:58,000-nominal-scale color-infrared photography transferred directly to 1:100,000-scale topographic quadrangle maps enlarged to the scale of the photographs and then reduced and transferred to 1:250,000-scale topographic maps. Fault locations in southernmost Pueblo Valley are mapped at 1:24,000 (Minor and others, 1989 #7390). Inferred faults (those without bars and balls) are not included.
Geologic setting	This complex fault zone forms part of the eastern margin of the Pueblo Valley, a large graben associated with major normal faulting on the Steens fault zone [856] located on the west side of the valley. The region is underlain by Miocene volcanic rock, primarily the Steens Basalt and rhyolitic rock of the McDermitt Caldera complex (Willden, 1964 #3002; Walker and Repenning, 1965 #3559; Walker and MacLeod, 1991 #3646).
Length (km)	33 km.
Average strike	N17°E
Sense of movement	Normal *Comments:* Faults in this zone are mapped as normal or high-angle faults by D.B. Slemmons (1966, unpublished Vya

	1:250,000-scale quadrangle), Dohrenwend and Moring (1991 #281), Pezzopane (1993 #3544), and Geomatrix Consultants, Inc. (1995 #3593).
Dip Direction	NW; W
Paleoseismology studies	
Geomorphic expression	This complex zone of faulting is marked by discontinuous fault scarps on piedmont deposits along the eastern margin of the Pueblo Valley and the subdued west flank of the Trout Creek Mountains (D.B. Slemmons, 1966, unpublished Vya 1:250,000-scale quadrangle, Dohrenwend and Moring, 1991 #281; Walker and MacLeod, 1991 #3646). Class C faults mapped on the southeastern margin of Pueblo Valley by Dohrenwend and Moring (1991 #281) are characterized by lineations and scarps on Tertiary rock and are not shown on the map.
Age of faulted surficial deposits	Quaternary alluvial deposits are faulted on the piedmont slopes of Lone Mountain and the Trout Creek Mountains, and juxtaposed against pre-Tertiary and Tertiary bedrock at Lone Mountain (D.B. Slemmons, 1966, unpublished Vya 1? X 2? quadrangle, Dohrenwend and Moring, 1991 #281; Walker and MacLeod, 1991 #3646). Near the south end of Pueblo Valley, late Pleistocene piedmont-slope deposits are faulted and deposits as young as latest Pleistocene and (or) Holocene may be faulted based on reconnaissance photogeologic mapping of Dohrenwend and Moring (1991 #281).
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) *Comments:* Although timing of the most recent event is not well constrained, a late Quaternary time is suggested for most of the faults by reconnaissance photogeologic mapping of Dohrenwend and Moring (1991 #281) and Dohrenwend and others (1996 #2846); latest Pleistocene and (or) Holocene faulting is suspected near Antelope Valley (Dohrenwend and Moring, 1991 #281). Pezzopane (1993 #3544), Geomatrix Consultants, Inc. (1995 #3593), and Weldon and others (2002 #5648), mapped most of the fault zone in Oregon as middle and late Quaternary (<700-780 ka), with the exception of several short, latest Quaternary scarps at the north end of the zone. These younger scarps may be related

	to faulting events on the more-recently active Steens fault zone [856] located on the west side of Pueblo Valley. Madin and others (1996 #3479) mapped faults in the northern part of the fault zone as active in the Quaternary.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* No slip studies have been performed on the East Pueblo Valley fault zone. dePolo (1998 #2845) estimated a reconnaissance vertical slip rate of 0.01 mm/yr (0.003 to 0.07 mm/yr) for his East Pueblo Valley fault swarm, but this estimate is based on an empirical relationship between maximum basal facet height and vertical slip rate, rather than field data. The late Quaternary characteristics of this fault (geomorphic expression, continuity of scarps, age of faulted deposits) support a low slip rate, so the less than 0.2 mm/yr slip-rate category is assigned herein.
Date and Compiler(s)	2016 Thomas L. Sawyer, Piedmont Geosciences, Inc. Stephen F. Personius, U.S. Geological Survey Kathleen M. Haller, U.S. Geological Survey
References	#2845 dePolo, C.M., 1998, A reconnaissance technique for estimating the slip rate of normal-slip faults in the Great Basin, and application to faults in Nevada, U.S.A.: Reno, University of Nevada, unpublished Ph.D. dissertation, 199 p. #281 Dohrenwend, J.C., and Moring, B.C., 1991, Reconnaissance photogeologic map of young faults in the Vya 1° by 2° quadrangle, Nevada, Oregon, and California: U.S. Geological Survey Miscellaneous Field Studies Map MF-2174, 1 sheet, scale 1:250,000. #2846 Dohrenwend, J.C., Schell, B.A., Menges, C.M., Moring, B.C., and McKittrick, M.A., 1996, Reconnaissance photogeologic map of young (Quaternary and late Tertiary) faults in Nevada, *in* Singer, D.A., ed., Analysis of Nevada's metal-bearing mineral resources: Nevada Bureau of Mines and Geology Open-File Report 96-2, 1 pl., scale 1:1,000,000. #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. #3479 Madin, I.P., Ferns, M.F., Langridge, R., Jellinek, A.M., and Priebe, K., 1996, Final report to Bonneville Power Administration U.S. Department of Energy Portland General Electric Company—Geothermal resources of southeast Oregon: State of Oregon, Department of Geology and Mineral Industries Open-File Report OFR-0-96-4, 41 p., 6 pls. #7390 Minor, S.A., Vander Meulen, D.B., Rytuba, J.J., and Vercoutere, T.L., 1989, Geologic map of the Windy Point quadrangle, Harney County, Oregon: U.S. Geological Survey Open-File Report 89-212, scale 1:24,000. #3544 Pezzopane, S.K., 1993, Active faults and earthquake ground motions in Oregon: Eugene, Oregon, University of Oregon, unpublished Ph.D. dissertation, 208 p. #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. #3559 Walker, G.W., and Repenning, C.A., 1965, Reconnaissance geologic map of the Adel quadrangle, Lake, Harney, and Malheur Counties, Oregon: U.S. Geological Survey Miscellaneous Geologic Investigations I-446, 1 sheet, scale 1:250,000. #3002 Willden, R., 1964, Geology and mineral deposits of Humboldt County, Nevada: Nevada Bureau of Mines and Geology Bulletin 59, 154 p., scale 1:250,000.