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Quaternary Fault and Fold Database of the United States

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Eastern Humboldt Range fault zone (Class A) No. 1637

Last Review Date: 1999-03-11

citation for this record: **Adams, K., and Sawyer, T.L., compilers, 1999, Fault number 1637, Eastern Humboldt Range 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 02:35 PM.**

Synopsis	This generally continuous zone is comprise of range-front and piedmont faults on the eastern margin of the Humboldt Range and in western Buena Vista Valley. The Humboldt Range is a major east-tilted fault block. Range-front faults juxtaposes Quaternary alluvium and Quaternary-Tertiary volcanic rocks against older bedrock and are expressed as the linear and locally abrupt east front of the Humboldt Range. Piedmont faults are expressed as a series of discontinuous east-facing scarps developed on Quaternary alluvium. Detailed and regional geologic mapping and reconnaissance photogeologic mapping are the sources of data. Trench investigations and detailed studies of scarp morphology have not been conducted.
Name	Refers to range-front normal faults along eastern side of the

comments	Humboldt Range and in western Buena Vista Valley that extend from near Fitting to the north end of the range about 5 km south of Mill City. The piedmont faults are discontinuous adjacent to the range front from near mouth of Cottonwood Canyon northward to alluvial fan of Santa Clara Canyon and in western Buena Vista Valley. dePolo (1998 #2845) referred to these faults as the Eastern Humboldt Range fault system. **Fault ID:** Refers to fault number LL22 of dePolo (1998 #2845).
County(s) and State(s)	PERSHING COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* Fault locations based on 1:62,500-scale maps of Wallace and others (1969 #3027) and Silberling and Wallace (1967 #3025). Fault locations were checked against the 1:250,000-scale map of Johnson (1977 #2569) and the 1:250,000-scale photogeologic maps of Dohrenwend and others (1991 #285) and Slemmons (1974, unpublished Lovelock 1? X 2? sheet).
Geologic setting	This generally continuous normal fault zone bounds the eastern side of the Humboldt Range and western margin of the Buena Vista Valley. East of the range front, there are discontinuous piedmont faults from near mouth of Cottonwood Canyon northward to alluvial fan of Santa Clara Canyon and in western Buena Vista Valley (Silberling and Wallace, 1967 #3025; Wallace and others, 1969 #3027; Dohrenwend and others, 1991 #285; Slemmons, 1974 unpublished Lovelock 1? X 2? sheet). The Humboldt Range is a major east-tilted fault block (Stewart, 1978 #2866).
Length (km)	33 km.
Average strike	N4°E
Sense of movement	Normal *Comments:* Inferred from topography and as shown by Silberling and Wallace (1967 #3025), Wallace and others (1969 #3027), Slemmons (1974, unpublished Lovelock 1? X 2? sheet), and

	Dohrenwend and others (1991 #285) .
Dip Direction	E
Paleoseismology studies	
Geomorphic expression	Range-front faults are expressed as the linear and locally abrupt east front of the Humboldt Range. Piedmont faults are expressed as a series of discontinuous east-facing scarps developed on Quaternary alluvium (Silberling and Wallace, 1967 #3025; Wallace and others, 1969 #3027; Dohrenwend and others, 1991 #285; Slemmons, 1974, unpublished Lovelock 1? X 2? sheet).
Age of faulted surficial deposits	Faults in this zone displace late Pleistocene alluvium (Dohrenwend and others, 1991 #285), latest Pleistocene deposits of Lake Lahontan (Wallace and others, 1969 #3027), Quaternary alluvium, and Quaternary-Tertiary basalt (Silberling and Wallace, 1967 #3025; Wallace and others, 1969 #3027; Johnson, 1977 #2569; Dohrenwend and others, 1991 #285).
Historic earthquake	
Most recent prehistoric deformation	latest Quaternary (<15 ka) *Comments:* Although timing of most recent event is not well constrained, a latest Quaternary time is suggested by detailed geologic mapping of Wallace and others (1969 #3027), which is generally consistent with mapping by Silberling and Wallace (1967 #3025), Slemmons (1967 #156), Johnson (1977 #2569), and Dohrenwend and others (1991 #285).
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* No detailed data exists to determine slip rates for this fault. dePolo (1998 #2845) assigned a reconnaissance vertical slip rate of 0.01 mm/yr for the fault based on the presence of scarps on alluvium and the absence of basal facets. The late Quaternary characteristics of this fault (overall geomorphic expression, continuity of scarps, age of faulted deposits, etc.) support a low slip rate. Accordingly, the less than 0.2 mm/yr slip-rate category has been assigned to this fault.

Date and Compiler(s)	1999 Kenneth Adams, Piedmont Geosciences, Inc. Thomas L. Sawyer, Piedmont Geosciences, Inc.
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. #285 Dohrenwend, J.C., McKittrick, M.A., and Moring, B.C., 1991, Reconnaissance photogeologic map of young faults in the Lovelock 1° by 2° quadrangle, Nevada and California: U.S. Geological Survey Miscellaneous Field Studies Map MF-2178, 1 sheet, scale 1:250,000. #2569 Johnson, M.G., 1977, Geology and mineral deposits of Pershing County, Nevada: Nevada Bureau of Mines and Geology Bulletin 89, 115 p., scale 1:250,000. #3025 Silberling, N.J., and Wallace, R.E., 1967, Geologic map of the Imlay quadrangle, Pershing County, Nevada: U.S. Geological Survey Geologic quadrangle Map GQ-666, scale 1:62,500. #2866 Stewart, J.H., 1978, Basin-range structure in western North America—A review, *in* Smith, R.B., and Eaton, G.P., eds., Cenozoic tectonics and regional geophysics of the western cordillera: Geological Society of America Memoir 152, p. 1-31, scale 1:2,500,000. #3027 Wallace, R.E., Tatlock, D.B., Silberling, N.J., and Irwin, W.P., 1969, Geologic map of the Unionville quadrangle, Pershing County, Nevada: U.S. Geological Survey Geologic quadrangle Map GQ-820, scale 1:62,500.