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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.

Blue Mountain fault (Class A) No. 2084

Last Review Date: 2016-01-11

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources

citation for this record: **Machette, M.N., and Jochems, A.P., compilers, 2016, Fault number 2084, Blue Mountain 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 02:22 PM.**

Synopsis	This northeast-striking, down-to-the northwest fault offsets Oligocene volcanic rocks along its northern part and Pleistocene alluvium along its southern part. Although no detailed studies have been made of the fault scarps or the fault's Pleistocene history, the size of the scarps and general age limits of the associated alluvium imply multiple movements in the early and middle Pleistocene; the most recent faulting may have occurred as recently as the late Pleistocene although no detailed studies have been conducted to confirm this assertion.
Name comments	Named by Elston (1957 #1031) for the fault's location along the northwest margin of Blue Mountain, about 5 km northwest of

	Dwyer (Faywood), New Mexico. The northern end of the fault is about 3 km west of Swartz, New Mexico (Seager and others, 1982 #626). From here it extends south-southwest to Table Mountain (Elston, 1957 #1031). Seager and others (1982 #626) showed the fault as concealed to as far southwest as City of Rocks State Park.
County(s) and State(s)	GRANT COUNTY, NEW MEXICO
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:125,000 and 1:24,000 scale. *Comments:* The fault was shown on an earlier 1:48,000-scale map by Elston (1957 #1031) and later included in the 1:125,000-scale map of Seager and others (1982 #626). Fault trace is compiled from these maps and accurately placed using photogrammetric methods.
Geologic setting	This northeast-trending fault downdrops Oligocene volcanic rocks to the west and offsets Quaternary sediment along its southern half. Elston (1957 #1031) considered the fault to be Neogene, but Seager and others (1982 #626) showed it as offsetting Pleistocene sediment. Elston (1957 #1031) reported the fault as having about 330 m of throw in Tertiary volcanic rocks south of Mimbres Peak.
Length (km)	15 km.
Average strike	N46°E
Sense of movement	Normal *Comments:* Elston (1957 #1031) reported a rake of 80° NE for slickenlines on a bedrock exposure of the fault in San Jose Canyon, suggesting almost pure normal slip.
Dip	62° NW *Comments:* Elston (1957 #1031) reports a dip of 62° NW from a bedrock exposure of the fault in San Jose Canyon.
Paleoseismology	

studies	
Geomorphic expression	The fault forms a discontinuous strike valley in Oligocene rocks north of Blue Mountain and a prominent northwest-facing escarpment on Tertiary and Quaternary deposits south of Blue Mountain. Seager and others (1982 #626) showed the fault as offsetting southeast- and southwest-sloping Quaternary surfaces (unit Q1p), and inspection of 1:24,000-scale topographic maps of the area (Table Mountain and Whitehouse Mountain 7.5-minute quadrangles) confirm the presence of a nearly continuous scarp on these surfaces. The scarp appears to be about 10–15 m high on the basis of topographic projection and probable correlation of alluvial surfaces on both sides of the fault. In particular, down-to-the-northwest motion on the fault has formed a scarp that opposes the local geomorphic gradient, thereby deflecting drainages between Table Mountain and Blue Mountain. To the south, near City of Rocks State Park, the fault forms a 13-m-high northwest-facing scarp that controls and may have been freshened by local drainage.
Age of faulted surficial deposits	Seager and others (1982 #626) showed the fault as offsetting undifferentiated Quaternary sediment of early to middle Pleistocene age. However, Seager (written commun., 1998) now believes that these deposits are more likely of early Pleistocene age and are correlative with the upper part of the Camp Rice Formation.
Historic earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) *Comments:* Maximum time of faulting is from age of deposits as shown by Seager and others (1982 #626). However, he now considers these deposits to only be as young as early Pleistocene. The size of the scarps (10–15 m) suggests multiple faulting events in the early to middle (?) Pleistocene, although additional movement could have occurred in the late Pleistocene.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Low slip-rate category assigned based on estimated 10–15 m of offset of Quaternary deposits (<1.6 Ma to perhaps

	<750 ka).
Date and Compiler(s)	2016 Michael N. Machette, U.S. Geological Survey, Retired Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
References	#1031 Elston, W.E., 1957, Geology and mineral resources of Dwyer quadrangle, Grant, Luna, and Sierra Counties, New Mexico: [New Mexico] Bureau of Mines and Mineral Resources Bulletin 38, 86 p., 4 pls. #626 Seager, W.R., Clemons, R.E., Hawley, J.W., and Kelley, R.E., 1982, Geology of northwest part of Las Cruces 1° x 2° sheet, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic Map 53, 3 sheets, scale 1:125,000.