

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](#).

unnamed faults on the Cliff surface (Class A) No. 1989

Last Review Date: 2016-04-22

citation for this record: Jochems, A.P., compiler, 2016, Fault number 1989, unnamed faults on the Cliff surface, 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 02:25 PM.

Synopsis	These faults form subtle flexures on the Cliff surface just west of the Cliff fault [2111]. They appear to deform middle (?) Pleistocene piedmont deposits and the underlying Pliocene Ceja Formation. The geometry of the faults is mostly obscured by erosion and degradation of fault scarps as well as intermittent cover by alluvium and eolian sand. No detailed studies of the faults have been made.
Name comments	These faults were previously included with intrabasin faults on the Llano de Albuquerque [2121]. They are considered as separate structures here because of their discontinuity with faults in that dataset (Machette and McGimsey, 1983 #1024).
County(s) and	SOCORRO COUNTY, NEW MEXICO

State(s)	SUCURRO COUNTY, NEW MEXICO
Physiographic province(s)	BASIN AND RANGE
Reliability of location	<p>Good Compiled at 1:24,000 scale.</p> <p><i>Comments:</i> Fault trace from 1:24,000-scale mapping by Machette (1978 #1400) and Connell and McCraw (2007 #7475) combined with accurate placement using photogrammetric methods.</p>
Geologic setting	<p>These intrabasin faults are located in the southernmost Belen sub-basin of the Albuquerque basin of the Rio Grande rift. They are likely both synthetic and antithetic to the nearby Cliff fault [2111] less than a kilometer to the east. The faults form subtle flexures and scarps on the Cliff surface that has been correlated with the Llano de Albuquerque (Machette, 1978 #1400 and #1433; Machette and McGimsey, 1983 #1024; Machette, 1985 #1267). The faults displace middle (?) Pleistocene piedmont deposits and the underlying Pliocene Ceja Formation (Connell and McCraw, 2007 #7475).</p>
Length (km)	8 km.
Average strike	N4°W
Sense of movement	Normal
Dip	<p><i>Comments:</i> No dip values or directions are given for these faults in available 1:24,000-scale maps. However, photogrammetric investigations suggest that their degraded scarps face both east and west.</p>
Paleoseismology studies	
Geomorphic expression	<p>These faults form subtle flexures on the Cliff surface just west of the Cliff fault [2111]. The geometry and morphology of the faults is mostly obscured by erosion and degradation of fault scarps as well as intermittent cover by alluvium and eolian sand. However, photogrammetric investigations suggest that their degraded scarps face both east and west.</p>

Age of faulted surficial deposits	The faults deform middle (?) Pleistocene piedmont deposits but are buried by younger (upper Pleistocene to Holocene) alluvium and eolian sand (Machette, 1978 #1400; Connell and McCraw, 2007 #7475). Machette (1978 #1400, 1978 #1433) suggests that the erosional Cliff surface, which is cut by the faults, correlates to the Llano de Albuquerque to the north and has relict soil ages ranging from 440–140 ka. These ages are derived from pedogenic carbonate content and regional rates of soil formation. The faults do not appear to displace upper Pleistocene Rio Salado terrace gravels (Machette, 1978 #1400).
Historic earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) <i>Comments:</i> Timing based on deformation of the Cliff surface, dated to approximately 440–140 ka based on relict soils, and no observations of deformation of upper Pleistocene Rio Salado terrace gravels (Machette, 1978 #1400 and #1433). The degraded surface expression of the faults generally supports this conclusion.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr <i>Comments:</i> The fault is assigned a Quaternary slip rate of less than 0.2 mm/yr based on degraded scarps formed on middle (?) Pleistocene deposits and surfaces.
Date and Compiler(s)	2016 Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
References	#7475 Connell, S.D., and McCraw, D.J., 2007, Preliminary geologic map of the La Joya NW quadrangle, Socorro County, New Mexico: New Mexico Bureau of Geology and Mineral Resources Open-File Geologic Map 140, scale 1:24,000. #1400 Machette, M.N., 1978, Geologic map of the San Acacia quadrangle, Socorro County, New Mexico: U.S. Geological Survey Geologic quadrangle Map GQ-1415, 1 sheet, scale 1:24,000. #1433 Machette, M.N., 1978, Late Cenozoic geology of the San

Acacia-Bernardo area, *in* Hawley, J.W., ed., Guidebook to Rio Grande rift in New Mexico and Colorado: New Mexico Bureau of Mines and Mineral Resources Circular 163, p. 135-137.

#1267 Machette, M.N., 1985, Calcic soils of the southwestern United States, *in* Weide, D.L., ed., Soils and Quaternary geology of the southwestern United States: Geological Society of America Special Paper 203, p. 1–21.

#1024 Machette, M.N., and McGimsey, R.G., 1983, Map of Quaternary and Pliocene faults in the Socorro and western part of the Fort Sumner 1° x 2° quadrangles, central New Mexico: U.S. Geological Survey Miscellaneous Field Studies Map MF-1465-A, 12 p. pamphlet, 1 sheet, scale 1:250,000.

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