

# 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 along San Mateo Mountains (Class A) No. 2131

Last Review Date: 2016-02-12

### 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 2131, unnamed faults along San Mateo Mountains, 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 02:21 PM.

#### Synopsis

This unnamed group of faults is about 2–3 km inboard of the eastern margin of the southern part of the San Mateo Mountains. There are two piedmont scarps along the northern part of the fault. Both scarps have anomalous down-to-the-west motion, which opposes the regional (i.e., basin-range) pattern of uplifted ranges and downdropped basins. However, this information was gleaned from aerial photographs and topographic maps; only the northern part has been field checked. No detailed study has been made of fault-scarp morphology or the age of Quaternary deposits within and adjacent to the fault zone.

<b>Name comments</b>	Mapped but not named during reconnaissance investigations for a study of regional Quaternary and late Pliocene faults (Machette, 1987 #960). The faults extend from 2 km southwest of Big Rosa Canyon, south past the Melton Ranch at North Canyon (Tenmile Hill 7.5-minute quadrangle) to Cuervo Canyon (Steel Hill 7.5-minute quadrangle) along the eastern margin of the San Mateo Mountains. Also includes a short subparallel fault trace to the east of the southern part of the main fault trace.
<b>County(s) and State(s)</b>	SIERRA COUNTY, NEW MEXICO SOCORRO COUNTY, NEW MEXICO
<b>Physiographic province(s)</b>	BASIN AND RANGE
<b>Reliability of location</b>	Good Compiled at 1:24,000 scale.  <i>Comments:</i> Traces from 1:24,000-scale map of Ferguson (1988 #1227) and unpublished 1:24,000-scale mapping by Machette (1987 #960) combined with accurate placement using photogrammetric methods.
<b>Geologic setting</b>	This 40-km-long, unnamed fault lies 2–3 km inboard of the eastern margin of the San Mateo Mountains. It, and a subparallel strand southeast of the southern part, have down-to-the-west motion that opposes the regional pattern of uplifted ranges and downdropped basins.
<b>Length (km)</b>	41 km.
<b>Average strike</b>	N0°E
<b>Sense of movement</b>	Normal
<b>Dip Direction</b>	W
<b>Paleoseismology studies</b>	
<b>Geomorphic expression</b>	These faults form small, discontinuous west-facing scarps on piedmont surfaces graded to the San Marcial Basin between Big Rosa Canyon on the north and North Canyon on the south. The west-facing scarps oppose the gradient of the piedmont slope on which they are formed, and thus are quite apparent on aerial

	<p>photographs. Ferguson (1988 #1227) noted that the scarps just north of the Melton Ranch are as much as 8 m high, but become progressively smaller toward the northern of the fault. No detailed study has been made of fault-scarp morphology nor have the scarps within bedrock been field checked.</p>
<b>Age of faulted surficial deposits</b>	<p>Machette's (unpubl., 1981) notes indicate that the west-facing scarps are formed on old piedmont-slope deposits, which are probably middle Pleistocene in age. Ferguson (1988 #1227) mapped these deposits as the Palomas Formation, which is considered to be of Pliocene to Pleistocene age. The constructional surface of the Palomas Formation is probably of middle to early Pleistocene age (Mack and others, 1993 #1020). Ferguson also noted that there are anomalous clayey deposits in the Palomas Formation that are exposed on the south bank of North Canyon, just west of the scarp near the Melton Ranch. These deposits probably represent temporary damming of the drainage of North Canyon as a result of down-to-the-west movement on the main strand of the fault. No detailed mapping of Quaternary deposits along this fault zone has been conducted to help further resolve the age of faulted deposits.</p>
<b>Historic earthquake</b>	
<b>Most recent prehistoric deformation</b>	<p>middle and late Quaternary (&lt;750 ka)</p> <p><i>Comments:</i> Timing based on degraded nature of fault scarps (Machette, 1987 #960) as they appear on aerial photographs and from inferred age of the constructional surface of the Palomas Formation.</p>
<b>Recurrence interval</b>	
<b>Slip-rate category</b>	<p>Less than 0.2 mm/yr</p> <p><i>Comments:</i> Low slip-rate category assigned based on the inference that the 8-m-high scarp noted by Ferguson (1988 #1227) as the maximum size of scarp (and offset) formed on the Palomas Formation, and an age of 700–900 ka for the surface (Mack and others, 1993 #1020).</p>
<b>Date and Compiler(s)</b>	<p>2016</p> <p>Michael N. Machette, U.S. Geological Survey, Retired Andrew P. Jochems, New Mexico Bureau of Geology &amp; Mineral</p>

	Resources
<b>References</b>	<p>#1227 Ferguson, C.A., 1988, Geology of the Tenmile Hill 7.5' quadrangle, Socorro County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-File Report 283, 21 p., 2 pls.</p> <p>#960 Machette, M.N., 1987, Preliminary assessment of Quaternary faulting near Truth or Consequences, New Mexico: U.S. Geological Survey Open-File Report 87-652, 40 p.</p> <p>#1020 Mack, G.H., Salyards, S.L., and James, W.C., 1993, Magnetostratigraphy of the Plio-Pleistocene Camp Rice and Palomas formations in the Rio Grande rift of southern New Mexico: American Journal of Science, v. 293, p. 49–77.</p>

[Questions or comments?](#)

[Facebook](#) [Twitter](#) [Google](#) [Email](#)

[Hazards](#)

[Design](#) [Ground Motions](#) [Seismic Hazard Maps & Site-Specific Data](#) [Faults](#) [Scenarios](#)  
[Earthquakes](#) [Hazards](#) [Data](#) [Education](#) [Monitoring](#) [Research](#)



[Home](#) [About Us](#) [Contacts](#) [Legal](#)