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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.

Manzano fault (Class A) No. 2119

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

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Synopsis	The Manzano fault forms the eastern margin of the Rio Grande rift in the central part of the Albuquerque-Belen basin. The fault is generally mapped as having a buried trace; only several degraded, discontinuous scarps have been mapped on early to middle Pleistocene deposits, mostly along the northern part of the Manzano fault between White Rock Canyon and Cañon del Trigo. However, the Manzano fault must control the steep west-facing front of the Manzano Mountains and thus may have undergone early Pleistocene or Pliocene movement as with the Los Piños fault [2118].
Name	The Manzano fault was named after the Manzano Mountains

comments	(Spanish for apple), which form a steep escarpment along the eastern edge of the central Albuquerque-Belen basin. Most maps show the Manzano fault as a northern continuation of the Los Piños fault [2118], from near U.S. Highway 60 northward about 55 km along the steep eastern flank of the Manzano Mountains, to near the mouth of Hell Canyon at the Bernalillo/Valencia County line (Read and others, 1944 #1416; Reiche, 1949 #1417; Kelley, 1954 #1222; Myers and McKay, 1970 #1406; Baltz, 1976 #1431; Kelley, 1977 #1106; Machette, 1982 #1401; Machette and McGimsey, 1983 #1024; Chamberlin and others, 1997 #1768). Chamberlin and others (1997 #1768) named the northernmost part of the fault the "Manzanita fault," but the name "Manzano fault" is retained herein for the entire structure to reduce confusion. **Fault ID:** Fault no. 5 of Machette (1982 #1401), fault no. 4 of Machette and McGimsey (1983 #1024).
County(s) and State(s)	SOCORRO COUNTY, NEW MEXICO BERNALILLO COUNTY, NEW MEXICO TORRANCE COUNTY, NEW MEXICO VALENCIA COUNTY, NEW MEXICO
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Poor Compiled at 1:24,000 scale. *Comments:* Published maps show the fault as dotted (buried) along most of its length. Thus, the true surface location is generally poorly controlled except for discontinuous scarps in several areas (primarily between White Rock Canyon and Cañon del Trigo on the Bosque Peak and Capilla Peak 7.5-minute quadrangles). Fault traces are from 1:24,000-scale geologic mapping of Karlstrom and others (1997 #1768; revised in 2002 by Chamberlin and others), Karlstrom and others (1999 #7462, 2000 #7463), Baer and others (2004 #7461), Rawling and McCraw (2004 #7466), Luther and others (2005 #7464), Rawling (2005 #7465), and Scott and others (2005 #7467).
Geologic setting	The Manzano fault forms part of the eastern margin of the Rio Grande rift and the Albuquerque-Belen basin. Luther and others (2005 #7464) estimated a throw of approximately 1500 m across the fault from restored cross-sections of geologic mapping on the Becker 7.5-minute quadrangle; this amount increases to nearly

	2000 m along the central and northern traces of the fault (e.g., Karlstrom and others, 2000 #7463). A shallow bedrock bench underlies much of the piedmont between the southern Manzano and Los Piños [2118] faults and more active intrabasin faults to the west.
Length (km)	54 km.
Average strike	N9°E
Sense of movement	Normal
Dip Direction	W
Paleoseismology studies	
Geomorphic expression	In most places, the fault is marked by a steep mountain front, but degraded, discontinuous fault scarps have been mapped between White Rock Canyon and Cañon del Trigo (Karlstrom and others, 1999 #7462 and 2000 #7463). Vegetation lineaments may define the fault trace in places (Karlstrom and others, 1999 #7462).
Age of faulted surficial deposits	The ages of faulted deposits are unknown; deposits are probably lower Pleistocene along most of the fault (Machette and McGimsey, 1983 #1024), and middle (?) Pleistocene between White Rock Canyon and Cañon del Trigo.
Historic earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) *Comments:* Timing estimates based on the geomorphology of the western flank of the Manzano Mountains suggest an early Pleistocene age for the most recent paleoevent (Machette and McGimsey, 1983 #1024), but degraded fault scarps between White Rock Canyon and Cañon del Trigo (Karlstrom and others, 1999 #7462, 2000 #7463) could indicate a middle Pleistocene age.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* No published studies of fault offset or age of offset

	deposits are available; the assigned slip-rate category is based on lack of prominent fault scarps and low rates of slip on analog faults in this part of the Rio Grande rift.
Date and Compiler(s)	2016 Stephen F. Personius, U.S. Geological Survey Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
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