

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](#).

West Robledo fault (Class A) No. 2064

Last Review Date: 2015-12-21

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

citation for this record: Machette, M.N., and Jochems, A.P., compilers, 2015, Fault number 2064, West Robledo 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 Quaternary fault bounds the west side of the Robledo Mountains and the Aden Hills to form the western margin of a wide horst block. The West Robledo fault continues southward into Mexico [MX-94]. Much of the fault offsets the upper La Mesa (geomorphic) surface of probable early Quaternary age. No detailed studies have been made of the fault or its scarp morphology.
Name comments	This fault was first mapped by Kottlowski (1960 #1010), but he did not name it. The first and only name applied is the West Robledo fault (Seager and Clemons, 1975 #1002), which serves to differentiate it from the East Robledo fault [2063]. Its surface

	<p>trace extends from the north edge of Robledo Mountain (about 3 km southwest of Fort Selden), southwest along the west side of Robledo Mountain (Seager and others, 1987 #627). It crosses Interstate Highway 10 about 25 km west of Las Cruces, New Mexico. From here, the fault extends southwest across the La Mesa surface, along the west side of the Aden Hills, and south through basalt flows of the West Potrillo Mountains (Seager and others, 1987 #627). It continues past the International Boundary southward into Mexico [MX-94].</p>
County(s) and State(s)	DOÑA ANA 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> Kottlowski (1960 #1010) appears to have been the first to show the fault on a Quaternary geologic map, although he only mapped the northern portion, which is on the Las Cruces 15-minute quadrangle. Seager and others (2008 #7298) mapped the fault at 1:24,000 from the Robledo Mountains to about 3 km east of the Sleeping Lady Hills, and a generalized trace of the entire fault north of the International Boundary is shown on the 1:125,000-scale maps of Seager and others (1987 #627) and Seager (1995 #975).</p>
Geologic setting	<p>The fault bounds the uplifted Robledo Mountain block and Aden Hills and places Paleozoic and Tertiary rock in the footwall (east side) against Quaternary sediment on the hanging wall (west side). Between these two uplifts, the fault is entirely within sediment of the Camp Rice Formation and deforms the upper La Mesa (geomorphic) surface. South of the Aden Hills, the fault is entirely within Quaternary basalt flows of the West Potrillo Mountains. The West Robledo [2064] and East Robledo [2063] faults form a southward-widening horst block that separates the Mesilla Basin to the east from the Mimbres Basin to the west.</p>
Length (km)	103 km.
Average strike	N8°E
Sense of movement	Normal

Dip Direction	W <i>Comments:</i> The fault is shown as a high-angle structure on cross sections of Seager and others (1987 #627; 2008 #7298). However, no specific dip values are shown on these maps.
Paleoseismology studies	
Geomorphic expression	The fault offsets the upper (?) La Mesa surface less than 10 m near Interstate Highway 10, and the throw does not appear to increase much to the south. To the north of Corralitos Ranch, the fault controls north-northwest-trending stream drainages. No detailed studies have been made of the fault or its scarp morphology.
Age of faulted surficial deposits	As shown on the map of Seager and others (1987 #627), faulted Quaternary units include the upper part of the Camp Rice Formation, early to middle (?) Pleistocene, the upper (?) La Mesa surface (constructional top of Camp Rice Formation), and Quaternary basalts of the West Potrillo Mountains. The upper La Mesa is probably a local, tectonically uplifted surface that is not regionally significant as a stratigraphic datum; however, it clearly pre-dates the lower La Mesa, which is believed to have stabilized about 700–900 ka (Mack and others, 1993 #1020). The presence of 1.2-Ma basalt on the upper La Mesa surface (Seager, 1995 #975) suggests it is of early Quaternary age. No measurements of offset of the La Mesa surface or the basalt are published; however, topographic maps indicate little (<10 m) offset of the La Mesa surface in the vicinity of Interstate Highway 10.
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) <i>Comments:</i> Timing based on offset of upper (?) La Mesa surface (>1.2 Ma). However, middle Pleistocene or younger faulting may have occurred.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr <i>Comments:</i> Low slip-rate category assigned based on less than 10

	m of offset of upper (?) La Mesa surface (>1.2 Ma).
Date and Compiler(s)	2015 Michael N. Machette, U.S. Geological Survey, Retired Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
References	<p>#1010 Kottowski, F.E., 1960, Reconnaissance geologic map of Las Cruces thirty-minute quadrangle: New Mexico Bureau of Mines and Mineral Resources Geologic Map 14, 1 sheet, scale 1:126,720.</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> <p>#975 Seager, W.R., 1995, Geology of southwest quarter of Las Cruces and northwest El Paso 1° x 2° sheets, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic Map 60, 5 sheets, scale 1:125,000.</p> <p>#1002 Seager, W.R., and Clemons, R.E., 1975, Middle to Late Tertiary geology of Cedar Hills-Selden Hills area, New Mexico: New Mexico Bureau of Mines and Mineral Resources Circular 133, 24 p., 2 pls.</p> <p>#627 Seager, W.R., Hawley, J.W., Kottowski, F.E., and Kelley, S.A., 1987, Geology of east half of Las Cruces and northeast El Paso 1° x 2° sheets, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic Map 57, 3 sheets, scale 1:125,000.</p> <p>#7298 Seager, W.R., Kottowski, F.E., and Hawley, J.W., 2008, Geologic map of the Robledo Mountains and vicinity, Doña Ana County, New Mexico: New Mexico Bureau of Geology and Mineral Resources Open-File Report 509, 2 sheets, scale 1:24,000.</p>

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