

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](#).

Mastodon fault (Class A) No. 2067

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 2067, Mastodon 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	No studies have been made on this down-to-the-west intrabasin fault that offsets La Mesa surface by 3–6 m. It produces a west-facing scarp that has a thick cover of eolian sand in many places. The fault trace appears as an irregular escarpment on topographic maps and aerial photographs.
Name comments	First mapped by Seager and others (1987 #627), this fault was later named by Hawley and Lozinsky (1992 #985), most likely for the Mastodon railroad siding (Strauss 7.5° quadrangle, 1955 version).
County(s) and	DOÑA ANA COUNTY, NEW MEXICO

State(s)	DONA 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> The location of the fault is mapped using trace from 1:125,000-scale map of Seager and others (1987 #627) and 1:100,000-scale map (plate 1) of Hawley and Lozinsky (1992 #985) combined with accurate placement using photogrammetry.</p>
Geologic setting	This down-to-the-west intrabasin fault offsets the La Mesa surface, which is underlain by sediment of the Camp Rice Formation. It produces a west-facing fault scarp which is obscured in many places by a thick cover of eolian sand. It is one of many intrabasin faults in the southern Mesilla Basin.
Length (km)	14 km.
Average strike	N38°W
Sense of movement	<p>Normal</p> <p><i>Comments:</i> Inferred from cross sections of Seager and others (1987 #627) and regional geology (Cenozoic extension).</p>
Dip Direction	SW
Paleoseismology studies	
Geomorphic expression	This fault forms west-facing scarps that are largely obscured by a thick cover of eolian sand. The surface of the relatively flat La Mesa surface appears to be offset 3–6 m as determined from generalized surface elevations on either side of the fault. In addition, the trace of the fault is irregular, suggesting substantial erosion of the scarp (i.e., a fault-line scarp) in many places.
Age of faulted surficial deposits	La Mesa surface and underlying Camp Rice Formation are offset by the fault. Elsewhere in the Mesilla basin, the lower La Mesa surface (which is recognized to the north, west of Las Cruces) is considered to have been established between 700–900 ka (Mack and others, 1993 #1020).
Historic	

earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) <i>Comments:</i> Timing based on offset of La Mesa surface.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr <i>Comments:</i> Low slip-rate category assigned based on small (3–6 m) scarps on middle Quaternary surface.
Date and Compiler(s)	2015 Michael N. Machette, U.S. Geological Survey, Retired Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
References	#985 Hawley, J.W., and Lozinsky, R.P., 1992, Hydrogeologic framework of the Mesilla Basin in New Mexico and western Texas: New Mexico Bureau of Mines and Mineral Resources Open-File Report 323, 50 p., 17 pls. #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. #627 Seager, W.R., Hawley, J.W., Kottlowski, 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.

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