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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.

Cemetery fault (Class A) No. 2000

Last Review Date: 2016-07-13

citation for this record: **Cikoski, C.T., compiler, 2016, Fault number 2000, Cemetery 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 02:23 PM.**

Synopsis	The Cemetery fault is a southeast-striking, down-to-the-southwest normal fault underlying a low (<6-m-high) scarp in the depositional top of the Santa Fe Group (age of surface approximately 700–800 ka). The scarp is commonly concealed by post-Santa Fe Group alluvium and eolian material; neither of these deposits show evidence for deformation associated with fault activity. Surface deformation therefore likely ceased in the middle Pleistocene. Axial-fluvial sandstones of the Sierra Ladrones Formation of the Santa Fe Group cropping out along the trace of the fault show evidence of soft sediment deformation, possibly induced by seismic activity along the fault.
Name comments	Named by Cikoski (2012 #7446).
County(s) and State(s)	SOCORRO COUNTY, NEW MEXICO
Physiographic	

Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* Compiled from 1:24,000 scale mapping (Cikoski, 2012 #7446), with additional DEM- and photogrammetry-based extrapolation.
Geologic setting	The Cemetery fault strikes southeast with down-to-the-southwest displacement across the southern portion of the Socorro basin of the Rio Grande rift. Exposures of the fault are poor. At the surface, the fault juxtaposes Sierra Ladrones Formation against itself, suggesting a relatively small amount of stratigraphic offset. The fault extends from the modern Rio Grande floodplain southeastward to the southwestern flank of the Cerro de la Campana, a set of low, eroded hills that lack evidence of relatively recent uplift. The fault cannot be followed with confidence beyond the Cerro de la Campana area. A notable feature of the Cemetery fault is the relative abundance of contorted bedding in outcrop of Sierra Ladrones Formation axial-fluvial sandstones in the vicinity of the fault. Seismic activity along the fault may have induced soft sediment deformation in saturated fluvial sands.
Length (km)	10 km.
Average strike	N40°W
Sense of movement	Normal
Dip Direction	SW
Paleoseismology studies	
Geomorphic expression	The Cemetery fault underlies a notable topographic "step" in outcrop of the Sierra Ladrones Formation, which can be followed into the eolian sand sheet-covered depositional top of the Sierra Ladrones. Across the top of the Sierra Ladrones, the fault underlies a low (<6-m-high), variably concealed scarp. Eolian sands and alluvial sediments from the Cerro de la Campana to the northeast (in the footwall block) blanket the fault scarp and do not appear deformed by the fault.

Age of faulted surficial deposits	The Cemetery fault produces a scarp in the depositional top of the Plio-Pleistocene Sierra Ladrones Formation of the Santa Fe Group. This surface has not been directly dated in the Socorro basin. Magnetostratigraphic work in the Albuquerque basin and the basins of the southern Rio Grande rift suggests the top of the Santa Fe Group is 700–800 ka (cf. Mack and others, 2006 #7447; Connell and others, 2013 #7235). Post-Santa Fe Group deposits crossing the trace of the fault do not appear offset, suggesting that surface deformation ceased after the middle Pleistocene.
Historic earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) *Comments:*
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr
Date and Compiler(s)	2016 Colin T. Cikoski, New Mexico Bureau of Geology & Mineral Resources
References	#7446 Cikoski, C.T., 2012, Geologic map of the San Antonio SE 7.5-minute quadrangle, Socorro County, New Mexico: New Mexico Bureau of Geology and Mineral Resources Open-File Geologic Map 228, scale 1:24,000. #7235 Connell, S.D., Smith, G.A., Geissman, J.W., and McIntosh, W.C., 2013, Climatic controls on nonmarine depositional sequences in the Albuquerque Basin, Rio Grande rift, north-central New Mexico, *in* Hudson, M.R., and Grauch, V.J.S., eds., New perspectives on Rio Grande rift basins—From tectonics to groundwater: Geological Society of America Special Paper 494, p. 383–425, doi:10.1130/2013.2494(15) #7447 Mack, G.H., Seager, W.R., Leeder, M.R., Perez-Arlucea, M., and Salyards, S.L., 2006, Pliocene and Quaternary history of the Rio Grande, the axial river of the southern Rio Grande rift, New Mexico, USA: Earth-Science Reviews 79, p. 141–162.

Questions or comments?