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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.

unnamed fold (Class A) No. 2057

Last Review Date: 2015-12-11

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 2057, unnamed fold, 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	Little is known about this structure. It is manifested at the surface as a north-trending fold that deforms basin-floor deposits of middle to late Pleistocene age (Seager and others, 1987 #627). No studies of morphology or detailed mapping have been published.
Name comments	This unnamed fold is shown by Seager and others (1987 #627) as extending north-south for about 3 km in the south-central part of the Tularosa basin (within White Sands National Monument).
County(s) and State(s)	OTERO COUNTY, NEW MEXICO
Physiographic	

Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* Location taken from 1:125,000-scale mapping of Seager and others (1987 #627). The location of the fault was digitized at 1:24,000 scale using photogrammetry to accurately map its trace from this map.
Geologic setting	This intrabasin fold may reflect faulting in the subsurface, or perhaps diapiric movement of low-density materials (shales, gypsum, etc.). The relatively small size of the fold implies that it is related to a source in the shallow subsurface.
Length (km)	3 km.
Average strike	N7°W
Sense of movement	Anticline
Dip Direction	E; W
Paleoseismology studies	
Geomorphic expression	The structure is expressed at the surface as a gentle dome-like fold that is elongate north-south.
Age of faulted surficial deposits	Seager and others (1987 #627) showed the fold developed in fine-grained basin floor deposits (middle to late Pleistocene). The structure deforms the surface of the deposits, and thus must postdate their deposition. These sediments are thought to have been deposited by a lake pre-dating pluvial Lake Otero, nearshore deposits of which have been dated to about 45 ka (Allen, 2005 #7302; Allen and others, 2009 #7303). The structure possibly pre-dates this age, and clearly deforms sediment deposited after initial incision of the ancestral Rio Grande ~800 ka (Mack and others, 1993 #1020). The fold is mapped between two areas of active gypsiferous sand dunes.
Historic earthquake	
Most recent prehistoric	middle and late Quaternary (<750 ka)

deformation	*Comments:* Timing based on Seager and others (1987 #627) estimate of the age of folded sediment.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Low uplift rate inferred from slip rates on associated faults in the Hueco basin to the south.
Date and Compiler(s)	2015 Michael N. Machette, U.S. Geological Survey, Retired Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
References	#7302 Allen, B.D., 2005, Ice age lakes in New Mexico, *in* Lucas, S.G., Morgan, G.S., and Zeigler, K.E., eds., New Mexico's Ice Ages: New Mexico Museum of Natural History and Science Bulletin 28, p. 107–114. #7303 Allen, B.D., Love, D.W., and Myers, R.G., 2009, Evidence for late Pleistocene hydrologic and climatic change from Lake Otero, Tularosa Basin, south-central New Mexico: New Mexico Geology, v. 31, p. 9–22. #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.