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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.

Sierro Kemado fault (Class A) No. 2079

Last Review Date: 2016-01-06

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

citation for this record: **Machette, M.N., and Jochems, A.P., compilers, 2016, Fault number 2079, Sierro Kemado 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 deforms Tertiary rocks as well as the upper (Quaternary) part of the Camp Rice Formation. Although much of the fault's movement probably occurred in the Tertiary, offset of Quaternary surfaces indicates reactivation of the fault. No detailed studies have been made of the fault's Quaternary history or its scarp's morphology.
Name comments	This fault was named by Seager and others (1975 #995) for Sierro Kemado, a small series of hills northwest of the Cedar Hills (Sierra Alta 7.5-minute quadrangle). The fault extends from Horse Canyon (about 2 km east of Sierro Kemado), where it splays from the Ward Tank fault [2078], north and northwest to

	Bignell Arroyo. Seager (1995 #975) considered the Sierro Kemado fault as a splay of the Ward Tank, but we treat it as a separate fault in this compilation.
County(s) and State(s)	DOÑA ANA COUNTY, NEW MEXICO
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* Compiled from trace of the fault from 1:24,000-scale map of Seager and others (1975 #995) combined with accurate placement using photogrammetric methods.
Geologic setting	The fault places Tertiary rock against sediment of the Camp Rice Formation. Along at least half of the fault, the trace is entirely within the Camp Rice. The Sierro Kemado fault may be a northwestward extension (splay) of the Ward Tank fault [2078] (Seager and others, 1975 #995).
Length (km)	7 km.
Average strike	N24°W
Sense of movement	Normal
Dip	65° SW; NE *Comments:* The only dip recorded by mapping along the fault is 65°, and this is along a southwest-dipping splay of the northeast-dipping main fault. Along the northwest half of the fault, there are three separate strands, each of which are shown as high-angle on cross sections by Seager and others (1975 #995).
Paleoseismology studies	
Geomorphic expression	From Rock Canyon north, the fault forms scarps on the Jornada I surface (middle Pleistocene), which is a local constructional piedmont surface of the Camp Rice Formation. North of Hersey Arroyo (Sierra Alta 7.5-minute quadrangle), the fault splits into two subparallel stands that form a local bedrock horst. In addition, there is a third strand southwest of the horst. All of these fault

	traces are characterized by small scarps on the Jornada I surface and by local control of ephemeral drainages. From inspection of 1:24,000-scale topographic maps, it appears that the scarps are associated with relatively minor offset (typically 5-10 m) of the Jornada I surface. No detailed studies have been made of the fault's scarp morphology.
Age of faulted surficial deposits	The fault offsets sediment of the upper part of the Camp Rice Formation (early to middle Pleistocene) and the Jornada I surface (middle Pleistocene). Younger (late Pleistocene) alluvial surfaces are not known to be offset by the Sierro Kemado fault.
Historic earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) *Comments:* Timing based on offset of Jornada I surface (middle Pleistocene). However, late Pleistocene faulting may have occurred on the basis of the young appearance of the fault scarps (Seager and others, 1975 #995).
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Low slip-rate category assigned based on 5- to less than 10-m-high scarps on the Jornada I surface (500–700 ka; Gile and others, 2007 #7346).
Date and Compiler(s)	2016 Michael N. Machette, U.S. Geological Survey, Retired Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
References	#7346 Gile, L.H., Monger, H.C., Grossman, R.B., Ahrens, R.J., Hawley, J.W., Peterson, F.F., Gibbens, R.P., Lenz, J.M., Bestelmeyer, B.T., and Nolen, B.A., 2007, A 50th anniversary guidebook for the Desert Project: U.S. Department of Agriculture, Natural Resources Conservation Service, National Soil Survey Center, 295 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.

	#995 Seager, W.R., Clemons, R.E., and Hawley, J.W., 1975, Geology of Sierra Alta quadrangle, Doña Ana County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Bulletin 102, 56 p., 1 pl., scale 1:24,000.