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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.

Hickman fault (Class A) No. 2136

Last Review Date: 2016-04-22

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 2136, Hickman 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 02:21 PM.**

Synopsis	This north- to northeast-trending fault forms an apparent scarp on unconsolidated Quaternary deposits and may control the course of Newton Draw, a north-flowing ephemeral drainage. The Hickman fault, which has proven Neogene movement, extends considerably farther to the south-southwest and to the north, where it offsets basaltic dikes of late Oligocene age (28–29 Ma). No field studies have been conducted to verify the presence of faulted sediment.
Name comments	The recognized Quaternary trace of this fault extends from Freeland Arroyo on the north to Newton Draw on the south (Tres Lagunas 7.5-minute quadrangle). The central part of the

	Quaternary rupture is located about 6 km north of Tres Lagunas and 15 km north of Pie Town, two small communities in western New Mexico.
County(s) and State(s)	CATRON COUNTY, NEW MEXICO
Physiographic province(s)	COLORADO PLATEAUS
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* Traces delineated using photogrammetric methods to accurately place faults mapped at 1:100,000 scale by Chamberlin and others (1994 #1256). Tertiary to Quaternary fault trace as shown by Wengerd (1959 #7441), Maxwell (1986 #1720), and Chamberlin and others (1994 #1256) is much longer and is based primarily on mapping of Cretaceous to Tertiary rocks.
Geologic setting	The Hickman fault is a Neogene normal fault that seems to have been a right-lateral reverse fault during the Laramide (Wengerd, 1959 #7441; Chamberlin, 1981 #7440). The fault parallels the regional structural grain, which is one of mostly NNE-trending high-angle normal faults of Neogene age and gently SSE-dipping middle Tertiary strata (Chamberlin and others, 1994 #1256). The normal faulting is generally considered to represent backsliding (extension) on Laramide compressional fault zones.
Length (km)	9 km.
Average strike	N23°E
Sense of movement	Normal *Comments:* Chamberlin and others (1994 #1256) consider the Hickman fault to have been a high-angle dip-slip normal fault in the Neogene, but it appears to have been a right-lateral (dextral) reverse fault in Laramide time. They estimated 275–366 m (1000–1200 ft) of Neogene displacement where the Hickman fault crosses the Lehew dike (28–29 Ma), but only about 90 m (300 ft) of post 5-Ma (Pliocene to Pleistocene) throw on the fault about 30 km to the southwest.
Dip Direction	W

	Comments: Chamberlin and others (1994 #1256) reported the Hickman fault as high-angle dip-slip normal fault.
Paleoseismology studies	
Geomorphic expression	Fault forms a small scarp on unconsolidated Quaternary sediment. The northern several kilometers are obscured (buried by eolian sand?), but the central part is apparent on aerial photographs. The southern half of the trace, which is shown as concealed on the map, appears to control the course of Newton Draw, a north-flowing ephemeral drainage. No fault-specific field studies have been conducted to confirm Quaternary movement on this structure.
Age of faulted surficial deposits	Chamberlin and others (1994 #1256) showed unconsolidated upper Quaternary alluvium and middle to upper Quaternary (older) alluvium along the suspected trace of the fault. Elsewhere, Paleogene sedimentary rocks and the Oligocene Lehew dike are the youngest units that are shown as cut by the Hickman fault (Chamberlin and others, 1994 #1256).
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) *Comments:* Timing poorly controlled. Based on presence of scarp on unconsolidated alluvium, which Chamberlin and others (1994 #1256) map as upper Quaternary.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr
Date and Compiler(s)	2016 Michael N. Machette, U.S. Geological Survey, Retired Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
References	#7440 Chamberlin, R.M., 1981, Uranium potential of the Datil Mountains-Pietown area, Catron County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-File Report 138, 51 p. pamphlet, 1 pl., scale 1:250,000.

#1256 Chamberlin, R.M., Cather, S.M., Anderson, O.J., and Jones, G.E., 1994, Reconnaissance geologic map of the Quemado 30 x 60 minute quadrangle, Catron County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-File Report 406, 29 p. pamphlet, 1 sheet, scale 1:100,000.

#1720 Maxwell, C.H., 1986, Geologic map of El Malpais Lava Field and surrounding areas, Cibola County, New Mexico: U.S. Geological Survey Miscellaneous Investigations Map I-1595, 1 sheet, scale 1:62,500.

#7441 Wengerd, S.A., 1959, Regional geology as related to the petroleum potential of the Lucero region, west-central New Mexico, in Weir, J.E., Jr., and Baltz, E.H., eds., West-central New Mexico: New Mexico Geological Society, 10th Field Conference, October 15-17, 1959, Guidebook, p. 121-134.