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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.

Arroyo Diablo fault (Class A) No. 904

Last Review Date: 1993-10-31

Compiled in cooperation with the Texas Bureau of Economic Geology

citation for this record: **Collins, E., compiler, 1993, Fault number 904, Arroyo Diablo 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 03:14 PM.**

Synopsis	Fault forms discontinuous scarps in the southeastern part of Hueco basin; scarps are en echelon to the Camp Grande fault [902]. Reconnaissance studies of scarp morphology and mapping of faulted Quaternary deposits are the sources of data. Best preserved scarps are about 1.7 km south of Campo Grande Mountain. Outcrops in Arroyo Diablo and Arroyo Balluco show faulted basin-fill deposits overlain by unfaulted upper Pleistocene deposits. Trench investigations have not been conducted.
Name comments	Named by Collins and Raney (1993 #852); also referred to as fault 10 by Collins and Raney (1991 #846). Fault extends from Arroyo Diablo (about 2 km southeast of Campo Grande Mountain) southeastward to near Arroyo Balluco (about 5 km

	north of Interstate Highway 10).
County(s) and State(s)	HUDSPETH COUNTY, TEXAS
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:250,000 scale. *Comments:* Location based on 1:250,000-scale map compiled from aerial photographs and 1:12,000- to 1:250,000-scale maps of Collins and Raney (1991 #846).
Geologic setting	This down-to-southwest fault bounds a deep part of the southeastern Hueco basin (Collins and Raney, 1991 #846). As such, it may be a section of the Campo Grande fault [902] (Collins and Raney, 1993 #852), which also bounds a deep part of the Hueco basin. However, the Arroyo Diablo fault exhibits only 1.6-3 m of vertical displacement of middle Pleistocene deposits, whereas the Campo Grande fault has 10 m of throw on middle Pleistocene deposits.
Length (km)	14 km.
Average strike	N34°W
Sense of movement	Normal *Comments:* Not studied in detail; sense of movement inferred from topography.
Dip	60°-85° SW *Comments:* Dip based on outcrops of faulted Pliocene-Pleistocene sediment.
Paleoseismology studies	
Geomorphic expression	The fault is marked by subtle discontinuous scarps that are 1.7 and 2.5 m high (where measured). The maximum slope angle of one compound scarp is as much as 15?, suggesting young (late Quaternary) movement. Much of the fault's trace is covered by unfaulted deposits (Collins and Raney, 1991 #846).

Age of faulted surficial deposits	Quaternary and late Tertiary. The youngest faulted deposits, which are vertically displaced 1.6–3 m, are middle Pleistocene in age (Collins and Raney, 1991 #846; 1993 #852).
Historic earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) *Comments:* The youngest faulted deposits are estimated to be middle Pleistocene because they are capped by 1- to 1.5-m thick calcic soils (Collins and Raney, 1991 #846; 1993 #852). Upper Pleistocene deposits are not known to be faulted, yet the scarp morphology suggests movement may be this young.
Recurrence interval	125–250 k.y. (<500 ka) *Comments:* Not studied in detail, but Collins and Raney (1993 #852) estimated that the average recurrence interval for large surface ruptures since middle Pleistocene may be as great as 125–250 k.y. These values are based on (a) their estimate of the number of large-displacement (1- to 2-m) surface ruptures since middle Pleistocene time, (b) the assumption that faulted middle Pleistocene deposits are approximately 250-500 ka (although the deposits are probably 400-500 ka on the basis of calcic soils 1-to 1.5-m thick having stage IV morphology), and (c) 1.6-3 m of measured throw on middle Pleistocene deposits.
Slip-rate category	Less than 0.2 mm/yr *Comments:* Average slip rate since middle Pleistocene is low based on less than 3 m throw of middle Pleistocene deposits (Collins and Raney, 1993 #852).
Date and Compiler(s)	1993 E.W. Collins, Bureau of Economic Geology, The University of Texas at Austin
References	#846 Collins, E.W., and Raney, J.A., 1991, Tertiary and Quaternary structure and paleotectonics of the Hueco basin, trans-Pecos Texas and Chihuahua, Mexico: The University of Texas at Austin, [Texas] Bureau of Economic Geology Geological Circular 91-2, 44 p. #852 Collins, E.W., and Raney, J.A., 1993, Late Cenozoic faults of the region surrounding the Eagle Flat study area, northwestern

	trans-Pecos Texas: Technical report to Texas Low-Level Radioactive Waste Disposal Authority, under Contract IAC(92-93)-0910, 74 p.