

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](#).

Sunshine faults (Class A) No. 1000

Last Review Date: 1997-04-16

Compiled in cooperation with the Arizona Geological Survey

citation for this record: Pearthree, P.A., compiler, 1997, Fault number 1000, Sunshine faults, 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 02:19 PM.

Synopsis

The Sunshine faults form a narrow, shallow, asymmetric graben with related normal faults located west of the Hurricane fault on the Shivwitz Plateau. These faults are part of a series of fault zones that appear to be subsidiary to the Hurricane fault zone. Paleozoic rocks are displaced as much as 120 m across the western (Sunshine) fault. Linear fault escarpments formed on Paleozoic bedrock range from fairly gentle to moderately steep, with extensive young fan deposition at the bases of the escarpments. Upper Pleistocene to Holocene fan deposits are evidently faulted in a few places; 7.5 m of displacement of these deposits has been estimated at one locality by Billingsley (1993 #2074). Younger Holocene fan deposits are not faulted.

Name comments	Mapped by Hamblin and Best (1970 #2070) but mapped and named the "Dutchman Draw graben" by Menges and Pearthree (1983 #2073). The geology along the faults was mapped by Billingsley (1992 #2072; 1993 #2074; 1993 #2075). The fault nomenclature used here follows Billingsley, who called the westernmost fault of this set the Sunshine fault.
County(s) and State(s)	MOHAVE COUNTY, ARIZONA
Physiographic province(s)	COLORADO PLATEAUS
Reliability of location	Good Compiled at 1:250,000 scale. <i>Comments:</i> Mapped at 1:24,000-scale; the traces were transferred to 1:250,000-scale topographic base map for digitization.
Geologic setting	The Sunshine faults form a narrow, shallow, asymmetric graben with related normal faults on the Shivwitz Plateau west of the Hurricane fault [998]. These faults are part of a series of fault zones that appear to be subsidiary to the Hurricane fault. Paleozoic rocks are displaced up to 120 m across the western (Sunshine) fault. Upper Pleistocene to Holocene fan deposits are evidently faulted in a few places; vertical displacement of 7.5 m has been estimated at one locality (Billingsley, 1993 #2074). Younger Holocene fan deposits are not faulted.
Length (km)	29 km.
Average strike	N27°W
Sense of movement	Normal <i>Comments:</i> Inferred from topography and regional relations.
Dip Direction	NE; SW; E; W
Paleoseismology studies	
Geomorphic expression	Faulting has generated gentle to moderately steep, linear escarpments on Paleozoic bedrock, with extensive young fan deposition in the linear trough at the bases of the escarpments; the western escarpment generally is larger and steeper. Alluvial fault scarps exist locally along these faults, but none have been studied

	in detail.
Age of faulted surficial deposits	Paleozoic, Pleistocene, late Pleistocene to Holocene.
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) <i>Comments:</i> Surficial deposits estimated to be Pleistocene and upper Pleistocene to Holocene in age are evidently faulted in a few places, but age estimates are very rough. The steepness and linearity of the graben escarpments also suggest late Quaternary activity. Younger Holocene fan deposits are not faulted.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr <i>Comments:</i> No slip rate values have been determined. However, the faults probably have slip rates comparable to other faults in the area.
Date and Compiler(s)	1997 Philip A. Pearthree, Arizona Geological Survey
References	#2072 Billingsley, G.H., 1992, Geologic map of the Hole-N-Wall quadrangle, northern Mohave County, Arizona: U.S. Geological Survey Open-File Report 92-432, 15 p., 1 pl., scale 1:24,000. #2074 Billingsley, G.H., 1993, Geologic map of The Grandstand quadrangle, northern Mohave County, Arizona: U.S. Geological Survey Open-File Report 93-588, 15 p., 1 pl., scale 1:24,000. #2075 Billingsley, G.H., 1993, Geologic map of the Dutchman Draw quadrangle, northern Mohave County, Arizona: U.S. Geological Survey Open-File Report 93-587, 12 p., 1 pl., scale 1:24,000. #2070 Hamblin, W.K., and Best, M.G., eds., 1970, The western Grand Canyon district—Guidebook to the geology of Utah, n. 23: Salt Lake City, Utah Geological Society, 156 p.

#2073 Menges, C.M., and Pearthree, P.A., 1983, Map of neotectonic (latest Pliocene-Quaternary) deformation in Arizona: Arizona Geological Survey Open-File Report 83-22, 48 p., scale 1:500,000.

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