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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.

Bonnie Claire fault (Class A) No. 1095

Last Review Date: 1999-01-11

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Synopsis	The name Bonnie Claire fault is applied to poorly understood, highly discontinuous and scattered clusters of scarps and lineaments in the vicinity of Bonnie Claire Flat southwest of Scottys Junction, Nevada. The faults strike mostly northeast and some are conspicuously curved as they bound low to moderate ridges that are also curved. No range-front fault is associated with the Bonnie Claire fault, but some fault traces do bound outcrops of Tertiary volcanic rocks. Part of the fault is mapped as cutting Quaternary deposits, but there are no reports of scarp characteristics or displacement amounts, so nothing is known of the recurrence times or slip rate. Photogeologic mapping is the main source of data for the scarps and lineaments that express the fault.
Name comments	Name taken from Piety (1995 #915) who applied it to highly discontinuous and scattered clusters of generally northeast-

	striking scarps and lineaments in the vicinity of Bonnie Claire Flat southwest of Scottys Junction, Nevada. These features are identified on a 1:100,00-scale, photogeologic map by Reheis and Noller (1991 #1195); however, a 1:250,000-scale, photogeologic map by Dohrenwend and others (1992 #289) does not show these features, but does show similar northeast-striking fault traces in Tertiary rocks that form nearby low ridges. Scarps and lineaments of the Bonnie Claire fault extend discontinuously from about 4 km northeast of the California/Nevada border, northeastward along and near low hills of Bonnie Claire Flat, to about 1 km west of the town of Bonnie Claire. **Fault ID:** Referred to as BC by Piety (1995 #915)
County(s) and State(s)	NYE COUNTY, NEVADA ESMERALDA COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* Location is from Reheis and Noller (1991 #1195) who compiled the traces on a 1:100,000-scale topographic map based on photogeologic mapping on aerial photos at scales ranging from 1:24,000 to 1:80,000.
Geologic setting	The faults are located in the Goldfield section of the Walker Lane belt of Stewart (1988 #1654), an area characterized by a general lack of major through-going northwest-striking strike-slip faults and by a scarcity of major Basin and Range faults. The faults strike northeast and some are conspicuously curved as they bound low to moderate ridges that are also curved. No range-front fault is associated with the Bonnie Claire fault, but some fault traces do bound outcrops of Tertiary volcanic rocks (Cornwall, 1972 #1482; Albers and Stewart, 1972 #3863). Piety (1995 #915) noted that the Bonnie Claire fault may be related to other northeast-striking faults that bound the northwest sides of range blocks in the area. Reheis and Noller (1991 #1195) speculated that these northeast-striking faults could be conjugate shears to the right-slip, northwest-striking Fish Lake Valley fault zone [49] in the Death Valley area of California. Alternatively, they could be an expression of dip-slip displacement on faults with strikes perpendicular to the regional extension direction (Reheis and

	Noller, 1989 #1610).
Length (km)	20 km.
Average strike	N46°E
Sense of movement	Normal *Comments:* Cornwall (1972 #1482) showed a fault directly southwest of Scottys Junction as a dashed trace through Quaternary alluvium and down to the southeast. No specific slip-sense data are available, but the faults are oriented approximately normal to the extension direction, and thus could be expected to be normal faults.
Dip Direction	Unknown *Comments:* Unknown, possibly steep, as suggested by northwest and southeast facing directions (Reheis and Noller, 1991 #1195). Cornwall (1972 #1482) showed a fault directly southwest of Scottys Junction as a dashed trace through Quaternary alluvium and down to the southeast. Reheis and Noller (1991 #1195) show some scarps as facing northwest and some as facing southeast, which may indicate that the faults have varied dip directions and may suggest the presence of horst and graben structure along this zone of faults.
Paleoseismology studies	
Geomorphic expression	Based on photogeologic mapping Reheis and Noller (1991 #1195) show generally northeast-striking scarps and lineaments on Quaternary deposits or surfaces in this area, and some traces are mapped along linear bedrock ridges. Reheis and Noller (1991 #1195) also show both northwest- and southeast-facing direction for the scarps, and they characterize the prominence of the scarps and lineaments as being weakly to strongly expressed. Detailed mapping or subdivision of Quaternary deposits and surfaces have not been done in this area, and there is no detailed information on scarp characteristics.
Age of faulted surficial deposits	On the basis of photogeologic mapping, portions of the fault are portrayed as weakly expressed or prominent lineaments or scarps on surfaces of Quaternary deposits (Reheis and Noller, 1991 #1195). The longest down-to-the-southeast fault trace at the

	northeastern end of the fault is shown as displacing Quaternary alluvium (Cornwall, 1972 #1482). At Bonnie Claire Lake the fault is shown primarily as scarps and (or) prominent topographic lineaments on surfaces of Tertiary volcanic and sedimentary rocks, but one curving trace directly west of the lake is shown as juxtaposing Quaternary alluvium against bedrock (Cornwall, 1972 #1482). Detailed mapping or subdivision of Quaternary deposits and surfaces have not been done in this area, which might more tightly constrain the age of faulted deposits.
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* Scarps and lineaments on undivided Quaternary deposits or surfaces show evidence for Quaternary activity along this fault (Reheis and Noller, 1991 #1195).
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* No displacement or scarp-height data are reported. The late Quaternary characteristics of this fault (overall geomorphic expression, continuity of scarps, age of faulted deposits, etc.) suggest a low slip rate. Accordingly, the less than 0.2 mm/yr slip-rate category has been assigned to this fault.
Date and Compiler(s)	1999 R. Ernest Anderson, U.S. Geological Survey, Emeritus
References	#3863 Albers, J.P., and Stewart, J.H., 1972, Geology and mineral deposits of Esmeralda County, Nevada: Nevada Bureau of Mines and Geology Bulletin 78, 88 p. #1482 Cornwall, H.R., 1972, Geology and mineral deposits of southern Nye County, Nevada: Nevada Bureau of Mines and Geology Bulletin 77, 49 p., 1 pl., scale 1:250,000. #289 Dohrenwend, J.C., Schell, B.A., McKittrick, M.A., and Moring, B.C., 1992, Reconnaissance photogeologic map of young faults in the Goldfield 1° by 2° quadrangle, Nevada and California: U.S. Geological Survey Miscellaneous Field Studies Map MF-2183, 1 sheet, scale 1:250,000.

	#915 Piety, L.A., 1995, Compilation of known and suspected Quaternary faults within 100 km of Yucca Mountain, Nevada and California: U.S. Geological Survey Open-File Report 94-112, 404 p., 2 pls., scale 1:250,000. #1610 Reheis, M.C., and Noller, J.S., 1989, New perspectives on Quaternary faulting in the southern Walker Lane, Nevada and California, *in* Ellis, M.A., ed., Late Cenozoic evolution of the southern Great Basin: Nevada Bureau of Mines and Geology Open-File Report 89-1, p. 57-61. #1195 Reheis, M.C., and Noller, J.S., 1991, Aerial photographic interpretation of lineaments and faults in late Cenozoic deposits in the eastern part of the Benton Range 1:100,000 quadrangle and the Goldfield, Last Chance Range, Beatty, and Death Valley Junction 1:100,000 quadrangles, Nevada and California: U.S. Geological Survey Open-File Report 90-41, 9 p., 4 sheets, scale 1:100,000. #1654 Stewart, J.H., 1988, Tectonics of the Walker Lane belt, western Great Basin—Mesozoic and Cenozoic deformation in a zone of shear, *in* Ernst, W.G., ed., Metamorphism and crustal evolution of the western United States, Ruby Volume VII: Englewood Cliffs, New Jersey, Prentice Hall, p. 683-713.