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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.

Clayton-Montezuma Valley faults (Class A) No. 1103

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Synopsis	The Clayton-Montezuma Valley faults consist of a group of northeast-striking discontinuous straight to curved, weakly to moderately expressed lineaments or scarps developed on Quaternary and Tertiary deposits between Clayton Ridge and the Montezuma Range. The faults are not well expressed topographically but are part of a group of similarly oriented faults one of which (the Montezuma Range fault, [1102]) bounds a major range block. Photogeologic mapping is the main source of data for these faults. The age of the last Quaternary displacement event is unknown, and no information exists on the style of faulting, displacement, slip rate, or recurrence interval.
Name comments	Adapted from Piety (1995 #915) who used the name Clayton-Montezuma Valley fault for a group of faults located between

	Clayton Ridge and the Montezuma Range fault [1102]. These faults were mapped my Dohrenwend and others (1992 #289) and Reheis and Noller (1991 #1195), and they are also shown on a compilation of Quaternary faults by Piety (1995 #915). The northeast-striking Clayton-Montezuma Valley faults extend from about Lida Wash, northeastward along the southeast flank of Clayton Ridge, to the northern end of the ridge. **Fault ID:** Fault referred to as CLMV by Piety (1995 #915).
County(s) and State(s)	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 faults on a 1:100,000-scale topographic map from photogeologic study of aerial photographs at scales ranging from 1:24,000 to 1:80,000.
Geologic setting	The Clayton-Montezuma Valley 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 a scarcity of major Basin and Range faults. They strike mostly northeast but some curve to northwest strikes. The traces are spread across the gently southeast-sloping terrain between Clayton Ridge and the Montezuma range, an area mapped as underlain by non welded ash flows of Tertiary age (Albers and Stewart, 1972 #3863). Several of the faults are shown on the 1:250,000-scale geologic map of Esmeralda County (Albers and Stewart, 1972 #3863), but all within Tertiary rock. Those features mapped photogeologically as Quaternary structures, are not marked by range-margin or block-boundary escarpments (Reheis and Noller, 1991 #1195; Dohrenwend and others, 1992 #289). They are part of a larger group of north-northeast- to northeast-striking faults that extend 25 km westward from the Montezuma Range across Clayton Valley (Reheis and Noller, 1991 #1195; Dohrenwend and others, 1992 #289). These faults are similar to several northeast-striking faults that bound ranges and ridges in the area of west central Nevada and adjacent California. They could be conjugate left-slip shears to the

	northwest-striking right-slip Fish Lake Valley fault zone [49] or normal faults perpendicular to the regional northwest-southeast extension direction (Reheis and Noller, 1989 #1610; 1991 #1195). All probably have a normal component of displacement, and there is generally little direct evidence to support left-lateral displacement (Reheis and Noller, 1989 #1610; 1991 #1195).
Length (km)	15 km.
Average strike	N14°E
Sense of movement	Normal *Comments:* No specific displacement-sense data are available, but the faults are oriented approximately normal to the extension direction and, thus, could be expected to be normal faults. Reheis and Noller (1991 #1195) decorate the fault traces with tics indicating downdropping to the northwest and southeast, which may indicate the presence of horst and graben structure along the fault zone. The adjacent Montezuma Range fault [1102] to the east, is a normal fault (Reheis and Noller, 1989 #1610).
Dip Direction	NW; SE *Comments:* On the basis of photogeologic interpretation and limited field data pertaining to the northeast-striking faults in the area, Reheis and Noller (1989 #1610) suggest the faults dip steeply (70? to 90?) and possibly both NW and SE. Reheis and Noller (1991 #1195) decorate the fault traces with tics indicating downdropping to the northwest and southeast, possibly suggesting dips in those directions.
Paleoseismology studies	
Geomorphic expression	The northeastern faults are portrayed by Reheis and Noller (1991 #1195) as weakly to moderately expressed lineaments or scarps on Quaternary deposits and those in the southwest part as similarly expressed features chiefly on surfaces of Tertiary deposits. With the exception of a narrow graben-like depression in the southwest part of the fault group, the faults do not follow conspicuous topographic escarpments.
Age of faulted surficial	Dohrenwend and others (1992 #289) portray scarps and lineaments on Quaternary deposits or surfaces that they assign a

deposits	early to middle and (or) late Pleistocene age (0.01 to 1.5 Ma). Reheis and Noller (1991 #1195) show scarps and lineaments on undivided Quaternary deposits. Detailed mapping and subdivision of Quaternary deposits and surfaces have not been done in this area.
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* Based on photogeologic study, Dohrenwend and others (1992 #289) and Reheis and Noller (1991 #1195) show evidence for Quaternary activity along these faults; detailed mapping and study of Quaternary deposits and fault-related features, however, have not been done in this area.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* No scarp-height or displacement data are available. The late Quaternary characteristics of these faults (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 these faults.
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. #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.