

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](#).

unnamed faults of Red Hill (Class B) No. 2298

Last Review Date: 1997-06-12

Compiled in cooperation with the Colorado Geological Survey

citation for this record: Widmann, B.L., compiler, 1997, Fault number 2298, unnamed faults of Red Hill, 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 03:00 PM.

Synopsis	These faults extend across Red Hill southwest of Dotsero. Several graben structures and fault traces are clearly visible on aerial photographs. The largest of the grabens has as much as 20 m of topographic relief (Unruh and others, 1993 #2777). Quaternary movement on these faults is evidenced by offset Quaternary landslide deposits (Kirkham and Rogers, 1981 #792). Faulting is attributed to salt migration and dissolution rather than to regional tectonics (Kirkham and Rogers, 1981 #792; Unruh and others, 1993 #2777). In as much as the faulting may be salt related, we consider these to be Class B structures.
Name	This group of faults is comprised of about 26 faults on Red Hill

comments	<p>southwest of Dotsero and south of I-70. Many of the faults form east-west-trending grabens. Only two or three faults were previously mapped by Kirkham and Rogers (1981 #792) and Colman (1985 #1953). More detailed mapping by Streufert and others (1997 #2752; 1997 #2753) indicated there are numerous small faults in this area.</p> <p>Fault ID: Fault 60 in Kirkham and Rogers (1981 #792) and fault number Q47 of Widman and others (1998 #3441).</p>
County(s) and State(s)	EAGLE COUNTY, COLORADO
Physiographic province(s)	SOUTHERN ROCKY MOUNTAINS
Reliability of location	<p>Good Compiled at 1:250,000 scale.</p> <p><i>Comments:</i> The faults were mapped at 1:24,000 scale by Streufert and others (1997 #2752; 1997 #2753). The trace used herein is from Streufert and others (1997 #2752; 1997 #2753), but recompiled at 1:250,000 scale.</p>
Geologic setting	<p>These faults are typically high-angle, normal, graben-forming faults. The area is underlain by thick deposits of the Pennsylvanian Eagle Valley Evaporite that consist primarily of gypsum and dolomite, and possible halite at depth. The highly variable orientation of the faults suggests that fault activity is related to salt tectonics rather than regional stress regimes. The faults are believed to have formed in response to piping or collapse of the overburden due to flowage and dissolution of evaporite deposits from beneath the area (Kirkham and Rogers, 1981 #792; Unruh and others, 1993 #2777).</p>
Length (km)	7 km.
Average strike	N21°W
Sense of movement	<p>Normal</p> <p><i>Comments:</i> A cross section through Red Hill by Streufert and others (1997 #2753) showed these faults as high-angle normal faults.</p>
Dip Direction	Unknown

	<i>Comments:</i> The faults have a highly variable orientation that suggests activity is related to salt tectonics.
Paleoseismology studies	
Geomorphic expression	A northeast-trending topographic depression at the crest of Red Hill defines a graben with up to 20 m of topographic relief. Other grabens are also visible on Red Hill and closed depression are common in the grabens. Bedrock fault scarps are present on Paleozoic sedimentary rock (Unruh and others, 1993 #2777).
Age of faulted surficial deposits	Quaternary landslide deposits are offset across several of the faults (Kirkham and Rogers, 1981 #792). The fault traces extend primarily through Pennsylvanian and Permian rocks with less than 10 percent of the fault traces in Quaternary deposits.
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) <i>Comments:</i> Deformation during the Quaternary is evinced by offset of Quaternary landslide deposits (Kirkham and Rogers, 1981 #792). Orientation of faults in the area is not consistent with contemporary stress fields, and offset is probably not linked to a single tectonic event (Unruh and others, 1993 #2777). Rather, movement on the faults is believed to be associated with collapse of overburden in response to the on-going process of salt flowage and dissolution (Kirkham and Rogers, 1981 #792; Unruh and others, 1993 #2777). In as much as the faulting may be aseismic (salt related), we considered these to be Class B structures.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr <i>Comments:</i> Unruh and others (1993 #2777) indicated 20 m of relief across the largest graben on Red Hill, but did not indicate what portion of that offset is Quaternary in age. Widmann and others (1998 #3441) placed these faults within the <0.2 mm/yr slip-rate category based on the above data and slip rates inferred for other similarly formed faults in this area.

Date and Compiler(s)	1997 Beth L. Widmann, Colorado Geological Survey
References	<p>#1953 Colman, S.M., 1985, Map showing tectonic features of late Cenozoic origin in Colorado: U.S. Geological Survey Miscellaneous Geologic Investigations I-1566, 1 sheet, scale 1:1,000,000.</p> <p>#792 Kirkham, R.M., and Rogers, W.P., 1981, Earthquake potential in Colorado: Colorado Geological Survey Bulletin 43, 171 p., 3 pls.</p> <p>#2752 Streufert, R.K., Kirkham, R.M., Schroeder, T.J., II, and Widmann, B.L., 1997, Geologic map of the Dotsero quadrangle, Eagle and Garfield Counties, Colorado: Colorado Geological Survey Open-File Report 97-2.</p> <p>#2753 Streufert, R.K., Kirkham, R.M., Widmann, B.L., and Schroeder, T.J., II, 1997, Geologic map of the Cottonwood Pass quadrangle, Eagle and Garfield Counties, Colorado: Colorado Geological Survey Open-File Report 97-4.</p> <p>#2777 Unruh, J.R., Wong, I.G., Bott, J.D.J., Silva, W.J., and Lettis, W.R., 1993, Seismotectonic evaluation, Rifle Gap Dam, Silt Project, Ruedi Dam, Fryingpan-Arkansas Project, northwestern Colorado: U.S. Bureau of Reclamation, 154 p.</p> <p>#3441 Widmann, B.L., Kirkham, R.M., and Rogers, W.P., 1998, Preliminary Quaternary fault and fold map and database of Colorado: Colorado Geological Survey Open-File Report 98-8, 331 p., 1 pl., scale 1:500,000.</p>

[Questions or comments?](#)

[Facebook](#) [Twitter](#) [Google](#) [Email](#)

[Hazards](#)

[Design Ground Motions](#)[Seismic Hazard Maps & Site-Specific Data](#)[Faults](#)[Scenarios](#)
[Earthquakes](#)[Hazards](#)[Data](#)[Education](#)[Monitoring](#)[Research](#)

[Home](#)[About Us](#)[Contacts](#)[Legal](#)