

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 fault near Pine Mountain (Class A) No. 2267

Last Review Date: 1997-09-04

Compiled in cooperation with the Colorado Geological Survey

citation for this record: Widmann, B.L., compiler, 1997, Fault number 2267, unnamed fault near Pine Mountain, 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 03:01 PM.

Synopsis

This fault lies on the southwest margin of the Uncompahgre Uplift. Evidence for Quaternary movement on this fault was cited in Witkind (1976 #2792) based on personal communication with Fred Cater. Based on the timing of abandonment of Unaweep Canyon, Cater (1966 #2671) indicated uplift of the Uncompahgre Plateau began in the mid-Pliocene and continued into the Pleistocene, resulting in as much as 640 m of differential uplift. Williams (1964 #2789) mapped Quaternary deposits as abutting the fault. Cater (1970 #2672) mapped the fault as being concealed by Quaternary deposits. The fault has been classified as a

	Quaternary fault (Howard and others, 1978 #312; Kirkham and Rogers, 1981 #792; Colman, 1985 #1953), and no references have been published that refute this age assignment.
Name comments	<p>This northwest-trending fault begins northeast of the Granite Creek fault zone [2265] on the northeast flank of The Palisade, northeast of the town of Gateway, and extends southeast to the northwest side of Uncompahgre Butte. The fault forms part of the south margin of the Ute Creek graben, which lies on the southwest flank of the Uncompahgre Uplift.</p> <p>Fault ID: Fault 80 in Kirkham and Rogers (1981 #792), fault 351 in Witkind (1976 #2792), and fault number Q17 of Widman and others (1998 #3441).</p>
County(s) and State(s)	MESA COUNTY, COLORADO
Physiographic province(s)	COLORADO PLATEAUS
Reliability of location	<p>Good Compiled at 1:250,000 scale.</p> <p><i>Comments:</i> The fault was mapped at a scale of 1:24,000 by Cater (1955 #2670), 1:62,500 by Cater (1970 #2672) and 1:250,000 by Williams (1964 #2789). The trace used herein is from Williams (1964 #2789) and Cater (1970 #2672).</p>
Geologic setting	<p>This fault forms the south margin of the Ute Creek graben, which lies on the southwest flank of the Uncompahgre Uplift. The Uncompahgre Uplift is a northwest-trending, east-tilted fault block. This fault is high angle and down to the northeast. Although Witkind (1976 #2792) showed the fault as down to the southwest, all other references indicated the fault is down to the northeast (Williams, 1964 #2789; Cater, 1966 #2671; Howard and others, 1978 #312; Kirkham and Rogers, 1981 #792; Colman, 1985 #1953). Throw on the fault opposes local topography. The fault lies in a tectonically weakened area above the ancestral Uncompahgre fault zone (Stone, 1977 #2749).</p>
Length (km)	31 km.
Average strike	N52°W
Sense of	Normal

movement	<i>Comments:</i> Cater (1970 #2672), Heyman (1983 #2697) and Kirkham and Rogers (1981 #792) showed this fault as normal.
Dip	81° NE <i>Comments:</i> Cater (1970 #2672) showed a dip of 81° NE for this fault on his cross section.
Paleoseismology studies	
Geomorphic expression	Geomorphic indicators of youthful faulting have not been reported.
Age of faulted surficial deposits	Cater (1955 #2670) documented a maximum throw of about 260 m on this fault, but did not map Quaternary deposits as being offset by the fault. Williams (1964 #2789) mapped Quaternary deposits as both concealing the fault and as abutting the fault. Cater (1970 #2672) mapped the fault as concealed by Quaternary deposits. The Salt Wash Sandstone Member of the Jurassic Morrison Formation is the youngest deposit offset by this fault according to Cater (1970 #2672). The fault lies primarily in Precambrian and lower Mesozoic bedrock with about 20 percent of the fault extending into or beneath Quaternary deposits.
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) <i>Comments:</i> Offset of Quaternary deposits is inconclusive since Williams (1964 #2789) showed Quaternary deposits as abutting against the fault, whereas Cater (1970 #2672) mapped the fault as concealed by Quaternary deposits. However, faults associated with the Uncompahgre Uplift are often considered to have experienced Quaternary movement. Evidence for Quaternary movement on this fault was cited in Witkind (1976 #2792) based on personal communication with Fred Cater. Based on the timing of abandonment of Unaweep Canyon, Cater (1966 #2671) indicated uplift of the Uncompahgre Plateau began in the mid-Pliocene and continued into the Pleistocene, resulting in as much as 640 m of differential uplift. There is no other published evidence that Quaternary deposits are offset by this structure. This fault has been classified as a Quaternary fault (e.g. Howard and

	others, 1978 #312; Kirkham and Rogers, 1981 #792; Colman, 1985 #1953), and no references have been published that refute this age assignment.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr <i>Comments:</i> Widmann and others (1998 #3441) placed this structure within the <0.2 mm/yr slip-rate category based on calculations of an overall uplift rate of 0.4 m/1000 yr since 1.8 Ma for the Uncompahgre Uplift (Perry, 1989 #2731).
Date and Compiler(s)	1997 Beth L. Widmann, Colorado Geological Survey
References	#2670 Cater, F.W., Jr., 1955, Geology of the Pine Mountain quadrangle, Colorado: U.S. Geological Survey Geologic quadrangle Map GQ-60. #2671 Cater, F.W., Jr., 1966, Age of the Uncompahgre Uplift and Unaweep Canyon, west-central Colorado: U.S. Geological Survey Professional Paper 550-C, 86-92 p. #2672 Cater, F.W., Jr., 1970, Geology of the salt anticline region in southwestern Colorado, with a section on stratigraphy by F.W. Cater and L.C. Craig: U.S. Geological Survey Professional Paper 637, 80 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. #2697 Heyman, O.G., 1983, Distribution and structural geometry of faults and folds along the northwestern Uncompahgre Uplift, western Colorado and eastern Utah, <i>in</i> Averett, W., ed., Northern Paradox Basin—Uncompahgre Uplift: Grand Junction Geological Society, p. 45-57. #312 Howard, K.A., Aaron, J.M., Brabb, E.E., Brock, M.R., Gower, H.D., Hunt, S.J., Milton, D.J., Muehlberger, W.R., Nakata, J.K., Plafker, G., Prowell, D.C., Wallace, R.E., and Witkind, I.J., 1978, Preliminary map of young faults in the United

States as a guide to possible fault activity: U.S. Geological Survey Miscellaneous Field Studies Map MF-916, 2 sheets, scale 1:5,000,000.

#792 Kirkham, R.M., and Rogers, W.P., 1981, Earthquake potential in Colorado: Colorado Geological Survey Bulletin 43, 171 p., 3 pls.

#2731 Perry, T.W.V., 1989, Tectonic inference and computer simulation in stream longitudinal profile evolution, Unaweep Canyon and vicinity, Colorado and Utah: Geological Society of America Abstracts with Programs, v. 21, no. 6, p. 269.

#2749 Stone, D.S., 1977, Tectonic history of the Uncompahgre Uplift, *in* Veal, H.K., ed., Exploration Frontiers of the central and southern Rockies: Rocky Mountain Association of Geologists, 1977 Field Conference Guidebook, p. 23-30.

#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.

#2789 Williams, P.L., 1964, Geology, structure, and uranium deposits of the Moab quadrangle, Colorado and Utah: U.S. Geological Survey Miscellaneous Geologic Investigations I-360.

#2792 Witkind, I.J., 1976, Preliminary map showing known and suspected active faults in Colorado: U.S. Geological Survey Open-File Report 76-154.

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