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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.

Glade Park fault (Class A) No. 2254

Last Review Date: 1997-06-11

Compiled in cooperation with the Colorado Geological Survey

citation for this record: **Widmann, B.L., compiler, 1997, Fault number 2254, Glade Park fault, 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	The Glade Park fault lies on the northeast flank of the Uncompahgre Uplift southwest of Grand Junction. Williams (1964 #2789) mapped this fault as a solid line through Quaternary alluvium, but Lohman (1963 #2718; 1965 #2719) showed this fault as being covered by Quaternary alluvium. 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 by the Gunnison River, 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. Despite the lack of evidence of faulted Quaternary deposits

	along the Glade Park fault, it 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.
Name comments	The Glade Park fault is an east-west oriented fault that extends through Glade Park, which is southwest of Grand Junction. The fault lies on the northeast flank of the Uncompahgre Uplift. Witkind (1976 #2792) mapped faults 2254-2256, 2258, 2260, and 2261 (numbers for this database) as a single fault, which he referred to as the Glade Park fault. Williams (1964 #2789) showed faults 2254 and 2255 as a single fault. More detailed mapping by Lohman (1963 #2718; 1965 #2719) revealed that the faults are not connected at the surface. Lohman (1963 #2718) labeled fault 2254 as the Glade Park fault. **Fault ID:** Fault 66 in Kirkham and Rogers (1981 #792), fault 282 in Witkind (1976 #2792), and fault number Q4 of Widman and others (1998 #3441).
County(s) and State(s)	MESA COUNTY, COLORADO
Physiographic province(s)	COLORADO PLATEAUS
Reliability of location	Good Compiled at 1:250,000 scale. *Comments:* This fault was mapped at a scale of 1:31,680 by Lohman (1963 #2718; 1965 #2719) and 1:250,000 by Williams (1964 #2789). The trace used herein is from Lohman (1965 #2719), but recompiled at1:250,000 scale.
Geologic setting	The Glade Park fault is part of the northeast margin of the Uncompahgre Uplift southwest of Grand Junction. The Uncompahgre Uplift is a northwest-trending, east-tilted fault block. Displacement on this fault is down to the south on either a normal fault (Lohman, 1965 #2719; Kirkham and Rogers, 1981 #792) or a reverse fault (Heyman, 1983 #2697). Witkind (1976 #2792) suggested throw is down to the northeast but showed faults 2254-2256, 2258, 2260, and 2261 (this database) as a single fault. Portions of this fault complex are in fact down to the northeast (faults 2256 and 2258), but the remainder of the faults, including the Glade Park fault are down to the south (Lohman,

	1963 #2718; 1965 #2719; Kirkham and Rogers, 1981 #792; Colman, 1985 #1953). Throw on the fault is opposite to local topography. This fault lies in a tectonically weakened area above the ancestral Garmesa and Douglass Creek fault zones (Stone, 1977 #2749).
Length (km)	9 km.
Average strike	N79°W
Sense of movement	Reverse *Comments:* Heyman (1983 #2697) mapped this fault as down to the south on a north-dipping reverse fault. Kirkham and Rogers (1981 #792) described this fault as normal, but did not provide measurements or discussion that support normal movement.
Dip	75° N *Comments:* Heyman (1983 #2697) mapped the Glade Park fault as down to the south on a 75? north-dipping plane in the vicinity of T12S, R101W.
Paleoseismology studies	
Geomorphic expression	Geomorphic indicators of youthful faulting have not been reported.
Age of faulted surficial deposits	Williams (1964 #2789) mapped this fault as a solid line through Quaternary alluvial deposits, which indicates the deposit is offset by the fault. More detailed mapping by Lohman (1963 #2718; 1965 #2719), however, showed the fault as being overlain by unfaulted Quaternary alluvial deposits, and having less than 7.5 m of throw in pre-Quaternary deposits. The upper Jurassic Morrison and Summerville Formations are the youngest faulted deposits according to Lohman (1963 #2718). More than 95 percent of the fault lies in lower Mesozoic bedrock.
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* Quaternary deposits are generally absent in this area, making it difficult to recognize Quaternary movement on the

	faults. Williams (1964 #2789) showed the fault trace as a solid line through Quaternary deposits (indicating the deposits are faulted), whereas Lohman (1965 #2719) showed the fault as overlain by unfaulted Quaternary deposits. Faults associated with the Uncompahgre Uplift are often considered to have experienced Quaternary movement. Evidence for Quaternary movement on the fault was cited in Witkind (1976 #2792) as being from a personal communication with Fred Cater. Based on the timing of abandonment of Unaweep Canyon by the Gunnison River, Cater (1966 #2671) indicated uplift 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. Despite the lack of evidence for Quaternary movement, the Glade Park 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 *Comments:* 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	#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. #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, *in* 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.

#2718 Lohman, S.W., 1963, Geologic map of Grand Junction area, Colorado: U.S. Geological Survey Miscellaneous Geologic Investigations I-404.

#2719 Lohman, S.W., 1965, Geology and artesian water supply of the Grand Junction area, Colorado: U.S. Geological Survey Professional Paper 451, 149 p.

#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.