Jump to Navigation

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.

Eleven Mile fault (Class A) No. 2318

Last Review Date: 1997-11-25

Compiled in cooperation with the Colorado Geological Survey

citation for this record: **Widmann, B.L., compiler, 1997, Fault number 2318, Eleven Mile 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 03:00 PM.**

Synopsis	The Eleven Mile fault branches from the East-Side Chase Gulch fault [2317] near Eleven Mile Canyon Reservoir. The East-Side Chase Gulch fault is linked to an older Laramide thrust at depth. The association with the East-Side Chase Gulch fault suggests that the Eleven Mile fault may also be related in some way to the Laramide age thrust. The fault is marked by a low scarp and ponded groundwater. Slocum Alluvium and Bull Lake deposits are each offset about 1.6 m across the fault. Shaffer (1980 #2739) suggested the latest movement on the fault was during the Pinedale glaciation (13 to 30 ka).
Name	The Eleven Mile fault is a northwest-trending fault that is oblique

comments	to the East-Side Chase Gulch fault [2317] south of Eleven Mile Canyon Reservoir. **Fault ID:** Fault 176 in Kirkham and Rogers (1981 #792) and fault number Q66 of Widman and others (1998 #3441).
County(s) and State(s)	PARK COUNTY, COLORADO
Physiographic province(s)	SOUTHERN ROCKY MOUNTAINS
Reliability of location	Good Compiled at 1:250,000 scale. *Comments:* The fault was mapped at a scale of 1:62,500 by Wobus and Epis (1974 #2793) and 1:250,000 by Scott and others (1978 #2735). The trace used herein is from Scott and others (1978 #2735).
Geologic setting	The fault branches from the East-Side Chase Gulch fault [2317], which is believed to be linked to the Chase Gulch fault system that merges at depth with the Laramide age Elkhorn Thrust (Shaffer, #2739). The relationship between the Eleven Mile fault, the East-Side Chase Gulch fault and Laramide Elkhorn Thrust is not clear. The fault is in the Laramide South Park basin, which is bounded by the Mosquito Range on the west, the Front Range on the north and east, and the Thirtynine Mile volcanic field on the south. The Eleven Mile fault is down to the east which is consistent with throw on the East-Side Chase Gulch fault.
Length (km)	5 km.
Average strike	N10°W
Sense of movement	Normal *Comments:* Kirkham and Rogers (1981 #792) reported normal movement for this fault.
Dip Direction	E
Paleoseismology studies	
Geomorphic expression	The Eleven Mile fault is recognized by a low scarp visible on low-sun-angle aerial photographs. Groundwater is ponded behind

	the trace of the fault at Union Creek and Balm of Gilead Creek (Shaffer, 1980 #2739).
Age of faulted surficial deposits	Bull Lake alluvial deposits are offset about 1.8 m across the fault, whereas the older Slocum Alluvium (middle Pleistocene) is offset by about the same amount (Shaffer, 1980 #2739). Along most of the fault trace, Precambrian bedrock on the east is juxtaposed against Oligocene Thirtynine Mile Andesite on the west. Quaternary deposits are offset only at the north end of the fault.
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) *Comments:* Slocum Alluvium and deposits of the Bull Lake glaciation are offset across the Eleven Mile fault according to Wobus and Epis (1974 #2793), Scott and others (1978 #2735), and Shaffer (1980 #2739). Shaffer (1980 #2739) suggested that the last significant movement on the fault occurred during the Pinedale glaciation (13 ka to 30 ka).
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Shaffer (1980 #2739) calculated a slip rate of <0.14mm/yr for the East-Side Chase Gulch fault [2317]. Scarps and stratigraphic offset on the Eleven Mile fault are less than on the East-Side Chase Gulch fault, suggesting a lower slip rate for the Eleven Mile fault. Widmann and others (1998 #3441) placed the Eleven Mile fault in the <0.2 mm/yr slip-rate category.
Date and Compiler(s)	1997 Beth L. Widmann, Colorado Geological Survey
References	#792 Kirkham, R.M., and Rogers, W.P., 1981, Earthquake potential in Colorado: Colorado Geological Survey Bulletin 43, 171 p., 3 pls. #2735 Scott, G.R., Taylor, R.B., Epis, R.C., and Wobus, R.A., 1978, Geologic map of the Pueblo 1° x 2° quadrangle, south-central Colorado: U.S. Geological Survey Miscellaneous Geologic Investigations I-1022.

	#2739 Shaffer, M.E., 1980, Seismic hazard evaluation, Spinney Mountain project, Park County, Colorado: Technical report to R.W. Beck and Associates, Report 78-5129, 77 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. #2793 Wobus, R.A., and Epis, R.C., 1974, Reconnaissance geologic map of the Florissant 15-minute quadrangle, Park and Teller Counties, Colorado: U.S. Geological Survey Open-File Report 74-95.