

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 near Twin Lakes Reservoir (Class A) No. 2307

Last Review Date: 1997-06-19

Compiled in cooperation with the Colorado Geological Survey

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Synopsis

These faults are in the northern end of the upper Arkansas Valley graben, which is a major Neogene structure that is the northernmost topographically prominent feature of the Rio Grande rift. The graben developed along the axial crest of the Laramide age Sawatch anticline. Two of the faults bound Twin Lakes Reservoir on the north and south sides, four faults bound Clear Creek Reservoir, and several of the other faults form closed depressions. Tweto and Case (1972 #2769) suggested faulting of late Cenozoic deposits based on geologic mapping, drill-hole data, and gravity and magnetic data that revealed a northeast-

	<p>trending magnetic low in the vicinity of Twin Lakes Reservoir. Tweto and Reed (1973 #2772) mapped these faults as inferred in rocks of the Miocene Dry Union Formation and younger unconsolidated Quaternary deposits. No detailed studies have been conducted in this area and Quaternary movement on these faults is not definitive. The most recent paleoevent on these faults is herein tentatively considered to have occurred during the Quaternary (<1.6 Ma).</p>
<p>Name comments</p>	<p>This series of unnamed faults lies in the upper Arkansas Valley south of Leadville. The faults are perpendicular to the south end of the northern section of the Sawatch fault [2308a] and the southern end of the Mosquito fault [2303].</p> <p>Fault ID: A few of these faults were previously mapped as fault 160 by Kirkham and Rogers (1981 #792). They are fault number Q55 of Widman and others (1998 #3441).</p>
<p>County(s) and State(s)</p>	<p>LAKE COUNTY, COLORADO CHAFFEE COUNTY, COLORADO</p>
<p>Physiographic province(s)</p>	<p>SOUTHERN ROCKY MOUNTAINS</p>
<p>Reliability of location</p>	<p>Good Compiled at 1:250,000 scale.</p> <p><i>Comments:</i> The faults were mapped at 1:62,000 scale by Tweto and Reed (1973 #2772), at 1:125,000 by Tweto and Case (1972 #2769), and at 1:250,000 scale by Tweto and others (1978 #2770). The trace used herein is from Tweto and Reed (1973 #2772), recompiled at 1:250,000 scale.</p>
<p>Geologic setting</p>	<p>The faults are on the north margin of the Precambrian high that separates the northern and southern sections of the Sawatch fault [2308]. Twin Lakes and Clear Creek Reservoirs are in basins bound by several of these faults. The faults are part of the upper Arkansas Valley graben, a Neogene west-tilted structure that forms the northernmost topographically prominent expression of the Rio Grande rift. The graben developed along the axial crest of the Laramide age Sawatch anticline. Gravity and magnetic data revealed a northeast-trending magnetic low in the vicinity of Twin Lakes Reservoir (Tweto and Case, 1972 #2772).</p>

Length (km)	13 km.
Average strike	N4°E
Sense of movement	Normal
Dip Direction	E; N
Paleoseismology studies	
Geomorphic expression	
Age of faulted surficial deposits	Test holes drilled in the area by the U.S. Bureau of Reclamation indicated late Cenozoic deposits (including the Miocene Dry Union Formation) are faulted against Precambrian rocks on the south side of Twin Lakes Reservoir (Tweto and Case, 1972 #2769). Tweto and Reed (1973 #2772) inferred offset of the Miocene Dry Union Formation and younger unconsolidated Quaternary deposits.
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) <i>Comments:</i> Based on geologic mapping, drill-hole data, and magnetic features, Tweto and Case (1972 #2769) indicated probable faulting of late Cenozoic deposits. Tweto and Reed (1973 #2772) mapped these faults as inferred in Miocene Dry Union Formation and younger unconsolidated Quaternary deposits. Without more definitive evidence for Quaternary movement, the most recent paleoevent on these faults is herein considered to have occurred during the Quaternary, but may actually have occurred prior to the Quaternary.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr <i>Comments:</i> Widmann and others (1998 #3441) placed this 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.

#2769 Tweto, O., and Case, J.E., 1972, Gravity and magnetic features as related to geology in the Leadville 30-minute quadrangle, Colorado: U.S. Geological Survey Professional Paper 726-C, 31 p.

#2772 Tweto, O., and Reed, J.C., Jr., 1973, Reconnaissance geologic map of the Mount Elbert 15-minute quadrangle, Lake Chaffee, and Pitkin Counties, Colorado: U.S. Geological Survey Open-File Report 73-5279.

#2770 Tweto, O., Moench, R.H., and Reed, J.C., 1978, Geologic map of the Leadville 1° x 2° quadrangle, northwestern Colorado: U.S. Geological Survey Miscellaneous Geologic Investigations I-999.

#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.

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