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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.

Whitney Canyon fault (Class A) No. 741

Last Review Date: 1994-06-03

citation for this record: **McCalpin, J.P., compiler, 1994, Fault number 741, Whitney Canyon 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 02:02 PM.**

Synopsis	This fault is one of many short, west-dipping normal faults that parallel east-directed thrust faults in Mesozoic sedimentary rock in this part of the Overthrust Belt. The fault forms two separate scarps and displaces Quaternary alluvium as well as rock of the Tertiary Wasatch Formation.
Name comments	Fault unnamed in compilation by Gibbons and Dickey (1983 #821). The informal name Whitney Canyon has been applied by J.P. McCalpin to this fault. The fault has an arcuate trace that extends from mouth of Becks Canyon south to about 1 km south of Whitney Canyon.
County(s) and State(s)	UINTA COUNTY, WYOMING
Physiographic province(s)	MIDDLE ROCKY MOUNTAINS

Reliability of location	Good Compiled at 1:250,000 scale. *Comments:* Mapped in reconnaissance (1:100,000 scale) by Gibbons and Dickey (1983 #821). Fault traces recompiled at 1:250,000-scale on map with topographic base.
Geologic setting	This fault is one of many short, west-dipping normal faults that parallel east-directed thrust faults in Mesozoic sedimentary rocks in this part of the Laramide Overthrust Belt. It is comprised of a short, arcuate down-to-west normal fault and 1-km-long antithetic fault along the west side of the Bear River Divide.
Length (km)	5 km.
Average strike	N18°W
Sense of movement	Normal *Comments:* Shown as normal by Gibbons and Dickey (1983 #821).
Dip Direction	W; E
Paleoseismology studies	Site 741-1: Gibbons and Dickey (1983 #821) collected charcoal samples from pre- and post-faulting sediment at a site near Whitney Canyon. These samples constrain the most recent paleoearthquake at between 1.2 ka and 2.4 ka. The constraining ages were determined by radiocarbon dating of charcoal samples and amino-acid dating of snail shells. No detailed mapping or stratigraphic relations are included in their discussion.
Geomorphic expression	Gibbons and Dickey (1983 #821) mentioned a 2-m-high west-facing fault scarp in the text that accompanies their map. The scarp appears to be on piedmont-slope or alluvial fan deposits to the south of the Whitney Canyon drainage. No morphometric studies have been conducted.
Age of faulted surficial deposits	Not explicitly stated by Gibbons and Dickey (1983 #821). Their criteria was that the fault offset erosion surfaces or materials (soils and deposits) dating from some stage in the development of the present landscape, which implied Quaternary movement.
Historic earthquake	

Most recent prehistoric deformation	latest Quaternary (<15 ka) *Comments:* Gibbons and Dickey (1983 #821) placed the most recent paleoearthquake at between 1.2 ka and 2.4 ka at Whitney Canyon. No information is available about the timing or amount of offset associated with a penultimate event.
Recurrence interval	*Comments:* Although the most recent event is dated at 1.2–2.4 ka (Gibbons and Dickey, 1983 #821), no prior events are documented; thus, no recurrence information exists.
Slip-rate category	Less than 0.2 mm/yr *Comments:* Low slip-rate category inferred on basis of single small (2 m) scarp, unknown recurrence interval, and absence of data to indicate otherwise.
Date and Compiler(s)	1994 James P. McCalpin, GEO-HAZ Consulting, Inc.
References	#821 Gibbons, A.B., and Dickey, D.D., 1983, Quaternary faults in Lincoln and Uinta Counties, Wyoming, and Rich County, Utah: U.S. Geological Survey Open-File Report 83-288, 1 sheet, scale 1:100,000.