

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](#).

Indian Creek faults (Class A) No. 673

Last Review Date: 1993-04-16

Compiled in cooperation with the Montana Bureau of Mines and Geology

citation for this record: Machette, M.N., compiler, 1993, Fault number 673, Indian Creek faults, 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 02:04 PM.

Synopsis	Series of short, echelon, east- and west-facing fault scarps recognized from aerial photos and later confirmed by ground reconnaissance.
Name comments	Named by Johns and others (1982 #259) for fault scarps on alluvial fans of local drainage. Also referred to as Townsend graben by Stickney and Bartholomew (1987 #85; 1987 #242) and West Canyon Ferry faults by Stickney and Bartholomew (written commun. 1992 #556). Indian Creek name is preferred because of prior usage and reference to a specific nearby locality. The fault scarps are north of Indian Creek on the piedmont between the Elkhorn Mountains and Canyon Ferry Lake.

	Fault ID: Refers to fault 114, Indian Creek faults, of Johns and others (1982 #259), fault 19, Townsend graben, of Stickney and Bartholomew (1987 #85), and West Canyon Ferry faults of Stickney and Bartholomew (written commun. 1992 #556).
County(s) and State(s)	BROADWATER COUNTY, MONTANA
Physiographic province(s)	NORTHERN ROCKY MOUNTAINS
Reliability of location	Good Compiled at 1:250,000 scale. <i>Comments:</i> From detailed mapping used to compile map by Stickney and Bartholomew (1987 #242).
Geologic setting	Intrabasin, high-angle normal faults that form graben on piedmont east of Elkhorn Mountains, northwest of Townsend, Montana. Stickney and Bartholomew (1987 #85) reported that these faults are part of a 7-km long by 2-km wide graben that trends N 35° W, 2-3 km east of the range front. The predominant sense of movement is down to the northeast, but some secondary faults are down to the southwest thus forming the graben reported by Stickney and Bartholomew (1987 #85).
Length (km)	4 km.
Average strike	N38°W
Sense of movement	Normal
Dip Direction	NE; SW
Paleoseismology studies	
Geomorphic expression	Six-km long zone of 0.5- to 1-km long echelon and parallel scarps on Quaternary surfaces. An additional 3 km of older (pre-late Quaternary) faults are present according to Stickney and Bartholomew (1987 #85), although these are not shown on a map.
Age of faulted surficial deposits	Pleistocene according to mapping of Freeman and others (1958 #526); Johns and others (1982 #259) suspect that these faults may cut an upper Quaternary (early? Wisconsin) alluvial fan. Stickney and Bartholomew (1987 #85) report that upper Quaternary (<130

	ka) deposits have 1- to 2-m-high scarps.
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) <i>Comments:</i> Based on geologic relations of scarps on deposits thought to be about 15-130 ka (Stickney and Bartholomew, 1987 #85).
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr <i>Comments:</i> Inferred slip rate based on 1- to 2-m-high scarps considered to be on deposits that are 15-130 ka (Stickney and Bartholomew, 1987 #85).
Date and Compiler(s)	1993 Michael N. Machette, U.S. Geological Survey, Retired
References	#526 Freeman, V.L., Ruppel, E.T., and Klepper, M.R., 1958, Geology of part of the Townsend Valley Broadwater and Jefferson Counties, Montana, <i>in</i> Contributions to economic geology: U.S. Geological Survey Bulletin 1042-N, p. 481-556, 1 pl., scale 1:48,000. #259 Johns, W.M., Straw, W.T., Bergantino, R.N., Dresser, H.W., Hendrix, T.E., McClernan, H.G., Palmquist, J.C., and Schmidt, C.J., 1982, Neotectonic features of southern Montana east of 112°30' west longitude: Montana Bureau of Mines and Geology Open-File Report 91, 79 p., 2 sheets. #242 Stickney, M.C., and Bartholomew, M.J., 1987, Preliminary map of late Quaternary faults in western Montana: Montana Bureau of Mines and Geology Open-File Report 186, 1 pl., scale 1:500,000. #85 Stickney, M.C., and Bartholomew, M.J., 1987, Seismicity and late Quaternary faulting of the northern Basin and Range province, Montana and Idaho: Bulletin of the Seismological Society of America, v. 77, p. 1602-1625. #556 Stickney, M.C., and Bartholomew, M.J., 1992 written commun., Preliminary map of late Quaternary faults in western

Montana (digital data): Montana Bureau of Mines and Geology
(digital version of MBMG Open-File Report 186), 1 pl., scale
1:500,000.

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