

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](#).

East Muddy Creek fault (Class A) No. 651

Last Review Date: 1993-04-01

Compiled in cooperation with the Montana Bureau of Mines and Geology

citation for this record: Haller, K.M., compiler, 1993, Fault number 651, East Muddy Creek 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 02:03 PM.

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| Synopsis | History of fault is poorly known; no detailed work has been completed. There is little general agreement in the time of most recent movement. Fault is complimentary basin-bounding fault to the West Muddy Creek fault [652]. |
| Name comments | An early reference to East Muddy Creek fault is Scholten and others (1955 #69), and might be source of name. Fault extends from approximately the latitude of north fork of McKnight Canyon southward to Shearing Pen Gulch. Fault ID: Refers to number 9 (East Muddy Creek fault) of Witkind (1975 #317). |

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| County(s) and State(s) | BEAVERHEAD COUNTY, MONTANA |
| Physiographic province(s) | NORTHERN ROCKY MOUNTAINS |
| Reliability of location | Poor Compiled at 1:250,000 scale. <i>Comments:</i> Fault trace is from 1:700,000-scale map of Ostenaar and Wood (1990 #318). |
| Geologic setting | High-angle, down-to-west, normal fault bounding northeast side of Muddy Creek basin. |
| Length (km) | 18 km. |
| Average strike | N23°W |
| Sense of movement | Normal <i>Comments:</i> (Scholten and others, 1955 #69) |
| Dip Direction | SW |
| Paleoseismology studies | |
| Geomorphic expression | Scholten and others (1955 #69) comment that fault is a distinctive feature for more than 15 mi but do not describe its characteristics. |
| Age of faulted surficial deposits | |
| Historic earthquake | |
| Most recent prehistoric deformation | undifferentiated Quaternary (<1.6 Ma) <i>Comments:</i> Fault has no features indicative of late Quaternary movement, but is considered it to be a potential seismic source (Ostenaar and Wood, 1990 #318). Witkind (1975 #317) shows fault as late Cenozoic but suggests that it might not have been active since Oligocene. Pierce and Morgan (1992 #539) indicate that this fault was active during the Tertiary but do not preclude Quaternary movement. M.J. Bartholomew (written commun. |

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| | 1997) found no evidence suggesting late Quaternary faulting with the exception of a single scarp of indeterminable origin. Because details are lacking, the fault is included in this compilation. Due to the lack of agreement in the timing of the most recent movement, a Quaternary age is assigned here. |
| Recurrence interval | |
| Slip-rate category | Less than 0.2 mm/yr <i>Comments:</i> Inferred low slip rate based on lack of data to indicate late Quaternary slip. |
| Date and Compiler(s) | 1993 Kathleen M. Haller, U.S. Geological Survey |
| References | #318 Ostenaar, D., and Wood, C., 1990, Seismotectonic study for Clark Canyon Dam, Pick-Sloan Missouri Basin Program, Montana: U.S. Bureau of Reclamation Seismotectonic Report 90-4, 78 p., 1 pl. #539 Pierce, K.L., and Morgan, L.A., 1992, The track of the Yellowstone hot spot— Volcanism, faulting, and uplift, <i>in</i> Link, P.K., Kuntz, M.A., and Platt, L.B., eds., Regional geology of eastern Idaho and western Wyoming: Geological Society of America Memoir 179, p. 1-53, 1 pl. #69 Scholten, R., Keenmon, K.A., and Kupsch, W.O., 1955, Geology of the Lima region, southwestern Montana and adjacent Idaho: Geological Society of America Bulletin, v. 66, p. 345-404. #317 Witkind, I.J., 1975, Preliminary map showing known and suspected active faults in western Montana: U.S. Geological Survey Open-File Report 75-285, 36 p. pamphlet, 1 sheet, scale 1:500,000. |

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