

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](#).

Thompson Valley fault (Class A) No. 696

Last Review Date: 2011-01-21

Compiled in cooperation with the Montana Bureau of Mines and Geology

citation for this record: Haller, K.M., compiler, 2011, Fault number 696, Thompson Valley 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 | Fault was first mapped and described by Ostenaar and others (1990 #540) based on photogeologic mapping and brief field reconnaissance. |
| Name comments | Source of the fault name is Ostenaar and others (1990 #540). The mapped fault scarps shown here extend from Bear Creek southward to the Little Thompson River, but the fault may extend approximately 3 km farther north to near Semem Creek. Fault ID: Not shown on any previous compilation. |
| County(s) and | SANDERS COUNTY MONTANA |

| | |
|----------------------------------|--|
| State(s) | SANDERS COUNTY, MONTANA |
| Physiographic province(s) | NORTHERN ROCKY MOUNTAINS |
| Reliability of location | <p>Good Compiled at 1:100,000 scale.</p> <p><i>Comments:</i> Location based on trace from 1:48,000-scale map of Ostenaa and others (1990 #540), further constrained by satellite imagery and topography at scale of 1:100,000. Reference satellite imagery is ESRI_Imagery_World_2D with a minimum viewing distance of 1 km. Ostenaa and others speculate that the fault extends at least 3 km north of the trace shown on their map and possibly as far as 20 km northward, based on the extent of the adjacent topographic basin, but they do not show its location.</p> |
| Geologic setting | Down-to-the-west, normal fault west of Cook Mountain and adjacent peaks to the south. The fault is nearly parallel to an elongate topographic basin and is located closer to the center of the basin than along the flanking mountains. Late Cenozoic displacement is inferred to be small because of the presence of bedrock outcrops and apparently thin alluvial fill in the adjacent valley (Ostenaa and others, 1990 #540). |
| Length (km) | 10 km. |
| Average strike | N12°W |
| Sense of movement | <p>Normal</p> <p><i>Comments:</i> (Ostenaa and others, 1990 #540)</p> |
| Dip Direction | W |
| Paleoseismology studies | |
| Geomorphic expression | A nearly continuous, down-to-the-west, fault scarp characterizes the part of the fault shown here. The maximum observed surface offset is 6.4 m on surfaces that are early to mid-Wisconsin in age or older (Ostenaa and others, 1990 #540). Prominent faceted spurs have been noted along the mountain front to the east, but they may be nontectonic in origin (Ostenaa and others, 1990 #540). |

| | |
|--|---|
| Age of faulted surficial deposits | upper Quaternary fan alluvium (Wisconsin in age) |
| Historic earthquake | |
| Most recent prehistoric deformation | late Quaternary (<130 ka) <i>Comments:</i> |
| Recurrence interval | <i>Comments:</i> Multiple late Quaternary faulting events are indicated by different amounts of surface offset on surfaces of different ages; however, the ages of the displaced surfaces are poorly constrained. Ostenaar and others (1990 #540) did not attempt to define recurrence intervals. |
| Slip-rate category | Less than 0.2 mm/yr <i>Comments:</i> Inferred low slip rate is based on 6.4-m-high scarp on surfaces at least early to mid-Wisconsin in age. |
| Date and Compiler(s) | 2011 Kathleen M. Haller, U.S. Geological Survey |
| References | #540 Ostenaar, D., Manley, W., Gilbert, J., LaForge, R., Wood, C., and Weisenberg, C.W., 1990, Flathead Reservation regional seismotectonic study—An evaluation for dam safety: U.S. Bureau of Reclamation Seismotectonic Report 90-8, 161 p., 7 pls. |

[Questions or comments?](#)

[Facebook](#) [Twitter](#) [Google](#) [Email](#)

[Hazards](#)

[Design Ground Motions](#)[Seismic Hazard Maps & Site-Specific Data](#)[Faults](#)[Scenarios](#)

[Earthquakes](#)[Hazards](#)[Data](#)[Education](#)[Monitoring](#)[Research](#)

[Home](#)[About Us](#)[Contacts](#)[Legal](#)