Jump to Navigation

# 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.**

## Secondary faults in Jackson Hole valley (Class B) No. 725

**Last Review Date: 2001-10-26**

***citation for this record:*** **Machette, M.N., and Pierce, K.L., compilers, 2001, Fault number 725, Secondary faults in Jackson Hole valley, 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 collection of fault-like surficial features are concentrated in short zones in the eastern to northern part of the Jackson Hole Valley, north of Jackson, Wyoming. They parallel the Teton fault [768] but display an order of magnitude (or much less) displacement. The faults have little net vertical offset on individual strands or across graben-like structures, much like those features south of Blacktail Butte fault [724]. Early geologic mapping, which first noted their presence, suggested a fault origin, but later studies for seismic hazard assessments has suggested that the features might be related to strong ground motion, and thus are secondary features. No detailed studies involving trenching or exposure of the faults have been performed. We consider these features to be Class B structures (uncertain origin, but of Quaternary age) pending further investigations. |

| | |
|---|---|
| **Name comments** | Shown as unnamed faults within the Potholes, Antelope Flats, and Flat Creek Fan Study Areas on plate 4 of Gilbert and others (1983 #1338) and described as other "north-trending normal faults" by Gilbert and others (1983 #1338). Inasmuch as little is known about these specific structures, we refer to them informally as secondary faults in Jackson Hole Valley. |
| **County(s) and State(s)** | TETON COUNTY, WYOMING |
| **Physiographic province(s)** | MIDDLE ROCKY MOUNTAINS |
| **Reliability of location** | Good<br>Compiled at 1:62,500 scale.<br><br>*Comments:* Fault traces based on geologic mapping at 1:62,5000 scale by Gilbert and others (1983 #1338), 1:125,000 scale by Love and others (1992 #2289), and Love and Love (1988 #4670). |
| **Geologic setting** | These widely distributed groups of relatively short scarps are present on alluvial fan sequences that commonly are underlain by fine-grained sediment, much like the lateral-spread features that formed near Chilly Buttes as a result of the 1983 Borah Peak, Idaho, earthquake. These faults are short and have little net vertical offset across the zone which indicates they may be secondary features (Gilbert and others, 1983 #1338). |
| **Length (km)** | 33 km. |
| **Average strike** | N5°E |
| **Sense of movement** | Normal |
| **Dip Direction** | W; E |
| **Paleoseismology studies** | |
| **Geomorphic expression** | The scarps included herein are concentrated in three discrete areas, each of which is shown on plate 4 of Gilbert and others (1983 #1338). From north to south, they are in the Potholes, Antelope Flats, and Flat Creek fan Study Areas. The scarps in the Potholes Study Area are about 2-2.5 km long, trend northeast, and are characterized by subdued slopes. The scarps in the Antelope Flats Creek fan Study Areas are about 4.5-5 km long and trend |

| | |
|---|---|
| | north-northeast or north-northwest. The scarps in the Flat Creek Study Area are more extensive, forming a zone about 5 km long (N-S) and up to 1 km wide (at the south end). In each case, there is some indication that the faulted surficial deposits overlie finer-grained sediment. No studies of scarp morphology appear to have been conducted. |
| **Age of faulted surficial deposits** | At Antelope Creek, the scarps are on Burned Ridge age glacial outwash (unit Qo41), whereas at the Potholes, the scarps are on Jackson Lake till (unit Qo42) (Gilbert and others, 1983 #1338). The scarps on the Flat Creek fan are on undated Holocene deposits (Gilbert and others, 1983 #1338). Recent studies for seismic hazard assessments have suggested that the features might be related to strong ground motion, and thus may be secondary features. |
| **Historic earthquake** | |
| **Most recent prehistoric deformation** | late Quaternary (<130 ka)<br><br>*Comments:* In general, the scarps are formed on terrace or alluvial fan deposits related to the last major glaciation (10-130 ka) or on Holocene deposits (undated). No studies of scarp morphology or trenching have been conducted at these sites in order to narrow the time of most recent faulting. |
| **Recurrence interval** | |
| **Slip-rate category** | Less than 0.2 mm/yr<br><br>*Comments:* The heights of scarps associated with the faults is generally small, and the north-trending scarps on late Quaternary deposits at Flat Creek suggest that about 0.6 m (2 ft) of late Quaternary displacement has occurred on at least some of these faults (Gilbert and others, 1983 #1338). A low-slip rate is inferred by the compiler on basis of small offset and on activity rates on other seemingly secondary late Quaternary faults in adjacent parts of the region (Gilbert and others, 1983 #1338). Wong and others (2000 #4484) did not consider these faults in their recent appraisal of late Quaternary faulting of northwestern Wyoming. |
| **Date and Compiler(s)** | 2001<br>Michael N. Machette, U.S. Geological Survey, Retired<br>Kenneth L. Pierce, U.S. Geological Survey, Emeritus |

| | |
|---|---|
| **References** | #1338 Gilbert, J.D., Ostenaa, D., and Wood, C., 1983, Seismotectonic study of Jackson Lake Dam and Reservoir, Minidoka Project, Idaho-Wyoming: U.S. Bureau of Reclamation Seismotectonic Report 83-8, 123 p., 11 pl.<br><br>#4670 Love, J.D., and Love, J.M., 1988, Geologic road log of part of the Gros Ventre River Valley including the Lower Gros Ventre slide: Wyoming Geological Survey Reprint 46, 14 p.<br><br>#2289 Love, J.D., Reed, J.C., Jr., and Christiansen, A.C., 1992, Geologic map of Grand Teton National Park: U.S. Geological Survey Miscellaneous Investigations Map I-2031, scale 1:62,500.<br><br>#4484 Wong, I., Olig, S., and Dober, M., 2000, Preliminary probabilistic seismic hazard analyses—Island Park, Grassy Lake, Jackson Lake, Palisades, and Ririe Dams: U.S. Department of the Interior, Bureau of Reclamation Technical Memorandum D8330-2000-17. |