

# 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](#).

## Diamond Springs fault (Class A) No. 682

Last Review Date: 1993-04-27

### Compiled in cooperation with the Montana Bureau of Mines and Geology

*citation for this record:* Machette, M.N., compiler, 1993, Fault number 682, Diamond Springs 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.

<b>Synopsis</b>	Poorly studied, down-to-the-east, normal fault that bounds pre-Tertiary bedrock at northwestern corner of Helena Valley. Trend is nearly perpendicular to the northern section Helena Valley fault [678a].
<b>Name comments</b>	Mapped and named by Stickney (1987 #251) for local drainage (Diamond Springs Gulch). Fault extends from Diamond Springs Gulch southward about 1 km.  <b>Fault ID:</b> Refers to fault 23, Diamond Springs fault, of Stickney and Bartholomew (1987 #85); Diamond Springs scarp of Stickney and Bartholomew (1987 #242).

<b>County(s) and State(s)</b>	LEWIS AND CLARK COUNTY, MONTANA
<b>Physiographic province(s)</b>	NORTHERN ROCKY MOUNTAINS
<b>Reliability of location</b>	Good Compiled at 1:250,000 scale.  <i>Comments:</i> From digital map of Stickney and Bartholomew (written commun. 1992 #556).
<b>Geologic setting</b>	One-km-long, down-to-the-east, normal fault that forms scarp on Quaternary deposits and bounds pre-Tertiary bedrock at the northwestern corner of Helena valley.
<b>Length (km)</b>	1 km.
<b>Average strike</b>	N6°E
<b>Sense of movement</b>	Normal  <i>Comments:</i> Stickney (1987 #251).
<b>Dip Direction</b>	E
<b>Paleoseismology studies</b>	
<b>Geomorphic expression</b>	Scarp on piedmont is dissected by streams that have terraces of Holocene to late Pleistocene age. No scarp heights or amounts of offset are mentioned by Stickney (1987 #251) or Stickney and Bartholomew (1987 #85).
<b>Age of faulted surficial deposits</b>	Stickney (1987 #251) showed the fault cutting Holocene and middle Pleistocene alluvium, but the depicted displacement of Holocene alluvium is a drafting error (Stickney, oral commun. 1993).
<b>Historic earthquake</b>	
<b>Most recent prehistoric deformation</b>	late Quaternary (<130 ka)  <i>Comments:</i> Stickney and Bartholomew (1987 #85; 1987 #242) show the fault as having late Pleistocene movement, but referenced by Stickney (1987 #251).

<b>Recurrence interval</b>	
<b>Slip-rate category</b>	Less than 0.2 mm/yr <i>Comments:</i> Low slip rate inferred from absence of scarps on Holocene and upper Quaternary deposits.
<b>Date and Compiler(s)</b>	1993 Michael N. Machette, U.S. Geological Survey, Retired
<b>References</b>	<p>#251 Stickney, M.C., 1987, Quaternary geologic map of the Helena valley, Montana: Montana Bureau of Mines and Geology Geologic Map 46, 1 pl., scale 1:50,000.</p> <p>#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.</p> <p>#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.</p> <p>#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.</p>

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