

# 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](#).

## Ruby Range northern border fault (Class A) No. 666

Last Review Date: 1994-05-05

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

*citation for this record:* Haller, K.M., compiler, 1994, Fault number 666, Ruby Range northern border 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 02:04 PM.

<b>Synopsis</b>	Little is known about the Quaternary history of this fault. All data are based on compilation of Johns and others (1982 #259). Published maps reveal significant differences in the location and extent of the fault.
<b>Name comments</b>	Name is from Johns and others (1982 #259). Fault extends from Ruby Range western border fault [665] southeastward to Williams Creek.  <b>Fault ID:</b> Refers to number 4 (Ruby Range northern border fault)

	of Johns and others (1982 #259).
<b>County(s) and State(s)</b>	MADISON COUNTY, MONTANA
<b>Physiographic province(s)</b>	NORTHERN ROCKY MOUNTAINS
<b>Reliability of location</b>	Poor Compiled at 1:250,000 scale.  <i>Comments:</i> Location based on 1:500,000-scale map of Johns and others (1982 #259). Only the southeastern 13 km of the fault is shown on the geologic map of Ruppel and others (1993 #646), but the location agrees with the trace shown here except for the part east of the Ruby River. Ruppel and others (1993 #646) show this part of the fault 0.5 km to the south.
<b>Geologic setting</b>	High-angle, down-to-the-northeast, range-front normal fault bounding the northern side of the Ruby Range. Amount of structural throw is unknown.
<b>Length (km)</b>	22 km.
<b>Average strike</b>	N50°W
<b>Sense of movement</b>	Normal  <i>Comments:</i> (Johns and others, 1982 #259)
<b>Dip Direction</b>	NE
<b>Paleoseismology studies</b>	
<b>Geomorphic expression</b>	No scarps are reported along this fault; the range front is abrupt.
<b>Age of faulted surficial deposits</b>	The fault defines the contact between Quaternary alluvium and bedrock (Ruppel and others, 1993 #646).
<b>Historic earthquake</b>	
<b>Most recent prehistoric deformation</b>	undifferentiated Quaternary (<1.6 Ma)  <i>Comments:</i> Timing of faulting is poorly constrained. Johns and others (1982 #259) suggest that the most recent event occurred

	<p>during the late Pleistocene based on a genetic response of fan building to faulting; they do not report scarps on alluvial deposits. Pierce and Morgan (1992 #539) indicate that this fault was active during the Tertiary but do not preclude Quaternary movement. Bartholomew and Stickney examined several sites along the fault and found no evidence suggesting late Quaternary faulting (M.J. Bartholomew, written commun. 1997). Because details are lacking, the fault is included in this compilation. Pierce and Morgan (1992 #539) indicate that this fault was active during the Tertiary but do not preclude Quaternary movement. Bartholomew and Stickney examined several sites along the fault and found no evidence suggesting late Quaternary faulting (M.J. Bartholomew, written commun. 1997). 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.</p>
<p><b>Recurrence interval</b></p>	
<p><b>Slip-rate category</b></p>	<p>Less than 0.2 mm/yr</p> <p><i>Comments:</i> Inferred low slip rate is based on the absence of scarps.</p>
<p><b>Date and Compiler(s)</b></p>	<p>1994 Kathleen M. Haller, U.S. Geological Survey</p>
<p><b>References</b></p>	<p>#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.</p> <p>#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.</p> <p>#646 Ruppel, E.T., O'Neill, J.M., and Lopez, D.A., 1993, Geologic map of the Dillon 1° x 2° quadrangle, Idaho and Montana: U.S. Geological Survey Miscellaneous Investigations Map I-1803-H, 1 sheet, scale 1:250,000.</p>

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