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Quaternary Fault and Fold Database of the United States

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Eastern Bear Valley fault (Class B) No. 734

Last Review Date: 1994-06-03

citation for this record: **McCalpin, J.P., compiler, 1994, Fault number 734, Eastern Bear 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 02:01 PM.**

Synopsis	This is one of many west-dipping normal faults that parallel east-directed thrust faults in this part of the Overthrust Belt. It is generally poorly expressed and is mainly concealed; thus, little is known about its Quaternary history. It is considered to be a Class B structure because age is uncertain.
Name comments	The informal name Eastern Bear Valley fault has been applied by J.P. McCalpin to the fault that bounds the east side of Bear Valley, Wyoming. Included here is the northern extension of the fault shown by Witkind (1975 #819) along the west margin of the Sublette Range on its northern end. As such, the fault is entirely in Wyoming, but extends from about the latitude of Geneva, Idaho, south to about 1.5 km east of Eli Hill in Wyoming. **Fault ID:** Refers to number 18 (unnamed fault east side of graben, west side of Sublette Range) in Witkind (1975 #819).

County(s) and State(s)	LINCOLN COUNTY, WYOMING
Physiographic province(s)	MIDDLE ROCKY MOUNTAINS
Reliability of location	Poor Compiled at 1:250,000 scale. *Comments:* Location of southern 35 km of fault is based on 1:63,360-scale mapping of Rubey and others (1975 #816; 1980 #814), whereas the northern part of the fault is from 1:500,000-scale reconnaissance mapping by Witkind (1975 #819). Fault traces recompiled at 1:250,000 scale on map with topographic base. Almost the entire length of the fault is mapped as concealed and thus poorly located; its location is largely inferred from geomorphologic relations.
Geologic setting	One of many west-dipping normal faults that parallel east-directed Laramide thrust faults in this part of the Overthrust Belt. Fault bounds eastern side of a structural depression that contains the Bear River.
Length (km)	47 km.
Average strike	N2°E
Sense of movement	Normal *Comments:* Shown as normal by Rubey and others (1975 #816; 1980 #814).
Dip	60°-75° *Comments:* Shown in cross sections by Rubey and others (1975 #816) as dipping 60?W; however, they indicated that data are insufficient to determine dip of this fault. To the north, the fault is shown to dip 65?-70? W (Rubey and others, 1980 #814).
Paleoseismology studies	
Geomorphic expression	Fault is inferred to control the alluvium-bedrock contact on the eastern side of valley, but no scarps are known to exist.
Age of faulted	Rubey and others (1975 #816; 1980 #814) showed almost all of

surficial deposits	the fault trace as concealed beneath alluvium. At one location Jurassic bedrock is faulted at the surface (Rubey and others, 1980 #814).
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* Timing of the most recent movement is not constrained. Witkind (1975 #819) showed this fault as late Cenozoic and Rubey and others (1975 #816; 1980 #814) showed the fault as mainly concealed beneath Quaternary alluvium. However, this fault may be as young as the Rock Creek fault [729] (i.e. Holocene) and its inferred young scarps have been buried by aggradation of the Bear River floodplain. Therefore, the fault is considered to be a Class B (suspected Quaternary) structure until further studies are completed.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* No data exist to support a slip rate, but the fault is herein considered to be in the <0.2 mm/yr slip-rate category. However, the rate could be larger than that of other faults in the vicinity because Cenozoic motion on this fault has created a large, sediment-filled depression (the Bear Valley), whereas others have not. Further work, such as dating of subsurface units needs to be done in order to determine slip rates.
Date and Compiler(s)	1994 James P. McCalpin, GEO-HAZ Consulting, Inc.
References	#816 Rubey, W.W., Oriel, S.S., and Tracey, J.I., Jr., 1975, Geology of the Sage and Kemmerer 15-minute quadrangles, Lincoln County, Wyoming: U.S. Geological Survey Professional Paper 855, 18 p., 2 pls. #814 Rubey, W.W., Oriel, S.S., and Tracey, J.I., Jr., 1980, Geologic map and structure sections of the Cokeville 30-minute quadrangle, Lincoln and Sublette Counties, Wyoming: U.S. Geological Survey Miscellaneous Investigations Map I-1129, 2 sheets, scale 1:62,500. #819 Witkind, I.J., 1975, Preliminary map showing known and

	suspected active faults in Wyoming: U.S. Geological Survey Open-File Report 75-279, 35 p. pamphlet, 1 sheet, scale 1:500,000.