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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.

Crawford Mountains (west side) fault (Class A) No. 2346

Last Review Date: 1999-10-01

Compiled in cooperation with the Utah Geological Survey

citation for this record: **Black, B.D., and Hecker, S., compilers, 1999, Fault number 2346, Crawford Mountains (west side) 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 03:00 PM.**

Synopsis	Poorly understood range-front and valley-floor normal fault along the western base of the Crawford Mountains and in the Bear River flood plain. The central part of the fault shows evidence for late Pleistocene activity.
Name comments	**Fault ID:** Refers to fault number 11-4 of Hecker (1993 #642).
County(s) and State(s)	RICH COUNTY, UTAH

Physiographic province(s)	MIDDLE ROCKY MOUNTAINS
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* Mapped or discussed by Lamerson (1982 #4461), Hecker (1987 #642), Sullivan and others (1988 #4508), and Evans (1991 #4425). Fault traces from Hecker (1987 #642).
Geologic setting	Generally north- to northeast-trending range-front normal fault along the western side of the Crawford Mountains. Structurally, the Crawford Mountains are a north-trending tightly folded syncline with normal faults along the east and west flanks. The west fault extends southward into the valley floor and Bear River flood plain.
Length (km)	25 km.
Average strike	N16°E
Sense of movement	Normal
Dip Direction	W *Comments:* The range-front fault appears to have a listric subsurface geometry possibly inherited from earlier thrusting (Evans, 1991 #4425; Lamerson, 1982 #4461; F. Royse, in Sullivan and others, 1988 #4508).
Paleoseismology studies	
Geomorphic expression	Scarps are apparently absent on the Bear River flood plain and on young, Holocene (?), alluvial fans. However, older alluvial scarps are preserved locally, and faulting appears to truncate many talus slopes along the range front. Late Pleistocene faulting likely extends north of the faulted Bear River terrace to at least where the range front takes a prominent left step, and south for an unknown distance. The impressive steepness and linearity of the range front suggest recurrent late Quaternary faulting, but these characteristics are likely due in part to resistant rock units that dip steeply (50-70?) basinward. The position of the Bear River on the east side of the valley and meander-bend scars adjacent to the range front also suggest recent tectonic tilting.

Age of faulted surficial deposits	An offset Bear River terrace at the south end of the fault likely dates from Pinedale time (<70 ka), as indicated by weak soil development in a thick loess deposit that overlies fluvial sand and gravel. Scarps are apparently absent on the Bear River flood plain and on young, Holocene (?), alluvial fans.
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) *Comments:* A faulted Bear River terrace at the south end of the fault likely dates from Pinedale time (<70 ka), whereas scarps are apparently absent in the Bear River flood plain and on young, Holocene (?), alluvial fans.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Black and Hecker (2000 #4336) placed this structure within the <0.2 mm/yr slip-rate category.
Date and Compiler(s)	1999 Bill D. Black, Utah Geological Survey Suzanne Hecker, U.S. Geological Survey
References	#4336 Black, B.D., Hecker, S., Jarva, J.L., Hylland, M.D., and Christenson, G.E., 2000, Quaternary fault and fold database and map of Utah: Technical report to U.S. Geological Survey, Reston, Virginia, under Contract 98QGR1029, October 2000, unpaginated, 1pl., scale 1:500,000. #4425 Evans, J.P., 1991, Structural setting of seismicity in northern Utah: Utah Geological Survey Contract Report 91-15, 37 p. #642 Hecker, S., 1993, Quaternary tectonics of Utah with emphasis on earthquake-hazard characterization: Utah Geological Survey Bulletin 127, 157 p., 6 pls., scale 1:500,000. #4461 Lamerson, P.R., 1982, The Fossil Basin and its relationship to the Absaroka thrust system, Wyoming and Utah, *in* Powers, R.B., ed., Geologic studies of the Cordilleran thrust belt, volume I: Rocky Mountain Association of Geologists, p. 279-340.

	#4508 Sullivan, J.T., Nelson, A.R., LaForge, R.C., Wood, C.K., and Hansen, R.A., 1988, Central Utah regional seismotectonic study for USBR dams in the Wasatch Mountains: Bureau of Reclamation Seismotectonic Report 88-5, 269 p.