

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](#).

Sevier Valley Hills faults and folds (Class B) No. 2537

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 2537, Sevier Valley Hills faults and folds, 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 02:53 PM.

Synopsis	Poorly understood diffuse zone of suspected late Quaternary folding and faulting in the Sevier Valley Hills near Panguitch. Geomorphic evidence in the area of deformed basalts suggests that folding and faulting possibly continued into the latest Pleistocene or Holocene.
Name comments	Named modified from "Sevier Valley (Hills near Panguitch) faults and folds" as used by Hecker (1993 #642). Fault ID: Refers to fault number 10-17 of Hecker (1993 #642).

County(s) and State(s)	GARFIELD COUNTY, UTAH
Physiographic province(s)	COLORADO PLATEAUS
Reliability of location	Good Compiled at 1:250,000 scale. <i>Comments:</i> Mapped or discussed by Bucknam and Anderson (1979 #332) and Anderson and Christenson (1989 #828). Fault traces from 1:250,000-scale mapping of Anderson and Christenson (1989 #828).
Geologic setting	Zone of folds and faulted folds in the hills south and east of Panguitch in Sevier Valley. Sevier Valley is in the Southern High Plateaus, a physiographic area capped by the most extensive expanse of extrusive igneous rocks in Utah. The area is divided into seven distinct plateaus, based on physiographic breaks produced by external bounding cliffs and internal alluvium-filled valleys following north-trending fault lines or narrow grabens.
Length (km)	24 km.
Average strike	N9°E
Sense of movement	Normal
Dip Direction	Unknown <i>Comments:</i> Zone contains a variety of dip directions, although the folds are dominantly north trending.
Paleoseismology studies	
Geomorphic expression	The northernmost fold is defined by fan surfaces (probably as old as middle Pleistocene) that are rotated as much as a few degrees away from a central graben. Faulted folds on-trend to the south are mostly in a 5.3 Ma basalt that overlies sediment of the Sevier River Formation, and they have limbs that dip an average of 5 degrees. Axial graben scarps are as much as about 25 m in height, whereas most other scarps are only a few meters high. Tilted fan surfaces have mature calcic soils that represent many tens of thousands to >100 ka of soil formation. Streams that flow west

from the Sevier Plateau bisect the surfaces and scarps, and Holocene fluvial deposits (having ^{14}C ages of 4,000-5,000 yr B.P. at one locality) locally bury the faulted surfaces. One low-lying surface 4 km north of the intersection of Utah Highways 89 and 12 is displaced vertically less than 1 m by surface faulting that may be similar in age to the late Pleistocene event on faults north of Panguitch [2536]. Geomorphic evidence in the area of deformed basalts suggests that folding and faulting possibly continued into the latest Pleistocene or Holocene. Several closed basins disrupt drainages, and an anomaly in the channel pattern of the Sevier River where it crosses the southward projection of an anticline suggests active uplift. A general morphologic age of 100 ka estimated for scarps within the larger Panguitch area was estimated using regression analysis of scarp-profile data (Bucknam and Anderson, 1979 #332), but this may not be meaningful because of possible erosional complications and because the available data show significant scatter. In addition, these scarps probably represent multiple faulting events, which complicates the analysis of scarp morphology. The faulted folds are thought to have formed aseismically and to be genetically related to the subparallel Sevier fault [2355]. The clusters of closely spaced scarps are associated with far less structural relief than the folds and probably represent shallow, fold-related faults with little seismic potential.

Age of faulted surficial deposits	Tilted alluvial-fan surfaces (and underlying deposits) have mature calcic soils that represent many tens of thousands to >100 ka of soil formation.
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) <i>Comments:</i>
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr
Date and Compiler(s)	1999 Bill D. Black, Utah Geological Survey Suzanne Hecker, U.S. Geological Survey

References

#828 Anderson, R.E., and Christenson, G.E., 1989, Quaternary faults, folds, and selected volcanic features in the Cedar City 1° x 2° quadrangle, Utah: Utah Geological and Mineral Survey Miscellaneous Publication 89-6, 29 p., 1 pl., scale 1:250,000.

#332 Bucknam, R.C., and Anderson, R.E., 1979, Estimation of fault-scarp ages from a scarp-height—slope-angle relationship: *Geology*, v. 7, p. 11-14.

#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.

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