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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.**

## Babbitt Lake fault zone (Class A) No. 954

**Last Review Date: 1997-01-02**

## Compiled in cooperation with the Arizona Geological Survey

***citation for this record:*** **Pearthree, P.A., compiler, 1997, Fault number 954, Babbitt Lake fault zone, 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 03:14 PM.**

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| **Synopsis** | The Babbitt Lake fault zone is a short, narrow, shallow graben formed on Paleozoic bedrock and lower to middle Pleistocene basalt flows. The surface of a lower Pleistocene basalt flow is vertically displaced at least 4 m. The fault scarp formed on basalt is gentle, which suggests that this fault has not ruptured recently or during the late Quaternary. |
| **Name comments** | Mapped by Menges and Pearthree (1983 #2073) who included it with many other faults in their Double Top fault set; it was later named the Babbitt Lake fault zone by Pearthree and others (1996 #2153). The geologic map of the area was published by Wolfe and others (1987 #2158). |

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| **County(s) and State(s)** | COCONINO COUNTY, ARIZONA |
| **Physiographic province(s)** | COLORADO PLATEAUS |
| **Reliability of location** | Good<br>Compiled at 1:250,000 scale.<br><br>*Comments:* Trace mapped at 1:50,000 scale, transferred to 1:250,000-scale topographic base map. |
| **Geologic setting** | The fault zone is located in the northern part of the Pliocene-Quaternary San Francisco volcanic field, on the erosion surface between the Mogollon Rim and the Grand Canyon. The Babbitt Lake fault zone is one of several northwest-trending faults that cut Paleozoic bedrock and lower or middle Quaternary basalt flows near the northern limit of Quaternary volcanic rocks. |
| **Length (km)** | 8 km. |
| **Average strike** | N50°W |
| **Sense of movement** | Normal<br><br>*Comments:* Inferred from surface displacement and regional relations. |
| **Dip Direction** | NE; SW |
| **Paleoseismology studies** | |
| **Geomorphic expression** | The fault zone is expressed as a narrow (<300-m-wide), shallow (<10-m-deep) physiographic trough formed on Paleozoic bedrock and lower Quaternary basalt flows. The floor of the trough is partially covered by late Quaternary alluvium. The highest scarp is about 5 m high on an early Pleistocene basalt flow. The fault scarp on basalt is quite subdued, suggesting that the fault has not ruptured in the late Quaternary. |
| **Age of faulted surficial deposits** | Paleozoic, early to early middle Pleistocene |
| **Historic** | |

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| **earthquake** | |
| **Most recent prehistoric deformation** | middle and late Quaternary (<750 ka)<br><br>*Comments:* Lower and lower to middle Pleistocene basalt flows are faulted. Holocene alluvium is not faulted. |
| **Recurrence interval** | |
| **Slip-rate category** | Less than 0.2 mm/yr<br><br>*Comments:* Lower to middle Pleistocene (~750 ka) basalt is displaced at least 4 m. These data suggest an extremely low slip rate. |
| **Date and Compiler(s)** | 1997<br>Philip A. Pearthree, Arizona Geological Survey |
| **References** | #2073 Menges, C.M., and Pearthree, P.A., 1983, Map of neotectonic (latest Pliocene-Quaternary) deformation in Arizona: Arizona Geological Survey Open-File Report 83-22, 48 p., scale 1:500,000.<br><br>#2153 Pearthree, P.A., Vincent, K.R., Brazier, R., and Hendricks, D.M., 1996, Plio-Quaternary faulting and seismic hazard in the Flagstaff area, northern Arizona: Arizona Geological Survey Bulletin 200, 40 p., 2 pls.<br><br>#2158 Wolfe, E.W., Ulrich, G.E., and Newhall, C.G., 1987, Geologic map of the northwest part of the San Francisco volcanic field, north-central Arizona: U.S. Geological Survey Miscellaneous Field Studies Map MF-1957, 2 sheets, scale 1:50,000. |