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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.**

## Western Bull Run Mountains fault (Class A) No. 1550

**Last Review Date: 1999-01-15**

***citation for this record:*** **Adams, K., and Sawyer, T.L., compilers, 1999, Fault number 1550, Western Bull Run Mountains 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 02:36 PM.**

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| **Synopsis** | This range-front plateau-bounding normal fault borders the west side of the Bull Run Mountains, from Mitchell Creek southward, along west front of Wilson Peak and Lime Mountain, to just north of Deep Creek. The bedrock of the Bull Run Mountains is the westernmost massif of Paleozoic basement rocks for 70 km. The intervening Owyhee Desert volcanic plateau, not only buries basement rock but also disrupts Basin-and-Range structure. Several related piedmont faults, in the vicinity of Silver Creek, southwest of Porcupine Pass and near the mouth of Bull Run Canyon, are expressed as short west-facing scarps. The range-front fault juxtaposes Quaternary alluvium against bedrock and is expressed as the abrupt front of the Bull Run Mountains, and the less abrupt but well-defined fronts of Wilson Peak and Lime Mountain. Reconnaissance photogeologic mapping of the faults and geologic mapping of the region are the sources of data. |

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| | Trench investigations and detailed studies of scarp morphology have not been completed. |
| **Name comments** | Refers to faults mapped by Slemmons (1966, unpublished McDermitt 1? X 2? sheet), Coats (1987 #2861), and Dohrenwend and Moring (1991 #284) along the west side of the Bull Run Mountains. dePolo (1998 #2845) named it the Western Bull Run Mountains fault.<br><br>**Fault ID:** Refers to fault MD15 (Western Bull Run Mountains fault) of dePolo (1998 #2845). |
| **County(s) and State(s)** | ELKO COUNTY, NEVADA |
| **Physiographic province(s)** | BASIN AND RANGE<br>COLUMBIA PLATEAU |
| **Reliability of location** | Good<br>Compiled at 1:100,000 scale.<br><br>*Comments:* Fault locations primarily based on 1:250,000-scale map of Dohrenwend and Moring (1991 #284) which was produced by analysis of 1:58,000-nominal-scale color-infrared photography transferred directly to 1:100,000-scale topographic quadrangle maps enlarged to scale of the photographs. The location of additional faults is from 1:250,000-scale bedrock mapping of Coats (1987 #2861). |
| **Geologic setting** | This range-front plateau-bounding normal fault borders west side of the Bull Run Mountains, from Mitchell Creek southward, along west front of Wilson Peak and Lime Mountain, to just north of Deep Creek (Coats, 1987 #2861; Dohrenwend and Moring, 1991 #284). Dohrenwend and Moring (1991 #284) show older Tertiary faults extending another 7 km to the south. The bedrock of the Bull Run Mountains is the westernmost massif of Paleozoic basement rocks for 70 km. The intervening Owyhee Desert volcanic plateau, not only buries basement rock but also disrupts Basin-and-Range structure. |
| **Length (km)** | 26 km. |
| **Average strike** | N10°E |
| **Sense of movement** | Normal |

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| | *Comments:* Not studied in detailed; normal sense of movement from Dohrenwend and Moring (1991 #284) and inferred from topography. |
| **Dip Direction** | W |
| **Paleoseismology studies** | |
| **Geomorphic expression** | The range-front fault juxtaposes Quaternary alluvium against bedrock and is expressed as the abrupt front of the Bull Run Mountains, and the less abrupt but well-defined fronts of Wilson Peak and Lime Mountain to the south. Several related west-facing piedmont scarps are located in the vicinity of Silver Creek, southwest of Porcupine Pass and near the mouth of Bull Run Canyon (Coats, 1987 #2861; Dohrenwend and Moring, 1991 #284). dePolo (1998 #2845) indicates that there are no scarps on alluvium and no basal fault facets. |
| **Age of faulted surficial deposits** | early to middle Pleistocene(?); Pleistocene; Tertiary. Faults displace early to middle Pleistocene(?) and undifferentiated Pleistocene piedmonts-slope deposits and juxtapose these deposits and Quaternary-Tertiary alluvium against Mesozoic and Tertiary bedrock. |
| **Historic earthquake** | |
| **Most recent prehistoric deformation** | undifferentiated Quaternary (<1.6 Ma)<br><br>*Comments:* Although timing of most recent event is not well constrained, a Quaternary time is suggested based on reconnaissance photogeologic mapping of Dohrenwend and Moring (1991 #284). |
| **Recurrence interval** | |
| **Slip-rate category** | Less than 0.2 mm/yr<br><br>*Comments:* No detailed data exists to determine slip rates for this fault. dePolo (1998 #2845) assigned a reconnaissance vertical slip rate of 0.001 mm/yr for the fault based on the absence of scarps on alluvium and the absence of basal facets. The late Quaternary characteristics of this fault (overall geomorphic expression, continuity of scarps, age of faulted deposits, etc.) support a low |

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| | slip rate. Accordingly, the less than 0.2 mm/yr slip-rate category has been assigned to this fault. |
| **Date and Compiler(s)** | 1999<br>Kenneth Adams, Piedmont Geosciences, Inc.<br>Thomas L. Sawyer, Piedmont Geosciences, Inc. |
| **References** | #2861 Coats, R.R., 1987, Geology of Elko County, Nevada: Nevada Bureau of Mines and Geology Bulletin 101, 112 p., scale 1:250,000.<br><br>#2845 dePolo, C.M., 1998, A reconnaissance technique for estimating the slip rate of normal-slip faults in the Great Basin, and application to faults in Nevada, U.S.A.: Reno, University of Nevada, unpublished Ph.D. dissertation, 199 p.<br><br>#284 Dohrenwend, J.C., and Moring, B.C., 1991, Reconnaissance photogeologic map of young faults in the McDermitt 1° by 2° quadrangle, Nevada, Oregon, and Idaho: U.S. Geological Survey Miscellaneous Field Studies Map MF-2177, 1 sheet, scale 1:250,000. |

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