

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](#).

Mount Riley fault (zone) (Class A) No. 2071

Last Review Date: 2016-01-05

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources

citation for this record: Machette, M.N., and Jochems, A.P., compilers, 2016, Fault number 2071, Mount Riley 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 02:23 PM.

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| Synopsis | The Mount Riley fault bounds the western margin of the uplifted East Potrillo Mountains (an asymmetric horst) and in places forms a west-facing scarp on dissected sediment of the Camp Rice Formation, northwest of the Potrillo maar. It is inferred to cut Quaternary basalt southwest of Cox Peak. The fault may be a mountainward (eastern) splay of the West Robledo fault [2064]. It continues south of the International Border into Mexico. No detailed studies have been made of the fault. |
| Name comments | This fault zone was named for Mount Riley (Seager and Mack, 1994 #1015). The zone is several kilometers wide in bedrock, but only a single surface trace is preserved on the southwestern |

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| | margin of the zone. |
| County(s) and State(s) | DOÑA ANA COUNTY, NEW MEXICO |
| Physiographic province(s) | BASIN AND RANGE |
| Reliability of location | Good Compiled at 1:24,000 scale. <i>Comments:</i> Mapped using generalized trace of the fault in New Mexico from 1:125,000-scale map of Seager (1995 #975) and 1:24,000-scale mapping of Seager and Mack (1994 #1015) combined with photogrammetric investigations where fault has evident surficial expression. |
| Geologic setting | This poorly defined, mainly concealed, northwest-trending, range-bounding fault forms the western side of the southwest-tilted East Potrillo Mountain block (an asymmetric horst). It includes a dissected west-facing scarp on sediment of the Camp Rice Formation (Pliocene to early Quaternary). Other strands of the fault zone form reverse fault-line scarps that separate lower Santa Fe Group sediment from piedmont-facies sediment of the Camp Rice Formation and are inferred (but not proven) to cut basalt of the West Potrillo Mountains to the southwest of Cox Peak. The fault zone may be a mountainward (eastern) splay of the West Robledo fault [2064]. No detailed studies address this fault |
| Length (km) | 37 km. |
| Average strike | N31°W |
| Sense of movement | Normal <i>Comments:</i> The fault zone is shown as being comprised of high-angle faults on cross sections of Seager and Mack (1994 #1015) and Seager (1995 #975). |
| Dip Direction | SW <i>Comments:</i> Two short strands south of the International Border dip NE. |
| Paleoseismology | |

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| studies | |
| Geomorphic expression | Displacement on the Mount Riley fault forms a west-facing scarp on dissected sediment of the Camp Rice Formation in places. Elsewhere, the fault has little or no expression as a recognizable scarp. The fault is exposed south of Cox Peak where it juxtaposes Santa Fe Group sediment with intermediate volcanic and volcanoclastic rocks (Seager and Mack, 1994 #1015; Seager, 1995 #975). |
| Age of faulted surficial deposits | Quaternary units that are faulted include sediment of the upper part of the Camp Rice Formation, as young as early to middle (?) Pleistocene and possibly some basalts of the West Potrillo Mountains (Seager, 1995 #975). |
| Historic earthquake | |
| Most recent prehistoric deformation | undifferentiated Quaternary (<1.6 Ma) <i>Comments:</i> The faulted deposits require Quaternary movement along at least one strand of the fault, whereas the other strands may have been active yet lack surficial evidence of Quaternary movement. |
| Recurrence interval | |
| Slip-rate category | Less than 0.2 mm/yr <i>Comments:</i> A low slip rate is inferred from the small apparent offset associated with scarp on sediment of the Camp Rice Formation and from rates of more conspicuous Quaternary faults in the region. |
| Date and Compiler(s) | 2016 Michael N. Machette, U.S. Geological Survey, Retired Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources |
| References | #975 Seager, W.R., 1995, Geology of southwest quarter of Las Cruces and northwest El Paso 1° x 2° sheets, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic Map 60, 5 sheets, scale 1:125,000. #1015 Seager, W.R., and Mack, G.H., 1994, Geology of East Potrillo Mountains and vicinity, Doña Ana County, New Mexico: |

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