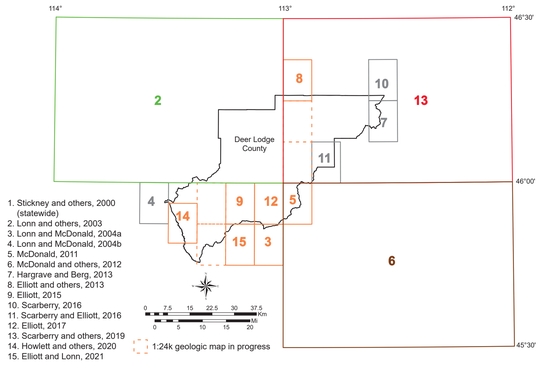

1. Stickney and others, 2000 (statewide)
2. Lonn and others, 2003
3. Lonn and McDonald, 2004a
4. Lonn and McDonald, 2004b
5. McDonald, 2011
6. McDonald and others, 2012
7. Hargrave and Berg, 2013
8. Elliott and others, 2013
9. Elliott, 2015
10. Scarberry, 2016
11. Scarberry and Elliott, 2016
12. Elliott, 2017
13. Scarberry and others, 2019
14. Howlett and others, 2020
15. Elliott and Lonn, 2021

1:24k geologic map in progress

Figure 1. Previous mapping in the study area.

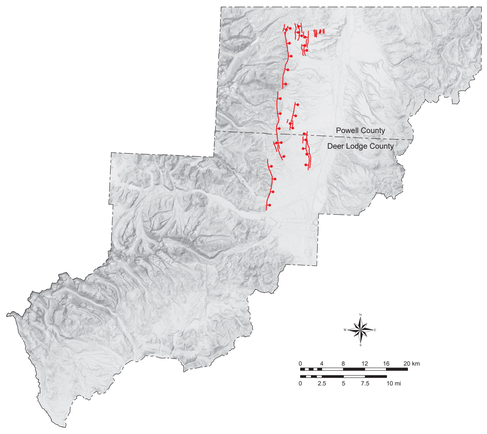

Figure 2. Generalized tectonic map of Deer Lodge County and southern Powell County showing Quaternary faults that have a predominantly normal sense of slip.

Scale 1:75,000

Base map: Lidar hillshade digital elevation model (DEM) overlain with slopeshade (relief). Lidar data for Deer Lodge County made available by the Montana State Library.

Location of Deer Lodge County, Montana

Legend

- Interstate
- Major road
- Railroad
- Town
- Stream
- County boundary

Quaternary Faults

- less than 15,000 years (Latest Quaternary)
- less than 130,000 years (Late Quaternary)
- less than 1.8 million years (Middle to Late Quaternary)
- less than 2.6 million years (undifferentiated Quaternary)

All Quaternary faults are shown with associated level of mapping certainty. Solid lines indicate well-constrained faults. Dashed lines indicate moderately constrained faults. Dotted lines indicate concealed faults.

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Geologic Map 102

Quaternary Fault Map of Deer Lodge County, Southwest Montana

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This Quaternary fault map identifies faults that demonstrate evidence of earthquake surface rupture based on lidar data, geomorphic and topographic analyses, field checks, and, when available, published geological maps (fig. 1). Faults are considered potentially active and hazardous if fault displacement occurred during the Quaternary (past 2.6 million years), and produced surface deformation during an earthquake, typically expressed as fault scarps. Quaternary faults in Deer Lodge County have a predominantly normal sense of slip and accommodate extension (fig. 2), associated with the Northern Rockies Basin and Range.

This map is designed for use as a general planning tool and is appropriate for use at a scale of 1:75,000. Site-specific investigations and more detailed geotechnical information are required for earthquake hazard assessments.

Latest Quaternary faults are those that have evidence of fault displacement within the past 15,000 years. Faults in this category have well-constrained locations with fault scarps that cut Holocene or late Pinedale aged sediments.

Late Quaternary faults are those that have evidence of fault displacement within the past 130,000 years. Faults in this category have well-constrained locations with fault scarps that cut Late Pleistocene or Bull Lake age sediments.

Middle to Late Quaternary faults are those that have evidence of fault displacement within the past 1.8 million years. Faults in this category have well- to moderately constrained locations with bedrock fault scarps or fault-controlled topographic lineaments that deform Quaternary sediments.

Undifferentiated Quaternary faults are those suspected to have fault displacement within the past 2.6 million years. Faults in this category have well- to moderately constrained locations or may be concealed but inferred to deform Quaternary sediments.

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Maps may be obtained from:
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