https://doi.org/10.59691/LTWO3427

Montana Bureau of Mines and Geology
STATEMAP Program 2025

The primary objective of the **USGS STATEMAP** program is to establish the geologic framework of areas determined to be vital to the economic, social, or scientific welfare of individual states. Mapping priorities are established by State Geological Surveys in consultation with a multi-representational **State Mapping Advisory Committee** (SMAC).

Project Summaries—Fiscal Year 2024

Delivered to the USGS on June 30, 2025:

- Mapping and final compilation of the Dillon 30′ x 60′ quadrangle. Mosolf (PI)
- Detailed geologic mapping in the Polson 30′ x 60′ quadrangle including the north half of the Weeksville and the south half of the Loneman Creek 7.5′ quadrangles, and the Shroder Creek 7.5′ quadrangle, scale 1:24,000. Gavillot (PI), Parker (co-PI)
- Detailed geologic mapping of the Fort Connah 7.5′ quadrangle and the southern Mission fault. Gavillot (PI)
- Completion and publication of Buxton and Tucker Creek 7.5′ quadrangles (I-15 interstate freeway corridor). Elliott (PI)
- Landslide map of the historic Virginia City area, southwest Montana. Willingham (PI)
- Surficial deposit compilation for the 1:100,000-scale seamless geologic map of Montana. Vuke (PI)
- Subsurface mapping of the Glendive and Glasgow 1° x 2° quadrangles, northeast Montana. Gunderson (PI)

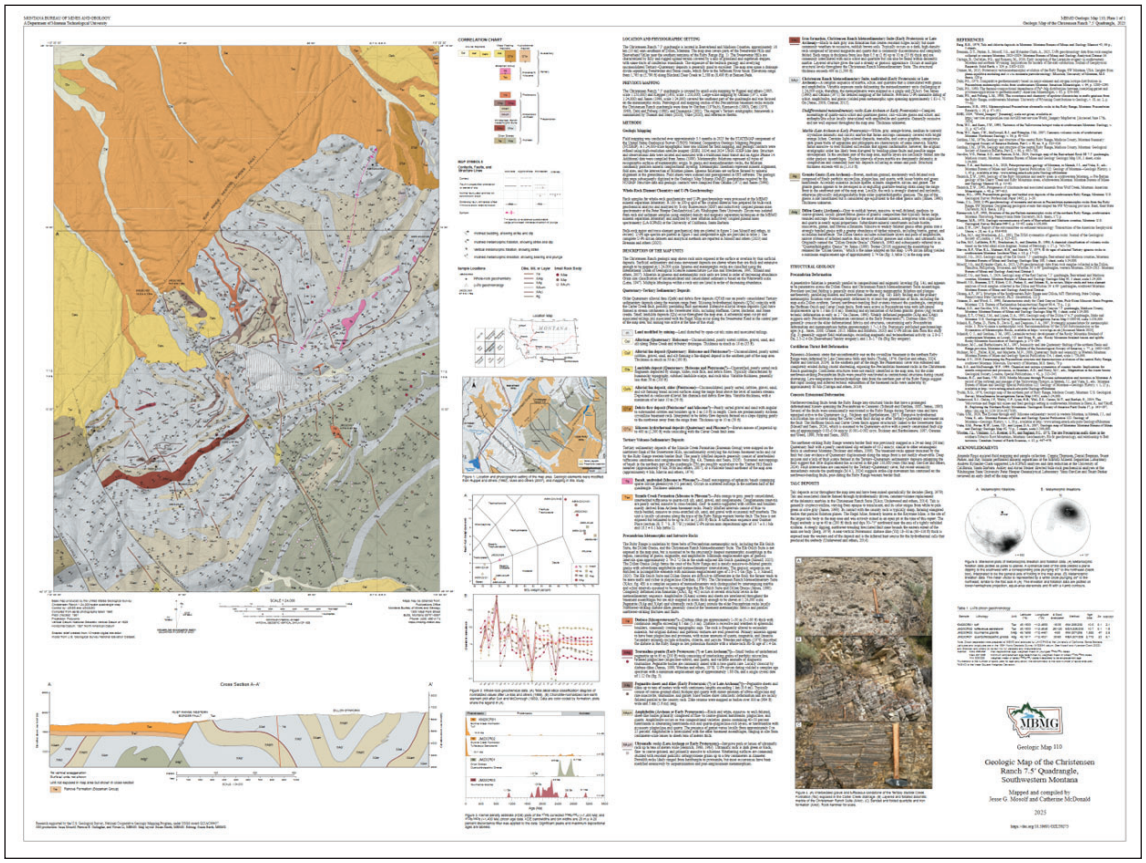

Figure 1. Thumbnail image of GM 110, the Christensen Ranch map, published this year.

Project Summaries—Fiscal Year 2025

In progress for August 17, 2026 USGS submittal deadline:

Project 1: Detailed geologic mapping of Baldy Lake, Big Fork, Cook Mountain, and Rose Crossing 7.5′ quadrangles. Parker (PI), Mosolf (Co-PI)

Project 2: Derivative Quaternary fault map of the Saint Marys Lake and Saint Ignatius 7.5′ quadrangles. Gavillot (PI)

Project 3: Detailed geologic map of the Gardiner 7.5′ quadrangle. Willingham (PI)

Project 4: Geologic map of the north half of the Leadore 30′ x 60′ quadrangle in Montana (scale 1:100,000). Lonn (PI)

Project 5: Surficial deposit compilation for the 1:100,000-scale seamless geologic map of Montana. Vuke (PI)

Project 6: Subsurface mapping of the Jordan and Miles City 1° x 2° quadrangles, northeast Montana. Gunderson (PI)

Project 7: Submission of MBMG geochronology data to the USGS National Geochron Database. Brennan (PI)

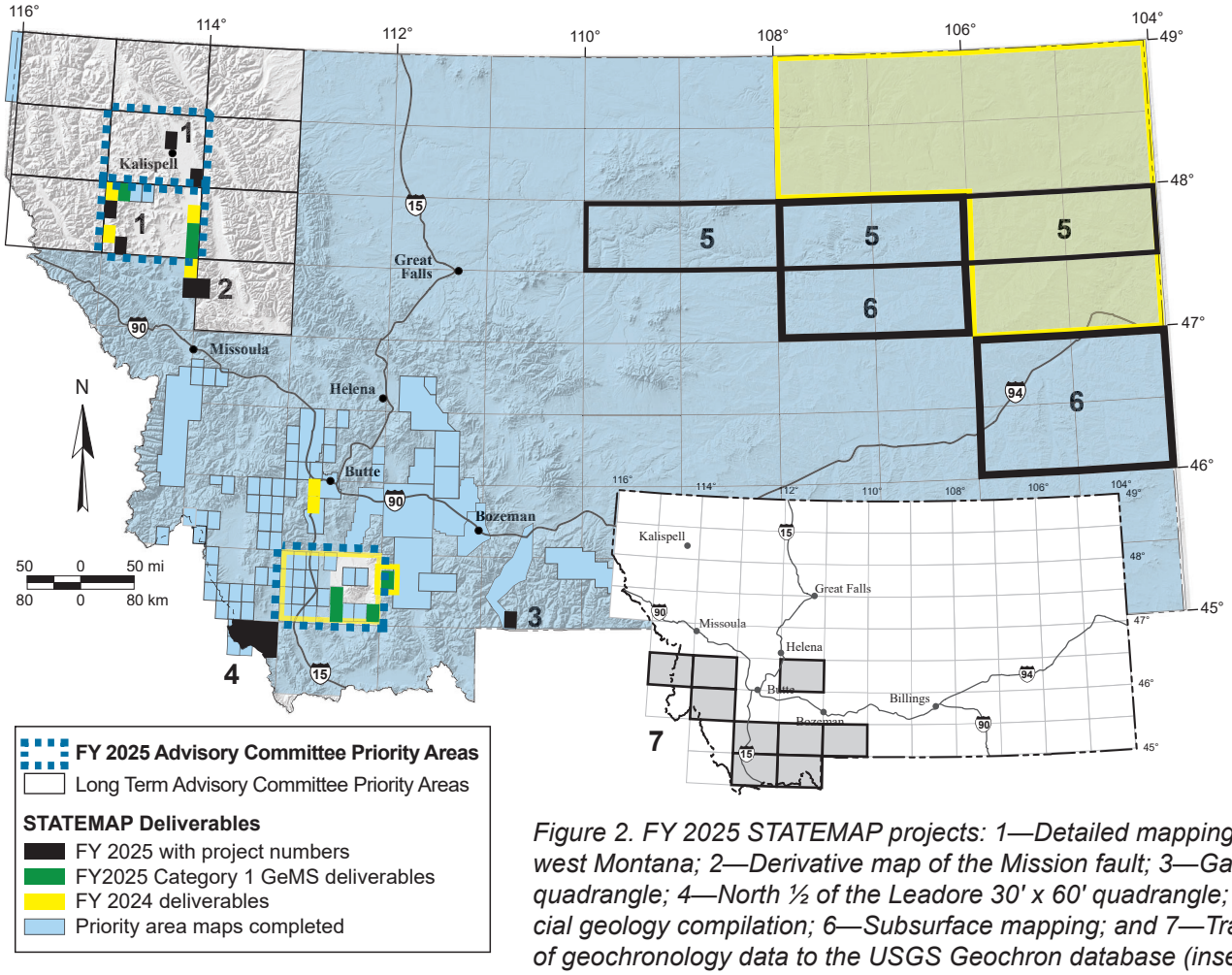

Figure 2. FY 2025 STATEMAP projects: 1—Detailed mapping in northwest Montana; 2—Derivative map of the Mission fault; 3—Gardiner 7.5' quadrangle; 4—North ½ of the Leadore 30' x 60' quadrangle; 5—Surficial geology compilation; 6—Subsurface mapping; and 7—Transmittal of geochronology data to the USGS Geochron database (inset map).

Other Geology Projects that Involve MBMG Mappers:

Economic Geology

USGS Earth MRI—Collaborative Geologic Mapping across the Montana–Idaho border: Alta and Horse Creek Pass 7.5' quadrangles

Three-year project to characterize potential for critical commodity occurrences in Sheep Creek–ID Cobalt Belt in collaboration with the Idaho Geological Survey.

Geohazards and Earthquake Studies

FEMA-MTDES—

- *Fault and landslide hazard maps from new lidar of Park and Missoula Counties, geohazards database of faults and landslides from new lidar of Jefferson and Deer Lodge Counties.*

  Identification of Quaternary faults and landslides using new lidar coverage for Park County and Missoula County, creation of fault and landslide hazard maps for public education. Standardization of online geodatabase parameters for previously published Quaternary fault and landslide maps of Jefferson and Deer Lodge Counties.

- *MT Geohazards Workshop*

  Annual MT Geohazards Workshop; coordination of the Montana Earthquake Working Group.

USGS NEHRP—

- *Quaternary slip rates and surface geometry of the East Gallatin–Reese Creek fault system, Yellowstone National Park: Collaborative Research with Montana Technological University and Wyoming State Geological Survey.*

  Constrain seismic source characterization along the East Gallatin–Reese Creek fault system by collecting new slip rate data through mapping of fault scarps, scarp vertical surface displacement measurements, and cosmogenic radionuclides analytical results, creation of fault hazard map and technical report for public education, seismic hazard assessments contributing to the National Seismic Hazard Model.

Regional Collaboration

Intermountain West Mapping Coalition

Met in April in Socorro, NM with other coalition members to discuss potential cross-border collaboration and common research goals. Purpose of coalition is to pool resources for joint investigations and scientific exchanges to advance the understanding of the complex and varied geology of the Intermountain West region of the United States and bordering areas.

MBMG STATEMAP Personnel

Geologists
Daniel Brennan
Colleen Elliott
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Cartographer
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Map Reviewer
Steve Quane

Map Editor
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2024–2025 STATEMAP Publications

Brennan, Daniel T., 2025, Geologic map of the Home Park Ranch 7.5′ quadrangle, southwestern Montana: Montana Bureau of Mines and Geology Geologic Map 109, 1 sheet, scale 1:24,000, https://doi.org/10.59691/MSIX7749

Brennan, D.T., Parker, S., Mosolf, J.G., and Kylander-Clark, A., 2025, U-Pb Geochronology data from rock samples collected in the Butte North, Dillon, Philipsburg, Polson, and Wisdom 30′ x 60′ quadrangles, western Montana, 2023–2024: Montana Bureau of Mines and Geology Analytical Dataset 16, https://doi.org/10.59691/TXET7641

Brennan, D.T., Sears, J.W., and Mosolf, J.G., 2024, Geologic map of the Belmont Park Ranch 7.5′ quadrangle, Madison County, Montana: Montana Bureau of Mines and Geology Geologic Map 99, 1 sheet, scale 1:24,000, https://doi.org/10.59691/TJCH2055

Elliott, Colleen G., 2024, Geologic map of the Big Hole Battlefield 7.5′ quadrangle, southwestern Montana: Montana Bureau of Mines and Geology Geologic Map 97, 1 sheet, scale 1:24,000, https://doi.org/10.59691/QIYJ2150

Elliott, C.G., Lonn, J.D., and Salazar, R., 2025, Geologic map of the Wisdom 30′ x 60′ quadrangle, southwestern Montana: Montana Bureau of Mines and Geology Geologic Map 106, 37 p., 1 sheet, scale 1:100,000, https://doi.org/10.59691/DOQV3157

Gavillot, Y.G., Parker, S.D., and Pearson, D.M., 2024, Geologic map of the Beaverhead Rock SE 7.5′ quadrangle, Madison County, Montana: Montana Bureau of Mines and Geology Geologic Map 101, 1 sheet, scale 1:24,000, https://doi.org/10.59691/AKIR4686

Lonn, J.D., Elliott, C.G., Burmester, R.F., and Lewis, R.S., 2024, Geologic map of the Big Hole Pass 7.5′ quadrangle, southwestern Montana and eastern Idaho: Montana Bureau of Mines and Geology Geologic Map 94, 1 sheet, scale 1:24,000, https://doi.org/10.59691/PBOA7465

McDonald, C., and Thomas, R.C., 2024, Geologic map of the Argenta 7.5′ quadrangle, southwest Montana: Montana Bureau of Mines and Geology Geologic Map 100, 1 sheet, scale 1:24,000, https://doi.org/10.59691/ESAY9062

Montana Bureau of Mines and Geology, 2025, Interactive Geologic Map of Montana: Montana Bureau of Mines and Geology Digital Map 1, scale 1:500,000, https://doi.org/10.59691/TQRS9419

Mosolf, Jesse G., 2025, Geologic map of the Elk Gulch 7.5′ quadrangle, southwestern Montana: Montana Bureau of Mines and Geology Geologic Map 108, 1 sheet, scale 1:24,000, https://doi.org/10.59691/NHYS7628

Mosolf, J.G., and McDonald, C., 2025, Geologic map of the Christensen Ranch 7.5′ quadrangle, southwestern Montana: Montana Bureau of Mines and Geology Geologic Map 110, 1 sheet, scale 1:24,000, https://doi.org/10.59691/GZLT6273

Mosolf, J.G., and Sears, J., 2024, Geologic map of the Red Canyon 7.5′ quadrangle, Beaverhead and Madison counties, Montana: Montana Bureau of Mines and Geology Geologic Map 95, 1 sheet, scale 1:24,000, https://doi.org/10.59691/UJZS2764

Mosolf, Jesse G., 2024, Geologic map of the Burns Mountain 7.5′ quadrangle, Beaverhead County, Montana: Montana Bureau of Mines and Geology Geologic Map 96, 1 sheet, scale 1:24,000, https://doi.org/10.59691/JCEN9713

Mosolf, J.G., and McDonald, C., 2024, Major oxide and trace element analyses of rock samples collected in the Dillon 30′ x 60′ quadrangle, southwest Montana, 2019–2020: Montana Bureau of Mines and Geology Analytical Dataset 9, https://doi.org/10.59691/OUKW4846

Parker, Stuart D., 2025, Geologic map of the Murr Peak 7.5′ quadrangle, Flathead and Sanders Counties, Montana: Montana Bureau of Mines and Geology Geologic Map 107, 1 sheet, scale 1:24,000, https://doi.org/10.59691/VWPC5709

Parker, S.D., and Gavillot, Y.G., 2024, Geologic map of the Laurin Canyon 7.5′ quadrangle, Madison County, Montana: Montana Bureau of Mines and Geology Geologic Map 98, 1 sheet, scale 1:24,000, https://doi.org/10.59691/WMJR3264

Stewart, D.E., Lewis, R.S., Lonn, J.D., Salazar, R., Burmester, R.F., and Elliott, C., 2025, Geologic map of the Lost Trail Pass quadrangle, Lemhi County, Idaho, and Beaverhead and Ravalli Counties, Montana: Montana Bureau of Mines and Geology Geologic Map 103, 1 sheet, scale 1:24,000, https://doi.org/10.59691/LQQA5158

2024–2025 Non-STATEMAP Publications that Involve MBMG Mappers

Elliott, C., and English, A., 2025, 50th annual field conference: Bannack, Montana: Tobacco Root Geological Society, Northwest Geology 54, 177 p.

Gavillot, Yann G., 2025, Landslide inventory and slope map of Deer Lodge County, southwest Montana: Montana Bureau of Mines and Geology Geologic Map 104, 1 sheet, scale 1:75,000, https://doi.org/10.59691/HZHD5965

Gavillot, Yann G., 2025, Quaternary fault map of Deer Lodge County, southwest Montana: Montana Bureau of Mines and Geology Geologic Map 102, 1 sheet, scale 1:75,000. https://doi.org/10.59691/CQIB1687

MBMG
Montana Bureau of Mines and Geology

Established in 1919, the Montana Bureau of Mines and Geology (MBMG) continues to fulfill its mandate to collect and publish information on Montana's geology to promote orderly and responsible development of the energy, groundwater, and mineral resources of the State. A non-regulatory state agency, the MBMG provides extensive advisory, technical, and informational services on the State's geologic, mineral, energy, and water resources. The MBMG is the principal source of earth science information for the citizens of Montana.