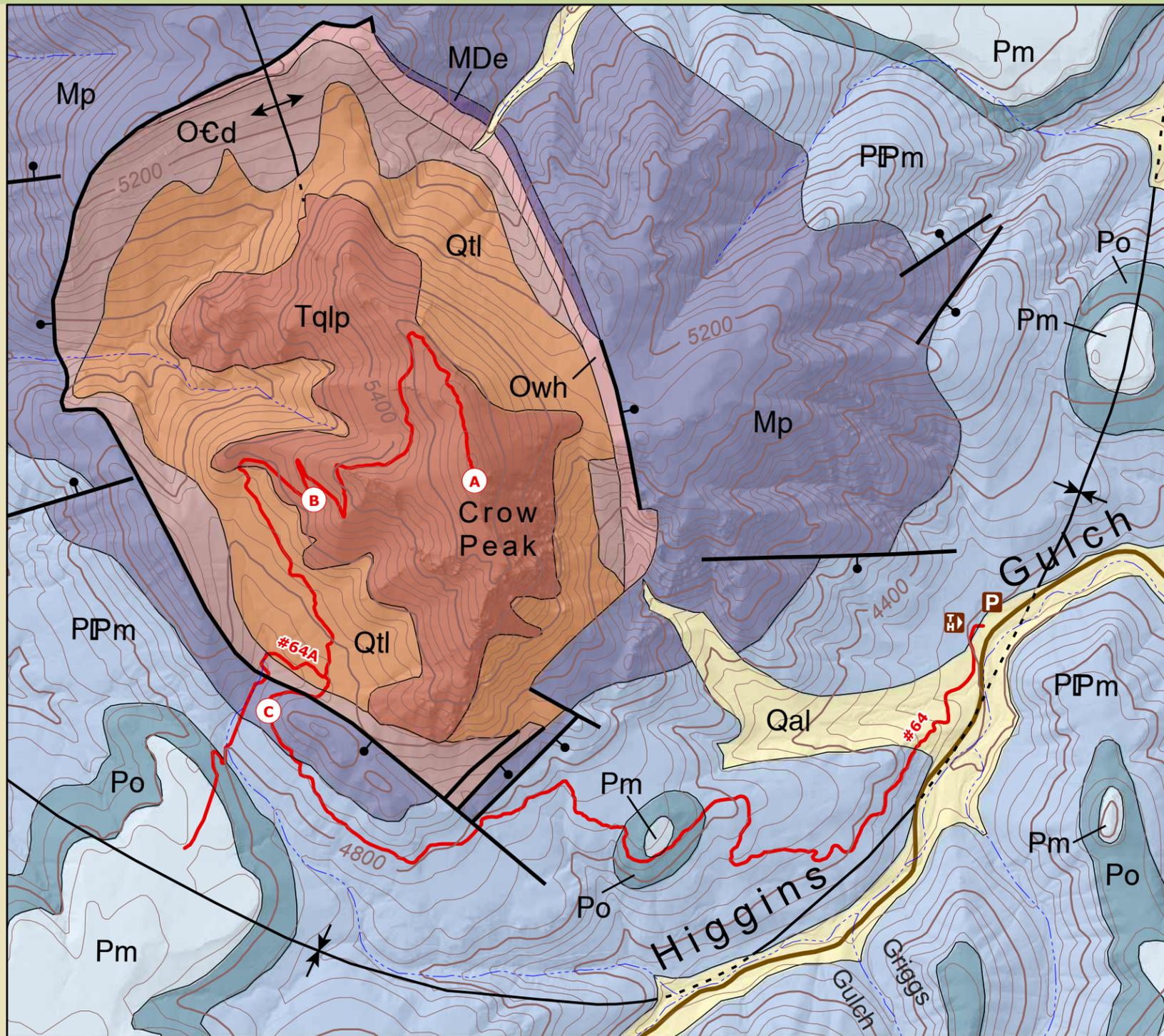
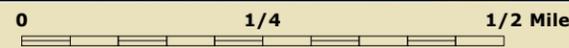


GEOLOGY ALONG THE CROW PEAK TRAIL AND SPUR BLACK HILLS NATIONAL FOREST TRAILS #64 AND #64A

Compiled by Jonathan N. Luczak



TRAILS LENGTH: 3.7 MILES



CONTOUR INTERVAL 40 FEET

FURTHER READING

Gries, J.P., 2005, *Roadside geology of South Dakota*: Missoula, Montana, Mountain Press Publishing Company, 358 p.

Lisenbee, A.L., Redden, J.A., and Fahrenbach, M.D., 2007, *Geologic map of the Maurice quadrangle, South Dakota*: South Dakota Geological Survey 7.5 minute Series Geologic Quadrangle Map 7, scale 1:24:000.

LEGEND

- | | | | | | |
|-------|------------------|---|--------|-----|--------------|
| — | CONTACT | — | ROAD | Ⓐ | WAYPOINT |
| - - - | FAULT | — | TRAIL | Ⓗ | TRAILHEAD |
| ↓ | Downside Unknown | — | STREAM | #64 | TRAIL NUMBER |
| ↑ | FOLD | — | #64A | P | PARKING |
| ↕ | Anticline | | | | |
| ↘ | Syncline | | | | |

Crow Peak trail and its spur provide a glimpse into one of the 32 varieties of Tertiary igneous intrusions found in the northern Black Hills. At the beginning of the trail you will encounter sedimentary rock formations ranging in age from Cambrian to Permian containing limestone, sandstone, dolomite, and shale. On your way up you will cross a talus field comprised of boulders that continue to erode from the intrusion to this day. You will then summit Crow Peak and stand on top of the igneous intrusion itself, a quartz latite porphyry.

GEOLOGIC FORMATIONS SEEN ALONG THE TRAILS

- Qal** **ALLUVIUM** - Clay, silt, sand, and gravel deposited in drainages during the Quaternary period (2.5 million years to present-day)
- Qtl** **TALUS** - Unconsolidated, angular blocks of randomly oriented, locally derived material. Deposited along steep slopes of Crow Peak during the Quaternary period (2.5 million years to present-day). This can be observed at waypoint B, see picture
- Tqlp** **QUARTZ LATITE PORPHYRY** - Igneous intrusion of Tertiary age (2.5-66 million years ago). Gray to brownish-gray latite porphyry with abundant alkali-feldspar, plagioclase, quartz, and minor hornblende. This unit can be observed at waypoint A, see picture
- Pm** **MINNEKAHTA LIMESTONE** - Carbonate sedimentary rock likely deposited in a marginal marine environment during the Permian period (252-299 million years ago). Pink, purplish-gray, to beige limestone
- Po** **OPECHE SHALE** - Sedimentary rock deposited in a marginal marine environment in the Permian period (252-299 million years ago). Dark red to reddish-brown shale with calcareous lenses. The uppermost section is purple from alteration due to groundwater movement
- PIPm** **MINNELUSA FORMATION** - Sedimentary rock deposited in a marginal marine environment in the Permian and Pennsylvanian periods (252-323 million years ago). Red, brown, and beige sandstone, shale, and limestone
- Mp** **PAHASAPA LIMESTONE** - Sedimentary rock deposited during the Mississippian period (323-359 million years ago) in a marine to marginal marine environment. Massive gray, white, and beige limestone with sandstone beds up to 15 ft. thick. Typically forms prominent cliffs, which can be observed at waypoint C, see picture
- MDe** **ENGLEWOOD LIMESTONE** - Sedimentary rock deposited in a marine environment during the Mississippian and Devonian periods (323-419 million years ago). Lavender, pink, and purplish-gray dolomitic limestone and shale
- Owh** **WHITEWOOD LIMESTONE** - Carbonate sedimentary rock deposited in a marine environment during the Ordovician period (444-485 million years ago). Orange, beige, and gray dolomite and dolomitic limestone
- OEd** **DEADWOOD FORMATION** - Sedimentary rock deposited in a marginal marine environment during the Ordovician and Cambrian periods (444-541 million years ago). Gray, brown, and green shale, sandstone, conglomerate, and limestone



Talus derived from the quartz latite porphyry of Crow Peak



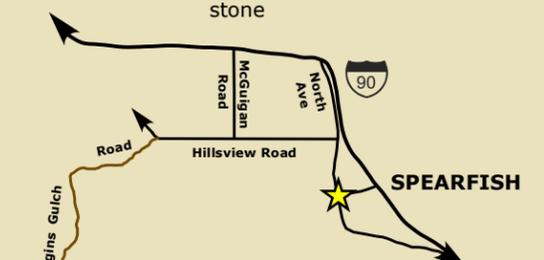
An outcrop of the Pahasapa limestone



Quartz latite porphyry seen at the top of Crow Peak

44.467013
-103.947746

LOCATION MAP



Contact the appropriate US Forest Service (USFS) office or refer to USFS Trail Map 64 for most up-to-date trail conditions and uses. Many trails are in remote locations with limited, poor, or nonexistent cell phone reception. It is the responsibility of the individual(s) using this map to ensure that they are physically able to perform the hike safely and are equipped with appropriate supplies before arriving at the trailhead (including but not limited to food, water, medical/emergency supplies, and backup navigation). Be aware that trail conditions may change abruptly. Reasonable efforts have been made by the South Dakota Geological Survey to ensure that this map accurately reflects the source data used in its preparation. Some base data for this map are modified from the USFS's Crow Peak Map 64: <https://www.fs.usda.gov>