Bedrock Geologic Map of the Disappointment Lake Area, Lake County, Northeastern Minnesota

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Precambrian Research Center Map Series

*This map is intended only as a guide to the geology and map units and is not to scale. This map is based on geologic and geostatistical studies, and the interpretation conforms to sound geologic and cartographic principles, however, the University of Minnesota does not warrant or guarantee that there are no errors. Users shall be solely responsible for the use and interpretation of the data.*

Explanatory Text

This map was created by PRC Field Camp students under the guidance of Dr. Dean Peterson, Duluth Metals District. The map was generated using georeferenced Farm Service Agency Airphotos of 2003-2004 and modified using georeferenced Farm Service Agency Airphotos of 2003-2004. The map was included in this project was achieved through extensive mapping of shorelines within the Disappointment Lake area. This map was created by PRC Field Camp students under the guidance of Dr. Dean Peterson, Duluth Metals District. This is the first detailed map of the area produced at a 1:10,000 scale.

Regional Geology

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**Sample Location Map**

**Digital Topography**

**Vertical Derivative Magnetic Anomaly Map**

**Geologic Cross-section A-A' of the Archean Metasedimentary, Volcanic and Volcaniclastic Rocks**

**Geologic Cross-section B-B' of the Mesoproterozoic Duluth Complex Contact with the Archean Rocks**

**Correlation of Map Units**

**Map Symbols**

**Description of Map Units**

- **Metamorphic**
  - M3ad/Hs
  - MoG
  - A1ab

- **Intrusive**
  - Light to medium grey, plagioclase-phyric (up to 3%) and/or hornblende granite.
  - Light grey, fine- to medium-grained, heterogeneous diorite and hornblende diorite. Matrix is groundmass. Pebble- to boulder-size clasts comprise granite-granodiorite, massive to amygdaloidal basalt, leucogranite, quartz-phyric to euhedral garnet phenocrysts near metasedimentary contacts. Basaltic enclaves and greywacke xenoliths are present locally.

- **Supracrustal**
  - Light to dark grey, medium- to coarse-grained locally pegmatitic or aplitic, granite or hornblende granite. - Multiphase intrusive igneous suite of the 1.1 Ga Midcontinent rift.

- **Volcanic and Volcaniclastic Rocks**
  - Massive and pillowed basalt lava flows (A1ab) - unit is also characterized by a strong structural and sheared fabric that is absent in the interbedded mudstone, sandstone, and conglomerate. The rock is thoroughly recrystallized and is commonly cross-cut by thin (<1cm - 1m) granitic dikes.
  - Greywacke conglomerate hornfels rocks - light to medium grey, granoblastic to granular hornfels sedimentary rocks, including metamorphosed sandstone, siltstone, mudstone, conglomerate, and quartzite. The rock is thoroughly recrystallized and is characterized by a fine- to medium-grained matrix composed of granoblastic subhedral plagioclase, biotite, hornblende, and quartz. Pebble- to boulder-size clasts comprise granite-granodiorite, massive to amygdaloidal basalt, leucogranite, and quartz-phyric granite.
  - Norite (PN) - medium- to coarse-grained, massive to amygdaloidal basalt and associated hyaloclastite.
  - Basaltic enclave (MhB) - medium- to coarse-grained, massive to amygdaloidal basalt and associated hyaloclastite.
  - Basalt hornfels (MhD) - light grey, fine- to medium-grained, heterogeneous diorite and hornblende diorite. Matrix is groundmass. Pebble- to boulder-size clasts comprise granite-granodiorite, massive to amygdaloidal basalt, leucogranite, and quartz.
  - Volcanic and Volcaniclastic Rocks (AHs) - light grey, fine- to medium-grained, heterogeneous diorite and hornblende diorite. Matrix is groundmass. Pebble- to boulder-size clasts comprise granite-granodiorite, massive to amygdaloidal basalt, leucogranite, and quartz.

**References**


