

LEGEND

Concentration of heavy metal, 0.001 or greater ppm
in stream waters 0.001
in spring waters 0.001

Concentration of heavy metal, 0.000 ppm
in stream waters 0.000
in spring waters 0.000

Location of known mineral veins

Mineral occurrences Pb x

Mineral Symbols

Copper Cu Silver Ag
Lead Pb Zinc Zn

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Geological cartography by the Geological Survey of Canada, 1965

Intermittent lake and stream

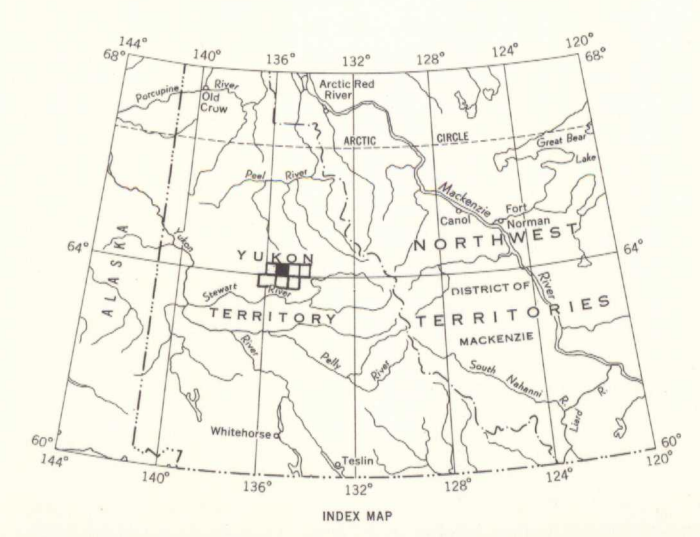
Marsh

Horizontal control point

Elevation in feet above mean sea-level 5467

Base-map produced by the Army Survey Establishment, R. C. E. 1951

Approximate magnetic declination, 33° 52' East, decreasing 4.3' annually



DESCRIPTIVE NOTES

Geological

McQuesten Lake area is underlain by a series of metamorphosed sedimentary rocks, mainly quartzites, phyllites, chlorite, sericite, and graphite schists, with minor limestone and slate. Basic igneous sills and lenses now altered to greenstone are interlayered with the metasedimentary rocks. Granite rocks outcrop in the southwest corner of the area, and two small granitic bodies occur on the south side of Davidson Range (Green, 1958). A few dykes and sills of quartz-feldspar porphyry are present in the area.

The region has undergone several stages of glaciation, and thick glacial deposits occupy the major valleys and hill slopes below an elevation of 3,000 feet. Permafrost is present throughout the area.

Several lead-zinc-silver deposits are present in Davidson Range. The occurrences in the vicinity of Rambler Hill, Stand-to Hill, Zahn Hill, and Mount Cameron have been described by Cockfield (1922). The deposits occur in northerly-striking vein faults that cut quartzites, phyllites, and greenstone. North of Mount Cameron a mineralized fault cuts a band of limestone. The vein fillings contain galena, siderite, sphalerite, and minor chalcocopyrite. These deposits have been oxidized with the formation of manganese oxides, limonite, cerussite, anglesite, and malachite.

Further details on the geology and mineralization of the area can be obtained from reports by Cockfield (1922), Green (1958), Green and McTaggart (1960), Green and Roddick (1962), Aho (1964), Poole (1965), and Boyle (1965).

Geochemical

The data on this map are based on samples of stream and spring waters that were tested at the sample site using the method described by Boyle, Hilsley, and Green (1955).

The values are expressed as total heavy metal (principally zinc, copper, and lead) in parts per million. Most of the heavy metal in the water is zinc. The pH of the waters varies from 4.3 to 8.2, but the majority of the values are between 5 and 6.5. The temperature of the waters varies from 0° to 10°C.

Helicopters were used to set-out traverse teams at or near the heads of the creeks; traverses down the streams were done on foot. An attempt was made to maintain a sample interval of 1,500 feet along all creeks.

Most of the known areas of mineralization produce water anomalies in the streams. The anomalous metal dispersion trains in this area vary in length from less than 1/2 mile to over 6 miles. In most cases the sediment anomalies (see Map 29-1964) and the water anomalies are coincident. Exceptions occur in Philip Gulch, in the upper parts of Scougale and Rambler Creeks, along most of Homestead Creek, on a left limit tributary of Cache Creek draining Forbes Hill, and in a tributary draining the southern slope of Mount Cameron. The reason for this lack of agreement is not understood but it is probably related to the presence or absence of permafrost and the pH and Eh of the environment.

Metal-bearing springs are common especially in Davidson Range and in the northern part of the map-area. Limonitic deposits are forming at the orifices of many of these springs, and a whitish-grey precipitate is associated with several of the springs in Davidson Range. In some parts of the area the springs have dried up leaving limonitic deposits in the creek valleys. Two of the most extensive deposits of this type occur on Philip Gulch and in the gulch draining the southern slope of Mount Cameron (Green, 1958). The rocks on the bottom of Rambler Creek are covered with a reddish brown precipitate. The heavy metal anomalies associated with all these springs are probably related to zones of sulphide mineralization.

Most of the stream water anomalies are associated with areas underlain by quartzite, phyllite, and greenstone. Many of the large anomalies detected in the field occur in Davidson Range and in the area north of the north end of McQuesten Lake. Further investigations should be carried out in these areas to determine the significance of these anomalies.

The heavy metal content of the waters shown on this map should be compared with the heavy metal content of the stream and spring sediments and precipitates shown on Map 29-1964.

Aho, A. E.: Mineral potential of the Mayo district; Western Miner, vol. 37, No. 10, pp. 80-88 (1954).

Boyle, R. W., Hilsley, C. T., and Green, R. N.: Geochemical investigation of the heavy metal content of stream and spring waters in the Keno Hill - Galena Hill area, Yukon Territory; Geol. Surv. Can., Bull. 32 (1955).

Boyle, R. W.: Geology, geochemistry, and origin of the lead-zinc-silver deposits of the Keno Hill - Galena Hill area, Yukon Territory; Geol. Surv. Can., Bull. 111 (1965).

Cockfield, W. E.: Silver-lead deposits of Davidson Mountains, Mayo district, Yukon Territory; Geol. Surv. Can., Summ. Rept. 1921, pt. A, pp. 1A-6A (1922).

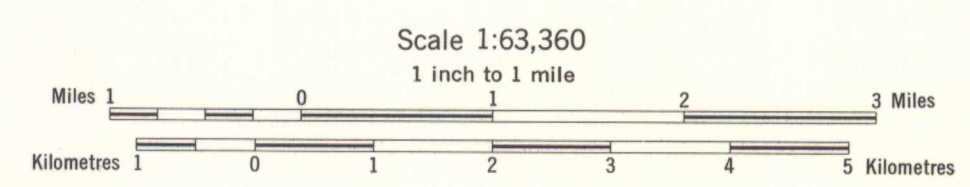
Green, L. H.: McQuesten Lake and Scougale Creek map-areas, Yukon Territory; Geol. Surv. Can., Paper 58-4 (1958).

Green, L. H., and McTaggart, K. C.: Structural studies in the Mayo district, Yukon Territory; Proc. Geol. Assoc. Canada, vol. 12, pp. 119-134 (1960).

Green, L. H., and Roddick, J. A.: Dawson, Larsen Creek, Nash Creek map-areas, Yukon Territory; Geol. Surv. Can., Paper 62-7 (1962).

Poole, W. H.: Reports of activities: field, 1964; Geol. Surv. Can., Paper 65-1 (1965).

MAP 28-1964
HEAVY METAL CONTENT OF STREAM AND SPRING WATERS
McQUESTEN LAKE
YUKON TERRITORY



106 D/3
McQUESTEN LAKE
YUKON TERRITORY
MAP 28-1964