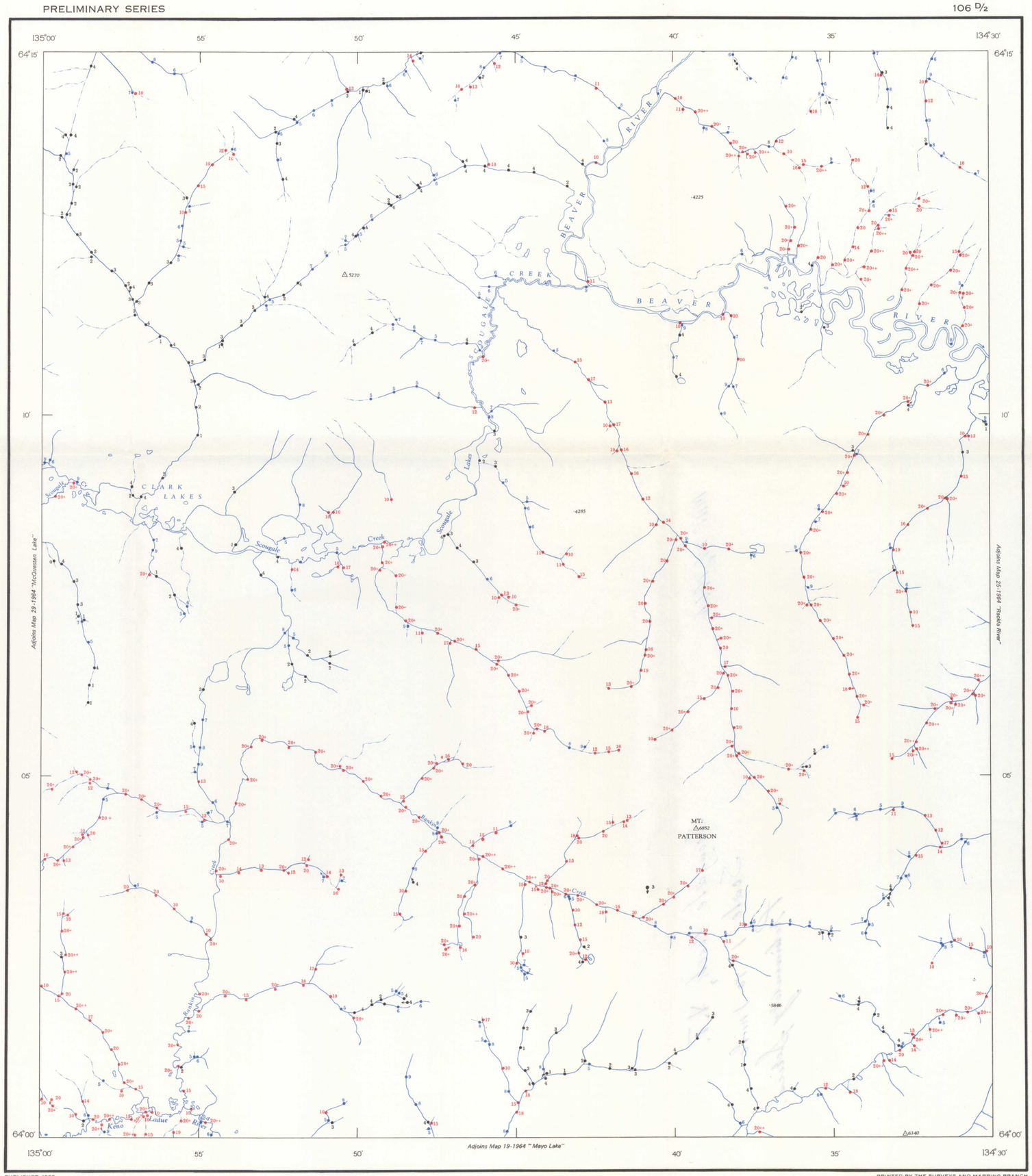
GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF MINES AND TECHNICAL SURVEYS

PRELIMINARY SERIES

106 D/2



LEGEND

Concentration of heavy metal, 10 or greater ppm
in stream sediments. . . . 15●, in spring sediments. . . . . 15▲

Concentration of heavy metal, 5 to 9 ppm
in stream sediments. . . . 7●, in spring sediments. . . . . 7▲

Concentration of heavy metal, 0 to 4 ppm
in stream sediments. . . . 4●, in spring sediments. . . . . 4▲

Field work by C. F. Gleeson, W. M. Tupper, A. Suparman, K. Domai, M. Shafiqullah, J. A. Colwell, J. R. Deighton, C. H. Yurchak, J. K. Worth, H. R. James, A. G. Troup, G. Wind, L. Hogg, and F. R. Campbell

Geological cartography by the Geological Survey of Canada, 1965

Intermittent lake and stream

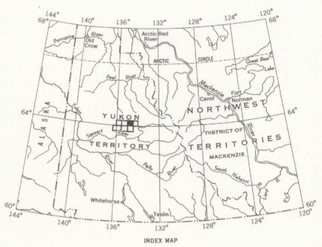
Marsh

Horizontal control point . . . . . △

Elevation in feet above mean sea-level 5270

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

Approximate magnetic declination, 34° 06' East, decreasing 4.4' annually



INDEX MAP

DESCRIPTIVE NOTES

Geological

Most of Scougale Creek area is underlain by a series of metamorphosed sedimentary rocks, mainly quartzites, phyllites, chlorite, sericite, and graphite schist, with minor slate and limestone. A band of dolomite with minor limestone occurs in the northeast corner of the sheet. Basic igneous sills and lenses now altered to greenstone are interlayered with the metasedimentary rocks.

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.

No mineral deposits are known in the area, although in the adjacent map-sheet to the west (McQuesten Lake area), several lead-zinc-silver lodes are known. These occur as fracture fillings in quartzites, phyllites, and greenstones, and north of Mount Cameron a mineralized fault cuts a lens of limestone.

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), and Boyle (1965).

Geochemical

The data on this map are based on samples of sediment collected from the channels of the streams and on samples of the sediments and precipitates in the vicinity of springs. Where possible the active channel was sampled. However, as the field work progressed it was found that moss on the creek banks below the water line had trapped considerable amounts of fine sediment. This kind of sample proved to be adequate, and in many instances this was the type of stream sediment sample analyzed. The wet sediment was analyzed at the sample site for cold citrate-soluble heavy metals (principally zinc, copper, and lead) using the method described by Smith (1964).

The values are expressed as total heavy metal in parts per million. The quantitative laboratory work done to date indicates that most of the heavy metal detected by the field test is zinc.

Helicopters were used to set out traverse teams at or near the heads of the creeks. Traverses down the creeks were done on foot. An attempt was made to maintain a sample interval of 1,500 feet along all creeks. In some places lack of time necessitated sampling at greater intervals.

The anomalous trains in this area vary in length from less than ½ mile to over 12 miles (Rankin Creek). Most of the sediment and water anomalies (Map 26-1964) are coincident. However, there are exceptions, commonly along short sections of creeks where metal-bearing acid springs issue. The pH and Eh of the environment and the presence or absence of permafrost probably play an important role in the distributon of heavy metal anomalies in the waters and sediments.

Most of the anomalous sediment samples occur in creeks draining Patterson Range and the eastern slope of Davidson Range. These areas are underlain by phyllitic rocks, greenstones, and lesser amounts of massive quartzite. The distribution of these anomalies suggest that the sources of the metals may be widespread. In the northeastern part of the area a group of creeks draining into Beaver River are anomalous, they drain an area underlain by phyllitic rocks and a contact zone between the phyllites and dolomite. Preliminary quantitative laboratory work shows that anomalous lead values are present in stream sediments from the creeks draining the dolomite.

Further investigations are required in order to determine whether or not the sediment anomalies in this area are related to mineralization of economic interest.

The heavy metal content of the stream and spring sediment and precipitates shown on this map should be compared with the heavy metal content of the stream waters shown on Map 26-1964.

Aho, A. E.: Mineral potential of the Mayo district; Western Miner, vol. 37, No. 10, pp. 80-88 (1964).

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).

Smith, A. Y.: Cold extractable "heavy metal" in soil and alluvium; Geol. Surv. Can., Paper 63-49 (1964).

PUBLISHED, 1965
COPIES OF THIS MAP MAY BE OBTAINED FROM THE DIRECTOR, GEOLOGICAL SURVEY OF CANADA, OTTAWA

PRINTED BY THE SURVEYS AND MAPPING BRANCH

MAP 27-1964

HEAVY METAL CONTENT OF STREAM AND SPRING SEDIMENTS

SCOUGALE CREEK

YUKON TERRITORY

Scale 1:63,360
1 inch to 1 mile

Miles 1 0 1 2 3 Miles

Kilometres 1 0 1 2 3 4 5 Kilometres

106 D/2
SCOUGALE CREEK
YUKON TERRITORY
MAP 27-1964

5. 1. 11
A, Geol.

Scougale Creek
Map 27-1964
Scale 1" to 1 mile, 1964