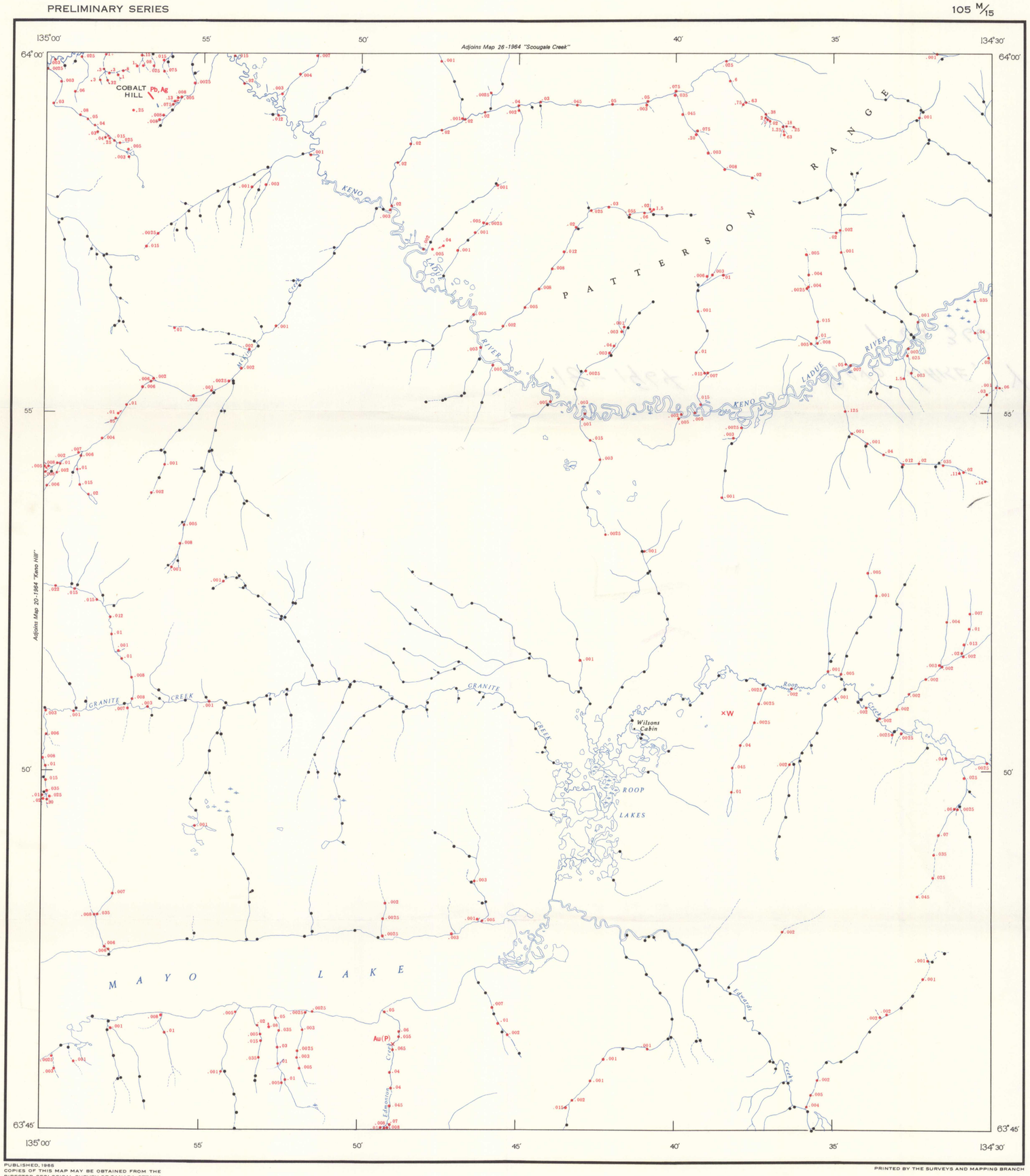
GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF MINES AND TECHNICAL SURVEYS

PRELIMINARY SERIES

105 M/15



LEGEND

Concentration of heavy metal, 0.001 or greater ppm in stream waters . . .005, in spring waters 005

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

Location of known mineral veins . . . . . — — —

Mineral occurrences . . . . . Au(P)×

Mineral Symbols

Gold (placer) . . . Au(P) Silver . . . . . Ag

Lead . . . . . Pb Tungsten (lode) . . W

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 . . . . . .

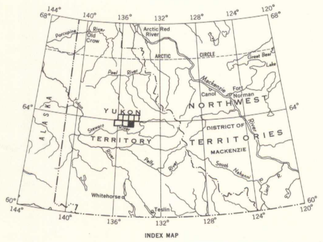
Marsh . . . . . .

Horizontal control point . . . . . △

Elevation in feet above mean sea-level 4326

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

Approximate magnetic declination, 33° 25' East, decreasing 4.0' annually



INDEX MAP

DESCRIPTIVE NOTES

Geological

The Mayo Lake area is underlain by a series of metamorphosed sedimentary rocks, mainly quartzites, phyllites, chlorite, sericite, and graphite schists, and minor limestone. Basic igneous sills and lenses now altered to greenstone are interlayered with these rocks. A large granitic stock intrudes the metasedimentary rocks in the central portion of the map-area, and a smaller one is present in the southeast corner of the area. A few thin quartz-feldspar porphyry dykes and sills are present in the altered sediments at scattered points.

The area 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.

Most of the ore deposits in the Keno Hill - Galena Hill area adjacent to this map-area, occur along northeasterly striking vein faults in thick bedded quartzites and occasionally in greenstone. Early vein fillings contain mainly pyrite and/or arsenopyrite with or without silver and lead minerals. Later mineralization resulted in the deposition of siderite, sphalerite, galena, and argentiferous tetrahedrite.

In the Mayo Lake area there is only one known silver-lead deposit. It occurs near the summit of Cobalt Hill where a vein of galena, 3 to 10 inches wide, occurs as a fracture filling in thinly-bedded quartzite. The vein strikes northwesterly and dips about 80 degrees to the southwest. The outcrop of the vein has been oxidized with the formation of limonite, manganese oxides, cerussite, and anglesite. The only other known mineral occurrence in the area is a scheelite showing along the contact of the granitic stock northeast of Wilsons Cabin (Green, 1957).

Further details on the geology and mineralization of the area can be obtained from reports by Bostock (1947), Green (1957), McTaggart (1960), Green and McTaggart (1960), Kindle (1962), Aho (1964), Boyle (1965), and Poole (1965).

Geochemical

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

The values are expressed as total heavy metal (zinc, copper, and lead) in parts per million. Most of the heavy metal in the water is zinc. The pH of the water varies from 4 to 8.2, but most of the values are between 5.5 and 7. The temperature of the water varies from 0° to 10°C.

Most of the creeks draining into Mayo Lake were accessible by boat, the creeks in the rest of the area were reached by helicopter. Traverses down the creeks were made on foot. An attempt was made to maintain a sample interval of 1,500 feet along all streams.

The heavy metal analyses show that few anomalies are associated with the granitic rocks. Most of the anomalous areas are underlain by quartzite, phyllite, and greenstone. The anomalous trains vary in length from about ½ mile to over 6 miles.

The distribution of the anomalies in the Cobalt Hill area suggests the presence of mineralization other than the lead-silver lode which occurs near the summit of the hill. This area should, therefore, be investigated in more detail. Other creeks in the map-area that require further investigation are: the anomalous creeks draining the Patterson Range north of Keno - Ladue River, the right fork of upper McKim Creek, the anomalous tributaries on the upper parts of Granite Creek (see also Map 20-1964), the anomalous creeks entering Mayo Lake, especially Edmonton Creek, the anomalous tributaries of Roop Creek, and those draining the northern slope of the ridge north of Roop Creek. All these creeks drain areas underlain in part by massive quartzite and/or greenstone. The sources of some of these anomalies are metal-rich springs. Such springs occur on the left limit of the creek draining the southeastern slope of Cobalt Hill, on upper McKim Creek and at the head of the two creeks draining the Patterson Range.

The heavy metal content of the water shown on this map should be compared with the heavy metal content of stream and spring sediments and precipitates shown on Map 19-1964.

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Boyle, R. W., Illsley, 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).

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

Kindle, E. D.: Keno Hill, Yukon Territory; Geol. Surv. Can., Map 1105A (1962).

McTaggart, K. C.: The geology of Keno and Galena Hills, Yukon Territory; Geol. Surv. Can., Bull. 58 (1960).

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

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MAP 18-1964

HEAVY METAL CONTENT OF STREAM AND SPRING WATERS

MAYO LAKE

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

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MAYO LAKE
YUKON TERRITORY
MAP 18-1964