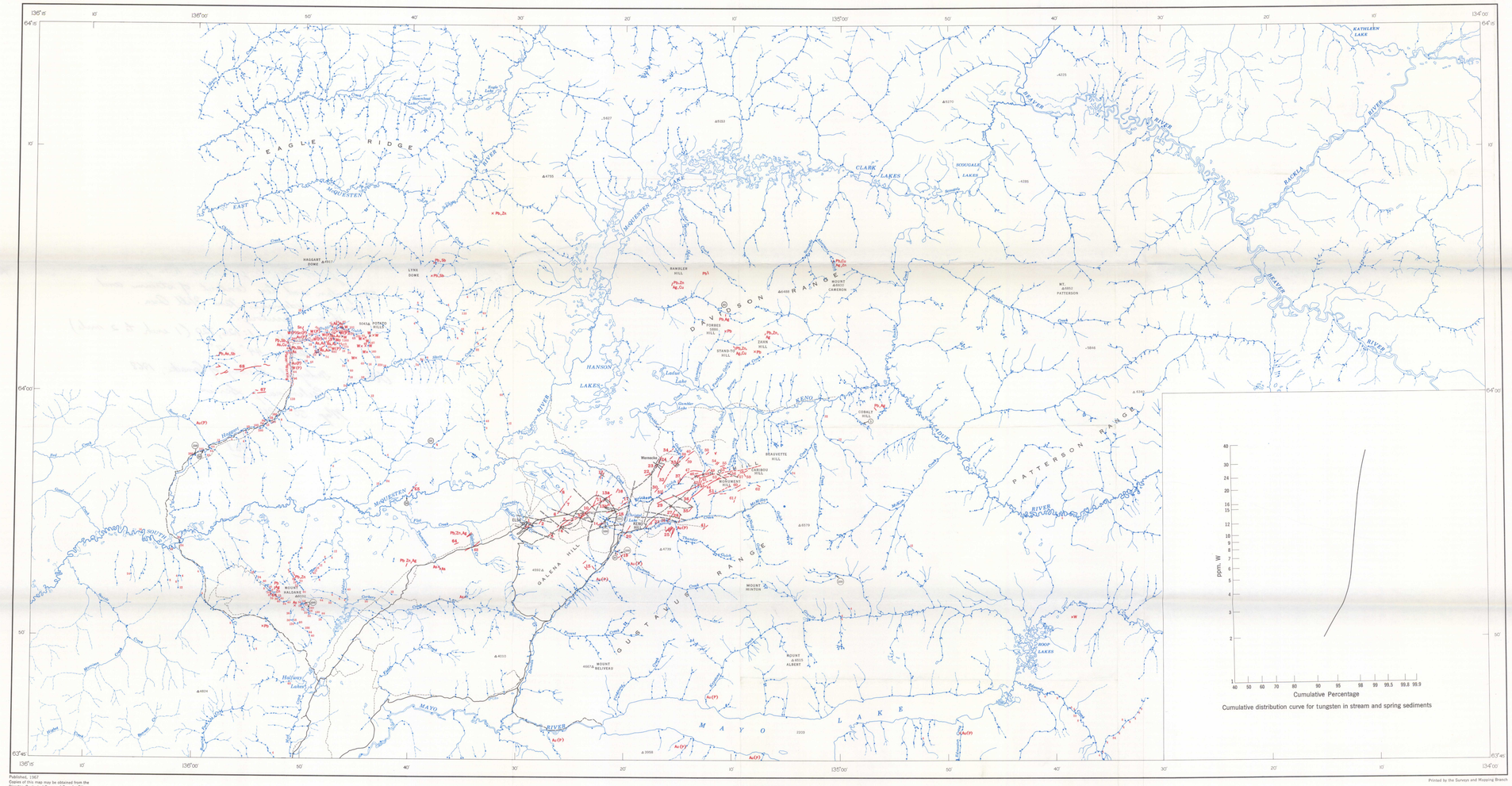
GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF ENERGY, MINES AND RESOURCES

PRELIMINARY SERIES



Cumulative distribution curve for tungsten in stream and spring sediments

LEGEND

Concentration of tungsten, less than 4 ppm in stream sediments ..... ·
Concentration of tungsten, 4 ppm or greater in stream sediments ..... ●
Concentration of tin 5 ppm or greater in stream sediments ..... ◎
Location of known veins ..... ——
Mineral occurrence ..... Au ×
Mineral deposit ..... Ag

Mineral Symbols

Arsenic	As	Silver	Ag
Antimony	Sb	Tungsten lode	W
Copper	Cu	Tungsten (placer)	W(P)
Gold (lode)	Au	Tin (lode)	Sn
Gold (placer)	Au(P)	Tin (placer)	Sn(P)
Lead	Pb	Zinc	Zn
Molybdenum	Mo		

INDEX TO MINES AND PROSPECTS

1. Ellen
2. Dixie
3. Coral and Wigwam
4. Arctic and Mastiff
5. Ruby
6. No Cash
7. Betty
8. Cream
9. Hector
10. Calumet
11. Dragon (UN)
12. Forno
13a. Galkeno (McLeod vein)
13b. Galkeno (Sime and Sugiyama veins)
14. Eagle
15. Fisher Creek
16. Bluebird
17. Tin Can
18. Rico
19. Duncan Creek
20. Moth
21. Oneh
22. Klondyke-Keno
23. Sadie-Friendship
24. Ladue
25. Bellekeno
26. Mount Keno (Hogan vein)
27. Ankeno
28. Mount Keno (Runer vein)
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31. Crocesus No. 1
32. Black Cap and Shepherd
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39. Cub and Bunny
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47. Gambler
48. Main fault and Nabob
49. Lake View
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52. Gold Hill No. 2
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59. Caribou
60. Divide
61. Devon
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64. Gerlitzky
65. Shanghai
66. Lookout
67. Rex
68. Peso Silver

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. Troop, G. Wind, L. Hogg, and F. R. Campbell

Analyses by J. J. Lynch, G. Mihailov, I. Smith and C. Durham

Compilation and text by C. F. Gleeson

Geological cartography by the Geological Survey of Canada, 1966

Roads, all weather
Other roads
Trail
Intermittent lake and stream
Horizontal control point ..... △
Elevation in feet above mean sea-level 2095

Base-map cartography by the Geological Survey of Canada, 1966 from maps published by the Surveys and Mapping Branch and by the Army Survey Establishment, R. C. E.

Approximate magnetic declination, 34°45' East, decreasing 4.2' annually

Published, 1967
Copies of this map may be obtained from the Director, Geological Survey of Canada, Ottawa

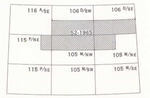
Printed by the Surveys and Mapping Branch

INDEX MAP

MAP 52-1965
TUNGSTEN AND TIN CONTENT OF STREAM AND SPRING SEDIMENTS
KENO HILL AREA
YUKON TERRITORY

Scale 1:126,720
1 inch to 2 miles

Miles 2 0 2 4 6 Miles
Kilometres 3 0 3 6 9 Kilometres



N. T. S. REFERENCE
KENO HILL AREA
YUKON TERRITORY

DESCRIPTIVE NOTES

Introduction

The reconnaissance geochemical survey of Keno Hill area, Yukon Territory was started and completed in the summer of 1964. The creeks not accessible by roads were reached by helicopter. An attempt was made to maintain a sample interval of 1,500 feet along all rivers, creeks, and their tributaries.

The data on this map are based on 5,300 samples of stream sediment collected from the channels of the streams and on the sediments and precipitates in the vicinity of springs from an area of approximately 1,900 square miles. Where possible the active channel was sampled; however as work progressed it was found that moss on the creek banks below the water line had trapped considerable amounts of fine sediment suitable for sampling. The wet sediments and waters were analyzed at the sample site for cold citrate-soluble heavy metals. The results of this work have been published in a series of 14 preliminary maps (Gleeson, et al., 1965). Field observations on the character of the stream, composition of the sediment, pH and temperature of the water, and rock types in the vicinity of the sample station were entered in code on special geochemical field cards. Subsequently, this information was punched on cards for electronic data processing.

The wet sediment was dried in the field at a temperature of about 60°C and sieved through an 80 mesh stainless steel screen. The sieved samples were shipped to Ottawa where they were ground to minus 100 mesh in a ceramic ball mill.

Analysis

Samples of the stream and spring sediments were analyzed colorimetrically for tungsten using a technique described by North (1956). Tin was analysed spectrographically using a 1.5 meter grating spectrograph. The limit of detectability for tungsten was 4 ppm and for tin 20 ppm.

General Geology

The regional geology has been described by Bostock (1947, 1964), and Green and Roddick (1962). More detailed geological studies have been made by Kindle (1962), McTaggart (1960), Poole (1965), and Green (1957, 1958). The geology, geochemistry, and origin of the mineral deposits in Keno Hill and Dublin Gulch areas have been described by Boyle (1965). Reports by Abo (1964) and Cockfield (1923) provide further information on mineral deposits of the area.

The map-area is underlain by a series of metamorphosed sedimentary rocks, mainly quartzites, phyllites, slates, chlorite, sericite and graphite schists, also grits and minor limestone. The age of these rocks is uncertain and appears to range from Precambrian to Mesozoic (Poole, 1965; Tempelman-Kluit, 1966).

A dolomite and limestone unit outcrops in the northeast part of the area. Fossils from these rocks range in age from Late Cambrian to Late Silurian or Early Devonian (Green and Roddick, 1962).

Mafic igneous sills and lenses now altered to greenstones are interlayered with the metamorphosed sediments. Quartz-feldspar porphyry sills and lamprophyre dykes are present locally. Granitic stocks cut the metamorphosed sediments east and north of Mayo Lake, northwest of Hanson Lake, south of Dublin Gulch and in the vicinity of Mount Haldane.

Scarn zones containing scheelite occur in the vicinity of some of the granitic masses particularly around Dublin Gulch, Mount Haldane, and east of Mayo Lake.

Most of the lead-silver ore deposits in the Keno - Galena Hills area occur along northeasterly striking vein faults in thick-bedded quartzite and occasionally in greenstone (Boyle, 1965). In the Dublin Gulch area quartz arsenopyrite-gold veins with a general northeast strike are present near the contacts of the granitic stocks. Also easterly striking vein faults are mineralized with siderite, jamesonite, boulangerite, pyrite, arsenopyrite, galena, tetrahedrite, and chalcopyrite. Two cassiterite-tourmaline veins occur on the right limit of Dublin Gulch near its mouth (Boyle, 1965; Poole, 1965). Also northerly striking lead-zinc-silver veins are present in Davidson Range (Cockfield, 1927, Abo, 1964). Placer gold has been recovered from Dublin Gulch, Haggart Creek, and Duncan Creek since 1898.

The area has undergone several stages of glaciation. Thick glacial deposits occupy the major valleys and hill slopes below an elevation of 2,000 feet. Permafrost is present throughout the area.

Results

Ninety-two per cent of the samples analyzed contained less than 4 ppm tungsten and only 13 out of 5900 contained detectable amounts of tin. Hence for this map tungsten has been grouped into two classes, those less than 4 ppm and those greater than 4 ppm.

The majority of the high tungsten values are grouped around granite intrusions in the vicinity of Dublin Gulch, Mount Haldane, and northeast of Edwards Creek. The presence of tungsten in the Dublin Gulch area has been known for many years, however its presence in Mount Haldane and Edwards Creek areas was not previously known.

Of the thirteen sediment samples containing tin, five are associated with known lead-silver veins in Galena Hill area and four are located in Haggart Creek-Dublin Gulch area. For many years cassiterite and scheelite have been recovered from the placer workings on these creeks. The remaining four anomalous tin values are in areas where no known lead-silver veins occur and further follow-up in these areas is warranted.

Stream sediment geochemistry is a useful exploration method for outlining areas of tungsten mineralization. These areas appear to be restricted to places where small bodies of granite occur. It is noteworthy that little tungsten was found in the streams draining the large granite stock north of Mayo Lake. Tin shows up poorly in the stream sediments. The reason for this is the stability of cassiterite to weathering processes. Where tin has been found in the sediments it is probably derived from sulphides associated with the lead-silver veins (Boyle 1965) or else it is present as stannite. Heavy mineral work has been more successful in pointing out areas of possible tin occurrences, the results of this work will be published at a later date.

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