GEOLOGICAL AND GEOCHEMICAL SURVEY
10516 ON THE
YUK MINERAL CLAIM GROUP
OF
SPIRIT EXPLORATIONS LTD. (NPL),
SUMMIT LAKE, YUKON TERRITORY.

This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representation work in the amount of

$ 15,619.30

J.S. Craig

Resident Geologist or
~~Resident Mining Engineer~~

Considered as representation work under Section 53 (4) Yukon Quartz Mining Act

Commissioner of Yukon Territory

060936

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GEOLOGICAL AND GEOCHEMICAL SURVEY

on the

YUK MINERAL CLAIM GROUP

of

SPIRIT EXPLORATIONS LTD. (NPL)

SUMMIT LAKE, YUKON TERRITORY

INTRODUCTION

The YUK property of Spirit Explorations Ltd. (NPL), is located at Summit Lake, Yukon Territory. The property was staked in February, 1973, following the announcement in late 1972 by Canex-Placer of the discovery of a major lead-zinc deposit in the area. The property was subsequently acquired by Spirit Explorations Ltd. (NPL).

During the early summer of 1973, geological and geochemical soil and rock sample surveys were conducted on the property by personnel of Agilis Engineering Ltd. Geological mapping was performed by Dr. A. M. de Quadros. All work was done under the direction and supervision of the author of this report.

LOCATION AND ACCESS

The YUK group lies across the north end of, and north of Summit Lake, Yukon Territory. The lake is 158 miles north

of Watson Lake, Y.T. and nine miles south-southwest of the Canex-Placer deposit at Howard Pass.

The property is located:-

62^{o} 22'N; 129^{o} 21' W

and lies two miles west of the Yukon-Northwest Territories border.

Access to the property is by float or ski-equipped fixed-wing aircraft from Watson Lake or Ross River. A helicopter can be useful for on-property mobility.

PHYSIOGRAPHY & CLIMATE

Topography on the YUK Group is generally steep with northwesterly trending ridges deeply incised by creek valleys. Elevations above sea level range from 3,980 feet at Summit Lake to 6,500 feet.

Tree-line in this area is at about 4,800 feet and below this level stunted spruce and occasionally very dense buckbrush is found. Above tree-line the country is generally open with caribou moss and grass.

The climate in this area is very cold in the winter with 4-8 feet of snow. The summers are mild and short. The snow-free working period lasts from mid-June to late September. The lake is in a state of partial freezing and unsuitable for aircraft during the period of late May to early June and late October.

PROPERTY

The YUK mineral claim group of Spirit Explorations Ltd. (NPL) consists of 63 claims located around Summit Lake in February 1973. Some of the claims partially overlap the MIT group which is west of the property.

The property consists of:

Claim Name	Record Numbers
YUK 1-44	Y 72452 - Y 72495
YUK 46	Y 72496
YUK 50-~~53~~ 56	Y 72497 - Y 72503
YUK 58	Y 72504
YUK 65	Y 72505
YUK 67	Y 72506
YUK 69 - 70	Y 72507 - Y 72508
YUK 73	Y 72509
YUK 75	Y 75510
YUK 79 - 80	Y 72511 - Y 72514

All claims are located and recorded in the Watson Lake Mining District of the Yukon Territory. The claim tags were attached to the appropriate posts during June and July 1973.

REGIONAL GEOLOGY

The basement in the claim region is composed of grey and green shale and phyllite, with maroon phyllite and minor limestone, of Cambrian and Earlier age.

This sequence is overlain by Upper Cambrian and (?) Ordovician limestone, dolomitic siltstone, silty dolomite, sandy dolomite and quartzite.

Uppermost in the general stratigraphy is Devonian and (?) Mississippian black shale and argillite with minor sandstone and siltstone; and banded chert and chert pebble conglomerate.

There is a reported unconformity between the (?) Ordovician and the Devonian with occasional deposits of Upper Ordovician and Silurian graptolitic shale, argillaceous limestone and minor black chert, cherty argillite and dolomite, in the unconformity.

Regional folding in this area is northwesterly striking with sub-parallel to parallel cleavage.

PROPERTY GEOLOGY

The YUK group is underlain by an isoclinal syncline whose fold axis strikes about 120^{o} and dips about $75\text{-}80^{o}$N.

Locally the stratigraphic sequence is as follows:

a) Thinly bedded, grey weathering, black shales, with minor layers of calcareous shale. These shales are fine-grained and fissile, breaking into slaty pieces, occasionally slabby, especially in the calcareous layers. The calcareous layers increase in quantity towards the bottom. This member occurs in the centre of the claim group, forming the core of the syncline.

b) Thinly bedded to flaggy, light grey weathering, fine-grained black calcareous shale, in part grading into an argillaceous limestone. The northeastern limb is pyritized.

c) Thinly bedded, grey weathering, fine-grained black shale, lenticular in shape, occurring on the northeastern limb of the syncline. This member is very fissile, with occasional layers being calcareous and slightly pyritized.

d) Blocky to flaggy, well foliated, grey weathering, fine-grained grey compact limestone, occurring mainly in the northeastern limb. It is occasionally thin bedded, especially in the east, where it becomes argillaceous. It tends to form bluffs when blocky.

e) Well bedded grey and white weathering striped argillaceous limestone with occasional layers of black shale. Highly pyritized.

f) Irregularly bedded, buff to orange and red weathering, fine-grained ferruginous and calcareous shale, with minor layers of limestone and dolomite. It is highly pyritized especially along bedding planes and fractures. Occasionally contains large crystals of pyrite up to an inch across. It tends to weather to a brown or orange ochre colored soil.

g) Grey weathering wavy banded limestone, occurring in bluffs off the northeast corner of the property.

Foliation on the YUK Claim Group dip uniformity between 58° and 90° to the north-east except at the nose of the fold where the dips are to the northwest at about 20 to 35°. The structure presented is that of a tight isoclinal fold whose fold axis strikes about 120° and plunges towards the northwest with the axial plane dipping towards the northeast. This tight folding resulted in intense shearing in the shales, and axial cleavages are well developed. The limestones are well jointed and in part sheared, though the degree of shearing is much less than that in the shales. No faulting was observed.

MINERALIZATION

During the course of the field work the only metalliferous mineral noted was pyrite, which is sometimes a pseudomorph after marcasite. Generally, the pyrite is disseminated throughout the rock in small crystals which are barely visible. On occasion, however, the pyrite occurs as aggregates of cubic crystals on foliation surfaces and in cleavages and joints or more spectacularly as large crystals up to an inch across.

These pyrite occurrences are concentrated near the top of the claim group, north of line 42N and east of line 28 + 00E. They appear particularly well developed in the members of banded limestone and ferrugious shale.

Pyrite occurs as a very minor constituent in most rocks in the area. There is some evidence of possible low level hydrothermal action, numerous quartz and calcite veins occur throughout the area. The quartz is usually massive and milky, though rarely it forms crystals up to 2 or 3 mm. long. Calcite is normally white in these veins. As far as observed, these veins do not seem to be connected with any mineralization and no metalliferous minerals were

seen in them.

Due to the fine grained nature of the known lead/zinc mineralization in this area, generally no galena or sphalerite is visible.

GEOCHEMICAL SURVEY

A soil and rock geochemical survey was conducted on the property. North-south lines were established every 400 feet across the property and samples were taken every 200 feet along the lines. Depending upon occurrences at each station, a soil or rock sample was collected. Soil samples were taken from 10-12 inches depth and placed in kraft paper bags provided by the laboratory.

ANALYSIS

All soil samples were shipped to Core Laboratories Ltd. at 325 Howe Street, Vancouver, B.C. Analysis was conducted on a minus 80 mesh fraction of the sample digested in hot nitric acid for 2½ hours. Quantitative analysis for ppm lead and zinc content was performed by atomic absorption methods on a Jarrell-Ash 800 machine.

All rock samples were shipped to Agilis Engineering Ltd base camp at Summit Lake, Y.T. where a laboratory was set up equipped with a crusher and an X-ray refraction machine. All samples were crushed and a minus 80 mesh fraction was taken for XRF analysis. Two readings for each element, lead and zinc, were taken from each sample. Analysis was conducted on an Echo Portable Mineral Analyser M8524.

RESULTS

A total of 519 soil samples were analysed for lead and zinc content. Soil development on the property is generally quite good, a 4-6 inch layer of volcanic ash just below the humus layer was carefully avoided during sampling - results are considered reliable.

Statistical analysis of results was done by plotting cumulative percent frequencies on arithmetic probability paper. Values indicated are:

	Range ppm	Background ppm	Anomalous ppm
Pb	3 - 80	24	40
Zn	greater than 1 - 1350	145	320

The anomalous values correlate well with regional data.

A total of 459 rock samples were analysed on the XRF for lead and zinc content. Only five samples yielded assayable zinc results, the highest of these being 0.20%. There were many assayable lead results, the highest being 0.42% Pb.

INTERPRETATION

Anomalous results are widely dispersed and no distinct anomaly can be defined for either lead or zinc. High zinc soil anomalies are found in the vicinity of the centre of the property syncline, but are unsupported by rock sample highs. The rock sample highs tend to skirt the black shale unit around the synclinal axis.

Significant soil samples in the Howard Pass area are generally in the 3-4000 ppm range and tend to have continuity. This situation is not found on the YUK property. In terms of geochemical expression of significant mineralization in the area, there have been no samples to indicate any economic mineralization on the YUK claims.

Favourable stratigraphic sequences have been located on and are known to underly most of the property, but no indication of any economic deposit in them has been found in work conducted to date.

CONCLUSIONS

The YUK mineral group is underlain by favourable stratigraphy relatable to mineralized strata containing the lead-zinc deposit of Canex-Placer in Howard Pass.

Comprehensive geochemical surveying on soil and rock samples has failed to indicate potential areas of significant lead and/or zinc mineralization on the property.

Two spot high samples in the greater than 1,000 ppm range for zinc in the centre of the property may possibly indicate some mineralization of interest at depth in the synclinal axis, the only way to check this in the property geological environment is by deep drilling into the synclinal axis. Geochemical investigations are not useful in this situation and geophysical investigations are not recommended due to the pervasive pyrite mineralization in the area and significant topographic and rock density variations on the property.

RECOMMENDATIONS

In view of the dispersed nature of the anomalous data received from the property, no further geochemical exploration of the property can be recommended.

Geological mapping has been definitive on the property and the only work that can be recommended is purely speculative.

Exploratory diamond drilling may be conducted into the axial hinge of the property syncline to investigate the buried calcareous shale sequences in this area. The probability of intersecting economic mineralization in this area is remote but the contingency may be covered before the property is abandoned.

Respectfully submitted,

D. P. Taylor, M.Sc., D.I.C.
Geologist

Endorsed by:

F. Holcapek, P.Eng., F. HOLCAPEK
Geologist

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA

November 5, 1973
Vancouver, B.C.

CERTIFICATE

I, David Pelham Taylor, of Vancouver, British Columbia, do hereby certify that:

1. I am an exploration geologist, residing at 2097 West 6th Avenue, Vancouver, B.C.

2. I am a graduate of the Royal School of Mines London University (M.Sc., D.I.C. 1971).

3. I have practised as an exploration geologist in British Columbia for five years.

4. I am registered as an Engineer-in-training with the Association of Professional Engineers of the Province of British Columbia.

5. The work subject of this report was conducted by myself and a crew under my supervision.

D. P. Taylor, M.Sc., D.I.C.

November 7, 1973
Vancouver, B.C.

YUKON TERRITORY

SPIRIT EXPLORATIONS LTD. (NPL)

YUK CLAIM GROUP

HOWARD PASS AREA

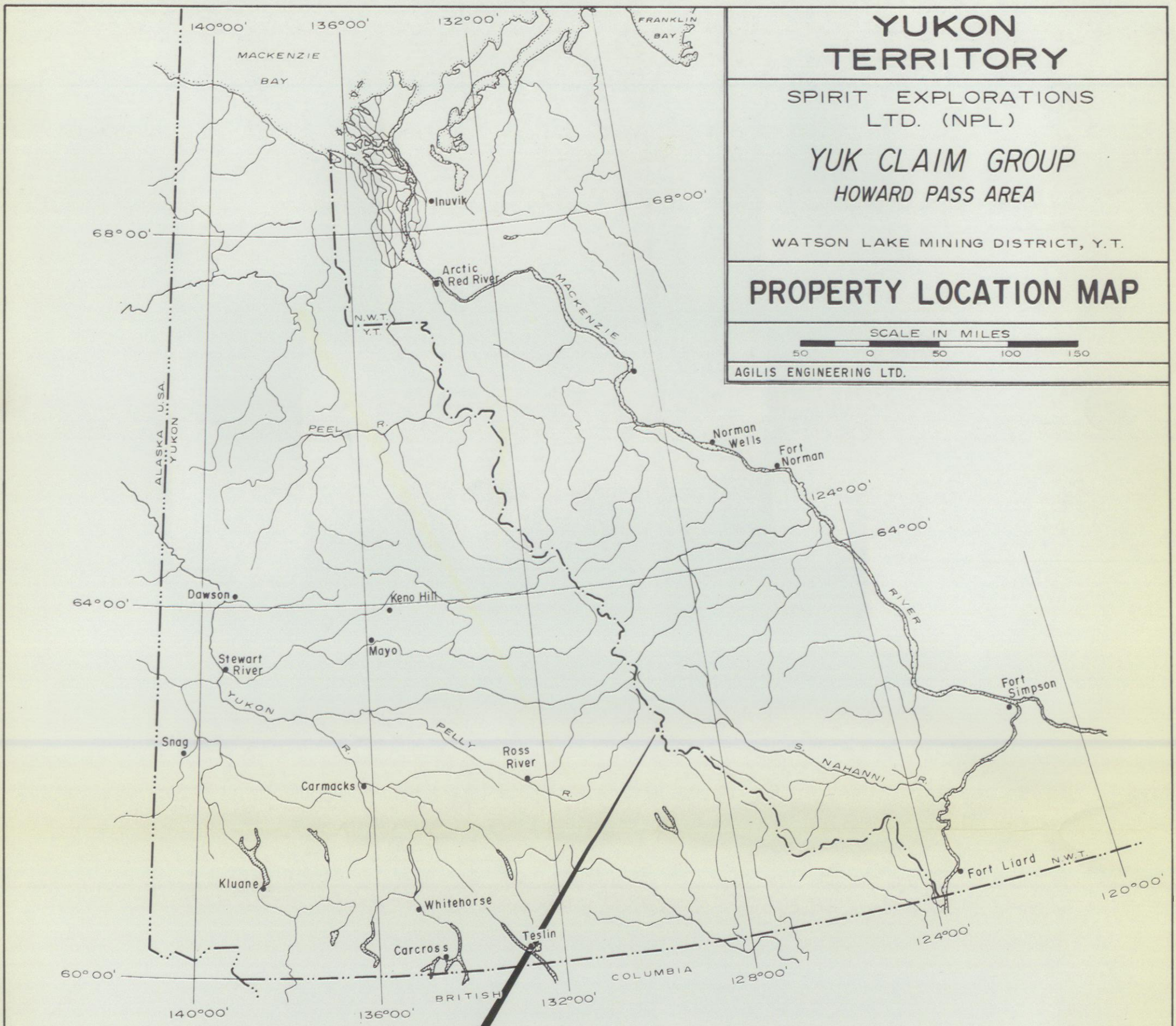
WATSON LAKE MINING DISTRICT, Y.T.

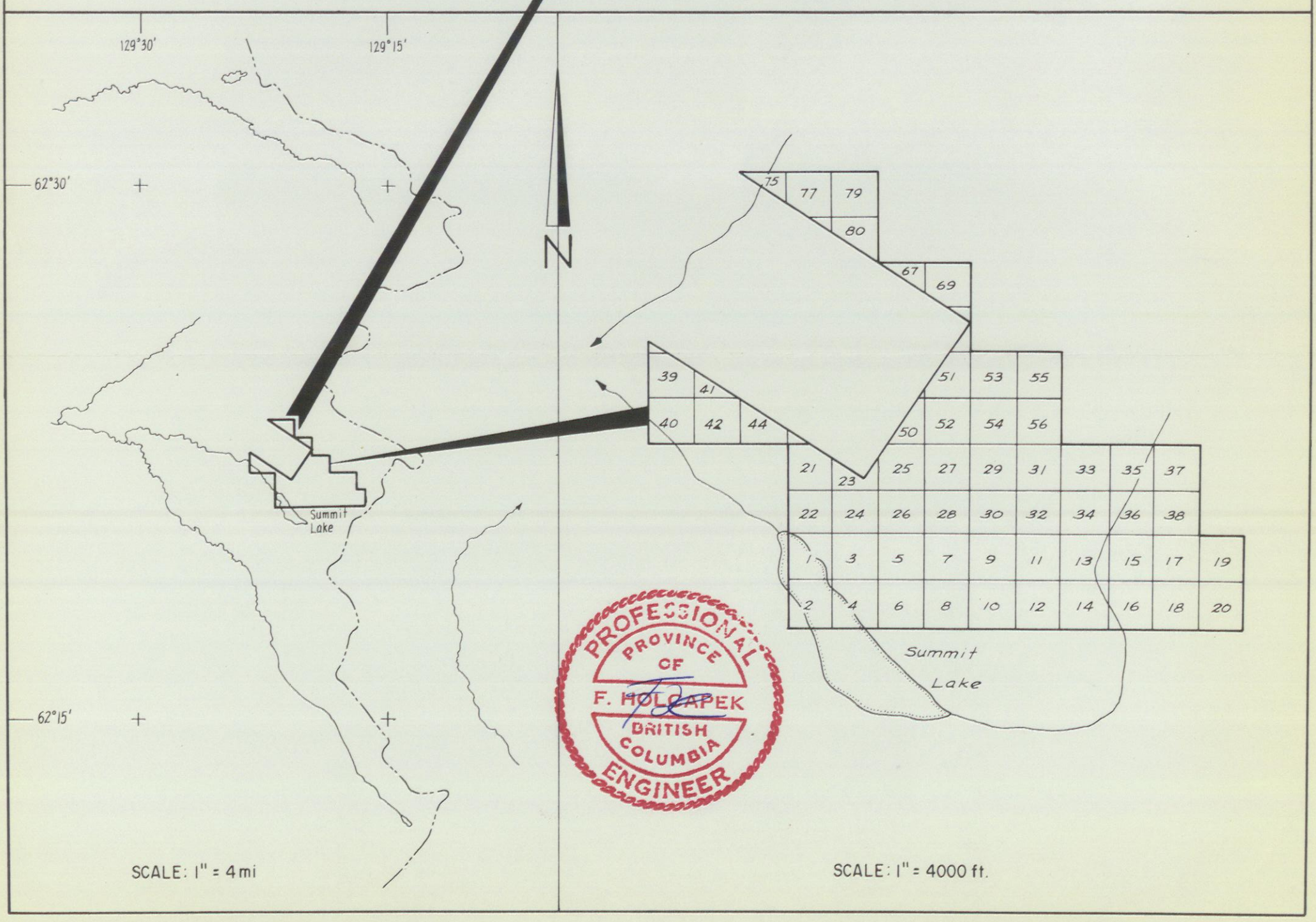
PROPERTY LOCATION MAP

SCALE IN MILES

50 0 50 100 150

AGILIS ENGINEERING LTD.





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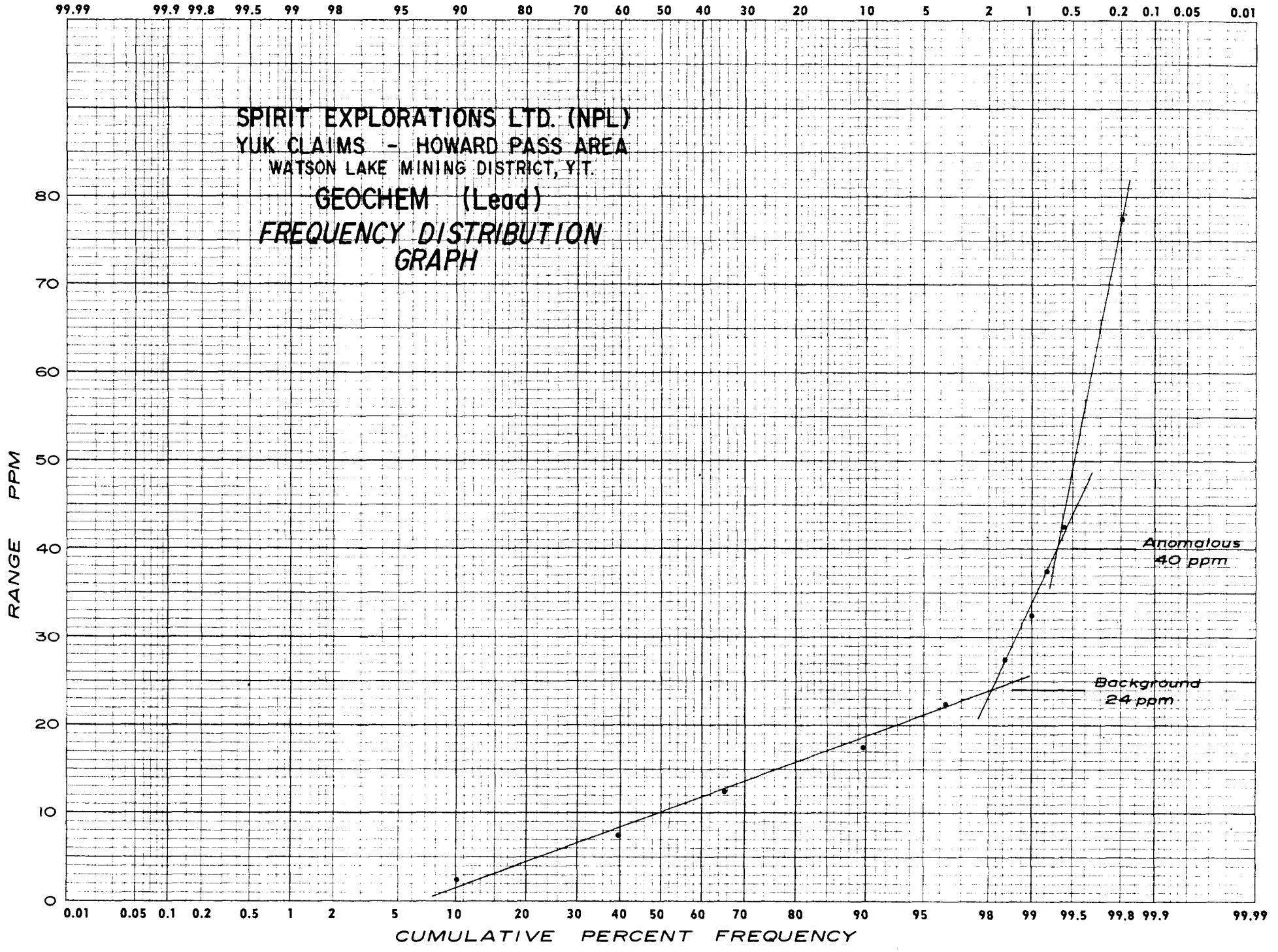
PROVINCE OF BRITISH COLUMBIA
F. HOLCAPEK

SCALE: 1" = 4 mi

SCALE: 1" = 4000 ft.



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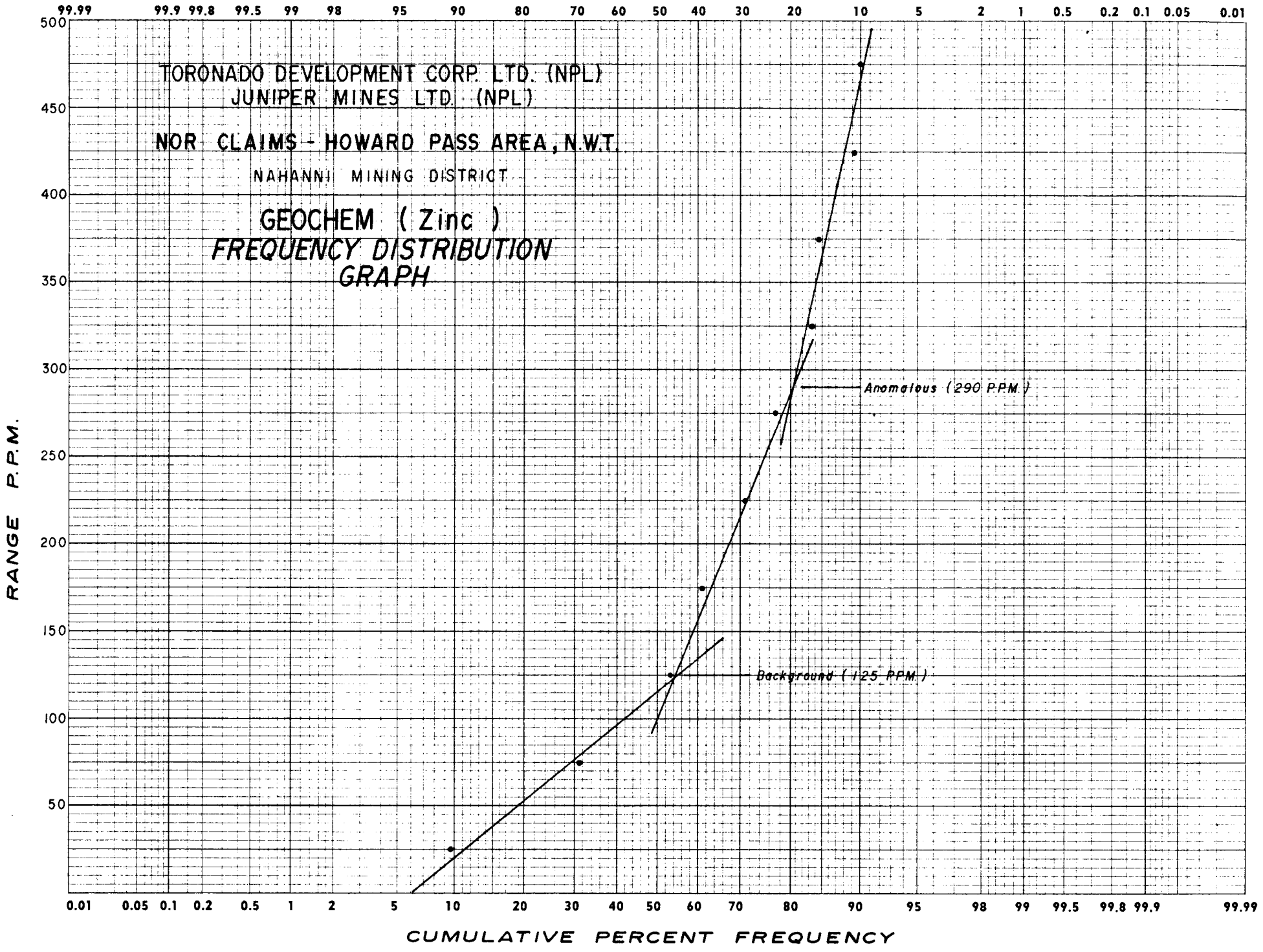

MIT

GROUP

Grey Limestone

Thinly Bedded Black Shale

Thinly Bedded Grey to Black Argillaceous Limestone

Grey Calcareous Shale

Thinly Bedded Grey to Black Shale

Claim Line

Claim Line

Claim Line

Grey to Black Calcareous Shale

SUMMIT LAKE

Thinly Bedded Black Shale

8W 4W 00 4E 8E

100N 96N 92N 88N 84N 80N 76N 68N 64N 60N 56N 52N 48N 44N 40N 36N 32N 28N 24N 20N 16N 12N 8N 4N BASE LINE 4S 8S 12S 16S

12E 16E 18E 22E 24E 28E 32E 36E 40E 44E 48E 52E 56E 60E 64E 68E 72E 76E 80E 84E 88E 92E 96E 100E 104E 108E 112E 116E 120E 124E

N

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA F. HOGGARTH

SPIRIT EXPLORATIONS LTD. (NPL)

YUK CLAIM GROUP

HOWARD PASS AREA - WATSON LAKE M.D., Y.T.

GEOLOGY

SCALE IN FEET

0 400 800 1200 1600

Agiis Engineering Ltd. Nov., 1973

MIT

GROUP

SUMMIT

LAKE

LEGEND

.26 Soil sample location, lead in ppm

Rock sample location (no detectable lead – XRF), lead in percent concentration – XRF, two readings taken from one sample – XRF

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SPIRIT EXPLORATIONS LTD (NPL)

YUK CLAIM GROUP

HOWARD PASS AREA – WATSON LAKE M.D., Y.T.

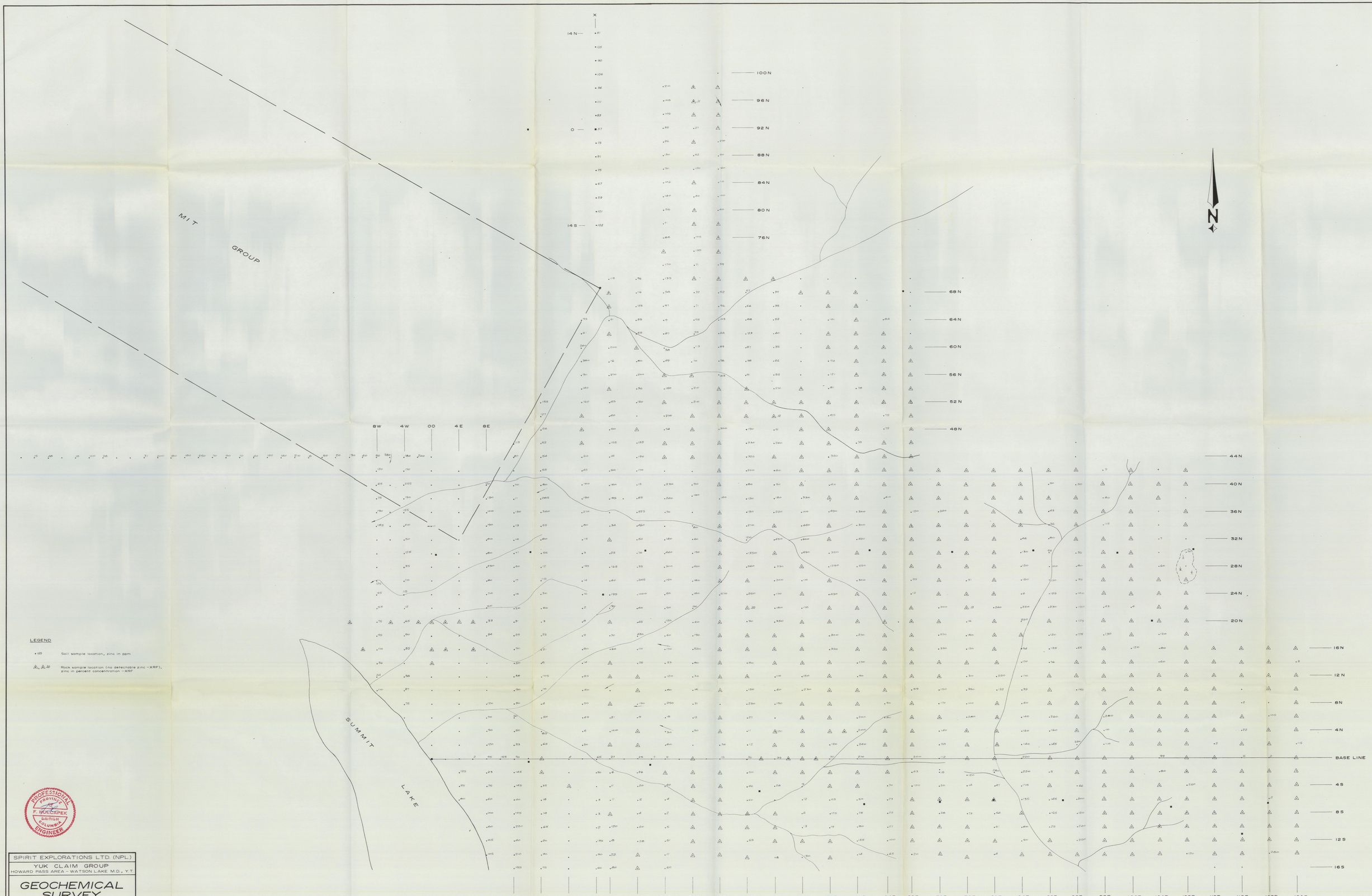
GEOCHEMICAL SURVEY

LEAD

SCALE IN FEET

0 400 800 1200 1600

Agilis Engineering Ltd. Nov., 1973



LEGEND

• 185 Soil sample location, zinc in ppm

△, △.20 Rock sample location (no detectable zinc – XRF), zinc in percent concentration – XRF

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F. HUCZAPEK

SPIRIT EXPLORATIONS LTD. (NPL)

YUK CLAIM GROUP

HOWARD PASS AREA – WATSON LAKE M.D., Y.T.

GEOCHEMICAL SURVEY

ZINC

SCALE IN FEET
0 400 800 1200 1600

Agtis Engineering Ltd. Nov., 1973