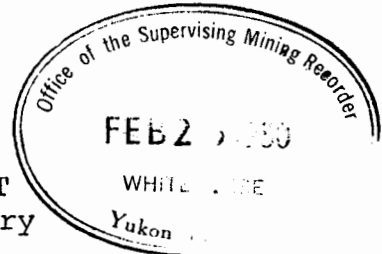


GEOLOGICAL, GEOCHEMICAL AND GEOPHYSICAL REPORT

ON THE

WOLF CLAIM GROUP



WATSON LAKE MINING DISTRICT
Allen Creek Area, Yukon Territory

N.T.S. 105-B/9

Latitude 60°33'N; Longitude 130°02'W

FOR

REGIONAL RESOURCES LTD.

720 - 800 W. Pender Street
Vancouver, B.C. V6C 2V6



BY

C. G. Verley, B.Sc., Geologist

SUPERVISED BY: M. H. Sanguinetti, P.Eng.

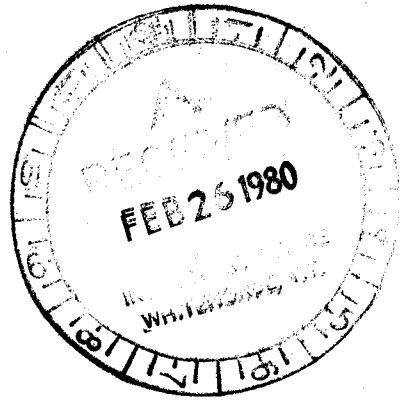
CORDILLERAN ENGINEERING
1418 - 355 Burrard Street
Vancouver, B.C. V6C 2G8

CLAIMS: Wolf Numbers 1-52 inclusive
LOCATION: 58 airmiles NW of Watson Lake, Y.T.
DATE: August 8 to October 25, 1979

JANUARY, 1980

090566



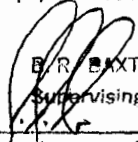


This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representation work in the amount of \$ 18,200.00

J. A. Mouin

Resident Geologist or
Resident Mining Engineer

Considered as representation work under
Section 50 (4) Yukon Quartz Mining Act.


B. R. BAXTER
Supervising Mining Recorder



Commissioner of Yukon Territory

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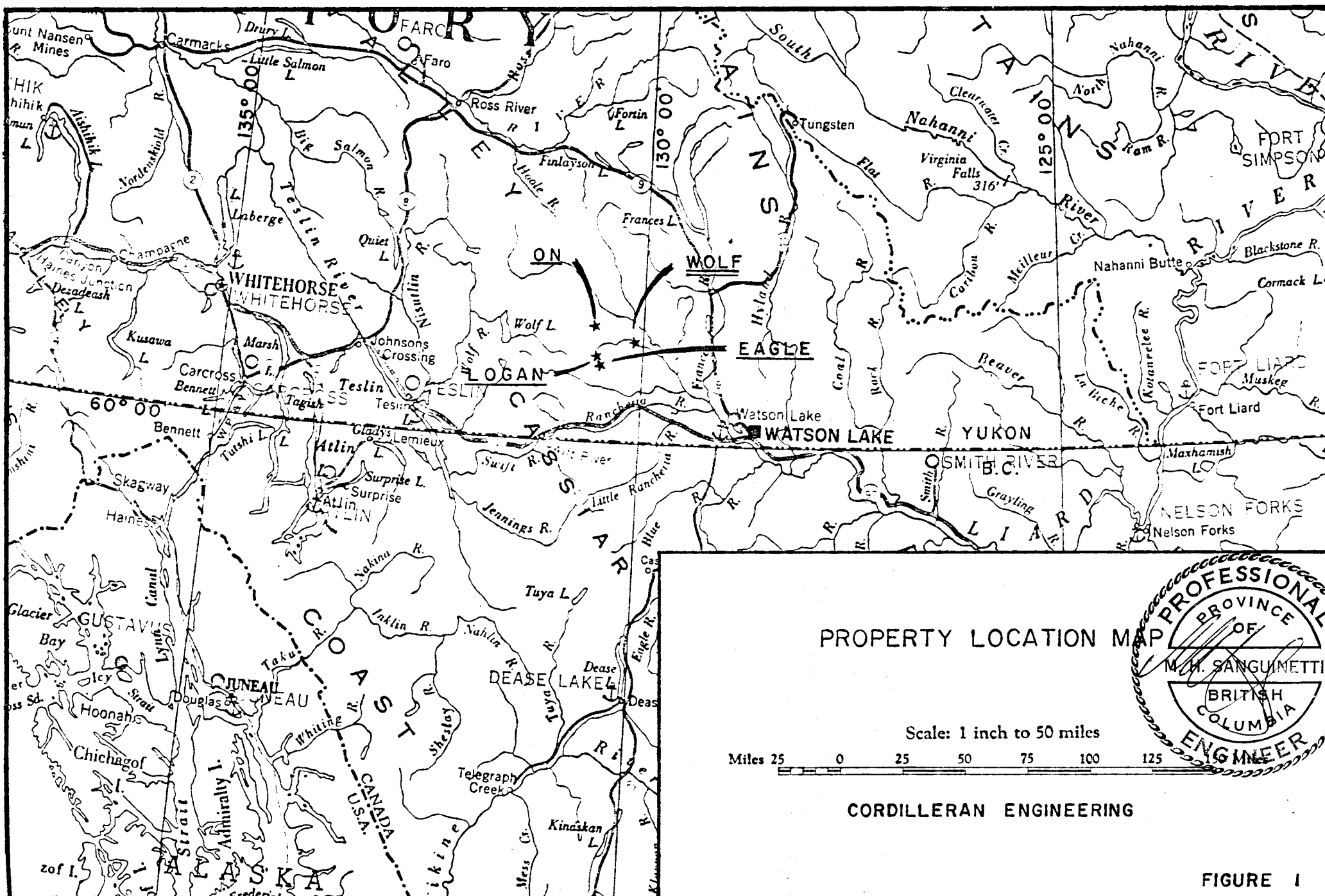
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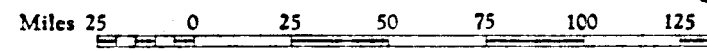
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PROPERTY LOCATION MAP



Scale: 1 inch to 50 miles



CORDILLERAN ENGINEERING

FIGURE I

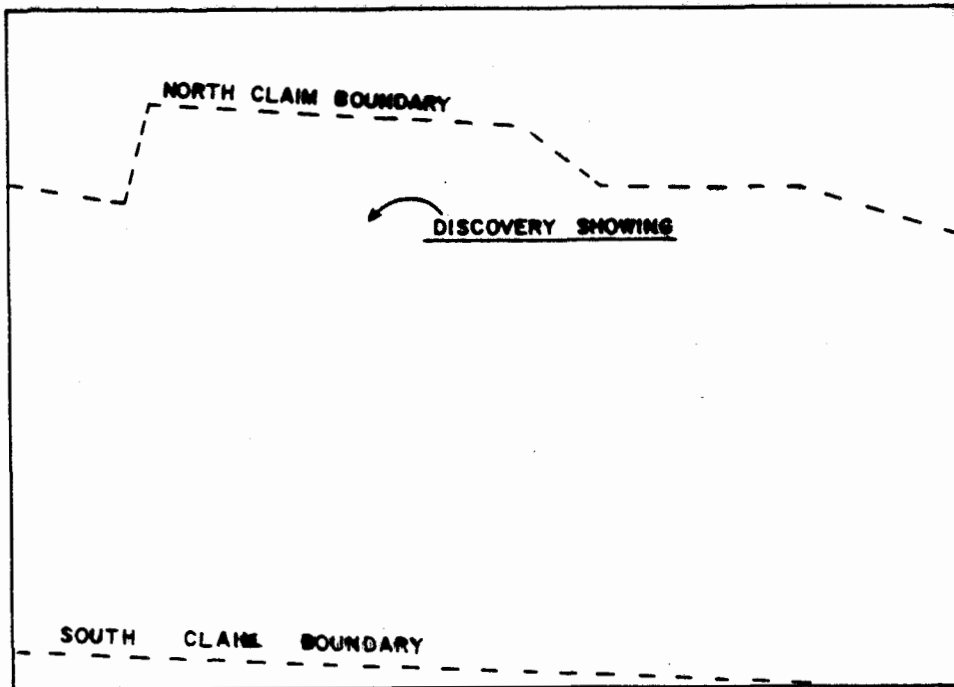
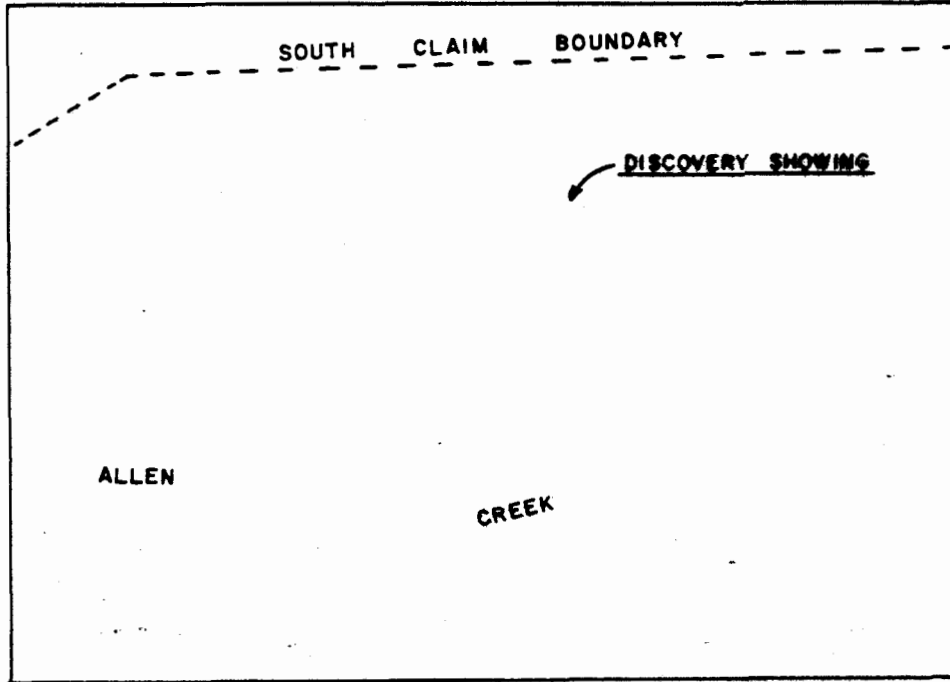




FIGURE 2: Wolf property, looking southwest

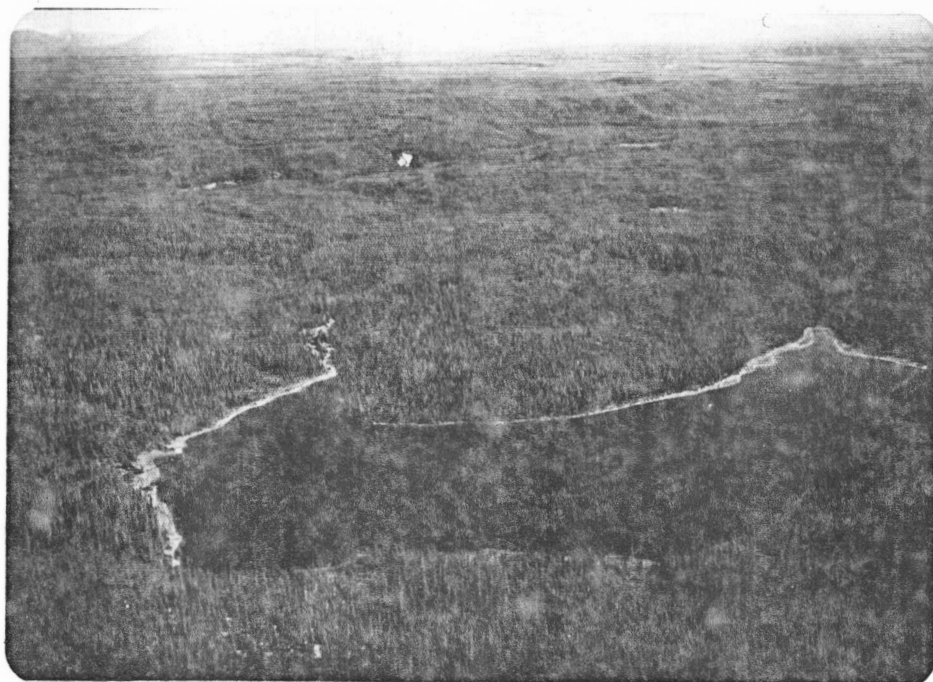


FIGURE 3: Looking northeast

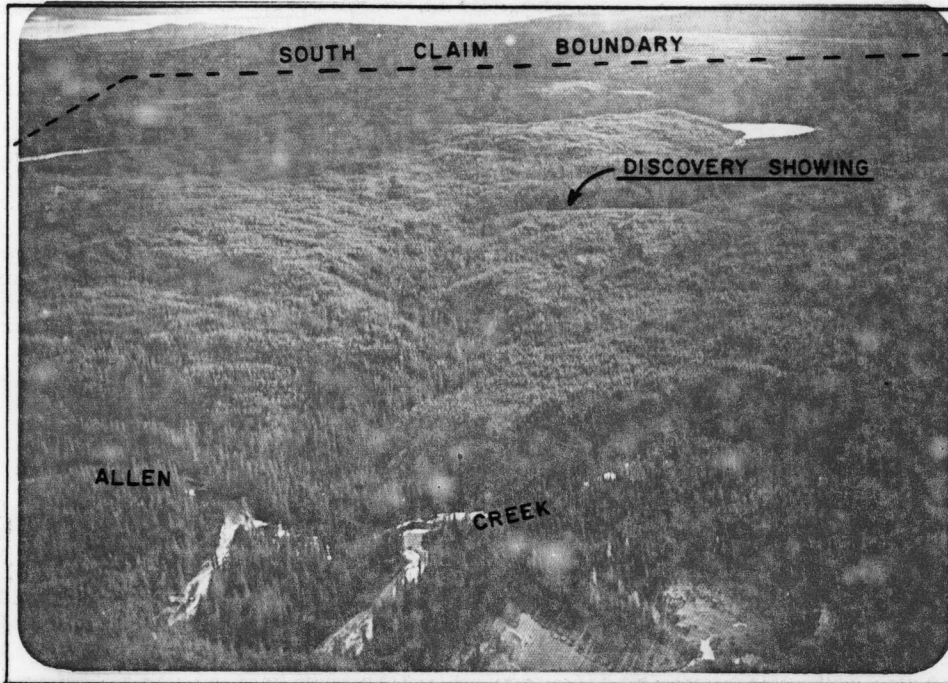


FIGURE 2: Wolf property, looking southwest

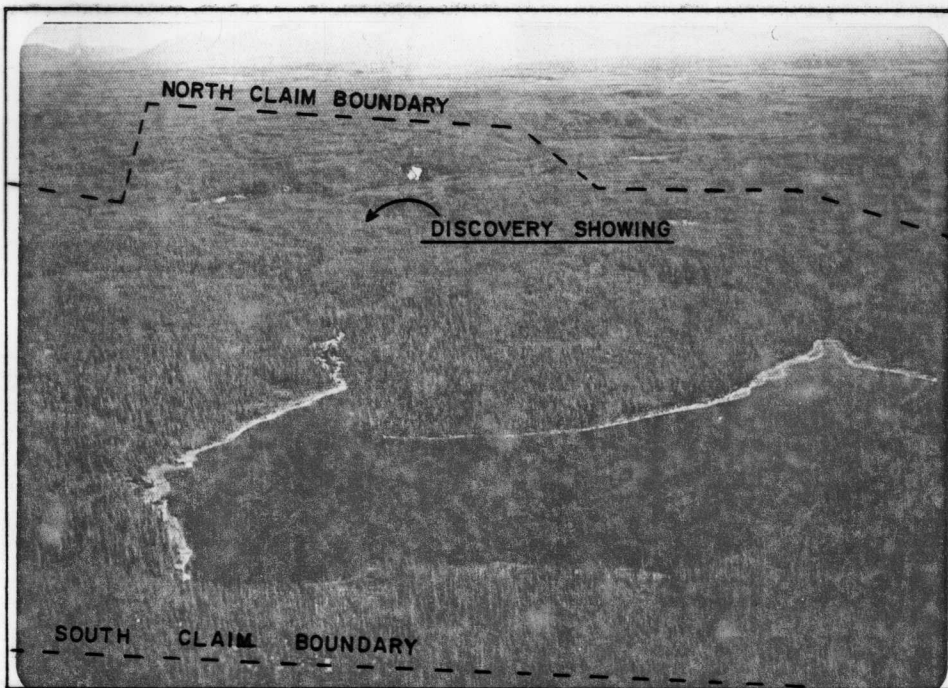
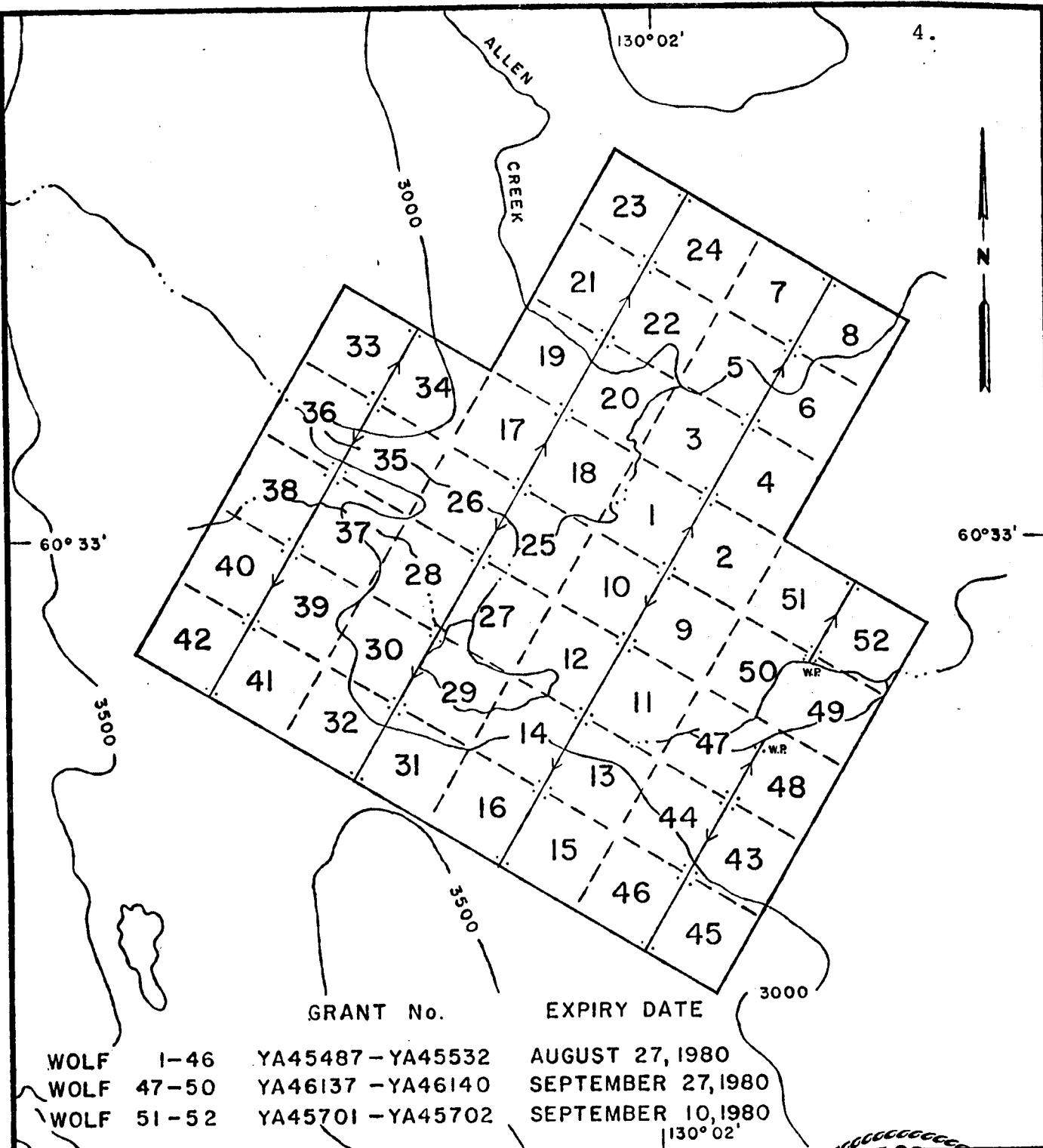


FIGURE 3: Looking northeast

I N T R O D U C T I O N

The Wolf group (52 claims, Figure 4) is located in the Watson Lake Mining District (N.T.S. 105-B/9), 93 kilometres (58 miles) northwest of Watson Lake, Y.T. The claims are situated at latitude 60°33'N and longitude 130°02'W and lie 6 kilometres from a winter road leading to the Alaska Highway. This new discovery was acquired in 1979 as a result of a regional exploration program conceived and conducted by Cordilleran Engineering for Regional Resources Ltd.

Stratiform Zn, Pb, Cu, Ag mineralization occurs on this property in folded Lower Cambrian and earlier (?) metasediments. Chip samples across two mineralized horizons at the discovery showing assay 4.65% Zn, 3.05% Pb, 0.06% Cu, 1.23 oz/ton Ag over 0.84 metres and 0.84% Zn, 0.6% Pb, <0.01% Cu, 0.24 oz/ton Ag over 1.01 metres. A massive pyrite horizon (30% FeS₂) lies stratigraphically above the



CLAIM MAP

WOLF GROUP

WATSON LAKE MINING DISTRICT, YUKON TERRITORY

N.T.S. 105B - 9

SCALE: 1 inch = 1/2 mile

CONTOUR INTERVAL = 500 feet

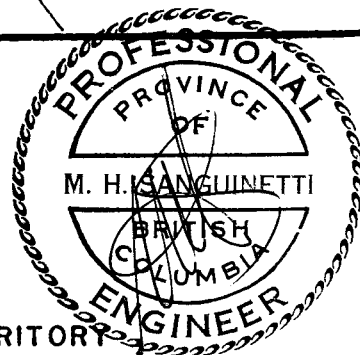


FIGURE 4

Zn-Pb horizons. A grab sample of this material assays:
0.41 oz/ton Ag, 0.058 oz/ton Au, 0.22% WO₃, 0.08% Cu.
Scheelite-bearing clasts are found in the massive pyrite
schist.

The results of preliminary soil sampling indicate a zone anomalous in Zn, Pb, Cu, Ag which is directly associated with the showing, and which has a length of 2000 m and a width of 300 m. The geological setting, mineralization and geochemistry strongly suggest that there is excellent potential for locating a Zn, Pb, Cu, Ag massive sulphide deposit on the Wolf group. Accessory Au and W may significantly enhance the value of this discovery.

G E O L O G Y

(Plate 1)

The Wolf group lies between the Northern Cassiar and Southern Pelly Mountains in the Omineca crystalline belt. The property is situated in a highly deformed and metamorphosed succession mapped as Lower Cambrian and earlier (?) in age by the Geological Survey (G.S.C. Map 10-1960). Migmatitic intrusive rocks outcrop approximately 4.8 kilometres (3 miles) northwest of the claims. A distinct northeast-trending lineament crossing the Wolf claims has been noted on ERTS imagery.

The region is underlain by rolling hills with elevations ranging from 2600' to 3200' (ASL). These are cut, locally, by steep walled creeks with gentle to moderate gradients. Forest cover is complete, except for swampy areas, and consists mainly of open pine stands. Spruce, tamarack

GEOLOGY (cont'd)

and birch are restricted to creek bottoms and swamps. Soil horizons are well developed in glacial till which blankets the property in thicknesses estimated between 2 to 7 metres (5 to 20 feet).

LITHOLOGIES

The existence of a sulphide-bearing schist sequence on the Wolf property has enabled the lithologies occurring on the claims to be subdivided into three units, described below. Limited exposure (less than one percent outcrop) has made further refinement of this subdivision impossible at present. Petrographic descriptions of specimens from each unit were prepared by Dr. J. Payne of Vancouver Petrographics.

LOWER CAMBRIAN AND EARLIER (?)Unit LE₁: Lower Schist

Muscovite-biotite-garnet schist intercalated with biotite-muscovite-quartz-plagioclase schist form the bulk of this unit. Interpreted as being derived from fine-to medium-grained psammitic rocks (wackes) interbedded with pelitic sediments, the Lower Schist appears to represent a turbidite sequence. Relict beds of pelitic schist 2 to

GEOLOGY (cont'd)



FIGURE 5: Exposure of Unit LE₁

GEOLOGY (cont'd)

30 cm thick are intercalated with psammitic schists which form beds averaging 10 to 20 cm in thickness. Pebble-sized quartz and feldspar augen are abundant in some psammitic layers suggesting these sequences were pebble conglomerates. The thickness of this unit has not been determined.

Unit LE₂: Sulphide-Bearing Schist

Unit LE₂ is essentially defined by exposures at and immediately surrounding the discovery showing. A coincident Pb, Zn, Ag, Cu geochemical soil anomaly lies over the showing. This, combined with structural data suggests that this schist unit has a sinuous, northwesterly trend, the extent of which can be extrapolated for 1000 metres either side of the discovery showing. Estimated thickness for this sequence is 75 metres.

This unit contains brown to rusty weathering, pale green, carbonate-muscovite-sulphide schists intercalated with pelitic, psammitic and carbonate-rich layers. Sphalerite, galena, minor chalcopyrite and pyrite occur as irregular layers (1 to 4 mm thick) alternating between carbonate and pelitic (dominantly muscovite) layers of similar thickness. Muscovite-rich layers may represent a volcanic component in these sediments: no relict textures remain to refute this notion. Tourmaline (up to 2 to 3%) occurs as an accessory in some layers. Within the sulphide-bearing schist unit are sequences of muscovite-biotite-garnet

GEOLOGY (cont'd)

schist (metapelites) and muscovite-biotite-garnet-plagioclase-quartz schists (metapsammities) which are similar to lithologies in Unit LE_1 .

At the discovery showing an upper and lower mineralized horizon are separated by a barren sequence of plagioclase-quartz-biotite-muscovite-garnet schist approximately 1.3 metres thick. Chip samples taken across the upper mineralized horizon (1.01 m) assay 0.85% Zn, 0.6% Pb, <0.01% Cu and 0.24 oz/T Ag. The lower horizon assays 4.65% Zn, 3.05% Pb, 0.06% Cu and 1.23 oz/ton Ag over 0.84 metres.

Approximately 15 metres stratigraphically above the discovery showing the upper part of a pyrite-siderite-muscovite-quartz schist layer is exposed. A fragmental structure with clasts of muscovite-schist occurs in part of this layer. Some clasts contain scheelite. A grab sample of pyrite schist assayed 0.41 oz/ton Ag, 0.058 oz/ton Au, 0.22% WO_3 , 0.08% Cu. The form and extent of this horizon is unknown.

Unit LE_3 : Upper Schist

Pale orange to rusty weathering exposures of this unit form cliffs along Allen Creek. The rock-type consists of interbedded metapelitic and metapsammitic rocks which are identical in appearance to sequences found in Unit LE_1 . The thickness of LE_3 is unknown.

GEOLOGY (cont'd)STRUCTURE

The sequence on the Wolf group is intensely deformed. Foliation parallel to relict bedding surfaces indicates isoclinal folding. Two sets of lineations nearly at right angles to one another are developed in the schists. Measurements of these lineations indicates they have been rotated suggesting at least three phases of folding. The lack of exposure and marker horizons precludes the development of a coherent structural interpretation at the present time.

The effect of faulting is not known. A major, northwesterly-trending fault, the Twin Lake Valley Fault, is situated four miles northeast of the discovery showing. ERTS imagery shows a northeasterly-trending lineament running through the center of the property. A pyrite-bearing quartz vein (1.3 m wide) occupies this trend and occurs 75 metres west of the discovery showing.

MINERALIZATION

(Figures 6, 6A; Table 1)

At the discovery showing stratiform Zn-Pb-Cu-Ag mineralization is limited to an outcrop exposing approximately 3 metres (10 feet) of section (Figure 6). Two mineralized horizons are found in this showing.

LOWER HORIZON

At the base of the exposure dark brown, fine-grained sphalerite occurs as lenticular aggregates and irregular laminations (2 to 10 mm thick) parallel to foliation. The layers are intensely deformed by folding and shearing. Relatively coarse, anhedral grains of galena are disseminated within the sphalerite layers. Pyrite occurs as fine, anhedral grains associated with galena and sphalerite and as coarse subhedral grains in adjacent schist layers. The bands separating mineralization vary from fine-grained muscovite schist to carbonate-rich laminations (2 to 15 mm thick). Chlorite (10-15%) in some layers and a high muscovite content (75-80%) in others suggest the parent rock may have had a volcanic component. Euhedral

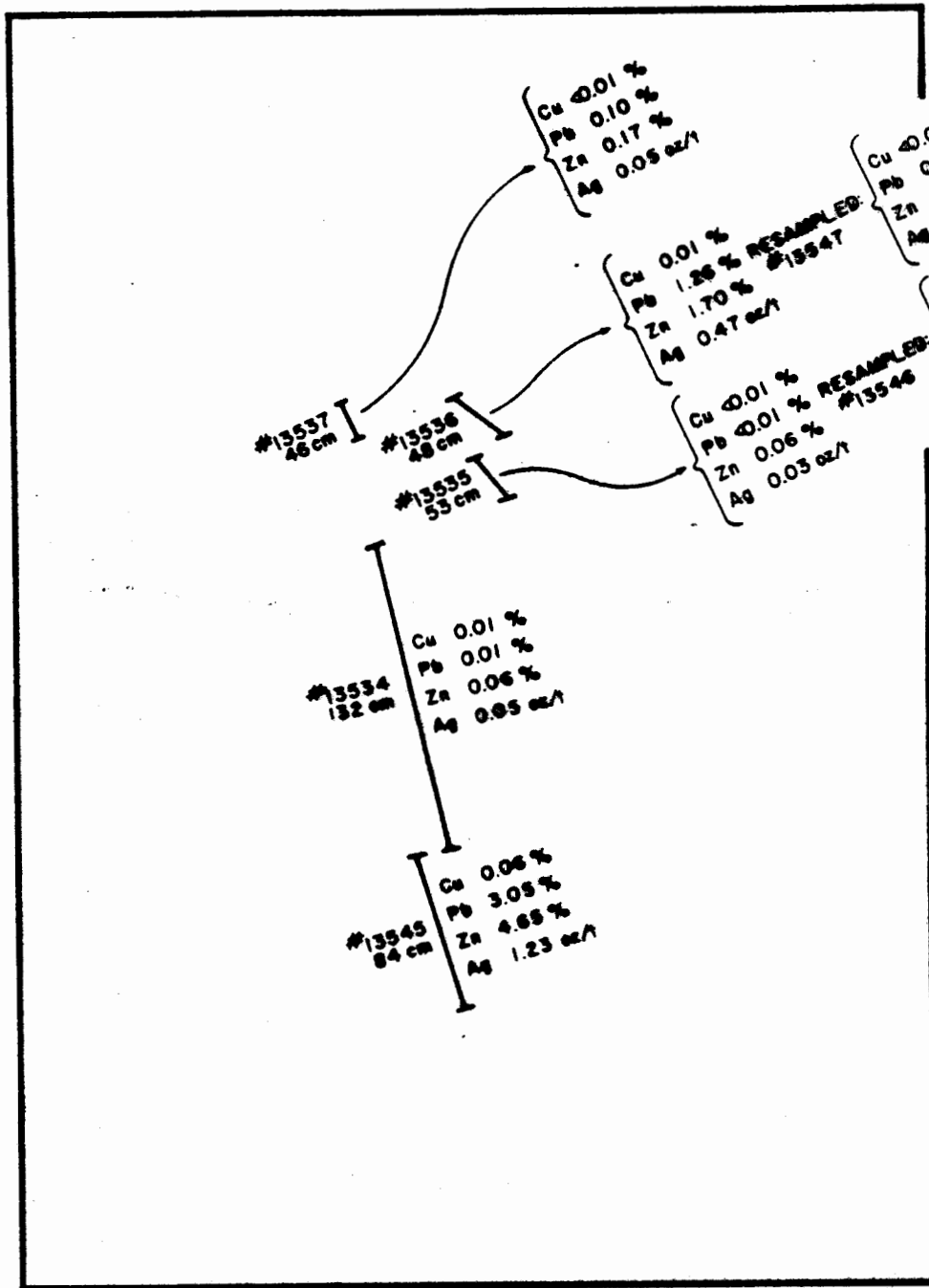


FIGURE 6A

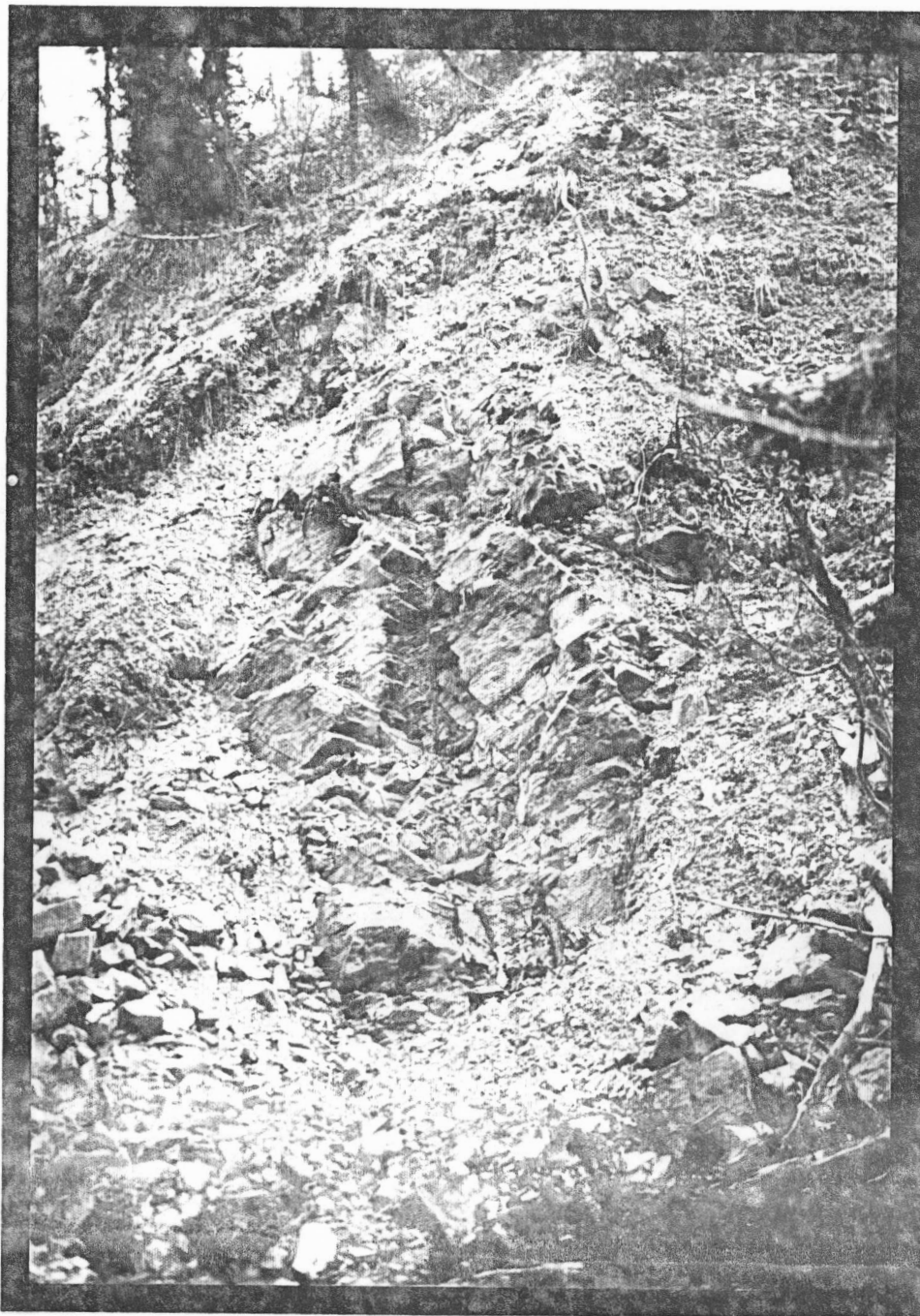


FIGURE 6: Assay sections, discovery showing, Wolf claim group.

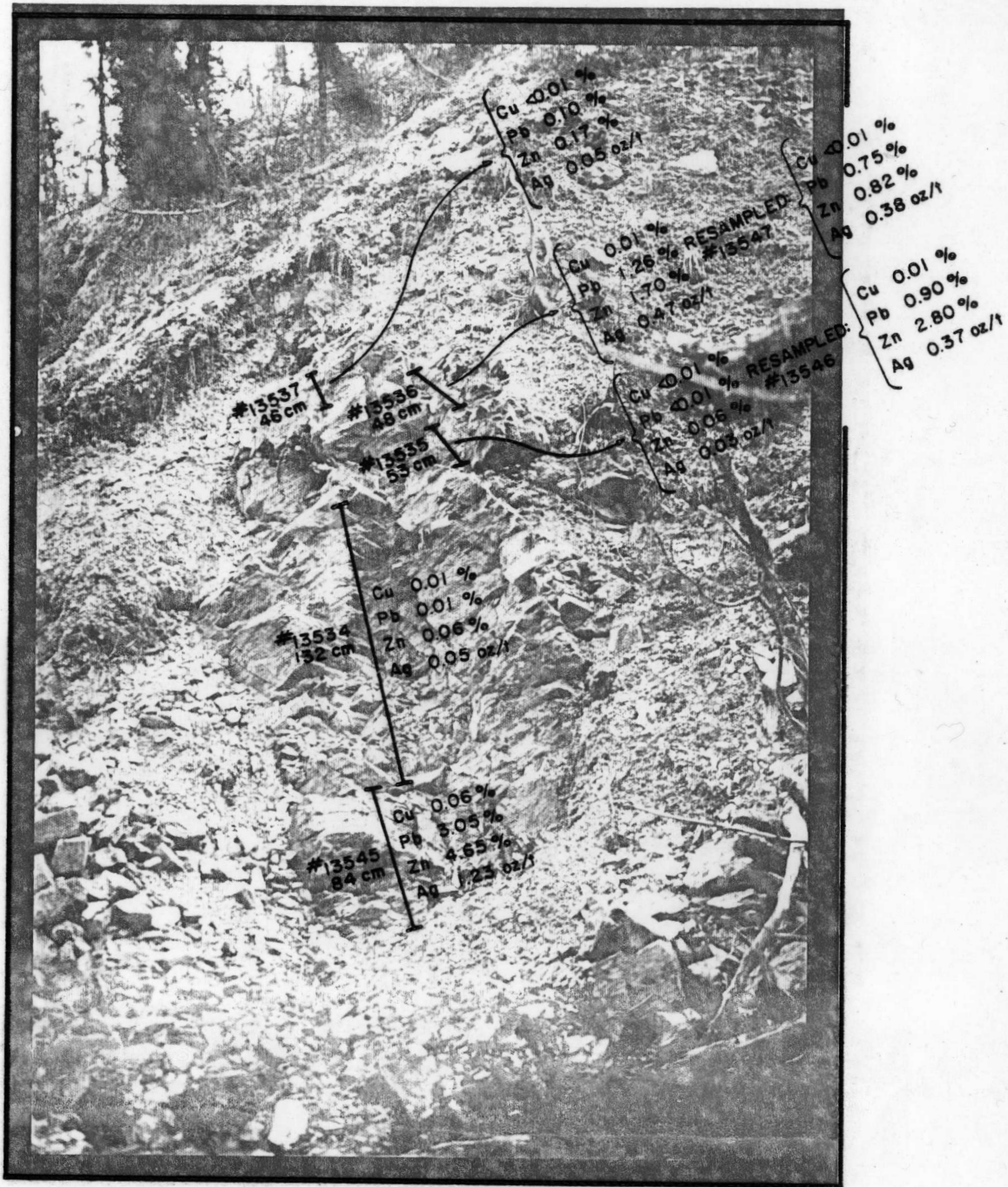


FIGURE 6: Assay sections, discovery showing, Wolf claim group.

TABLE I

ASSAYS

<u>Sample Number</u>	<u>Zn %</u>	<u>Pb %</u>	<u>Cu %</u>	<u>Ag oz/T</u>	<u>Nature of Sample</u>	<u>Width</u>	<u>Remarks</u>
13421	4.55	2.20	0.08	0.69	Continuous chip	60 cm	Base of Discovery Showing
13422	22.10	8.97	0.18	3.77	Grab	-	High grade mineralization concentrated in minor fold nose
13423	5.86	3.05	0.08	0.96	Grab	-	Typical mineralization Discovery Showing
13424	5.47	4.95	0.01	1.78	Grab	-	" " "
2205	1.40	1.09	0.02	0.42	Grab	-	Discovery Showing
2206	19.05	8.88	0.25	3.72	Grab	-	" "
2207	6.60	3.65	0.08	1.35	Grab	-	" "
2208	5.85	4.78	0.08	1.83	Grab	-	" "
2209	6.65	4.25	0.18	1.56	Grab	-	" "
2210	1.32	0.87	0.03	0.45	Grab	-	" "
13517	<0.01	<0.01	0.08	0.41	Grab	-	Massive pyrite schist: Au:0.058 oz/T, WO ₃ : 0.22%.
13534	0.07	0.01	0.01	0.05	Continuous chip	132 cm	Barren zone, Discovery Showing.
13535 ¹	0.06	<0.01	<0.01	0.03	Continuous chip	53 cm	Upper mineralized horizon, Discovery Sho
13536 ¹	1.70	1.26	0.01	0.47	Continuous chip	48 cm	" " "
13537	0.17	0.10	<0.01	0.05	Continuous chip	46 cm	Barren zone, Discovery Showing
13545	4.65	3.05	0.06	1.23	Continuous chip	84 cm	Lower mineralized horizon, Discovery Sho
13546 ²	2.80	0.90	0.01	0.37	Continuous chip	53 cm	Resample of #13535
13547 ²	0.82	0.75	<0.01	0.38	Continuous chip	48 cm	Resample of #13536
¹ Weighted Average	0.84	0.60	<0.01	0.24			13535 and 13536 combined
² Weighted Average	1.86	0.83	<0.01	0.37			13546 and 13547 combined

MINERALIZATION (cont'd)

tourmaline needles (2-3%) are accessories in some bands. The exposed width of this mineralized horizon is 84 cm (33 inches). A chip sample taken across it assayed: 4.65% Zn, 3.05% Pb, 0.06% Cu, 1.23 oz/ton Ag. The lower horizon grades rapidly upward into a barren section (132 cm or 52 in. thick) that consists of calcareous schists intercalated with quartz-plagioclase-muscovite schists.

UPPER HORIZON

The barren section is overlain by a mineralized horizon 101 cm (40 in.) thick. Sphalerite, galena and minor pyrite are found in this sequence in the same mode of occurrence as in the lower horizon. The weighted average grades of two continuous chip samples across the upper horizon is: 0.84% Zn, 0.60% Pb, <0.01% Cu, 0.24 oz/ton Ag (average of check samples: 1.86% Zn, 0.83% Pb, <0.01% Cu, 0.37 oz/ton Ag) ..

The upper part of a pyrite-carbonate-muscovite schist sequence is exposed 27 metres downstream from the discovery showing but, approximately 15 metres stratigraphically above the showing. This sequence consists of fine-grained, anhedral to subhedral pyrite (30%) with minor chalcopyrite and galena in a quartz (35%), carbonate (siderite?, 15%), muscovite (10%) matrix. Fragmental structures occur in the upper part of this horizon, with muscovite schist clasts floating in quartz-pyrite schist.

MINERALIZATION (cont'd)

Fragments containing scheelite are rare in the pyrite schist. A grab sample of this material (containing scheelite) assayed: 0.08% Cu, <0.01% Pb, 0.41 oz/ton Ag, 0.058 oz/ton Au, 0.22% WO₃.

Mineralization on the Wolf group is similar to stratiform mineralization found at other localities in the Lower Cambrian and earlier(?) succession in the Selwyn Basin. Lead-zinc ratios of the sample in Table I range from 0.32 to 0.9 (average 0.58) and are very similar to ratios of the Faro ore body. The sedimentary setting and tectonic environment are believed to be extremely favourable for massive sulphide deposition.

GEOCHEMISTRY AND GEOPHYSICS

(Plate 1)

Orientation soil sampling was conducted on the Wolf claims over 27.3 line-kilometres of grid. A total of 549 samples were collected and analyzed for Cu, Pb, Zn, Ag. Frequency distributions of the data are found in figures 7 to 9. Statistical categories, estimated from these, are listed below:

TABLE II

STATISTICAL CATEGORIES - SOIL ANALYSES - WOLF GROUP

	<u>Background</u>	<u>Possibly Anomalous</u>	<u>Anomalous</u>	<u>Maximum Value</u>
Cu	0 - 11	12 - 14	15+	515
Pb	0 - 30	31 - 39	40+	490
Zn	0 - 60	61 - 99	100+	940
Ag	0 - 0.3	0.4	0.5+	2.7

Contours of anomalous levels in each element exhibit a sinuous, northwesterly trending pattern across the central

part of the property. The anomalous zone has a length of 2000 metres (6500 feet) and average width of 300 metres (1000 feet). The discovery showing is located at the center of this trend. This suggests that Zn, Pb, Cu, Ag mineralization, similar to that at the discovery showing, may persist over the entire length of the anomalous zone.

Geophysical tests, by Pheonix Geophysics Limited, were conducted on one line which cuts obliquely across the structure and anomalous geochemical trend near the discovery showing. The results of this work suggest that the sulphide-bearing schist produces probable to definite induced polarization anomalies. Magnetic lows appear to be associated with the mineralized horizon and may reflect the absence of pyrrhotite in the sulphides as well as the reduced content of magnetic minerals in the schist/carbonate host rock, as opposed to the surrounding schists. Electromagnetic results are inconclusive. Further induced polarization, electromagnetic and magnetometer testing is warranted.

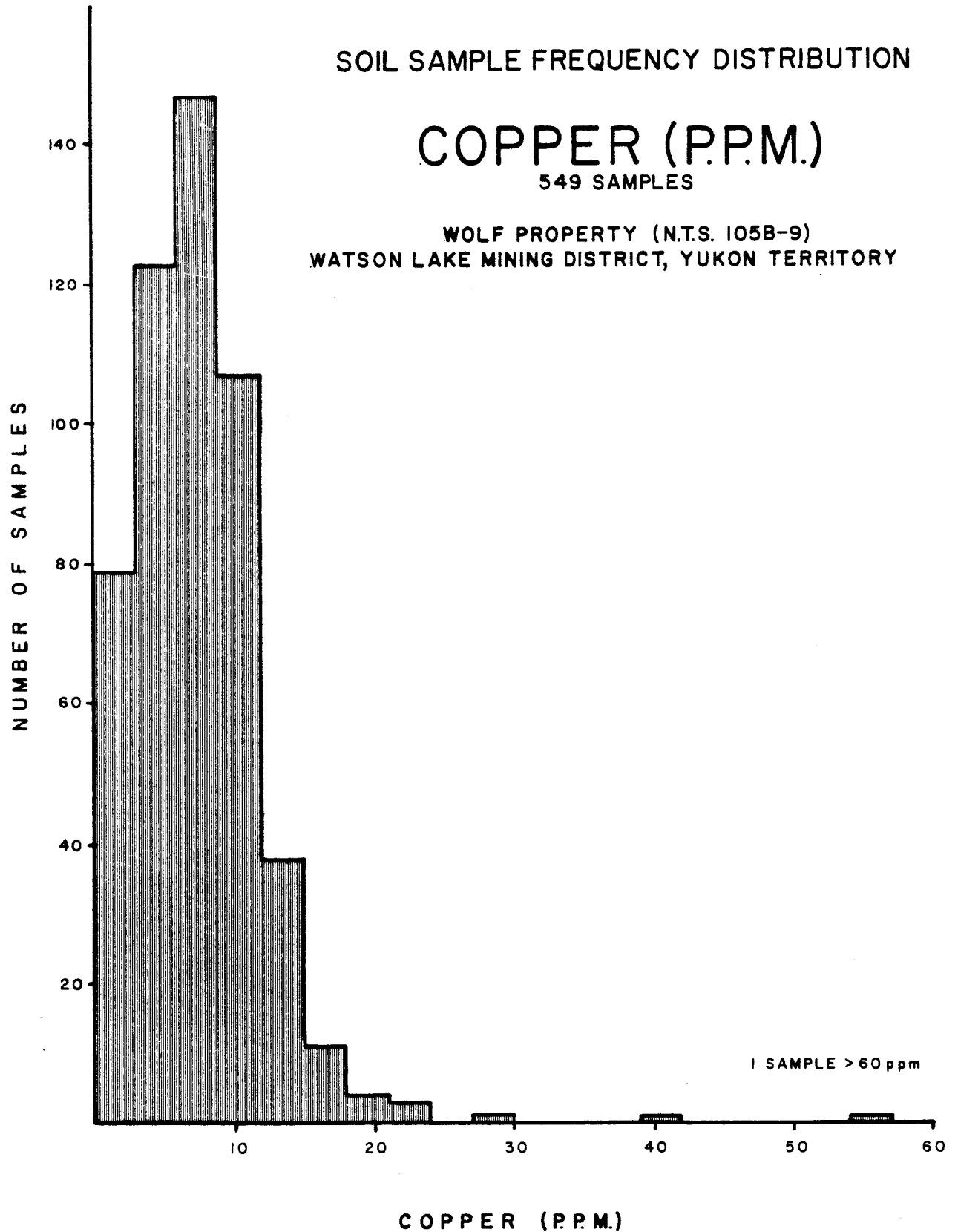


FIGURE 7

SOIL SAMPLE FREQUENCY DISTRIBUTION

LEAD (P.P.M.)

549 SAMPLES

WOLF PROPERTY (N.T.S. 105B-9)
WATSON LAKE MINING DISTRICT, YUKON TERRITORY

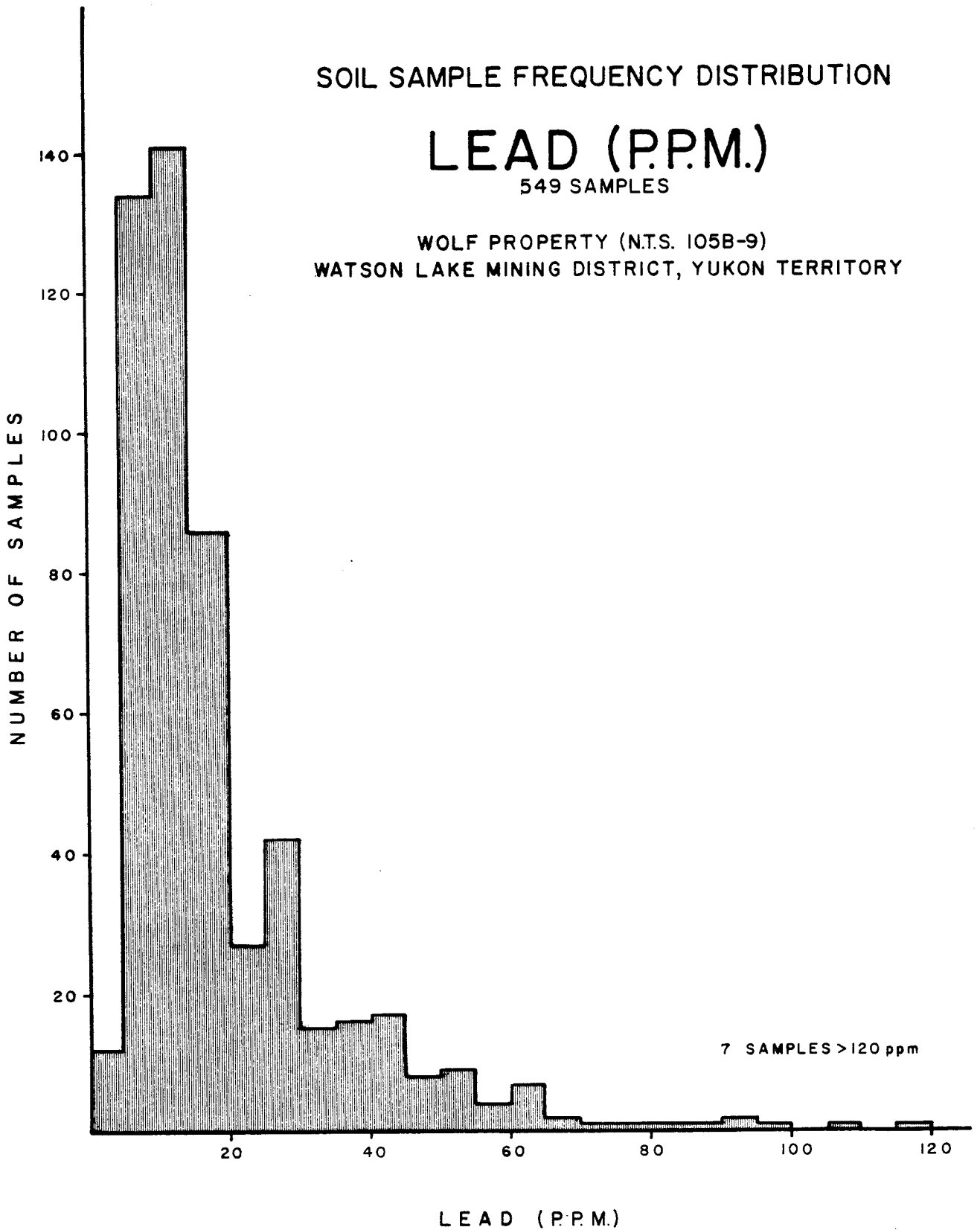


FIGURE 8

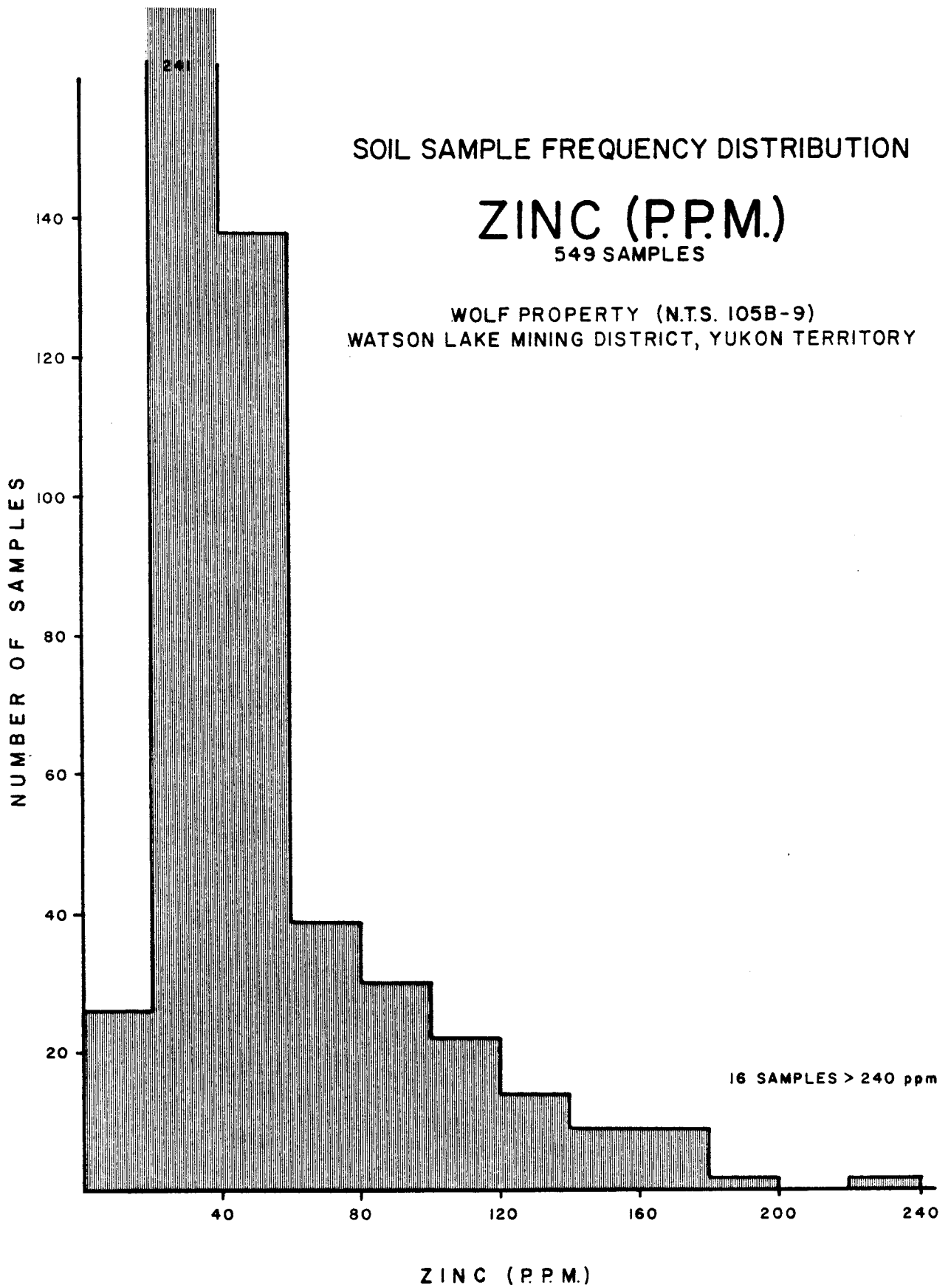


FIGURE 9

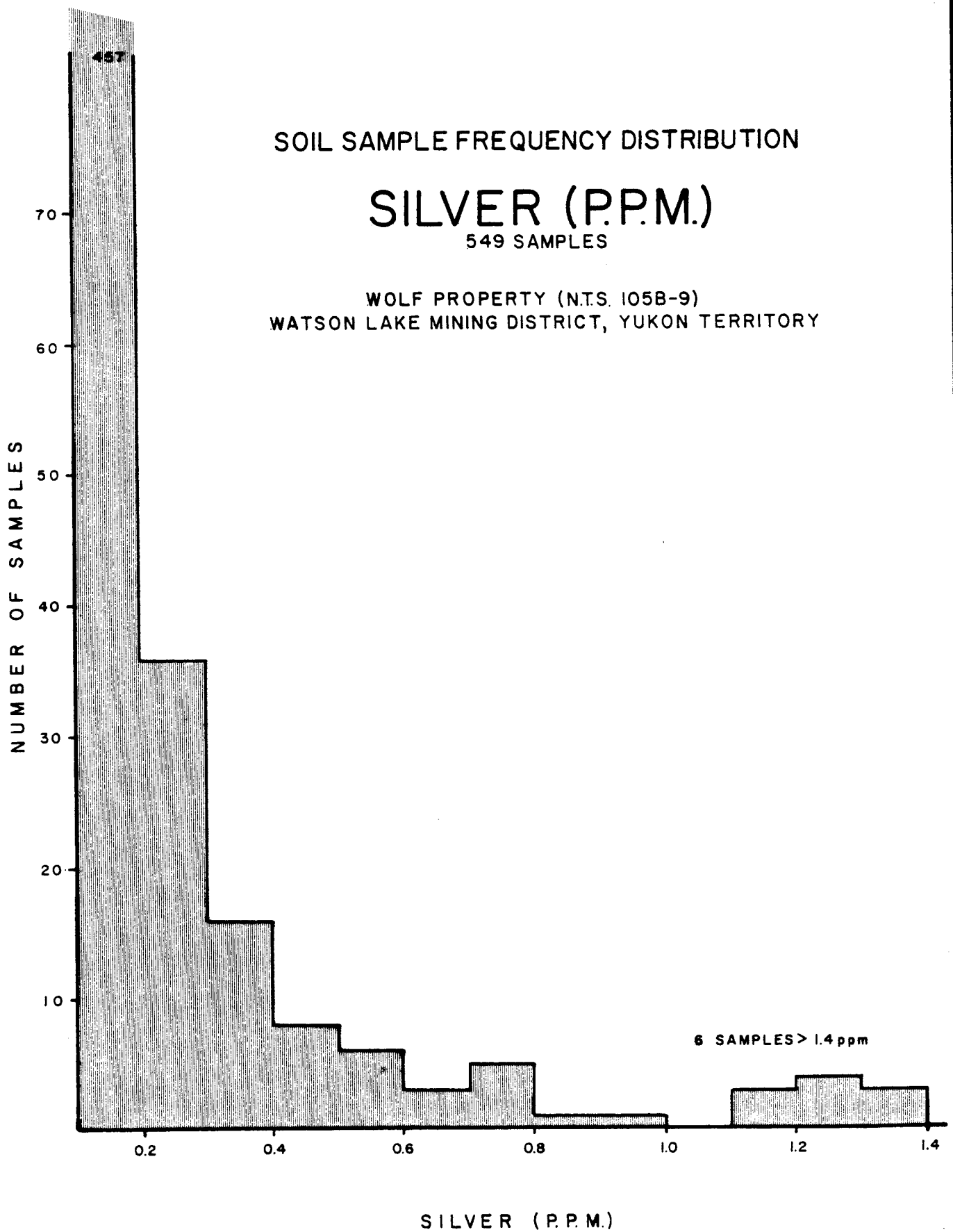


FIGURE 10

EVALUATION

The mode of occurrence and nature of the Zn-Pb-Cu-Ag mineralization on the Wolf property strongly suggests that there is good potential for locating a massive sulphide deposit.

The stratigraphic succession includes significant intervals of turbidites, which reflect environments of deposition similar to those found in other stratiform lead-zinc districts (Faro, Tom, Jason, Howard's Pass) in other parts of the Selwyn Basin. Carbonate rocks and a possible volcanic component associated with the mineralization are favourable indicators, suggesting that sulphide deposition may have developed during a quiescent period or in local troughs between coalescing turbidite lobes.

Major crustal breaks and cross-cutting features in the vicinity of the Wolf are tectonic elements which this

property has in common with many massive sulphide deposits on a world wide scale and many represent extensional features responsible for basin development as well as providing access for mineralizing solutions from depth.

The close relationship between high soil geochemistry, mineralization and structural trends suggest mineralization may be distributed across the Wolf property over a strike length of 2000 metres (6500 feet), dipping gently to moderately northeast. In light of the very limited exposure, grades from chip sampling of the discovery showing are very encouraging. The metamorphic grade of the host rocks and style of deformation should enhance recovery and may up-grade the mineralization. Significant silver, gold and tungsten values associated with mineralization add to the potential of this property. Location is favourable for development.

RECOMMENDATIONS

For the 1980 field season a two-stage exploration program is recommended for the Wolf claim group. Contingent upon the success of this program additional diamond drilling is recommended.

PHASE I

- 1) Grid Preparation
Accurately cut and flag grid: 35 kilometres.
- 2) Geochemistry
Detailed soil sampling of grid to determine metal (Cu,Pb,Zn,Ag) distribution: 1500 samples.
- 3) Geophysics
Geophysical survey of grid using induced polarization, MaxMin electromagnetic and magnetometer methods.
A gravity test is recommended along selected lines.
- 4) Geological mapping
1:5000 scale mapping, conducted concurrent to soil sampling.

RECOMMENDATIONS (cont'd)

PHASE II

A diamond drilling program, 2,000 ft (600 m), is recommended to test existing geochemical anomalies and known mineralization.

PHASE III

Contingent upon the success of Phases I and II a program of diamond drilling (3,000 ft) is recommended.

ESTIMATED COST OF RECOMMENDED EXPLORATION PROGRAM

WOLF #1-52 CLAIM GROUP

PHASE I

PROGRAM: Grid preparation
 Soil geochemistry
 Geophysical surveys
 Geological mapping

TIME PERIOD: One month

PERSONNEL: Geologist
 Two linecutters
 Two samplers/geophysical assistants
 Two geophysicists
 Cook

COSTS:

Salaries	\$ 10,000
Administrative and professional fees	15,000
Helicopter support (10 hr x \$450/hr)	4,500
Fixed-wing aircraft support (900 mi x \$2.50/mi)	2,250
Transportation, expediting	3,500
Camp supplies, food	5,200
Camp equipment, rentals	4,500
Assays and analyses	1,000
Geochemical survey (1500 samples, Cu, Pb, Zn, Ag)	6,500
Travel, lodging	3,000
Geophysical surveys	
Mobilization	\$2,000
Induced polarization (35 km x \$385/km)	13,475
MaxMin EM (35 km x \$205/km)	7,175
Magnetometer (35 km x \$90/km)	3,150
Gravity test (3 days)	2,000
Linecutting (35 km x \$300/km)	10,500
Miscellaneous expenses	6,250
TOTAL PHASE I	\$100,000

ESTIMATED COST OF RECOMMENDED EXPLORATION PROGRAM
WOLF #1-52 CLAIM GROUP (cont'd)

TOTAL PHASE I Forward \$100,000

PHASE II

A diamond drilling program of 2,000 feet (600 metres) is recommended to test the best geochemical anomalies and known mineralization.

ESTIMATED COST OF PHASE II 100,000

ESTIMATED COST OF RECOMMENDED
 1980 EXPLORATION PROGRAM
 PHASE I and II \$200,000

PHASE III

Contingent upon the success of Phases I and II a further 3,000 feet (900 metres) of BQWL diamond drilling is recommended at an estimated cost of

\$150,000



Respectfully submitted

C. G. Verley

C. G. Verley, B.Sc., Geologist

M. H. Sanguinetti

SUPERVISED BY: M. H. Sanguinetti, P.Eng.

January, 1980

A D D E N D U M

GEOCHEMISTRY:

Soil samples were taken at 50 metre intervals along grid lines. Each sample site was flagged and labelled. Samples were collected from the "B" horizon which was fairly well developed over most of the property. The sample depth, soil type, colour, drainage, and slope were recorded for each site. Samples were placed in numbered kraft envelopes, dried and sieved (to -80 mesh) at base camp then delivered to Bondar-Clegg and Company Ltd's North Vancouver laboratory. There each sample was digested by perchloric and nitric acids. The atomic absorption method was used for analysis of each element.

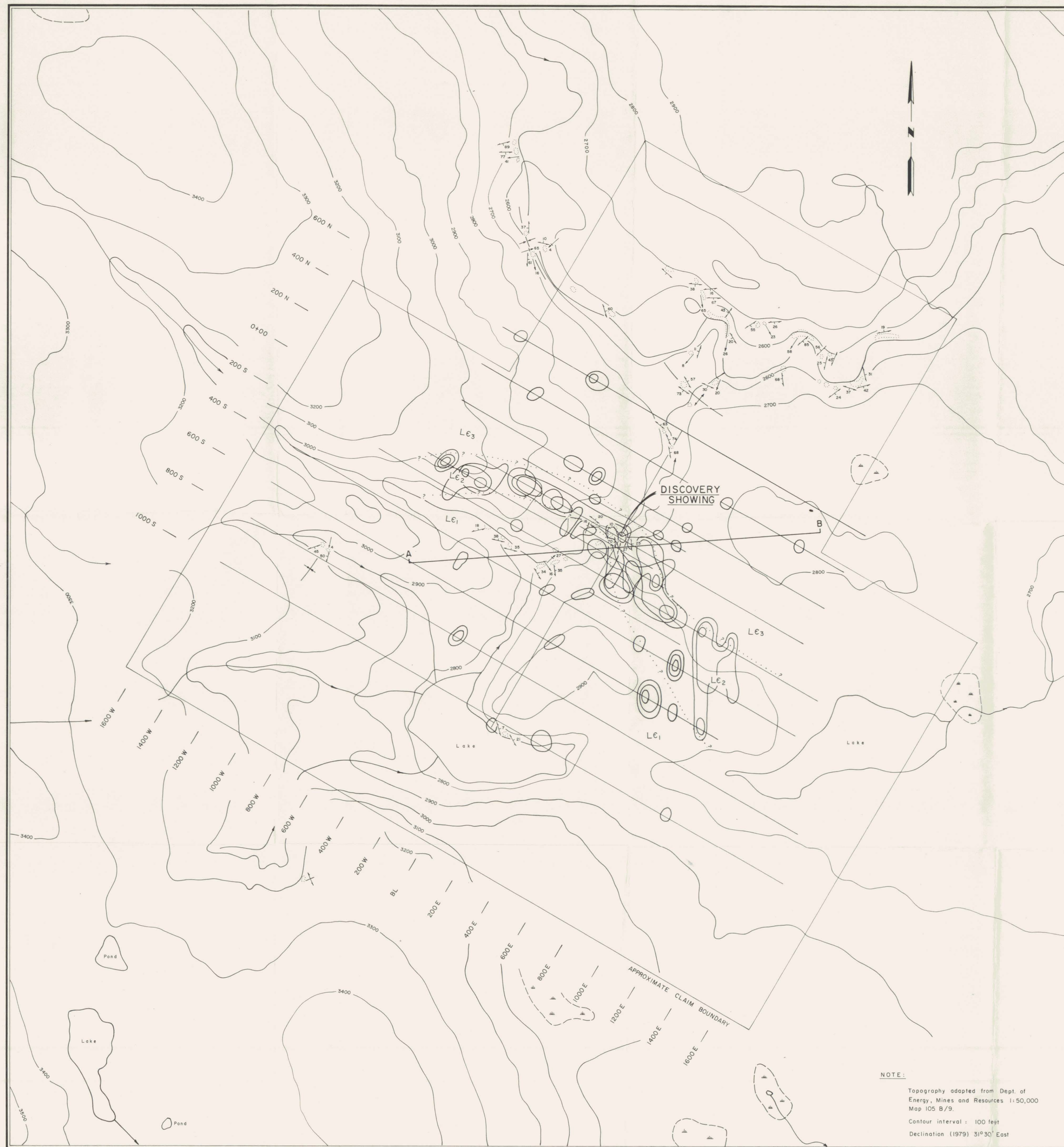
SUMMARY AND CONCLUSIONS:

In excess of \$18,000 has been expended to conduct pereliminary geological, geochemical and geophysical investigations of the Wolf #1-52 claim block, Watson Lake Mining District, Yukon Territory.

Stratiform Zn, Pb, Cu, Ag mineralization occurs on this property in folded Lower Cambrian and earlier (?) metasediments. Chip samples across two mineralized horizons at the discovery showing assay 4.65% Zn, 3.05% Pb, 0.06% Cu, 1.23 oz/ton Ag over 0.84 metres and 0.84% Zn, 0.6% Pb, <0.01% Cu, 0.24 oz/ton Ag over 1.01 metres. A massive pyrite horizon (30% FeS₂) lies stratigraphically above the Zn-Pb horizons. A grab sample of this material assays: 0.41 oz/ton Ag, 0.058 oz/ton Au, 0.22% WO₃, 0.08% Cu. Scheelite-bearing clasts are found in the massive pyrite schist.

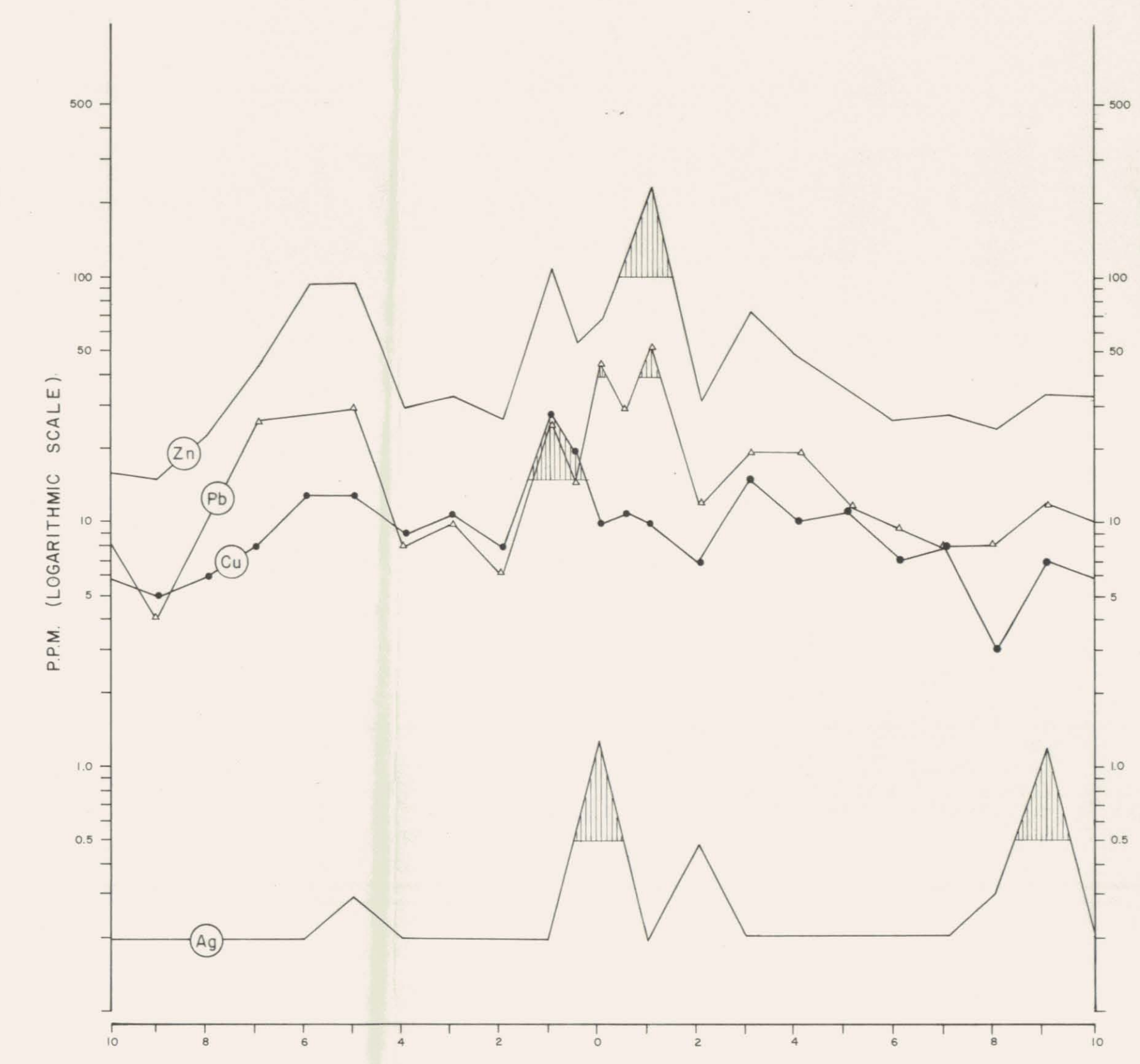
The results of preliminary soil sampling indicate a zone anomalous in Zn, Pb, Cu, Ag which is directly associated with the showing, and which has a length of 2000 m and a width of 300 m. Test geophysical surveys indicate anomalous IP effects are associated with the mineralized horizon.

The geological setting, mineralization and geochemistry strongly suggest that there is excellent potential for locating a Zn, Pb, Cu, Ag massive sulphide deposit on the Wolf group. Further work is recommended.

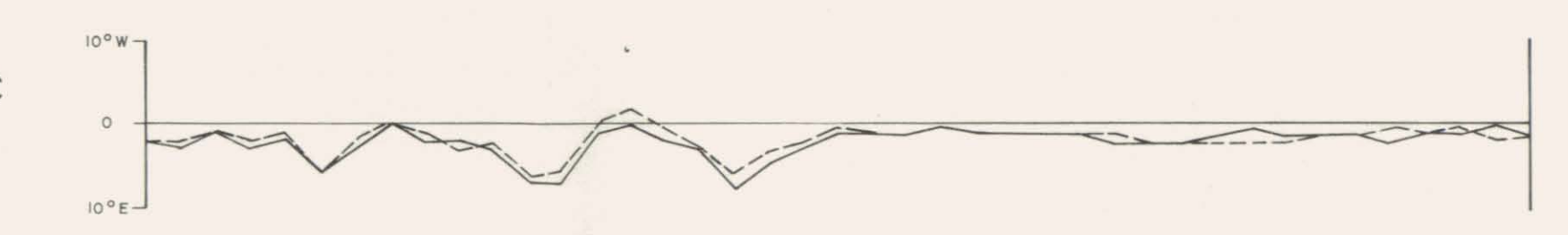


NOTE:
 Topography adapted from Dept. of Energy, Mines and Resources 1:50,000 Map 105 B/9.
 Contour interval: 100 feet
 Declination (1979) 31° 30' East

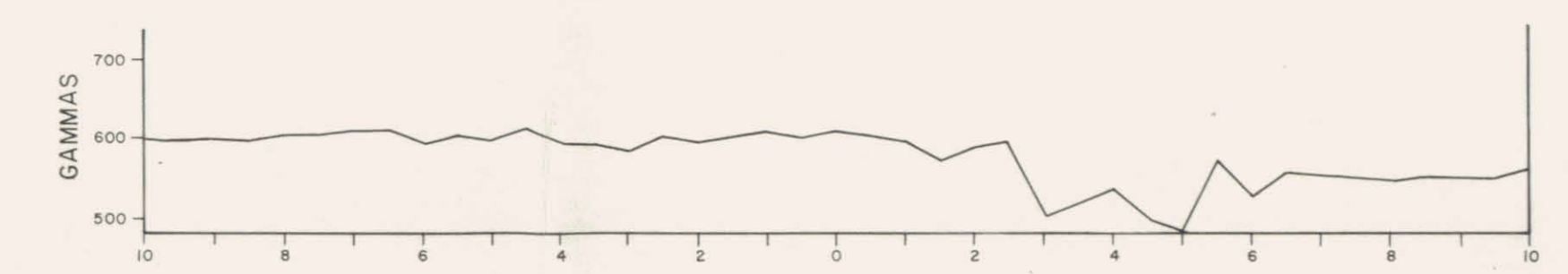
GEOCHEMICAL PROFILES
 SHADED AREAS ANOMALOUS



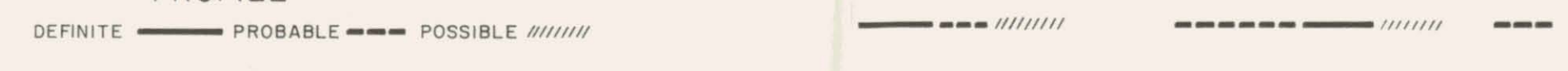
ELECTROMAGNETIC PROFILE
 (VERTICAL LOOP)



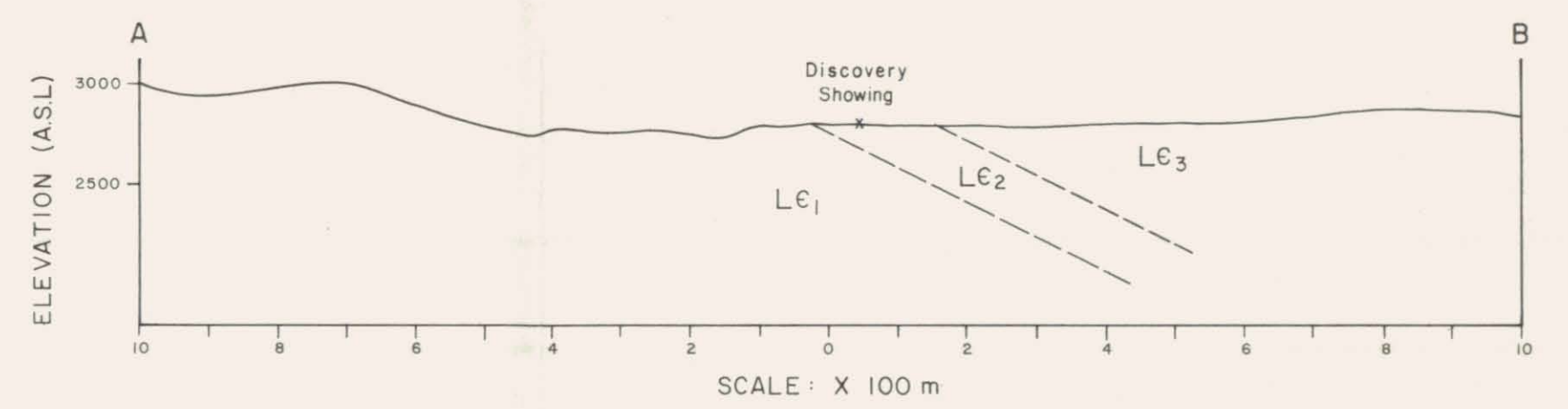
MAGNETIC PROFILE



INDUCED POLARIZATION PROFILE



GEOLOGICAL CROSS - SECTION



L E G E N D

LOWER CAMBRIAN AND EARLIER(?)

- LE₃** UPPER SCHIST
 PALE ORANGE TO RUSTY WEATHERING, PALE COLORED, FINE TO MEDIUM-GRAINED INTERBEDDED METAPELTIC AND METASAMMITIC ROCKS. MUSCOVITE-BIOTITE-GARNET SCHIST IN RELICT BEDS 2 TO 30 cm THICK ARE INTERCALATED WITH MUSCOVITE-BIOTITE-QUARTZ-PLAGIOCLASE SCHISTS WHICH FORM RELICT BEDS AVERAGING 10 TO 20 cm IN THICKNESS. PEBBLE-SIZED AUGEN ARE ABUNDANT IN SOME SAMMITIC UNITS SUGGESTING THE SEQUENCES WERE PEBBLE CONGLOMERATES. THIS UNIT IS OF UNKNOWN THICKNESS.
- LE₂** SULPHIDE-BEARING SCHIST
 BROWN TO RUSTY WEATHERING, PALE GREEN CARBONATE-MUSCOVITE-SULPHIDE SCHIST. SPHALERITE, GALENA, MINOR CHALOPYRITE AND PYRITE OCCUR AS IRREGULAR LAYERS (1 TO 4 mm THICK) ALTERNATING BETWEEN CARBONATE AND PELTIC (DOMINANTLY MUSCOVITE) LAYERS OF SIMILAR THICKNESS. MUSCOVITE-BIOTITE-GARNET-PLAGIOCLASE SCHIST LAYERS OCCUR WITHIN THIS SEQUENCE AS DO MUSCOVITE-BIOTITE-GARNET SCHIST LAYERS SIMILAR TO THOSE IN UNIT LE₁. FIFTEEN METRES STRATIGRAPHICALLY ABOVE THE EXPOSED Pb-Zn HORIZON THE UPPER PART OF A PYRITE-CARBONATE(SIDERITE?) MUSCOVITE-QUARTZ-SCHIST LAYER IS EXPOSED. CLASTS CONTAINING SCHEELITE OCCUR IN THIS LAYER. THE UPPER MINERALIZED HORIZON AT THE DISCOVERY SHOWING ASSAYS 1.07% Pb, 2.28% Zn, 0.41 oz/ton Ag OVER 1.01 m. THE LOWER HORIZON ASSAYS 3.05% Pb, 4.85% Zn, 1.23 oz/ton Ag, 0.06% Cu OVER 0.84 m. A GRAB SAMPLE OF THE MASSIVE PYRITE SCHIST (100% Fe₂S₃) ASSAYS 0.41 oz/ton Ag, 0.08 oz/ton Au, 0.23% WO₃, 0.08% Co. THICKNESS OF THIS UNIT, INFERRED FROM GEOCHEMISTRY, IS APPROXIMATELY 75 m AT THE DISCOVERY SHOWING.
- LE₁** LOWER SCHIST
 MUSCOVITE-BIOTITE-GARNET SCHIST INTERCALATED WITH BIOTITE-MUSCOVITE-QUARTZ-PLAGIOCLASE SCHIST. THIS UNIT IS LITHOLOGICALLY IDENTICAL TO UNIT LE₃ AND IS OF UNKNOWN THICKNESS.

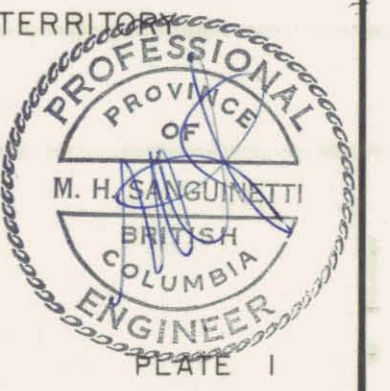
- ASSUMED LITHOLOGIC CONTACT
- ATTITUDE OF FOLIATION
- TREND AND PLUNGE OF LINEATIONS (YOUNGER, OLDER)
- SYNFORM
ANTIFORM
- OUTCROP
- GEOLOGICAL, GEOPHYSICAL AND GEOCHEMISTRY PROFILE LINE

SOIL GEOCHEMISTRY: Contours

- Cu ≥ 15 ppm
- Pb ≥ 40 ppm
- Zn ≥ 100 ppm
- Ag ≥ 0.5 ppm

LOGAN JOINT VENTURE
 GEOLOGY AND GEOCHEMISTRY
 WOLF CLAIM GROUP
 WATSON LAKE MAP SHEET, N.T.S. 105 B-9
 WATSON LAKE MINING DISTRICT, YUKON TERRITORY

BY
 CORDILLERAN ENGINEERING
 1418-355 BARRARD STREET
 VANCOUVER, B.C. V6C 2G8





EXPLANATION

- SOIL SAMPLE, INTERVAL 50m
- COPPER CONTENT OF SOILS (PPM)**
- BACKGROUND 0-11
- POSSIBLY ANOMALOUS 12-14
- ANOMALOUS 15+
- CONTOURS ENCLOSE ANOMALOUS VALUES

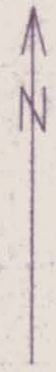
SCALE:
 0 100 200 300 400 METRES
 0 100 200 300 400 FEET

NOTE: TOPOGRAPHY ADAPTED FROM DEPT. OF SURVEY
 PLANS & RESOURCES 1:50,000 SCALE FROM 1955/57
 COORDINATE SYSTEM: UTM
 DATUM: NAD 83



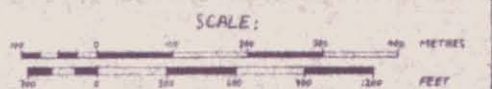
COPPER GEOCHEMISTRY
 WRECK CLAIM GROUP
 WRECK LAKE MAP - SHEET, MTE 1058/9
 WRECK LAKE MINING DISTRICT, YUKON TERRITORY

CARDILLERAN ENGINEERING
 1118 - 1125 BURBANK STREET
 VANCOUVER, B.C. V6E 2E8



EXPLANATION

- SOIL SAMPLE, INTERVAL 50m
- LEAD CONTENT OF SOILS (PPM)**
- BACKGROUND 0-30
- POSITELY ANOMALOUS 31-79
- ANOMALOUS 40+
- CONTOURS ENCLOSE ANOMALOUS VALUES

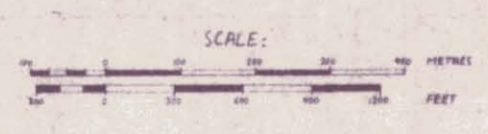
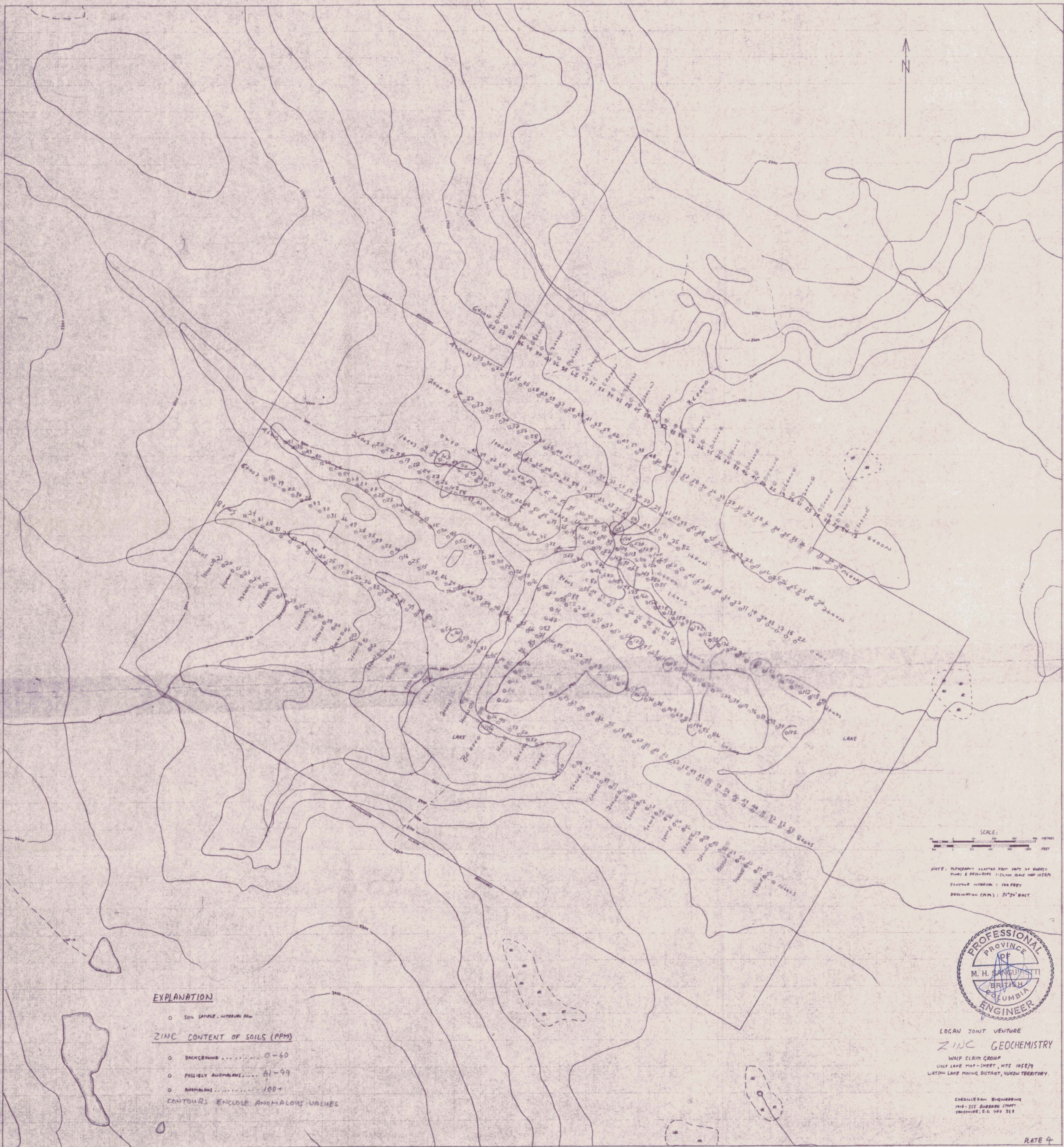
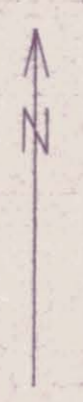


DATE: TOPOGRAPHY ADAPTED FROM DEPT. OF SURVEY
 SHEET 8 BRITISH COLUMBIA 1:50,000 SCALE FROM 1925/26
 CONTOUR INTERVAL: 100 FEET
 ORIENTATION (MAG): 21° 30' EAST



LOGAN JOINT VENTURE
LEAD GEOCHEMISTRY
 WOLF CLAIM GROUP
 WOLF LAKE MAP - SHEET, MTC 1056/9
 LANTAU LAKE MINING DISTRICT, YUKON TERRITORY

CARDILLIAN ENGINEERING
 1418 - 1155 BURGARD STREET
 VANCOUVER, B.C. V6C 2E8



NOTE: TOPOGRAPHY DERIVED FROM DATA BY SHEPPARD
 PLAN: 8 REVISIONS 1:25,000 SCALE MAP 105679
 COURSE INTERVAL: 100 FEET
 DECLINATION (M): 31°25' EAST

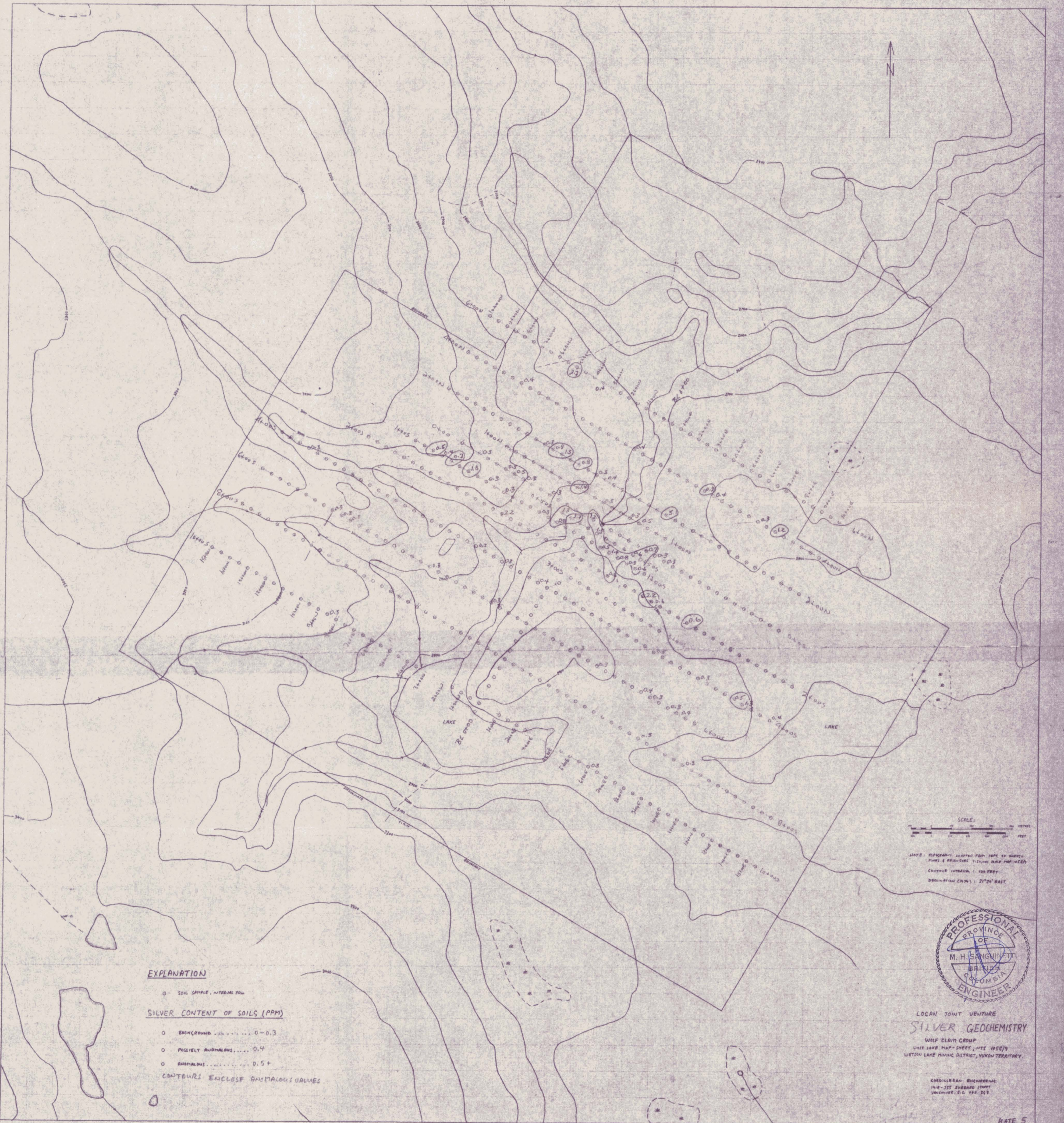
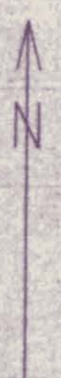
EXPLANATION

- SOIL SAMPLE, INTERVAL 50m
- ZINC CONTENT OF SOILS (PPM)**
- BACKGROUND 0-60
- POSSIBLY ANOMALOUS 61-99
- ANOMALOUS 100+
- CONTOURS ENCLOSE ANOMALOUS VALUES



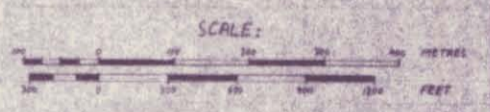
LOGAN JOINT VENTURE
ZINC GEOCHEMISTRY
 WOLF CLAIM GROUP
 WOLF LAKE MAP - SHEET, MTS 105679
 WATSON LAKE MINING DISTRICT, YUKON TERRITORY

CORVILLE ROAD, WHISTLER, B.C.
 1978-355 GARDNER STREET
 VANCOUVER, B.C. V6G 2E8



EXPLANATION

- SOIL SAMPLE, INTERVAL 50M
- SILVER CONTENT OF SOILS (PPM)**
- BACKGROUND 0-0.3
- POSSIBLY ANOMALOUS 0.4
- ANOMALOUS 0.5+
- CONTOURS ENCLOSE ANOMALOUS VALUES



NOTE: TOPOGRAPHY ADAPTED FROM MAPS BY SURVEY
 PHOTOS & PHOTOLOGS (1:25,000 SCALE) FOR 1958
 CONTOUR INTERVAL: 100 FEET
 DISTRIBUTION (1965): 21" x 26" EAST



LOGAN JOINT VENTURE
SILVER GEOCHEMISTRY
 WOLF CLAIM GROUP
 WOLF LAKE MAP SHEET, 1958/59
 WATCO LAKE MINING DISTRICT, YUKON TERRITORY

CORRIGAN ENGINEERING
 1418 - 325 BURBANK STREET
 VANCOUVER, B.C. V6Z 1K8

APPENDIX "A"

CERTIFICATES

CORDILLERAN ENGINEERING

1418 MARINE BUILDING, 355 BURRARD STREET, VANCOUVER, BRITISH COLUMBIA V6C 2G8 TEL: (604) 681-8381

WRITER'S CERTIFICATE

I, Carl G. Verley of Vancouver, British Columbia
hereby certify that:

1. I am a geologist residing at 301 - 1867 West 3rd Avenue, Vancouver, B.C. and employed by Cordilleran Engineering of 1418-355 Burrard Street, Vancouver, B.C., V6C 2G8.
2. I am a graduate of the University of British Columbia, B.Sc., in 1974, and have practiced my profession since that time.
3. I am an engineering pupil with the Association of Professional Engineers of the Province of British Columbia.
4. I am the author of this report which is based on work conducted on the Wolf #1-52 mineral claims during the period August 8 to October 25, 1979. This work included geological mapping and geochemical sampling, geophysics, undertaken on behalf of the Logan Joint Venture.

CORDILLERAN ENGINEERING

*Carl G. Verley*Carl G. Verley, B.Sc.,
GeologistJanuary, 1980
Vancouver, B.C.

CORDILLERAN ENGINEERING

1418 MARINE BUILDING, 355 BURRARD STREET, VANCOUVER, BRITISH COLUMBIA V6C 2G8 TEL: (604) 681-8381

SUPERVISOR'S CERTIFICATE

I, Michael H. Sanguinetti of Vancouver, British Columbia hereby certify that:

1. I am a geologist residing at 2208 West 35 Avenue, and employed by Cordilleran Engineering of 1418-355 Burrard Street, Vancouver, B.C., V6C 2G8.
2. I am a graduate of the University of British Columbia, B.Sc., in 1965, and have practiced my profession since that time.
3. I am a member of the Association of Professional Engineers of the Province of British Columbia.
4. I supervised the writing of this report which is based on the results of a field program conducted by Cordilleran Engineering during the period August 8 to October 25, 1979
5. Field work was done under the supervision of Mr. J. W. Stollery, P.Eng.



January, 1980
Vancouver, B.C.

CORDILLERAN ENGINEERING

A handwritten signature in cursive script, appearing to read 'M. H. Sanguinetti'.

Michael H. Sanguinetti, B.Sc., P.Eng.
Geologist

APPENDIX "B"

ASSAY CERTIFICATES

To: CC Allan Engineering Ltd.

REPORT NO. 5-1574

PAGE No. 1

BONDAR-CLEGG & COMPANY LTD.

DATE: November 6, 1979

1418 - 355 Burrard Street
Vancouver, B.C. V6C 2G8

CERTIFICATE OF ASSAY


Samples submitted: October 25, 1979
Results completed: November 6, 1979

PROJECT: **LOGAN YUKON # 26**

I hereby certify that the following are the results of assays made by us upon the herein described ore samples.

MARKED	GOLD		SILVER		Cu	Pb	Zn				
	Ounces per Ton	Grams per Metric Ton	Ounces per Ton	Grams per Metric Ton	Percent	Percent	Percent	Percent	Percent	Percent	Percent
13545	0.002		1.23		0.06	3.05	4.65				
13546	0.010		0.37		0.01	0.90	2.80				
13547	0.002		0.38		<0.01	0.75	0.82				

NOTE:
Rejects retained three weeks
Pulps retained three months
unless otherwise arranged.


Registered Assayer, Province of British Columbia

APPENDIX "B"

To: Corraleran Engineering Ltd.

REPORT NO. A2 - 1182

PAGE No. 1

BONDAR-CLEGG & COMPANY LTD.

DATE: October 15, 1979

1418 - 355 Burrard Street
Vancouver, B.C. V6C 2G8

CERTIFICATE OF ASSAY

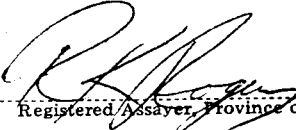
Samples submitted: October 1, 1979
Results completed: October 15, 1979

PROJECT: LOGAN YUKON #21

I hereby certify that the following are the results of assays made by us upon the herein described ore samples.

MARKED	GOLD		SILVER		Cu	Pb	Zn				
	Ounces per Ton	Grams per Metric Ton	Ounces per Ton	Grams per Metric Ton	Percent	Percent	Percent	Percent	Percent	Percent	Percent
13543	<0.002		0.04		<0.01	0.03	0.85				

NOTE:
Rejects retained three weeks
Pulps retained three months
unless otherwise arranged.


Registered Assayer, Province of British Columbia

APPENDIX "B" 11

1418 - 355 Burrard Street
Vancouver, B.C. V6C 2G8

CERTIFICATE OF ASSAY

Samples submitted: September 24, 1979
Results completed: October 11, 1979

PROJECT: LOGAN YUKON # 19

I hereby certify that the following are the results of assays made by us upon the herein described ore samples.

MARKED	GOLD		SILVER		Cu	Pb	Zn	WO ₃	Sn		
	Ounces per Ton	Grams per Metric Ton	Ounces per Ton	Grams per Metric Ton	Percent	Percent	Percent	Percent	Percent	Percent	Percent
13518	<0.002		0.11		0.01	0.11	0.04	0.01	0.04		
13519	<0.002		0.40		0.12	0.02	2.13	0.02	0.06		
13520	<0.002		2.59		0.97	0.02	11.00	0.05	0.02		
13521	<0.002		0.08		0.02	<0.01	0.16	0.01	0.02		
13522	<0.002		0.45		0.07	<0.01	2.42	0.04	0.13		
13523	0.005		1.92		0.63	0.01	4.28	0.06	0.03		
13524	0.003		2.20		0.48	<0.01	6.65	0.03	0.05		
13525	<0.002		2.88		1.26	0.06	8.25	0.06	0.02		
13526	<0.002		10.87		1.42	0.10	35.88	0.03	0.01		
13527	<0.002		0.18		0.10	0.02	0.12	0.02	<0.01		
13528	<0.002		0.93		0.09	0.01	3.40	0.01	0.19		
13529	0.006		0.19		0.03	0.02	0.07	0.01	0.60		
13530	<0.002		0.35		0.06	<0.01	5.45	0.01	0.01		
13531	<0.002		4.85		0.16	0.85	0.55	0.02	0.33		
13532	0.002		2.98		0.69	1.44	2.92	-	-		
13534	0.002		0.05		0.01	0.01	0.07	-	-		
13535	<0.002		0.03		<0.01	<0.01	0.06	-	-		WOLF PROPERTY
13536	<0.002		0.47		0.01	1.26	1.70	-	-		
13537	<0.002		0.05		<0.01	0.10	0.17	-	-		
13538	<0.002		0.13		0.02	0.01	0.49	0.02	0.04		
13539	<0.002		0.73		0.08	0.01	2.25	0.01	0.02		
13540	<0.002		3.09		0.13	0.03	6.27	0.01	0.02		
13541	<0.002		0.33		0.15	<0.01	4.35	0.01	0.04		
13542	0.003		1.62		0.07	0.02	13.10	0.01	0.01		

cc Mr. E. Balon

NOTE:

Rejects retained three weeks
Pulps retained three months
unless otherwise arranged.

[Signature]
Registered Assayer, Province of British Columbia

To: Corc .leran Engineering Ltd.

REPORT NO. _____) - 981

PAGE No. 1

BONDAR-CLEGG & COMPANY LTD.

DATE: September 17, 1979

1418 - 355 Burrard Street
Vancouver, B.C. V6C 2G8

CERTIFICATE OF ASSAY

Samples submitted: September 7, 1979
Results completed: September 17, 1979

PROJECT: LOGAN YUKON #18

I hereby certify that the following are the results of assays made by us upon the herein described _____ ore _____ samples.

MARKED	GOLD		SILVER		Cu	Pb	Zn	Sn	WO ₃		
	Ounces per Ton	Grams per Metric Ton	Ounces per Ton	Grams per Metric Ton	Percent	Percent	Percent	Percent	Percent	Percent	Percent
13517	0.058		0.41		0.08	<0.01	<0.01	<0.001	0.22		

cc Mr. E. Balon

NOTE:
Rejects retained three weeks
Pulps retained three months
unless otherwise arranged.

Registered Assayer, Province of British Columbia

APPENDIX "B" IV

To: Cora leran Engineering Ltd.

REPORT NO. A2 - 748

PAGE No. 1

BONDAR-CLEGG & COMPANY LTD.

DATE: August 16, 1979

1418 - 355 Burrard Street
Vancouver, B.C.
V6C 2G8

CERTIFICATE OF ASSAY

Samples submitted: August 10, 1979
Results completed: August 16, 1979

PROJECT: LOGAN YUKON

I hereby certify that the following are the results of assays made by us upon the herein described ore samples.

MARKED	GOLD		SILVER		Cu	Pb	Zn				
	Ounces per Ton	Grams per Metric Ton	Ounces per Ton	Grams per Metric Ton	Percent	Percent	Percent	Percent	Percent	Percent	Percent
2205			0.42		0.02	1.09	1.40				
2206			3.72		0.25	8.88	19.05				
2207			1.35		0.08	3.65	6.60				
2208			1.83		0.08	4.78	5.85				
2209			1.56		0.13	4.25	6.65				
2210			0.45		0.03	0.87	1.32				

cc Mr. E. Balon

NOTE:
Rejects retained three weeks
Pulps retained three months
unless otherwise arranged.


Registered Assayer, Province of British Columbia

APPENDIX "B" V.

To: Co. Alleran Engineering Ltd.

REPORT NO. A2. - 720

PAGE No. 1

BONDAR-CLEGG & COMPANY LTD.

DATE: August 10, 1979

1418 - 355 Burrard Street
Vancouver, B. C. V6C 2G8

CERTIFICATE OF ASSAY

Samples submitted: August 8, 1979
Results completed: August 10, 1979

PROJECT: LOGAN YUKON #12

I hereby certify that the following are the results of assays made by us upon the herein described ore samples.

MARKED	GOLD		SILVER		Cu	Pb	Zn				
	Ounces per Ton	Grams per Metric Ton	Ounces per Ton	Grams per Metric Ton	Percent	Percent	Percent	Percent	Percent	Percent	Percent
13417	0.010		0.53		0.01	0.04	0.02				
13418	-		0.27		-	0.02	0.05				
13419	-		0.08		-	0.02	0.04				
13420	-		0.08		-	<0.01	0.08				
13421	0.002		0.69		0.08	2.20	4.55				
13422	0.005		3.77		0.18	8.97	22.10				
13423	0.002		0.96		0.08	3.05	5.86				
13424	0.002		1.78		0.01	4.95	5.47				
13425	0.002		0.08		-	-	-				

WOLF PROPERTY

NOTE:
Rejects retained three weeks
Pulps retained three months
unless otherwise arranged.


Registered Assayer, Province of British Columbia

APPENDIX "B" VI

APPENDIX "C"

GEOPHYSICAL REPORT

PHOENIX GEOPHYSICS LIMITED

REPORT ON THE
GEOPHYSICAL ORIENTATION PROGRAM
AND
LOGAN, EAGLE AND WOLF CLAIM GROUPS
WATSON LAKE MINING DISTRICT
YUKON TERRITORY
FOR
CORDILLERAN ENGINEERING LIMITED

1. INTRODUCTION

A geophysical orientation survey has been carried out on three properties for Cordilleran Engineering Limited. The test surveys consisting of magnetometer, electromagnetic, induced polarization and resistivity surveys were conducted on the Logan, Eagle and Wolf Claim Groups. The properties are located 100km west-northwest of Watson Lake in the Yukon Territory.

The object of the survey was to investigate the geophysical response of mineral discoveries on the three claim groups. The tests were limited in nature, with just one line being surveyed on each claim group.

The surveys were carried out under the supervision of Crew Leader John Marsh. His certificate of qualification is appended to this report.

A McPhar M-700 Fluxgate Magnetometer with a sensitivity of 20 gammas per scale division was used for the magnetic survey. The electromagnetic survey was carried out with a McPhar VHEM dual frequency 600 and 2400 Hz unit operating in the vertical mode. A Phoenix IPT-1, IPV-1 frequency domain IP system was used for the induced polarization and resistivity survey operating at 0.3 and 5.0 Hz.

Field work was carried out during October, 1979.

2. DESCRIPTION OF PROPERTIES

The orientation survey took place on three properties described as follows:

- WOLF Claims 1-52 inclusive, NTS 105-B - 10, Longitude 130° 02', Latitude 60° 30'
- EAGLE Claims - 1-8 inclusive, NTS 105-B - 8, Longitude 130° 26', Latitude 60° 26'
- LOGAN Claims - 106 inclusive, NTS 105-B - 8 + 9, Longitude 130° 28', Latitude 60° 30'.

3. PRESENTATION OF RESULTS

The results of the geophysical surveys are shown on the following data plots. The induced polarization and resistivity results are plotted in the manner described in the notes preceding this report. The electromagnetic and magnetometer results have been profiled.

<u>Line</u>	<u>Property</u>	<u>Geophysical Method</u>	<u>Dwg. No</u>
50S	Wolf Claims	IP - 100 m Dipoles	IP 5178-1
50S	Wolf Claims	EM & Magnetic	G 5178-2
0+00	Eagle Claims	IP - 100 m Dipoles	IP 5178-3

<u>Line</u>	<u>Property</u>	<u>Geophysical Method</u>	<u>Dwg. No.</u>
0+00	Eagle Claims	EM & Magnetic	G 5178-4
3+00E	Logan Claims	IP - 100 m Dipoles	IP 5178-5
3+00E	Logan Claims	IP - 50 m Dipoles	IP 5178-6
3+00E	Logan Claims	EM & Magnetic	G 5178-7

Also enclosed with this report is Dwg. I.P.P. 1047-1,-2,-3, plan maps of the Wolf, Eagle & Logan Grids. The definite, probable and possible Induced Polarization and EM anomalies are indicated by symbols, in the manner shown on the legend, on these plan maps as well as on the data plots.

Since the Induced Polarization measurement is essentially an averaging process, as are all potential methods, it is frequently difficult to exactly pinpoint the source of an anomaly. Certainly, no anomaly can be located with more accuracy than the electrode interval length; i.e. when using 100 m electrode intervals the position of a narrow sulphide body can only be determined to lie between two stations 100 m apart. In order to definitely locate, and fully evaluate, a narrow, shallow source it is necessary to use shorter electrode intervals. In order to locate sources at some depth, larger electrode intervals must be used, with a corresponding increase in the uncertainties of location. Therefore, while the centre of the indicated anomaly probably corresponds fairly well with source, the length of the indicated anomaly along the line should not be taken to represent the exact edges of the anomalous material.

The Grid information shown on Dwg. I.P.P. 1047-1,-2,-3 has been taken from maps made available by the staff of Cordilleran Engineering Ltd.

4. DISCUSSION OF RESULTS

(a) Wolf Claims

Stratiform massive sulfide mineralization occurs in a northeasterly

trending outcrop of Lower Cambrian, or earlier, metamorphic rocks. The showing is located about 50 meters northeast of station 0+00, Line 50S. The country rock consists of rusty weathering metapelites and metagrits.

The mineralization consists of Lamellae of galena, sphalerite and minor chalcopryite and pyrite alternating between thin layers of greenish quartz-muscovite schist, dark grey siliceous schist and pale feldspar bands. The showing, exposed over 3 meters, contains three 0.6 meter bands of mineralization separated by quartz rich beds.

A bed of massive granular pyrite in a sericite muscovite schist is poorly exposed in a small outcrop located 25 meters east of the above showing.

The induced polarization and resistivity survey did not locate an anomaly adjacent to these mineral occurrences. The resistivities were moderately high and the IP effects were background levels.

A well defined moderate magnitude IP anomaly indicating some distance to the source occurs between 4+00W and 2+00W and may extend to 1+00W. The distance to the source, either beneath or adjacent to the line is estimated at 25 - 30 meters. The correlating resistivity low appears deeper than the frequency effect anomaly and suggests disseminated material surrounding a more conductive core.

A second lower magnitude IP anomaly was located between 1+00E and 4+00E. The frequency effect anomaly is shallow relative to the 100 meter dipoles while the accompanying resistivity low indicates some distance to the source. This again is suggestive of disseminated material over a more conductive core.

Very weak IP effects were recorded between 6+00E and 7+00E in a moderate magnitude resistivity environment.

The electromagnetic (EM) survey did not locate any well defined strong conductors. A weak anomaly at 2+75W correlates with the deep IP anomaly.

The magnetometer survey shows an unusually flat response over the entire line. There is an indication of two distinct magnetic plateaus with a 600 gamma level west of 2+50E and 550 gammas to the east. There is no correlating magnetic high with either the IP or EM anomalies.

(b) Eagle Claims

The Eagle Claim area is underlain by a biotite-muscovite-quartz schist (metagrit), metaquartzite, and crystalline limestone. This sequence has been folded into a northeasterly trending synform.

Mineralized float containing Cu, Pb, Zn, and Ag was discovered beside a gossan on the Little Moose River, (0+00, Base Line). The gossan consists of a highly fractured quartz-sericite schist, probably the equivalent of the metagrit. Sphalerite and pyrite occur on fracture surfaces. The crystalline limestone should provide a marker horizon underlying the gossan.

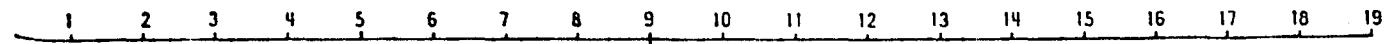
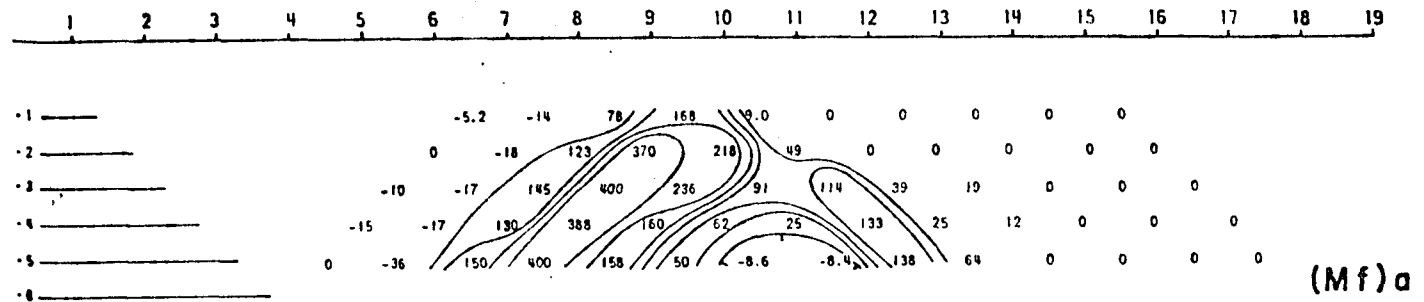
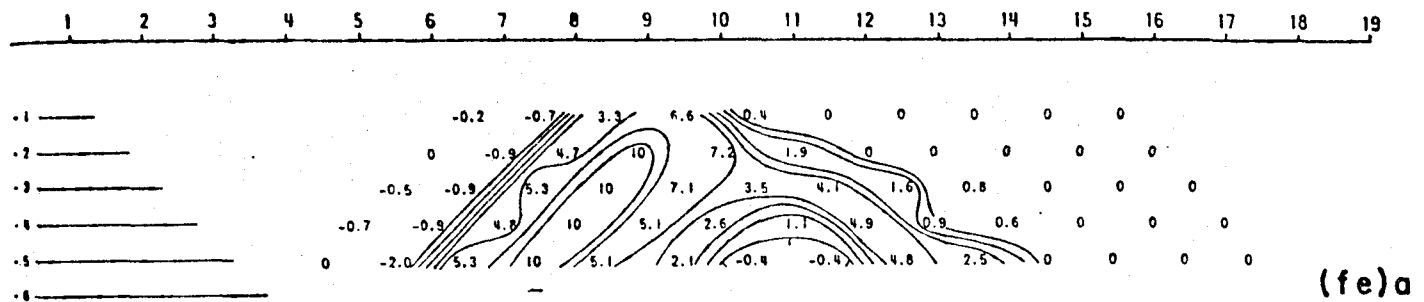
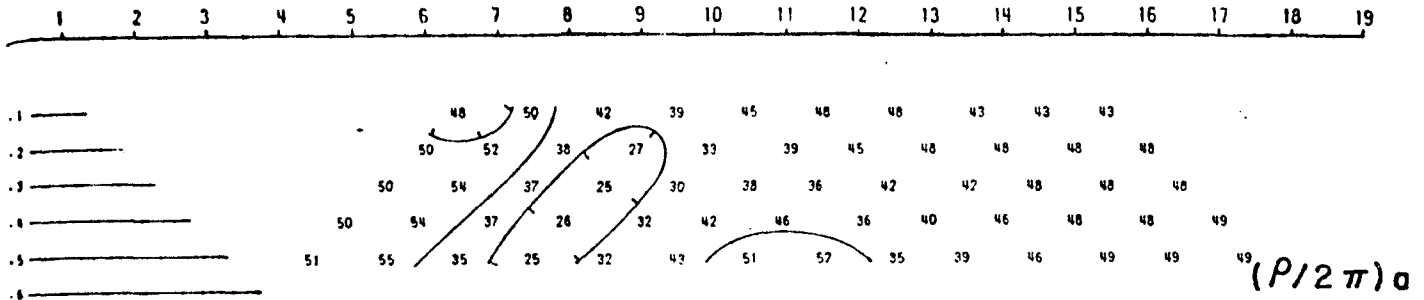
A northeasterly trending geochemical anomaly conforms roughly with the synforms.

The IP survey outlined a weak but well defined anomaly centred at 0+50W and extending from 1+00E to 2+00W. Less anomalous material probably extends both east and west to 2+00E and 4+00W respectively. The frequency effects are moderately anomalous and the associated resistivities are moderately high. This suggests that metallic minerals are disseminated within a resistive medium. In this context, sphalerite is non-conductive and could form part of the ground mass. The anomalous pattern suggests an easterly dip.

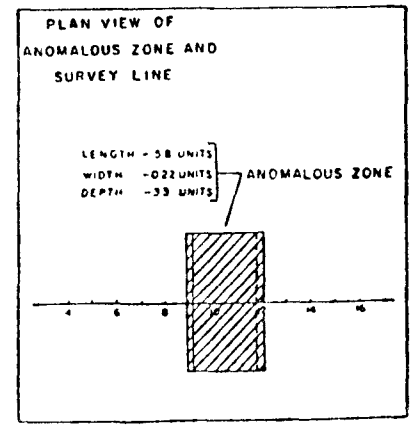
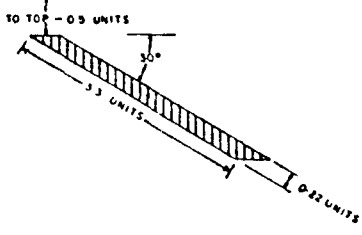
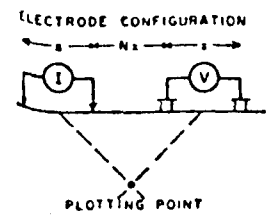
PHOENIX GEOPHYSICS LIMITED

Theoretical Induced Polarization and Resistivity Studies

Scale Model Cases



$(P/2\pi)_1 = 50$ $(P/2\pi)_2 = 2.0$
 $(Mf)_1 = 0$ $(Mf)_2 = 12,500$
 $(fe)_2 = 25\%$



CASE III-0.5-BU-50-b30°
FIGURE #1

Weak IP effects centred at 7+00E are associated with moderate magnitude resistivities.

No strong, well defined EM anomalies were located on this line with the possible exception of the conductor at 9+00E. The anomaly is positioned east of the resistivity survey coverage, but probably occurs within a high resistivity environment.

(c) Logan Claims

The Logan Claims are underlain by a migmatitic, pegmatitic quartz monzonite. A northeast trending felsite dyke dipping to the southeast intrudes the quartz monzonite. The felsite is fractured, locally contains sphalerite in fractures and is cut by sphalerite-arsenopyrite-bearing quartz veins.

A quartz-siderite vein containing sphalerite, chalcopyrite, pyrite and arsenopyrite, strikes east-west and apparently dips steeply south. Line 3+00E crosses the vein at about 15 meters north, and the felsite dyke at 100 meters north. The quartz monzonite is intensely sericitized adjacent to the vein and felsite dyke.

Line 3E was surveyed with IP using 100 meter electrode intervals. An anomalous section was subsequently detailed with shorter 50 meter intervals.

The 100 meter data discovered a weak well defined IP anomaly that straddles the mineralized vein and terminates near the felsite dyke. Assuming a simple source, the anomalous pattern suggests a body dipping steeply north, with a depth to the source of 30 - 50 meters (Fig.#1). Since this interpretation does not agree with field observation which indicate a steep south dip, the source may be complex involving more than one mineralized body.

The 50 meter detail examines the shallow part of the section and does not penetrate sufficiently deep to investigate the deeper source. It does indicate weak shallow anomalies probably with two separate sources.

The EM survey did not locate a significant anomaly. The several weak responses may be due to orientation errors or conductive overburden.

Similar to the other grids, the magnetic response was relatively flat across grid Line 3+00E with a total relief of about 125 gammas. The base level averages about 430 gammas north of 0+50S and 525 gammas to the south. This could indicate a geological formation change.

5. CONCLUSIONS AND RECOMMENDATIONS

The geophysical test surveys on the three grids for Cordilleran Engineering Limited, were planned in an attempt to gather some information concerning the geophysical response to be expected from the mineralization that had been located as a result of geochemical sampling and geological mapping. The field work was extremely rushed due to the weather conditions, and only a limited time could be spent at each property.

One line was surveyed in each area. The magnetic and electromagnetic results from the three areas do not show any anomalous response that correlates with the known mineralization. This indicates that pyrrhotite and magnetite are not present, and the conducting sulphide minerals are not present in sufficient concentration and volume to produce an electromagnetic conductor. Even the bedded, massive granular pyrite band on the Wolf Prospect did not produce an EM anomaly.

The sulphide material itself is not a good conductor. The resistivity values for the band samples shown in Table I does not show high conductivity. The lowest resistivity sample is the massive pyrite from the Wolf Prospect.

CORDILLERAN ENGINEERING LIMITED

Sample and Description	Resistivity Ohm ft.	F.E.%
LOGAN #2 - Vein material - contains sphalerite, arsenopyrite and trace of chalcopyrite.	133K	16
LOGAN #4 - Altered felsite	212K	8
LOGAN #5 - Unaltered wall rock	15K	3
LOGAN ASSAY # 13544 - Altered and mineralized wall rock	124K	11
WOLF # 37 - Massive pyrite and sericite	62	20
WOLF ASSAY # 2205 - Showing material	181K	13

TABLE I

There are significant frequency effect values measured from all of the rock samples from the showings that contained sulphide mineralization. If appreciable volumes of this material are present, and if the parameters of the survey are properly chosen, mineralization of this type could be located, and traced, using the induced polarization method.

The field measurements at the three prospects were made using a 100 meter electrode interval. This was chosen to give as much coverage as possible in the limited time available for field work. Weak, shallow anomalies were measured at the Eagle Prospect and the Logan Prospect. There was no IP anomaly measured at the showing on the Wolf Prospect; however, a fairly definite anomaly was measured, at depth to the west.

The absence of a measured IP anomaly over the showing at the Wolf Prospect may not be significant, since the 100 meter electrode interval is appreciably greater than the possible width of the source. As outlined in the Appendix to this report, it is possible that only very weak, or no, apparent IP effects will be measured if the electrode interval used is appreciably greater than the width of the source. For the same reasons of scale, the weak, shallow effects measured at the Eagle Prospect and the Logan Prospect can not be fully evaluated with the current data.

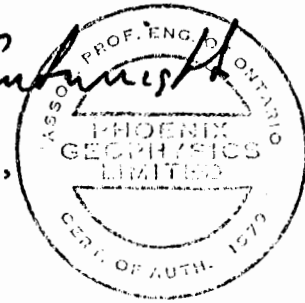
Since the magnetic method and the electromagnetic method did not indicate the presence of the mineralization at the three properties, the induced polarization and resistivity technique should be used in further exploration. At the Eagle Prospect and the Logan Prospect, measurements with shorter electrode intervals should be made, to determine the interval that results in the most definite anomaly. A grid should then be surveyed to cover the entire area of interest to be certain that all zones of metallic mineralization have been located.

At the Wolf Prospect, measurements with very short electrode intervals should be made to determine the IP effects to be expected from the mineralization in the showing and the pyrite band. A grid can then be surveyed to trace the extent of the zones.

When the detailed IP data is available, a program of short drill holes can be planned to determine the possible economic importance of the mineralization.

PHOENIX GEOPHYSICS LIMITED

Paul A. Cartwright
Paul A. Cartwright,
Geophysicist



Dated: January 9, 1980

STATEMENT OF COST

Cordilleran Engineering Ltd. - Geophysical Surveys
Watson Lake Area of the Yukon Territory

CREW: J. Marsh - D. Ouellette

PERIOD: October 12 - 24, 1979

5 Operating days	@ \$560.00/day	\$2,800.00
1 Organization)	@ \$210.00/day	420.00
1 Bad Weather) 2 days		
Mobilization		1,650.00

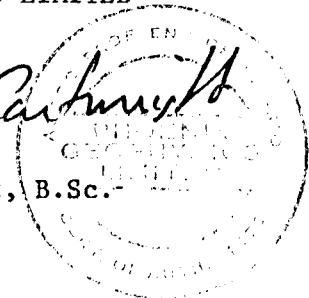
EXPENSES

Meals & Accommodation	\$ 70.00	
Supplies	4.90	
Telephone	46.41	
	<u>121.31</u>	
+ 10%	<u>12.13</u>	
		133.44
		<u>\$5,003.44</u>

PHOENIX GEOPHYSICS LIMITED

Paul A. Cartwright

Paul A. Cartwright, B.Sc.



Dated: January 9, 1980


CERTIFICATE

I, Paul A. Cartwright, of the City of Toronto, Province of Ontario, do hereby certify that:

1. I am a geophysicist residing at 45 La Rose Avenue, Weston, Ontario.
2. I am a graduate of the University of British Columbia, B.C. with a B.Sc. Degree.
3. I am a member of the Society of Exploration Geophysicists.
4. I have been practising my profession about 9 years.
5. I have no direct or indirect interest, nor do I expect to receive any interest directly or indirectly, in the property or securities of Cordilleran Engineering Limited or any affiliate.
6. The statements made in this report are based on a study of published geological literature and unpublished private reports.
7. Permission is granted to use in whole or in part for assessment and qualification requirements but not for advertising purposes.

Dated at Toronto

This 9th day of January, 1980


Paul A. Cartwright, B.Sc.



CERTIFICATE

I, JOHN MARSH, of the Municipality of North York, Ontario, DO HEREBY CERTIFY THAT:

1. I am a geophysical crew leader residing at 200 Yorkland Blvd., Willowdale, Ontario.

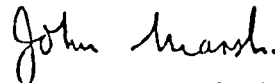
2. I am a graduate of the City of Norwich Technical College, U.K., ordinary National Certificate (Electrical Engineering)

3. I worked with McPhar Geophysics Company from 1968 to 1975 as a geophysical crew leader.

4. I am presently employed as a geophysical crew leader by Phoenix Geophysics Ltd. of 310 - 885 Dunsmuir Street; Vancouver, B.C.

Dated at Vancouver, B.C.

This 29th Day of July, 1977



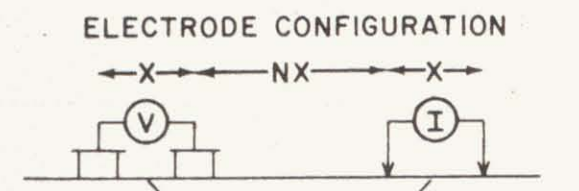
John Marsh

CORDILLERAN ENGINEERING LTD.

WOLF CLAIM GROUP, WATSON LAKE M.D.

YUKON TERRITORY

LINE NO. - 50S



PLOTTING POINT X = 100m.

SURFACE PROJECTION OF ANOMALOUS ZONE

DEFINITE **—————**
 PROBABLE **.....**
 POSSIBLE **///////**

FREQUENCIES 0.3-5.0 HZ.

DATE SURVEYED OCT. 1979

APPROVED



NOTE - CONTOURS AT LOGARITHMIC INTERVALS
 1, -1.5, -2, -3, -5, -7.5, -10

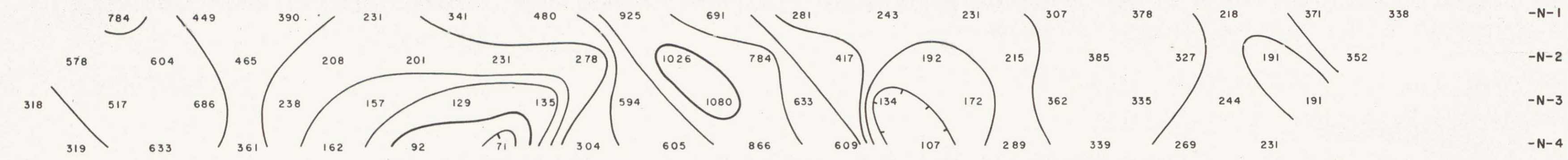
DATE JAN 09/80

PHOENIX GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY

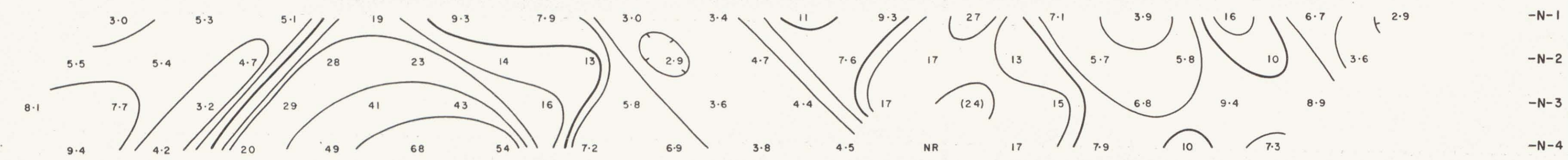
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RESISTIVITY (APP) OHM-METRES



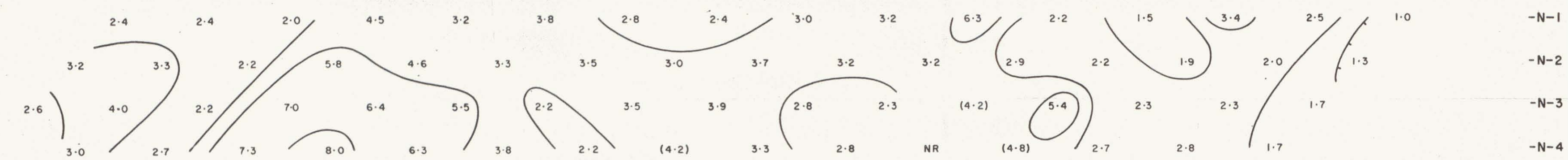
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METAL FACTOR (APP)



10W 9W 8W 7W 6W 5W 4W 3W 2W 1W 0 1E 2E 3E 4E 5E 6E 7E 8E 9E 10E

FREQUENCY EFFECT (APP) IN %

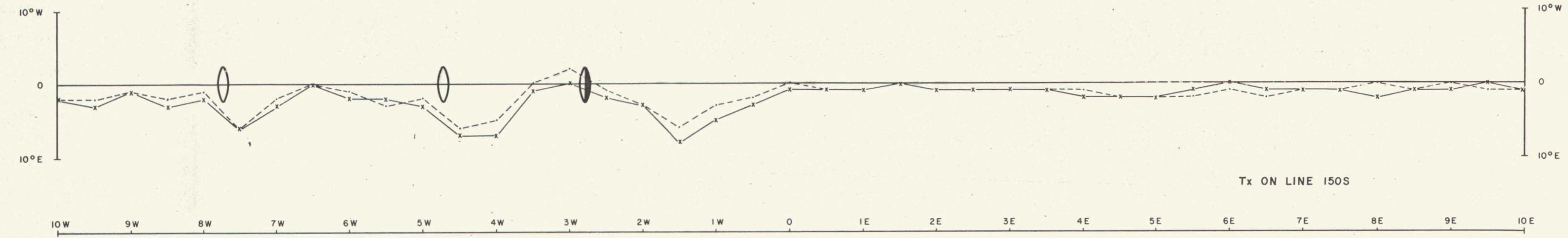


CORDILLERAN ENGINEERING LTD.

WOLF CLAIM GROUP, WATSON LAKE M.D.

YUKON TERRITORY

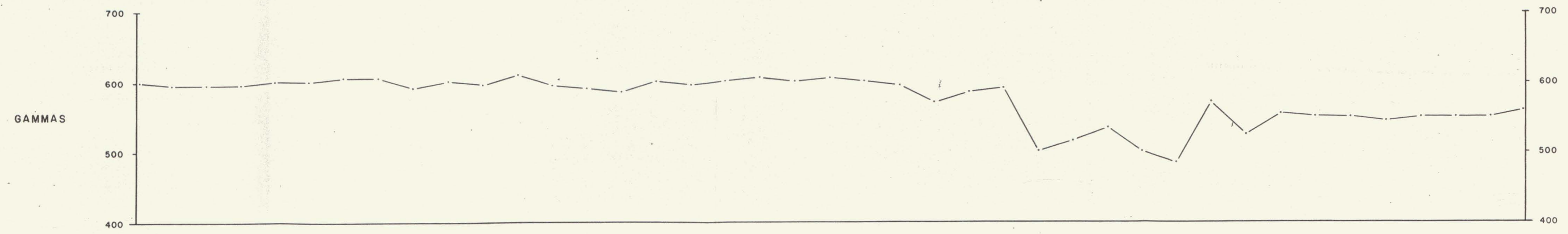
LINE NO.- 50S



DIP ANGLE
10°- SOUTH OR WEST



10°- NORTH OR EAST
DIP ANGLE PROFILE - 1" = 10°



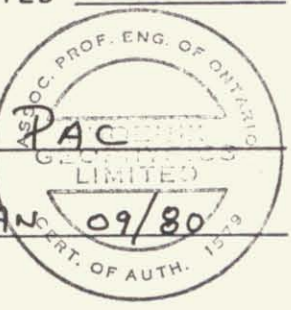
CONDUCTOR SYMBOLS

- DEFINITE
- PROBABLE
- POSSIBLE

FREQUENCIES x — x 600HZ.
----- 2400 HZ.

DATE SURVEYED OCT. 1979

APPROVED



DATE JAN 09/80

PHOENIX GEOPHYSICS LIMITED

ELECTROMAGNETIC AND MAGNETOMETER SURVEY

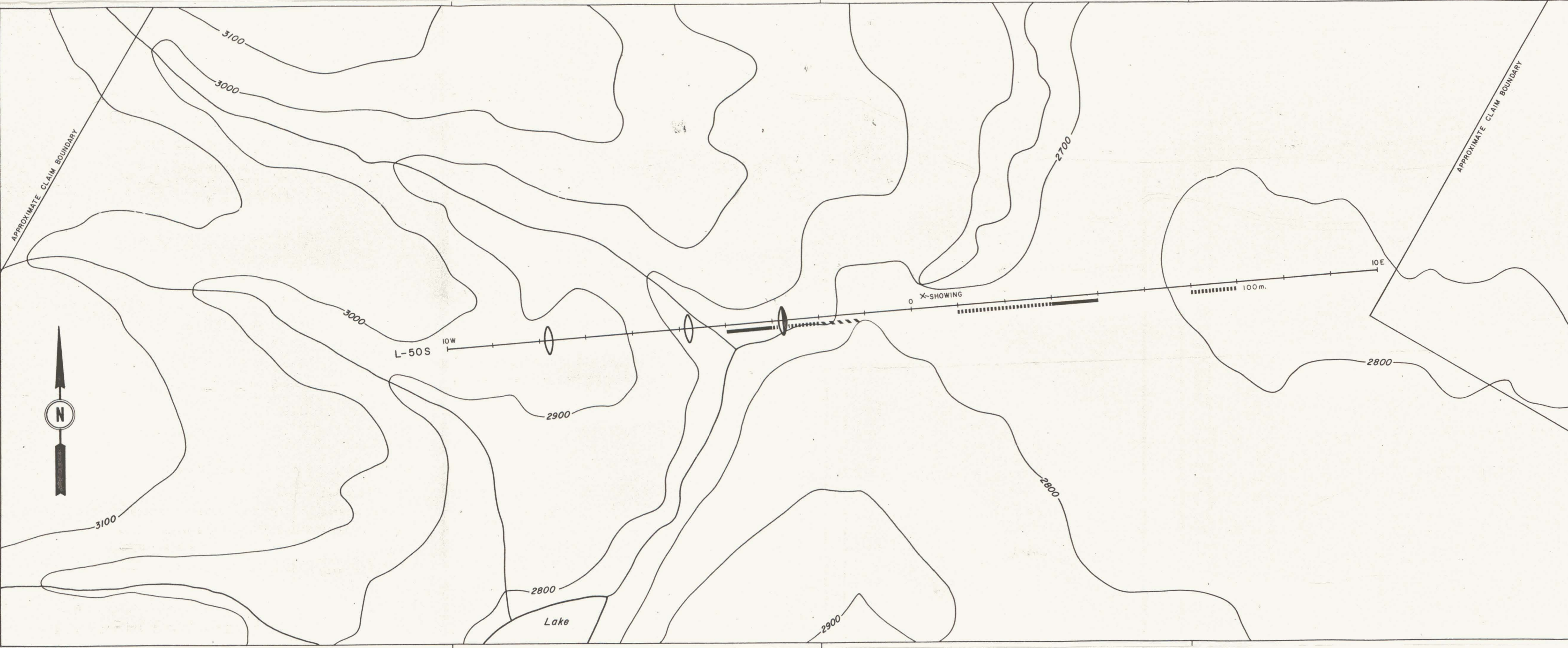
CORDILLERAN ENGINEERING LTD.

WOLF CLAIM GROUP, WATSON LAKE M.D.

YUKON TERRITORY

SCALE

1:5000



SURFACE PROJECTION OF ANOMALOUS ZONE (I.P)


DEFINITE 


PROBABLE 


POSSIBLE 

NUMBER AT END OF ANOMALIES INDICATE SPREAD USED.

CONDUCTOR SYMBOLS (E.M)

 DEFINITE

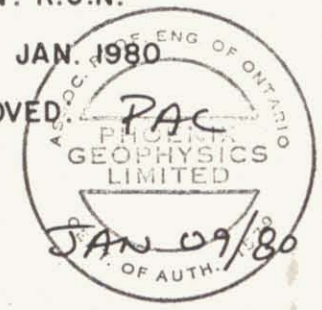
 PROBABLE

 POSSIBLE

DRAWN: R.C.N.

DATE: JAN. 1980

APPROVED:



DATE: JAN 09/80

PHOENIX GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY

PLAN MAP

APPENDIX "D"

STATUTORY DECLARATION

CANADA)
 TO WIT :) In the matter of a geological, geochemical and
 geophysical report on behalf of the Logan Joint
 Venture

I, Michael H. Sanguinetti, agent for Cordilleran Engineering
 of 1418-355 Burrard Street, Vancouver, B.C., V6C 2G8


do solemnly declare, - that geological mapping, geochemical
 sampling and geophysical surveys were conducted on the
 Wolf #1-52 (inclusive) mineral claims, Watson Lake Mining
 District, Y.T., during the period August 8 to October 25,
 1979. Expenditures for this work include:

Salaries, Management Fees, Consulting and Petrographic Services	.....	\$ 5,706.06
Helicopter and fuel	.....	7,517.00
Assays and analysis	.....	2,722.25
Accommodation, food, telephone freight and supplies	.....	478.72
Report preparation, drafting photocopying and printing	.....	566.42
Geophysical Survey	.....	<u>1,650.80</u>
	TOTAL	\$18,641.25

And I make this solemn declaration conscientiously believing it
 to be true and knowing that it is of the same force and effect as if
 made under oath and by virtue of the Canada Evidence Act.

Declared before me at Vancouver)
 in the Prov. of B.C. this)
12 day of February 1980)




 A notary Public in and for the
~~Yukon Territory~~ B.C.

APPENDIX "E"

PERSONNEL

PERSONNEL

Mr. C. G. Verley, B.Sc. 1418-355 Burrard Street Vancouver, B.C.	Geologist
Mr. E. A. Balon 1418-355 Burrard Street Vancouver, B.C.	Prospector
Mr. J. W. Stollery, B.Sc., P.Eng. 1418-355 Burrard Street Vancouver, B.C.	Geological Engineer
Mr. M. H. Sanguinetti, B.Sc., P.Eng. 1418-355 Burrard Street Vancouver, B.C.	Geologist
Mr. T. Turner 1418-355 Burrard Street Vancouver, B.C.	Field Assistant
Mr. B. Goodacre 1418-355 Burrard Street Vancouver, B.C.	Field Assistant
Mr. G. Didier 1418-355 Burrard Street Vancouver, B.C.	Field Assistant