



GEOLOGICAL, GEOCHEMICAL AND GEOPHYSICAL REPORT

ON THE

LOGAN CLAIM GROUP

WATSON LAKE MINING DISTRICT
Little Moose River Area, Yukon Territory
N.T.S. 105-B/7, 8, 9
Latitude 60°30'N; Longitude 130°28'W

FOR



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

By

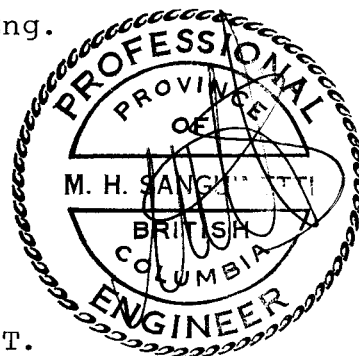
C. G. Verley, B.S., Geologist

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

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

JANUARY, 1980

CLAIMS: Logan Numbers 1-36 inclusive
LOCATION: 68 airmiles NW of Watson Lake, Y.T.
DATE: August 15 to October 25, 1979



090571

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

\$ 15,450.00

J A Mouin

Resident Geologist or
Resident Mining Engineer

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


E. P. BAXTER

Supervising Mining Recorder


 Commissioner of Yukon Territory

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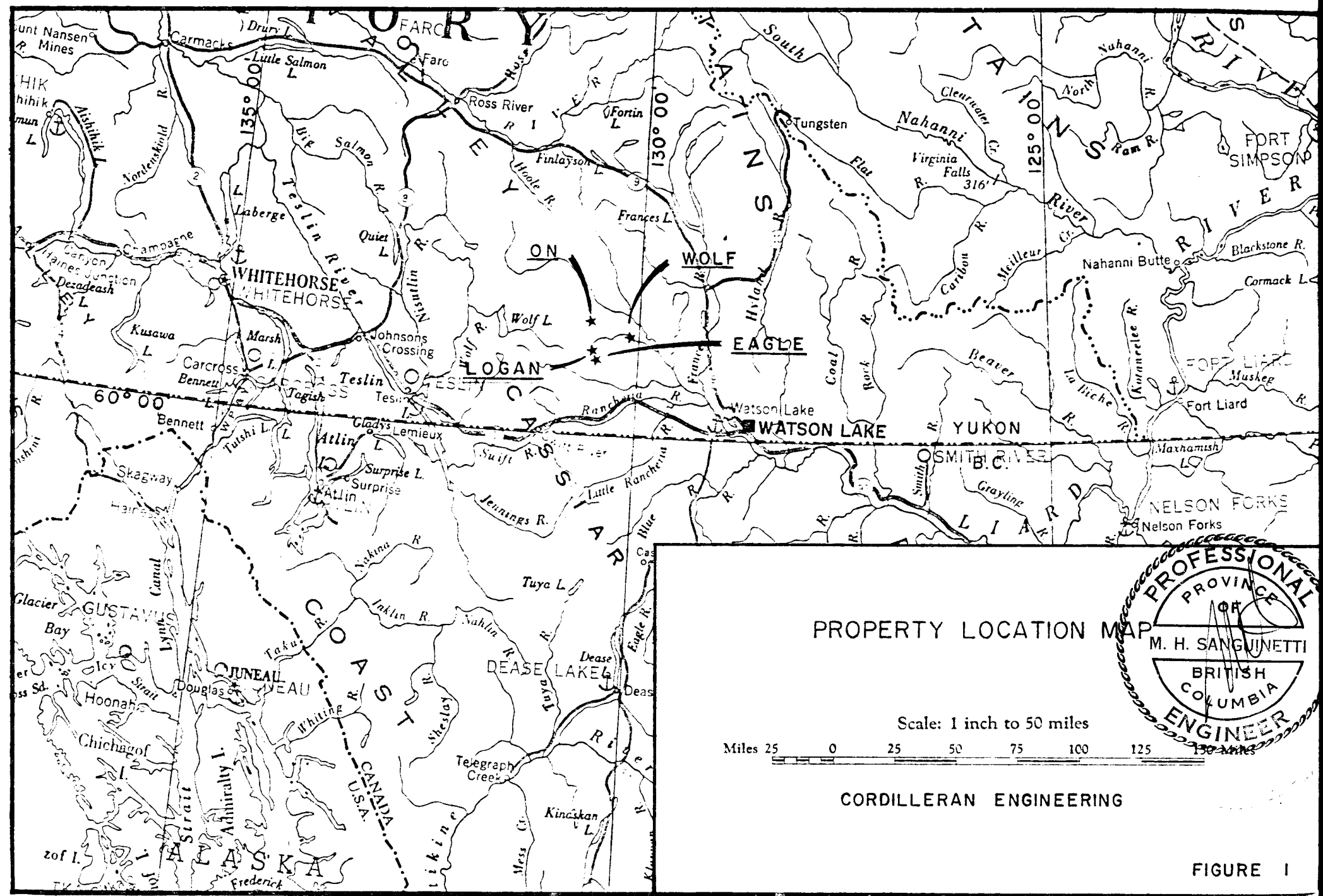
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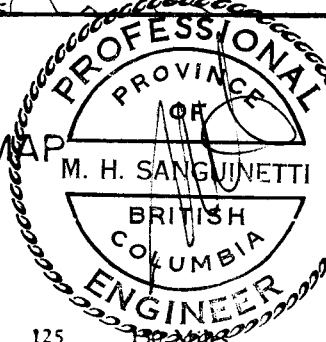
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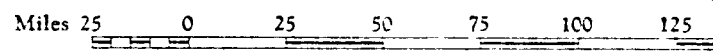
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PROPERTY LOCATION MAP



Scale: 1 inch to 50 miles



CORDILLERAN ENGINEERING

FIGURE I

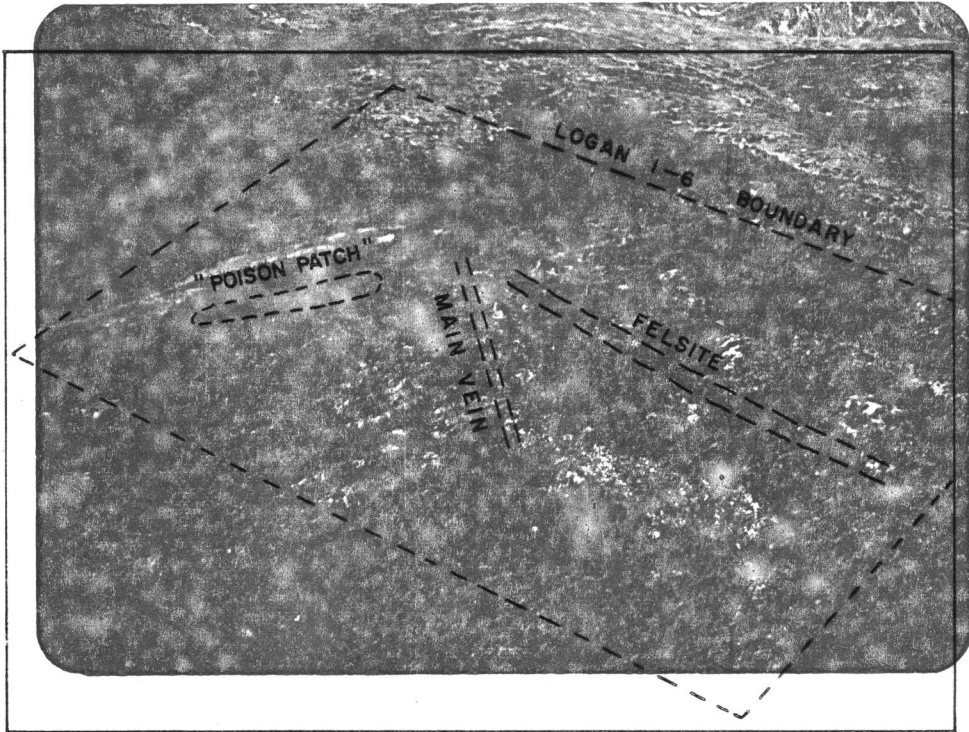
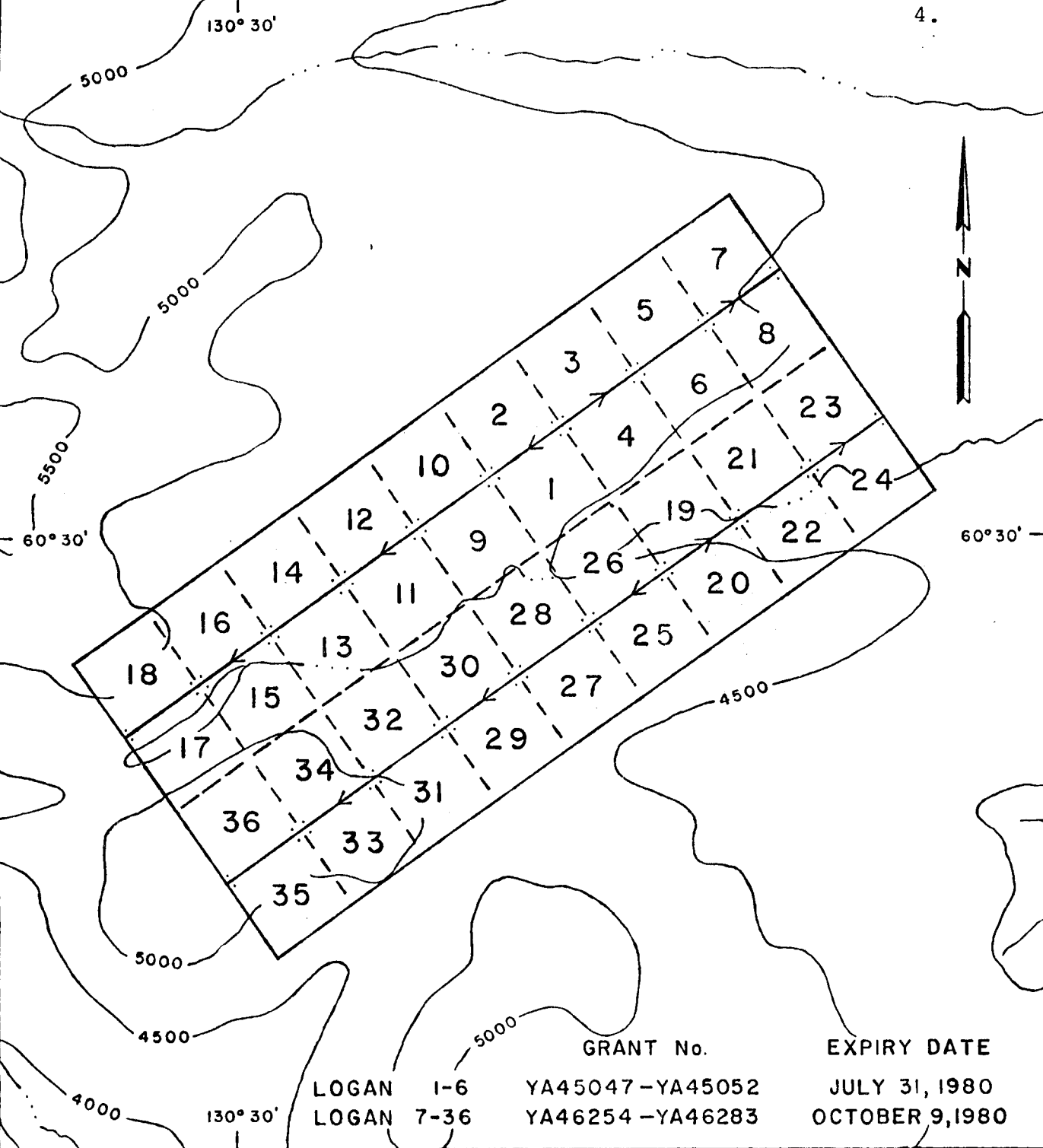


FIGURE 2: Logan #1-6 claims, looking west.

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

The Logan group (36 claims) is located 109 kilometres (68 miles) northwest of Watson Lake, Y.T. in the Watson Lake Mining District (N.T.S. 105-B/7,8,9). The claims are situated at latitude 60°30'N and longitude 130°28'W and lie 39 kilometres (24 miles) north of the Alaska Highway. A new discovery, the Logan was found for Regional Resources Ltd. during the 1979 field season by Cordilleran Engineering.

Zn, Cu, Ag mineralization occurs in a vein system associated with a felsite dyke - both of which cut granodiorite. Chip samples across a five foot wide, steep southerly-dipping vein average: 5.29% Zn, 0.58% Cu, and 1.79 oz/ton Ag with trace Pb, Sn, WO₃. Grab samples of typical mineralized vein float assay: 8.15% Zn, 0.29% Cu, 5.01 oz/ton Ag with selected samples running up to 35.88% Zn, 1.42% Cu and 16.35 oz/ton Ag. Samples of silicified and brecciated felsite assay up to 1.42% Sn (tin).



CLAIM MAP

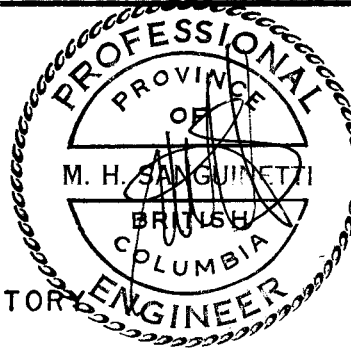
LOGAN GROUP

WATSON LAKE MINING DISTRICT, YUKON TERRITORY

N.T.S. 105B-7,8,9

SCALE: 1 inch = 1/2 mile

CONTOUR INTERVAL = 500 feet



The results of soil sampling indicate a zone with coincident anomalies in Cu, Pb, Zn, Ag, Sn extends for a length of 750 metres (2500 feet) and width of 150 metres (500 feet) on the property. Mineralization adequate to explain very high Pb (up to 9900 ppm) and Ag (up to 50 ppm) in soils has not been located at present.

The Logan group hosts vein-type Zn-Cu-Ag mineralization which may have potential to support a small tonnage high grade mining operation. Many geological similarities with greissen-type deposits exist. The property is also believed to have good potential for hosting significant Sn and Ag mineralization.

G E O L O G Y

(Plate 1)

The Logan property lies in the northern Cassiar Mountains in the Omineca crystalline belt. The claims are situated on the contact between highly deformed metasediments (Lower Cambrian and earlier (?)) and a magmatitic, Upper Cretaceous intrusive. A shattered, mineralized felsite dyke and mineralized quartz vein system are associated with pronounced northerly, northeasterly and easterly trending lineaments in the intrusive on the north side of the claims. Gossanous quartz veins in the metasediments are associated with areas of anomalous soil geochemistry (Cu, Pb, Zn, Ag, Sn) on the southwest part of the group.

The physiography of the property is characterized by rolling hills with elevations ranging from 4500' to 5100' ASL. A cover of pine, spruce and juniper prevails below 4700'. Soils are well developed over most of the property.

GEOLOGY (cont'd)LITHOLOGIES

Preliminary mapping was restricted to the Logan 1-6 claims. Despite limited exposure (less than 1%) three lithologies were located, descriptions of these follow. Petrographic descriptions of specimens from each unit and mineralization have been prepared by Dr. J. Payne of Vancouver Petrographics.

CREATCEOUSUnit K_{PG}: Pegmatitic Granodiorite

Much of the Logan group is underlain by a medium-grained biotite-muscovite granodiorite. Coarse pegmatitic lenses (15 cm to 60 cm in length), with graphic textures, are common throughout the intrusive. Large xenoliths of meta-sediments occur in this unit immediately north of the property. Local layering within K_{PG} may represent relict structures suggesting a migmatitic origin for this rock. Near quartz veins, plagioclase and biotite are intensely altered to sericite.

Unit K_F: Felsite

A northeasterly trending dyke of felsite approximately 12 metres (40 feet) wide is inferred to intrude granodiorite on the Logan 3, 5 claims. The felsite is an aphanitic, pale brown rock, which is commonly highly fractured and

GEOLOGY (cont'd)

veined with quartz. Sphalerite and arsenopyrite occur in veins and on fracture surfaces. In thin-section the rock consists of euhedral to subhedral plagioclase (7-10%) and mafic phenocrysts (biotite? 1-2%) in a groundmass of plagioclase (45-50%), quartz (20-25%), mafics (7-10%, biotite?). Phenocrysts and groundmass feldspars are intensely altered to sericite. In hand specimen rare, anhedral quartz phenocrysts (2-3 mm dia.) were noted. Float boulders of a silicified breccia containing angular fragments of felsite occur in a slight topographic depression approximately 75 metres north of the west end of the dyke. Minor sphalerite and galena are found in the breccia, cassiterite has tentatively been identified. Grab samples of this material assay 0.33 to 1.42% Sn and 4.85 to 16.35 oz/ton Ag. Two stages of quartz veining are evident in the breccia.

Unit K_{MV}: Main Vein

A slight topographic, linear depression up to 20 metres in width, easterly trending, occurs in the center of Logan 1-6. Sphalerite, arsenopyrite, chalcopyrite, pyrite-bearing quartz vein float lies in the depression. A large "poison-patch" of exotic or transported gossan containing fragments of vein material, granodiorite and felsite is situated south of the vein. Small patches of exotic gossan lie adjacent to the south side of the vein at several other localities. At approximately 250E, 50N (soil grid coordinates) a quartz vein system 1.5 metres (5 feet) wide, with steep southerly dip, is exposed. From this exposure and the vein float distribution it is inferred that a vein system, the

GEOLOGY (cont'd)

"Main Vein", underlies the depression. The exposed vein contains relatively massive sphalerite with chalcopyrite and siderite (?) in vuggy comb-textured quartz, arsenopyrite and lesser sphalerite disseminated in medium-to coarse-grained quartz. Chip samples taken across the vein average 5.29% Zn, 0.58% Cu, 0.02% Pb, 1.79 oz/ton Ag. A more detailed description of the vein and mineralization is given under "Mineralization". The width of the topographic depression (20 metres) relative to the vein width (1.5 metres) suggest either several parallel veins may occur in this zone or sericitization of K_{PG} is extensive on the vein hanging wall.

GEOLOGY (cont'd)



FIGURE 4: Trench exposing "Main Vein".

GEOLOGY (cont'd)STRUCTURE

Easterly and northeasterly linear trends are the main structures on the Logan claims, with northerly and northwesterly trends less well developed. It is conceivable that these features developed through north-northeasterly compression, with the main vein and felsite being emplaced after relaxation of this stress.

MINERALIZATION

In place mineralization is exposed on the Logan group at the "Main Vein Showing". The outcrop is interpreted to be composed of a set of several parallel veins (Figure 5). The intensity of mineralization appears to increase from south to north across the system. South veins (5 to 10 cm wide) contain disseminated arsenopyrite with minor sphalerite in thin walls and coarse euhedral sphalerite and minor arsenopyrite in vugs between comb-textured quartz walls. A vein central to the system has walls that are impregnated with sphalerite (up to 15% ZnS) and arsenopyrite (approximately 3%). Textures in this vein suggest that the walls were shattered, then flooded with mineralizing solutions. On the north side a thick vein (30 cm) has a core of relatively massive sphalerite with chalcopyrite, pyrite and carbonate. Paragenesis of this vein is illustrated in Figure 6. The wall rock of the vein system is intensely sericitized pegmatitic granodiorite. The foot wall is mineralized with sheet-like series of quartz-sphalerite

FIGURE 5: SCHEMATIC CROSS-SECTION: MAIN VEIN

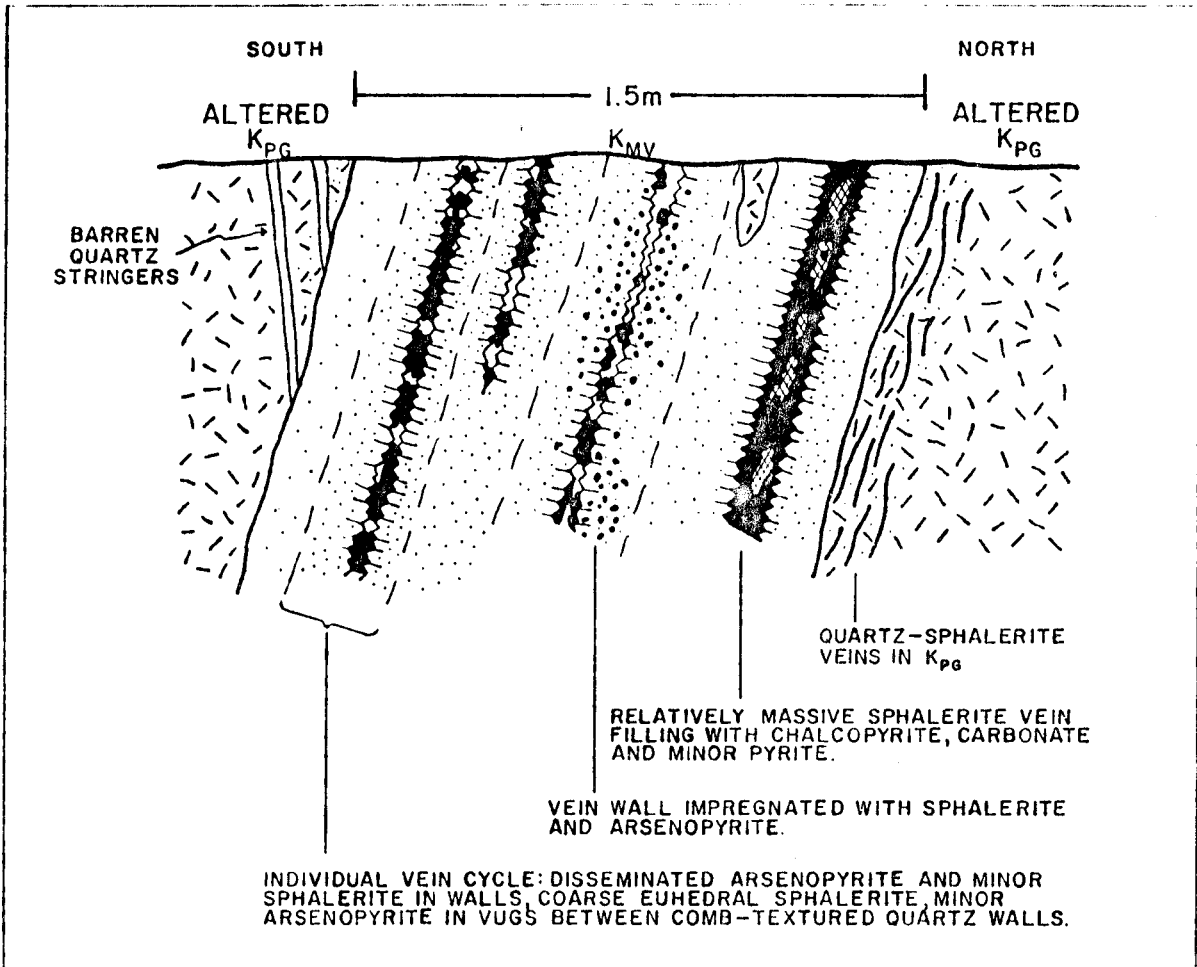
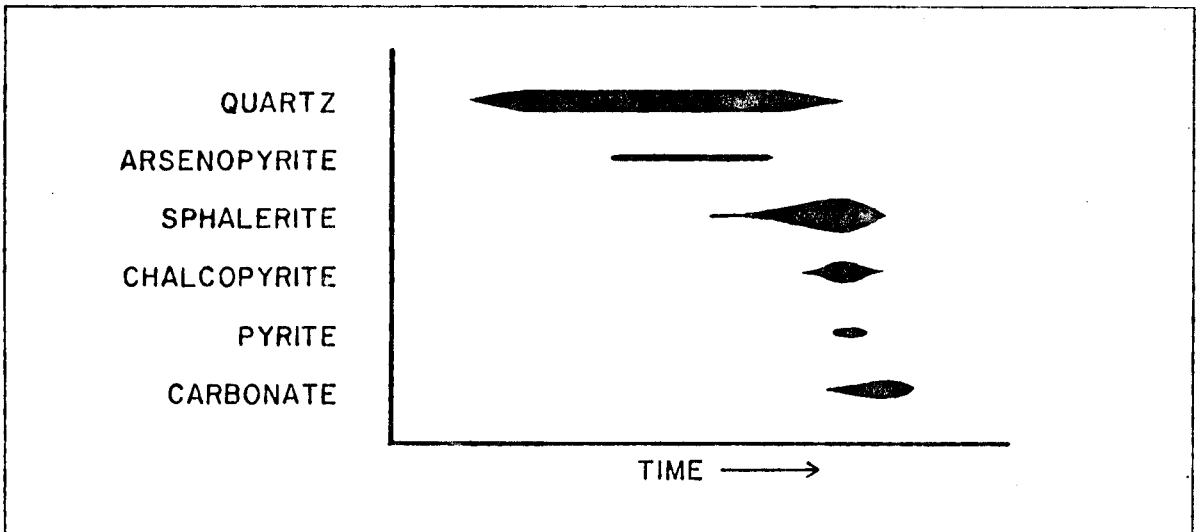


FIGURE 6: VEIN PARAGENESIS



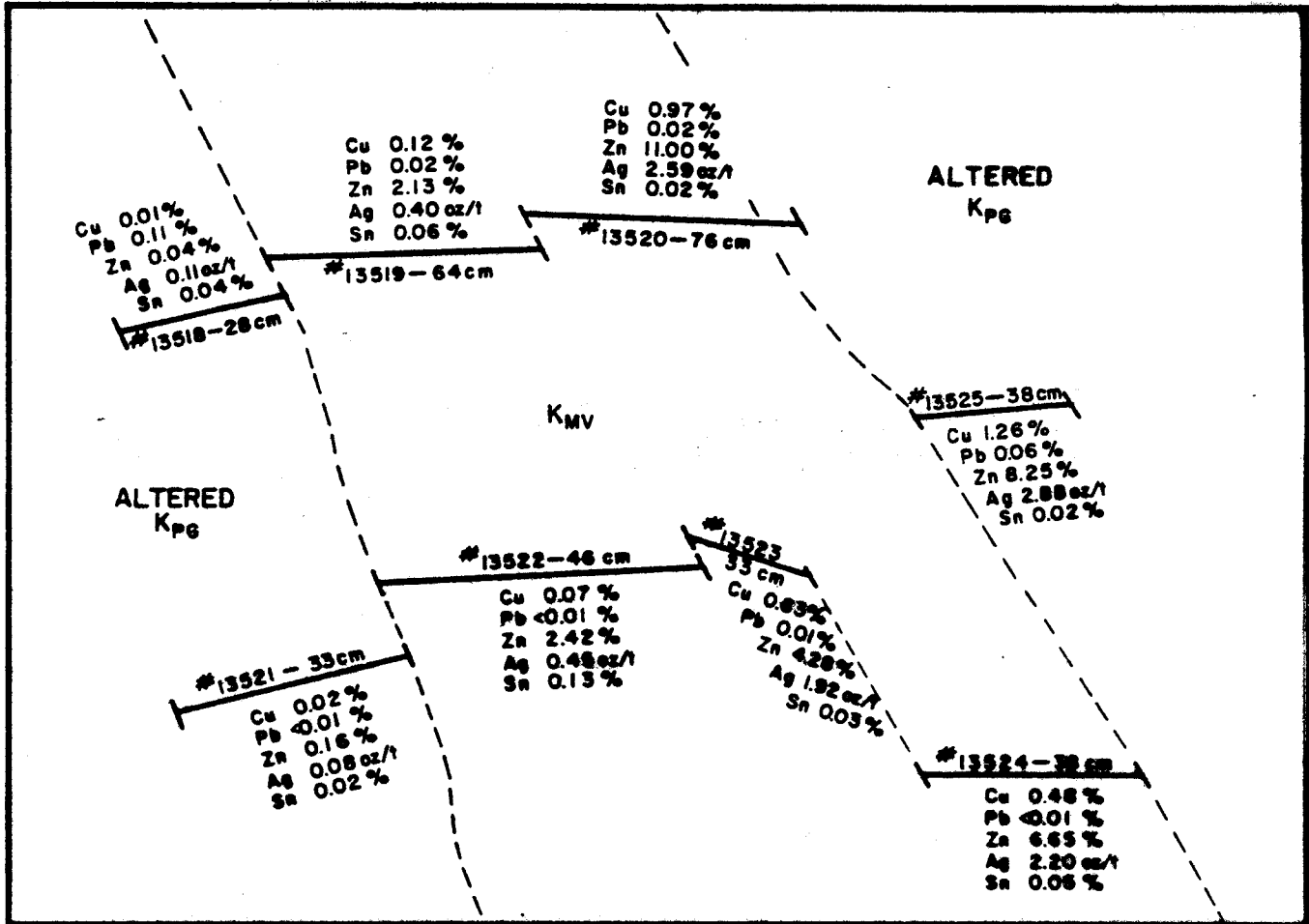


FIGURE 7A

MINERALIZATION (cont'd)

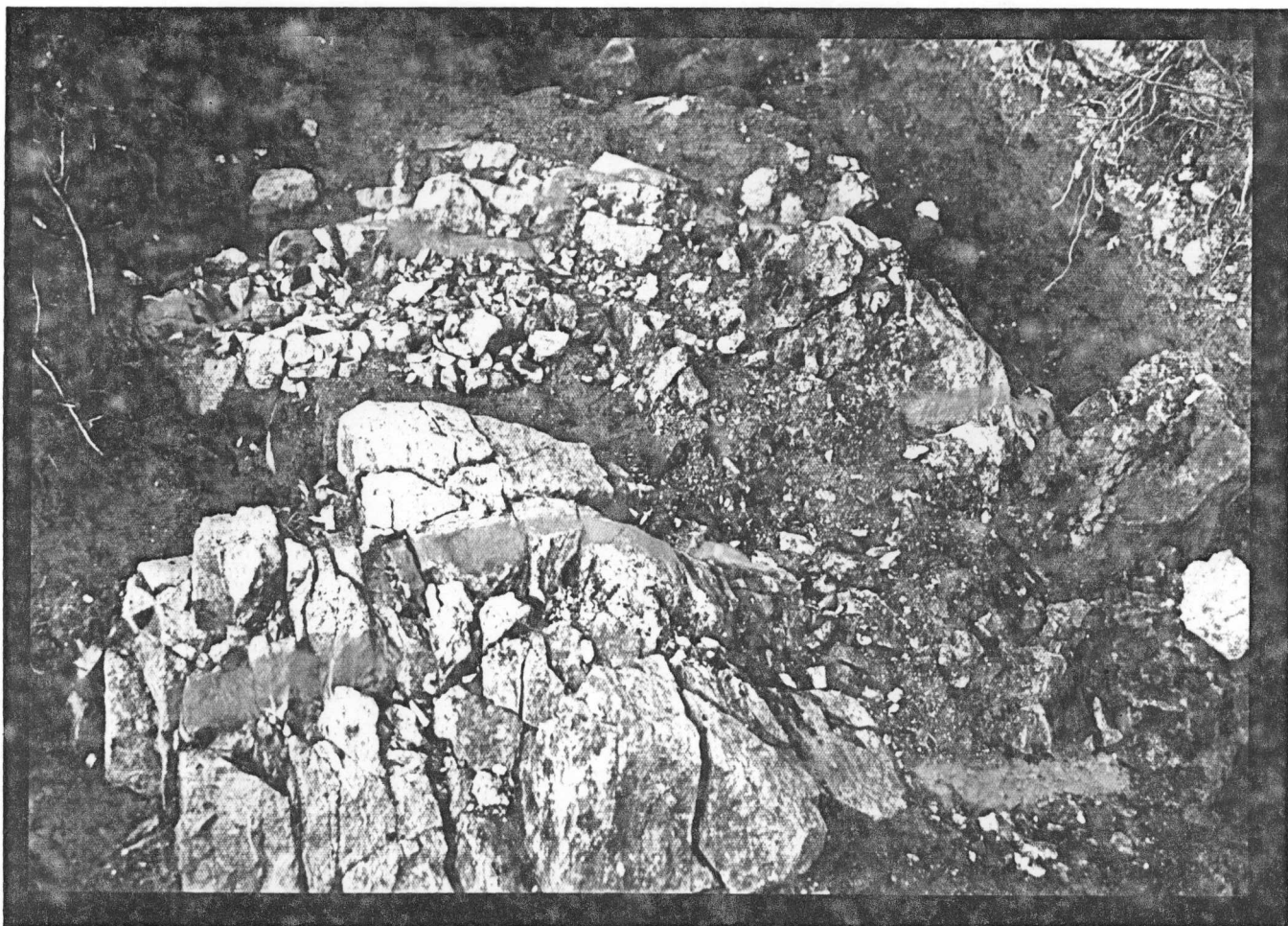


FIGURE 7: Chip sample sections, "Main Vein Showing".

TABLE I

ASSAYS AND ANALYSES

<u>ASSAYS</u>	<u>% Cu</u>	<u>% Pb</u>	<u>% Zn</u>	<u>oz/T Ag</u>	<u>% WO3</u>	<u>% Sn</u>	<u>Nature of Sample</u>	<u>Width</u>	<u>Remarks</u>
13401	0.29	0.04	8.15	5.01	0.05	0.01	Grab	-	Min'zd vein float
13518	0.01	0.11	0.04	0.11	0.01	0.04	Continuous chip	28 cm	"Main Vein"
13519 ¹	0.12	0.02	2.13	0.40	0.02	0.06	Continuous chip	64 cm	" "
13520 ¹	0.97	0.02	11.00	2.59	0.05	0.02	Continuous chip	76 cm	" "
13521	0.02	<0.01	0.16	0.08	0.01	0.02	Continuous chip	33 cm	" "
13522 ²	0.07	<0.01	2.42	0.45	0.04	0.13	Continuous chip	46 cm	" "
13523 ²	0.63	0.01	4.28	1.92	0.06	0.03	Continuous chip	33 cm	" "
13524 ²	0.48	<0.01	6.65	2.20	0.03	0.05	Continuous chip	38 cm	" "
13525 ²	1.26	0.06	8.25	2.88	0.06	0.02	Continuous chip	38 cm	" "
13526	1.42	0.10	35.88	10.87	0.03	0.01	Selected Grab	-	Min'zd vein float
13528	0.09	0.01	3.40	0.93	0.01	0.19	Selected Grab	-	" " "
13530	0.06	<0.01	5.45	0.35	0.01	0.01	Selected Grab	-	" " "
13531	0.16	0.85	0.55	4.85	0.02	0.33	Selected Grab	-	Silicified breccia
¹ Weighted									
Average	0.64	0.02	7.67	1.75					
² Weighted									
Average	0.58	0.02	5.29	1.79					
<u>ANALYSES:</u>									
	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>	<u>Ag</u>	<u>WO3</u>	<u>Sn</u>	<u>CHECK ASSAYS</u>		
	<u>ppm</u>	<u>ppm</u>	<u>ppm</u>	<u>ppm</u>	<u>ppm</u>	<u>ppm</u>	<u>oz/T Ag</u>	<u>% Sn</u>	
VR-35	148	400	55	26	-	-	-	-	Grab
VR-83	2800	1600	1790	>100	13	24	7.84	-	Selected Grab
VR-86	3200	1250	3860	>100	2	610	6.80	-	Selected Grab
VR-87	182	153	340	18	2	170	-	-	Selected Grab
VR-88	620	520	1770	100	2	56	2.55	-	Selected Grab
VR-90	217	1700	264	66	2	>10000	-	1.42	Selected Grab
									-
VR-92	1060	3600	166	>100	2	730	16.35	-	Selected Grab
									-
									Silicified breccia float
									Silicified breccia float

MINERALIZATION (cont'd)

veins, the hanging wall is relatively barren. Fragments of wall rock occur, rarely, within the vein. Assays of chip samples taken across the vein system are listed in Table I and illustrated in Figure 7A.

The felsite dyke is intensely shattered and altered. Veinlets and fractures within this unit are commonly mineralized with spaherlite and rarely arsenopyrite. Float of brecciated and silicified felsite located 75 metres (250 feet) north of the western most exposure of the dyke shows evidence of at least two stages of quartz veining. The only galena found on the property to date (and in minor amounts, 1.3%) occurs in silicified breccia. Two grab samples of breccia assayed 0.33% and 1.42% Sn. The tin bearing mineral is presumed to be cassiterite.

Mineralized quartz vein float is common in some topographic depressions and abundant around and south of the Main Vein. Locations of selected grab samples of this mineralization are plotted in Plate I, assay values are reported in Table I.. The distribution of vein float suggests that there are numerous veins in this area of the property or alternately several large veins or vein systems similar to the "Main Vein". Limited exposure has prevented determination of whether a stock-

MINERALIZATION (cont'd)

work system exists. Stockwork development is consistent with features such as the intense hydrothermal alteration, brecciation and intrusive activity observed on the property. These features and tin values in breccia indicate that potential exists for locating greissen-type Sn mineralization with associated Ag on the Logan group.

GEOCHEMISTRY AND GEOPHYSICS

Soil sampling on the Logan property consisted of grid sampling over 17.5 kilometres of line (360 samples) on Logan 1-6 and reconnaissance sampling on Logan 31-34 claims (150 samples). Frequency distributions of data for the detailed sampling are found in figures 8 to 12. Statistical categories, estimated from histograms are listed below (in ppm).

TABLE II

STATISTICAL CATEGORIES: SOIL ANALYSES - LOGAN 1-6

	<u>Background</u>	<u>Possibly Anomalous</u>	<u>Anomalous</u>	<u>Maximum Value</u>
Cu	0 - 40	41 - 109	110+	1140
Pb	0 - 60	61 - 124	125+	9900
Zn	0 - 400	401 - 849	850+	>20000
Ag	0 - 1.5	1.6 - 3.5	3.5+	50
Sn	0 - 60	61 - 99	100+	635

Contours of anomalous levels in each element are plotted on transparencies (Figures 13 and 14) at the same scale as Plate I.

SOIL SAMPLE FREQUENCY DISTRIBUTION

COPPER (P.P.M.)

360 SAMPLES

LOGAN PROPERTY (N.T.S. 105B-8,9)
WATSON LAKE MINING DISTRICT, YUKON TERRITORY

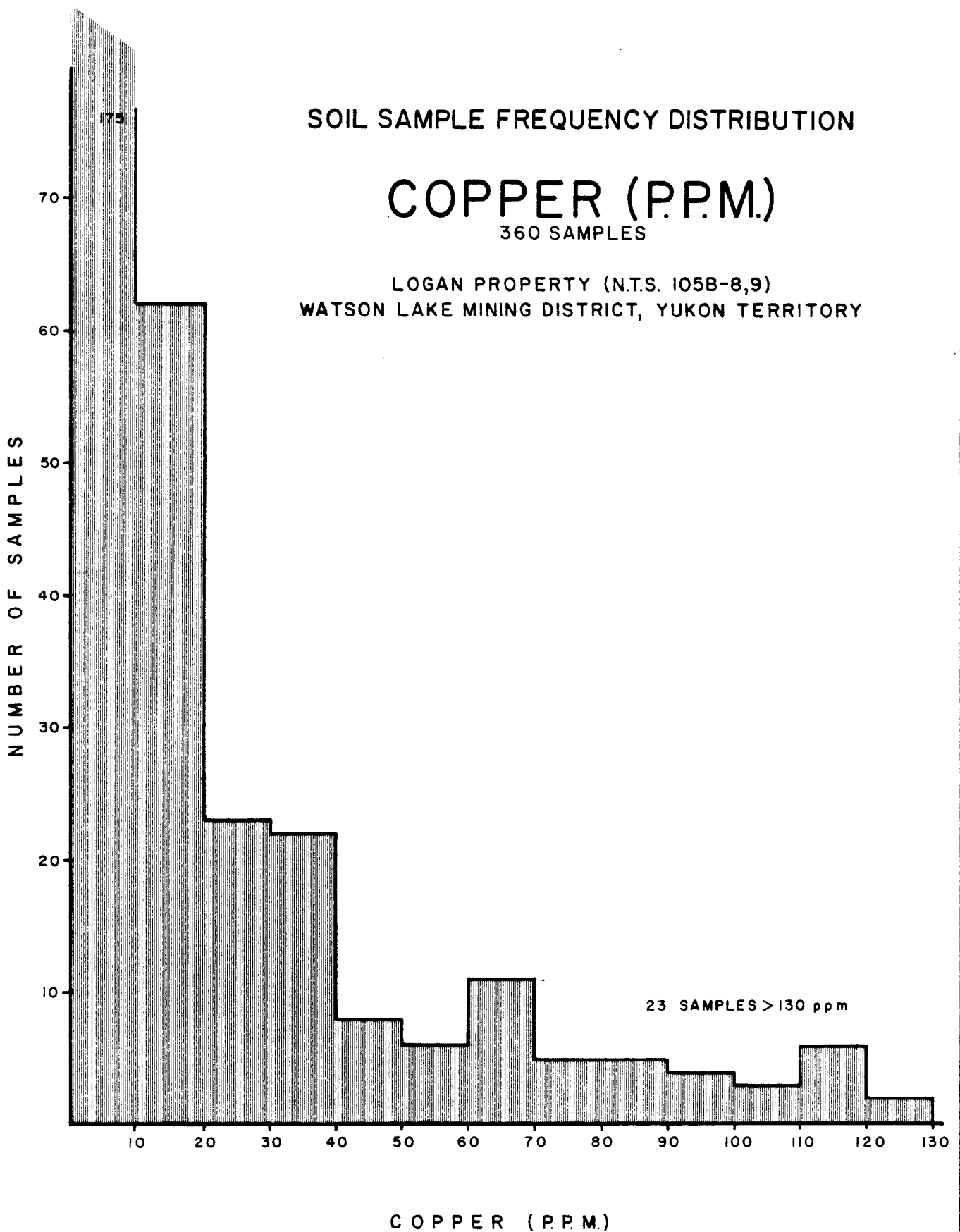


FIGURE 8

SOIL SAMPLE FREQUENCY DISTRIBUTION

LEAD (P.P.M.)

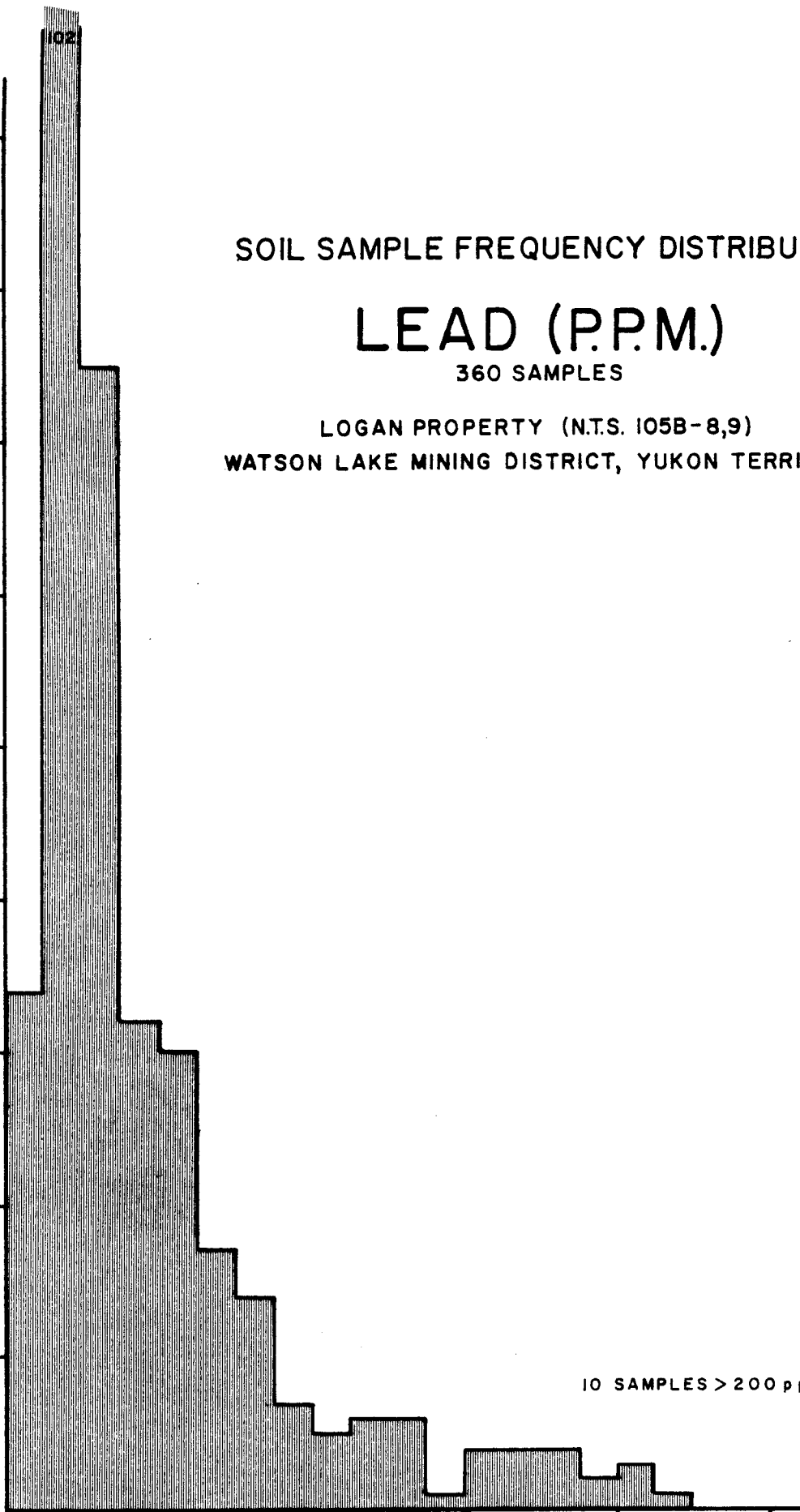
360 SAMPLES

LOGAN PROPERTY (N.T.S. 105B-8,9)

WATSON LAKE MINING DISTRICT, YUKON TERRITORY

NUMBER OF SAMPLES

90
80
70
60
50
40
30
20
10



10 SAMPLES > 200 ppm

LEAD (P.P.M.)

FIGURE 9

SOIL SAMPLE FREQUENCY DISTRIBUTION

ZINC (P.P.M.)

360 SAMPLES

LOGAN PROPERTY (N.T.S. 105B-8,9)
WATSON LAKE MINING DISTRICT, YUKON TERRITORY

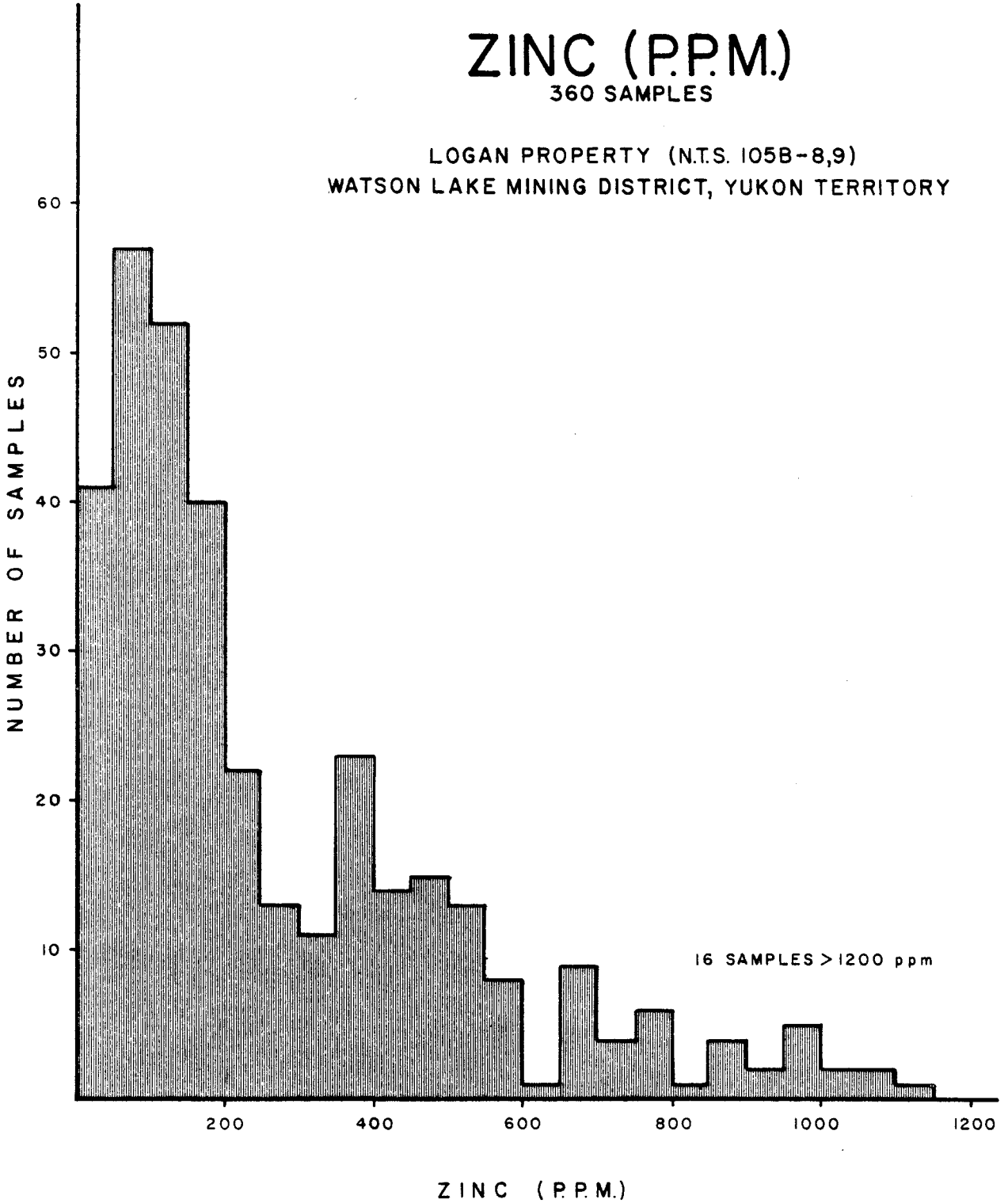


FIGURE 10'

SOIL SAMPLE FREQUENCY DISTRIBUTION

SILVER (P.P.M.)

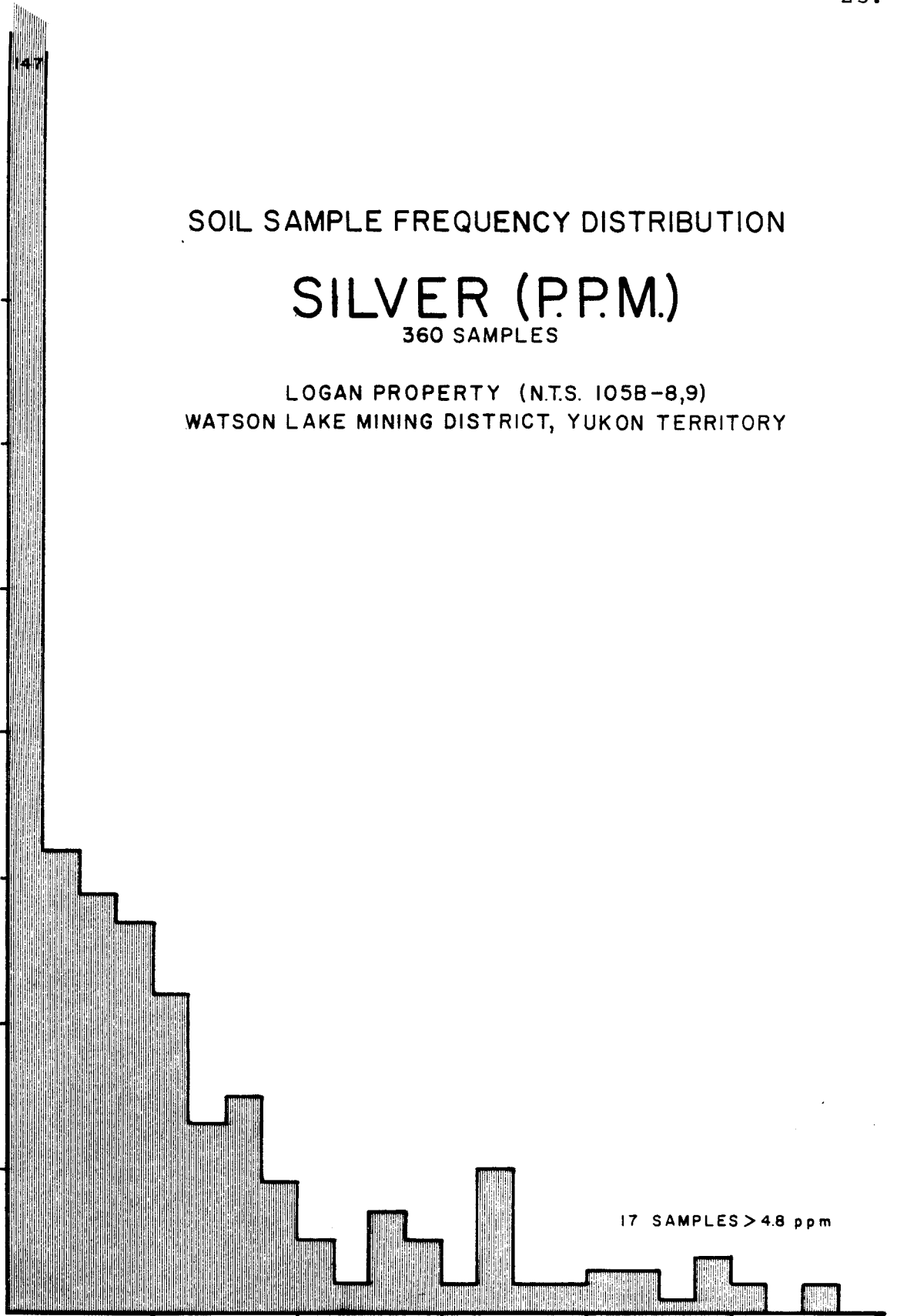
360 SAMPLES

LOGAN PROPERTY (N.T.S. 105B-8,9)

WATSON LAKE MINING DISTRICT, YUKON TERRITORY

NUMBER OF SAMPLES

70
60
50
40
30
20
10



SILVER (P.P.M.)

FIGURE II

SOIL SAMPLE FREQUENCY DISTRIBUTION

TIN (P.P.M.)

360 SAMPLES

LOGAN PROPERTY (N.T.S. 105B-8,9)

WATSON LAKE MINING DISTRICT, YUKON TERRITORY

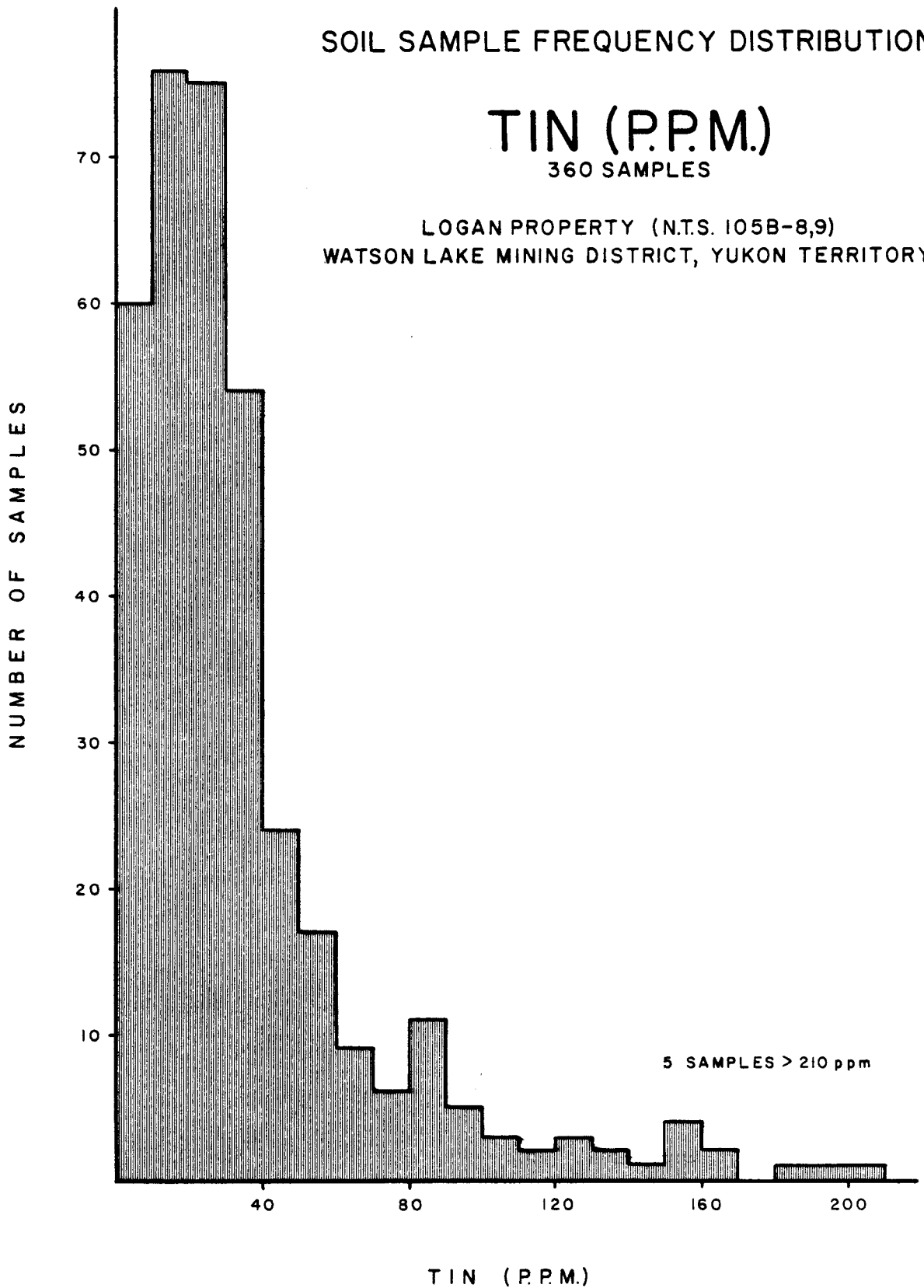


FIGURE 12

APPROXIMATE CLAIM BOUNDARY LOGAN 1-6

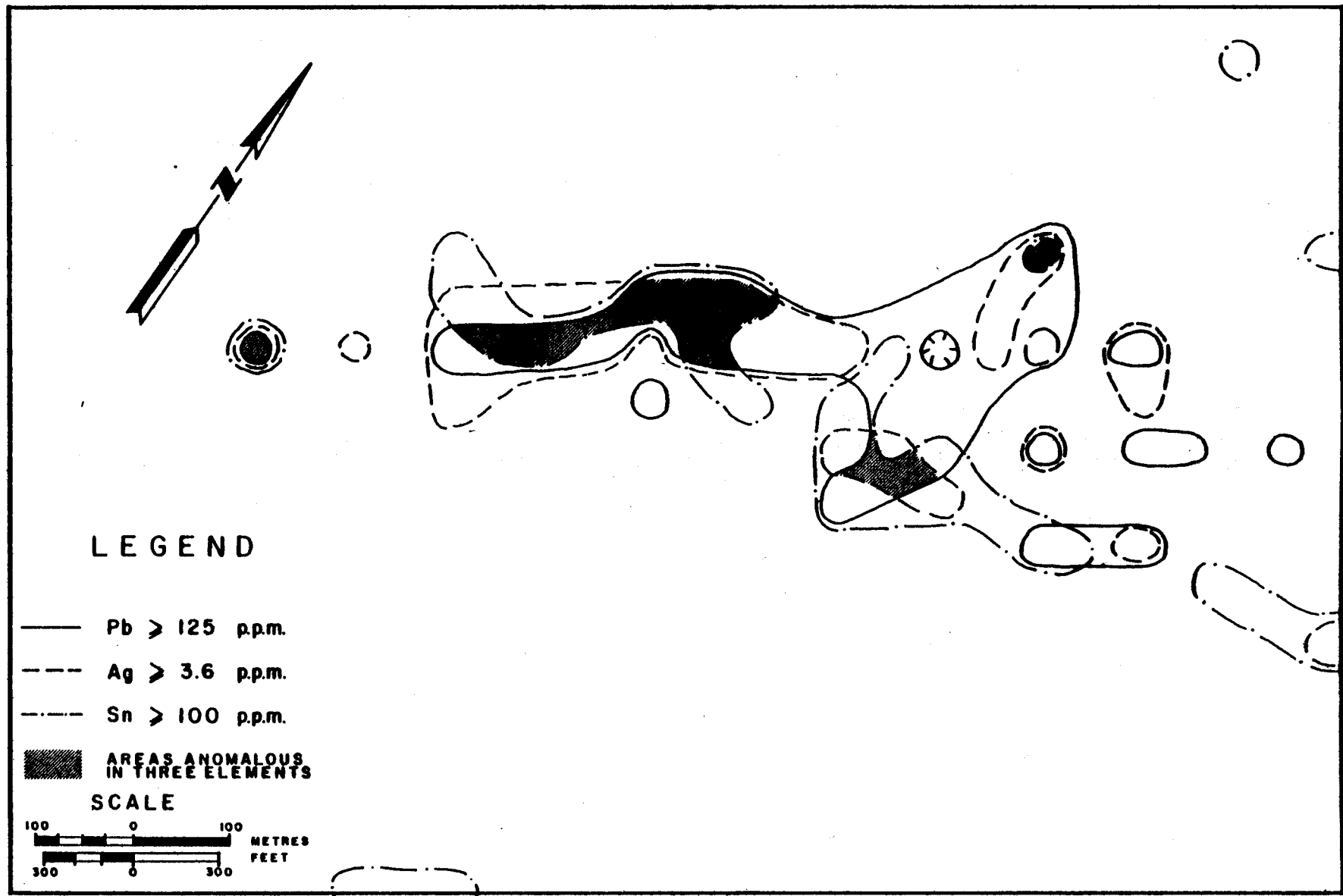


FIGURE 13: SOIL GEOCHEMISTRY, Pb, Ag, Sn ANOMALOUS ZONES. LOGAN 1-6 CLAIMS

APPROXIMATE CLAIM BOUNDARY LOGAN 1-6

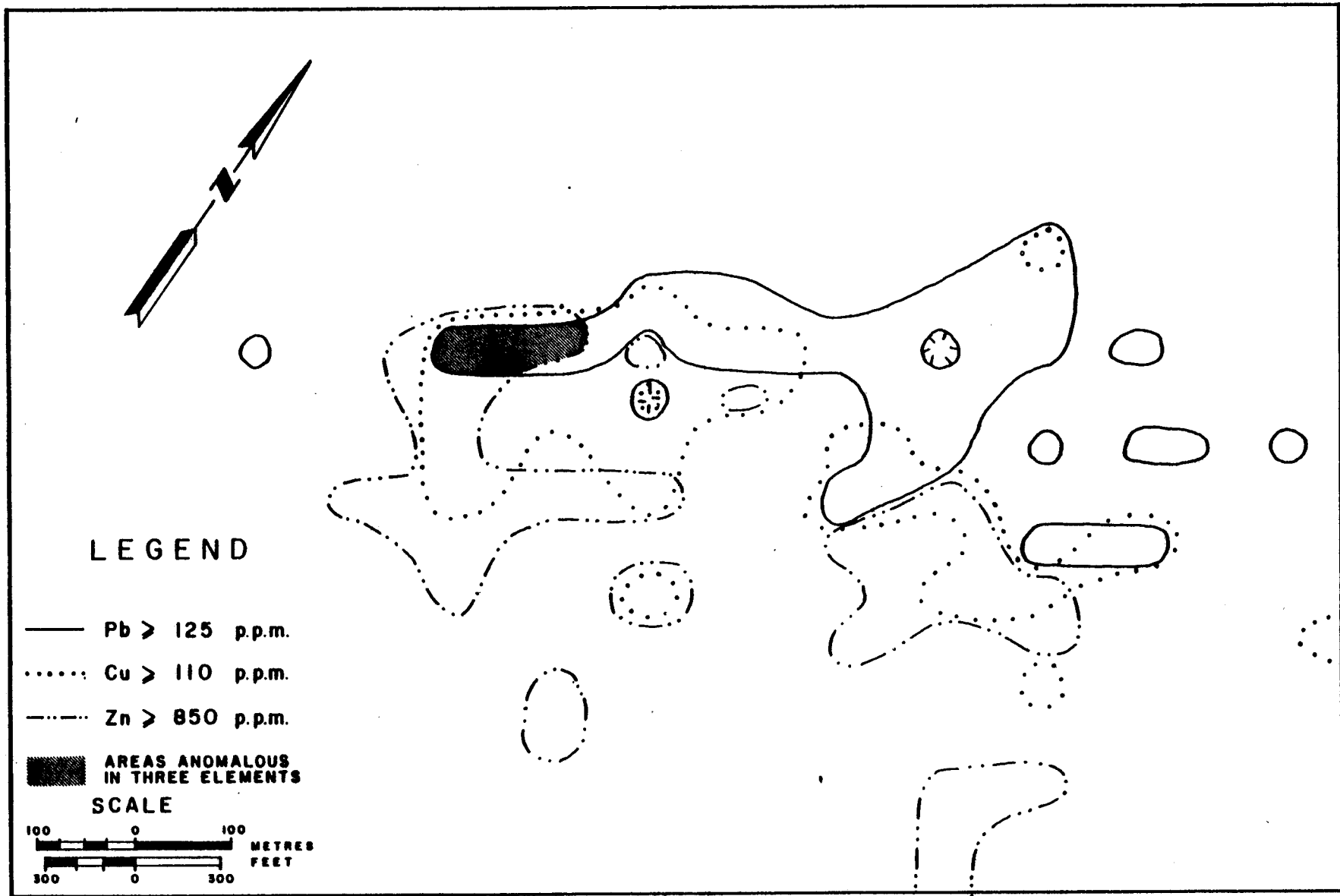


FIGURE 14: SOIL GEOCHEMISTRY, Pb, Cu, Zn ANOMALOUS ZONES. LOGAN 1-6 CLAIMS

GEOCHEMISTRY AND GEOPHYSICS (cont'd)

Results of the sampling on Logan 1-6 indicate anomalous trends in Cu, Pb, Zn, Ag, Sn are coincident with major structures, the main vein system and felsite. The most highly anomalous area is situated around the inferred intersection of the Main Vein and felsite and between the felsite and silicified breccia. It is important to note that the exposure of the Main Vein that was sampled lies in an area that is not considered anomalous. This may be a result of soil sample spacing or it could imply that the anomalous areas are underlain by better grade mineralization than that found in the vein exposed.

Reconnaissance sampling on Logan 31-34 indicates an anomalous area at the northwest end of the grid, with high values (in ppm) of Pb: 98, Cu: 102, Zn: 860, Ag: 3.2, Sn: 240. Prospecting suggests that the area is underlain by metasediments which are intruded by pegmatitic dykes and cut by quartz veins (4 to 60 cm wide).

Geophysical tests on one line across the vein, felsite and breccia were conducted by Pheonix Geophysics Limited. The results of this work indicate definite induced polarization anomalies are associated with the region underlain by the Main Vein and felsite. A "probable" anomaly extends from the

GEOCHEMISTRY AND GEOPHYSICS (cont'd)

felsite to the silicified breccia. Magnetometer and electromagnetic results are inconclusive.

EVALUATION

The nature of the Main Vein Showing, associated float distribution and geochemical expression suggests that there may be sufficient mineralization associated with this structure to support a small tonnage, high grade mining operation. Geochemical response suggests higher grade Pb, Ag sections of the vein may occur along strike from the area of exposed mineralization.

A pronounced lineament pattern, possibly acting as a channeling or focusing mechanism for hydrothermal solutions and intrusive activity, as well as multiple hydrothermal events, alteration, veining, brecciation and tin mineralization are strong evidence favouring the possibility that Sn-Ag greissen zones may occur at relatively shallow depths.

RECOMMENDATIONS

For the 1980 field season a three-stage exploration program is recommended for the Logan claim group:

PHASE I

- 1) Grid Preparation
Accurately cut and flag grid: 10 kilometres.
- 2) Geochemistry
Detailed soil sampling of grid to determine metal (Cu, Pb, Zn, Ag, Sn) distribution: 1200 samples.
- 3) Geophysics
Geophysical survey of grid using induced polarization, MaxMin electromagnetic and magnetometer methods.
- 4) Geological Mapping
1:5000 scale mapping, conducted concurrent to soil sampling.

PHASE II

Diamond drilling, 2000 ft (600 m), is recommended to test existing geochemical anomalies and the Main Vein.

RECOMMENDATIONS (cont'd)PHASE III

Contingent upon the success of Phases 1 and 2, 2000 feet of further diamond drilling is recommended.

ESTIMATED COST OF RECOMMENDED EXPLORATION PROGRAM

LOGAN #1-36 CLAIM GROUP

PHASE I

PROGRAM: Grid preparation
 Soil geochemistry
 Geophysical survey
 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 (30 hrs x \$450/hr)	13,500
Fixed-wing aircraft support (1000 mi x \$2.50/mi) ..	2,500
Transportation, expediting	3,500
Camp supplies, food	5,200
Camp equipment and rentals	4,500
Assays and analyses	1,000
Geochemical survey (1200 samples, Cu,Pb,Zn,Ag,Sn)	9,000
Travel, lodging	3,000
Geophysical surveys:	
mobilization	\$ 2,000
Induced polarization survey (10 km x \$385/km)	3,850
MaxMin EM ((10 km x \$205/km)	2,050
Magnetometer (10 km x \$90/km)	900
Linecutting (10 km x \$300/km)	3,000
Miscellaneous expense	6,000
<u>TOTAL PHASE I</u>	<u>\$ 85,000</u>

ESTIMATED COST OF RECOMMENDED EXPLORATION PROGRAM
LOGAN #1-36 CLAIM GROUP (Cont'd)

TOTAL PHASE I forward \$ 85,000

PHASE II

A diamond drilling program of 2000 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
 PHASES I and II \$185,000

PHASE III

Contingent upon the success of Phases I and II, a further 2000 feet (600 metres) of BQWL diamond drilling is recommended at an estimated cost of \$100,000

Respectfully submitted

Carl G. Verley

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

M. H. Sanguinetti

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



Vancouver, B.C.

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 a fraction of each sample was digested by perchloric and nitric acids for Cu, Pb, Zn, and Ag analysis by the atomic absorption method. Tin determinations were made by the X-ray diffraction method.

SUMMARY AND CONCLUSIONS

In excess of \$21,000.00 has been expended to conduct preliminary geological, geophysical and geochemical

investigations on the Logan #1-36 claim block, Watson Lake Mining District, Y.T.

Zn, Cu, Ag mineralization occurs in a vein system associated with a felsite dyke - both of which cut granodiorite. Chip samples across a five foot wide, steep southerly-dipping vein average: 5.29% Zn, 0.58% Cu and 1.79 oz/ton Ag with trace Pb, Sn and WO₃. Grab samples of typical mineralized vein float assay: 8.15% Zn, 0.29% Cu, 5.01 oz/ton Ag with selected samples running up to 35.88% Zn,, 1.42% Cu and 16.35 oz/ton Ag. Samples of silicified and brecciated felsite assay up to 1.42% Sn.

Soil sampling on the Logan property consisted of grid sampling over 17.5 kilometres of line (360 samples) on Logan #1-6 and reconnaissance sampling on Logan 31-34 claims (150 samples). All samples were collected at 50 metre intervals and analyzed for Cu, Pb, Zn, Ag and Sn. Results of the sampling indicate anomalous values in soils are related to mineralized structures. Geophysical tests were conducted on one line on the Logan 1-6. Results of this work indicate definite induced polarization anomalies are associated with the region underlain by the Main Vein and felsite. Electromagnetic and magnetic methods gave inconclusive results.

The Logan group hosts vein-type Zn-Cu-Ag mineralization which may have potential to support a small tonnage high grade mining operation. Many geological similarities with greissen-type deposits exist. The property is also believed to have good potential for hosting significant Sn and Ag mineralization.

APPENDIX "A"

CERTIFICATES

CORDILLERAN ENGINEERING

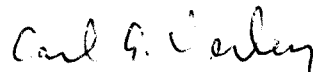
1418 MARINE BUILDING, 355 BURRARD STREET, VANCOUVER, BRITISH COLUMBIA V6C 2G8 TEL: (604) 681-8381

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 Logan #1-36 mineral claims during the period August 15 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, B.Sc.,
Geologist

January, 1980
Vancouver, B.C.

CORDILLERAN ENGINEERING

1418 MARINE BUILDING, 355 BARRARD 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 15 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

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

APPENDIX "B"

ASSAY CERTIFICATES

To: Corcoran Engineering Ltd.

REPORT NO. A2 . 1336

PAGE No. 1

BONDAR-CLEGG & COMPANY LTD.

DATE: October 30, 1979

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

CERTIFICATE OF ASSAY

Samples submitted: October 16, 1979
Results completed: October 30, 1979

PROJECT: LOGAN YUKON #19

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

MARKED	GOLD		SILVER		Percent	Percent	Percent	Percent	Percent	Percent	Percent
	Ounces per Ton	Grams per Metric Ton	Ounces per Ton	Grams per Metric Ton							
VR 83			7.84								
86			6.80								
88			2.55								
92			16.35								

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


Registered Assayer, Province of British Columbia

APPENDIX "B"

To: Cc illeran Engineering Ltd.

REPORT NO. 9 - 1262

PAGE No. 1

BONDAR-CLEGG & COMPANY LTD.

DATE: October 22, 1979

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

CERTIFICATE OF ASSAY


Samples submitted: October 9, 1979
Results completed: October 22, 1979

PROJECT: LOGAN YUKON #19

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

MARKED	GOLD		SILVER		Sn							
	Ounces per Ton	Grams per Metric Ton	Ounces per Ton	Grams per Metric Ton	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
VR 90					1.42							

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

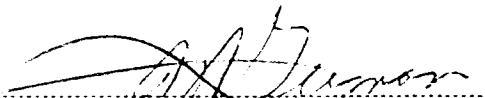
PROJECT: LOGAN YUKON # 19

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		LOGAN PROPERTY
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		LOGAN PROPERTY
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	-	-		
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.


Registered Assayer, Province of British Columbia

APPENDIX "B" 111

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

CERTIFICATE OF ASSAY

Samples submitted: July 16, 1979
Results completed: July 19, 1979


PROJECT: LOGAN-YUKON #7

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

MARKED	GOLD		SILVER		Cu	Zn	WO ₃	Sn	Pb		
	Ounces per Ton	Grams per Metric Ton	Ounces per Ton	Grams per Metric Ton	Percent	Percent	Percent	Percent	Percent	Percent	Percent
13375	<0.002		0.44		0.02	0.56	0.05	<0.01	0.01		
13401	0.002		5.01		0.29	8.15	0.05	0.01	0.04	LOGAN PROPERTY	

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

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 chalcopyrite 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.

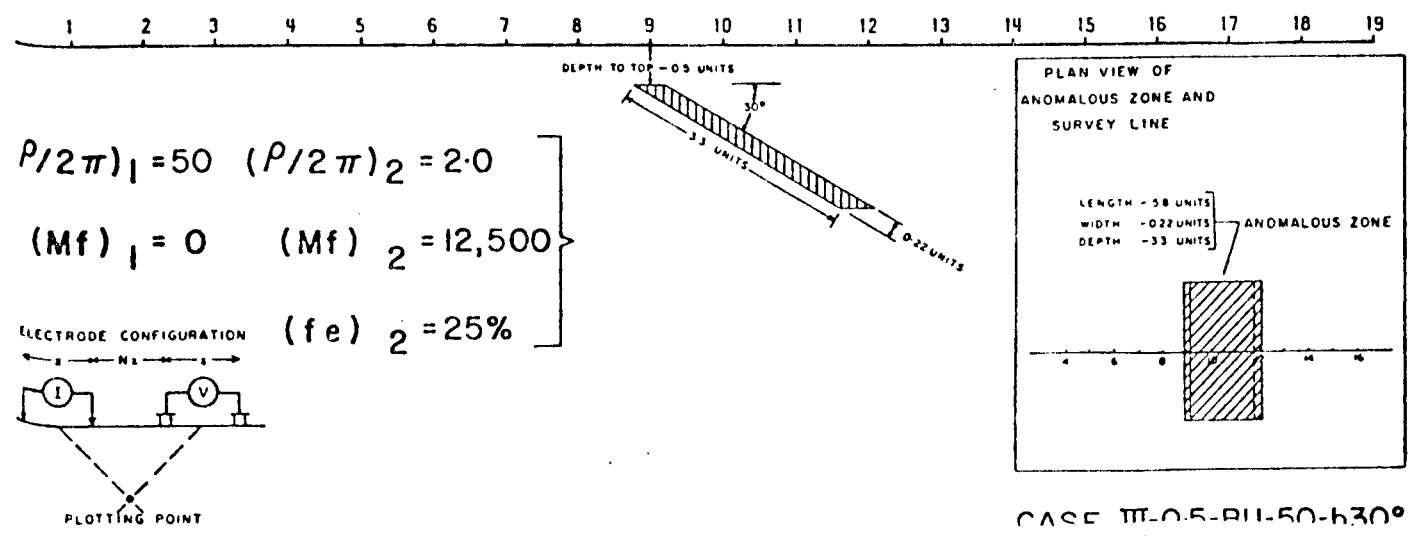
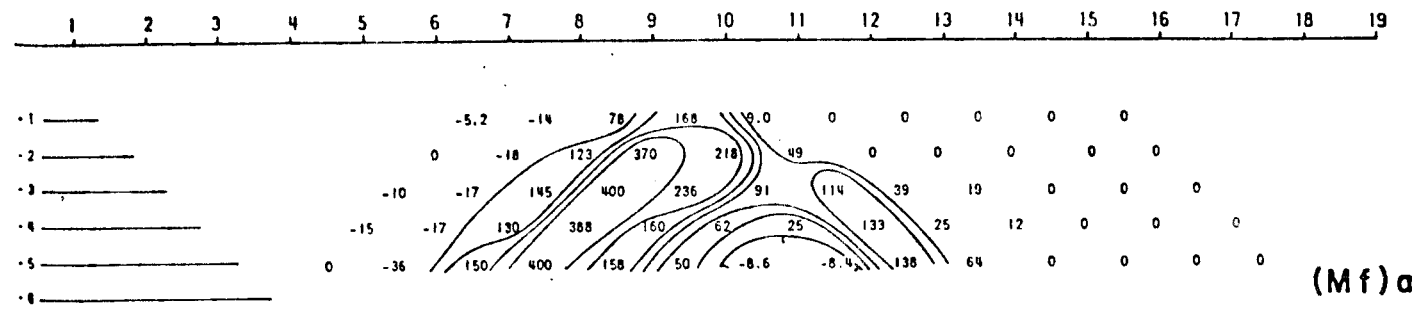
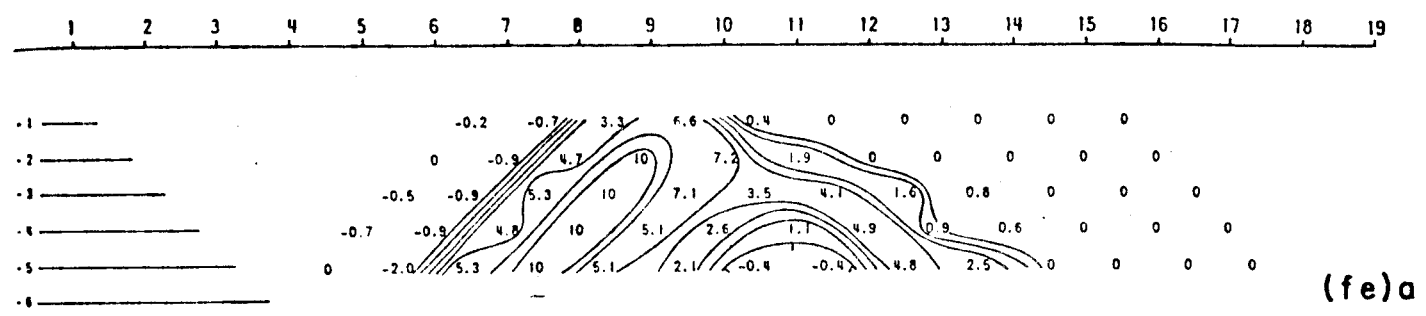
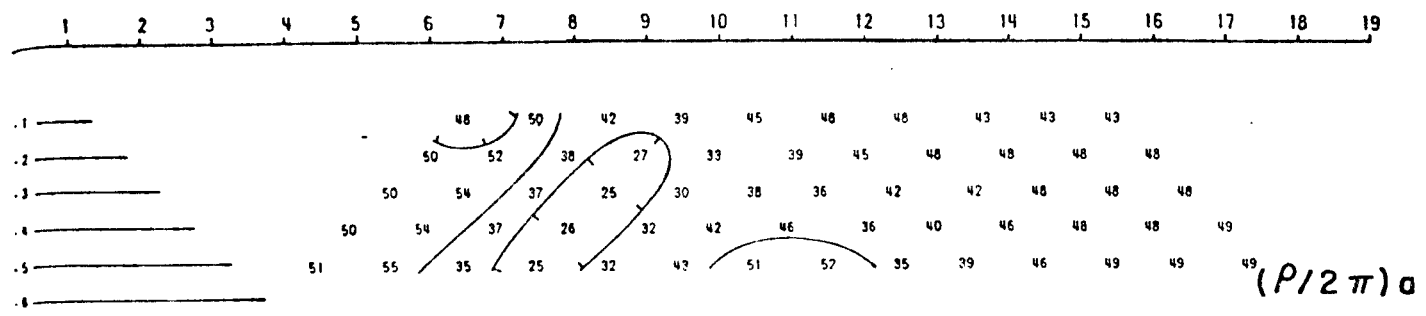
A northeasterly trending geochemical anomaly conforms roughly with the synforms.

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



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)		
1 Bad Weather)	2 days @ \$210.00/day	420.00
Mobilization		1,650.00

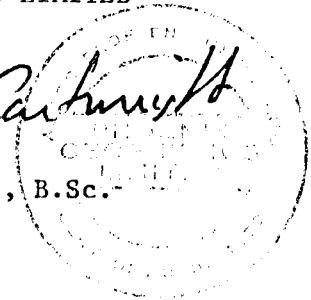
EXPENSES

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:

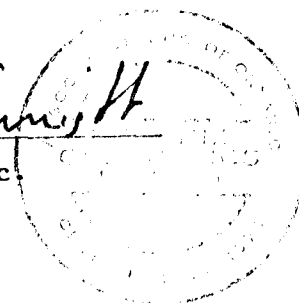
1. I am a geophysicist residing at 45 La Rose Avenue, Weston, Ontario.
2. I am a graduate of the University of British Columbia, B.C. with a B.Sc. Degree.
3. I am a member of the Society of Exploration Geophysicists.
4. I have been practising my profession about 9 years.
5. I have no direct or indirect 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.



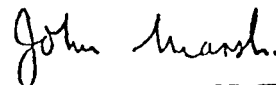
CERTIFICATE

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

APPENDIX "D"

STATUTORY DECLARATION

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

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

do solemnly declare, - that geological mapping, geochemical sampling, and geophysical surveys were conducted on the Logan #1-36 (inclusive) mineral claims, Watson Lake Mining District, Y.T., during the period August 15 to October 25, 1979. Expenditures for this work include:

Salaries, Management Fees, Consulting, and Petrographic Services	.....	6,176.88
Helicopter and fuel	.....	7,176.50
Assays and analysis	.....	5,082.40
Geophysical Survey	.....	1,650.79
Fixed Wing	.....	424.00
Accommodation, Food, Telephone, freight, supplies	.....	428.00
Drafting, printing	.....	<u>432.81</u>
	TOTAL	\$21,371.38

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)

Lin P. Lam
 A notary Public in and for the
Yukon Territory B.C.

Michael H. Sanguinetti

APPENDIX "E"

PERSONNEL

PERSONNEL

Mr. C. G. Verley, B.Sc. 1418-355 Burrard St. Vancouver, B.C.	Geologist
Mr. E. A. Balon 1418-355 Burrard St. 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. H. E. Ewen 1418-355 Burrard Street Vancouver, B.C.	Field Assistant
Mr. T. Turner 1418-355 Burrard Street Vancouver, B.C.	Field Assistant
Mr. G. Didier 1418-355 Burrard Street Vancouver, B.C.	Field Assistant
Mr. B. Goodacre 1418-355 Burrard St. Vancouver, B.C.	Field Assistant

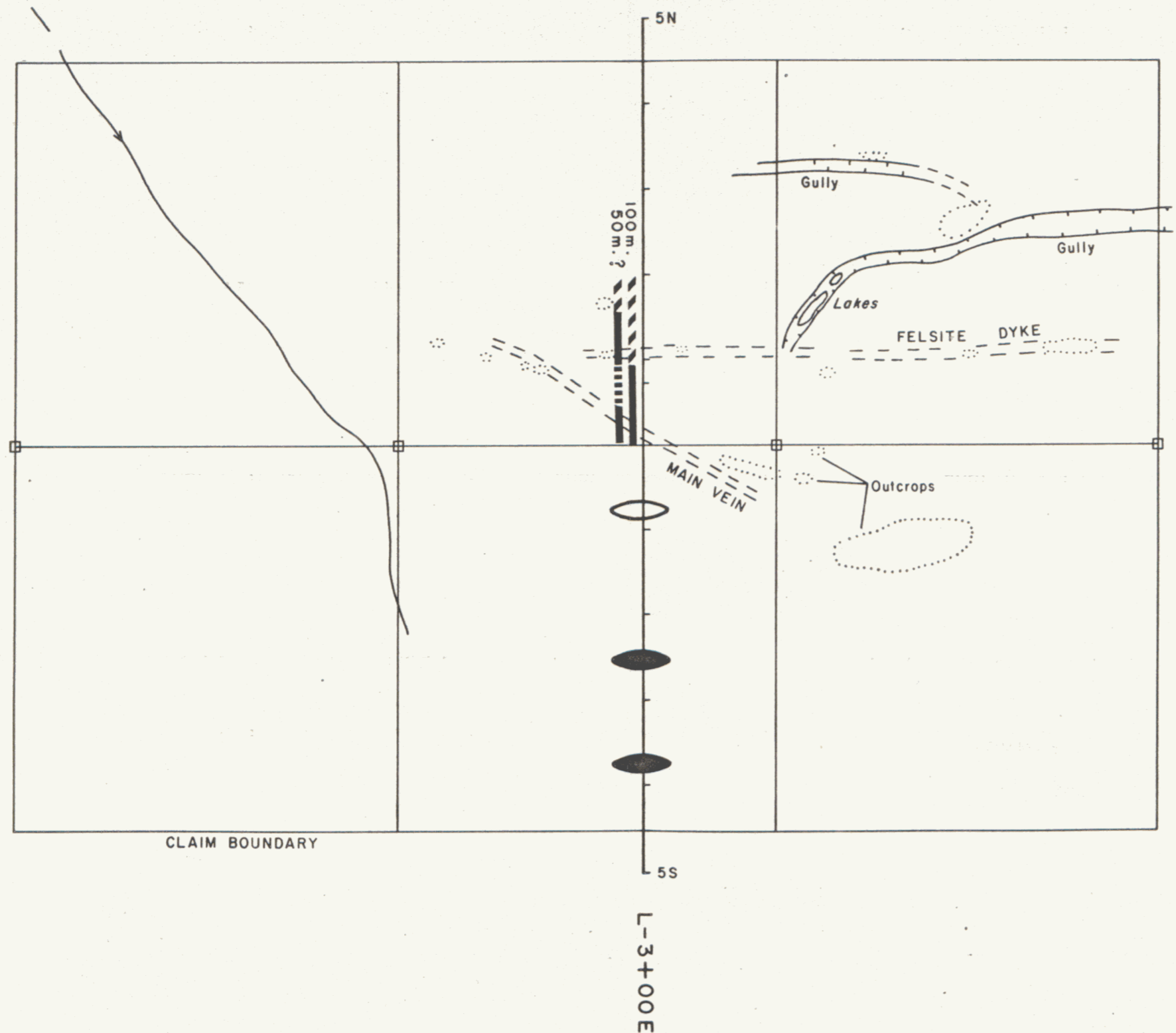
CORDILLERAN ENGINEERING LTD.

LOGAN CLAIM GROUP, WATSON LAKE M.D.

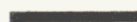


YUKON TERRITORY

SCALE

1:6000






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: 

PHOENIX GEOPHYSICS LIMITED

DATE: JAN 09/80

PHOENIX GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY

PLAN MAP

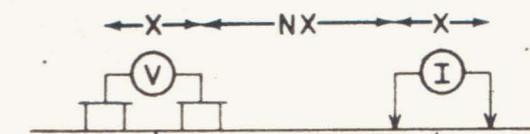
CORDILLERAN ENGINEERING LTD.

LOGAN CLAIM GROUP, WATSON LAKE M.D.

YUKON TERRITORY

LINE NO. - 3+00E

ELECTRODE CONFIGURATION



PLOTTING POINT \rightarrow X = 100 m.

SURFACE PROJECTION OF ANOMALOUS ZONE

DEFINITE
 PROBABLE
 POSSIBLE

FREQUENCIES 0.3-5.0 HZ.

DATE SURVEYED OCT. 1979

APPROVED



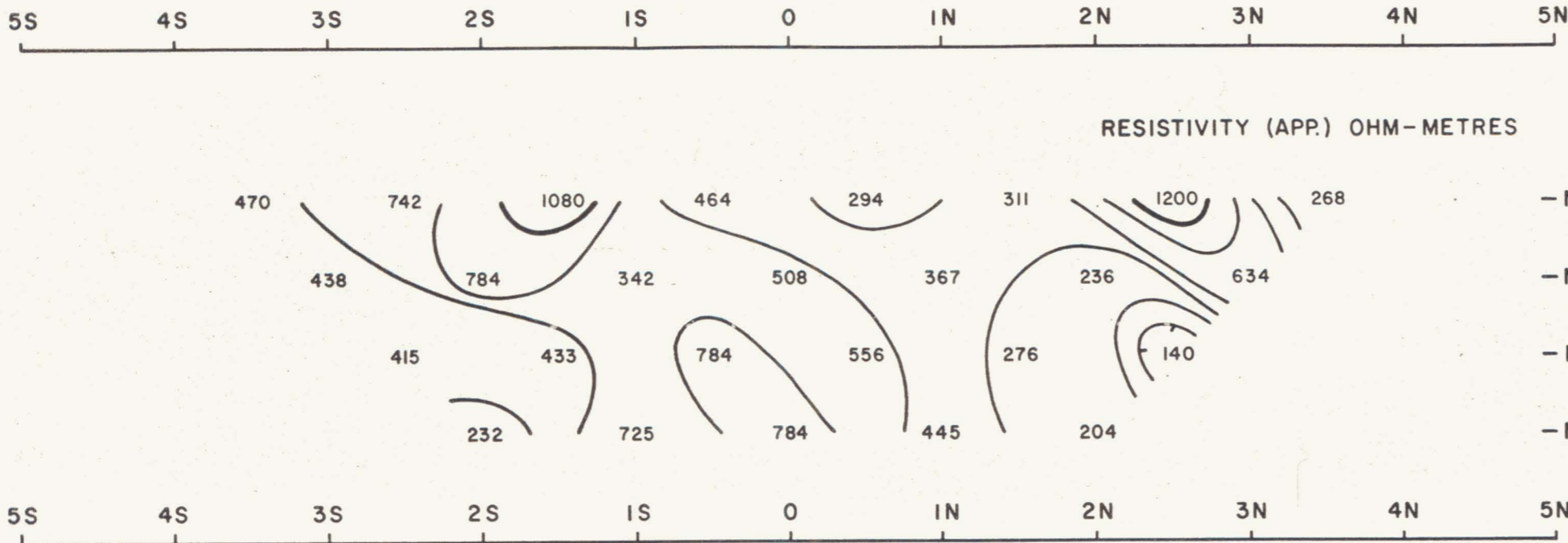
DATE

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

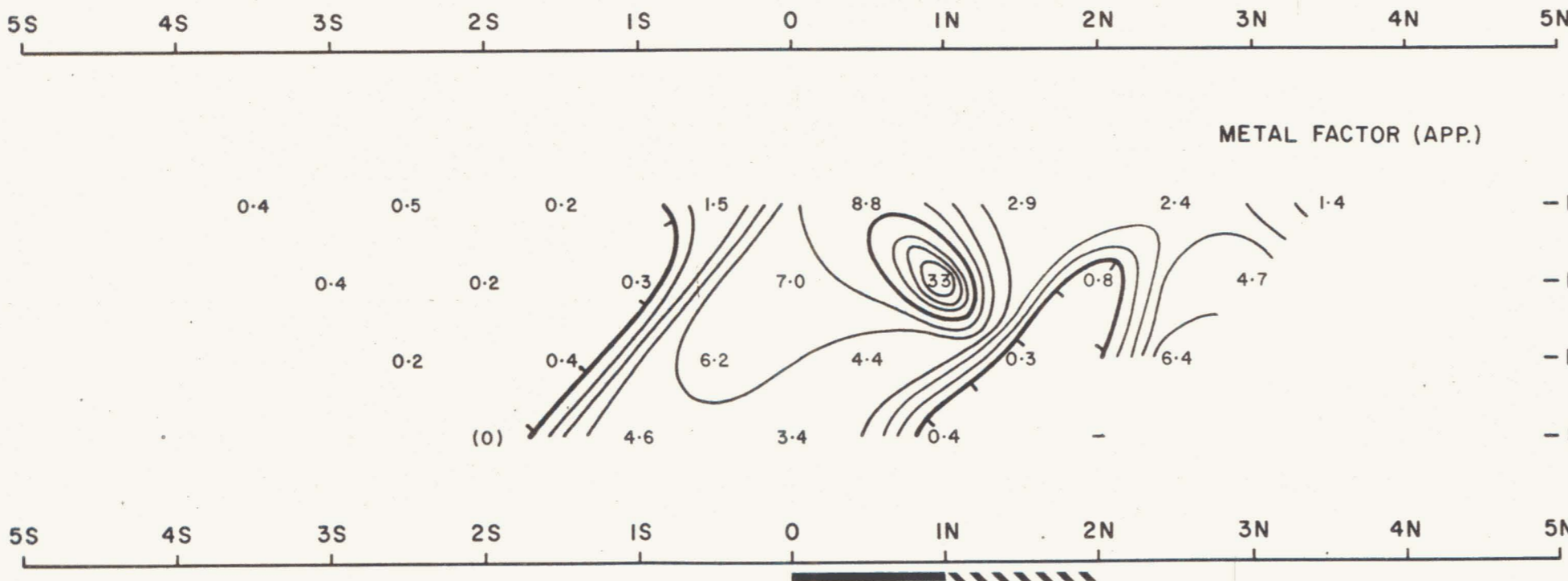
PHOENIX GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY

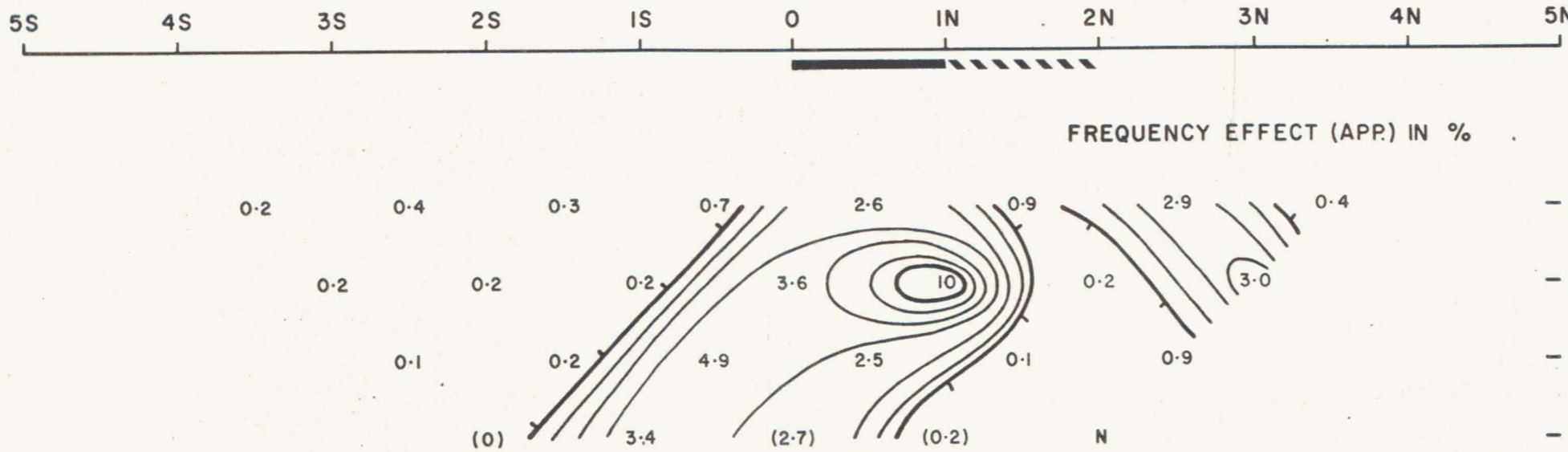
RESISTIVITY (APP.) OHM-METRES



METAL FACTOR (APP.)



FREQUENCY EFFECT (APP.) IN %



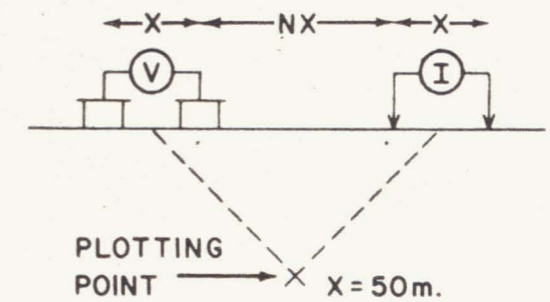
CORDILLERAN ENGINEERING LTD.

LOGAN CLAIM GROUP, WATSON LAKE M.D.

YUKON TERRITORY

LINE NO.- 3+00E

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONE

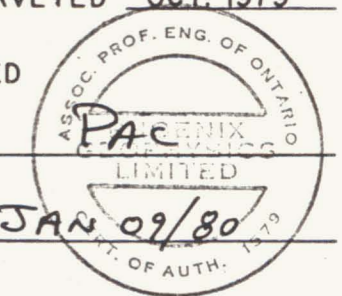
DEFINITE **—————**
 PROBABLE **—————**
 POSSIBLE **—————**

FREQUENCIES 0.3-5.0 HZ.

DATE SURVEYED OCT. 1979

APPROVED

DATE JAN 09/80



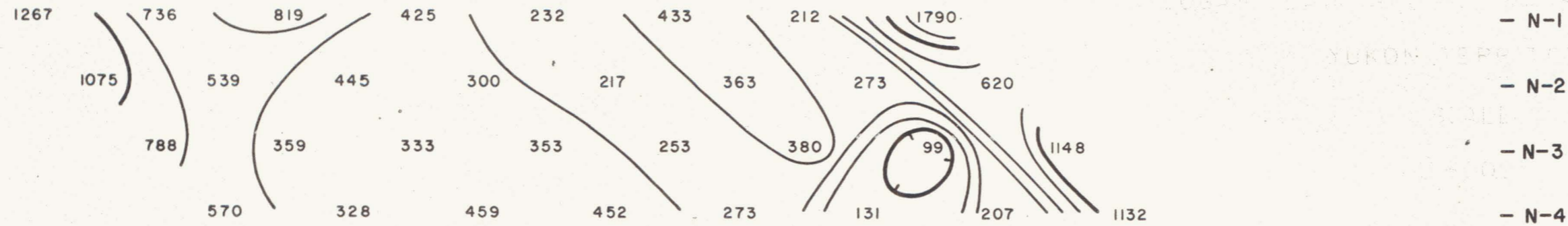
NOTE - CONTOURS AT LOGARITHMIC INTERVALS 1, -1.5, -2, -3, -5, -7.5, -10

PHOENIX GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY SURVEY

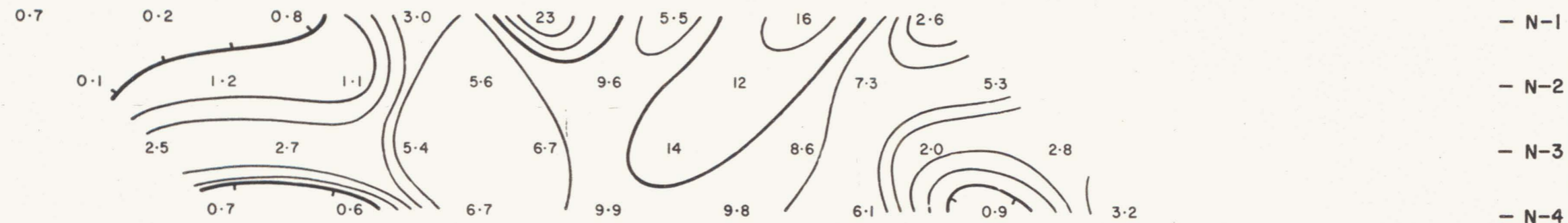
250S 200S 150S 100S 50S 0 50N 100N 150N 200N 250N 300N 350N 400N

RESISTIVITY (APP) OHM-METRES



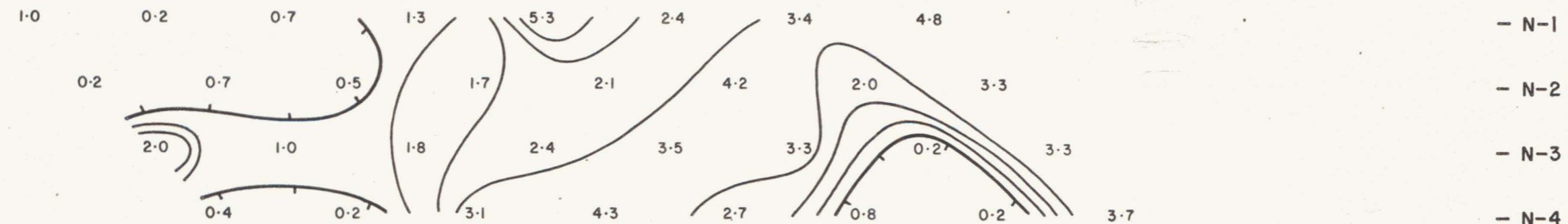
250S 200S 150S 100S 50S 0 50N 100N 150N 200N 250N 300N 350N 400N

METAL FACTOR (APP)



250S 200S 150S 100S 50S 0 50N 100N 150N 200N 250N 300N 350N 400N

FREQUENCY EFFECT (APP) IN %



CORDILLERAN ENGINEERING LTD.

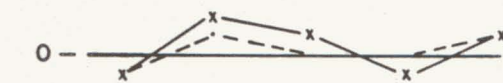
LOGAN CLAIM GROUP, WATSON LAKE M.D.

YUKON TERRITORY

LINE NO.- 3+00E

DIP ANGLE




10°- SOUTH OR WEST



10°- NORTH OR EAST

DIP ANGLE PROFILE - 1" = 10°

CONDUCTOR SYMBOLS

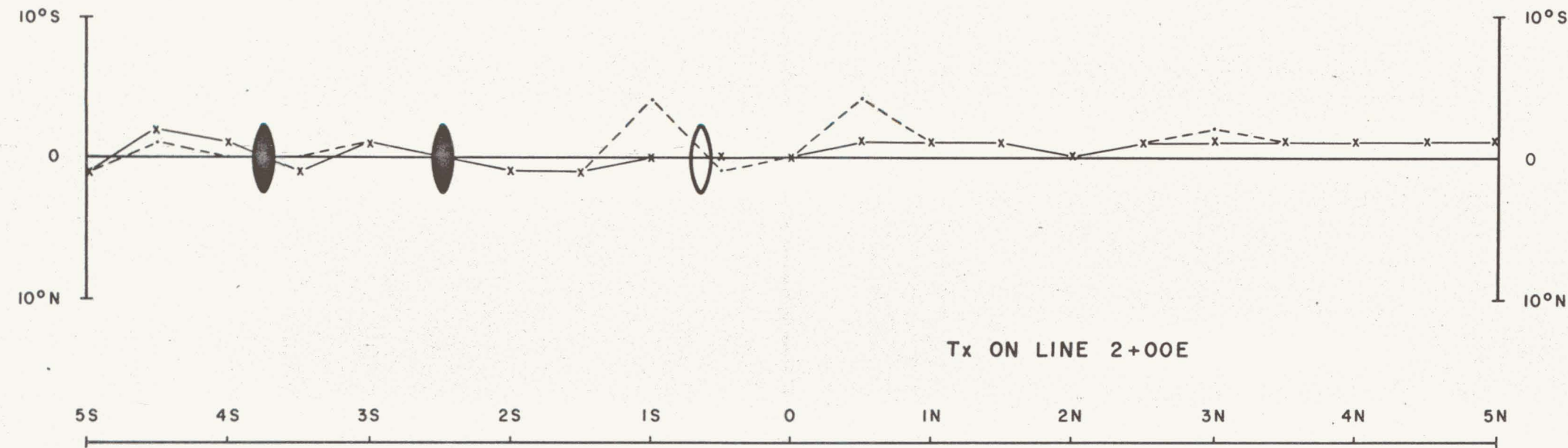
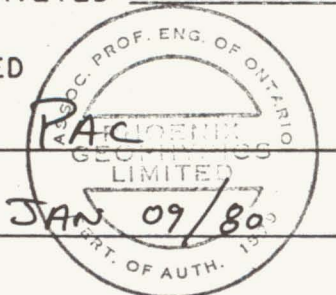
-  DEFINITE
-  PROBABLE
-  POSSIBLE

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

DATE SURVEYED OCT. 1979

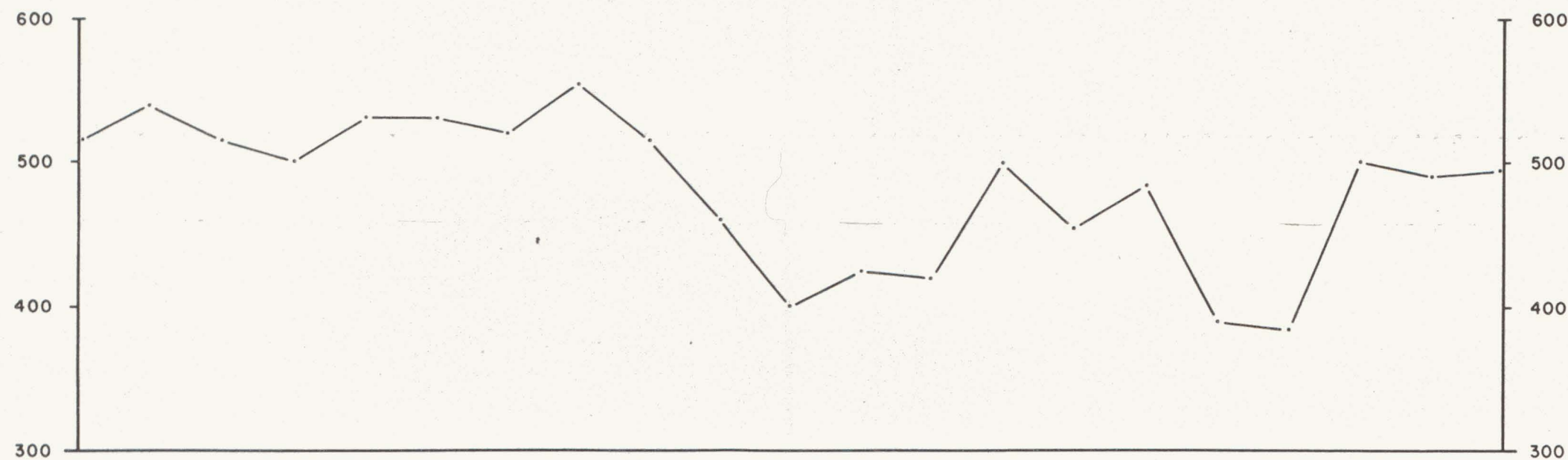
APPROVED

DATE JAN 09/80



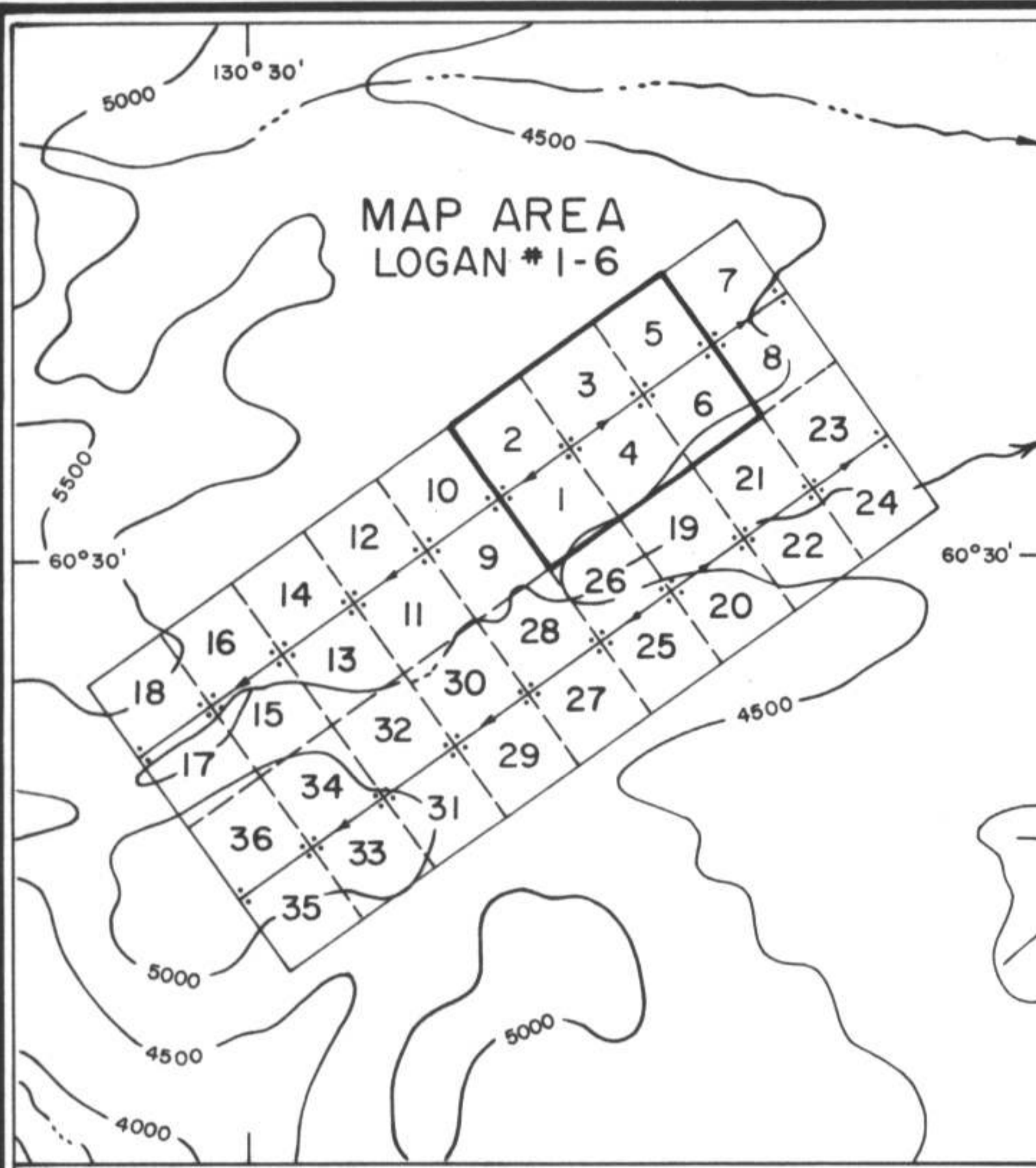
Tx ON LINE 2+00E

GAMMAS

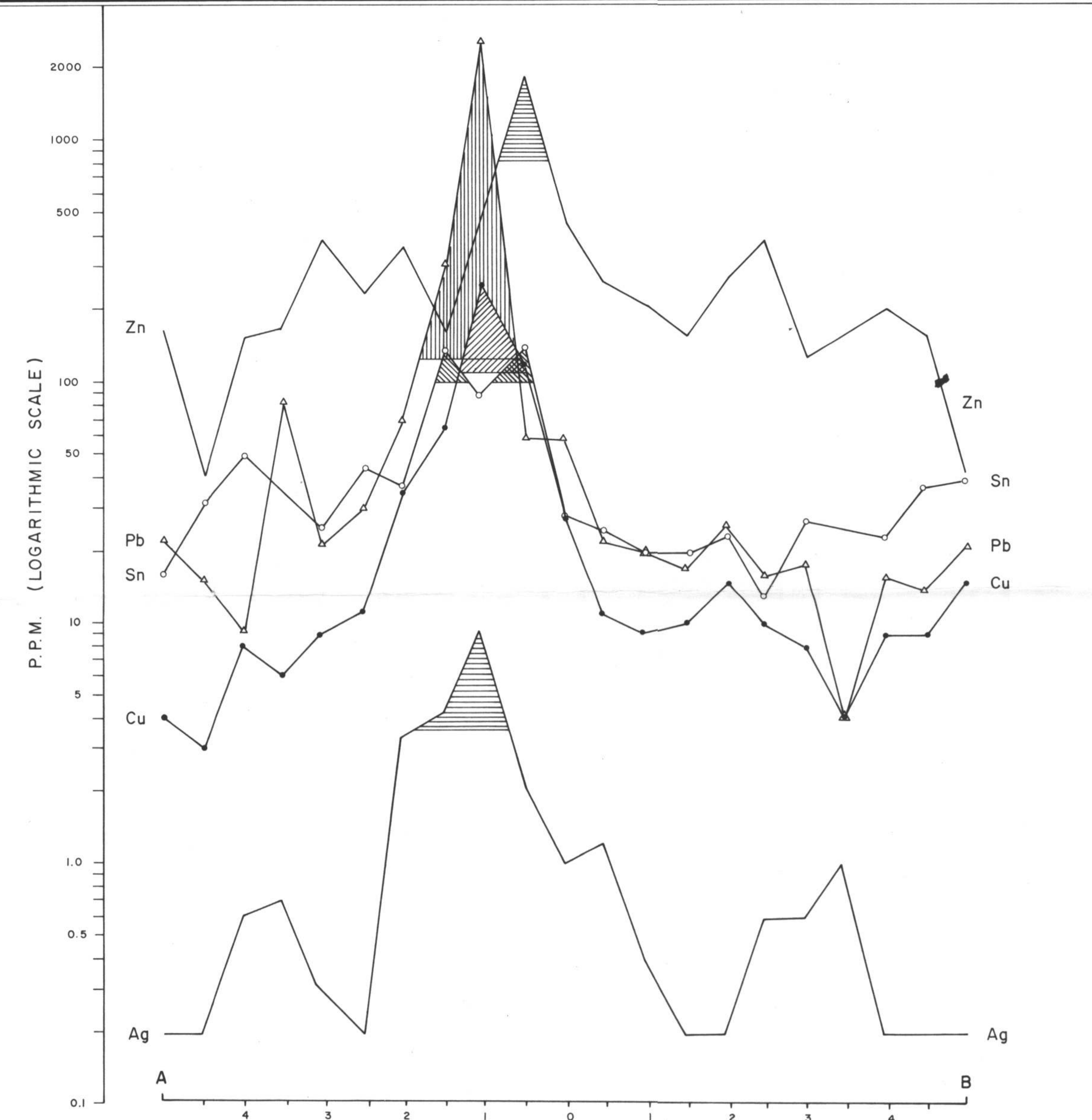


PHOENIX GEOPHYSICS LIMITED

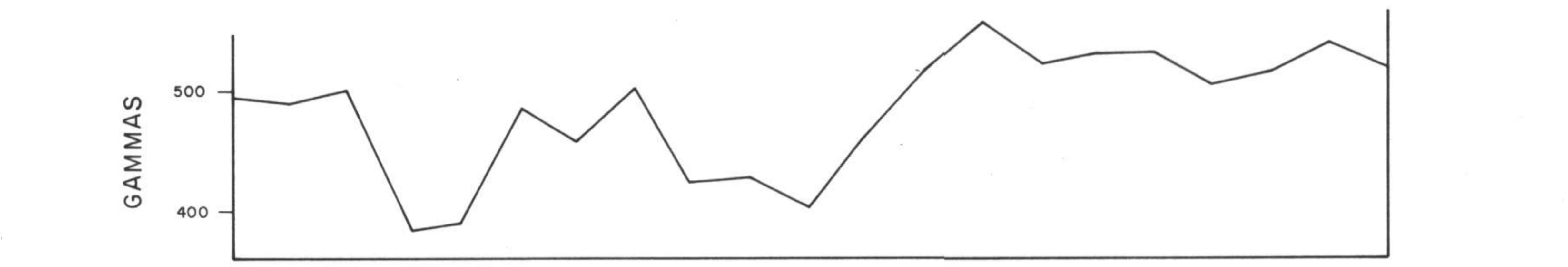
ELECTROMAGNETIC AND MAGNETOMETER SURVEY



GEOCHEMICAL PROFILES
SHADED AREAS ANOMALOUS

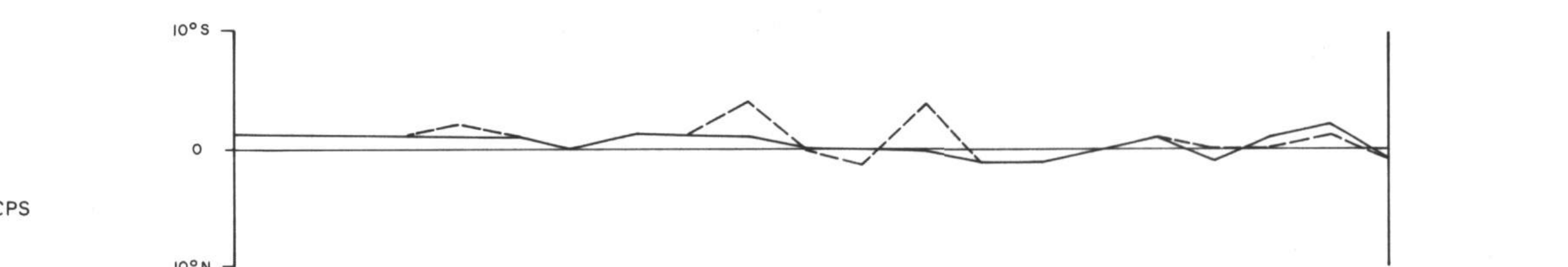


MAGNETIC PROFILE



ELECTROMAGNETIC PROFILE

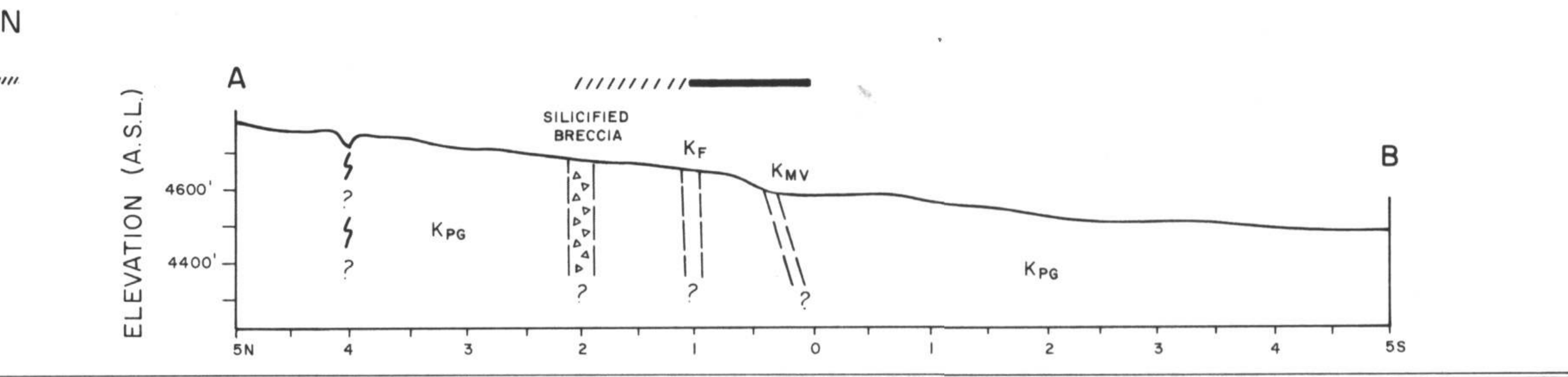
--- 2400 CPS VERTICAL LOOP --- 600 CPS VERTICAL LOOP



INDUCED POLARIZATION ANOMALIES

DEFINITE — PROBABLE

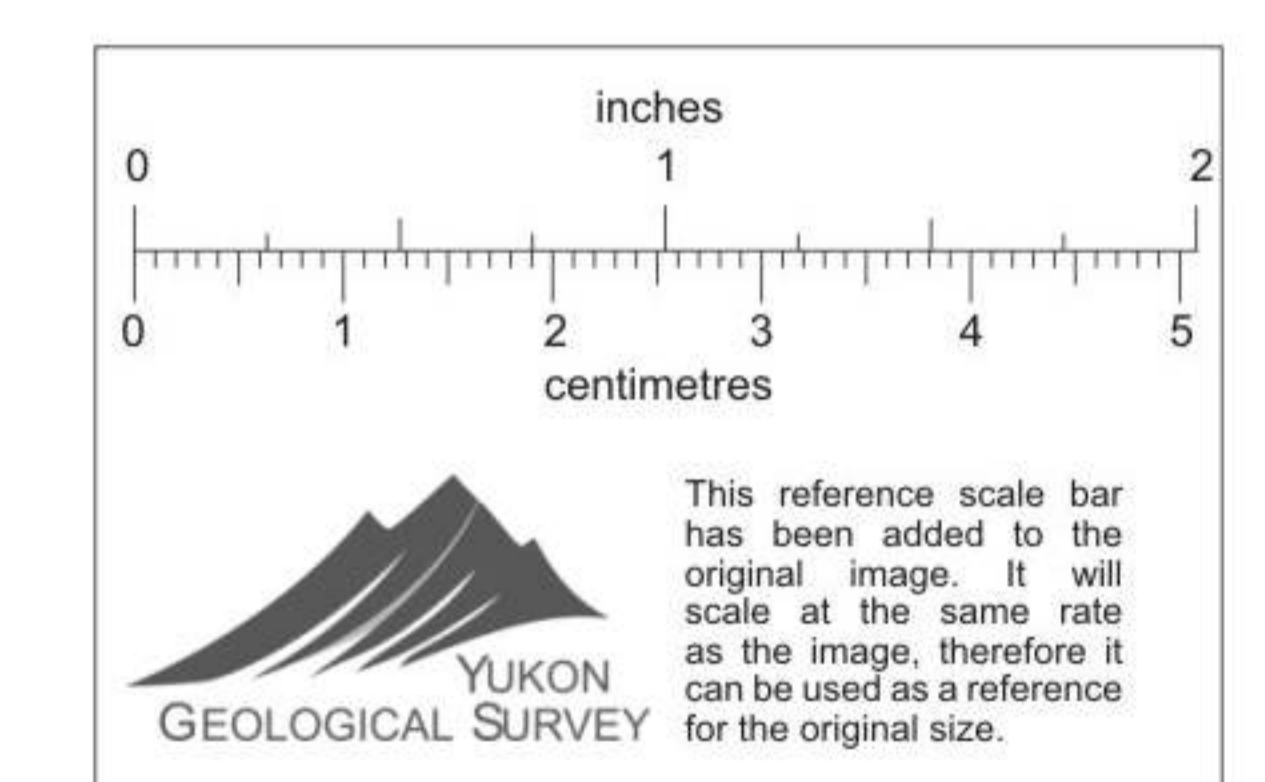
GEOLOGICAL CROSS - SECTION



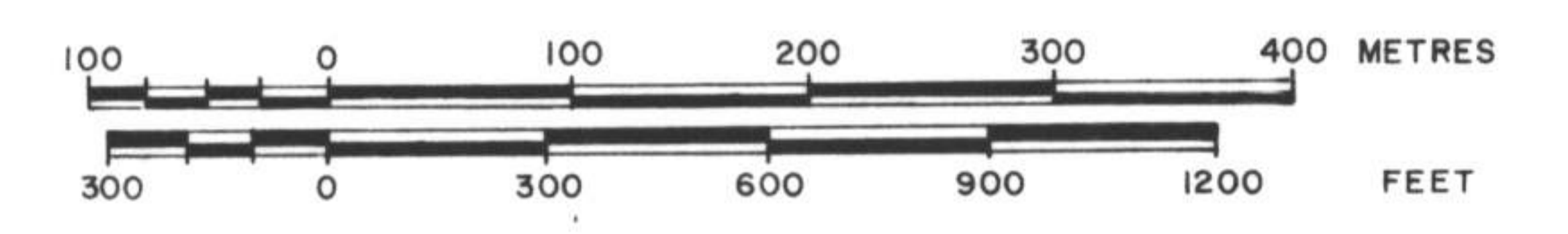
L E G E N D

- CRETACEOUS**
- KMV** MAIN VEIN: AN EAST-WEST TRENDING SPHALERITE-CHALCOPYRITE-PYRITE-ARSENOPYRITE-BEARING QUARTZ VEIN OCCURS IN THE CENTRAL PART OF THE #1-6 CLAIMS. AN EXPOSURE OF THE VEIN 1.5 METRES IN WIDTH, STEEPLY DIPPING TO THE NORTH, OCCURS IN A LINEAR TOPOGRAPHIC DEPRESSION UP TO 20 METRES WIDE. CHIP SAMPLES ACROSS THE VEIN ASSAYED 5.29% Zn, 0.58% Cu, 1.79 OZ/TON Ag, TRACE Pb, W, Sn OVER 1.5 m.
- KF** FELSITE: PALE BROWNISH GREY, FINE-GRAINED DYKE. SUBHEDRAL QUARTZ PHENOCRYSTS (2-3mm.) ARE RARE, EXPOSURES ARE SHATTERED, SURFACES BEING COATED WITH LIMONITE. QUARTZ VEINLETS ARE COMMON AND CONTAIN ARSENOPYRITE AND SPHALERITE. DYKE IS ESTIMATED TO BE UP TO 12 METRES WIDE.
- KPG** PEGMATITIC GRANODIORITE: MEDIUM-GRAINED BIOTITE-MUSCOVITE GRANODIORITE. COARSE PEGMATITIC LENSES (15cm TO 60cm IN LENGTH), WITH GRAPHIC TEXTURES, ARE COMMON THROUGHOUT THIS INTRUSIVE. PLAGIOCLASE AND BIOTITE ARE INTENSLY ALTERED TO SERICITE NEAR QUARTZ VEINS.

- LITHOLOGIC CONTACT (INFERRED)
- ATTITUDE OF JOINTS
- ATTITUDE OF QUARTZ VEINS
- MINERALIZATION: FLOAT, IN PLACE
- GOSSANOUS QUARTZ VEIN FLOAT
VR-87, 19526 ROCK CHIP, ASSAY NUMBERS
- TOPOGRAPHIC DEPRESSION
- APPROXIMATE OUTCROP DISTRIBUTION
- GEOLOGICAL, GEOCHEMICAL AND GEOPHYSICAL PROFILE LINE



LOGAN JOINT VENTURE
GEOLOGY
LOGAN #1-6 CLAIMS
WOLF LAKE MAP SHEET, N.T.S. I05B-8,9
WATSON LAKE MINING DISTRICT, YUKON TERRITORY

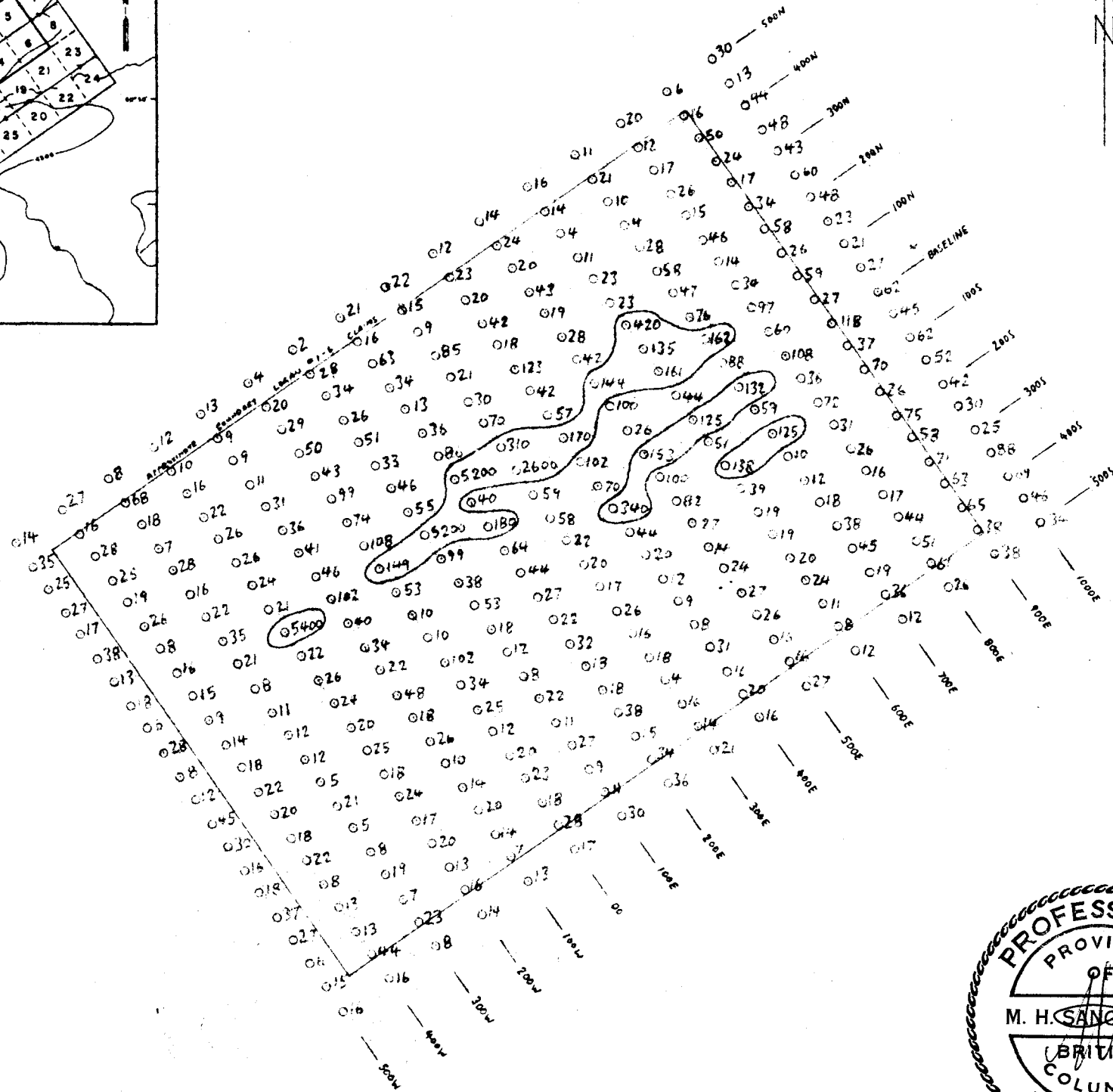
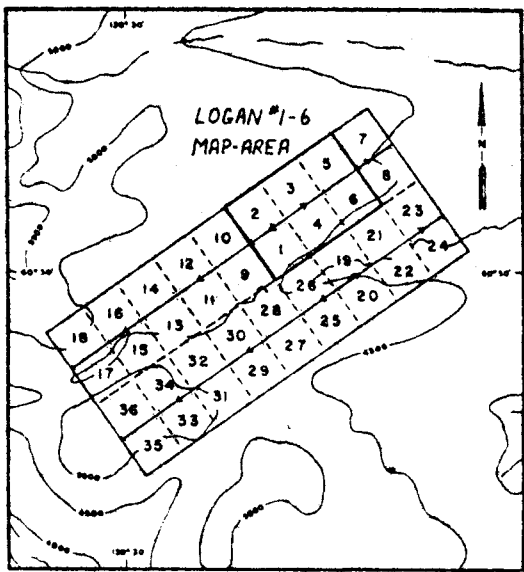


BY
CORDILLERAN ENGINEERING
1418 - 355 BURNARD STREET
VANCOUVER, B.C. V6C 2G8

NOVEMBER 1979

PLATE I

090571



EXPLANATION:

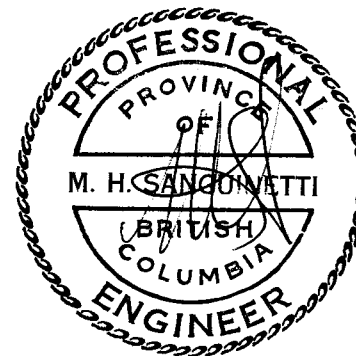
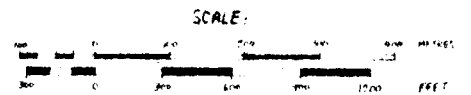
○ SOIL SAMPLE, MATERIAL 50m

LEAD CONTENT OF SOILS (PPM)

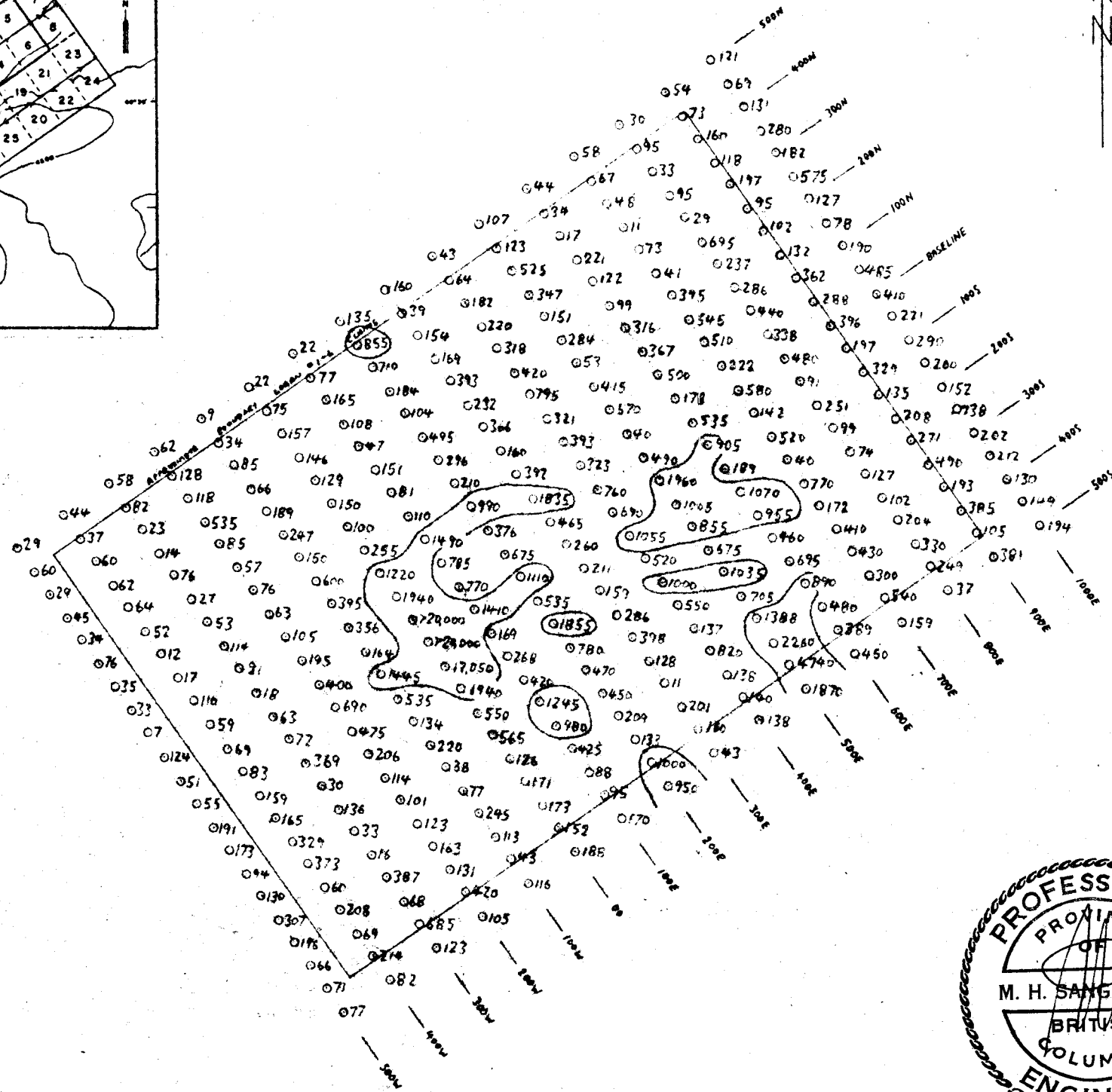
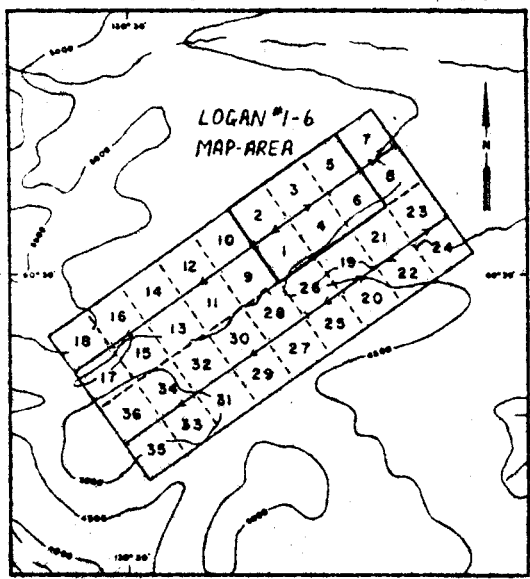
- BACKGROUND 0-60
 - POSSIBLY ANOMALOUS 61-124
 - ANOMALOUS 125+
- CONTOURS ENCLOSE ANOMALOUS VALUES.

NOTE: MAGNETIC DECLINATION (1975) 31°30' EAST

LOGAN JOINT VENTURE
 LEAD GEOCHEMISTRY
 LOGAN #1-6 CLAIMS
 GOLF LAKE MAP-SHEET, NTS 1050-9-B
 WATSON LAKE MINING DISTRICT, YUKON TERRITORY.



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 VANCOUVER, B.C. V6C 2G8



EXPLANATION:

○ SOIL SAMPLE, INTERVAL 50M

ZINC CONTENT OF SOILS (PPM)

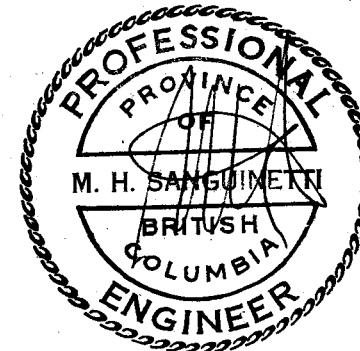
- BACKGROUND 0-400
- POSSIBLY ANOMALOUS 401-849
- ANOMALOUS 850+

CONTOURS ENCLOSE ANOMALOUS VALUES

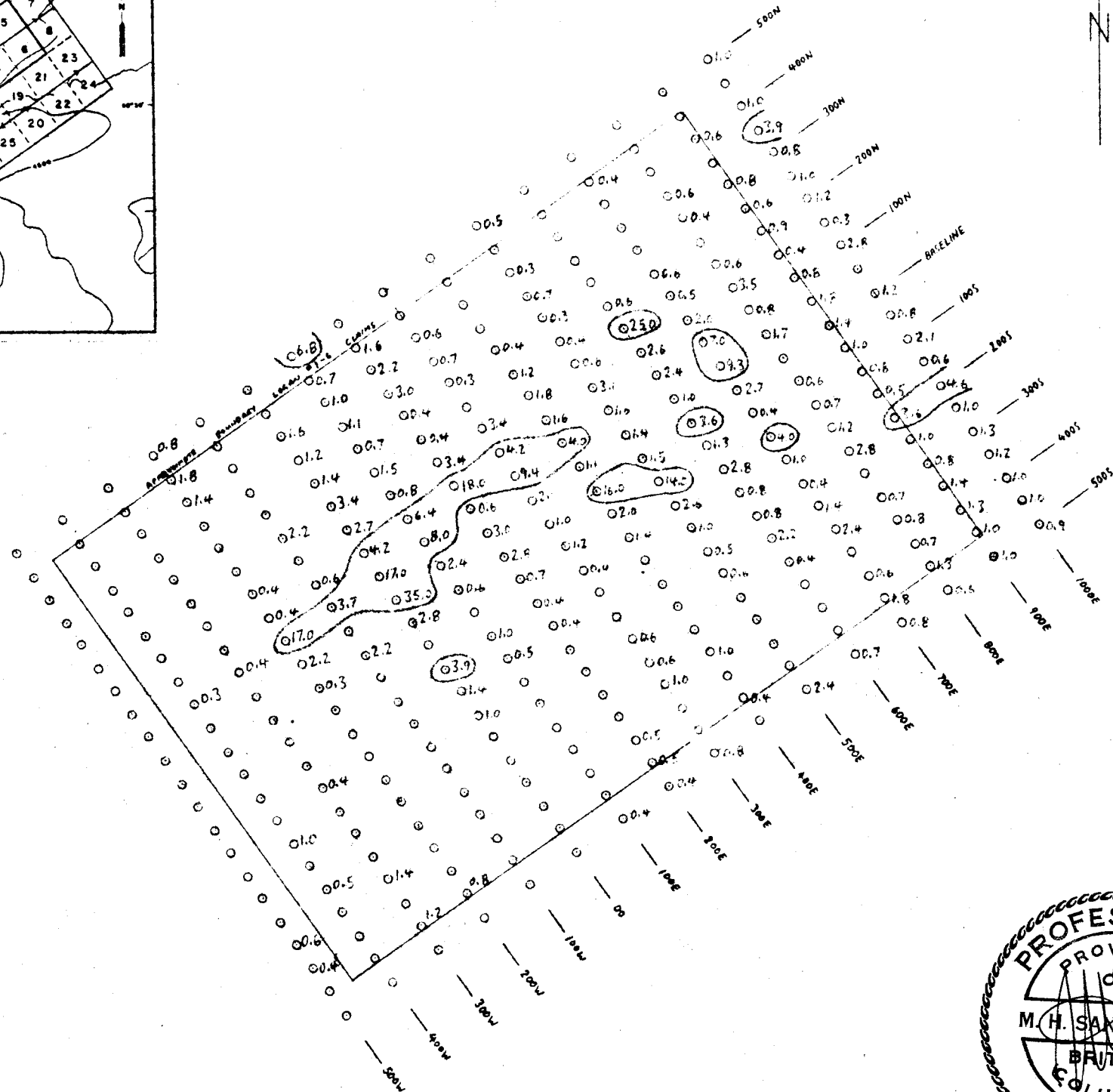
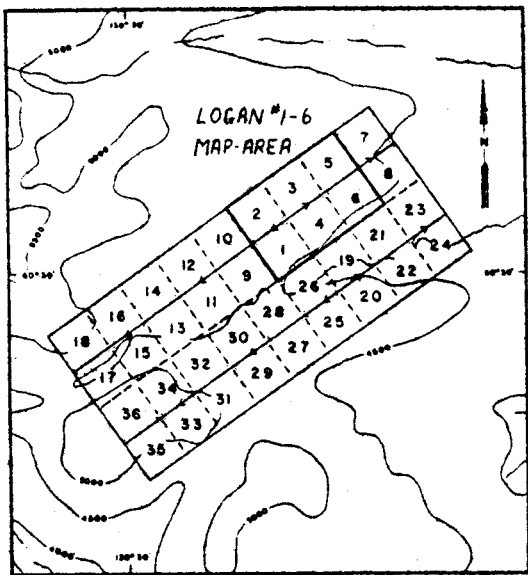
NOTE: MAGNETIC DECLINATION (1978) 31°30' EAST

LOGAN JOINT VENTURE
 ZINC GEOCHEMISTRY
 LOGAN #1-6 CLAIMS
 WOLF LAKE MAP-SHEET, NTS 1058-9,8
 WATSON LAKE MINING DISTRICT, YUKON TERRITORY.

SCALE:



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



EXPLANATION:

○ SOIL SAMPLE, INTERVAL 50M

SILVER CONTENT OF SOILS (PPM)

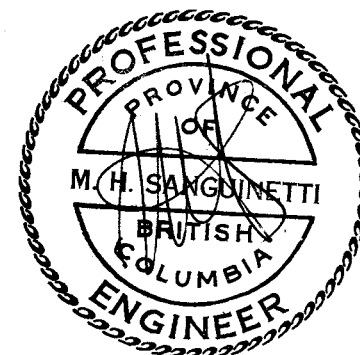
- BACKGROUND 0-1.5
- POSSIBLY ANOMALOUS 1.6-3.5
- ANOMALOUS 3.6+

VALUES ≤ 0.2 ppm NOT PLOTTED.
 CONTOURS ENCLOSE ANOMALOUS VALUES.

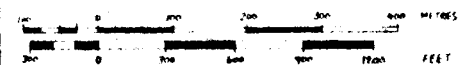
NOTE: MAGNETIC DECLINATION (1975) 31°30' EAST

LOGAN JOINT VENTURE
 SILVER GEOCHEMISTRY
 LOGAN #1-6 CLAIMS

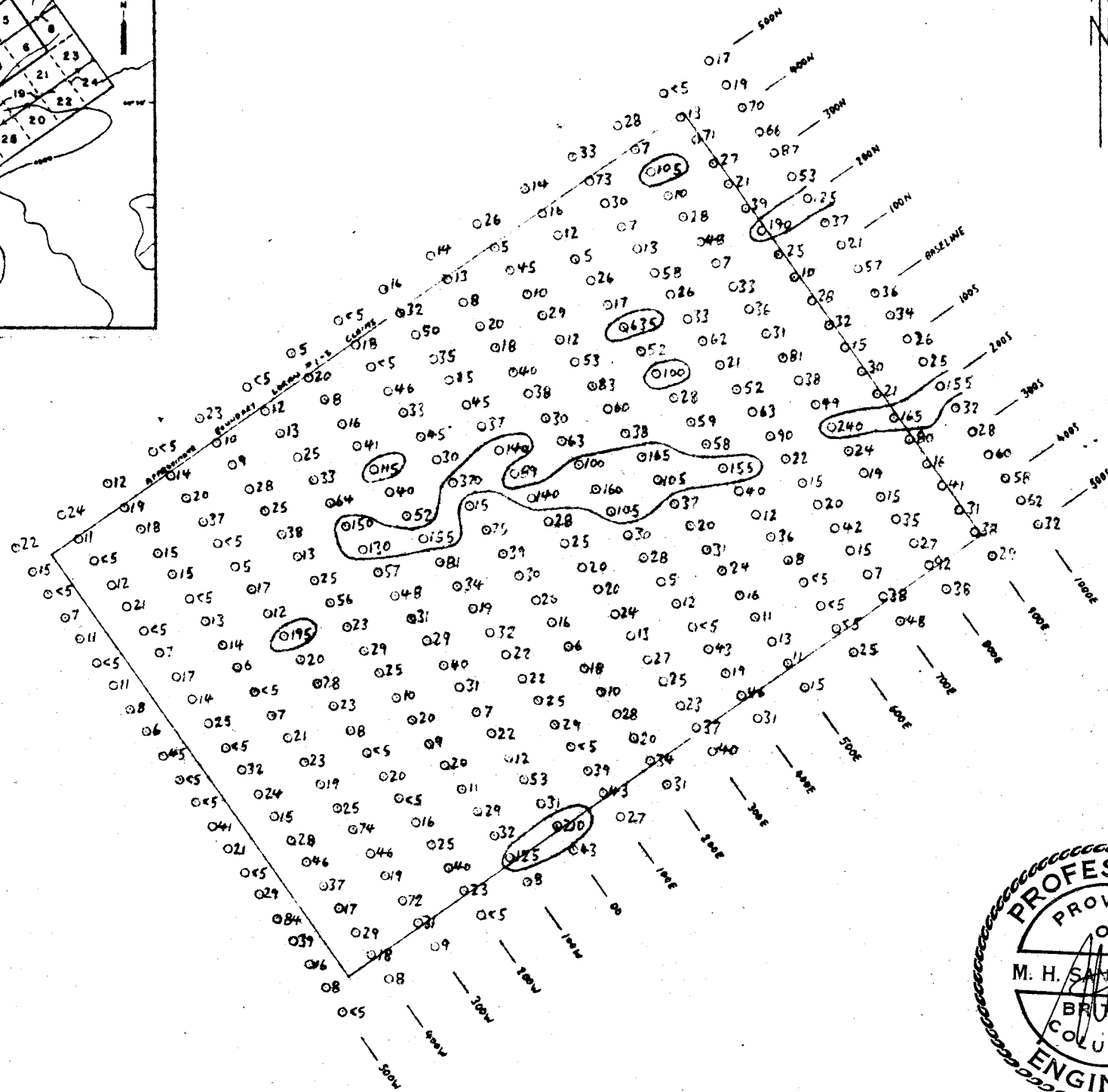
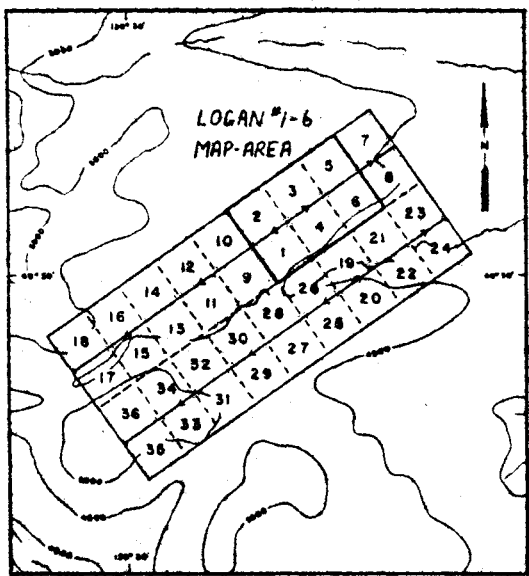
WOLF LAKE MAP-SHEET, NTS 1058-9,8
 WATSON LAKE MINING DISTRICT, YUKON TERRITORY.



SCALE:



CORILLERAN ENGINEERING
 1418 - 365 BARRARD STREET
 VANCOUVER, B.C. V6C 2A8



EXPLANATION:

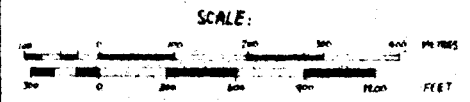
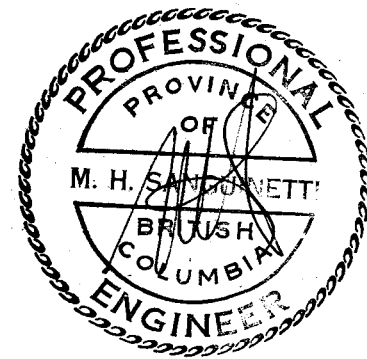
○ SOIL SAMPLE, INTERVAL 50M

TIN CONTENT OF SOILS (PPM)

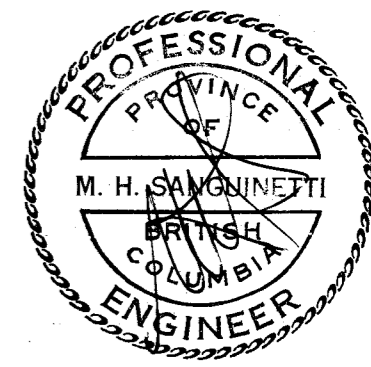
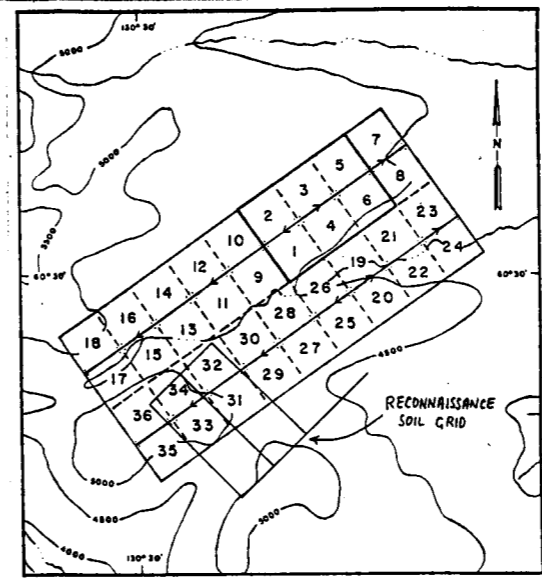
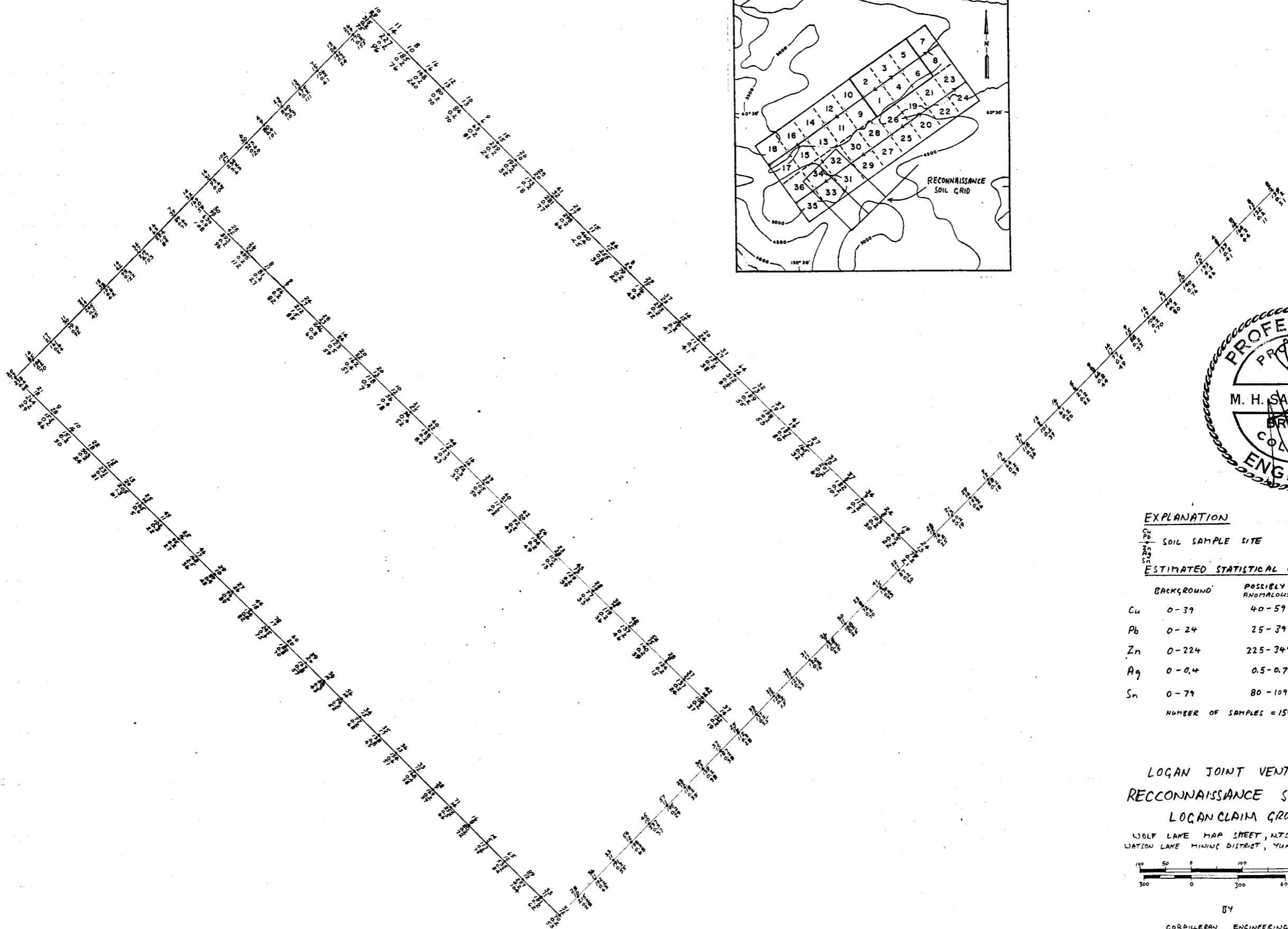
- BACKGROUND 0-60
 - POSSIBLY ANOMALOUS 61-99
 - ANOMALOUS 100+
- CONTOURS ENCLOSE ANOMALOUS VALUES.

NOTE: MAGNETIC DECLINATION (1975) 31°30' EAST

LOGAN JOINT VENTURE
 TIN GEOCHEMISTRY
 LOGAN #1-6 CLAIMS
 WOLF LAKE MAP-SHEET, NTS 1058-9,8
 WATSON LAKE MINING DISTRICT, YUKON TERRITORY.



CORLEMAN ENGINEERING
 1419 - 355 BARRARD STREET
 VANCOUVER, B.C. V6C 2G8



EXPLANATION

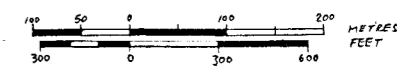
SOIL SAMPLE SITE

ESTIMATED STATISTICAL CATEGORIES (PPM)

	BACKGROUND	POSSIBLY ANOMALOUS	ANOMALOUS
Cu	0-39	40-59	60+
Pb	0-24	25-39	40+
Zn	0-224	225-349	350+
Ag	0-0.4	0.5-0.7	0.8+
Sn	0-79	80-109	110+

NUMBER OF SAMPLES = 150

LOGAN JOINT VENTURE
 RECONNAISSANCE SOIL GRID
 LOGAN CLAIM GROUP
 WOLF LAKE MAP SHEET, N.T. 105B-7, 8, 9
 WATSON LAKE MINING DISTRICT, YUKON TERRITORY



BY
 CORDILLEAN ENGINEERING
 1418-155 BARRARD STREET
 VANCOUVER, B.C. V6C 2G8

FIGURE 15