'79-#409-# 7556

WEIR MOUNTAIN REPORT NUMBER 5
GEOLOGY, GEOPHYSICS AND GEOCHEMISTRY

CLAIMS CY 1 - 8, CY 9, ENG 1 - 3
RECORD NUMBERS 224 to 231, 479, 221 to 223

WEIR MOUNTAIN AREA
59°39'N, 132°59'W
NTS 104N 10W
ATLIN MINING DISTRICT

Owner:	Noranda Mines Limited
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Supervisor:	W. Mercer, Ph.D.
Date:	August 1979

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
7556

ABSTRACT

Noranda Mines Limited (Mattagami Lake Exploration Division) owns twelve claims (195 units) in the Weir Mountain area, 41 km. northeast of Atlin, northwestern British Columbia. This report discusses the work carried out on the CY 2, 3, 4, 6, 7, 8, 9 and ENG 1 to 3 claims. These claims cover a series of uranium, lead and zinc occurrences.

A magnetometer survey was used to trace a known sphalerite bearing vein over 500 m. or the CY 6 and CY 7 claims. Numerous galena and sphalerite rich boulders were found in a streambed on the ENG 2 claim and traced to their cutoff point. These are thought to be related to a large quartz vein and future work will be aimed at delineating this vein.

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CHAPTER ONE - INTRODUCTION

1-1 PROPERTY AND OWNERSHIP

Noranda Mines Limited (Mattagami Lake Exploration Division) is the owner of mineral claims CY 2 to CY 4, CY 6 to CY 9 and ENG 1 to ENG 3, record numbers 224 to 231, 479, 221 to 223. These claims were staked for the company by F. Morra and W. Howard and were recorded in Atlin, British Columbia, on the 26th of July, 1977.

The claims cover 169 units or about 4150 hectares.

1-2 LOCATION AND ACCESS (Figure 1)

The claims are located in the Weir Mountain area, northern British Columbia, NTS 104N (Figures 1 and 2). The property lies 41 km. northeast of the community of Atlin and its geographical co-ordinates are $59^{o}39'$N and $132^{o}59'$W.

There are no roads to the property. Access is via helicopter from Atlin. A gravel road connects Atlin with the west shore of Surprise Lake, 22 km. west of Weir Mountain.

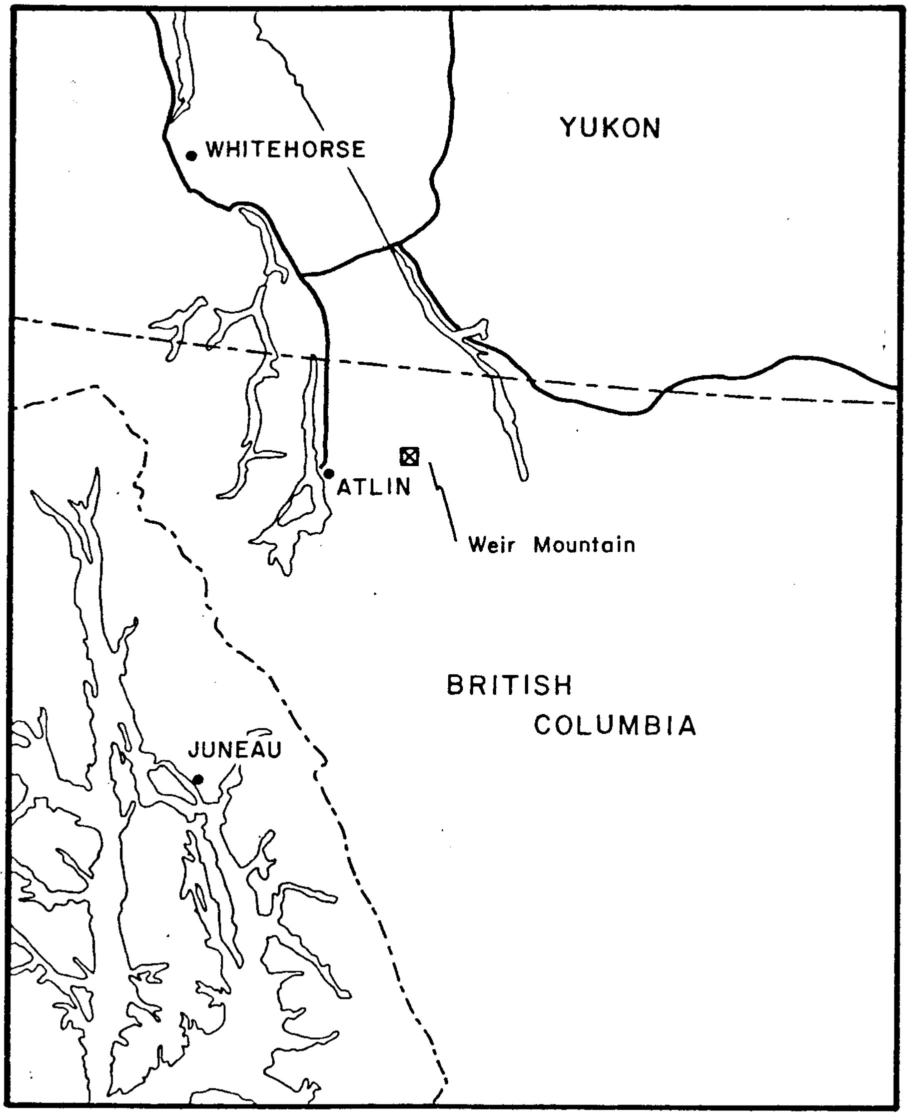
1-3 PHYSIOGRAPHY

The area is mountainous, with gently sloping, vegetation covered, southeast flanks and precipitous cliffs on the northwest flanks. Recent glaciation has left wide U-shaped valleys as well as cirques and hanging valleys. The elevation is 1,000 to over 2,000 m. above sea level.

Vegetation is dense, short, willow bush up to 1,300 m. Above this elevation, there is a very immature alpine-type of soil, 10 to 50 cm. thick. Vegetation here constitutes grass and lichens. Valley bottoms are covered by extensive fluvial and moraine deposits.

Figure I

LOCATION MAP
CY & ENG CLAIMS, B.C.
WEIR MOUNTAIN AREA



1-4 CLIMATE

The CY and ENG claims are almost completely free of snow from early July to the end of August although many cornices persist for much of the summer.

The area is characterized by strong winds, generally from the southwest. Summer temperatures average +4^{o}C and snow storms are common during the summer months, especially June and August.

1-5 HISTORY (Figure 2) (Map 1)

During July 1977, eleven claims (187 units) were staked in the Weir Mountain area for Mattagami Lake Mines Ltd. to cover a radioactive area discovered by a regional helicopter-borne radiometric survey in 1977. One additional claim (CY 9, 8 units) was staked in 1978.

Geochemical sampling, radon detection in water and soil and radiometric surveys were carried out to cover most of the CY claims in 1977 (Weir Mountain Report No. 2, F. Morra).

Detailed geochemical and geophysical surveys (magnetomer, RADEM, VLF, I.P., Radiometric) were completed during the summer of 1978, predominantly on the CY 3, CY 4 and CY 6 claims. The results of this work are presented in Weir Mountain Reports, Numbers 3 and 4, the CEM Report, Weir Mountain (T. Gledhill and D. Sutherland, 1978) and the I.P. Report (Phoenix Geophysics).

This work helped delineate the source of some of the geochemical anomalies, namely 2 uranium occurrences and several sphalerite and magnetite occurrences.

During the first part of the 1979 program (June and July) work was concentrated on the CY 3, CY 6 to CY 9, and ENG 1 to ENG 3 claims.

This included:

1. geological mapping and prospecting,
2. magnetometer survey,
3. radon in soil survey,
4. ground radiometric surveys.

Personnel during the 1979 field season consisted of:

J. Biczok -	party chief
P. Wagner -	senior assistant
P. Lhotka -	junior assistant
C. Stewart -	junior assistant.

A base camp was established on Weir Mountain at the headwaters of Cariboo Creek and fly camps were set up on ENG 1, 2 and 3, CY 3 and CY 8 (Map 1).

1-6 PURPOSE OF THE PROGRAM

The main purpose of the work carried out in June and July 1979 was to geologically map and prospect thoroughly the claims. This was aimed at delineating the known mineral occurrences and discovering new ones as well as formulating theories regarding the origin of these unique occurrences. Hopefully, this will aid in future exploration.

The magnetometer survey was designed to trace the length of 2 sphalerite-magnetite rich veins. The survey was completed over a grid 500 m. by 800 m., mainly within the CY 7 claim.

CHAPTER TWO - GEOLOGY (Map 2)

The CY 1 to CY 8 and ENG 1 to ENG 3 claims lie almost entirely within the Surprise Lake batholith, a Cretaceous lobe of the Coast Range batholith. The Surprise Lake batholith consists predominantly of various phases of alaskite and granite. The southernmost claims, ENG 1 and 2, cover the contact of the batholith with the Permian Cache Creek group, which in this region consists of cherts, chert breccias, quartzites and argillites. These have been recrystallized to the hornfels facies within the claim area.

To date, a total of 11 different intrusive phases have been distinguished within the claims. Due to the paucity and blocky nature of outcrops, age relationships are not always certain. From assumed youngest to oldest, the phases are as follows:

Phase 1: Fine grained, equigranular aplite with no mafic minerals.

Phase 2: Fine grained, equigranular aplite with 5-7% biotite.

Phase 3: Potassium-feldspar-quartz porphyritic aplite. Contains 15% quartz phenocrysts, 2-6 mm. plus 5% potassium-feldspar phenocrysts up to 1.5 cm. in a fine grained groundmass of potassium-feldspar greater than quartz, plus minor biotite.

Phase 4: Potassium-feldspar-quartz porphyritic alaskite/granite. Contains 15-20% potassium-feldspar phenocrysts 1-4 cm. long; 10-15% quartz phenocrysts up to 3 mm., locally seriate porphyritic.
The groundmass is medium grained, approx. 2 mm., saccharoidal, with potassium-feldspar greater than quartz and 3-4% biotite, 1-2 mm.

Phase 5: Coarse grained, brown, friable dike on ENG 2. Composition so far undetermined, possibly dioritic.

Phase 6: Medium grained, equigranular biotite alaskite/granite. Occurs only as a dike cutting Phase 8.

Phase 7: Medium to coarse grained, equigranular biotite granite with 5-7% biotite.

Phase 8: Coarse grained, equigranular to seriate porphyritic, biotite granite. Contains 5% biotite, 3-6 mm.; 20-30% quartz up to 5 mm., with the remainder being predominantly potassium-feldspar, 1-2 cm. long.

Phase 9: Coarse grained, pink, equigranular to porphyritic quartz monzonite/granite. Contains 10% medium grained quartz, 15-20% coarse grained plagioclase, frequently mantling potassium-feldspar, 0-10% acicular alkaline amphibole (?) in radiating aggregates up to 1 cm. across, with the remainder being coarse grained, pink potassium-feldspar. Possibly represents an alteration zone.

Phase 10: Strongly porphyritic alaskite, medium grained groundmass. Contains 30-40% potassium-feldspar phenocrysts, averaging 2-3 cm. in length, 25-30% quartz, equigranular to seriate porphyritic up to 1 cm., plus 5% biotite generally as anhedral aggregates to 1 cm. The groundmass consists of medium grained potassium-feldspar greater than quartz greater than biotite and minor plagioclase.

Phase 11: Medium to coarse grained, equigranular to porphyritic alaskite/granite. Contains 0-20% potassium-feldspar phenocrysts, 1-3 cm. in length, 25-30% equant quartz, averaging 5 mm., 2-7% biotite generally less than 2 mm. in a medium grained groundmass of potassium-feldspar greater than quartz much greater than biotite.

Phenocrysts in all phases are subhedral to euhedral while groundmass minerals are generally anhedral to subhedral. All phases except for 5 and 9 are white-grey in colour. Plagioclase could only be distinguished with certainty in Phase 9, but is assumed to be present in minor amounts in all phases.

Outside of the mineralized zones, alteration of the alaskite is relatively minor. Generally only minor kaolinization is present, and possibly rare sericitization. In the Cariboo Creek area an apple yellow-green coloured alteration is present along many of the fractures. This resembles alteration reported on the nearby MIR claims and identified there by X-ray techniques as the clay mineral tosudite, an aluminium silicate hydrate with minor iron, magnesium, calcium, sodium and potassium.

In sheared areas, amorphous Fe-Mn oxide coatings are common and can contain significant amounts of Zn (eg. R-14: greater than 2% Mn, 0.3% Zn).

An attempt has been made to determine whether or not the mineralization in the area is related to a specific phase. Results to date are inconclusive and speculative at best, however, there are indications that the mineralization may be related to the late stage aplitic phases. A more complete assessment of this possibility will be attempted during the second part of the program and will no doubt require petrographic and geochemical studies.

CHAPTER THREE - MINERALIZATION (Map 1)

3-1 BASE METAL MINERALIZATION

All significant mineralization encountered during this work has been described briefly in previous reports. The work carried out during June and July 1979, was aimed at delineating these known occurrences and developing ideas regarding their genesis.

The most promising showing on the Weir Mountain property is "anomaly E", on CY 6 and CY 7, a linear zone approx. 4-5 meters wide containing abundant sphalerite. This zone is exposed on a steep ridge south of Caribou Creek over a strike length of approx. 180 meters and a vertical height of approx. 120 meters. Thirty meters southeast of this main zone (Figure 3) is a sub parallel zone of a fine grained, granular, green rock with up to 15% medium to coarse grained magnetite and 20% medium grained sphalerite. This second zone is distinctly different from the first in composition and could not be mapped in detail. It is very friable, easily weathered and exposed in only a few outcrops, however, mineralized talus from this zone is extensive and one analyzed sample contains 0.2% Pb, 0.18% Zn and .55% F. Several other, smaller sphalerite bearing zones have been found on the property, mainly on CY 5 and CY 6.

Previously these zones have been interpreted as mafic dikes intruding the alaskite. Based on the most recent mapping, this theory has been dropped in favour of a hydrothermal, vein type origin.

The veins are characterized by very fine grained, black cores, containing abundant medium-coarse grained sphalerite, locally up to 90%. The composition of the black mineral has not been determined with certainty. Thin section study (Appendix VI) has suggested that the black mineral is chlorite. The sphalerite bearing cores can be up to five meters wide and are bounded by mottled areas which appear

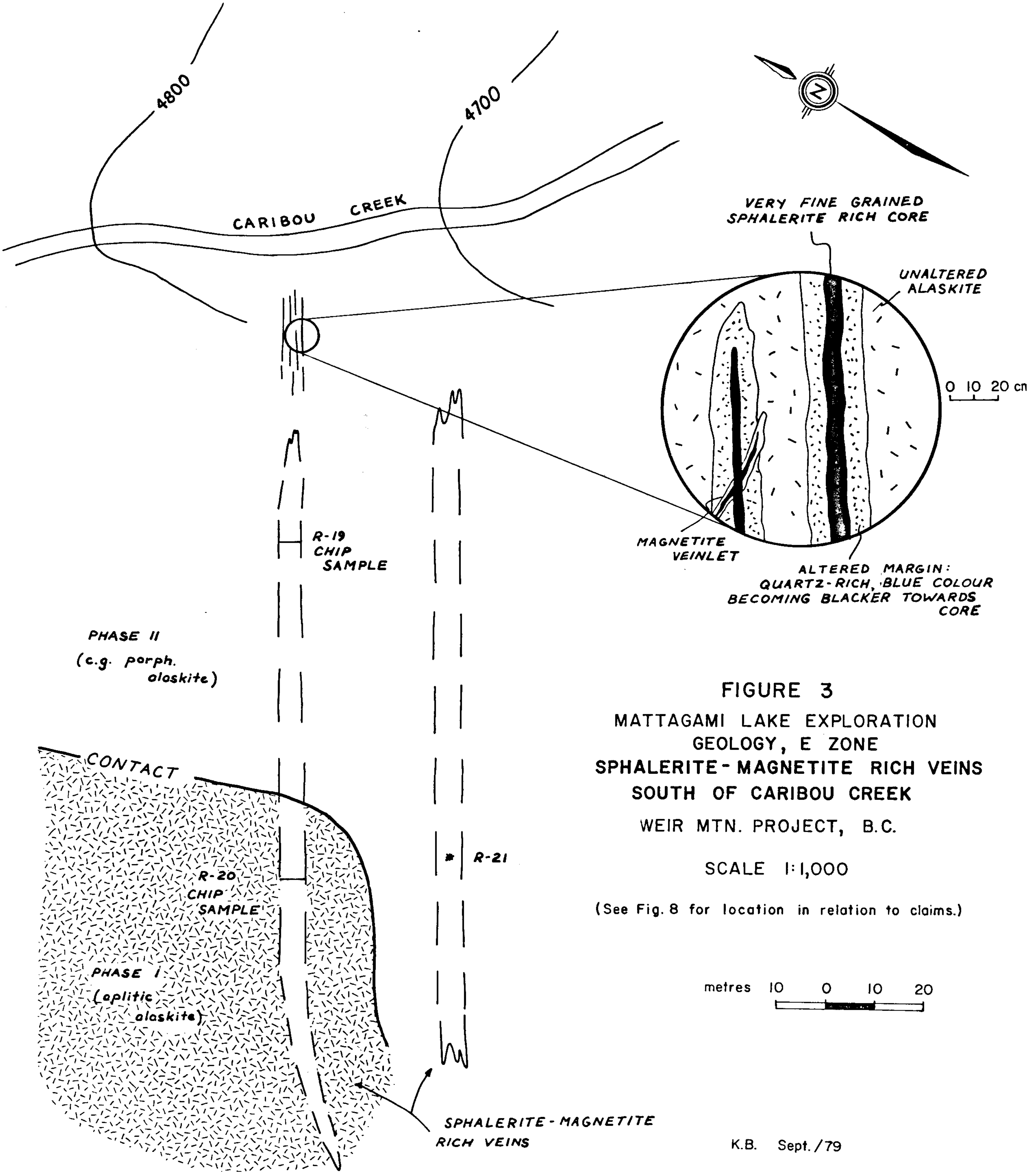


FIGURE 3

MATTAGAMI LAKE EXPLORATION
GEOLOGY, E ZONE
SPHALERITE-MAGNETITE RICH VEINS
SOUTH OF CARIBOU CREEK
WEIR MTN. PROJECT, B.C.

SCALE 1:1,000

(See Fig. 8 for location in relation to claims.)

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to be hydrothermally altered, alaskite. Fine grained, green-black patches up to 2 cm. across have developed in the alaskite, probably replacing the groundmass minerals. Relict potassium-feldspar phenocrysts are common in these mottled zones, which are generally quite narrow (less than 1/2 meter) and grade outwards into the unaltered alaskite. It appears that the hydrothermal alteration does not extend for more than one meter beyond the sphalerite bearing cores.

At the base of the ridge, the main sphalerite bearing vein pinches out over less than 10 meters and is replaced by a series of parallel, smaller veins, 4-70 cm wide. The same relationships observed in the large vein are found in these smaller veins, that is, alteration of the alaskite occurs over a short distance (less than 20 cm) increasing towards a black fine grained, sphalerite rich core. In these smaller veins, the cores are relatively narrow, (less than 20 cm) but contain up to 20% sphalerite. The adjacent alteration zones are much more developed and have a different composition from the (alteration zone of the) large veins. They are characterized by a blue-green, siliceous alteration, rare epidote veining and numerous cross-cutting magnetite veinlets (less than 1 cm wide). Similar narrow, blue-green to black veins were found on the CY 2 claim but no sphalerite mineralization has been located. One sample (115-R-9A) of the porphyritic aplitic alaskite from this area assayed 130 ppm W although no mineralization was visible.

On the ENG 2 claim, prospecting confirmed the presence of numerous mineralized boulders along a creek running north to south through the claim (Figure 4). These boulders appear to be highly altered alaskite and contain up to 15% galena and 5-10% sphalerite (115-R-41:15.0% Pb, 9.5% Zn),

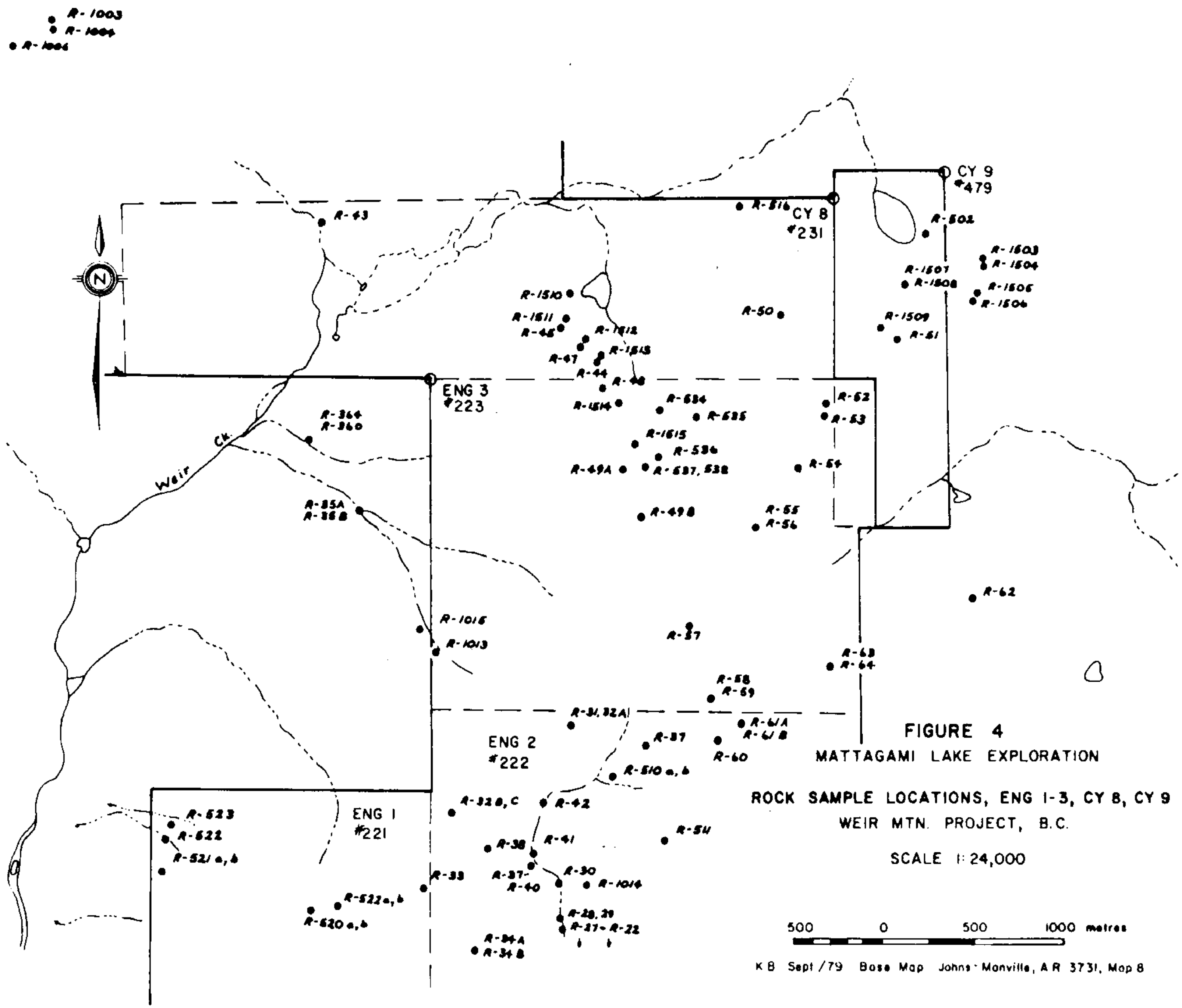


FIGURE 4

MATTAGAMI LAKE EXPLORATION

ROCK SAMPLE LOCATIONS, ENG 1-3, CY 8, CY 9

WEIR MTN. PROJECT, B.C.

SCALE 1:24,000

KB Sept/79 Base Map Johns-Manville, A.R. 3731, Map 8 generally as disseminated grains but also as veinlets. The alaskite has been altered to a fine grained, white, earthy rock with none of the original mineralogy remaining.

The mineralized boulders were traced up the creek to a cutoff point near its headwaters. Heavy mineral concentrates from panning of the creek did not reveal any distinct cutoff for Pb or Zn. (Figure 6). Prospecting around this area revealed the presence of numerous heavily altered alaskite boulders and quartz boulders while on a ridge about 250 meters to the northwest, numerous quartz boulders are concentrated in a zone 20-25 meters wide. While no mineralized alaskite boulders were located, two quartz boulders containing 3-5% galena plus sphalerite (1.1% Pb, 0.97% Zn) were found.

It is felt by the author that the hydrothermally altered and mineralized alaskite is related to the mineralized quartz in a manner similar to the showing on top of Weir Mountain. At that showing, a 20 cm. wide quartz vein consisting of crystals up to 3 cm. long, contains abundant galena, sphalerite, magnetite and uranium (4 pounds per ton U_3O_8, 1.65% Pb, 4% Zn). The adjacent alaskite has been altered and mineralized by the intrusion of the vein and also contains abundant galena, up to 20%. If indeed this model applies to the ENG 2 occurrence and the quartz vein is 20 to 25 meters wide, the area could have great potential. Further work consisting of soil sampling and various geophysical surveys will be required to delineate the zone.

3-2 URANIUM MINERALIZATION

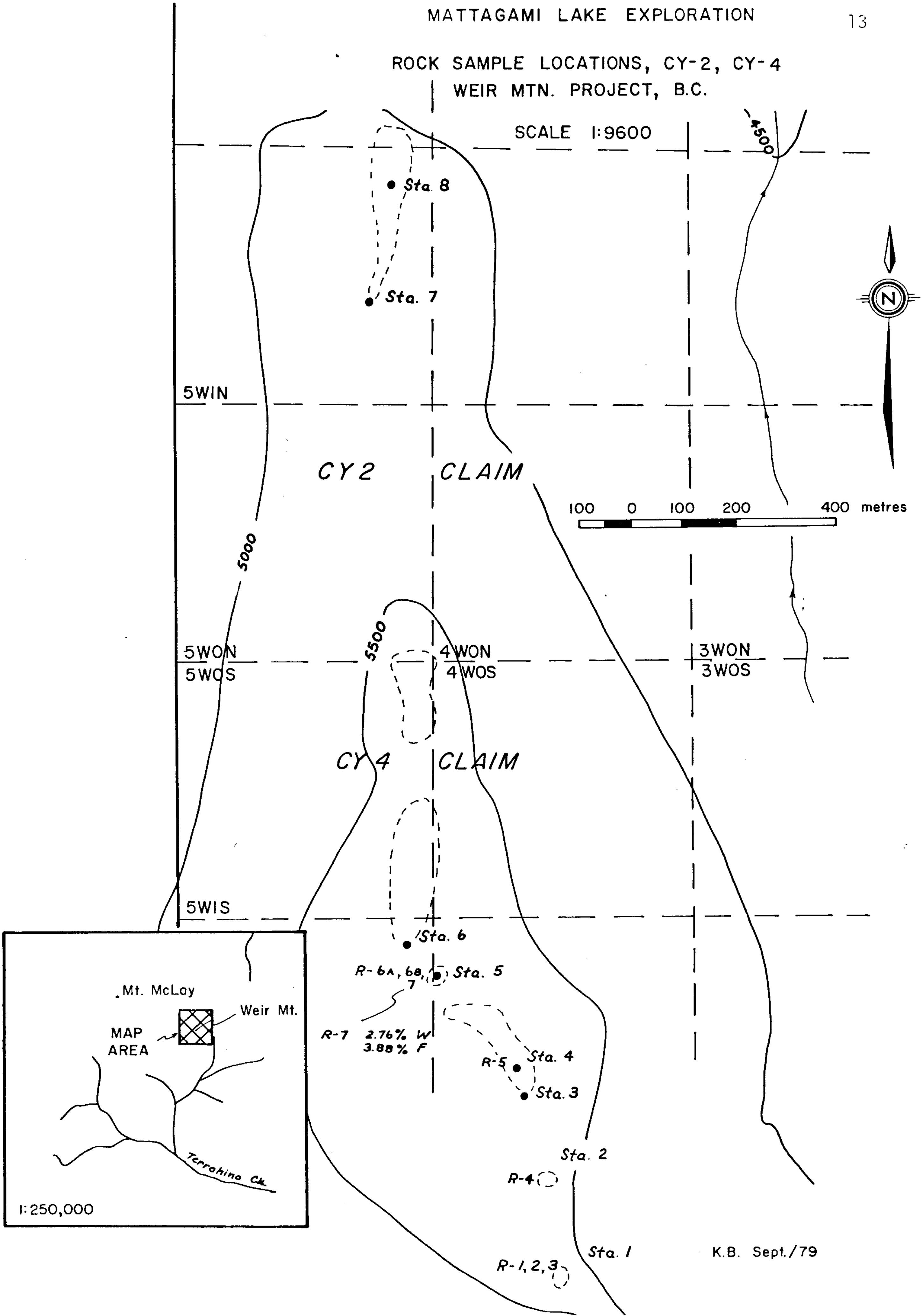
No new radioactive occurrences were found during this period. Scintillometers were carried at all times by the crew members during traverses.

FIGURE 5

MATTAGAMI LAKE EXPLORATION

ROCK SAMPLE LOCATIONS, CY-2, CY-4
WEIR MTN. PROJECT, B.C.

SCALE 1:9600



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The main uranium showing on Weir Mountain, "anomaly C", consists of Kasolite, ($Pb(UO_2)(SiO_3)(OH)_2$), wulfenite, ($PbMoO_4$), and minor vandendriesscheite, ($PbU_7O_{22}12H_2O$), which are precipitating from groundwaters onto surface rocks. This type of occurrence exists elsewhere in the Surprise Lake batholith and has apparently been drilled with negative results (various geologists, B.C. Uranium Inquiry, Atlin, B.C., July 4, 1979). No primary Uranium mineralization has been reported in these areas and it seems that the uranium may simply be derived from leaching of the highly fractured alaskite, which has a very high background uranium content. While this suggests that the potential for primary Uranium mineralization is low, it should not be overlooked. There are two potential primary Uranium sources at Weir Mountain, besides the alaskite. The first is a radioactive U-Pb-Zn bearing quartz vein such as the one occurring on the top of Weir Mountain. Extensive quartz veining has been found about 250 meters from the Kasolite showing. This veining strikes towards the showing, under the talus, and though not radioactive where exposed, it is quite possibly mineralized elsewhere along its length. Another potential source is a flourite rich alteration zone, which is apparently associated with a sphalerite bearing vein near the Kasolite showing. This rock is a very friable, extremely altered alaskite with up to 30-40% flourite and 30 ppm Uranium. It would therefore make a more suitable source for the Uranium than the unaltered alaskite. Further work, including detailed geophysical surveys, will be required to ascertain the source of the Uranium in this area.

CHAPTER FOUR - GEOCHEMISTRY (Figures 6, 7)

Several methods of geochemical sampling were conducted in various areas during this period. These consisted of soil sampling, talus fines sampling and the panning of creeks to obtain heavy mineral concentrates.

Soil sampling was carried out along reconnaissance lines on the ENG 1, 2 and 3 claims and in a detailed manner over previously determined anomalies on the Blue Sky Creek grid. In most areas the soils are very immature. The A horizon is poorly developed averaging 1 to 2 cm. in thickness and reaching a maximum of approximately 20 cm. in isolated areas of dense vegetation. The B horizon generally is light to dark brown in colour and consists predominantly of coarse rock fragments (less than 5 mm.) with lesser amounts of sand and silt sized particles. All samples were taken from the B horizon.

Talus fines sampling was carried out on CY 4 and CY 6 (Figure 7). Samples of the talus (or soil) were screened in the field to a size of less than 1 mm. and analyzed for W, Sn, Cu, Pb, Zn and U among other elements.

Assays of these samples indicate an area of anomalous Zn and U concentration up to (185 ppm Zn and 115 ppm U) at locations P535 and P536. No known mineral occurrence can yet be related to these anomalies and further geochemical and geophysical surveys will be required to define the source.

On ENG 2 and 3 (Figure 6) soil sampling 2 anomalous areas west of Galena Creek (samples P1023, P1024 and P1032) with up to 270 ppm Zn and 74 ppm Pb. Samples P1023 and P1024 coincide with the approximate cutoff point of the galena-sphalerite rich boulders found in Galena Creek and the area where numerous extremely hydrothermally altered alaskite boulders were found. A small anomaly at P1012 and P1013 with 150 ppm Zn and 100 ppm Pb was also located but does not correspond to any known mineralization.

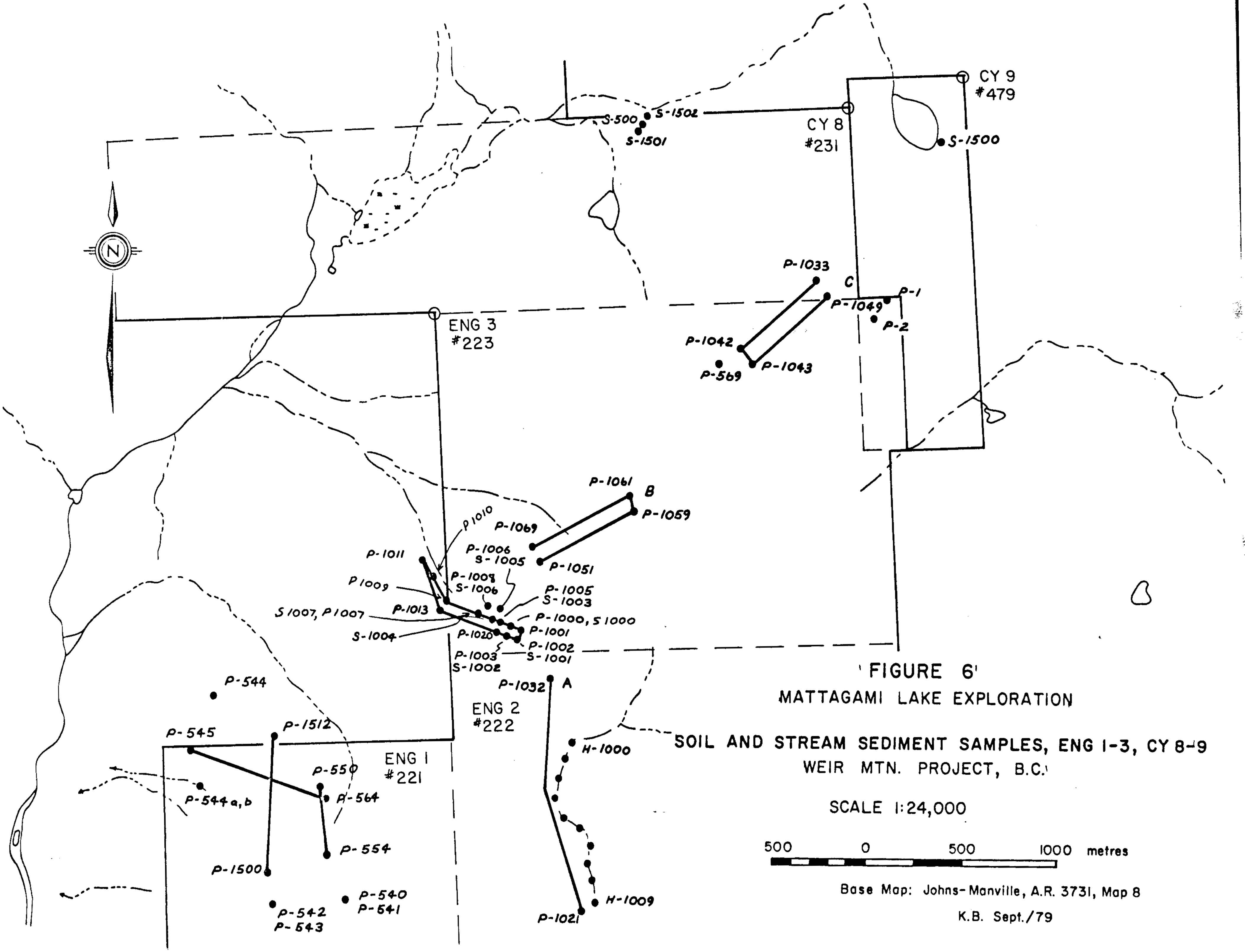

FIGURE 6

MATTAGAMI LAKE EXPLORATION

SOIL AND STREAM SEDIMENT SAMPLES, ENG 1-3, CY 8-9

WEIR MTN. PROJECT, B.C.

SCALE 1:24,000

Base Map: Johns-Manville, A.R. 3731, Map 8

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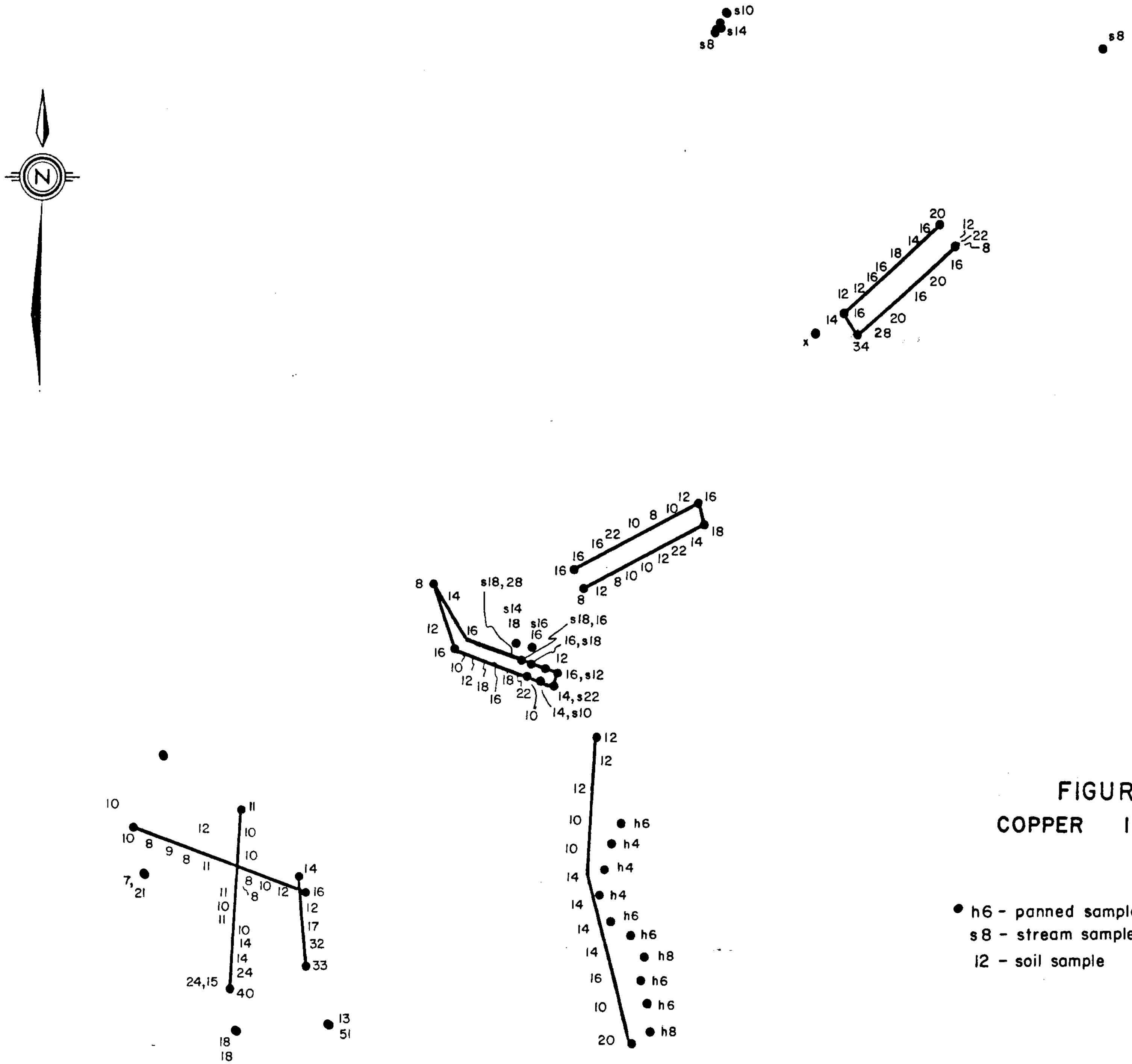


FIGURE 6a
COPPER IN PPM

● h6 - panned sample
s8 - stream sample
12 - soil sample

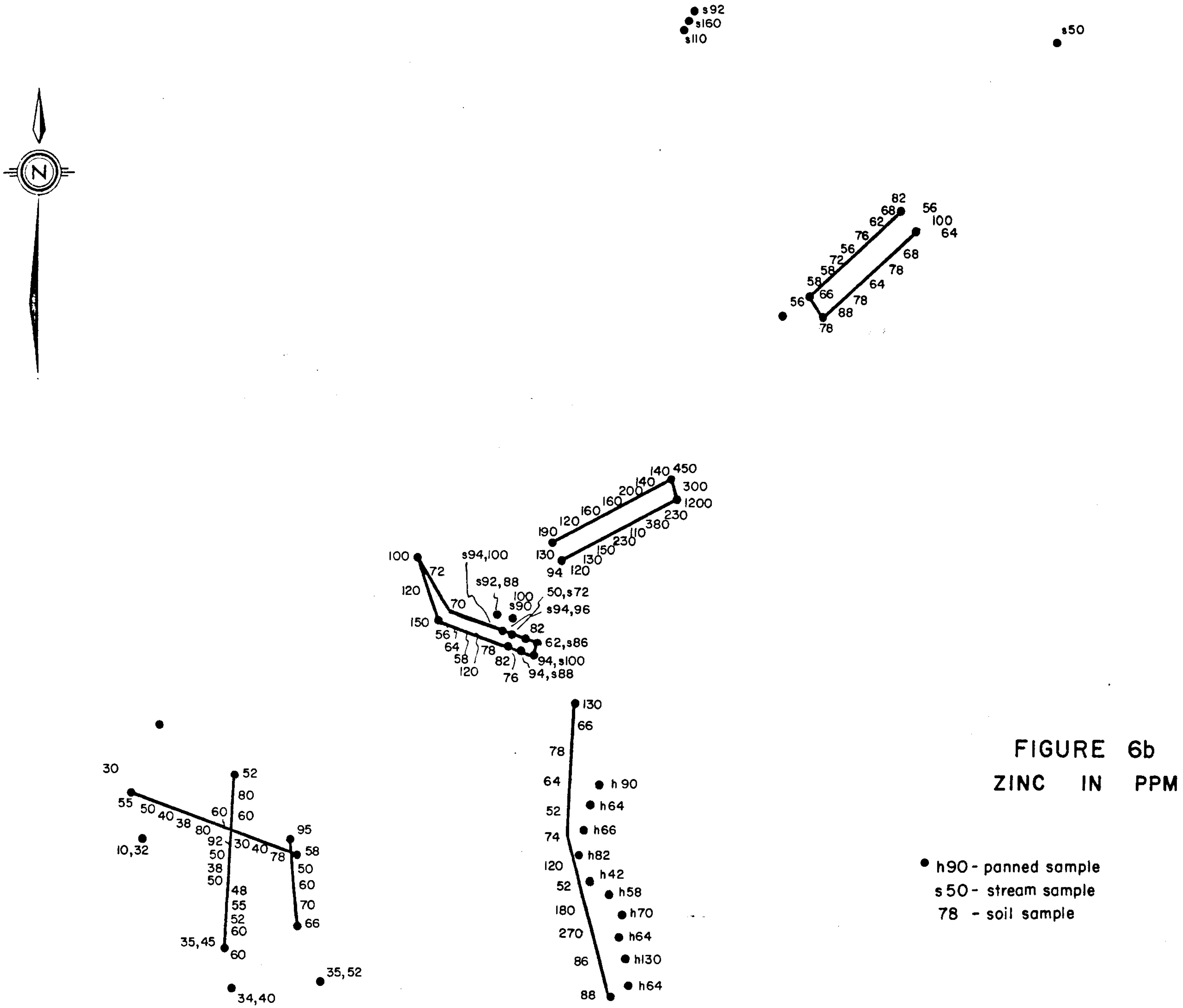


FIGURE 6b
ZINC IN PPM

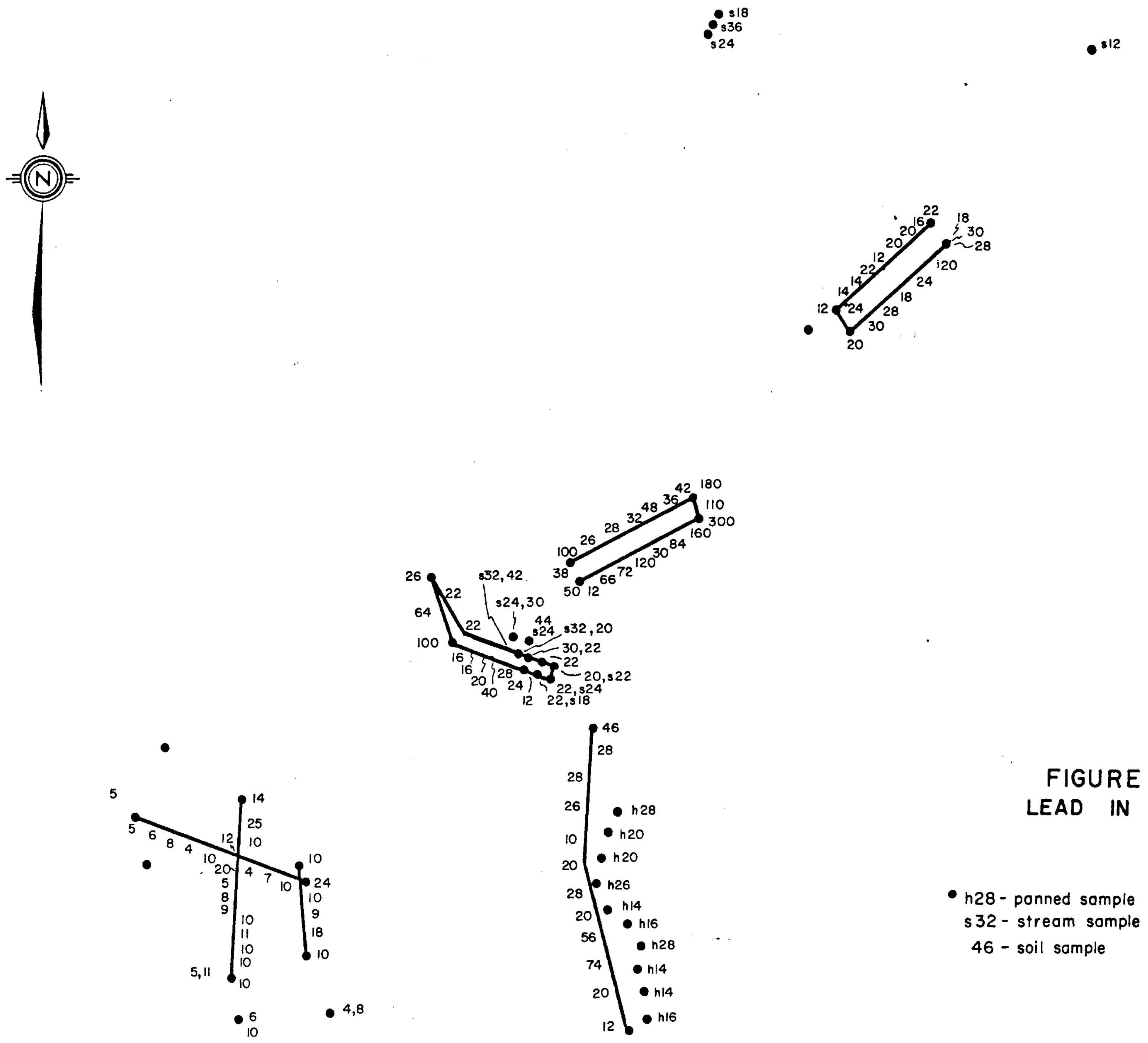


FIGURE 6c
LEAD IN PPM

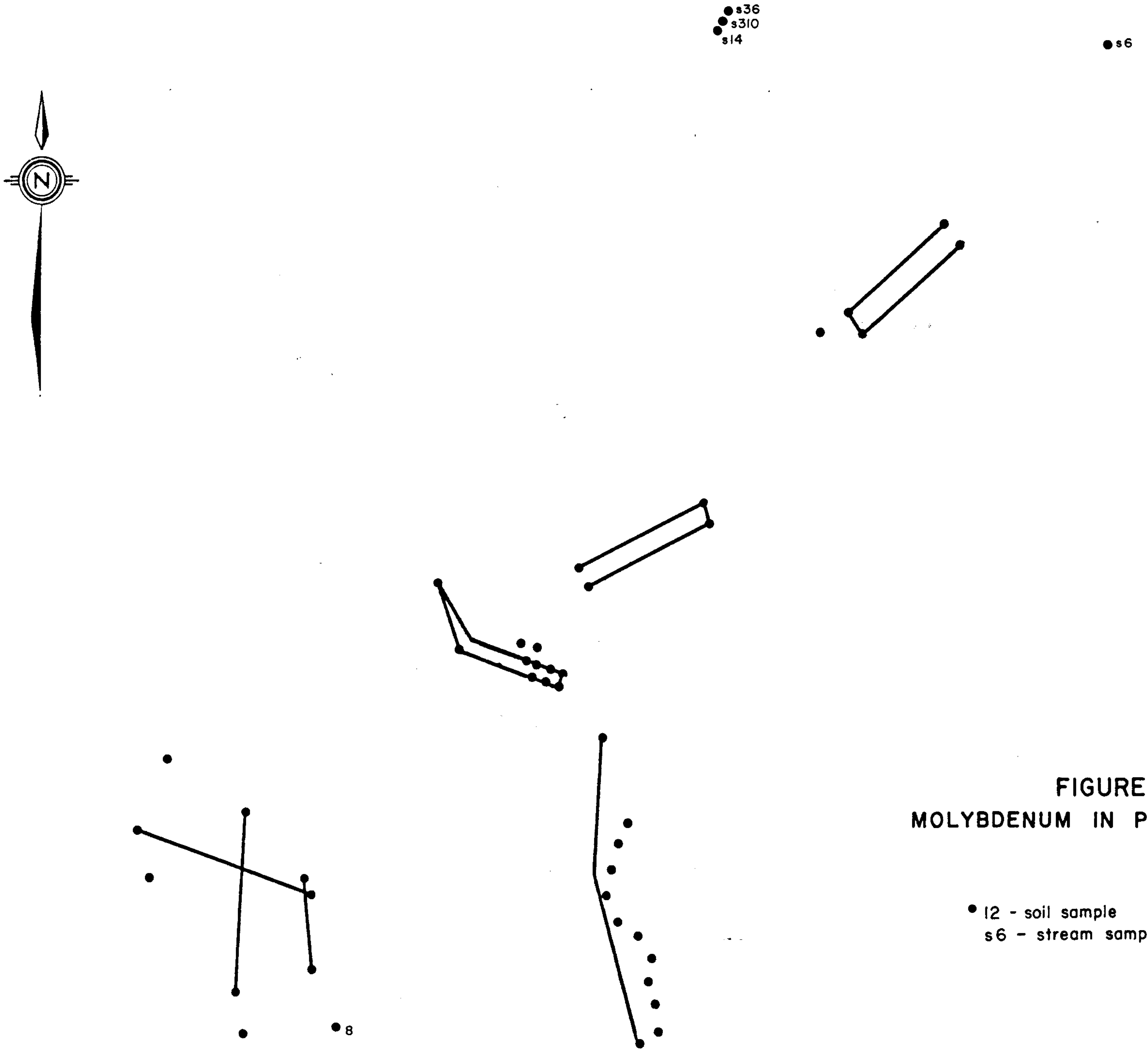


FIGURE 6d
MOLYBDENUM IN PPM (OVER 3ppm)

● 12 - soil sample
s6 - stream sample

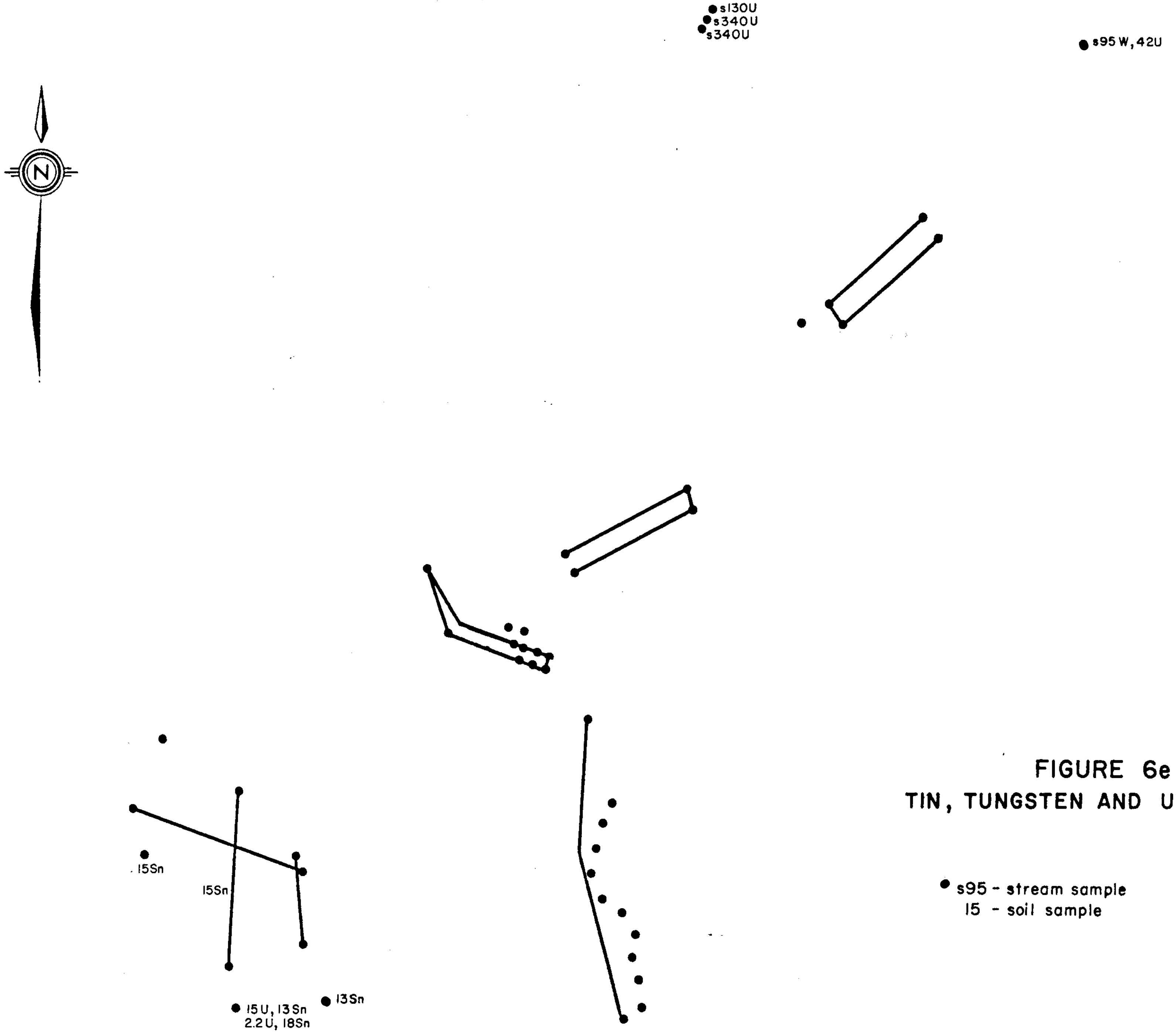


FIGURE 6e

TIN, TUNGSTEN AND URANIUM IN PPM

● s95 - stream sample
15 - soil sample

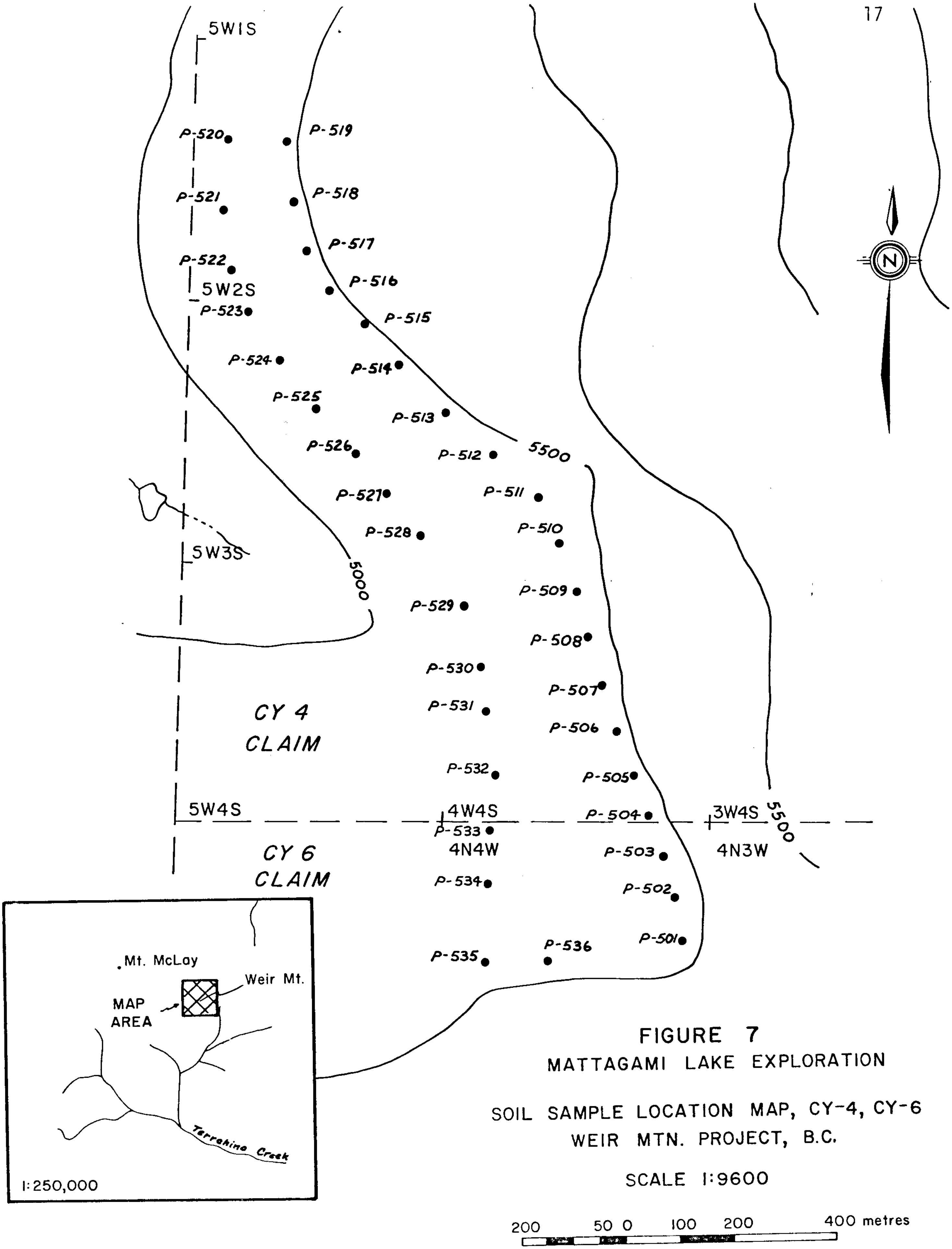


FIGURE 7

MATTAGAMI LAKE EXPLORATION

SOIL SAMPLE LOCATION MAP, CY-4, CY-6
WEIR MTN. PROJECT, B.C.

SCALE 1:9600

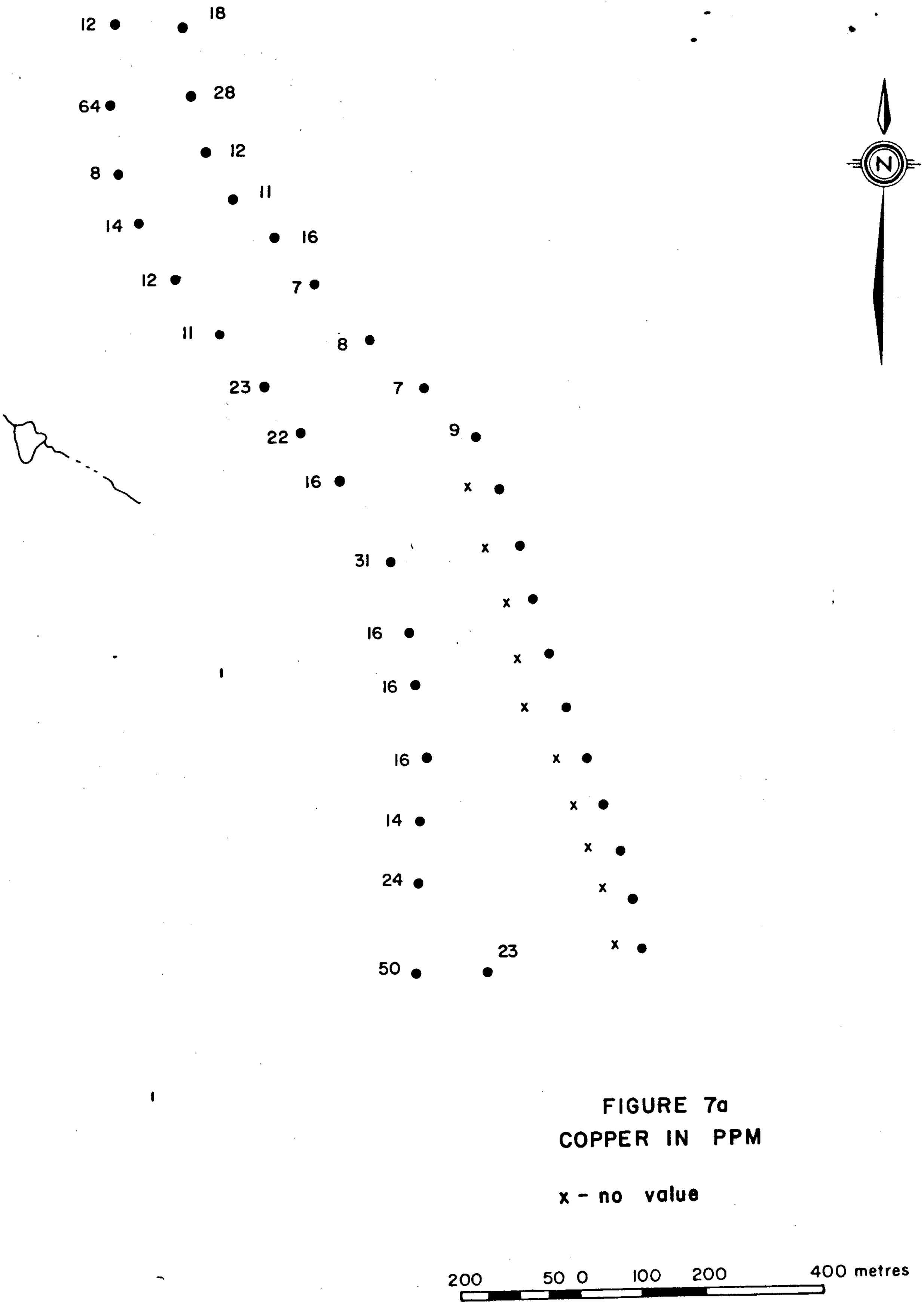


FIGURE 7a
COPPER IN PPM

x - no value

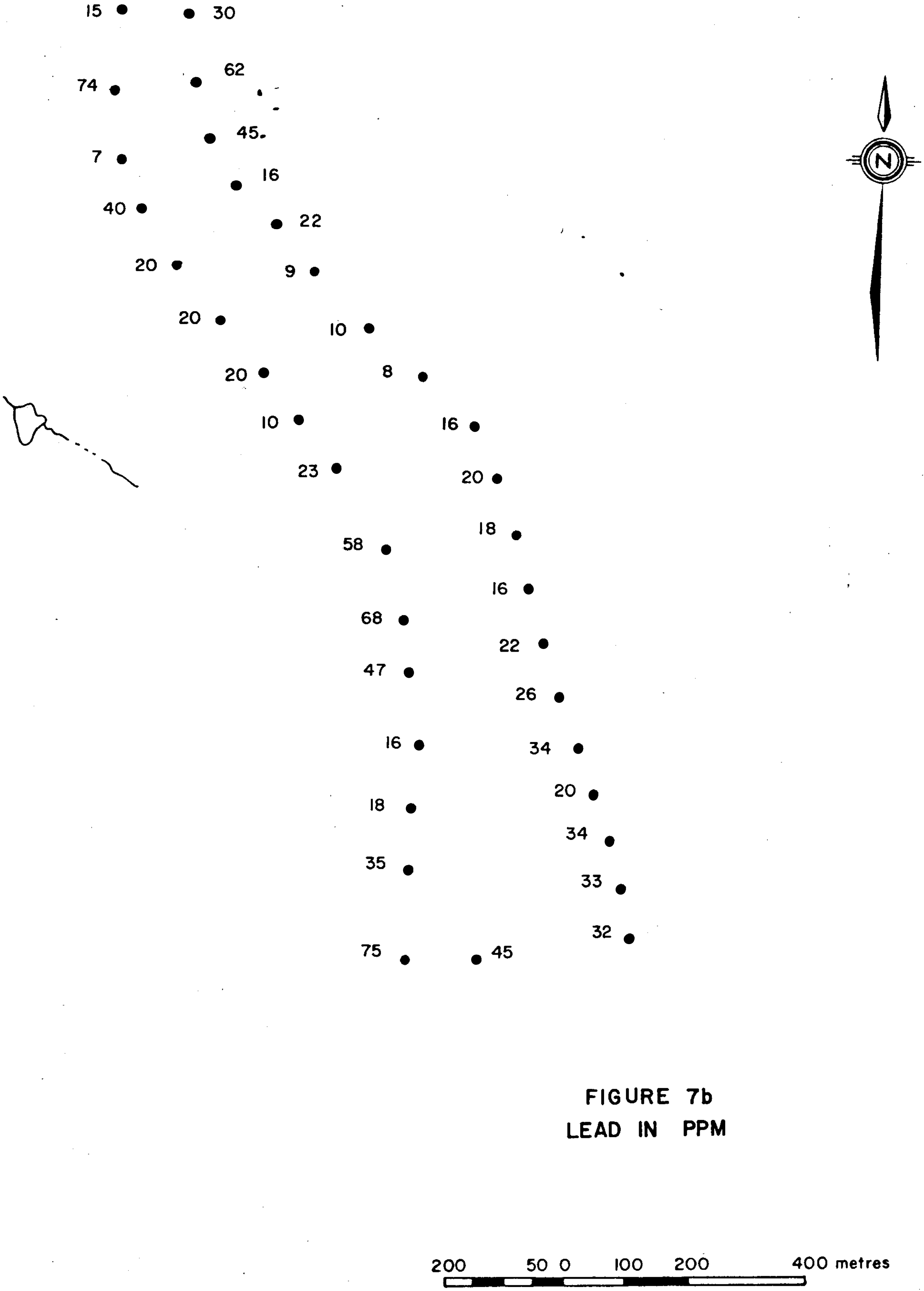


FIGURE 7b
LEAD IN PPM

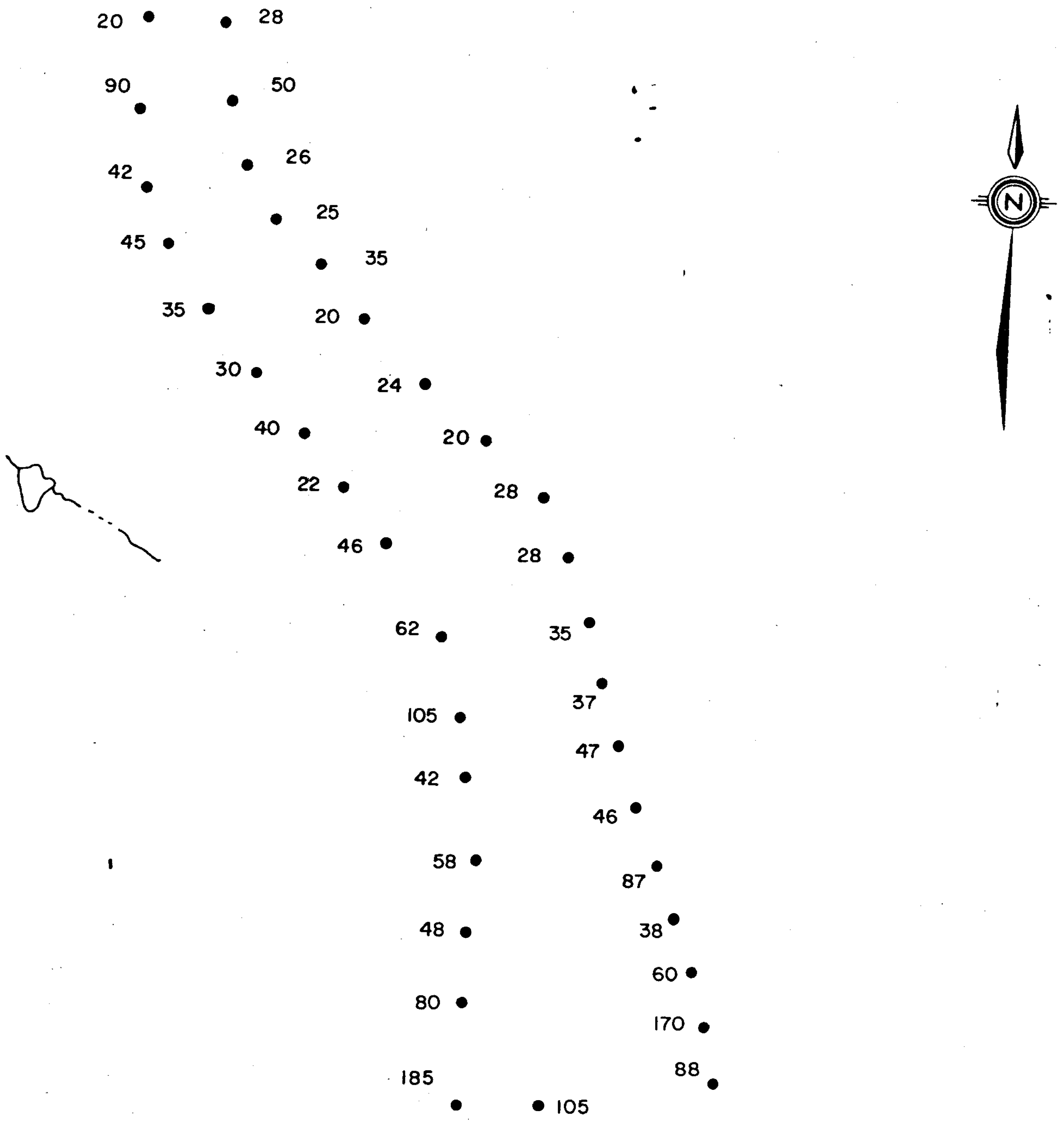


FIGURE 7c
ZINC IN PPM

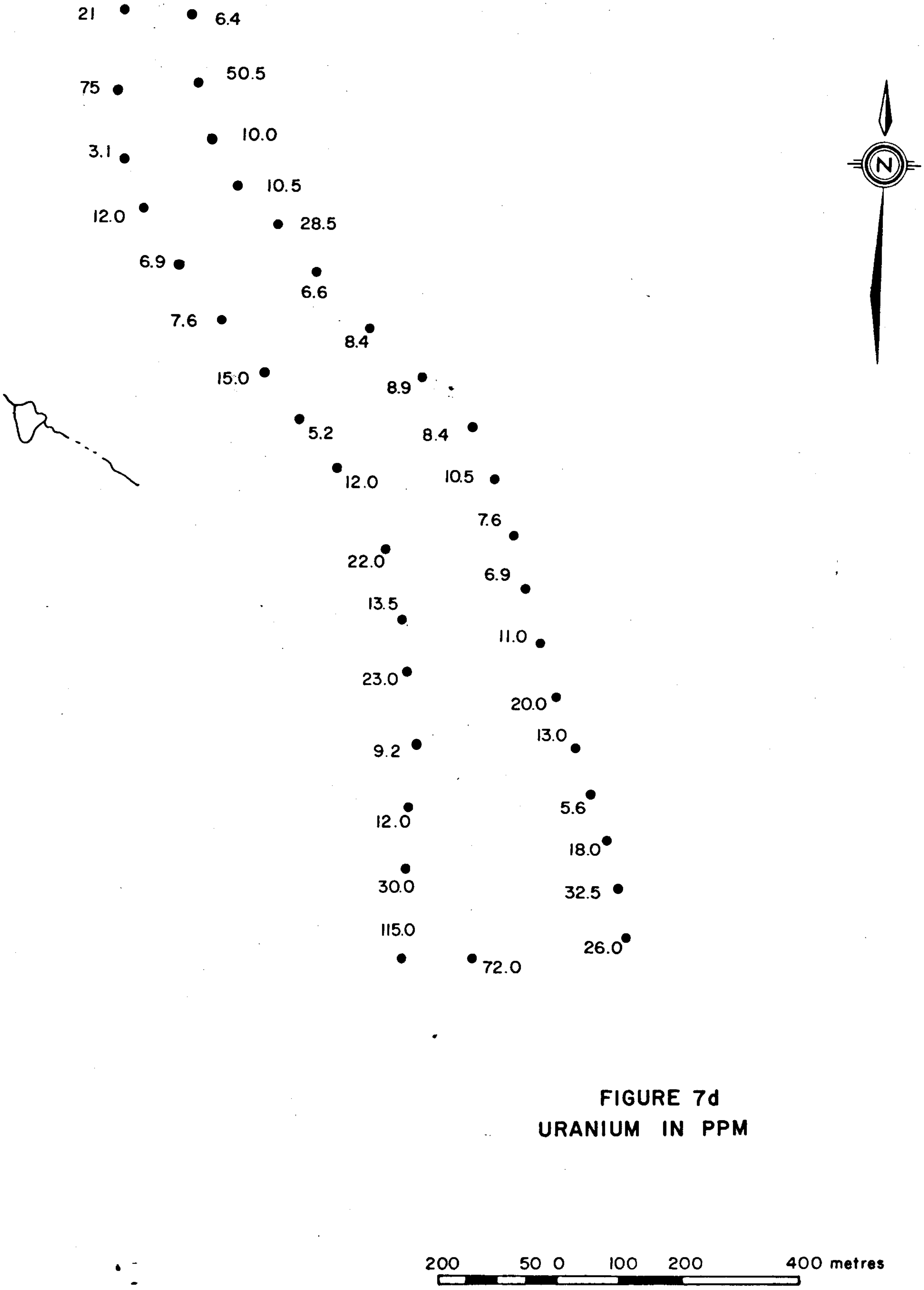


FIGURE 7d
URANIUM IN PPM

To the north of Galena Creek and northeast of fly camp 13, 2 parallel lines of soil samples were taken across the slope (P1051 to P1069). Virtually all samples on these lines are anomalously high in zinc (94-1200 ppm) and lead (30-300 ppm). Detailed grids in this area, and the Galena Creek area, will be established over which soil sampling and geophysical surveys will be carried out during the second half of this year's program.

Detailed soil sampling was carried out over selected areas of the Blue Sky Creek grid (Map 3) where uranium anomalies were discovered in 1977 and 1978. This year's survey confirmed the extent of "anomaly D" over 220 meters with uranium reaching 490 ppm in the soil. This zone also proved to be anomalous in zinc, up to 1100 ppm, copper, up to 62 ppm, lead, up to 82 ppm and molybdenum, up to 20 ppm. A major anomaly was delineated on lines 50E and 100E from 260S to 300S with up to 830 ppm uranium, 390 ppm zinc, 120 ppm lead, 160 ppm copper and 110 ppm molybdenum. Smaller anomalies were located on lines 100W at 300S, 00 at 00S, 150S, 180S and 325S. Magnetomer and radem surveys (Map 4) over these geochemical anomalies were inconclusive and further geophysical surveys (possibly EM 31) are recommended.

HEAVY MINERAL CONCENTRATE RESULTS (Figure 6)

Analyses of the heavy mineral concentrates obtained by panning along Galena Creek indicate only nominal variations in copper, zinc, lead, silver and molybdenum. No clearly defined cutoff is evident in any of the elements, however, there may be a weak cutoff in the concentration of copper between H-1003 and H-1004. Samples north of H-1003 average 4 ppm copper while those south of this point average 7 ppm.

STREAM SAMPLE RESULTS (Figure 6)

Only thirteen stream sediment samples were taken during this period since most of the streams in this area have been sampled in previous years. A total of nine samples were taken on ENG 3 (S-1000-S1008) but did not reveal any anomalous areas. One sample, S-1500, was taken on CY 9 and was anomalously high in tungsten - 95 ppm. No mineralization is known in this area and further work including soil sampling, geological mapping and prospecting will be required to define the source.

CHAPTER FIVE - GEOPHYSICS

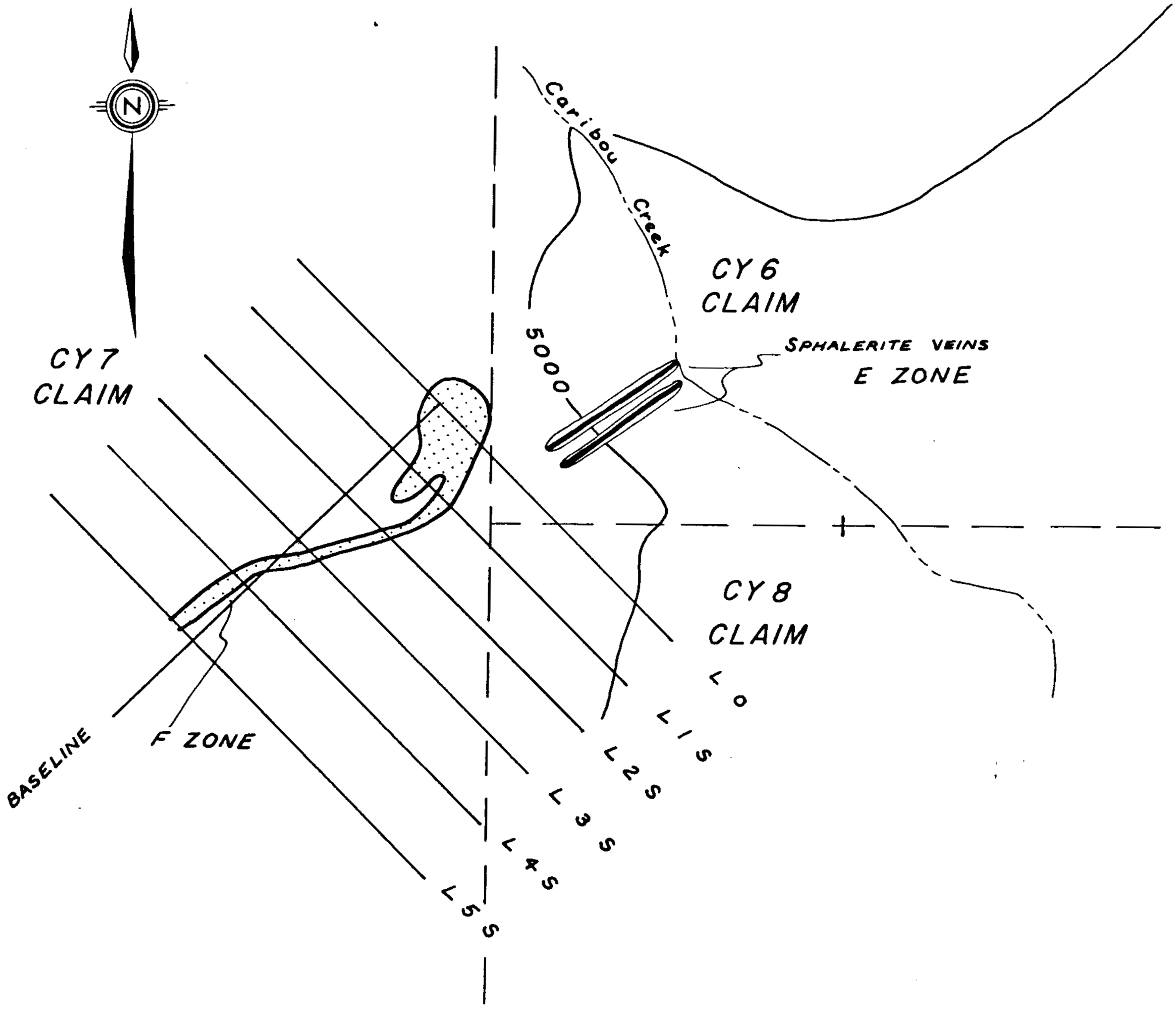
5-1 INTRODUCTION

Only 2 detailed geophysical surveys were conducted during this program, namely a magnetometer survey and a radon in soil survey. Scintillometers were carried by the crew members at all times during traverses and used not only to locate radioactive occurrences but also as an aid in mapping the various alaskite/granite phases.

5-2 MAGNETOMETER SURVEY

The survey was completed over a newly established grid, (Figure 8) predominantly on the CY 7 claim. Readings were taken at 25 m intervals over a total of 5300 meters of line (Map No. 5) with anomalous areas being surveyed at 6 m intervals. The instrument used was a McPhar M700 magnetometer which was calibrated to zero at a base station near the main camp. All readings were taken at waist level and facing magnetic north.

About 100 m to the northeast of the grid, two sphalerite magnetite bearing veins are exposed along a steep ridge face. The veins are each 2-5 m wide (about 30 meters apart) and roughly vertical. Only one magnetic anomaly could be traced across the grid. Due to the presence of a large cornice, the survey could not be extended over the ridge and therefore it is uncertain as to whether one of these veins are producing the anomaly. Numerous sphalerite-rich boulders are present in one area of the grid, however, and although these resemble the northernmost, more sphalerite-rich vein, the anomaly does not appear to coincide with either of the known veins and probably represents a third vein. The survey will be extended to the NE during the second part of the program in order to



Base Map: Johns-Manville, A.R. 3731, Map 6

FIGURE 8

MATTAGAMI LAKE EXPLORATION

CY-7 GRID AND SPHALERITE VEINS
WEIR MTN. PROJECT, B.C.

SCALE 1:9,600

200 50 0 100 200 400 metres

K.B. Sept./79

definitely correlate the magnetic anomaly with one of the dikes. The survey area will also be extended to the SW to fully trace the length of the anomaly. To date it appears to be over 500 meters long.

5-3 RADON IN SOIL SURVEY

A brief radon in soil survey was carried out along the north side of Caribou Creek (Map No. 6) at 38 sites, to test for extensions of anomalous areas discovered during the 1977 and 1978 programs. (Weir Mountain Report No. 2 and 3, F. Morra).

The instrument used was a portable radon detector, Model RD200, by EDA Instruments Inc.

To take the readings, a 50 cm. deep hole is first made in the ground and the gas in the hole is then pumped out and circulated through a scintillation cell mounted in the detector. Three consecutive one minute readings are then taken on the sample.

The highest readings obtained were 1008-779-585 at sample location G27. Under normal circumstances this would be considered very anomalous, however, the background level at Weir Mountain, and indeed much of the Surprise Lake batholith, is very high. While still anomalous, readings up to 1000 c.p.m. are not uncommon. Within the survey area, a possibly anomalous zone has been defined from stations G29 to G25, and possibly to G22, over a length of 300 m. During the second part of the program the survey area will be extended in an attempt to trace previous anomalies of over 7000 c.p.m. and possibly correlate these with other geophysical anomalies and geological features such as structural lineaments, alteration zones, etc.

CHAPTER SIX - CONCLUSIONS AND RECOMMENDATIONS

6-1 CONCLUSIONS

Detailed mapping and sampling of the main sphalerite rich zone indicates that these zones are hydrothermal veins with only minor associated alteration. The linear nature, lack of shearing and apparent constant trend of these veins suggest that they were emplaced along relatively early formed joint system, possibly as a result of volatiles given off by a late crystallizing phase. This theory is supported by their enrichment in Sn, Be, Bi, U and F.

The galena and sphalerite rich boulders found on ENG 2 appear to be hydrothermally altered and mineralized alaskite. The source of this mineralization is presumed to be a large quartz vein (not exposed) which itself is probably mineralized. Talus distribution indicates that this quartz vein may be 25 meters wide. The economic potential of this zone could be significant since some talus samples contain up to 25% Pb and Zn and 1 oz/ton Ag.

6-2 RECOMMENDATIONS

On the basis of the data obtained and observations made to date, the following work is recommended:

1. Extension of the CY 7 magnetometer survey to trace the entire length of the magnetic anomaly and to cover extensions of the two known sphalerite rich veins.
2. Blast-trenching of the 2 sphalerite rich veins where they outcrop south of Caribou Creek to accurately determine width and grade.

3. Blast-trenching along the CY 7 magnetic anomaly at 200 meter intervals to ascertain the width and grade of this presumed 3rd sphalerite rich vein.
4. Detailed soil sampling and geophysical surveys on ENG 2 to delineate the source of the galena-sphalerite rich boulders. This should be followed by blast-trenching of any anomalies.
5. Detailed mapping, soil sampling and possibly magnetometer surveys on CY 2 to test for possible sphalerite rich veins and tungsten mineralization.
6. Detailed mapping, soil sampling and geophysical surveys (magnetometer, RADEM) on CY 6 to locate the source of U and Zn in soil anomalies, I.P. anomalies and galena-sphalerite bearing talus.

STATEMENT OF COSTS

DETAILS

WAGES June 22 to July 15	J. Biczok	1,862.69	
	P. Wagner	1,312.49	
	C. Stewart	1,083.76	
	P. Lhotka	1,232.18	5,491.12
CONSULTANT FEES	D. Sutherland 2 days @ $150./day = $300.		300.00
TRANSPORTATION			
	Ground Tilden Truck Rental 2 mos. @ $550./mo. = $1,100. Budget Truck Rental 6 days @ $568./mo. = $113.60 Vehicle Operation = $335.61		1,499.21
	Helicopter Hughes 500 - 14.7 hours $275. + fuel/hour =		4,528.50
INSTRUMENT RENTAL			
	Urtec UG130 scintillometer 1 month @ $340./mo. Urtec UG135 spectrometer 1 month @ $398./mo. =	738.00	
	Geometrics GRS101 scintillometer $238.16/month	238.16	
	McPhar TV1A spectrometer 2 @ 29 days, $8.60/day + $7.98/mo insurance	531.96	
	EDA RDX356 soil probe 1 @ $35./month, 1.5 months	52.50	
	McPhar fluxgate magnetometer 2 @ $255. + $8.48/mo., 1 month	526.96	
	Tundra Tech. Services 2 (SBX-11) radiophone @ $180./mo.	360.00	2,447.58
ANALYSIS			3,175.65
FOOD AND ACCOMMODATION	~100 man-days @ 40/d TEK.		4,187.66
SUPERVISION			999.45
REPORT			494.34
			$23,123.51

GEOLOGICAL ASSOCIATION OF CANADA
W. MERCER
FELLOW

SAMPLE ANALYSES

Geochemical

81 (W) @ $2.00 =	162.00
208 elements @ $1.50 =	312.00
13 (Cu), 94 (Ag), 84 (Pb), 17 (Zn)	
382 elements @ $0.65 =	248.30
124 (Mo), 16 (Ag), 43 (Pb), 115 (Zn), 1 (Mn), 83 (Cu)	
7 (Bi) @ $2.50 =	17.50
126 (U) @ $2.90 =	365.40
59 (Sn) @ $3.25 =	191.75
149 elements @ $3.50 =	521.50
131 (W), 18 (Be)	
36 elements @ $3.75 =	135.00
13 (Au), 23 (F)	
2 (32 element scans) @ $25.00 =	50.00
175 (Cu) @ $1.00 =	175.00
794 elements @ $0.60 =	476.40
94 (U), 175 (Zn), 175 (Pb), 175 (Ag), 175 (Mo)	

Assays

1 (Ag) @ $4.25 =	4.25
1 (Cu) @ $5.00 =	5.00
26 elements @ $5.50 =	143.00
15 (Zn), 11 (Pb)	
10 (Ag) @ $6.00 =	60.00
4 elements @ $9.00 =	36.00
2 (Sn), 1 (W), 1 (Mn)	
2 (F) @ $14.00 =	28.00
1 Heavy mineral preparation @ $1.00 =	1.00
94 Rock sample preparations @ $1.75 =	164.50
84 oil preparations @ $0.45 =	37.80
275 Background corrections @ $0.15 =	41.25
	$3,175.65

GEOLOGICAL ASSOCIATION OF CANADA · FELLOW ·
W. MERCER

APPENDIX I

ROCK SAMPLE ANALYSES

R

BONDAR-CLEGG & COMPANY LTD.

136B INDUSTRIAL RD, WHITEHORSE, YUKON Y1A ~~4X1~~2V1

PHONE: (403) 667-6523
TELEX: 036-8-460

Certificate of Analysis

TO Noranda Mines Ltd. - Mattagami
#502, 18215 - 112 St.
Edmonton, Alberta

REPORT NO. A-49-54

DATE August 3, 1979

I hereby certify that the following are the results of analyses made by us upon the herein described rock samples

MARKED		%	%	%					
		Cu	Zn	Mn					
115-R 7		---	---	---					
-R14		---	---	2.96					
-R16E		---	3.62	---					
-R19		---	9.25	---					
-R20		---	3.26	---					
504A		---	9.95	---					
504B		---	1.18	---					
~~129-01-R 7~~		~~1.30~~	---	---					
~~-R 8~~		~~2.10~~	---	---					
~~-R 10~~		---	---	---					
~~-R 11B~~		~~2.82~~	---	---					
~~519~~		~~1.43~~	---	---					
~~1003~~		---	---	---					

30

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

W & F to follow

BONDAR-CLEGG & COMPANY LTD.

Steven Simpson

BONDAR-CLEGG & COMPANY LTD.
136B INDUSTRIAL RD, WHITEHORSE, YUKON Y1A 4X1
PHONE: (403) 667-6523
TELEX: 036-8-460

Win Mtn.

Certificate of Analysis

TO Noranda Mines Ltd.
Mattagami Lake Expl. Div.
Suite #502, 8215-112 St.
Edmonton, Alberta T6 G 1C8

REPORT NO. A-49-54

DATE August 21, 1979

I hereby certify that the following are the results of analyses made by us upon the herein described rock samples

MARKED	% W	% F
115R - 7	2.76	3.88
~~129-01-R-519~~	~~0.31~~	
115-R-1003		1.80

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

BONDAR-CLEGG & COMPANY LTD.

Steven Simpson

BONDAR-CLEG & COMPANY LTD.

136B INDUSTRIAL RD, WHITEHORSE, YUKON Y1A 4X1

PHONE: (403) 667-6523
TELEX: 036-8-460

Certificate of Analysis

TO Norando Mines Mattagami Lake
502 8215-112 St.
Edmonton, Alberta

REPORT NO. A-49-34

DATE July 20, 1979

I hereby certify that the following are the results of analyses made by us upon the herein described ENG 2 rock samples

MARKED	%	%		
	Pb	Zn		
115K-40	1.10	0.97	Gal-sphal bearing	quartz boulder
41	15.0	9.50	" "	altered alaskite
115K-22	3.75	2.55	-qtz vein with gal.	
23	5.05	2.50	gal-sphal with boulders altered alaskite	
24	1.53	0.5		
25	4.75	5.31		
26	2.05	2.33		
27	4.45	2.90		
28	3.23	3.55		

32 element scans to follow

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

BONDAR-CLEGG & COMPANY LTD.

Steven Simpson

BONDAR-CLEGG & COMPANY LTD.

136B INDUSTRIAL RD, WHITEHORSE, YUKON Y1A 4X1

PHONE: (403) 667-6523
TELEX: 036-8-460

R file
Wein Mtn.

Certificate of Analysis

TO Noranda Mines Limited
Mattagami Lake Exploration Division
~~Suite #502, 8215-112 St. Edmonton,~~ Alberta
T6G 1C8

REPORT NO. A-49-34

DATE August 8, 1979

I hereby certify that the following are the results of analyses made by us upon the herein described rock samples

MARKED	oz/ton Ag
115-R-40	L0.05
-41	1.64
-22	4.38
-23	0.50
-24	0.35
-25	0.69
-26	0.16
-27	0.74
-28	0.48

L denotes less than
NOTE: Au to follow on 115-R-41 & 115-R-22
Rejects retained two weeks
Pulps retained three months
unless otherwise arranged.

BONDAR-CLEGG & COMPANY LTD.

Steven Simpson

BONDAR-CLEGG & COMPANY LTD.

136B INDUSTRIAL RD, WHITEHORSE, YUKON Y1A ~~4X4~~2V1

PHONE: (403) 667-6523
TELEX: 036-8-460

W i Mtn.

Certificate of Analysis

TO Noranda Mines Ltd.-Mattagami Lk.
Suite #502, 8215-112 St.
Edmonton, Alberta

REPORT NO. A-49-80
DATE August 27, 1979

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

MARKED		%	%							
		Cu	Sn							
115R-100			7.96							
115R-1515			0.38							
~~129-03-R8~~		~~12.3~~								
~~129-03-R504B~~		~~1.45~~								
~~129-03-R1504~~		~~5.78~~								

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

BONDAR-CLEGG & COMPANY LTD.

Steven Simpson

BONDAR-CLEGG & COMPANY LTD.

136B INDUSTRIAL RD, WHITEHORSE, YUKON Y1A 4X1

PHONE: (403) 667-6523
TELEX: 036-8-460

U' in Mtn.
R

Certificate of Analysis

TO Noranda Mines Limited (Mattagami)
Suite #502, 8215-112 St.
Edmonton, Alberta T6G 1C8

REPORT NO. A-49-70

DATE August 15, 1979

I hereby certify that the following are the results of analyses made by us upon the herein described rock samples

MARKED	%	%								
	Cu	Zn								
115-R-101	3.63	0.04								Scans & W to follow

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

BONDAR-CLEGG & COMPANY LTD.

Steven Simpson

John

BONDAR-CLEGG & COMPANY LTD.

136B INDUSTRIAL RD, WHITEHORSE, YUKON Y1A ~~4X4~~ 2V1

PHONE: (403) 667-6523
TELEX: 036-8-460

Certificate of Analysis

TO Noranda Mines Ltd. - Mattagami
#502, 18215 - 112 St.
Edmonton, Alberta

REPORT NO. A-49-57
DATE August 3, 1979

I hereby certify that the following are the results of analyses made by us upon the herein described rock samples

MARKED		oz/ton	%	%						
		Ag	Pb	Zn						
115R-1013		1.07	3.56	4.35						

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

BONDAR-CLEGG & COMPANY LTD.

Steven Simpson

ROCK SAMPLE ANALYSES

SAMPLE NUMBER	Cu	Pb	Zn	Mo	W	Mn	Au PPb	Ag	U	F	Sn	Bi	Be	ROCK DESCRIPTION
115-R-3			47	15	10		Less Than 5		4.3	150				Silicified (?) alaskite
6	8		97	3	Less Than 2									Grey, quartz diorite
7			38	24	2.76%		355		9.1	3.88%				Quartz vein
9A			48	8	130				18.1					Aplitic alaskite
11			77	14	36				5.4		6			Aplitic alaskite, some hydrothermal alteration
14			3000	4	14	2.96%			25.6					Alaskite stained with MnO
15			137	7					12.5	7800				Alaskite
16E	88	550	3.62%	7	2		Less Than 5	8.0	33.1	280	105	11	28	Alteration zone adjacent to sphalerite vein #1
19	56	450	9.25%	4	10		10	12.0	31.3	195	230	38	27	Chip sample across 15' of sphalerite vein #1
20	23	270	3.26%	5	Less Than 2		Less Than 5	4.5	32.5	500	80	8	39	" " " " " " "
21A	27	2050	1799	9	2		Less Than 5	10.0	35	940	86	20	20	Composite float samples from sphalerite vein #2
21B	6	30	150	10	Less Than 2			0.5	12.5	5500	20	1	5	Porphyritic alaskite
22	25	3.75%	5500	25	3		Less Than 5	4.38 oz/ton	62.0	4.10				Quartz vein with galena, float

SAMPLE NUMBER	Cu	Pb	Zn	Mo	W	[illegible]	Au PPb	Ag	U	F	Sn	Bi	Be	ROCK DESCRIPTION
115-R-23	6	5.05%	2.50%	7	2			0.50 oz/ton	20.5	480			20	Sphalerite-galena rich, altered alaskite
24	7	1.53%	5000	9	3			0.35 oz/ton	32.0	2500			7	" " " " "
25	6	4.75%	5.31%	3	2			0.69 oz/ton	4.5	350			23	Sphalerite-galena rich, altered alaskite
26	8	2.05%	2.33%	5	Less Than 2			0.16 oz/ton	7.5	2200			13	" " " " "
27	5	4.45%	2.90%	3	2			0.74 oz/ton	13.0	100			3	" " " " "
28	5	3.23%	3.55%	3	L2			0.48 oz/ton	9.0	210			10	" " " " "
30	3	60	70	5	L2				5.5	65			11	Porphyritic dike, dioritic (?)
31	3	60	70	5	L2				2.5	3500			4	Biotite alaskite/granite
32A	29	1260	1200	6	2				5.5	100			29	Magnetite rich alaskite
32B		1380	3697	10	L2			6.5	7.5					Hematite stained vuggy quartz X-tac's
32C		2150	750	5	L2				4.0					" " " " " "
34	3	10	40	6	L2				3.8	2000			6	Coarse grained, weakly porphyritic alaskite
36A		60	40	4	L2			3.0	2.5		8			Relatively fresh coarse-grained biotite-alaskite
36B		175	215	4	L2			3.2	1.4		5			Silicified-alaskite - bluish alteration
36C		180	180	3	L2			2.5	2.0					Alaskite cut by epidote vein
36D		170	471	7	L2			2.0	1.8		12			Altered alaskite & blue-green chlorite ?
38A		1050	1062	8				7.3	5.9					Rotten hematite quartz talus
38B		110	1125	6				1.5	9.5					Hydrothermally altered alaskite Fe-Mn stained
38C		140	6000	3				1.5	9.0					Fine-grained yellow-green rock with magnesium blebs

SAMPLE NUMBER	Cu	Pb	Zn	Mo	W	Mn	Au PPb	Ag	U	F	Sn	Bi	Be	ROCK DESCRIPTION
115-R-38D		150	819	2				7.5	2.5					Hydrothermally altered alaskite - porphyritic
39		420	979	1				3.0	10.0					Hydrothermally altered alaskite - porphyritic & blue-chlorite ?
40		1.10%	.97%					L .05 oz/ton						Quartz vein with galena and sphalerite
41		15.0%	9.50%					1.64 oz/ton						Hydrothermally altered alaskite - galena sphalerite
43		90	150	2	L2			1.0	4.4		5			"Alkaline amphibole rosette" quartz monzonite
49A		30	70	5	2			.8	18.0					Altered alaskite - micacious
52		55	57	9	2			.5	4.6					Highly altered white alaskite
54		67	120	8	180			1.0	3.2					Mgn. replacing alaskite
56		1050	736	8	L2			5.0	5.4					Mn-Fe coated quartz
61A		617	250	3	L2			6.0	3.6					Mgn. replacing porphyritic alaskite
61B		60	165	10	2			1.7	4.4					Mgn. veining in alaskite
63		58	770	3	L2			4.0	5.0					Black, altered alaskite
64		40	242	4	6			1.5	4.6					Heavily altered rotten quartz vein
100		1068	32		80						7.96%			Greisinized alaskite high muscovite
501	60	9	76					.2	.1					
504A	30	530	9.95%	5										Altered vein and sphalerite
504B	44	2800	1.18%	6										Altered alaskite
504C	6	230	1000	5	L2		L5	2.2	12.5	195	55	L1	10	Quartz vein
529				6	L2						20			Clear to milky quartz vein
531				3	L2						10			Milky white quartz vein
1003			223				L5		57.5	1.80%				Biotite granite and flourite

SAMPLE NUMBER	Cu	Pb	Zn	Mo	W	Mn	Au PPb	Ag	U	F	Sn	Bi	Be	ROCK DESCRIPTION
115-R-1004							L5			25				Quartz vein
1005	15	230	3500	5	L2		L5	3.5	35.6	195	55	L1	10	Hydrothermally altered alaskite-sphalerite
1013		3.56%	4.35	7	L2			33	7.0					Hydrothermally altered alaskite with hematite, epidote
1014		1770	4531	1	L2			22.0	6.0					Magnetite vein replacing porphyritic alaskite
1513	6	545	1144	4	L2			0.6			20			Altered granite and magnetite
1515	5400	36	436	4	L2			32.5						Altered granite and malachite
RT1		.03%	19.55%					.25 oz/ton						Sample from anomaly E, vein #1 approximately 75% sphalerite

- All values are in ppm except where stated otherwise. Values in % and oz/ton are assay results, which are more accurate than analyses.

APPENDIX II

ROCK SAMPLE ASSAYS

BRANCH OFFICES
INDUSTRIAL RD., WHITEHORSE, Y.T.
1000 PEMBERTON AVE., NORTH VANCOUVER, B.C.
BOX 497, CAMPBELLTON, N.B.

BCC
BONDAR-CLEGG & COMPANY LTD.
768A BELFAST ROAD (M.R. 1), OTTAWA, ONTARIO K1G 0Z5
PHONE 237-3110
TELEX: 013-3548

SEMI-QUANTITATIVE ANALYSIS

No: A-49-34

Sample No. 115 [illegible]

From: Noranda Mine Ltd.

Method:

Date: August 14, 19 72

No. of Elements: 32

Analyst:

MAJOR ELEMENTS (%)	<.003	.003-.01	.01-.03	.03-0.1	0.1-0.3	0.3-1.0	1.0-3.0	3.0-10.0	> 10.0	REMARKS
SiO_2									X	
Al_2O_3							X			
Total Fe (Fe_2O_3)								X		
MgO			X							
CaO					X					
Na_2O	X									
K_2O						X				
TiO_2					X					
TRACE ELEMENTS (%)										
V	X									
Cr	X									
Mn						X				
Co	X									
Ni	X									
Cu		X								
Zn					X					
As	X									
Sr		X								
Y	X									
Zr		X								
Nb	X									
Mo	X									
Ag		X								
Sn			X							
Sb	X									
Ba	X									
La			X							
Ce		X								
W	X									
Pb					X					
Bi			X							
Th •										
U	X									

• Interference

BRANCH OFFICES
WHITEHORSE, Y.T. NORTH VANCOUVER, B.C. CAMPBELLTON, N.B.

BONDAR-CLEGG & COMPANY LTD.

768A BELFAST ROAD (M.R. 1), OTTAWA, ONTARIO K1G 0Z5
PHONE 237-3110 TELEX 013-3548

K

SEMI-QUANTITATIVE ANALYSIS

No: [illegible]

Sample No. 115 2 10

From: [illegible]

Method:

Date: August 14, 1979

No. of Elements: 32

Analyst:

MAJOR ELEMENTS (%)	<.003	.003-.01	.01-.03	.03-0.1	0.1-0.3	0.3-1.0	1.0-3.0	3.0-10.0	> 10.0	REMARKS
SiO_2									X	
Al_2O_3							X			
Total Fe (Fe_2O_3)							X			
MgO				X						
CaO							X			
Na_2O							X			
K_2O						X				
TiO_2			X							
TRACE ELEMENTS (%)										
V		X								
Cr			X							
Mn	Greater than 5000									
Co	X									
Ni	X									
Cu	X									
Zn						X				
As	X									
Sr			X							
Y		X								
Zr	X									
Nb	X									
Mo	X									
Ag	X									
Sn		X								
Sb	X									
Ba			X							
La		X								
Ce	X									
W	X									
Pb						X				
Bi	X									
Th		X								
U	X									

APPENDIX III

SOIL SAMPLE ANALYSES

SOIL ANALYSES

SAMPLE NO.	Cu	Pb	Zn	Mo	W	U	Sn	Ag
115-P-501		32	88	1	4	26.0		0.6
502		33	170	2	4	32.5		1.2
503		34	60	2	4	18.0		1.3
504		20	38	2	3	5.6		0.8
505		34	87	2	3	13.0		1.2
506		26	46	1	3	20.0		0.6
507		22	47	2	4	11.0		0.4
508		16	37	1	4	6.9		0.6
509		18	35	1	3	7.6		
510		20	28	1	3	10.5		
511	9	16	28	2	3	8.4		
512	7	8	20	1	2	8.9		
513	8	10	24	1	2	8.4		0.6
514	7	9	20	1	2	6.6		0.6
515	16	22	35	2	2	28.5		0.2
516	11	16	25	1	2	10.5		0.4
517	12	45	26	2	3	10.0		0.7
518	28	62	50	4	4	50.5		0.6
519	18	30	28	2	12	6.4		0.6
520	12	15	20	1	2	21.0		0.4
521	64	74	90	3	4	75.0		1.2
522	8	7	42	2	3	3.1		0.7
523	14	40	45	2	4	12.0		0.5
524	12	20	35	1	3	6.9		0.4
525	11	20	30	2	4	7.6		0.6
526	23	20	40	1	3	15.0		0.6
527	22	10	22	1	4	5.2		0.5
528	16	23	46	2	6	12.0		0.3
529	31	58	62	4	4	22.0		0.4
530	16	68	105	3	4	13.5		0.4
531	16	47	42	2	3	23.0		0.5

SOIL ANALYSES

SAMPLE NO.	Cu	Pb	Zn	Mo	W	U	Sn	Ag
115-P-532	16	16	58	2	4	9.5		0.4
533	14	18	48	2	3	12.0		0.2
534	24	35	80	3	5	30.0		0.5
535	50	75	185	4	8	115.0		0.4
536	23	45	105	3	4	72.0		0.7
540	13	4	35	3	2	4.3	13	0.2
541	51	8	52	8	2	3.0	13	0.6
542	18	6	34	3	2	2.2	18	0.8
543	18	10	40	3	2	15.0	13	0.4
544A	7	5	10	2	L2	1.8	8	0.4
544B	21	10	32	3	2	4.5	15	0.3
545	10	5	30	2	L2	1.6	L5	0.3
546	8	4	35	1	2	3.3	5	0.4
547	11	16	65	2	L2	4.9	10	0.6
548	9	15	60	2	2	3.9	L5	0.4
549	12	10	58	2	L2	4.8	10	0.6
550	14	10	95	1	3	4.3	L5	0.2
551	12	10	50	2	3	6.3	5	0.3
552	17	9	60	1	3	5.2	8	0.2
553	32	18	70	4	2	2.8	L5	0.3
554	33	10	66	3	2	4.4	8	0.6
555	10	5	55	1	2	4.2	13	0.4
556	8	6	50	2	L2	5.2	8	0.5
557	9	8	40	1	L2	5.3	10	0.3
558	8	4	38	1	L2	5.8	10	0.4
559	11	10	80	1	3	5.0	10	0.2
560	12	12	60	1	L2	4.4	8	0.3
561	8	4	30	1	2	2.9	5	0.4
562	10	7	40	1	L2	1.5	10	0.2
563	12	10	78	1	2	7.5	13	0.2
564	16	24	58	2	2	4.7	L5	0.4

SOIL ANALYSES

SAMPLE NO.	Cu	Pb	Zn	Mo	W	U	Sn	Ag
115-P-565	14	30	100	10	45	26		0.6
566	6	26	68	20	45	37		0.6
567	14	42	140	2	20	65		1.0
570	16	20	100	2	60	17		0.4
571	14	18	86	L2	30	10		0.4
572	8	10	48	L2	25	4.6		0.4
573	10	12	56	L2	20	5.7		0.4
574	10	12	74	L2	15	6.7		0.2
575	46	250	350	20	20	140		1.2
576	40	62	280	8	20	96		0.6
577	22	22	140	2	30	86		0.2
578	22	26	140	2	40	110		0.4
579	12	18	56	2	0	26		0.6
580	14	18	68	2	35	46		0.2
581	24	36	170	6	20	200		0.6
582	24	44	200	8	25	140		0.6
583	28	42	190	8	20	240		0.6
584	26	42	180	10	22	250		0.4
585	12	24	90	6	45	37		0.2
586	58	72	370	14	60	520		1.0
587	50	56	260	16	20	500		1.0
588	14	18	66	4	55	23		0.4
590	8	4	44	8	25	6.1		0.2
591	12	14	46	4	30	16		0.4
592	16	20	60	2	20	29		0.4
593	16	20	72	2	40	19		0.4
594	20	24	84	2	30	16		0.4
595	34	36	120	7.2	20	52		1.6
596	50	34	140	24	0	156		2.4
597	40	24	88	40	I.S.	170		1.6
598	40	36	88	18	0	200		3.2

SOIL ANALYSES

SAMPLE NO.	Cu	Pb	Zn	Mo	W	U	Sn	Ag
115-P-599	12	4	40	8	I.S.	50		0.4
600	72	26	64	10	0	520		1.2
601	12	12	44	4	20	55		0.6
602	68	38	160	22	20	420		2.4
603	22	20	78	10	20	36		0.8
604	44	36	100	34	15	260		1.2
605	10	8	38	2	20	5.0		0.8
606	100	30	310	8	20	520		1.6
607	44	30	110	18	30	170		1.0
608	50	36	110	20	20	230		1.4
609	34	30	100	12	15	98		0.8
610	32	24	80	12	0	280		0.8
611	30	22	86	22	10	210		1.2
612	28	24	74	30	0	73		0.6
1000	12	22	82	L2				0.6
1001	16	20	62	L2				0.6
1002	14	22	94	L2				0.6
1003	14	22	94	L2				0.6
1004	16	20	96	L2				0.4
1005	16	30	50	L2				0.8
1006	16	44	100	L2				0.6
1007	28	42	100	L2				1.0
1008	18	30	88	L2				0.6
1009	16	22	70	L2				0.6
1010	14	22	72	L2				0.6
1011	8	26	100	L2				0.6
1012	12	64	120	L2				0.6
1013	16	100	150	L2				0.6
1014	10	16	56	L2				0.6
1015	12	16	64	L2				0.6
1016	18	20	58	L2				1.0
1017	16	40	120	L2				0.6

SOIL ANALYSES

SAMPLE NO.	Cu	Pb	Zn	Mo	W	U	Sn	Ag
115-P-1018	18	28	78	L2				0.8
1019	22	24	82	L2				0.6
1020	10	12	76	L2				0.4
1021	20	12	88	L2				0.4
1022	10	20	86	2				0.4
1023	16	74	270	L2				1.0
1024	14	56	180	2				0.8
1025	14	20	52	2				1.0
1026	14	28	120	L2				0.6
1027	14	20	74	2				0.8
1028	10	10	52	2				0.4
1029	10	26	64	2				0.4
1030	12	28	78	2				0.6
1031	12	28	66	L2				0.6
1032	12	46	130	L2				0.6
1033	20	22	82	L2				0.8
1034	16	16	68	L2				0.4
1035	14	20	62	L2				0.6
1036	18	20	76	L2				0.6
1037	16	12	56	L2				0.2
1038	16	22	72	L2				0.6
1039	12	14	58	L2				0.4
1040	12	14	58	L2				0.4
1041	16	24	66	2				0.8
1042	14	12	56	L2				0.6
1043	34	20	78	2				0.6
1044	28	30	88	L2				0.8
1045	20	28	78	L2				0.6
1046	16	18	64	L2				0.6
1047	20	24	78	L2				1.0
1048	16	20	68	L2				0.8

SOIL ANALYSES

SAMPLE NO.	Cu	Pb	Zn	Mo	W	U	Sn	Ag
115-P-1049A	12	18	56	L2				0.6
1049B	22	30	100	L2				0.8
1049C	8	28	64	L2				0.6
1050	8	88	130	L2				0.6
1051	8	50	94	L2				0.4
1052	12	12	120	L2				0.6
1053	8	66	130	L2				0.6
1054	10	72	150	L2				0.8
1055	10	120	230	L2				0.6
1056	12	30	110	L2				0.4
1057	22	84	380	L2				0.2
1058	14	160	230	L2				0.2
1059	18	300	1200	L2				0.8
1060	20	110	300	L2				0.4
1061	16	180	450	L2				0.6
1062	16	42	140	L2				0.4
1063	16	36	140	L2				0.4
1064	22	48	200	L2				0.8
1065	10	32	160	L2				0.4
1066	8	28	160	L2				0.4
1067	10	26	120	L2				0.2
1068	12	100	190	L2				0.2
1069	16	38	130	L2				0.2
1070	30	28	86	L2				0.2
1071	8	110	140	L2				0.4
1072	8	150	200	L2				0.4
1500	40	10	60	3	3	5.0	5	0.5
1501A	15	5	35	2	L2	4.0	L5	0.5
1501B	24	11	45	3	L2	4.9	5	0.4
1502	24	10	60	2	2	4.6	8	0.4
1503	14	10	52	1	2	4.7	8	0.4

SOIL ANALYSES

SAMPLE NO.	Cu	Pb	Zn	Mo	W	U	Sn	Ag
115-P-1504	14	11	55	1	L2	3.0	L5	0.2
1505	10	10	48	1	L2	3.3	10	0.3
1506	11	9	50	1	L2	2.8	15	0.3
1507	10	8	38	1	L2	4.3	8	0.3
1508	11	5	50	1	L2	2.3	8	0.4
1509	8	20	92	2	L2	4.2	13	0.4
1510	10	10	60	2	2	2.6	L5	0.3
1511	10	25	80	2	2	3.8	10	0.4
1512	11	14	52	2	L2	2.6	8	0.3
1513	13	10	50	2	2	2.6	5	0.4
1514B	16	18	84	2	10	13		0.4
1515B	18	90	280	14	10	51		0.8
1516A	30	34	1100	8	0	490		1.0
1516B	26	32	950	4	0	270		1.2
1517A	8	20	68	L2	1.5	22		1.2
1517B	10	20	76	8	1.5	7.0		0.4
1518B	10	18	96	2	20	19		0.2
1519B	14	14	84	2	10	13		0.2
1520B	20	34	110	2	5	27		0.6
1521B	16	26	90	6	5	20		0.2
1522B	16	18	62	2	15	19		0.2
1523B	14	18	64	2	0	15		0.2
1524B	36	62	360	6	20	130		1.0
1525B	16	20	100	L2	20	14		0.2
1526B	44	82	340	10	25	110		0.8
1527B	20	26	82	12	10	72		0.6
1528A	62	76	280	20	15	410		1.4
1528B	40	50	190	8	20	290		0.8
1529A	10	12	52	2	1.5	18		0.4
1529B	12	14	52	2	25	10		0.4
1530B	12	16	56	L2	20	7		0.4

SOIL ANALYSES

SAMPLE NO.	Cu	Pb	Zn	Mo	W	U	Sn	Ag
115-P-1531B	20	26	78	4	0	58		0.6
1532A	68	30	120	32	0	650		1.8
1532B	58	72	260	52	5	170		2.0
1533B	52	100	290	74	20	150		2.0
1534B	160	68	240	64	0	830		2.2
1535B	110	120	290	110	20	390		1.6
1536B	120	120	370	68	20	230		3.2
1537B	22	20	80	2	5	15		0.4
1538B	12	16	54	2	30	6		0.2
1539B	46	42	160	40	15	140		1.6
1540B	24	34	200	22	15	31		0.8
1541B	100	110	340	72	30	200		2.4
1542B	120	110	380	78	30	180		2.0
1543B	54	52	230	40	15	110		1.2
1544B	42	46	170	22	15	73		1.4
1545B	44	42	160	18	10	96		1.2
1546B	52	50	150	40	10	100		1.2
1547B	54	55	230	42	20	87		2.4
1548B	84	52	150	30	15 (Clay)	640		1.4
1549B	28	30	74	20	20	73		0.8
1550B	42	20	150	24	10	73		1.2
1551B	18	16	52	6	15	5.6		0.6
1552B	62	46	140	22	15	630		1.4
1553B	120	120	390	86	30	220		3.2

APPENDIX IV

STREAM SEDIMENT SAMPLE ANALYSES

APPENDIX IV

STREAM SEDIMENT ANALYSES

SAMPLE NO.	Cu	Zn	Pb	Ag	Mo	W	U
115-S-500	14	160	36	1.0	310	0	340
1000	12	86	22	0.6	L2		
1001	22	100	24	0.6	L2		
1002	10	88	18	0.4	L2		
1003	18	72	22	0.6	L2		
1004	18	94	34	0.6	L2		
1005	16	90	24	0.8	L2		
1006	14	92	24	0.8	L2		
1007	16	120	32	0.8	L2		
1008	10	130	110	0.2	L2		
1500	8	50	12	0.4	6	95	42
1501	8	110	24	0.8	14	0	340
1502	10	92	18	1.0	36	0	130

APPENDIX V

PANNED STREAM SEDIMENT ANALYSES

APPENDIX V

ANALYSES OF HEAVY MINERAL CONCENTRATES FROM GALENA CREEK, ENG 2

SAMPLE NO. Panned	Cu	Zn	Pb	Ag	Mo
H-1000	6	90	28	L0.2	L2
H-1001	4	64	20	L0.2	L2
H-1002	4	66	20	L0.2	L2
H-1003	4	82	26	L0.2	L2
H-1004	6	42	14	0.2	L2
H-1005	6	58	16	L0.2	L2
H-1006	8	70	28	0.2	L2
H-1007	6	64	14	L0.2	L2
H-1008	6	130	14	0.2	L2
H-1009	8	64	16	L0.2	L2

APPENDIX VI

DESCRIPTION OF THIN AND POLISHED SECTIONS

ROCK FROM MINERALIZED ZONE

115R 1035 Sphalerite Rich Vein

chlorite?		
radiating patches	30-35%	
fine grained disseminated in quartz	30-35	(includes quartz, probably 60/40 ch/qz)
quartz (clear borders of grains)	5-10	
sphalerite (honey)	15-20	
magnetite	7-10	
hematite(specularite)	3- 5	
pyrite	minor	
Ti-oxide	minor	
quartz-carbonate veinlet	trace	

The original texture of the host rock (if any) is completely destroyed. The present assemblage was formed by replacement of a low-density rock or by precipitation into open cavities; the former appears more probable because of the lack of many euhedral crystals.

Chlorite? occurs in two modes:

1) as patches of radiating to fibrous grains up to 0.05 mm long, intergrown with very fine grained equant grains of the same mineral. Pleochroism is very strong from pale yellow green to deep forest green. Birefringence is masked by the mineral color, but appears to be higher than normal for chlorite. The mineral may be a high-iron chlorite or possibly stilpnomelane (The book says stilpnomelane can be green, but all that I have seen has been brown). Patches are interstitial in part to other intergrowths of quartz and chlorite?, and commonly contain sphalerite and magnetite.
2) as fine grained (0.02 mm) equant grains in coarser quartz grains (0.2-0.7 mm average). The chlorite does not occur in the outer zones of the quartz grains, but is strongly concentrated in the centers, giving a thin rim of chlorite-free quartz, grading rapidly into what appears to be massive chlorite, but which probably still contains some quartz masked by the dark green chlorite. Quartz grains have irregular rounded borders, with overall scalloped contacts against the patches of fibrous chlorite.

Quartz grains free of chlorite host the hematite; quartz appears to form rims around the hematite up to 0.2 mm thick. Beyond this distance chlorite becomes abundant in the quartz.

Sphalerite, with bright orange color in transmitted light forms irregular equant grains averaging 0.2 to 1 mm in size. Good cleavage is developed in some coarser grains. Grains are associated intimately with magnetite, and appear more common in radiating to fibrous chlorite than in quartz-chlorite. This preference is not strong.

Magnetite forms subhedral to euhedral grains averaging 0.2 mm in size.

Platey hematite (specular?) forms aggregates up to 0.5 mm thick, w plates up to 1 mm across. Some aggregates are slightly radiating.

Pyrite forms a few grains 0.01 mm across in sphalerite.

Ti-oxide forms a few clusters of laths up to 0.2 mm across.

The rock is cut by a narrow (0.02 mm) quartz-carbonate stringer.

CERTIFICATE

I, John Biczok, of Kenora, Province of Ontario, do hereby certify that:

1. I am a geologist residing at 612 - 4th Avenue North, Kenora, Province of Ontario.
2. I am a graduate of Lakehead University, Ontario with a H. B.Sc. (1976) in geology and am presently completing an M.Sc. at the University of Manitoba, Winnipeg.
3. I have been practising my profession since 1973 and am at present Exploration Geologist with Noranda Mines Limited in Edmonton.
4. I was party chief for the crew that conducted the work in this report and the report is correct to the best of my knowledge and ability.

Dated: Oct. 4, 1979

John Biczok

John Biczok, H. B.Sc.

CERTIFICATE

I, William Mercer, of the City of Edmonton, Province of Alberta, do hereby certify that:

1. I am a geologist residing at 6814 - 110 Street, Edmonton.
2. I am a graduate of Edinburgh University, Scotland, with a B.Sc. Hons (1968) in geology and McMaster University, Ontario, with a Ph.D. (1975) in geology.
3. I have been practicing my profession since 1974 and am at present District Geologist for Noranda Mines Limited in Edmonton.
4. I am a fellow of the Geological Association of Canada and a member of the Society of Economic Geologists and the Canadian Institute of Mining and Metallurgy.
5. I supervised the work that is described in this report.

W. MERCER

Dated: 4 October 1979

W. Mercer, Ph.D.

STATEMENT OF COSTS

WORK PERFORMED IN THE EXPLORATION OF OUR WEIR MOUNTAIN PROJECT

JUNE/JULY 1979

J. Biczok	$1,440.00/month
P. Wagner	1,080.00/month
C. Stewart	885.00/month
P. Lhotka	1,010.00/month
June 5-7, 1979	Mobilization
June 22 to July 15, 1979	Grid location, electromagnetic survey, geochemical survey, and geological survey.
July 28-30, 1979	Report writing

All above salaries are subject to bush bonus and vacation pay.

STATEMENT OF COSTS

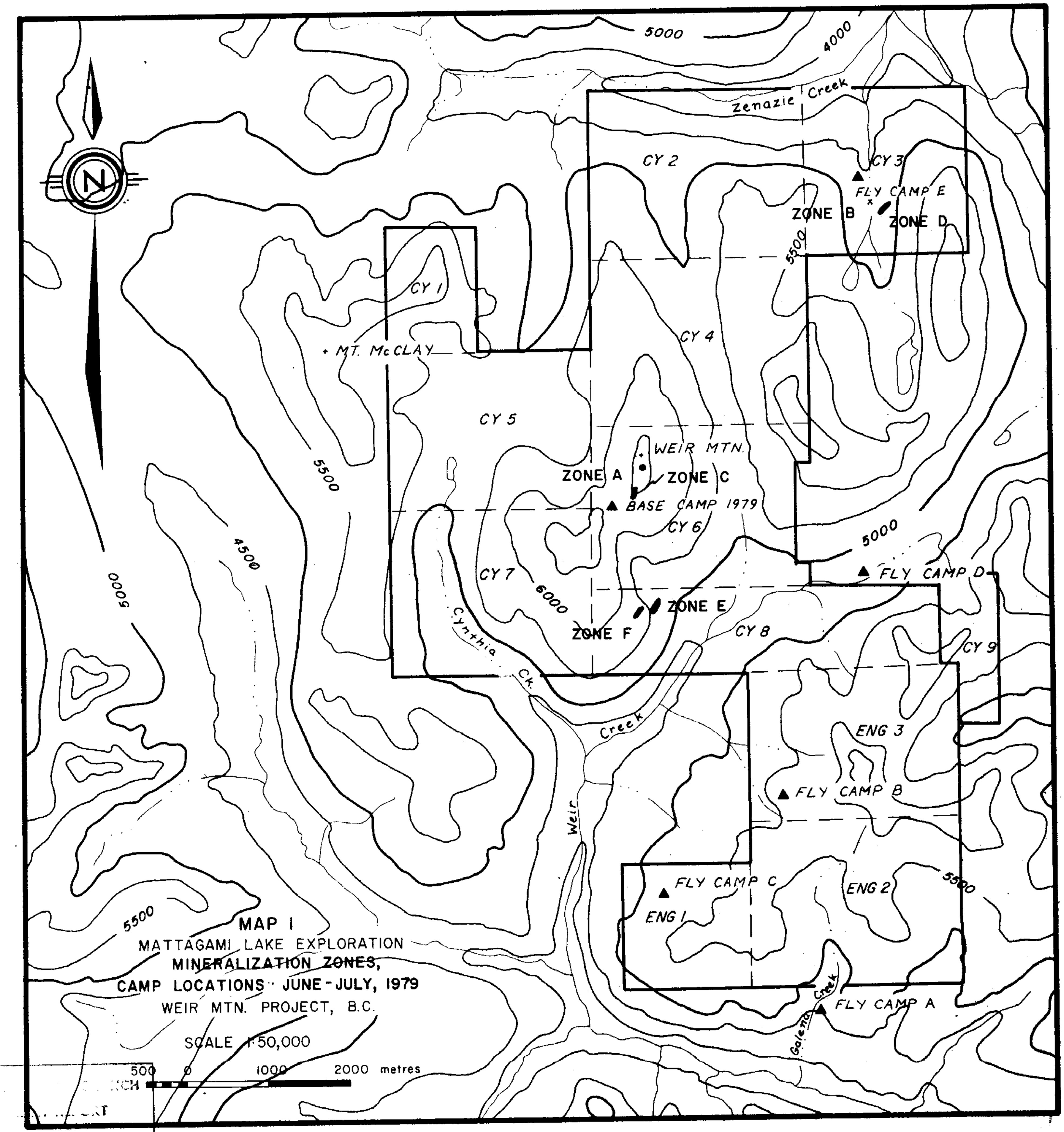
Grid Location		
2 man days 11.5 km ($25.45/km)	Cost	$ 292.70
Magnetometer		
2 man days 11.5 km ($99.88/km)	Cost	1,148.61
Geology Prospecting, Radiometrics, Radon, Soil Sampling		
84 man days	Cost	15,731.60
Geochemical (Soil Sampling, Stream Sediment Sampling)		
8 man days 242 soil samples ($18.42/sample)	Cost	4,456.81
General Supervision		
	Costs	999.45
Report Writing		
	Costs	494.34
		$23,123.51

CERTIFIED CORRECT

GEOLOGICAL ASSOCIATION
W. MERCER
FELLOW

September 18, 1979

District Geologist



MAP 1

MATTAGAMI LAKE EXPLORATION

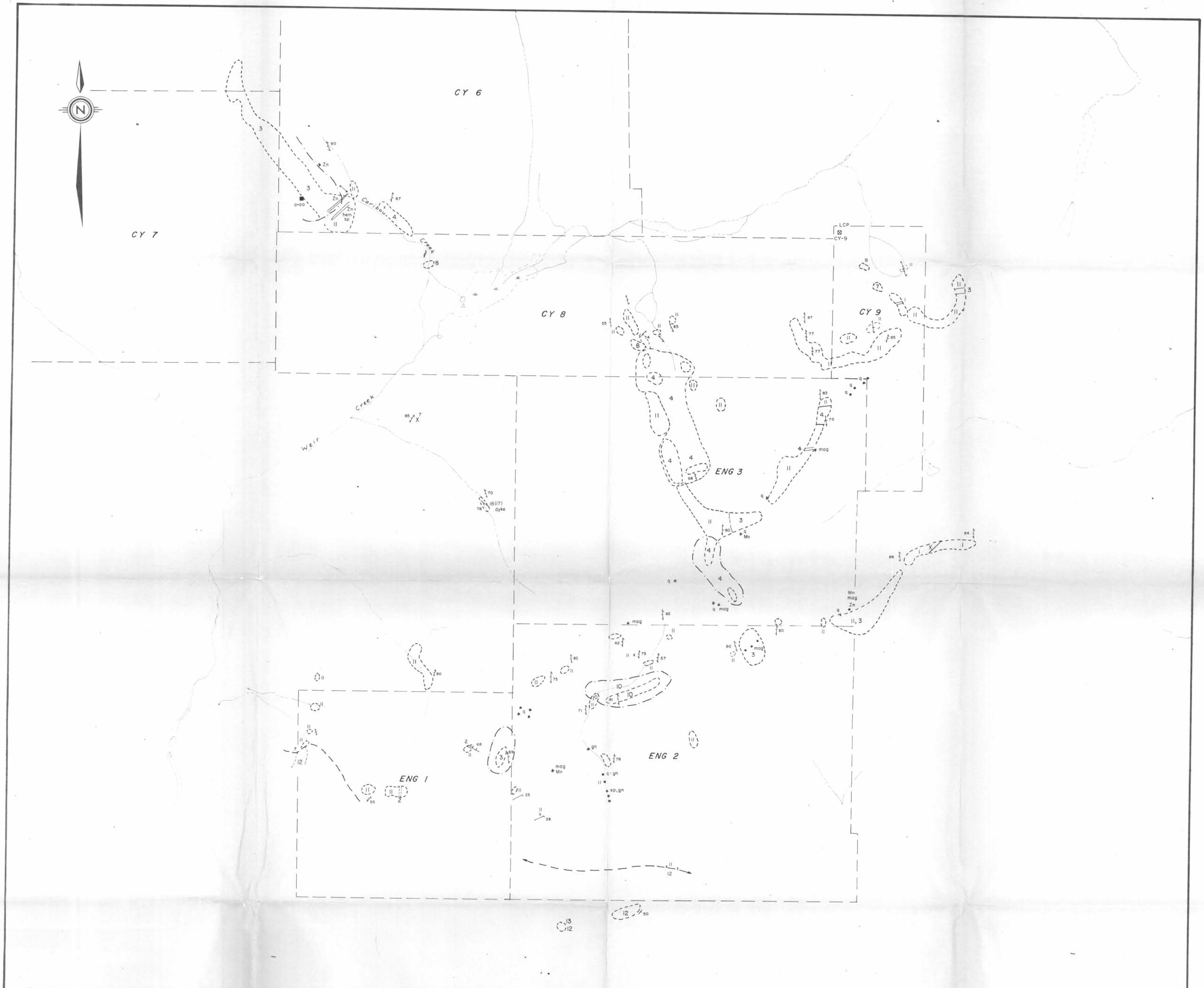
MINERALIZATION ZONES,

CAMP LOCATIONS JUNE - JULY, 1979

WEIR MTN. PROJECT, B.C.

SCALE 1:50,000

7556



MAP 2
MATTAGAMI LAKE EXPLORATION

GEOLOGY MAP, ENG 1-3, CY 5-9
WEIR MTN. PROJECT, B.C.

K.B. Sept./79 Base map: Johns-Manville, Map 8, A.R. 3731

1000 0 1000 2000 3000 feet
200 0 200 800 metres

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 7556

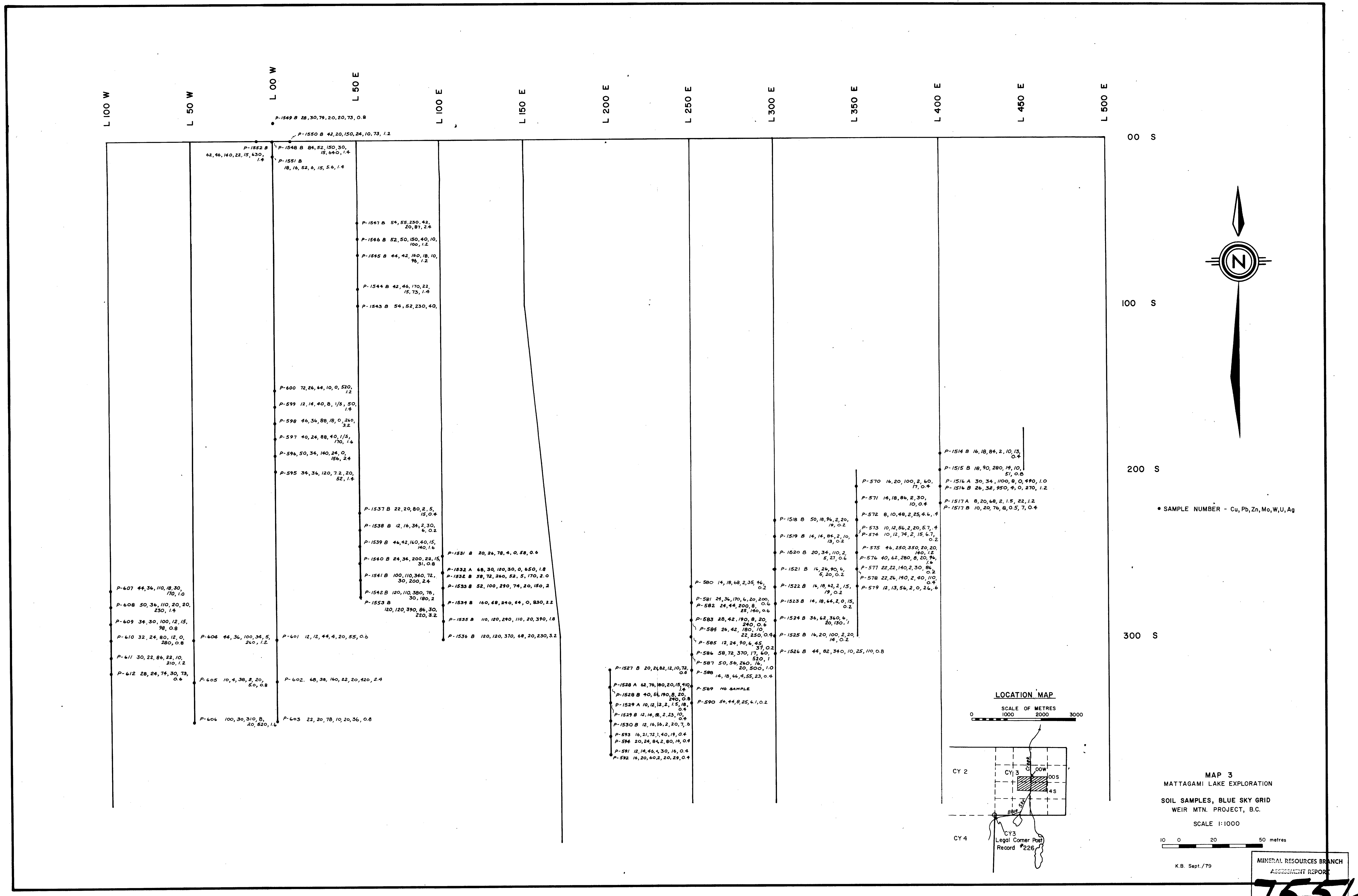
⬭	outcrop perimeter
x	small outcrop
*	talus
q	quartz
mag	magnetite
sp	sphalerite
gn	galena
⩘	shear foliation (dip unknown, inclined, vertical)
⟋	joint plane (inclined, vertical, dip unknown)
-·-	CONTACT: assumed
—	defined

LEGEND Surprise Lake Batholith

1	f.g. equigranular aplite, no mafics
2	f.g. equigranular aplite, 5-7% biotite
3	quartz porphyritic aplite, 15% qtz. pheno. 2-6mm. 5% k-fd pheno. l.t 1.5 cm. f.g. groundmass k-fd > quartz
4	porph-qtz-kfd alaskite/granite 10-20% kfd pheno. 2-4cm., qtz. phenos. to 3mm. possible seriate porph. 3-4% biotite < 2mm.
5	course-gr. porph. dyke, brown, composition undetermined
6	m.g. equigranular bt$_0$. alaskite/granite dyke
7	m.g.-c.g. equigranular, biotite granite
8	c.g. equigranular to seriate porph. biotite granite 5% m.-c.g. biotite 3-6mm., 20-30% qtz. < 5mm., kfd. 1-2 cm.
9	pink, c.g. equigranular to porphyritic alkaline amphibole qtz.-monzonite granite 10% mg qz., 15-20% plag., 0-10% alk. amph. in radiating aggreg. < 1 cm. across
10	strongly porphyritic alaskite, m.g. groundmass w. 30-40% kfd. phenos. 2-3cm. long 25-30% qtz equigranular - seriate porph. to 1cm. 5% biot. generally anhedral aggreg. to 1cm. Groundmass is m.g. kfd., qtz, bio., minor plag.
11	m.g.-c.g. equigranular to porph. alaskite/granite (bio.) 0-20% kfd phenos. 1-3 cm. 25-35% equant qtz. 5mm., 2-7% bio. < 2mm., groundmass generally m.g. < 5mm.

CACHE CREEK GROUP

12	f.g.-v.f.g. quartzite, massive or thin bedded shales
13	v.f.g. quartzite, hornfelsed, cherty, massive



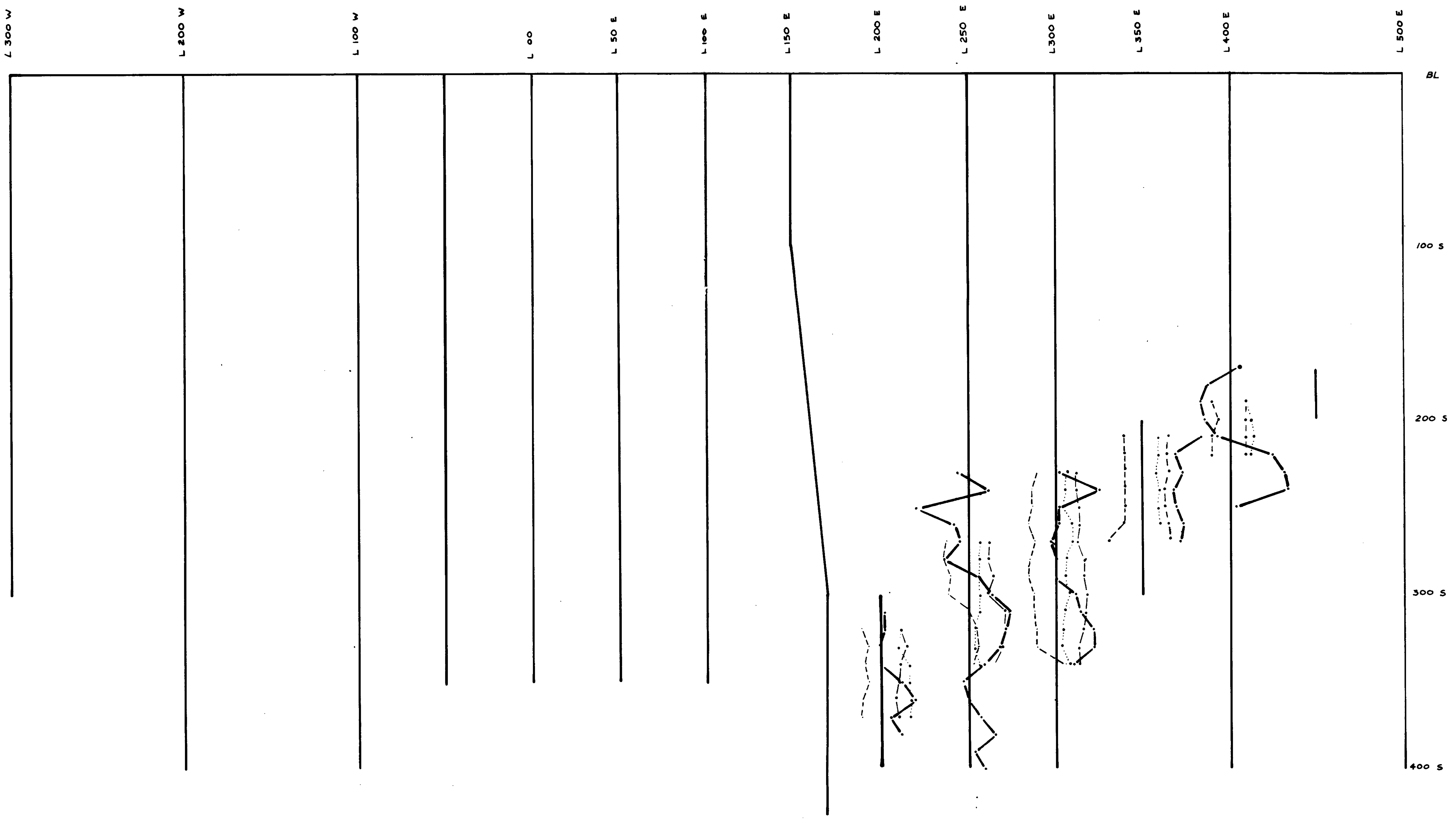
● SAMPLE NUMBER - Cu, Pb, Zn, Mo, W, U, Ag

MAP 3
MATTAGAMI LAKE EXPLORATION

SOIL SAMPLES, BLUE SKY GRID
WEIR MTN. PROJECT, B.C.

SCALE 1:1000

K.B. Sept./79



MAP 4

MATTAGAMI LAKE EXPLORATION

GEOPHYSICAL RESULTS - BLUE SKY GRID

WEIR MTN. PROJECT

LEGEND

MAGNETOMETER —·—·—·

RADEM

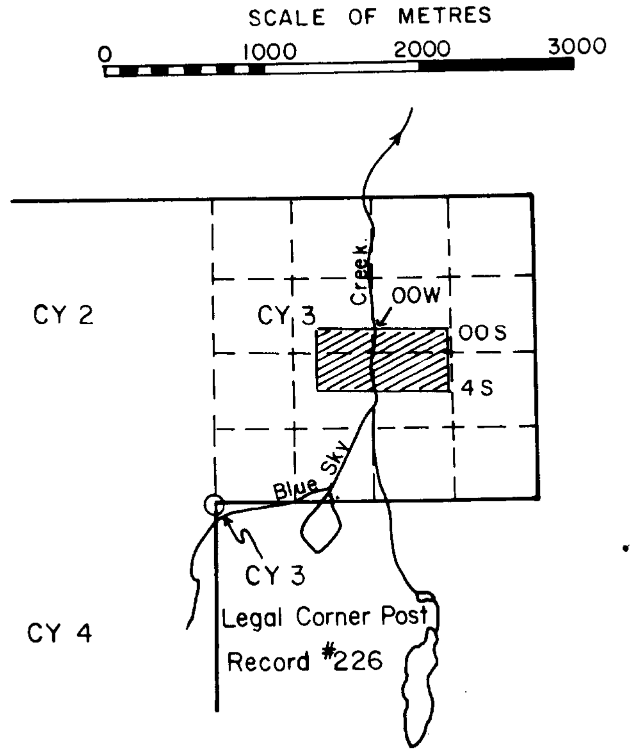
IN PHASE -·-·-·-·-·-·-

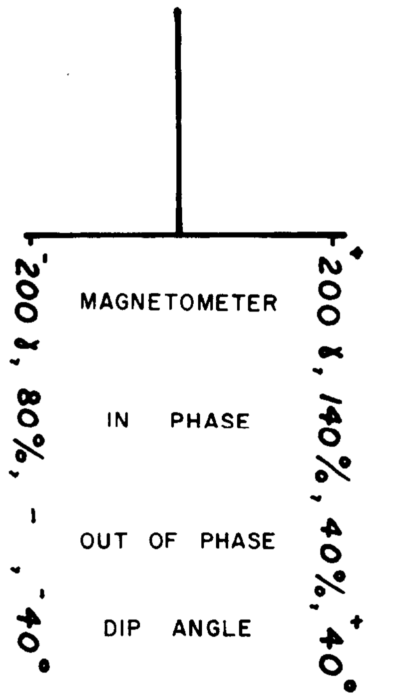
OUT OF PHASE —·—·—·

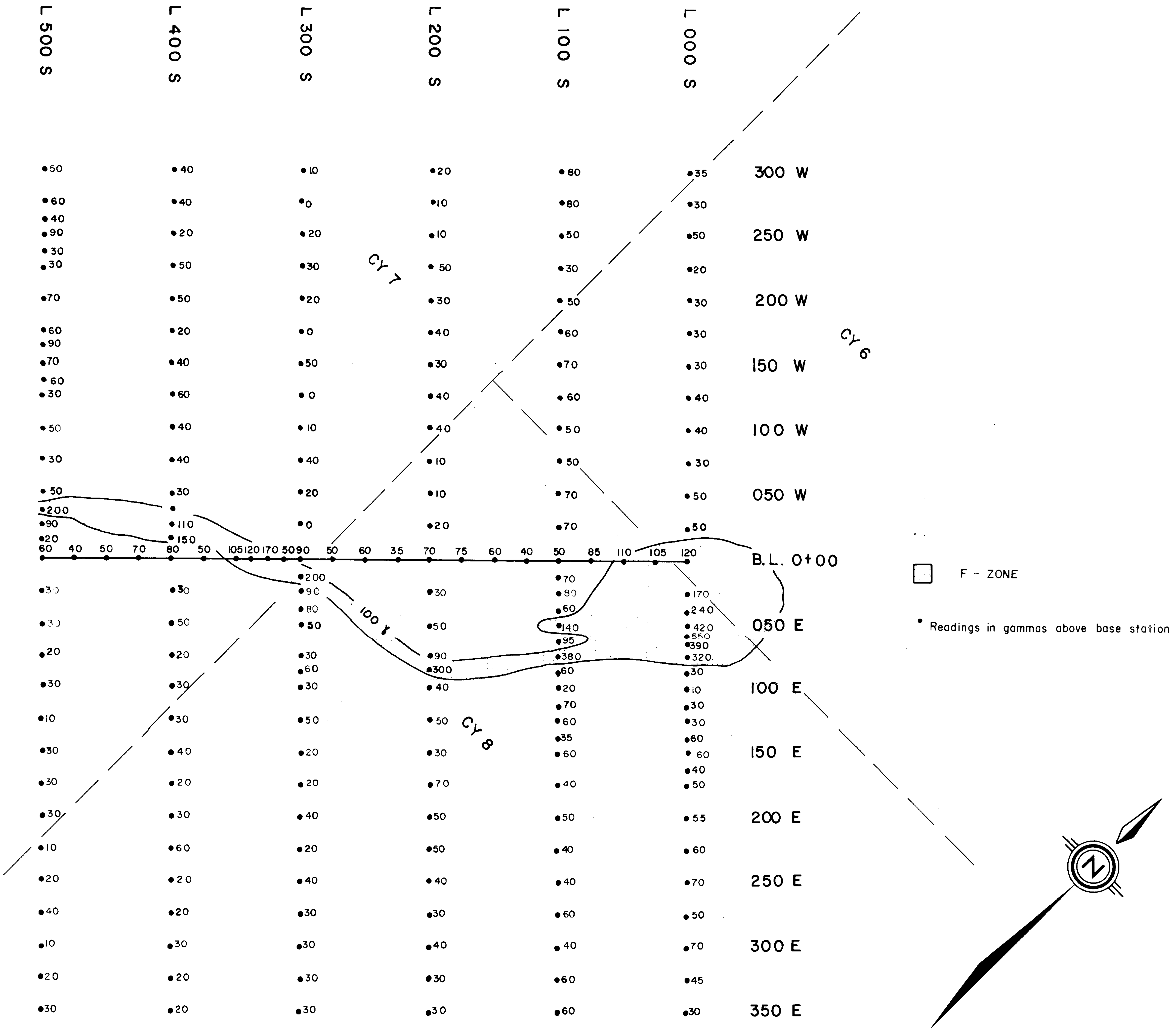
DIP ANGLE ·············

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
7556

LOCATION MAP







0 25 50 75 100 m

SCALE 1:2500

1 CM = 25 M

MAP 5
MATTAGAMI LAKE EXPLORATION

MAGNETOMETER SURVEY, F ZONE
WEIR MTN. PROJECT, B.C.

P.W., K.B. Sept./79

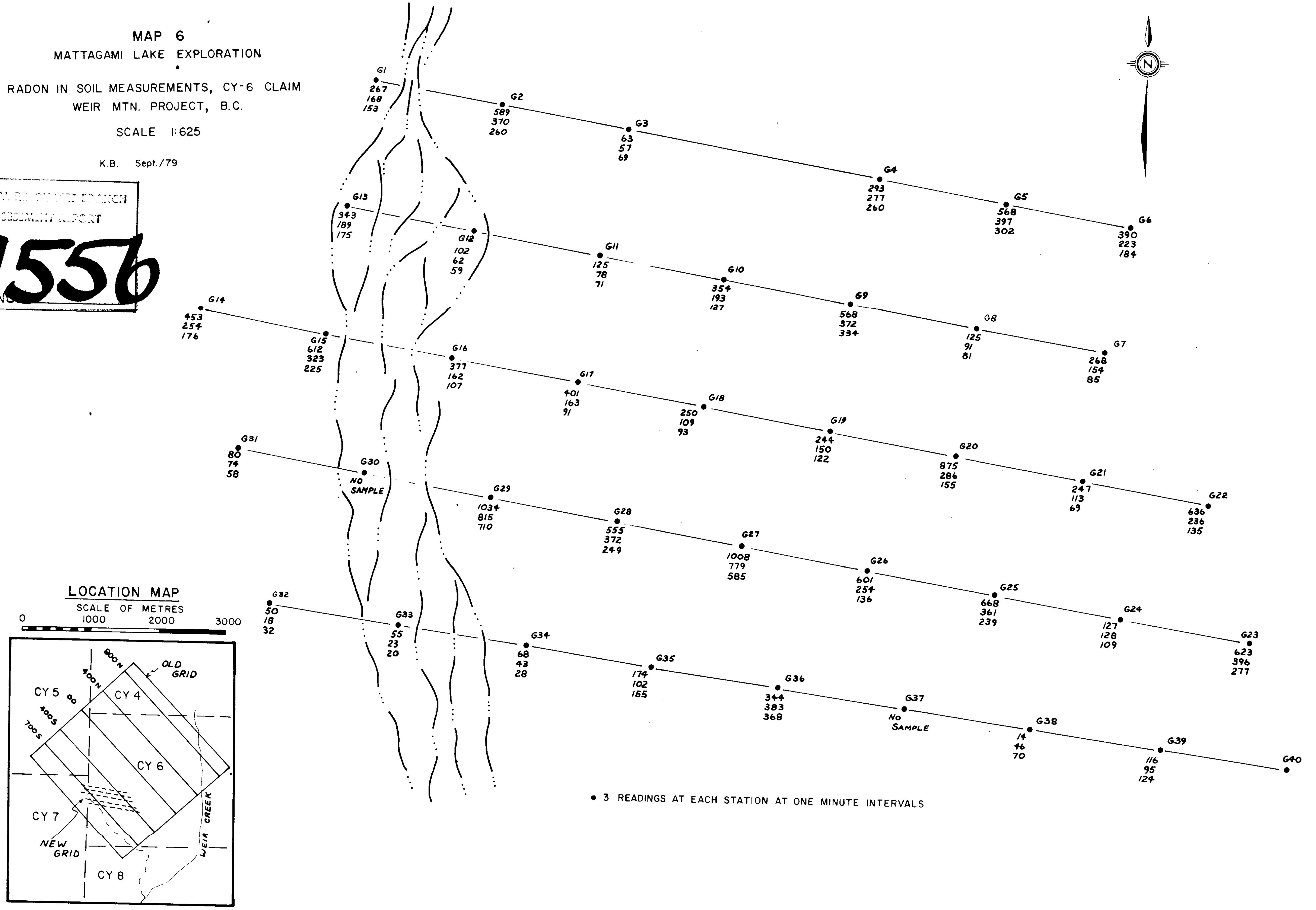
MAP 6

MATTAGAMI LAKE EXPLORATION

RADON IN SOIL MEASUREMENTS, CY-6 CLAIM
WEIR MTN. PROJECT, B.C.

SCALE 1:625

K.B. Sept./79



● 3 READINGS AT EACH STATION AT ONE MINUTE INTERVALS

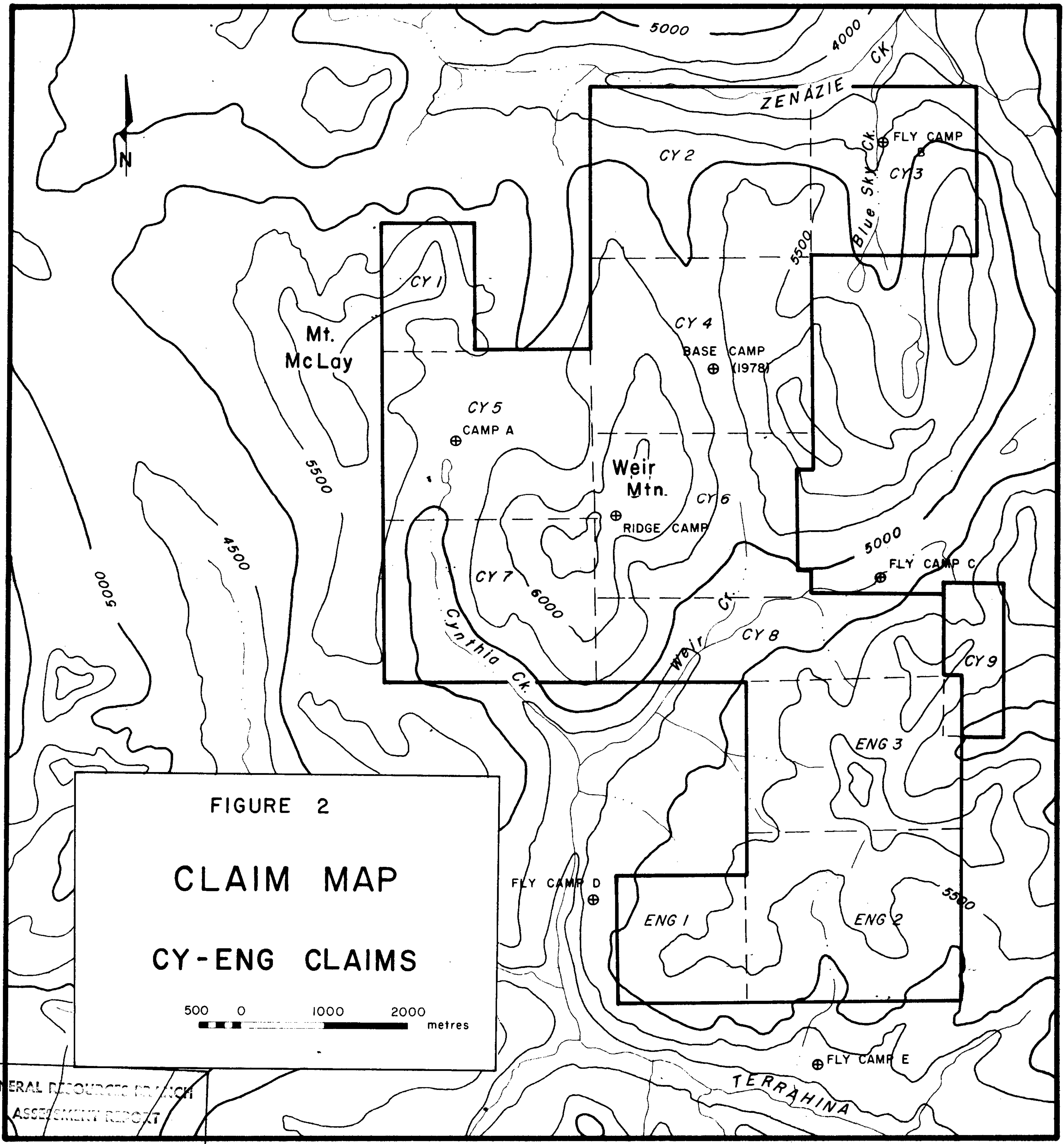


FIGURE 2

CLAIM MAP

CY-ENG CLAIMS