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YUKON TERRITORY, CANADA  
"LAND OF THE MIDNIGHT SUN"

1974 GEOLOGICAL & GEOPHYSICAL

REPORT ON THE

JIM 1-24 CLAIM GROUP  
GRANT NUMBERS Y74575-Y74582  
WATSON LAKE MINING DIVISION

N.T.S. SHEET 105G-3

LATITUDE 61° 09' AND LONGITUDE 131° 06'

FINALYSON LAKE MAP AREA  
FOR

ENVOY RESOURCES LTD.

VANCOUVER, B.C.

by

R. G. HILKER, P. ENG.

R. G. HILKER LIMITED

WHITEHORSE, YUKON TERRITORY

NOVEMBER 27th, 1974

*NMEAP  
Received  
May 28, 1975.*

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POCKET

    Sketch #2 - Location Plan - Scale 1" = 4 miles

    Geology Plan - Scale 1" = 400 ft.

    Geochemical Soil Sample Location Plan - Scale 1" = 400 ft.

    Geochemical Silver/Lead/Zinc Plan Scale 1" = 400 ft.

INTRODUCTION:

The Jim 1 - 24 claim group, located on N.T.S. Sheet 105-G-3 Junkers Lake area in the Yukon Territory, was staked on the east boundary of the Eagle Claim Group, where Silver-lead-zinc mineralized showings occur. The claim group was acquired by Envoy Resources Ltd. of Vancouver, British Columbia.

The area to the west of the Envoy Resources claim group was explored in 1961 and 1962 by underground adits, and surface pack-sack-diamond drilling and geological mapping by Conwest Exploration. In 1968 a geochemical survey was conducted on the Eagle claims. Twenty-six mineralized showings have been discovered on the Eagle claims by prospecting, trenching and geological mapping. The geochemical survey, during 1968, indicated the presence of previously discovered surface showings. The silver-lead-zinc mineralization, in the area west of the Envoy Resources claims, is associated with limestone beds near the contact with argillite and with minor and major faulting. The Eagle claim silver-lead-zinc mineralization occurs, as vein structures, lenses and in places is disseminated in the limestone-argillaceous limestone beds. The principal sulphide minerals are galena, sphalerite, freibergite; and the minor sulphides are chalcopyrite, pyrite and pyrrhotite.

Mr. J. W. MacLeod, P. Eng., a director of Envoy Resources Ltd. contacted the writer and requested that an evaluation report be prepared on the Jim 1 - 24 (inclusive) claim group. The writer visited the Eagle claim group September 17, 1973 and noted a surface mineralized showing near the portal of the adit. On March 17, 1974 the writer assisted in the staking of the Jim 1 - 24 (inclusive) claim group. The claim posts and locations of the Jim 1 - 8 claims were observed in the field by the writer. During the visitation to the property on March 17, 1974 approximately three feet of snow covered the ground, the temperature was about 25 degrees above and partially clear sunny weather prevailed. The writer observed no sulphide mineralization or

showings on the Jim 1-24 (inclusive) claim group, because of the snow cover.

On June 18th, 1974 Tintina Silver Mines Ltd. commenced an extensive diamond drill program on the Eagle claim group that is located on the west boundary of the Jim 1-24 claim group. A reconnaissance geological mapping and geochemical soil sampling survey was conducted on the Jim 1-24 claim group August 30th to September 3rd, 1974, by the consulting firm of R.G. Hilker Limited on behalf of Envoy Resources Ltd. The exploration work was done from a camp established at the upper part of Eagle creek. The traverses were made by establishing a chain and compass line marked by orange flagging by the two soil samplers employed on the job. The data processing and drafting was done in the office of R.G. Hilker Limited in Whitehorse and the soil samples were processed by Barringer Research Laboratory - Whitehorse for the elements of silver, lead and zinc. A report was prepared to outline the field results in the form to be used for assessment work purposes on the Jim claim group.



LOCATION AND ACCESS:

The Envoy Resources, Jim 1 - 24 contiguous claim group is located on N.T.S. Sheet 105G-3, Watson Lake Mining District, of the Yukon Territory. The property is located at Latitude 61° 09' and Longitude 131° 06', near the Junkers Lake and Inga River area.

The Jim claim group is accessible by flying from Ross River, Quite Lake Maintenance Camp, Teslin, Pine Lake Airstrip or Watson Lake. The following, is the various air distances from the previously mentioned location to the property:

Ross River	72 miles southwest
Quite Lake Camp	70 miles east
Teslin	87 miles northeast
Pine Lake Airstrip	70 miles north
Watson Lake	105 miles northwest

Territorial Airways fly fixed wing and rotary blade aircraft out of Ross River and Frontier Helicopters fly both fixed wing and rotary blade aircraft out of Watson Lake.

In 1962 a tractor tote trail was pushed, in a northeasterly direction, from near Morley River, Mile 777.7 on the Alaska Highway to the Eagle claim group and a point approximately two miles west of the Jim claim group. The tractor tote trail is presently only suitable for winter travel, because of soft muskeg areas. In 1962 an airstrip, approximately 3000 feet long, was cleared 6 miles north east of Junkers Lake. The airstrip is in excellent condition and has been constructed on a sandy soil that is relatively hard and not muddy during wet weather. The airstrip is located in a relatively wide and flat valley, elevation 3700 feet, that has a north-south bearing. It is possible to transport heavy and bulky mining equipment into the Junkers Lake Airstrip by fixed wing aircraft and then airlift from the airstrip to Jim claim group at the 4000 feet elevation.

At the present time the best access to the Envoy Resources property is by rotary blade aircraft.

PERSONNEL

The following personnel were employed by the consulting firm of R.G. Hilker Ltd., when the field work, data processing and office report preparation was conducted for Envoy Resources Ltd. on the Jim 1 - 24 (Y74575 - Y74598 incl.) claim group - sheet 105-G-3.

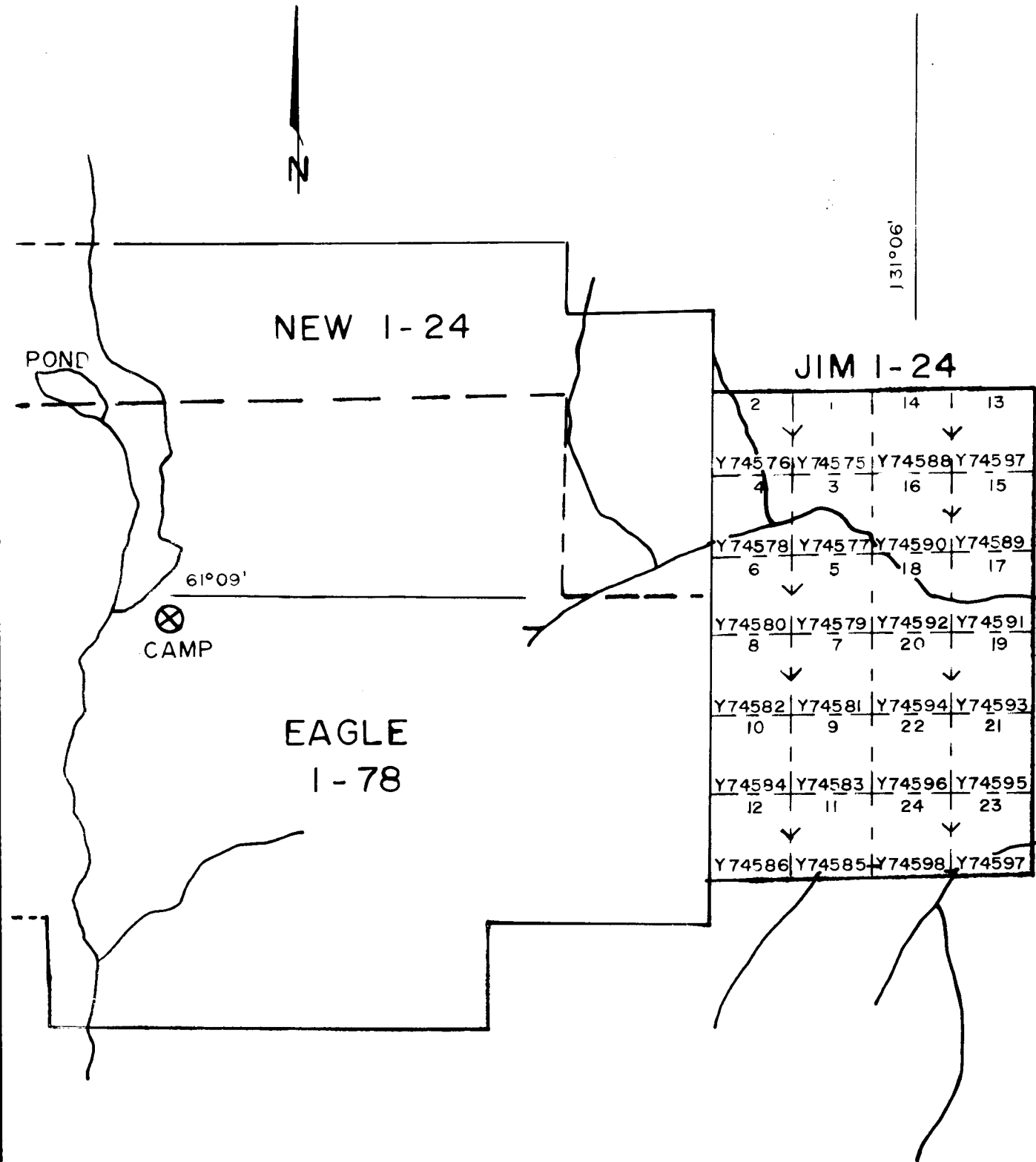
<u>Name</u>	<u>Address</u>	<u>Date - 1974</u>	<u>Occupation</u>
R.G. Hilker	Box 4008 Whitehorse, Y.T.	Aug. 30 Nov. 21-27	Geologist
G.G. Carlson	c/o Box 4008 Whitehorse, Y.T.	Aug. 30 & 31 Oct. 1 & 2	Geologist
D. McDonald	117 Gold Road Whitehorse, Y.T.	Aug. 31 Sept 1, 2 & 3	Soil Sampler
S. Benson	117 Gold Road Whitehorse, Y.T.	Aug. 31 Sept. 1, 2 & 3	Soil Sampler
W.D. Seidler	Box 4162 Whitehorse, Y.T.	Nov. 22 - 27	Drafting
J. Rink	6 Arnhem Road Whitehorse, Y.T.	Nov. 21 - 27	Secretary

CLAIMS

The Jim 1 - 24 claim group was staked on March 17, 1974 and recorded at the Watson Lake Mining Recorders office on March 20, 1974. The Jim 1 - 24 claim group is located on N.T.S. Sheet 105-G-3 in the Watson Lake Mining District of the Yukon Territory. The claims are situated in the Junker Lake and Ings River area at Latitude 61° 09' and Longitude 131° 06'. The following is a detailed description of the claims and is from Form "B" - Record of Mineral Claims:

Claim Name	Grant Number	Registered Owner	Anniversary Date
Jim 1 - 8 (incl.)	Y74575-Y74582 (incl.)	Envoy Resources Ltd.	March 20/75
Jim 9 - 16 (incl.)	Y74583-Y74590 (incl.)	Envoy Resources Ltd.	March 20/75
Jim 17 - 24 (incl.)	Y74591-Y74598 (incl.)	Envoy Resources Ltd.	March 20/75

The, Form "B" Record of A Mineral Claim in the Yukon Territory, has been issued by the Watson Lake Mining Recorder. The transfers of Mineral Claims for the Jim 1 - 24 claim group have been registered, to Envoy Resources Ltd. #333 - 885 Dunsmuir Street, Vancouver, British Columbia.



2	1	14	13
↓			↓
Y74576	Y74575	Y74588	Y74597
4	3	16	15
↓			↓
Y74578	Y74577	Y74590	Y74589
6	5	18	17
↓			
Y74580	Y74579	Y74592	Y74591
8	7	20	19
↓			↓
Y74582	Y74581	Y74594	Y74593
10	9	22	21
Y74584	Y74583	Y74596	Y74595
12	11	24	23
↓			↓
Y74586	Y74585	Y74598	Y74597

R.G. HILKER LTD  
 CONSULTING GEOLOGIST  
 WHITEHORSE, Y.T.

NTS SHEET 105-G-3

**ENVOY RESOURCES LTD**

**CLAIM LOCATION SKETCH**

DATE: May, 1974    SCALE: 1" = 1/2 mi.

## GEOLOGY

### REGIONAL GEOLOGY

The Jim claims are located at the southern end of the St. Cyr mountain range, within the Pelly Mountains. This range trends northwest and is bounded on the southwest by the Nisutlin Plateau and on the northeast by the Tintina valley, a strong, northwest trending fault zone which is a continuation of the Rocky Mountain Trench. The claims are within a mountainous terrain, elevations ranging from 4000 feet to Peak 7393 just north of the claim group.

Reconnaissance mapping by the Geological Survey of Canada has shown the mountains in this area to consist of folded and faulted sediments, of early Paleozoic age, which have been intruded by Jurassic and/or Cretaceous granitic rocks. The geology in the vicinity of the claim group is shown on Figure 4.

The oldest rock in the area, Unit 1, is a sequence of Lower Cambrian quartzite, phyllite and limestone. This unit, and in particular the limestone, forms the host rocks for the Tintina Silver property mineralization. These rocks are overlain, often on southwesterly dipping thrust planes, by Unit 2, a thick sequence of Middle and Upper Cambrian (?) phyllites, with some interbedded dolomite, greenstone and chert. Adjacent to granitic intrusive bodies, this rock is frequently altered to hornfels (Unit 2a).

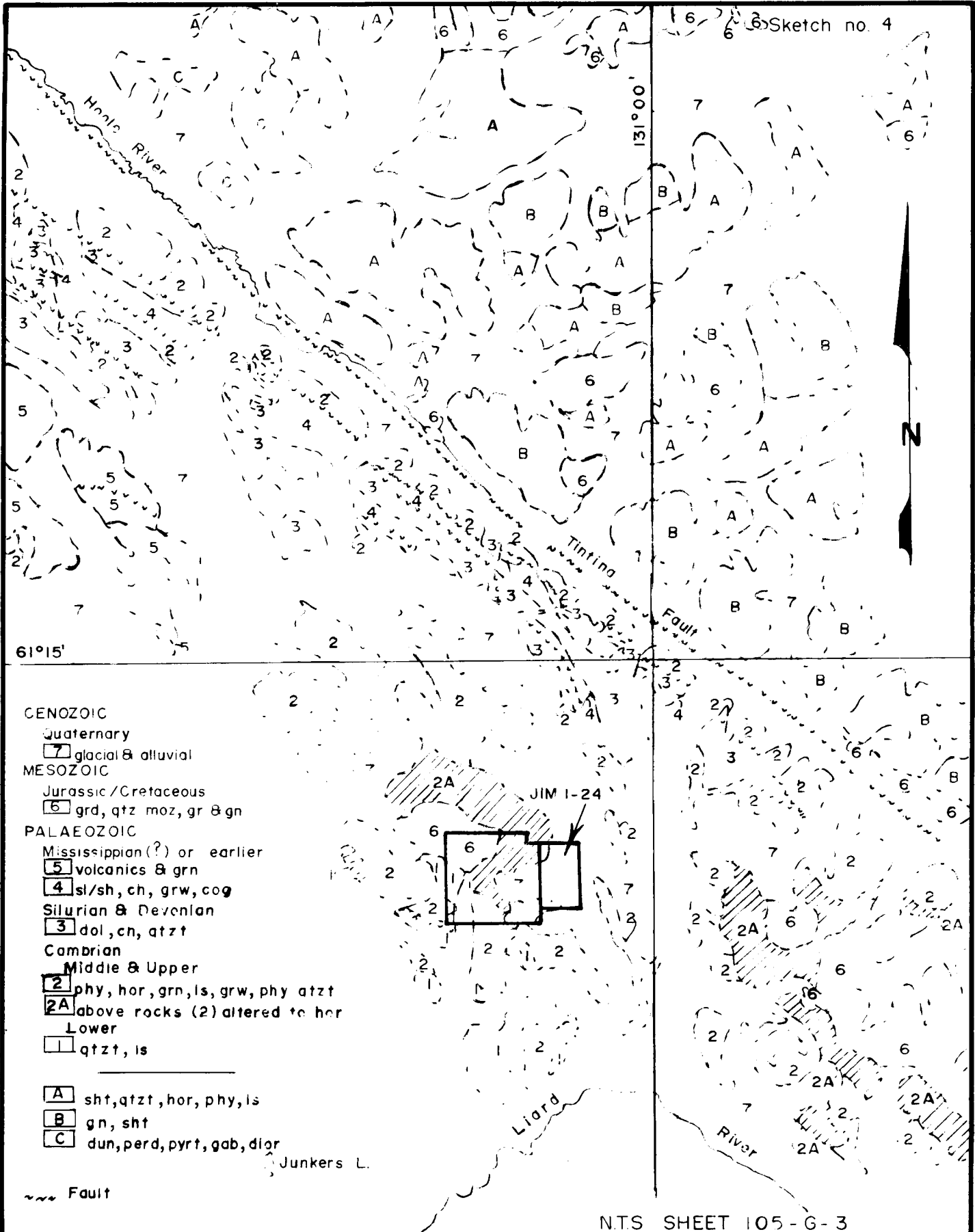
Overlying Unit 2, mainly to the northwest of the property, is a middle Paleozoic sequence of thick bedded dolomite, with minor chert and sandy and silty dolomite, and overlain locally by slate, shale, chert and minor greywacke (Unit 4). These rocks have been intruded by granitic rocks (Unit 5), mainly biotite granodiorite.

A roughly circular granodiorite plug, approximately 1½ miles in diameter, forms the northern boundary of the property and cuts rocks of both units 1 and 2.

Pleistocene glaciation has covered the entire area, moving towards the northwest, and subsequent alpine glaciation has sculpted the mountains, determining the present topography. Unit 12, unconsolidated glacial and alluvial deposits, fill the valleys and cover most slopes to between 4000 and 5000 feet elevation.

Structure in the area is dominated by the northwest striking Tintina Fault. The most important feature in the area of the Jim claims is an anticlinal structure which trends parallel to the Tintina Fault. Small scale folding associated with this structure is abundant, as is small scale cross faulting. Age relations between the various sedimentary units are often uncertain due to the thrust faulting from the southwest, as many of the major contacts are thrust fault planes.

Sketch no. 4



- CENOZOIC**  
 Quaternary  
 7 glacial & alluvial
- MESOZOIC**  
 Jurassic / Cretaceous  
 6 grd, qtz moz, gr & gn
- PALAEOZOIC**  
 Mississippian (?) or earlier  
 5 volcanics & grn  
 4 sl/sh, ch, grw, cog  
 Silurian & Devonian  
 3 dol, ch, atzt  
 Cambrian  
 Middle & Upper  
 2 phy, hor, grn, ls, grw, phy atzt  
 2A above rocks (2) altered to hor  
 Lower  
 1 qtzt, ls
- A** sht, qtzt, hor, phy, ls  
**B** gn, sht  
**C** dun, perd, pyrft, gab, dior

--- Fault

Junkers L.

NTS SHEET 105-G-3

ENVOY RESOURCES LTD.

GEOLOGY SKETCH

DATE: May, 1974 | SCALE: 1" = 4 miles

R.G. HILKER LTD.  
 CONSULTING GEOLOGIST  
 WHITEHORSE, Y.T.

Geology after  
 J.O. Wheeler, L.H. Green  
 & J.A. Reddick  
 Map 8-1960  
 Finlayson Lake, Y.T.

REGIONAL GEOLOGY  
TABLE OF FORMATIONS

CENOZOIC

Quaternary

- 5 Unconsolidated glacial and alluvial deposits

MESOZOIC

Jurassic and/or Cretaceous

- 4 Biotite granodiorite; quartz monzonite

PALEOZOIC

Silurian and Devonian

- 3 Dolomite; chert, quartzite, slate, shale

Middle and Upper Cambrian

- 2 Phyllite; dolomite, greenstone, chert

Lower Cambrian

- 1 Quartzite, phyllite, limestone

After J. O. Wheeler - Map 8 - 1960

REFERENCE TO PUBLISHED GEOLOGY:

The following list of geology references pertaining to the Junkers Lake area N.T.S. sheet 105-G, was referred to in the preparation of this report:

1. Geological Survey of Canada Map 8-1960 Geology Finlayson Lake, Yukon Territory by J.O. Wheeler, L. H. Green and J. A. Roddick. Scale - One Inch to Four Miles.
2. Geological Survey of Canada 1887-88 Annual Report, Volume 3 - Part (B) - 1, Page 1178 and 1188.
3. Geophysics Paper 7006 G, Finlayson Lake Yukon Territory, Sheet 105G - Airborne Magnetic Survey; Scale One Inch to Four Miles.
4. Geophysics Paper 1362, Junkers Lake, Yukon Territory, Sheet 105-G-3, Airborne Magnetics Survey; Scale One Inch to One Mile.
5. Report on The Eagle Claims For Tintina Silver Mines Ltd. Yukon Territory, Sheet 105-G-3, by W.G. Hainsworth, P. Eng., November 8, 1973.
6. Northern Miner - August 8th, 1974 issue report on assay results of diamond drill core Tintina Silver Mines Ltd.
7. Tintina Silver Mines Ltd. - 1974 Diamond Drill Program Geological Report - Eagle Claim Group, Sheet 105-G-3 by G.G. Carlson, P. Eng. and R.G. Hilker, P. Eng. October, 17, 1974.

## JIM CLAIMS GEOLOGY

The following section describes the local stratigraphy and structure, with reference to mineral deposits, as encountered and interpreted from the results of the 1974 drilling program on the adjoining Eagle claim group.

The host rocks for the mineralization are the Lower Cambrian Unit 1 on the Regional Geology Sketch, and here named the Tintina Series. The uppermost member of this series is a thick unit of argillaceous limestone, which probably belongs to Unit 2 on the Regional Geology sketch.

The Tintina Series consists of a basal argillite member, the Lower Argillite (unit 1), overlain successively by the Lower Limestone (unit 2), Middle Argillite (unit 3), Upper Limestone (unit 4), Black Argillite (unit 5) and Argillaceous Limestone (unit 6). The following is a description of each of the above rock units. The complete Table of Formations is listed.

### Lower Argillite - Unit 1

This unit was intersected only locally in drilling on the D-grid, and appears as a rather massive brown to purplish brown argillite with minor disseminated pyrrhotite. According to Moorehouse, this unit is at least 300 feet in thickness, but since its base has not been observed, total thickness is not known.

### Lower Limestone - Unit 2

This limestone unit is generally mottled or streaky and is locally argillaceous. Contact with Unit 1 is rather gradational, resulting in interlayered lime and argillite rich sections. Extreme deformation has given rise to log-shaped boudins of limestone in argillaceous limestone, frequently with a breccia appearance. Locally within the limestone are zones rich in white rings and cylindrical bodies described as fossils which suggest that this is a reef structure of

Lower Cambrian age. Thickness of this unit is variable, from 25 to 50 feet on the East Slope to over 100 feet in the D-grid and adit area and approximately 250 feet in the north of the claim group. Variations are quite probably due to sedimentary thinning, but the effects of folding and shearing are also likely causes at least in part.

#### Middle Argillite - Unit 3

This argillite member, separating the two main limestone units, has been well documented in outcrop and in the drill holes, in particular in the A-grid drilling its thickness is again quite variable, ranging from less than 50 feet to over 150 feet.

It is a strongly foliated grey to brown coloured rock, rich in pyrrhotite, pyrite and locally arsenopyrite, and frequently with abundant secondary quartz in stringers and patches. Lighter coloured massive, siliceous bands, up to three feet thick, have a tuffaceous appearance. Contacts between these quartzitic sections and the argillite and also between the argillite and overlying limestone, Unit 4, are very characteristic in that they usually consist of approximately six inches of very fine grained siliceous rock, of cherty appearance but lightly foliated, and an associated band of massive pyrrhotite, usually less than one inch thick, but locally two to three inches in thickness.

#### Upper Limestone - Unit 4

This limestone exhibits a mottled texture similar to that of Unit 2, but it is much more homogeneous, with only minor argillite content. It is not so thick as Unit 2, and the variable thickness is indicated in the drill sections from Grid A. This local thickness variability is due to folding and probably associated faulting. Sedimentary thinning, both to the north and the south, is also apparent, and thicknesses encountered vary from less than 10 feet to over 50 feet.

The mottled texture is due to secondary stringers and patches of white calcite and, to a lesser extent, quartz. At least two and possibly more ages of calcite stringers are observed. Unit 4 is the most important

host for silver-lead-zinc sulfide mineralization noted to date on the property. Where this unit is barren of silver-lead-zinc mineralization, iron sulfides are also absent.

#### Black Argillite - Unit 5

Overlying the Upper Limestone is a black, carbonaceous, sulfide-rich argillite which is visibly the most conspicuous rock unit in the area due to its colour, rusty and readily weathered appearance. Shearing has disrupted most primary features in the rock, and cleavage is strongly developed. Pyrite and pyrrhotite are present, forming up to 10 percent of the rock, and a distinct H<sub>2</sub>S odour is detectable when drilling through this unit. Secondary quartz stringers and patches are usually present and are typically oriented obliquely to the main foliation or cleavage.

The Black Argillite has been a very active structural zone. It appears to have provided the locus of most of the major thrust faulting, and its lower contact with Unit 4 is frequently marked by quartz veins. Its spatial distribution is quite irregular, due to this structural deformation. Thrusting of younger sediments from the southwest appears to have scraped much of this argillite off the southeast limb of the anticline; thicknesses are greater on the northeast limb.

#### Argillaceous Limestone - Unit 6

This is an extremely thick unit of bedded and strongly sheared and folded argillaceous limestone and is the youngest rock unit observed in the central area of the claim group. It is thin to thick bedded, with a strong cleavage which cuts the bedding, and it varies in composition from very limy argillite, and locally limestone beds, to thin bedded, platy siltstone. To the south it is overlain by the Peak Limestone, consisting of massive limestone and dolomite with argillite.

Structure within the claim group is dominated by a northwest trending anticline, here named the Moorehouse Anticline. The crest area of this fold is complicated by the thrust block of argillaceous limestone (Unit 6)

from the southwest. The major folding is also complicated by an undulating fold pattern on its crest, drag folding along its flanks, and abundant smaller scale thrust and cross faulting.

It is felt that the major structure may pre-date emplacement of the granodiorite intrusive, as certain of the intrusive-sediment contacts observed on steep slopes are very sharp, with negligible warping of sediments in the contact zone.

The forementioned description of the geology units are a detail of the rock types on the adjoining Eagle claim group. Due to the limited amount of time that was spent geology mapping on the Jim claim group, an accurate comparison of rock units are not possible at this time. Therefore, the geological legend on the Geology Plan - Scale 1" = 400 ft. is simplified in comparison to the Jim claim geology Table of Formations that follows this section of the report.

TABLE OF FORMATIONS

MESOZOIC

Jurassic and/or Cretaceous

- G Granodiorite, quartz monzonite
- L Biotite lamprophyre

PALEOZOIC

Cambrian

TINTINA SERIES

- 6 Argillaceous Limestone - lime phyllite, silty limestone, thin to thick bedded, thick unit.
- 5 Black Argillite - 10% pyrite and pyrrhotite, black color, carbonaceous, weathers rusty color.
- 4 Upper Limestone - mottled due to stringers and patches of white calcite, minor argillite; host rock for silver, galena and sphalerite sulfides; irregularly drag folded.
- 3 Middle Argillite - grey to brown color, light colored siliceous bands with tuff appearance, pyrrhotite and pyrite.
- 2 Lower Limestone - Locally argillaceous, strongly sheared, breccia appearance; fossils (?) - white rings and cylindrical shapes, reef structure (?).
- 1 Lower Argillite - limy bands, brownish-purple color, minor pyrrhotite.
- S Sulfide Zone - Silver, lead and zinc sulfide, mainly galena, sphalerite and tetrahedrite, from trace amounts to massive mineralization.

1974 GEOLOGY AND GEOCHEMICAL SURVEY

Mineral Deposits

Although previous studies have shown the relatively varied character of the mineral deposits encountered on the Eagle claim group, the 1974 work by Tintina Silver has revealed a continuity between the deposits which strongly suggests a common origin and mode of emplacement of mineralization throughout the area. Variations now apparent between the various types of deposit may be attributed to their subsequent structural and metamorphic history. The Upper Limestone (Unit 4), which shows the least indication of internal deformation, is host to sulfide deposits with the greatest extent and continuity yet observed on the property.

The genesis of the deposits is uncertain at this time. The most favourable hypothesis is that the deposits are replacement-type in favourable limestone horizons by solutions associated with the emplacement of the granodiorite plug to the northwest. Further, if emplacement of the sulfides occurred after folding, channelways for the mineralizing solutions can be envisioned within permeable limestone horizons, with entrapment and precipitation of sulfides in the nose of small folds; the black argillite forming an impermeable boundary. This reasoning is supported by the stratiform nature of the mineralization in the major deposits within limestone, sulfide textures which frequently suggest replacement, and the localization of sulfides in small drag folds on the limb of the Moorehouse Anticline, as observed particularly in the A-grid area and the number 10 mineralized zone.

A second possibility which should be considered, however, is that the deposit is syngenetic and that the sulfides may be associated with volcanic activity within the basin at the time of formation of sediments. Such an origin would be disguised by subsequent metamorphism, recrystallizing and possibly remobilizing both sulfides and host rocks, and associated or later structural activity. The character of the sulfides, in particular

sphalerite, within the limestone, is very similar to the secondary calcite, suggesting a metamorphic origin for the sulfide texture. Copper-lead-zinc ratios within the deposits are typical of those encountered in volcanogenic massive sulfide deposits throughout the world, and certain of the rocks in close spatial association with the mineralization in particular within the Middle Argillite, Unit 3, may be of volcanic origin. If the mineralization indeed pre-dates the intrusion of the granitic rocks, than a hypothesis such as this is favoured.

Regardless of origin, it is likely that most, if not all sulfides were originally deposited within one of the two main limestone units, (units 2 and 4) and subsequent alteration has produced three major deposit types.

The first type of deposit, and at present the most important, is the massive to disseminated sphalerite - galena - friebertite mineralization within the Upper Limestone (Unit 4). This mineralization has undergone relatively little alteration except possibly recrystallization and very local scale remobilization. An important association with this type of deposit is the overlying black argillite, which often forms the direct hangingwall of the mineralization. As previously mentioned, this rock unit might provide an impermeable boundary to mineralizing solutions causing precipitation of sulfides. It may also contribute chemically to the deposits, perhaps in the form of sulfur or iron. Sphalerite in these deposits, according to its colour, is more iron-rich than sphalerite in deposits within the Lower Limestone (Unit 2). The most important feature of these deposits is that they are associated with small scale drag folding near the crest of the Moorehouse Anticline. They have to date been observed only on the northeast limb of the fold, possibly due to the lack of exposure on the southwest limb.

A second type of deposit is that occurring in the Lower Limestone (Unit 2) and consisting of small pods of massive galena with friebertite and more widespread massive to disseminated sphalerite with lesser amounts

of galena. This mineralization is rather similar to that encountered in the Upper Limestone (Unit 4) but, it is less continuous and apparently less extensive. The reason for this difference may be that although the deposits were originally identical in form, the greater thickness and inhomogeneity of the Lower Limestone unit has resulted in a higher degree of shearing and deformation both of the rock unit itself and of sulfide bodies contained therein.

The third type of deposit, is associated with the base of the Argillaceous Limestone (Unit 6) thrust sheets. They are again similar to the Upper Limestone deposits but they are very discontinuous. It is possible that they also were similar in form to the Upper Limestone deposits but they became incorporated into the thrust sheet, from the Upper Limestone, during deformation.

The three deposit examples mentioned occur adjacent to the truncation of the Upper Limestone unit by thrust faulting. Massive galena occurs in pods or discontinuous lenses with sharp, shear contacts. Sphalerite is also present in these deposits and is usually associated with secondary calcite and quartz veining.

A fourth, and so far insignificant type of mineralization is that encountered mainly in the Argillaceous Limestone (Unit 6) and consisting of minor copper mineralization in quartz veins. This type of mineralization is believed to be similar to the thrust plane mineralization, and potentially indicative of more significant mineralization in the underlying limestone.

The structure in the area of the Jim 1-24 claim group is complex and lies in a zone of highly folded and faulted sediments, that trend in a northwest direction. The property is located southwest of the major Tintina fault and several minor fault contacts parallel the major northwest trend. Minor faults, as indicated by the drainage systems of the Ings River, McNeil River and other unnamed drainage systems, bisect the Tintina fault trend. Therefore, the rocks near and within the Jim claim

group are highly distorted due to intense folding and faulting of the sedimentary beds.

The sulfide mineralization controls on the adjoining Eagle claims, have been described in the previous section of this report. Twenty-six mineral showings that consists of sphalerite, galena, freibergite and minor amounts of pyrrhotite, chalcopryrite and pyrite are reported on the Tintina Silver Mines Ltd., Eagle claim group. A fairly high average of silver and an average of lead and zinc values are reported by Tintina Silver Mines Ltd. in the August 8th, 1974 issue of The Northern Miner from the company's diamond drill program.

Reconnaissance geological mapping and geochemical soil sampling was conducted on part of the Jim 1-24 claim group during late August and early September, 1974. The claims are located below timber line and fairly heavy spruce and willow bush cover the claim block area. Geology traverses noted that argillite, argillaceous limestone and dolomite rock types occur on part of the Jim claims. (see Geology Plan - Scale 1 inch = 400 ft). Difficulty was experienced in the geological mapping due to the heavy bush cover. A slashed and chained grid system is required on the property to properly prospect and geologically map the claim group.

A total of 141 soil samples were collected on part of the Jim claim group and the approximate location of the samples gathered is plotted on the soil sample number plan, scale 1 inch = 400 feet. The values of the elements, silver, lead and zinc were determined by Barringer Research Laboratory in Whitehorse, Y.T. from the soil samples gathered by the firm of R.G. Hilker Limited. Some of the silver values are higher than background of  $< 1.0$  ppm and shows an east west trend across the limited lines traversed by soil sampling. The lead and zinc values are not particularly high but a few values of 270 and 420 ppm lead and 225 and 220 ppm zinc are indicating some response. The soil sample lines were established by chain and compass by two soil samples when gathering the samples. The heavy bush conditions hindered the soil samplers on the traverses accomplished.

CONCLUSIONS AND RECOMMENDATIONS:

The Jim claim group of Envoy Resources is staked on the east boundary of the Eagle claim group. Twenty-six silver-lead-zinc mineralized showings have been discovered on the Eagle claim group. The Eagle mineralization occurs, as vein structures, lenses and in parts disseminated in limestone and argillaceous limestone beds. The Eagle sulfide mineralization consists of galena, sphalerite and freibergite. Minor sulfide mineralization consists of chalcopyrite, pyrite and pyrrhotite. Minor malachite mineralization was observed on the Jim 1-24 claim group.

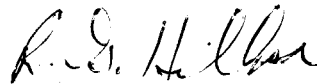
The summers geological and geochemical soil sampling program has indicated spotty greater than background silver, lead and zinc values. The exploration program was hindered by heavy bush cover on the Jim claim group.

It is recommended that a slashed line grid be established on the Jim claim group at 400 feet spaced crosslines and 100 feet chained stations. The linegrid would permit accurate geological mapping, prospecting for sulfide mineralization and orderly soil sampling. The exploration program should be conducted in July or August to guarantee the absence of all snow cover. During the time period that the linegrid is cut, the Jim 1-24 claim group claim posts should be located and tagged with the proper metal claim tags.

EXPENDITURES

The following exploration program is warranted to fully evaluate the Jim 1-24 claim group located on sheet 105-G-3 in the Watson Lake Mining District - Yukon Territory.

Linegrid - 26 linemiles @ \$120.00 -----	\$ 3120.00
Flying Transportation -----	5000.00
Helicopter - 10 hrs. @ \$300.00/hr -	3000.00
Fixed Wing - 10 hrs. @ \$200.00/hr -	<u>2000.00</u>
Vehicle Transportation - Whitehorse to Ross River -----	1000.00
Camp Costs - food etc. - 6 men/30 days -----	2200.00
Camp and Rental -----	1000.00
Camp Expediting -----	500.00
Radio Communications -----	350.00
Geological Mapping -----	2400.00
Geochemical Soil Sampling -----	2400.00
Geochemical Determinations - 1400 soil samples for silver/lead/zinc @ \$2.00/sample -----	2800.00
Trenching and Blasting supplies -----	1200.00
Exploration Field Supplies - rental -----	600.00
Assaying -----	500.00
Prospecting -----	1800.00
Report Preparation - data processing, drafting, and report writing -----	1500.00
Geological Supervision & Consulting Fees -----	1500.00
Contingencies -----	2130.00
	<hr/>
TOTAL EXPENDITURES	\$30,000.00



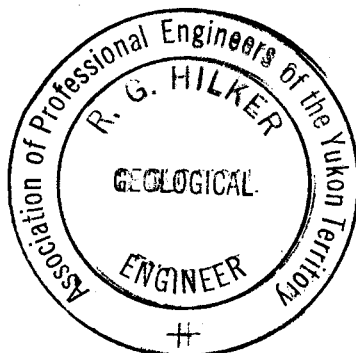
R.G. Hilker, P. Eng.  
Whitehorse, Yukon Terr.  
November 27th, 1974

CERTIFICATION

I, ROBERT G. HILKER, of #6 Chalet Crescent, Hillcrest, in the City of Whitehorse, in the Yukon Territory, DO HEREBY CERTIFY:

1. THAT I am a Consulting Geologist, with an office located at #8 Northern Metallic Building and Postal address P.O. Box 4008, in the City of Whitehorse, in the Yukon Territory.
2. THAT I am a graduate of the Michigan Technological University located at Houghton, Michigan, U.S.A., where I obtained a Bachelor of Science Degree in Geological Engineering (Exploration Option) in 1962.
3. THAT I am a registered member in good standing of; The Association of Professional Engineers of the Yukon Territory, a fellow of the Geological Association of Canada, and registered with The Association of Professional Engineers of British Columbia.
4. THAT I have practised my profession as an engineer and geologist for the past twelve years.
5. THAT I have personally been on the Jim 1-24 (inclusive) claim group located on N.T.S. Sheet 105-G-3 in the Junkers Lake and Ings River area of the Yukon Territory, on Aug. 30, 1974 and supervised the field work, data processing and report preparation of the work described in this report.
6. THAT I have no direct or indirect interests in any of the mineral claims, or in any of the securities held by Envoy Resources Ltd., nor do I expect to receive any.

DATED this 27th day of November, A.D. 1974, in the City of Whitehorse, Yukon Territory.



  
R.G. Hilker, P. Eng.

APPENDIX

1. Barringer Research Limited Laboratory Report - geochemical soil samples from Jim 1 - 24 claim group.
2. R.G. Hilker Limited - Invoice #2236 for the amount of \$2400.00.

# BARRINGER RESEARCH LIMITED

Geochemical

Laboratory  
Report

304 CARLINGVIEW DRIVE  
REXDALE, ONTARIO, CANADA  
PHONE: 416-677-2491  
CABLE: BARESEARCH

DATE September 25, 1974

R. G. Hilker Limited,  
P. O. Box 4008,  
WHITEHORSE, Yukon Territory.

REPORT NUMBER 113 - A

SAMPLE NUMBER	HClO <sub>4</sub> Pb ppm	HClO <sub>4</sub> Zn ppm	HClO <sub>4</sub> Ag ppm		SAMPLE NUMBER	HClO <sub>4</sub> Pb ppm	HClO <sub>4</sub> Zn ppm	HClO <sub>4</sub> Ag ppm
15498	23	75	1.4		15518	7	9	.6
499	38	86	1.6		519	5	6	.4
500	34	77	1.2		520	7	6	.8
501	42	85	1.4		521	31	165	1.2
502	39	82	1.4		522	18	25	.8
503	52	175	2.0		523	31	84	1.4
504	19	56	1.0		524	17	68	.8
505	21	55	.9		525	25	155	.6
506	24	68	1.0		526	11	16	.4
507	29	80	1.2		527	24	95	2.0
508	19	35	.8		528	22	145	1.4
509	26	67	.8		529	29	58	2.0
510	17	32	.9		530	28	56	1.0
511	22	44	1.3		531	8	15	.4
512	31	78	1.3		532	22	200	1.0
513	32	51	1.4		533	25	71	.8
514	26	54	1.0		534	34	66	1.4
515	30	77	1.2		535	36	91	1.2
516	30	92	1.0		536	18	47	1.0
517	33	78	1.2		537	7	7	.6

SAMPLE NUMBER SOILS	HClO <sub>4</sub> Pb ppm	HClO <sub>4</sub> Zn ppm	HClO <sub>4</sub> Ag ppm			SAMPLE NUMBER SOILS	HClO <sub>4</sub> Pb ppm	HClO <sub>4</sub> Zn ppm	HClO <sub>4</sub> Ag ppm
15538	9	8	.4			15565	6	7	.4
539	8	10	.4			566	26	63	.4
540	35	185	.8			567	28	47	.7
541	21	43	.6			568	23	51	.7
542	9	17	.4			569	34	57	1.2
543	7	8	.4			570	25	51	1.9
544	7	5	.4			571	15	30	1.0
545	8	8	.4			572	24	46	1.4
546	6	6	.4			573	19	20	1.2
547	5	4	.4			574	17	17	1.0
548	6	5	.4			575	91	225	1.6
549	37	85	1.7			576	420	195	2.0
550	31	66	.8			577	270	135	1.7
551	15	21	.8			578	55	145	1.2
552	30	81	1.0			579	61	155	1.8
553	40	94	1.0			580	56	175	2.0
554	30	87	.8			581	73	81	1.4
555	45	61	1.2			582	30	58	1.4
556	42	88	1.2			583	20	37	1.2
557	30	69	.6			584	N.S.	N.S.	N.S.
558	33	81	.8			585	21	70	1.4
559	35	84	.8			586	17	62	1.4
560	10	11	.4			587	23	44	1.6
561	17	37	.4			588	34	94	1.2
562	9	8	.4			589	29	69	1.6
563	6	11	.4			590	20	59	.8
564	7	7	.4			591	14	36	1.2

AMPLE NUMBER SOILS	HClO <sub>4</sub> Pb ppm	HClO <sub>4</sub> Zn ppm	HClO <sub>4</sub> Ag ppm			SAMPLE NUMBER SOILS	HClO <sub>4</sub> Pb ppm	HClO <sub>4</sub> Zn ppm	HClO <sub>4</sub> Ag ppm
15592	17	44	1.2			15619	30	130	1.8
593	18	55	1.2			620	24	92	1.4
594	20	44	1.4			621	27	54	1.6
595	12	31	.8			622	31	62	1.6
596	11	24	.8			623	32	52	1.5
597	22	220	1.0			624	28	49	1.6
598	15	38	.8						
599	50	240	1.6						
600	60	210	1.6						
601	53	195	1.8						
602	67	275	1.7						
603	27	62	.8						
604	25	81	1.0						
605	20	88	1.2						
606	37	160	1.4						
607	28	81	1.0						
608	25	81	1.0						
609	25	82	1.2						
610	24	85	1.2						
611	27	89	1.4						
612	24	94	1.3						
613	26	145	1.2						
614	30	92	1.4						
615	29	155	1.8						
616	34	175	1.8						
617	24	92	1.2						
618	13	54	.8						



**R. G. HILKER  
 LIMITED**

CONSULTING GEOLOGIST . . . PROFESSIONAL ENGINEER

P.O. Box 4008, WHITEHORSE  
 YUKON TERRITORY, CANADA  
 "LAND OF THE MIDNIGHT SUN"

Mr. Jim McLeod  
 Envoy Resources Ltd.  
 333 - 885 Dunsmuir Street  
 VANCOUVER, B.C..

September 10, 1974

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Invoice No. 2236

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Exploration program on the Jim 1-24 claim group for assessment work purposes - Sheet 105-G-3, Watson Lake Mining District.

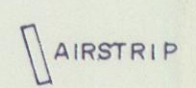
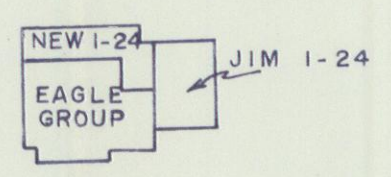
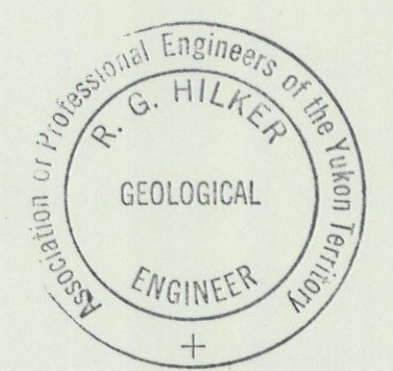
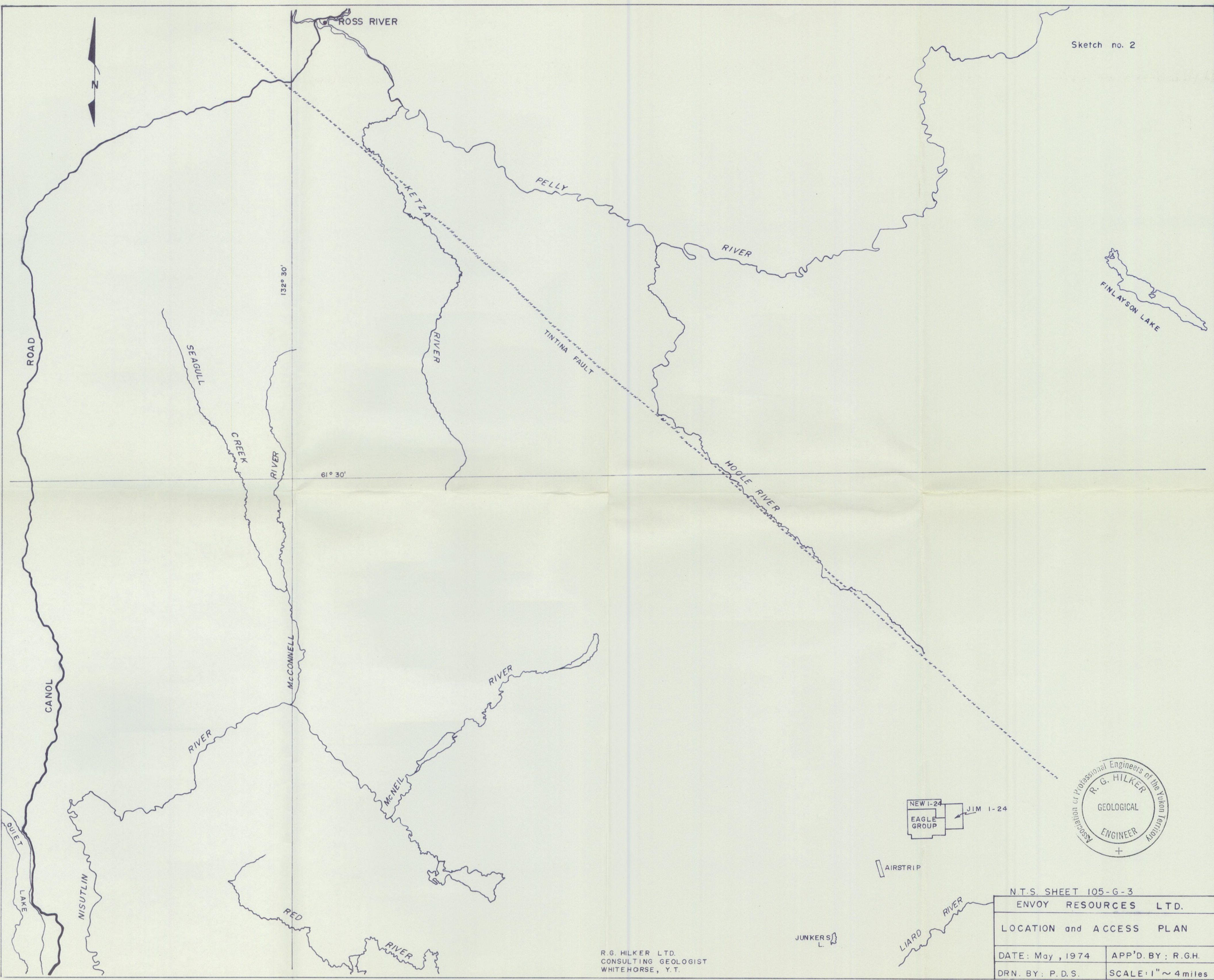
Disbursements

Territorial Airways -----	\$ 561.00
August 28, 1974 #2335 ----	\$357.00
August 29, 1974 # 2337 ----	\$204.00
Riverside Grocery -----	\$ 354.96
Barringer Research -----	\$ 214.20
R.G. Hilker Ltd. -----	\$1269.84
Labour and Professional-----	\$638.00
G.G. Carlson - Aug. 30 & 31	
R.G. Hilker - Aug. 28	
D. McDonald - Aug. 31 & Sept.	
1, 2 & 3	
S. Benson - Aug. 31 & Sept.	
1, 2 & 3	
Drafting and Report Typing -----	\$231.84
Report Preparation -----	\$400.00
	<u>\$1269.84</u>

TOTAL INVOICE

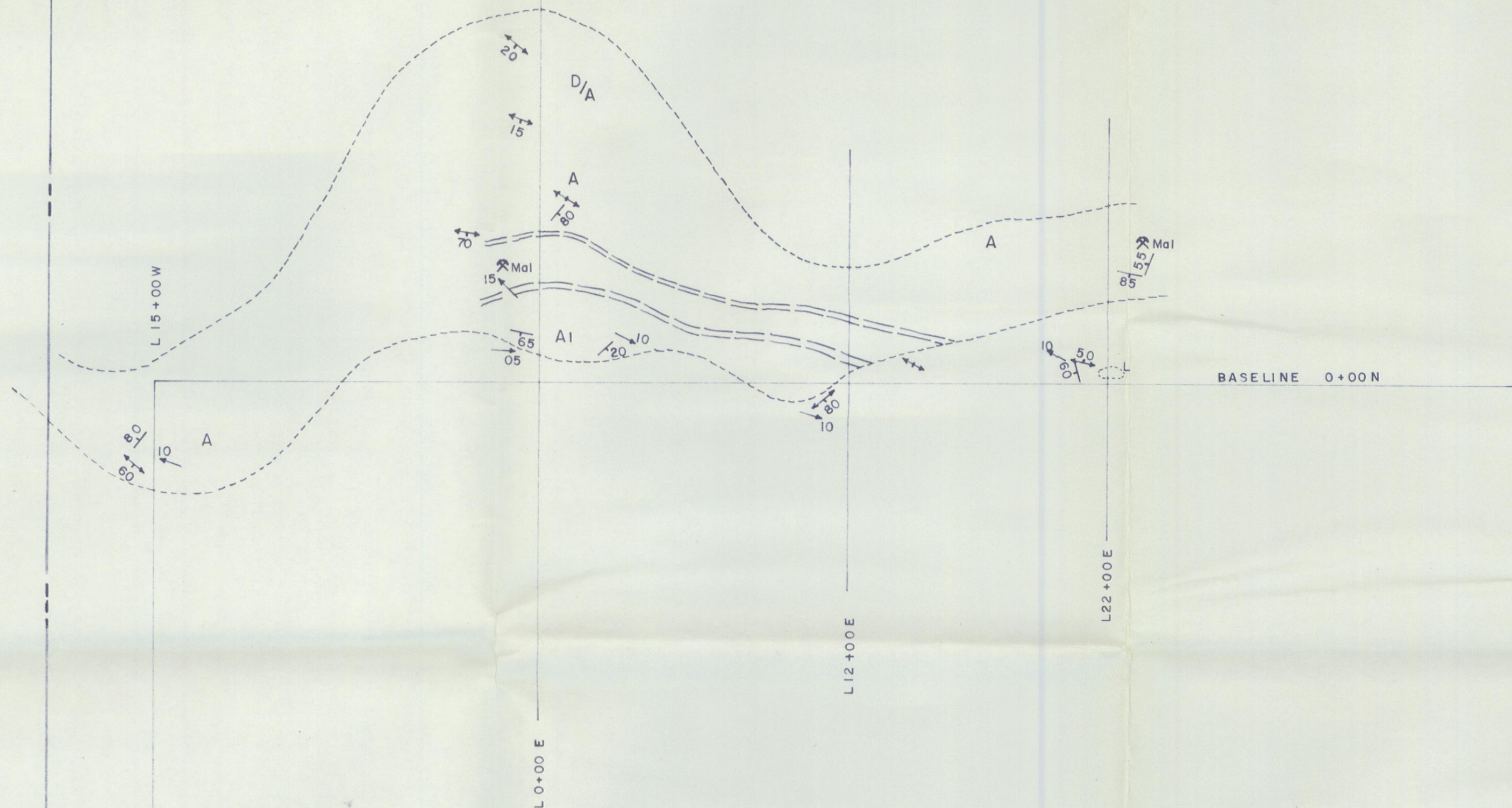
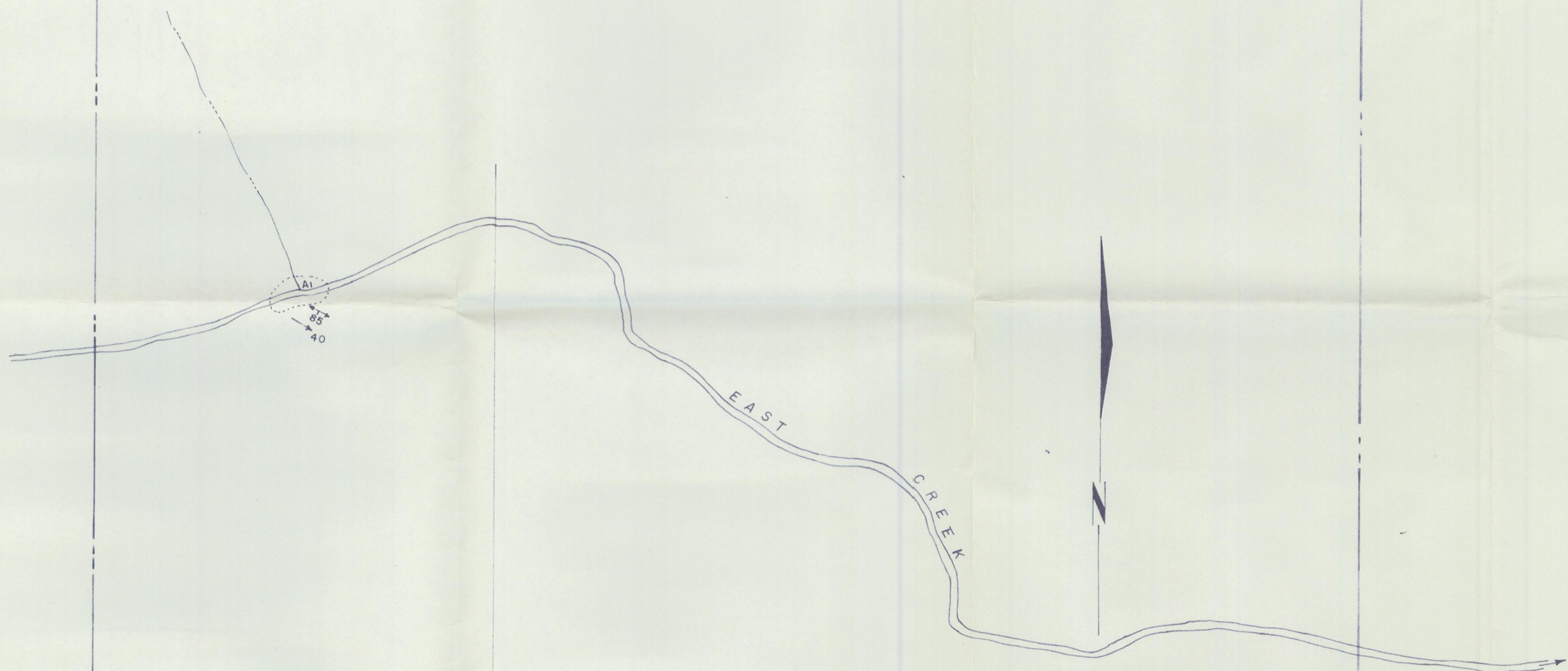
\$2400.00

Sketch no. 2

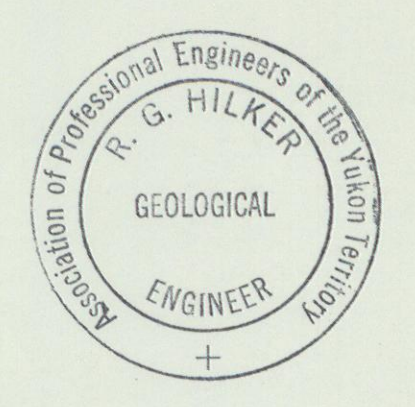


R. G. HILKER LTD.  
CONSULTING GEOLOGIST  
WHITEHORSE, Y.T.

N.T.S. SHEET 105-G-3	
ENVOY RESOURCES LTD.	
LOCATION and ACCESS PLAN	
DATE: May, 1974	APP'D. BY: R.G.H.
DRN. BY: P.D.S.	SCALE: 1" ~ 4 miles

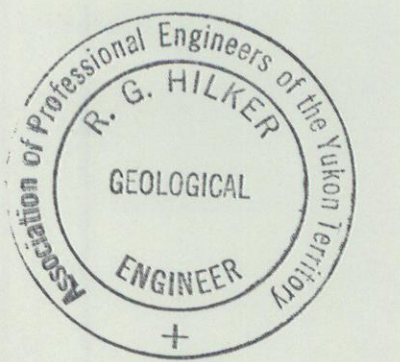
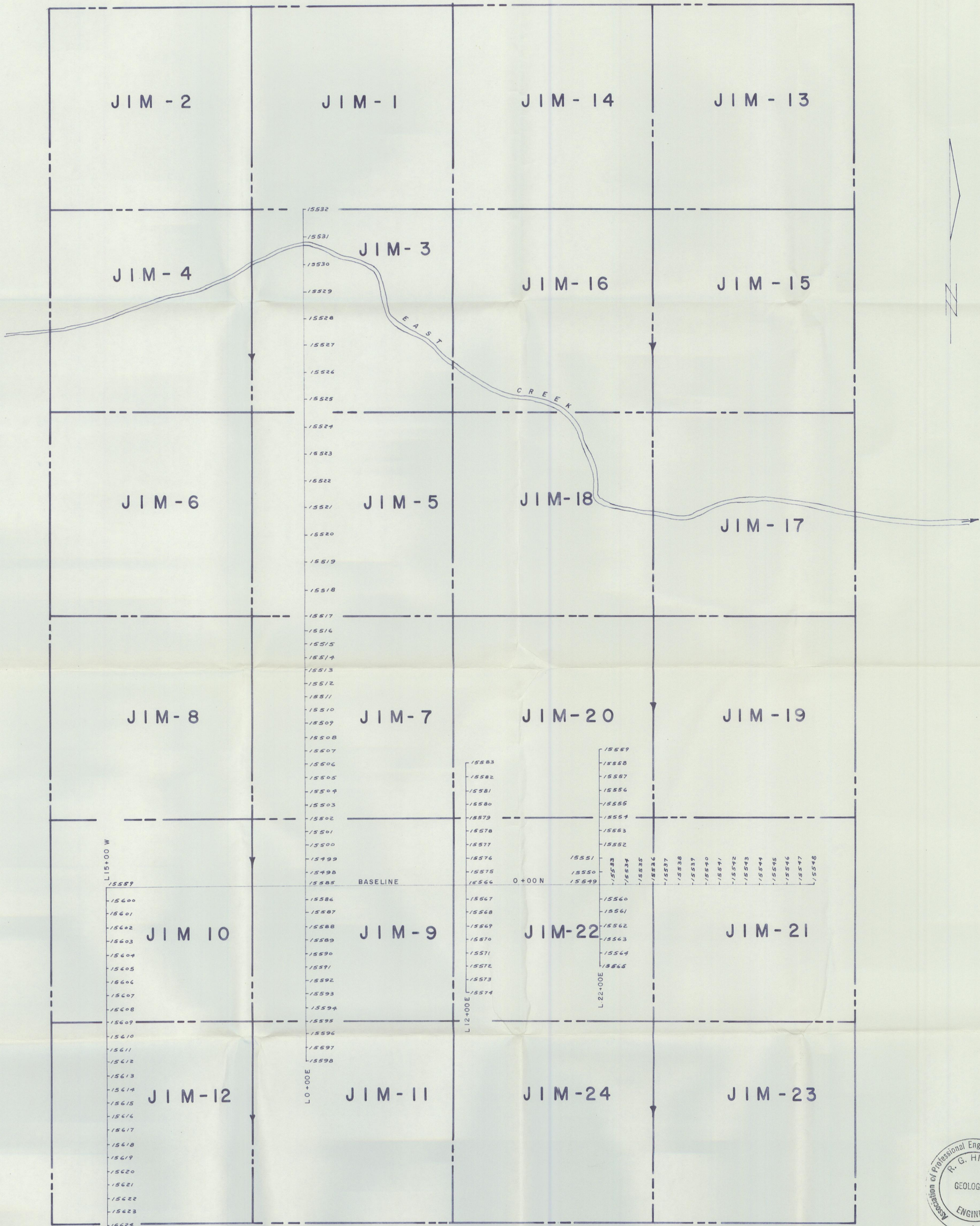


- GEOLOGY LEGEND**
- PALEOZOIC**
- CAMBRIAN**
- TINTINA SERIES**
- [A] - Lower Argillite, phyllite
  - [A1] - Argillaceous limestone
  - [L] - Lower limestone
  - [D] - Dolomite
  - Mal - Malachite stain or boulder
  - - - - - Outline of outcrop area
  - ==== - Geological contact - mapped - inferred
  - ↗ 30 - Bedding or cleavage with dip
  - ↘ 10 - Lineation or fold axis with plunge
  - 50 - Fracture or joint with dip



R. G. HILKER LTD.  
CONSULTING GEOLOGIST  
WHITEHORSE, Y.T.

ENVOY RESOURCES LTD.	
<b>JIM CLAIMS</b>	
<b>GEOLOGY</b>	
Date: Nov. / 1974	Scale: 1" = 400'



R. G. HILKER LTD.  
CONSULTING GEOLOGIST  
WHITEHORSE, Y.T.

N.T.S. SHEET 105-G-3 WATSON LAKE MINING DIST'T.

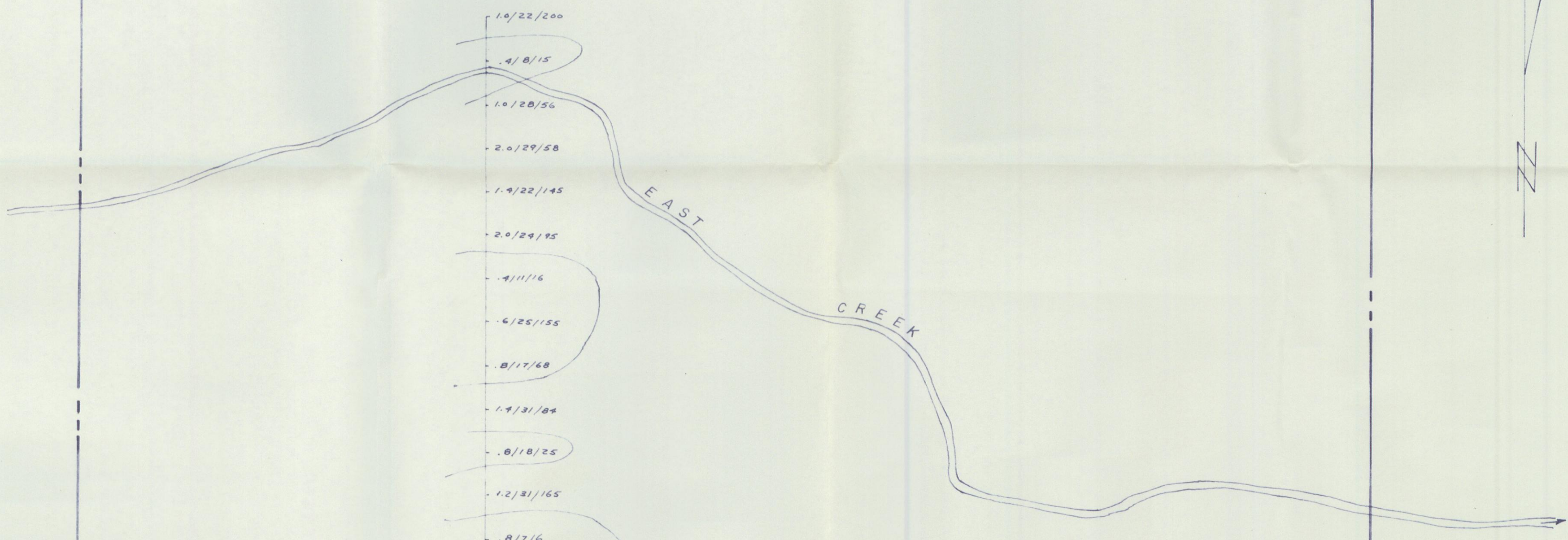
ENVOY RESOURCES LTD.

SOIL SAMPLE No.'s LOCATION

DATE: NOV./1974

SCALE: 1" = 400'

JIM CLAIMS OUTLINE



L15+00 W

- 092/05/71
- 1.6/60/210
- 1.8/53/155
- 1.7/67/275
- 1.8/27/62
- 1.0/25/81
- 1.2/20/88
- 1.4/37/160
- 1.0/28/81
- 1.0/25/81
- 1.2/25/82
- 1.2/24/85
- 1.4/27/89
- 1.3/24/94
- 1.2/26/195
- 1.4/30/92
- 1.8/29/155
- 1.8/34/175
- 1.2/24/192
- 1.8/13/54
- 1.8/30/130
- 1.4/24/92
- 1.6/27/54
- 1.6/31/62
- 1.5/32/52
- 1.6/28/99

BASELINE

0 + 00 N

- 1.0/22/200
- 1.4/8/15
- 1.0/28/56
- 2.0/29/58
- 1.4/22/145
- 2.0/24/95
- 1.4/11/16
- 1.6/25/155
- 1.8/17/60
- 1.4/31/84
- 1.8/18/25
- 1.2/31/165
- 1.8/7/6
- 1.4/5/6
- 1.6/7/9
- 1.2/33/78
- 1.0/20/92
- 1.2/30/77
- 1.0/26/54
- 1.4/32/51
- 1.3/31/78
- 1.3/22/94
- 1.4/17/32
- 1.8/26/67
- 1.8/19/35
- 1.2/29/80
- 1.0/24/68
- 1.4/21/55
- 1.0/19/56
- 2.0/52/115
- 1.4/39/82
- 1.4/42/85
- 1.2/24/77
- 1.6/38/86
- 1.4/23/75
- 1.4/21/70
- 1.4/17/52
- 1.6/23/44
- 1.2/34/94
- 1.6/29/69
- 1.8/20/59
- 1.8/19/36
- 1.2/17/44
- 1.2/18/55
- 1.4/20/44
- 1.8/12/31
- 1.8/11/24
- 1.0/22/220
- 1.8/15/38

L12+00 E

- 1.2/20/37
- 1.4/30/58
- 1.4/73/81
- 2.0/56/115
- 1.8/41/155
- 1.2/55/145
- 1.7/27/135
- 2.0/42/195
- 1.6/16/225
- 1.4/22/4
- 1.4/20/47
- 1.2/23/51
- 1.2/34/57
- 1.9/25/51
- 1.0/15/30
- 1.4/24/96
- 1.2/19/20
- 1.0/17/17

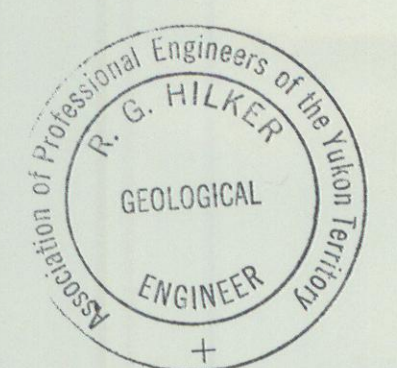
L22+00 E

- 1.8/35/84
- 1.8/33/81
- 1.6/30/69
- 1.2/42/88
- 1.2/45/61
- 1.8/30/87
- 1.0/40/94
- 1.0/30/81
- 1.2/51/8
- 1.4/25/71
- 1.4/34/66
- 1.2/36/91
- 1.0/18/47
- 1.6/7/7
- 1.4/1/8
- 1.4/8/10
- 1.8/35/185
- 1.6/21/43
- 1.4/9/17
- 1.4/1/8
- 1.4/1/5
- 1.4/8/8
- 1.4/6/6
- 1.4/5/4
- 1.4/6/5
- 1.4/10/11
- 1.4/17/37
- 1.4/9/8
- 1.4/6/11
- 1.4/7/7
- 1.4/6/7

1.4/23/75 Ag/Pb/Zn

SILVER CONTOUR INTERVAL : 1.0 + ppm

R.G. HILKER LTD. CONSULTING GEOLOGIST WHITE HORSE, Y.T.



N.T.S. SHEET 105-6-3 WATSON LAKE MINING DIST'T.

ENVOY RESOURCES LTD.

JIM CLAIMS GEOCHEMICAL SURVEY Silver-Lead-Zinc Values : ppm

DATE : NOV. /1974

SCALE : 1" = 400'