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Surface and Geology Plan

1" = 400' #1

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1" = 400' #2

REPORT ON  
GEOCHEMICAL AND GEOLOGICAL SURVEYS  
ON THE TI, MOM, AND BUD CLAIMS  
VANCOUVER ISLAND, B.C.  
FOR  
ACHERON MINES LTD. (N.P.L.)

INTRODUCTION:

The Ti, Mom, and Bud claims held by Acheron Mines Ltd. consists of a total of 54 contiguous mineral claims situated north of Holberg Inlet at the western end of Nahwitti Lake on northern Vancouver Island, British Columbia.

During November 1968 reconnaissance geochemical and geological surveys were conducted over approximately one third of the claims.

The work was carried out by personnel of Agilis Exploration Services Ltd. under the direction of the writers.

LOCATION AND ACCESS:

The claims are located at the western end of Nahwitti Lake between the Holberg road to the south and the Nahwitti River to the north. Coordinates are  $127^{\circ} 55'$  west longitude, and  $50^{\circ} 43'$  north latitude.

Access is by road from Port Hardy a distance of approximately 20 miles, then on foot approximately one mile to the group. At the time of the recent surveys a helicopter was used for access in establishing a camp on the property.

PHYSIOGRAPHY:

Relief is moderate with elevations rising to 2,000 feet above sea level. Most of the property is heavily timbered, with a few large areas of open swamp.

The overburden cover is extensive in area but appears quite thin over much of the property.

CLAIMS:

The property consists of 54 contiguous mineral claims.

	<u>Record No:</u>
Ti 1 - 28	22334 - 361
Ti 29 - 34	23083 - 088
Ti 40 - 53	23810 - 823
Bud 1	25146
Mom 1 - 5	27357 - 361

The surveys were conducted on all or portions of the following claims:

Ti 3 - 6, 29 - 34  
 Bud 1  
 Mom 2 - 5

GEOLOGY:General:

The area in which the current exploration activity is being concentrated is underlain by a west-northwest trending belt of Triassic volcanics and sediments. These have been intruded by several intrusive bodies, acid to intermediate in composition, of Jurassic and Tertiary Age. In a few small areas the older rocks are overlain by Cretaceous and Tertiary sediments and volcanics.

The youngest Triassic rocks, and those in which the Utah deposit occurs, are referred to as the Bonanza Group, consisting mainly of andesites and tuffs with agglomerate, argillite and limestone. These are underlain by the Quatsino Limestone with which numerous mineralized skarn zones are associated, and in turn by the Karmutsen Formation consisting mainly of andesitic and basaltic volcanic flows.

The various units exhibit a west-northwest trend with moderate dips to the south. Numerous faults cut the belt, the most prominent directions being west-northwest and northeast.

Two distinct types of mineral deposits are being explored in the region. Numerous deposits of the contact metamorphic variety are found associated with limestone bands near intrusive contacts. Mineralization, consisting variously of copper, lead, zinc, iron, and precious metals generally occurs in skarn zones developed along limestone-andesite contacts. Known deposits of this type are concentrated in the Nahwitti Lake area and northwest and east of Quatse Lake.

Copper mineralization is common in both the Karmutsen and Bonanza volcanics with concentrations generally associated with shearing and/or granitic intrusions. The major deposit being developed by Utah Construction & Mining Co. on their Bay Group consists of copper-molybdenum mineralization in strongly altered volcanics of the Bonanza Group and intrusive dikes and sills.

Geology of the Property:

Outcrop exposure in the area is generally limited to creeks and roadcuts with a few scattered occurrences where steep slopes are encountered.

Most of the mapping was carried out rather late in the season and had to be terminated because of a heavy snowfall, thus the geology as presented is only a generalized concept which may change considerably as work progresses.

Stratigraphy:

Within the survey area the geology is complex, with north-westerly trending volcanic and limestone belts cut by small stocklike bodies of intrusive quartz diorite.

The extreme eastern portion is underlain by a larger area of coarse grained quartz diorite in contact to the west with a broad belt of basaltic to andesitic flows believed to be of Karmutsen age. A belt of grey-black Quatsino Limestone occupies the central part of the claims while the western portion is underlain by a complex group of volcanic and pyroclastic rock types including basalt, andesite, dacite, plus larger areas of heavily pyritized rhyolite and interbedded banded tuff. These are similar to the Bonanza Group rocks commonly found in this area and are thought to belong to that group.

Reconnaissance traverses in the extreme western portion of the group (T1 50 - 53) indicate most of the area is underlain by similar pyritized rhyolite, tuff and andesite. Little outcrop occurs here and most information is based on float in creeks and along the steep, northerly facing slope.

Intrusive material is exposed in outcrop at two locations in the western part of the property and is assumed at a third location where homogeneous float material occurs.

This is fresh in appearance, varies from diorite to quartz diorite and contains varying amounts of pyrite. A small intrusive dyke extending into the Quatsino limestone is also heavily pyritized.

Reconnaissance mapping was also carried out along the road which extends along the east boundary of the property and joins the Holberg road to the south.

A large area of quartz diorite intrusive occurs to the east of the property and may be continuous with that found on the eastern portion of the survey area. To the south the intrusive grades into Karmutsen volcanics with silicification and minor pyrite and chalcopyrite mineralization near the contact. At the junction with the Holberg road a pink granite is encountered which differs markedly in appearance from the intrusives to the north. To the west and at a much higher elevation the road crosses the contact between the Karmutsen volcanics and the Quatsino limestone.

#### Structure:

Bedding attitudes are difficult to obtain except for the tuffaceous beds which strike northwesterly and dip gently southwest. This is the general trend although minor folding has been noted in places with the beds dipping steeply to the north.

A strong northwesterly trending fault crosses the property near the center of the mapped area and shows a right lateral displacement. Major jointing directions are northwest and west, dipping moderately to steeply north.

Several lineations are evident on airphotographs. The strongest of these strike northwesterly, parallel to the major fault mentioned above. Other directions are north and northeasterly. Certain geochemical anomalies appear related to intersections of two lineations.

#### Mineralization:

Minor chalcopyrite has been noted in rhyolitic and tuffaceous float and assaying of pyrite-rich diorite float returned 0.1% copper. Sphalerite and minor galena bearing skarn boulders occur in a creek bed in the northwest corner of Ti 29.

Similar skarn mineralization occurs approximately 1 claim length south of the group, and a short distance further south zinc-cobalt mineralization is exposed in brecciated and silicified tuff.

#### GEOCHEMICAL SURVEY:

##### Procedures:

The field crew was airlifted into a high elevation swamp on the property to carry out most of the geochemical survey. The southern portion was reached from the road to the south.

A baseline slightly over a mile in length was established in a north-south direction. Cross lines were run every 400 feet along the baseline in an east-west direction with stations marked every 200 feet at sample locations. A total of approximately 14 miles of line were run with chain and compass and marked with coloured tape. Claim posts were located and positioned with respect to the grid lines.

Soil samples were collected by means of a specially designed 4 foot auger and were taken wherever possible from the clay directly below the humous layer at an average depth of 18 inches. At each sample site notes were recorded regarding the depth and type of sample, vegetation and topography. In general, the sample quality in this area was very good.

All samples were forwarded to Chemex Labs Ltd. in North Vancouver and tested for copper by the atomic absorption method.

#### Results of the Survey:

Results were obtained in parts per million of copper and plotted at a scale of 400 feet to the inch.

Background concentration within the survey area ranges up to 40-60 ppm copper and readings higher than 80 ppm are considered anomalous. Readings lower than normal background were obtained where predominantly swampy conditions were encountered.

Readings in excess of 100 ppm copper were obtained at seven locations within the survey area. The largest of these anomalies extends from line 12 + 00 N to 28 + 00 N in the vicinity of stations 12 + 00 W. It is irregular in shape with a maximum width of about 1000 feet and is thought to be at least partially underlain by intrusive material containing abundant pyrite and minor copper mineralization.

The anomalous area covering lines 4 + 00 N and 8 + 00 N from the baseline to 8 + 00 W may be related to the above anomaly considering its proximity and should be investigated at the same time. This anomaly also lies on the major northwest fault at its possible intersection with a smaller cross fault.

Two smaller anomalies, both striking north-south across lines 16, 20 and 24 N, appear to be related to structural lineations evident on airphotos. The first, located just east of the baseline may be related to the intersection of two minor faults.

The second, located at 24 + 00 W of the baseline, follows a lineation quite closely and covers the intersection of this secondary structure with the major fault.

The fifth anomaly of possible significance is located on lines 0 + 00 and 4 + 00 N in the vicinity of station 16 + 00 W. This anomaly also covers an area where pyrite mineralization is known to occur along with intrusive rocks.

All the above zones should be investigated in detail to determine the cause of the anomalous values.

High values were also recorded at lines 8 + 00 N station 10 + 00 E, and 0 + 00 N, station 2 + 00 E, but due to their limited extent are probably erratic. The latter may be related to one of the other anomalies, but this can only be determined with further work.

CONCLUSIONS:

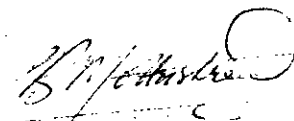
The Ti claims are underlain by a complex assemblage of volcanics, limestone and granitic intrusive rocks, the former belonging to the Karmutsen, Quatsino and Bonanza Formations.

The intrusives represent several separate bodies, possibly of different ages.

Several copper geochemical anomalies are indicated in the area surveyed. The cause of these has not been determined although several are related to apparent major structures, and minor copper and zinc mineralization has been noted in float.

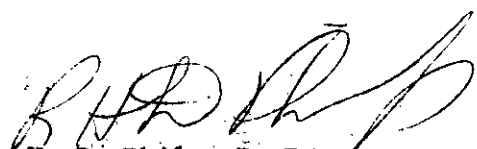
The geochemical and geological surveys should be extended over the remainder of the claims and the anomalous areas investigated in detail using an X-ray drill.

Respectfully submitted,



B. Mottershead

and



R. H. D. Philp, P. Eng.,

AGILIS EXPLORATION SERVICES LTD

February 15, 1969

DOMINION OF CANADA:  
PROVINCE OF BRITISH COLUMBIA.  
TO WIT:

In the Matter of the Geological and Geochemical  
Surveys on the Nah and Ti Groups, northern Vancouver  
Island, B.C.

I, **Ronald Philp**

of **812 Blundell Road, Richmond, B.C.**

in the Province of British Columbia, do solemnly declare that the following personnel were employed and cost incurred in conducting the above surveys between the dates of March 15-31, May 10-15, November 12-December 2, 1969.

PERSONNEL:

R. Philp	Supervision, report	2 days @ \$100.00/day	\$ 200.00
M. Cowan	Geologist	6 days @ \$ 50.00/day	300.00
B. Mottershead	Geologist	20 days @ \$ 60.00/day	1,200.00
K. Bright	Soil Sampler	15 days @ \$ 27.50/day	412.50
P. Van Riesen	Soil Sampler	10 days @ \$ 25.00/day	250.00
D. Ramer	Soil Sampler	16 days @ \$ 25.00/day	400.00
S. Scott	Soil Sampler	19 days @ \$ 25.00/day	475.00
K. Kikagawa	Draughting Plotting	8 days @ \$ 24.03/day	192.24
			<hr/>
			\$3,429. 74

DISBURSEMENTS:

Supplies and groceries	\$ 564.44	
Truck rental and gas	486.82	
Helicopter charges	222.75	
Meals and hotel accommodation while on project	84.83	
Geochemical Testing	430.06	
Camp and equipment charges	165.00	
Miscellaneous-freight, printing maps, typing etc.,	<u>197.34</u>	<u>\$2,151.24</u>
		<hr/>
TOTAL COSTS:		<u>\$5,580.98</u>

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

Declared before me at the *City*  
of *Vancouver*, in the  
Province of British Columbia, this *27<sup>th</sup>*  
day of *February, 1969*, A.D.



*J. Paul* *Notary Public*  
A Commissioner for taking Affidavits for British Columbia or  
A Notary Public in and for the Province of British Columbia.



Approximate Claim Boundary

T. I. No. 22

T. I. No. 20

T. I. No. 21

T. I. No. 19

MOM No. 1

T. I. No. 48

T. I. No. 49

Mixed andesite and quartz-diorite float to fine

T. I. No. 7

MOM No. 2

4

T. I. No. 8

6

T. I. No. 33

T. I. No. 34

2

T. I. No. 5

MOM No. 3

4

T. I. No. 32

6

T. I. No. 31

T. I. No. 32

1 or 5

2

1 or 5

T. I. No. 3

6

MOM No. 4

4

T. I. No. 29

2

T. I. No. 1

MOM No. 5

4

T. I. No. 30

3

1 or 5

1 or 5

1 or 5

Nakwitti  
Lake

LEGEND

6 GRANITIC INTRUSIVE ROCKS

BONANZA GROUP

5 BASALT, QUARTZ, BASALT, ANDESITE & DACITE

4 RHYOLITE WITH ABUNDANT PYRITE

3 TUFF, WELL BANDED, VARYING THICKNESSES

QUATSINO FORMATION

2 LIMESTONE, DARK GREY, PARTIALLY RECRYSTALLIZED STRANGERS

KARMUTSEN GROUP

1 BASALT TO ANDESITIC FLOWS, DARK GREEN, SLIGHTLY AMYGDALOIDAL & PORPHORIC, SILICIFIED & MINERALIZED NEAR IGNEOUS CONTACT

HOMOGENEOUS FLOAT MATERIAL

○ LARGE OUTCROP OR AREA OF CONTINUOUS OUTCROP

x SMALL ISOLATED OUTCROP

— GEOLOGIC CONTACT (assumed)

— STRIKE & DIP (jointing)

— STRIKE & DIP, (bedding)

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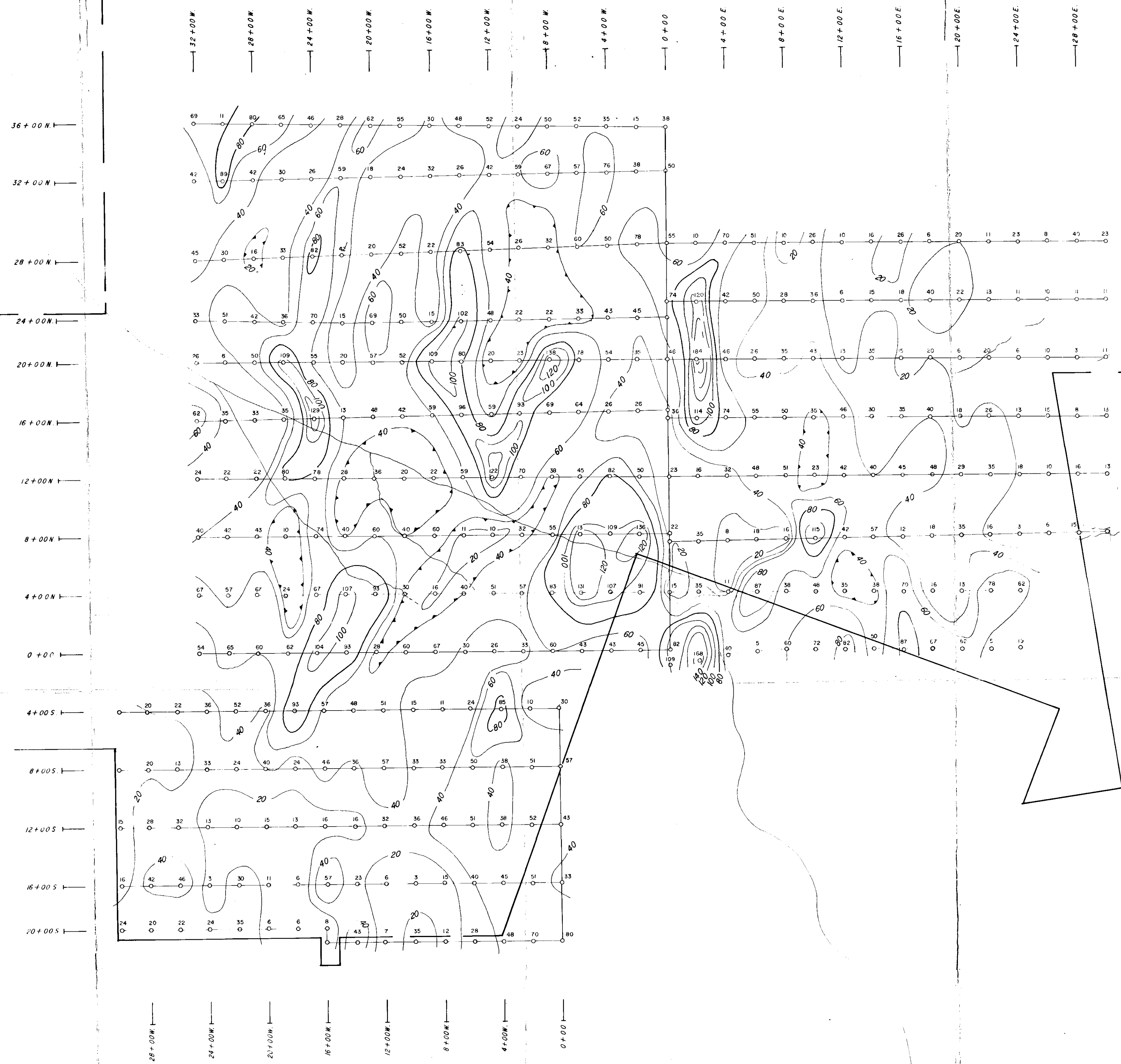
Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
MAP 1

AGILIS EXPLORATION SERVICES LTD.

ACHERON MINES LTD. (N.P.L.)  
T.I. GROUP  
NANAIMO MINING DIVISION

Surface & Geological Plan

DRAWN BY: K. K. SCALE: 1" = 400 feet  
CHECKED BY: R. P. DATE: December, 1968



**LEGEND**

- Copper Value in (p.p.m.)
- Copper Contour Interval (20 p.p.m.)

Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. 1762 MAP 2

**1762 1762**  
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AGILIS EXPLORATION SERVICES LTD.  
ACHERON MINES LTD. (N.P.L.)  
T.I. GROUP  
NANAIMO MINING DIVISION  
**Geochemical Survey**

DRAWN BY: K. K. SCALE: 1" = 400 feet  
CHECKED BY: R. P. DATE: December, 1968