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Mining Recorder's Office
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94E/2W

REPORT ON THE

RN MINERAL CLAIMS

of

MINAS DE CERRO DORADO LTD. (NPL)

DRYBROUGH MOUNTAIN

NORTH CENTRAL BRITISH COLUMBIA

OMINECA MINING DIVISION

Department of
Mines and Technical Resources
ASSESSMENT REPORT
NO. 4870 M.D.

December, 1973
Vancouver, B.C.

J. C. Needoba,
Geologist

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REPORT ON THE
RN MINERAL CLAIMS

of

MINAS DE CERRO DORADO LTD. (NPL)
DRYBROUGH MOUNTAIN

NORTH CENTRAL BRITISH COLUMBIA
OMINECA MINING DIVISION

1-00

INTRODUCTION

The RN property is a group of 36 mineral claims located on Drybrough Mountain, North Central British Columbia. They are owned by Minas de Cerro Dorado Ltd (NPL) and were staked in April, 1973 to cover copper-molybdenum mineralization over which claims have been held for the past ten years.

A property survey was conducted by personnel of Agilis Engineering Ltd. to examine the known mineralization and to determine its possible extension for future exploration.

2-00

PROPERTY

The property consists of the following 36 contiguous mineral claims which were recorded on May 1, 1973:

<u>Claim Name</u>	<u>Record Numbers</u>
RN 1-36	124189 - 124224

The claims were staked by Darrell Reinke and are owned by Minas de Cerro Dorado Ltd (NPL). They lie in the Omineca Mining Division on Claim Sheet 94E/2W.

3-00

HISTORY

The copper-molybdenum showings on Drybrough Peak were first located in about 1964 and have been held by various parties previous to being staked for Minas de Cerro Dorado Ltd in April, 1973.

Surveys have consisted of modest programs of geochemical, geological and geophysical testing, very minor trenching and a single diamond drill hole of unknown depth. Except for a 1968 induced polarization survey (Assessment Report 2307) and Geological Survey (Assessment Report 1802) the results of the surveys are not known to the writer.

Important discoveries of gold and of copper have been made northwest and southeast of the RN claims. Exploration activity has been at a high level in the Sustut Peak and Toodogone Lake areas since 1970.

4-00

WORK COMPLETED (1973)

Property examination of the RN claims for Minas de Cerro Dorado Ltd (NPL), was made by personnel of Agilis Engineering Ltd. The author and a crew of three men worked on the claims from August 24 to August 31, 1973.

Work consisted of a claims survey, geological mapping of the entire claims area, sampling of the mineral showings and geochemical and geophysical (magnetometer) surveys over areas of interest which were overburden covered.

Property control for geological mapping and claims survey was obtained by 12.5 line miles of chained and flagged grid, part of which was the re-establishing of former, largely destroyed, picket lines. A base line at 110° was run to roughly correspond with the northern claim line. The majority of the lines were 400 feet apart with stations flagged or picketed every 100 feet.

The magnetometer and geochemical surveys covered claims Rn 7, 9 and 11. A total of 205 soil samples were collected. The magnetic survey was conducted along 24,000 feet of line with readings every 200 feet.

5-00

GEOGRAPHY

5-10 Location:

The RN property is situated 215 miles NNW of Fort St. James and 9 miles north of Thutade Lake. The area is covered by NTS sheet 94E (Toodoggone River). More precisely the claims are positioned $126^{\circ} 55'$ W Longitude and $57^{\circ} 12'$ N Latitude.

5-20 Access:

Access is by float-equipped aircraft to Thutade Lake, 9 miles south, or to Toodoggone Lake 12 miles north of the property, and thence onto the property by helicopter. Scheduled flights fly during the summer months between Prince George and Johanson Lake or Smithers and Bear Lake.

Alternately a gravel and dirt road can be driven from Fort St. James to Johanson Lake, 55 miles southeast of the property.

5-30 Topography:

Topographic relief is gentle over the north half of the property, while that over the south half is rugged with elevations of 5,000 to 6,770 feet. Drybrough Peak is situated on the mideastern part of the property, elevation 6,774 feet. Water for exploration purposes is available year round from small streams which cut the north and southwest claims.

5-40 Climate:

Winters are severe, with snow falling as early as late August and persisting until early June. Rainfall during the summer months is moderate. Exploration is best carried out from mid-June to mid-August.

5-50 Vegetation:

Much of the property lies above tree line and is covered by moss and alpine grass. Steeper slopes and higher areas of Drybrough Peak have no vegetation and are covered by rock rubble. Small clumps of mountain spruce, underbrush and marsh are found along the stream valleys.

6-00

GEOLOGY

6-10 Regional Geology:

The general geology of the Toodoggone River area as far south as Thutade Lake is outlined in the 1971 volume of "Geology, Exploration and Mining in B.C." B.C. Department of Mines, pp 63-64.

Stocks of Omineca Granitic rocks (Jurassic and Cretaceous)

intrusive into Takla Group volcanics (Upper Triassic-Lower Jurassic) underlie the Drybrough area). Toodoggone Volcanics (Jurassic) occur to the northwest, Sustut clastics (Upper Cretaceous-Early Tertiary) lie to the west and older metamorphic rocks are found several miles to the east of Drybrough Peak.

The Takla Group consists mainly of basaltic flows and pyroclastics including augite porphyries and crystal and lapilli tuffs. Also associated are wedges of white crystalline limestone, some of which may be Palaeozoic in age.

The Omineca Intrusions are said to be medium grained, equigranular, pink to grey quartz monzonite and granodiorite.

6-20 Property Geology:

The two rock types underlying the RN claims are Omineca intrusive rocks and Takla Group volcanics with minor limestone.

The former consists of hornblende and biotite-hornblende syenite and monzonite which vary in color from dark pink to white and green. The intrusive stock is irregular in shape and small dykes commonly cut the volcanics far from the main body, having been guided by a strong pre-intrusive fracture system in the volcanics. The intrusives are generally rich in magnetite (as are many of the volcanics) and are locally pyritiferous to the extent that they weather gossanous. In several areas chlorite-sericite alteration is associated with mineral related fractures. The magmatic activity appears to be closely followed by the copper-molybdenum mineralization along the same zones of weakness.

The Takla Group flows and pyroclastics are the most common underlying rock type. They consist of purple and green andesite, andesite feldspar porphyry and tuff. Fracturing is widespread and chloritization is pervasive. Magnetite is common except in areas of strong pyrite alteration.

Minor purple basalt is exposed in a stream cut on RN8. It is overlain by a series of andesites and tuffs to the north.

White limestone units are exposed in the streambed, claim RN7; near the old camp on claim RN16; and as a thick-bedded, massive, cliff-forming unit in the southwest corner of the claim group. Contact relationships between the limestone and volcanics were not seen. Skarn does not occur between the syenite and the limestone.

Hydrothermal alteration is limited to narrow zones which appear to be related to an easterly striking fault system. Alteration minerals are mainly quartz, sericite and chlorite while pyrite is strong in some zones.

6-30 Mineralization:

Sulphide mineral occurrences are found over most of the property, although many appear to be minor. There are two notable occurrences of chalcopyrite and chalcopyrite-molybdenite.

One is located on the NW side of Drybrough Mountain on Claim RN20. It is about 250 feet x 150 feet in extent and is largely hidden by talus. It consists of disseminations and fracture fillings of chalcopyrite and blebs of molybdenite in the intrusive and associated with fractures 20 feet into the volcanics. The volcanic-intrusive contact

to the west of the showing is exposed over several hundred feet and has no associated mineralization. To the north, and for a short distance to the east, the showing is talus covered. Where outcrop occurs to the east it is not mineralized. The contact swings north from the showing, beneath the talus and rubble.

Alteration minerals in the form of chlorite, sericite and hematite are associated with the mineralization near the fracture zones. A single highly pyritiferous outcrop occurs 400 feet north of the mineralization, and 200 feet northeast of that a gossanous weathering volcanic is exposed. The pyritiferous material was assayed for copper, gold and silver but the values were very low.

Chip samples over the main mineral zone were taken perpendicular to the fracturing and altered fracture zones. One sample (31-1) over 9 feet assayed 0.13% copper, 0.010% molybdenum and another over 25 feet (31-2) assayed 0.10% copper, 0.154% molybdenum.

The second showing of any extent is situated 200 feet west of Drybrough Peak and lies totally within volcanic tuffs and andesites. It is related to fracturing and to syenite dykes which occur just to the north and often carry minor chalcopyrite. Malachite is extensive over an area 10 feet x 60 feet and small amounts of chalcopyrite and bornite are sometimes seen. The mineralization, being fracture associated, is largely leached away on surface. The extent of the showing to the north could not be traced along the cliffs and to the south it disappears under talus. A grab samples (26-9) assayed 0.58% copper and 0.36% oz/ton silver.

Elsewhere, malachite and chalcopyrite occur in scattered localities as indicated on the map. These occurrences are related to syenite-monzonite dykes and associated fractures in the volcanics. Malachite stained fractures are sometimes seen in the massive intrusive rock.

Along the north end of the property a wide gossan occurs in both the intrusive and the volcanics. Malachite occurs in the leached outcrop in two localities, however, pyrite is the only visible sulphide. A two-foot wide vein of magnetite, hematite and minor sphalerite occurs just west of the gossan, situated totally within limestone.

A geochemical soil sampling survey and a magnetometer survey were conducted over this zone. Samples of gossanous material were assayed for silver and gold, both of which were very low. Soil samples were assayed for copper and molybdenum the results of which are summarized in the following section.

Structurally, a fairly regional fault zone is projected through this part of the property to which this, and pyrite gossans off the property to the east, are related. Fracturing is moderately strong over most of the exposed outcrop.

7-00

GEOCHEMICAL SURVEY

7-10 Purpose:

A soils survey was conducted over the gossanous area, claims RN7 and 9, to test for possible perimeter copper mineralization somewhere north or south of the exposed gossan. Narrow zones of the type mapped on Drybrough Peak would probably be expressed in one or two samples only, with corresponding anomalous molybdenum samples

an aid in separating the erratic from the meaningful highs.

7-20 Method:

Samples were taken on a 100 x 200 foot grid over the main gossan and on a 100 x 100 foot grid over a small shear related copper showing southwest of the gossanous area. Slope is quite gentle, averaging about 05° to the north. Overburden varies from less than one foot to ten feet in depth.

Soil samples were collected from the B horizon at a depth of from 6 to 14 inches, using a soil auger. A portion of the soil obtained was placed into Kraft sample envelopes which were numbered corresponding to the grid location. At each sample location notes were recorded on any data that might enable a better interpretation of the results.

Samples were forwarded to Core Laboratories Ltd., 325 Howe Street, Vancouver, for analysis. After drying in an electric oven the soil was screened and the minus 80 mesh fraction was digested in hot perchloric-nitric acid mixture. Quantitative analysis for total copper and molybdenum was performed by atomic absorption and reported in parts per million (ppm).

7-30 Results and Interpretation:

Copper results were analyzed statistically by plotting the accumulative percent versus the sample values on arithmetic probability paper. This shows anomalous values to lie above 60 ppm with background below. About 8% of the values are strongly anomalous while approximately 15% lies in the weakly anomalous range. Average background is 30 ppm while the highs run to 590 ppm.

The granitic gossanous area lies well within background while several high and low anomalous values occur across that part of the gossan which is located within volcanic rocks. On lines 14W and 16W near the base line, three high anomalous values occur in an area of overburden, developing a zone of approximately 300 feet x 100 feet. Again, to the southwest of the gossan, several low anomalous values occur near the chalcopyrite occurrence but do not form a continuous trend. The high of 590 ppm is isolated near the intrusive-volcanic contact.

The results of the geochemical survey were not conclusive. Anomalous copper values show some vague trends, several with corresponding molybdenum highs. The overall results of the survey seem to suggest an erratic pattern of copper mineralization of the type observed elsewhere on the property.

8-00 MAGNETOMETER SURVEY

8-10 Purpose:

A magnetometer survey was conducted over the same area as the soils survey. The purpose was to attempt to further define the gossan zone which was known to be poor in magnetite (and rich in pyrite) with respect to the unaltered rocks. On the exposed showing, NW Drybrough, a pyrite gossan occurs 200 to 300 feet north of the chalcopyrite-molybdenite showing but is not of such an extent that it might outline a zone of alteration and mineralization.

A magnetic survey over the entire property does not appear useful as exposed rock indicates that both mineralized and non-mineralized rock can be magnetite rich.

8-20 Method:

The instrument used was a Scintrex MF-2 Fluxgate magnetometer which reads the vertical component of the earth's magnetic field. Base stations were established every 200 feet on the east-west running base line by averaging the corrected readings of three, 15 minute loops. Cross line loops were then run and corrected to the base stations for diurnal magnetic variations, assuming all variations to be linear over a short time interval. Stations were every 200 feet along the cross lines.

8-30 Results and Interpretation:

A magnetic low, trending approximately N80°E indicates that a structurally controlled alteration zone crosses the grid area through the exposed gossan and south of it, in the overburden covered area. It indicates that the alteration is probably fault related and is limited in width but continues east and west. The magnetic low corresponds with pyrite rich volcanics, and intrusives as well as the limestone to the west. Magnetic highs coincide with unaltered country rock.

9-00 CONCLUSIONS

The RN property has a favourable geological setting for the occurrence of a low grade copper-molybdenum deposit. Geological mapping has outlined several mineralized zones which are related to fracturing and faulting and the intrusion of a Tertiary syenite - monzonite complex into Triassic volcanics.

Alteration is not extensive but is locally strong. Much of the volcanic rock is pervasively chloritized. As well pyrite, chlorite sericite, epidote and silica are common

secondary minerals associated with the areas of copper mineralization. Pyrite gossans occur in two locations, they may be peripherally related to copper mineralized zones.

Sampling of the exposed mineralization indicates copper mineralization of less than 0.15% and molybdenum of 0.154% to 0.01%. Surface samples may not be representative due to weathering of the fracture related copper, as former sampling (Reeve, Assessment Report 1802, 1968) in fresh trenching has indicated grades as high as 1.3% over 10 feet.

A magnetic survey conducted over pyritiferous rocks in the northeast was useful in delineating this zone of alteration with respect to relatively magnetite rich country rocks. Magnetics may be of limited value in outlining altered and mineralized zones elsewhere on the property.

Geochemical soil sampling of this same area picked out several copper highs but failed to outline any extensive zones. The anomalous values may represent narrow zones of copper mineralization similar to that exposed on Drybrough Mountain. Geochemistry may be the most useful tool for surveying the lower elevations of the property where soil development is good.

Positive results of Induced Polarization Surveys conducted in 1968 (Assessment Report 2307) and the nature of the exposed mineralization support its further use in exploring the property.

10-00 RECOMMENDATIONS

The following course of exploration would best delineate the mineralized zones on the RN claims:

1. Extension of Induced Polarization survey to cover as much of the property as is permitted by accessibility and ground contact (i.e. some areas are overlain by coarse rock rubble). Detail in the areas of exposed copper mineralization if possible.
2. Geochemical surveying at 200 x 400 foot over that area of the property lying east of line 48W and south of the base line to line 21S, south of which there is no soil development.
3. The correlation of geochemistry, I.P. and magnetics would be especially important in tracing the Main Showing north along the contact. The first 1600 feet are talus-covered, succeeded along strike by overburden and scrub tree cover.
4. Detailed prospecting and mapping south of the Drybrough Peak showing as well as regional prospecting to the south and east of Drybrough Peak to pick up all surface occurrences of copper. Ropes and climbing gear would be necessary to prospect and sample the 1000 foot cliffs north of Drybrough Peak.
5. Diamond drilling would be necessary to further test the mineralized zones, especially south of Drybrough Peak where the ground is mostly covered by rock rubble, and north of the Main Showing which is largely talus-covered.

Submitted by:

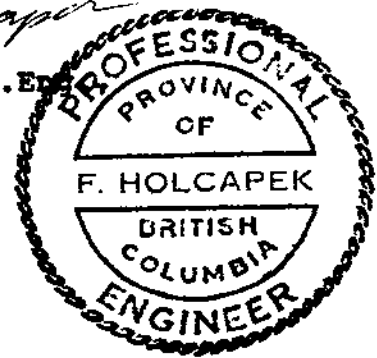
J. C. Needoba

J. C. Needoba, Geologist

F. Holcapek

Endorsed by:

F. Holcapek, P.Eng.



December, 1973
Vancouver, B.C.

CERTIFICATION

I, JACK CHARLES NEEDOBA, of Vancouver, British Columbia, do hereby certify that:

1. I am a graduate of the University of British Columbia and hold a B.Sc., (1971) degree in Geology.
2. I have practised as an exploration geologist in British Columbia, Yukon Territory and Northwest Territories for three years.
3. The work subject of this report was conducted by myself and a crew under my supervision.


J. C. Needoba, B.Sc.,

Vancouver, B.C.
December, 1973

DOMINION OF CANADA:
 PROVINCE OF BRITISH COLUMBIA.
 To Wit:

In the Matter of Geological and Geochemical surveys
 conducted on the RN Mineral Claims of Minas De
 Cerro Dorado Ltd. (NPL).

J. J. B. Talbot

of 107 - 325 Howe St., Vancouver, B.C. V6C 1Z7

in the Province of British Columbia, do solemnly declare that the following personnel were employed and costs incurred from August 24 to August 31, 1973.

Personnel

F. Holcapek, P. Eng	.5 days @ \$125/day	62.50
J. Needoba - geologist	17.7 " " 100/day	1,778.00
R. Rollings - drafting	20.0 hrs. @ 8.50/hr	200.00
		<u>2,040.50</u>

Disbursements

Truck Rental	300.00
Gas	17.88
Mileage 525 miles 15¢ / mile	78.75
Camping and Eng. Equip	120.86
Freight	10.84
Assaying	63.90
Plane support	1,610.70
Printing	26.74
	<u>2,229.67</u>
	222.96
	<u>2,452.63</u>

August 1973

Personnel

F. Holcapek, P. Eng.	3 hrs. @ 15.00/hr	45.00
J. Needoba	8.25 hrs. " " "	123.75
F. Zischka - field	13.25 days @ 43.20/day	572.40
R. Turner	10.5 " " 72.72 "	763.56
L. Turner	10.5 " " 36.36 "	381.78
R. Rolling - drafting	1 hr " 8.50 hr.	8.50
B. Talbot - drafting	4.5 hrs " " "	38.25
		<u>1,933.24</u>

(CONTINUED)

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 10
 day of January 1974, A.D.

J. B. Talbot

John Luman
 Commissioner for taking Affidavits for British Columbia or
 Notary Public in and for the Province of British Columbia.

In the Matter of

.....
.....
.....
.....

Statutory Declaration
(CANADA EVIDENCE ACT)

Disbursements

Equipment and supplies	128.44	
Meals and accommodation	47.32	
Prints	9.32	
Geochemical testion	189.90	
Truck - rental	162.50	
Mileage	67.50	
Camp charges	60.00	
	<u>664.98</u>	
10% overhead	66.50	
	<u>731.48</u>	

June 1

Personnel

R. Rollings - drafting	11 hrs. @ 8.50/hr	93.50
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Disbursements

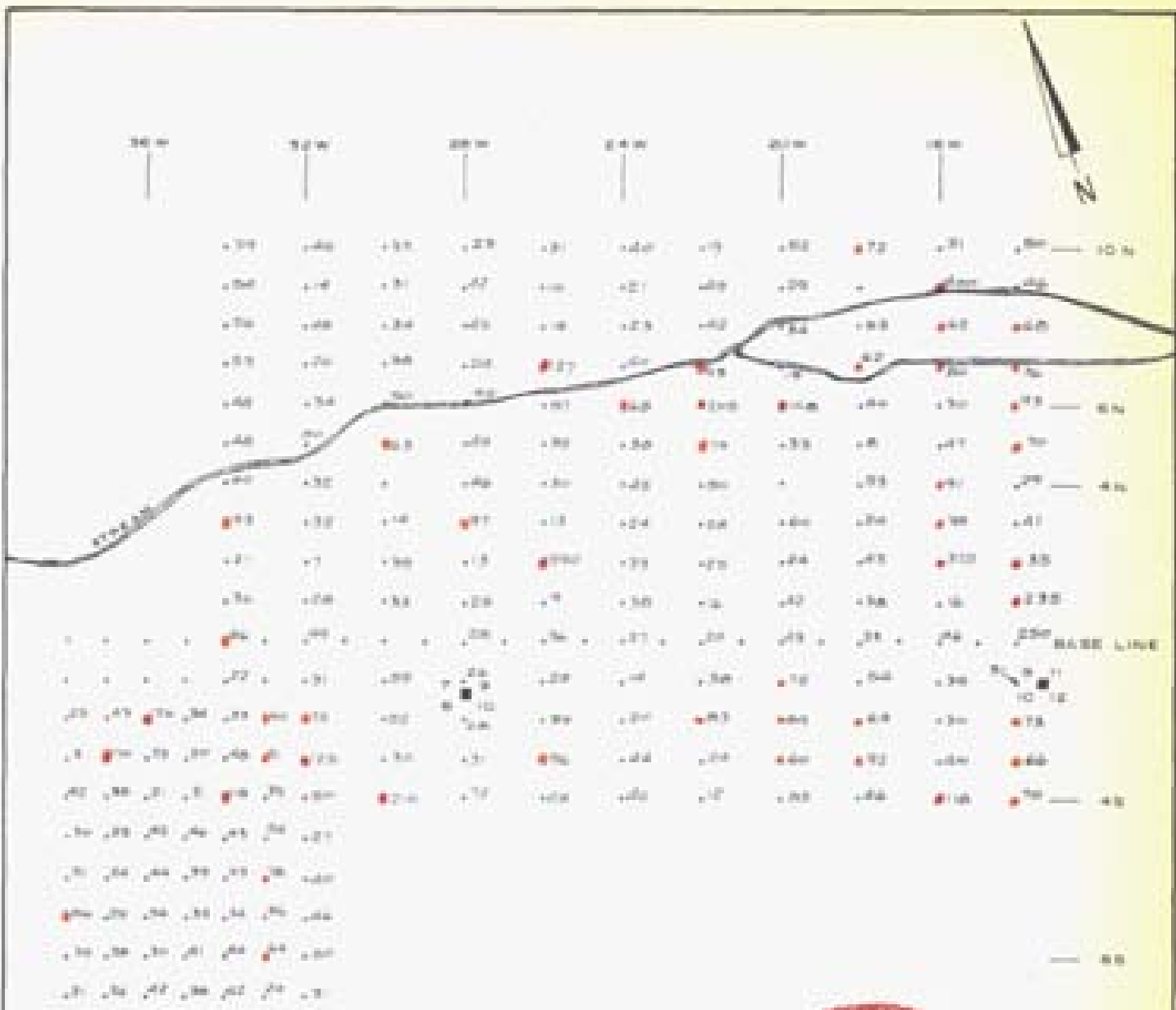
Prints and airphotos	15.08	
10%	<u>1.50</u>	
	<u>16.58</u>	

Total Cost 4,815.40

Declared before me at the *City*
Vancouver, in the
 office of the Registrar of the Province of British Columbia, this *10*
 day of *Jan.* 1974, A.D.

J. B. Talbot

Jill Turner
 Registrar of the Province of British Columbia or
 the Province of British Columbia.
 Registered Recorder



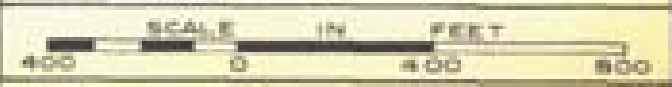
Department of
 Mines and Geoscience Resources
 Approval Number
 NO **4870** MAP **#3**



- 60-100 PPM.
- >100 PPM.

MINAS DE CERRO DORADO LTD (NPL)
 RM CLAIM GROUP - THUTADE LAKE AREA
 OMNICA MINING DIVISION, B.C.

GEOCHEMICAL SURVEY
 CU RESULTS IN PPM.



AGILIS ENGINEERING LTD. SEPTEMBER 1973

BRITISH COLUMBIA
MINAS DE CERRO DORADO LTD. (NPL)

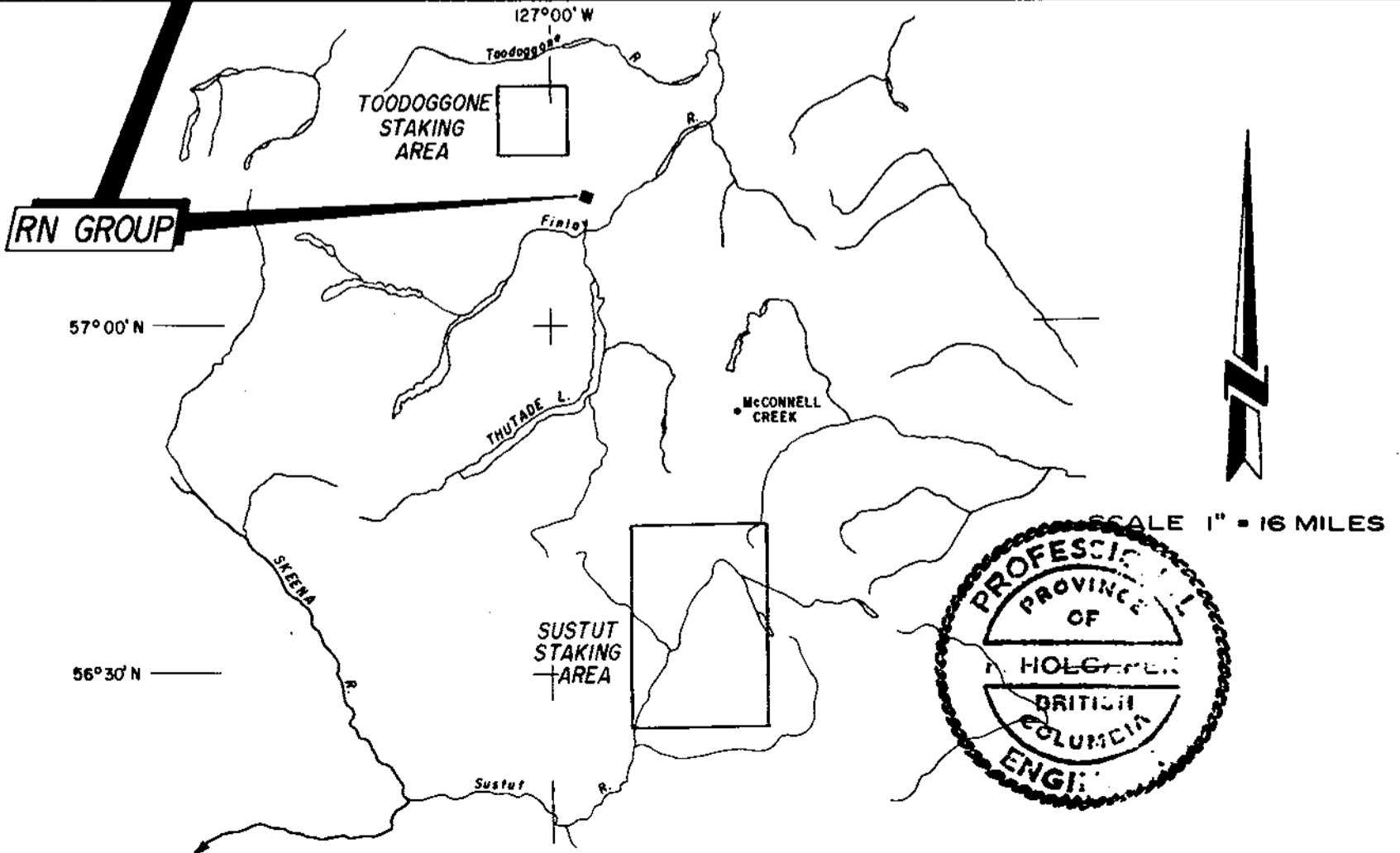
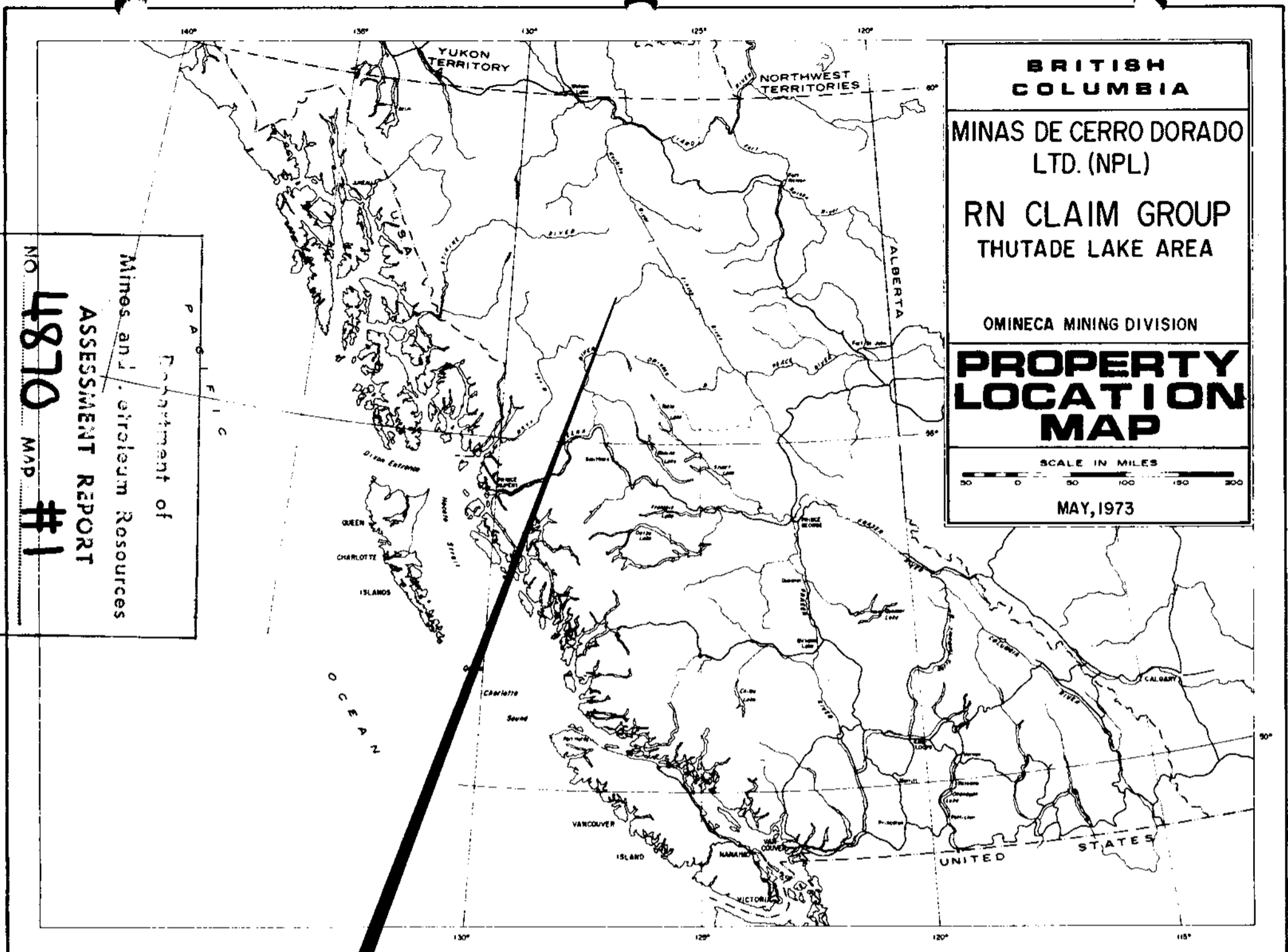
RN CLAIM GROUP
THUTADE LAKE AREA

OMINECA MINING DIVISION

PROPERTY LOCATION MAP

SCALE IN MILES
 0 50 100 150 200
 MAY, 1973

Department of
 Mines and Petroleum Resources
ASSESSMENT REPORT
 NO. **4870** MAP #1





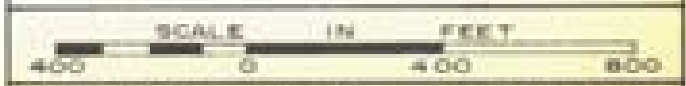
Project Name: *Minas de Cerro Dorado*
 Client: *Minas de Cerro Dorado Ltd.*
 Date: *September 1973*
 NO. **4870** MAP # **4**



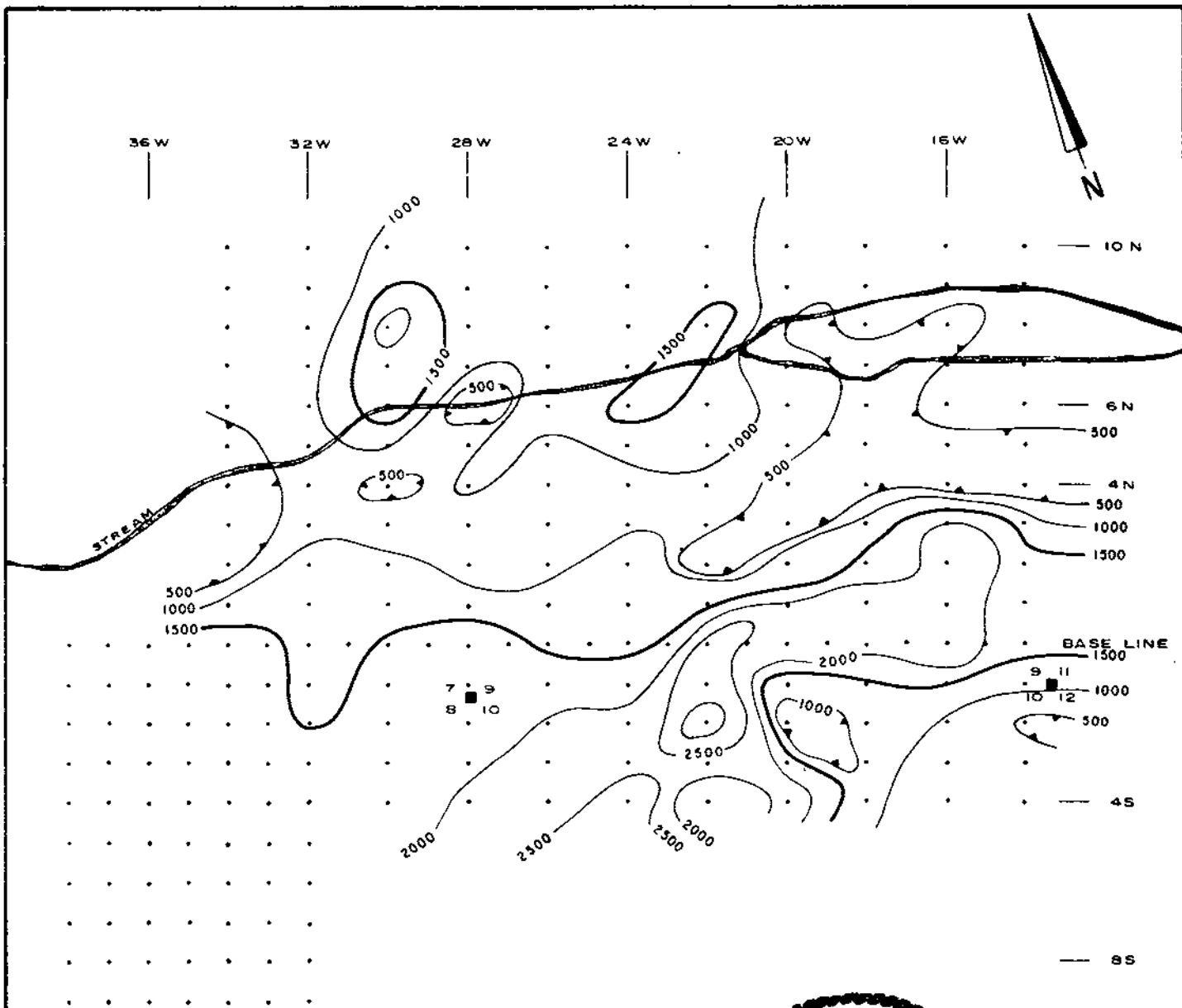
MINAS DE CERRO DORADO LTD. (NPL)
 RN CLAIM GROUP - THUTADE LAKE AREA
 DISTRICT MINING DIVISION, B.C.

GEOCHEMICAL SURVEY
 No RESULTS IN PPM

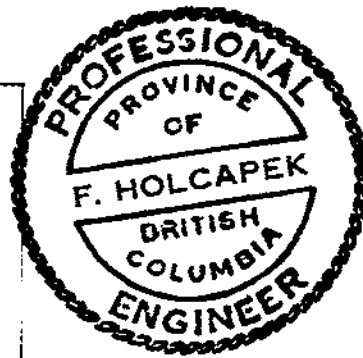
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- >15 PPM.



AGILIS ENGINEERING LTD SEPTEMBER 1973



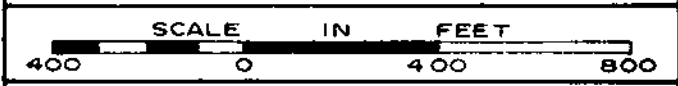
Department of
 Mines and Technical Surveys
 Geological Survey of Canada
 NO **4870** P.P. **#5**



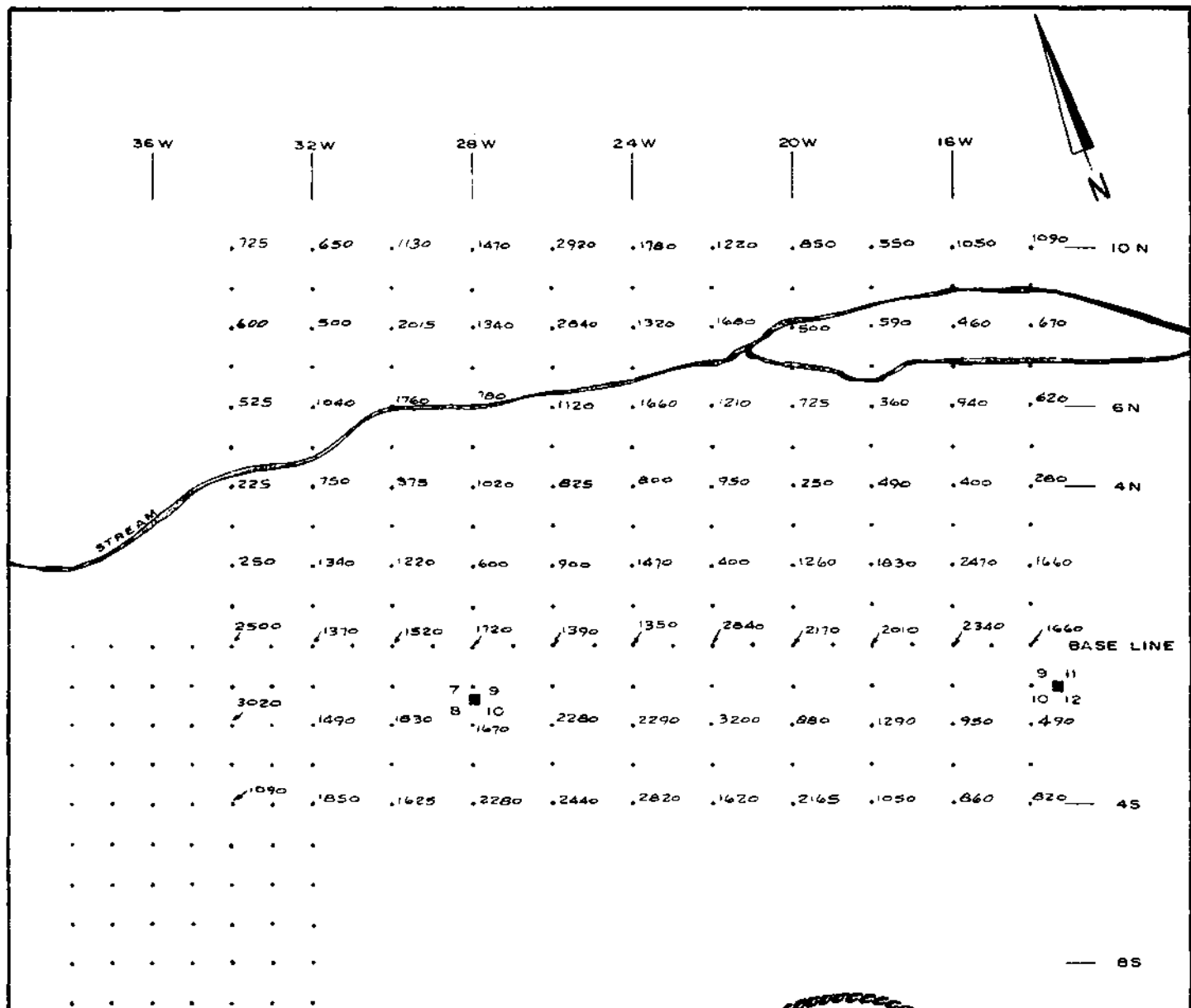
MINAS DE CERRO DORADO LTD. (NPL)
 RN CLAIM GROUP - THUTADE LAKE AREA
 OMINCA MINING DIVISION, B.C.

**MAGNETOMETER
 SURVEY**

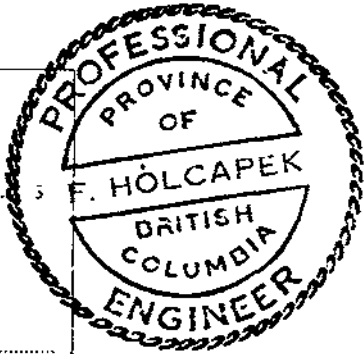
CONTOUR INTERVAL 500 GAMMAS



AGILIS ENGINEERING LTD. SEPTEMBER 1973



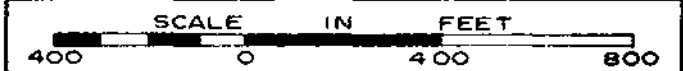
NO. **4870** #6



MINAS DE CERRO DORADO LTD. (NPL)
 RN CLAIM GROUP - THUTADE LAKE AREA
 OMINCA MINING DIVISION, B.C.

MAGNETOMETER SURVEY

VALUES IN GAMMAS

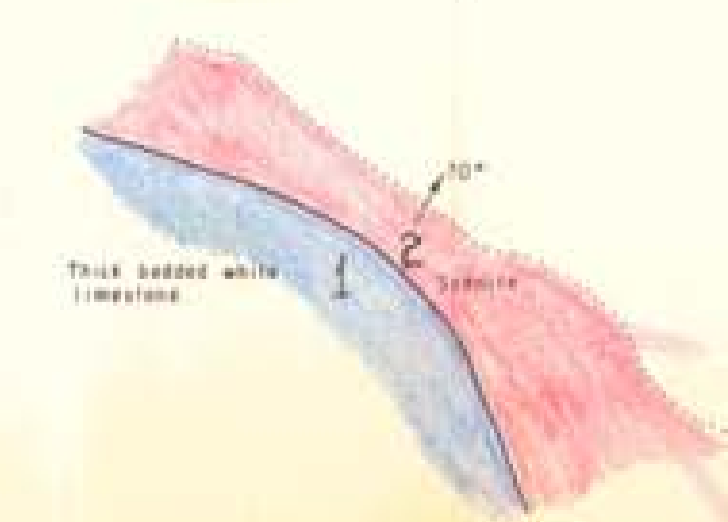
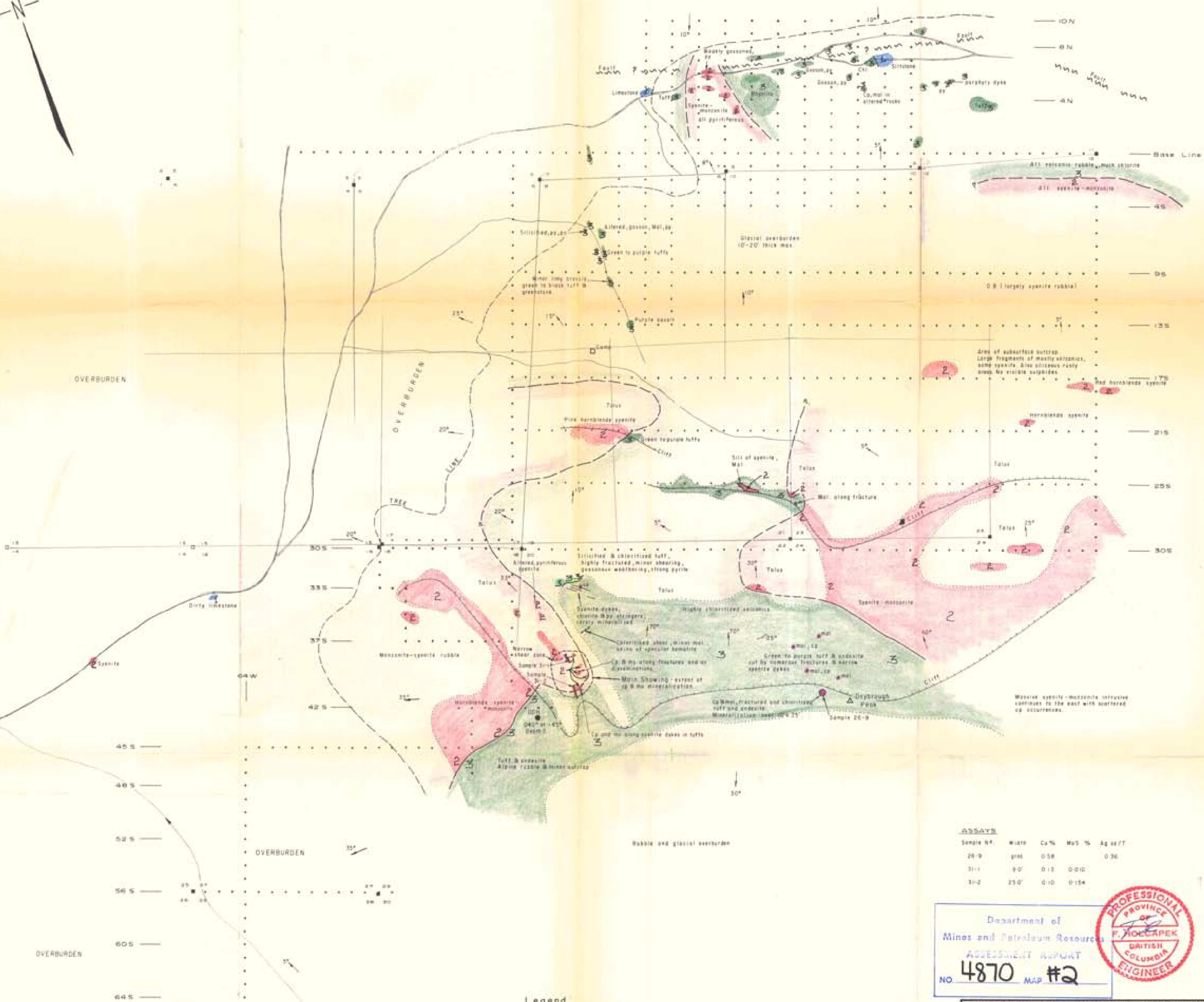


AGILIS ENGINEERING LTD. SEPTEMBER 1973



60W 56W 52W 48W 44W 40W 36W 32W 28W 24W 20W 16W 12W 8W 4W

10N
0N
-0N



Legend

- Sedimentary
- Intrusive
- Volcanic
- Outcrop
- Contact definite, approximate
- Slope direction
- cp - chalcocopyrite
- ma - molybdenite
- mal - malachite
- py - pyrite
- chl - chlorite
- pn - pyrrhotite

NOTE: All glacial material on the property is of local rock types.
Geology by Jack Needoba August, 1973

ASSAYS

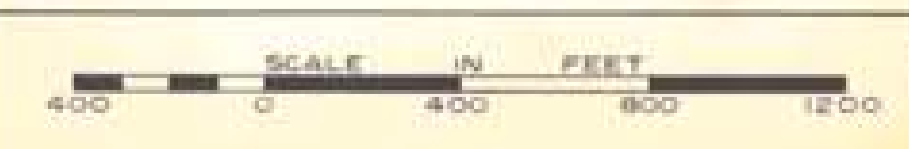
Sample No.	Wt%	Cu%	Mo%	Ag oz/T
26-9	grd	0.58		0.36
31-1	90'	0.13	0.010	
31-2	250'	0.10	0.154	

Department of
Minas and Petroleum Resources
ASSESSMENT REPORT
NO. 4870 MAP #2



MINAS DE CERRO DORODO LTD. (NPL)
RN CLAIMS - THUTADE LAKE AREA
OMEGA MINING DIVISION, B.C.

GEOLOGY MAP



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