

3706

Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
No. 3706 MAP.....

GEOCHEMICAL REPORT  
ON  
SOIL SAMPLING SURVEY.  
GREEN LAND MINING LTD. (N.P.L.)  
JOHN CLAIMS 92H/5W  
HARRISON LAKE AREA  
NEW WESTMINSTER M.D., B.C.  
MAY, 1971

JOHN SOUTH GROUP: 5 miles N60W of Harrison Hot Springs,  
49° 117° SW

JOHN NORTH GROUP: 5.5 miles N30W of Harrison Hot Springs,  
49° 117° SW

N.T.S.: 92H/5W

Report by: David G. Mark  
Geophysicist  
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Submitted to: GREEN LAND MINING LTD. (N.P.L.)  
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Soil Sampling Survey  
JOHN Claims

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2) David G. Mark	

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Soil Sampling Survey  
JOHN Claims

SUMMARY

A soil sampling geochemical survey was completed during mid-May, 1971, over the 2 JOHN group of claims (referred to as the JOHN North Group and the JOHN South Group, respectively) on the western shore of Harrison Lake near Camp Cove and Weaver Lake. Access is relatively easy because of logging roads, topography is rugged and forest cover dense coniferous.

The purpose of the survey was to locate any possible mineral zones of copper, silver and/or gold. The JOHN South Group is underlain by intermediate volcanics, and the JOHN North Group by sediments (sandstone, argillite and tuff) and an intrusive stock of quartz diorite. Both claim groups have a fair amount of pyritization within some of the rocks.

The properties were soil sampled on a 100- by 400-foot grid and tested by hot acid extraction for copper and silver and some for gold.

Very little in the way of positive results were produced on the JOHN South Group but a number of anomalies were produced on the southern 10 claims of the JOHN North Group.

A limited amount of prospecting is recommended for the JOHN South Group and a much more thorough program of prospecting, geological mapping, and perhaps 'cat' trenching and an induced polarization survey is recommended for the JOHN North Group.

GEOCHEMICAL REPORT  
ON  
SOIL SAMPLING SURVEY  
ON THE  
JOHN CLAIMS  
HARRISON LAKE AREA, B.C.

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Submitted to: GREEN LAND MINING LTD. (N.P.L.)  
J. A. Mitchell, P.Eng.  
Consulting Geologist

INTRODUCTION

A soil sample program was undertaken on the JOHN claims, on the west shore of Harrison Lake during the mid-part of May, 1971. The surveys were under supervision of the writer and under field supervision of Richard S. Simpson.

The survey was done over the claims JOHN 4 and 8-20. Additional claims were staked (A 1-4, 5 Fr. and 6 Fr.) as shown on the Claim Location and Geology Map, and the survey was then continued over these claims. The claims are found in 2 separate locations. The JOHN 4 and 6-8 claims comprise one group and are referred

to hereafter as the JOHN South Group. The JOHN 9-20 and A 1-4, 5 Fr. and 6 Fr. comprise the second group and are referred to hereafter as the JOHN North Group.

J. A. Mitchell, consulting geologist, examined the properties in early October, 1970 and concluded that because of the intense pyritization and presence of thin malachite stained seams, low grade copper gold mineralization could exist. The object of the soil sample survey was therefore to further explore this possibility. However, because of the possibility of silver values and the expense of gold analyses, the samples were tested for copper and silver, and only a limited number were tested for gold.

#### LOCATION AND ACCESS

The JOHN South Group has coordinates of  $49^{\circ} 20'N$  and  $121^{\circ} 52.5'W$ . It is located south of Weaver Lake and north of Weaver Creek about 5 miles N60W of Harrison Hot Springs.

The JOHN North Group has coordinates of  $49^{\circ} 22'N$  and  $121^{\circ} 50'W$ . It is located  $5\frac{1}{2}$  miles N30W of Harrison Hot Springs on the west shore of Harrison Lake by Camp Cove.

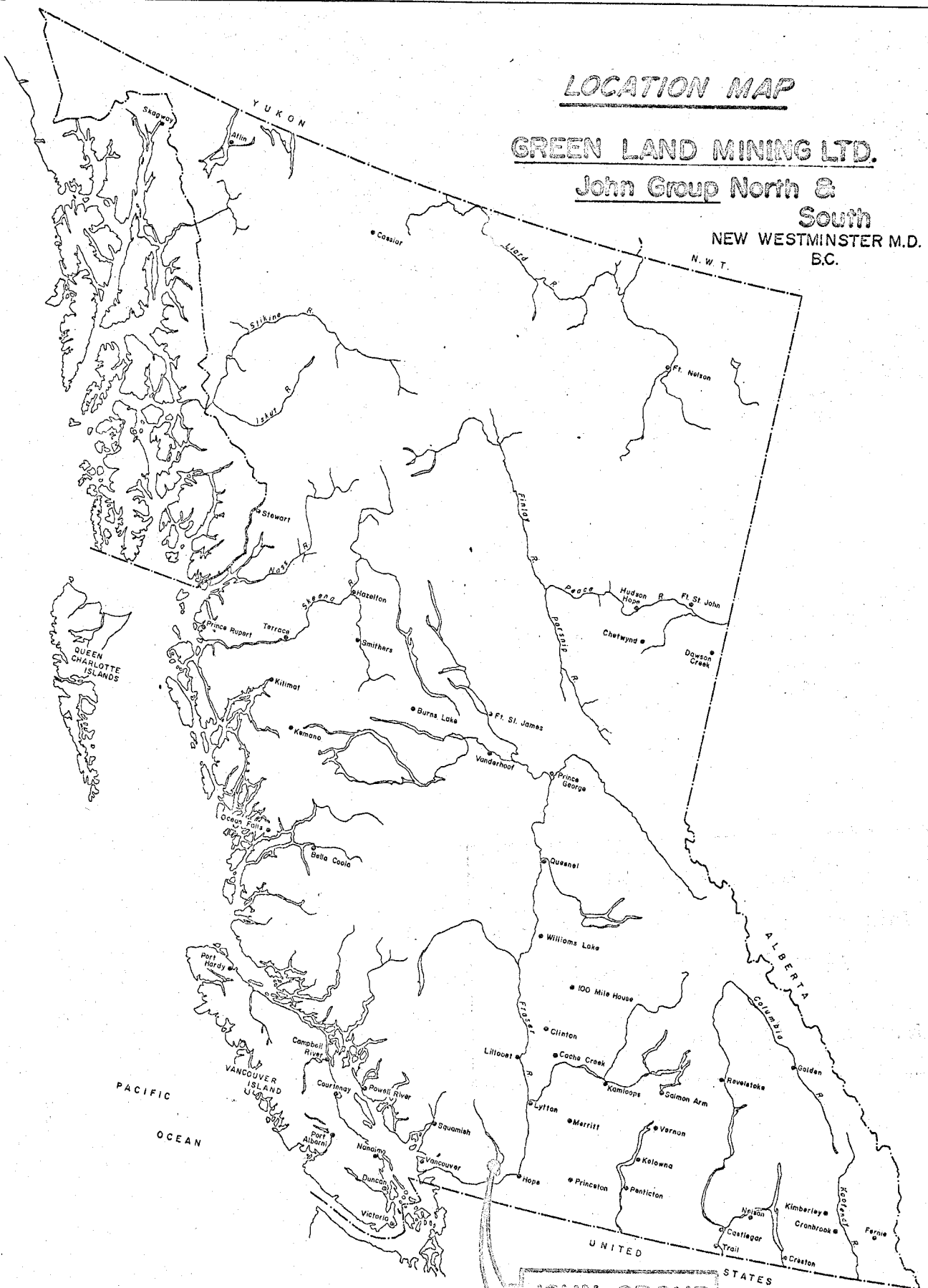
LOCATION MAP

GREEN LAND MINING LTD.

John Group North &

South

NEW WESTMINSTER M.D.  
B.C.



SCALE 1" = 110miles

**JOHN GROUP**



Access to the property is relatively easy in that the area is well traversed by logging roads. Both groups can be reached by vehicle, preferably 4-wheel drive, on 10 miles of these roads from Harrison Mills, which is on Highway 7 about 70 miles east of Vancouver.

#### TOPOGRAPHY

The field crew reports that the area around the claims is extremely rugged, especially the JOHN North Group. It is deeply cut by steep-sided ravines and dotted with numerous rock bluffs.

The vegetation is that of a dense coniferous forest but much of it has been logged off.

#### GEOLOGY

This is taken after Mitchell and Monger.

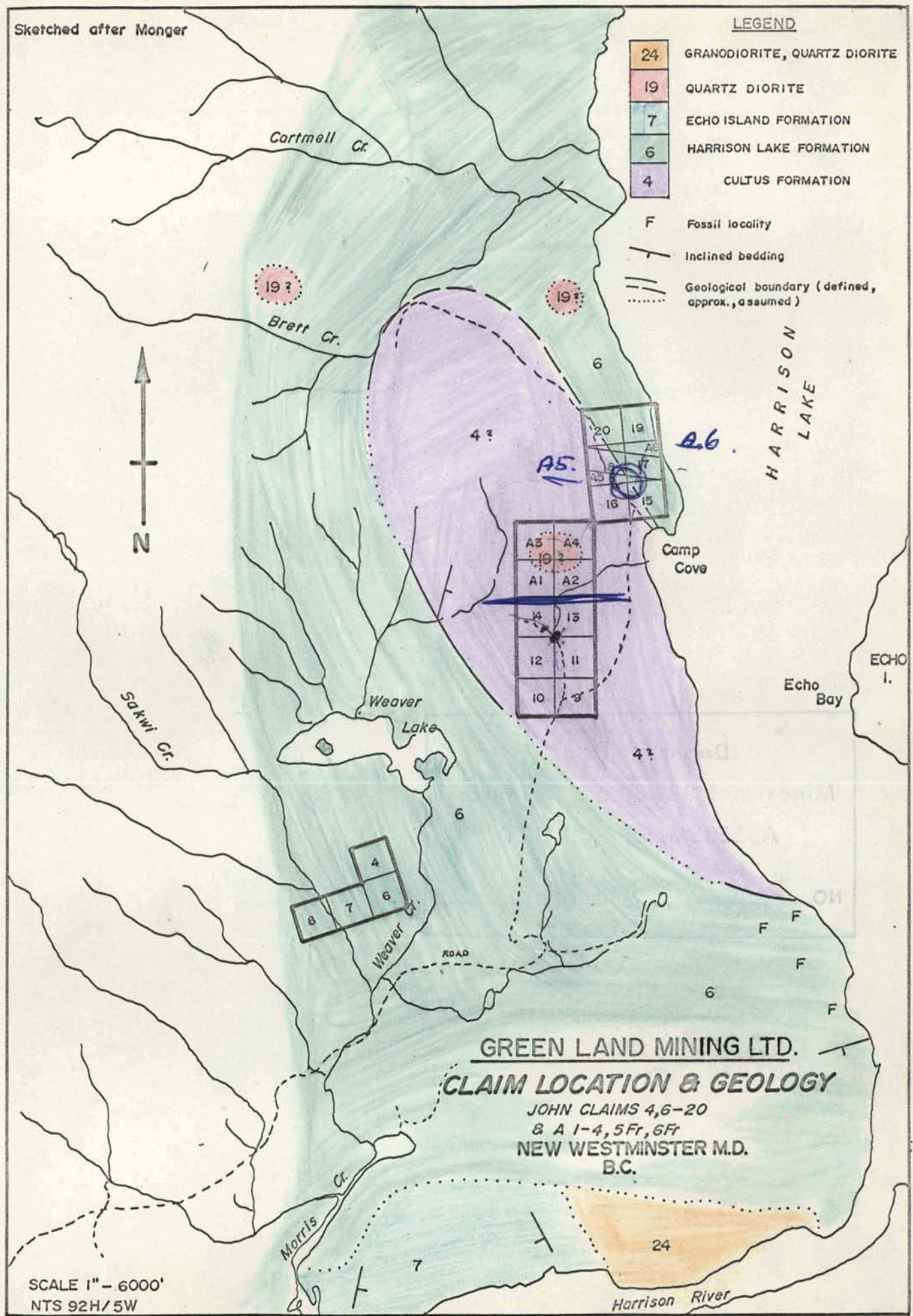
The JOHN South Group is underlain by volcanic rocks of the Harrison Lake Formation of Middle Jurassic Age. Mitchell stated that these rocks appeared to be andesites and andesitic agglomerates that were extensively mineralized by pyrite. He noted a little malachite on thin fractures but no evidence of any other mineralization except for pyrite.

Sketched after Monger

**LEGEND**

- 24 GRANODIORITE, QUARTZ DIORITE
- 19 QUARTZ DIORITE
- 7 ECHO ISLAND FORMATION
- 6 HARRISON LAKE FORMATION
- 4 CULTUS FORMATION

- F Fossil locality
- Inclined bedding
- Geological boundary (defined, approx., assumed)



**GREEN LAND MINING LTD.**  
**CLAIM LOCATION & GEOLOGY**  
 JOHN CLAIMS 4, 6-20  
 & A 1-4, 5Fr, 6Fr  
 NEW WESTMINSTER M.D.  
 B.C.

SCALE 1" = 6000'  
 NTS 92H/5W

*Monger*

The JOHN North Group is predominantly underlain by sediments of the Cultus Formation of Triassic and Jurassic Age. These rocks are, according to Monger (page 11), "...2,000 feet of sandstone and black argillite overlain by several hundred feet of tuff. In places above this is a conglomerate.... The whole is overlain by Middle Jurassic volcanic rocks." Monger shows on his geological map a quartz diorite intrusive on the A1 - A4 claims of Upper Cretaceous or (?) older age. On the road on the JOHN 11 and JOHN 14 claims, the field crew reported much limonite staining and pyritization.

Mitchell notes that "the area is quite rugged with deeply incised valleys and abrupt bluffs suggesting considerable minor faulting, probably subsidiary to the major fault zone along Hanson Lake."

#### SURVEY PROCEDURE

Both claim groups were soil sampled at 100-foot centers on lines about 400 feet apart parallel to the claim boundaries. On the JOHN South Group these lines therefore ran N75E on claims JOHN 6-8 and N15W on claim JOHN 4. On the JOHN North Group, the lines run north-south and are controlled by 3 base lines. These lines were chained and compassed in with the coordinates, as

shown on the sheets in the pocket, being marked at each 100-foot station on orange flagging tape. Some areas of some claims were not sampled due to abrupt cliffs.

The soil horizon sampled was the B layer and where no B existed, the C layer. The B was a reddish-brown colour and the C a more greyish colour. The soil was sampled with a 4-foot soil sampling auger which was pushed into the ground as far as it would go. The sample was then placed in a brown, wet-strength envelope with line and station marked thereon. In a number of places, very little soil could be obtained and other places there was no soil and thus rock chips were taken instead.

#### TESTING PROCEDURE

All samples were tested for copper and silver by Bondar-Clegg and Company Ltd. of North Vancouver, B.C. The sample was first thoroughly dried and then sifted through an 80-mesh screen. A measured amount of the sifted material is then put into a test tube with subsequent measured additions of aqua regia acid. The mixture is then heated for approximately 3 hours. The parts per million (ppm) material, whether copper or silver, is then measured by atomic absorption.

Those samples that contained anomalous values of copper (picked out by J. A. Mitchell) were subsequently analyzed for gold. The testing procedure is similar except that the sifted material is preliminarily fused by a fire-assay process. The resulting dory bead is then dissolved in hot aqua regia and the test continues as is given above. The results are in parts per billion (ppb).

#### PLOTTING OF RESULTS

The results were plotted on sheets at a scale of 1" = 400' showing streams, lakes, roads, claims, claim posts and survey grid. Sheets 1, 2 and 3 are of the JOHN North Group and have plotted on them copper, silver and gold, respectively. Sheets 1a, 2a and 3a are of the JOHN South Group and have results of copper, silver and gold plotted on them, respectively.

The copper values have a sub-anomalous threshold value of 50 ppm and an anomalous threshold value of 100 ppm and therefore were contoured at an interval of 50 ppm. The silver values have threshold values of 1.7 ppm and 2.5 ppm, respectively, and therefore were contoured at an interval of 0.5 ppm. On both maps the sub-anomalous threshold contour line was dotted in and the anomalous contour line was drawn in by heavier line.

Not enough gold values were taken to contour.

INTERPRETATION

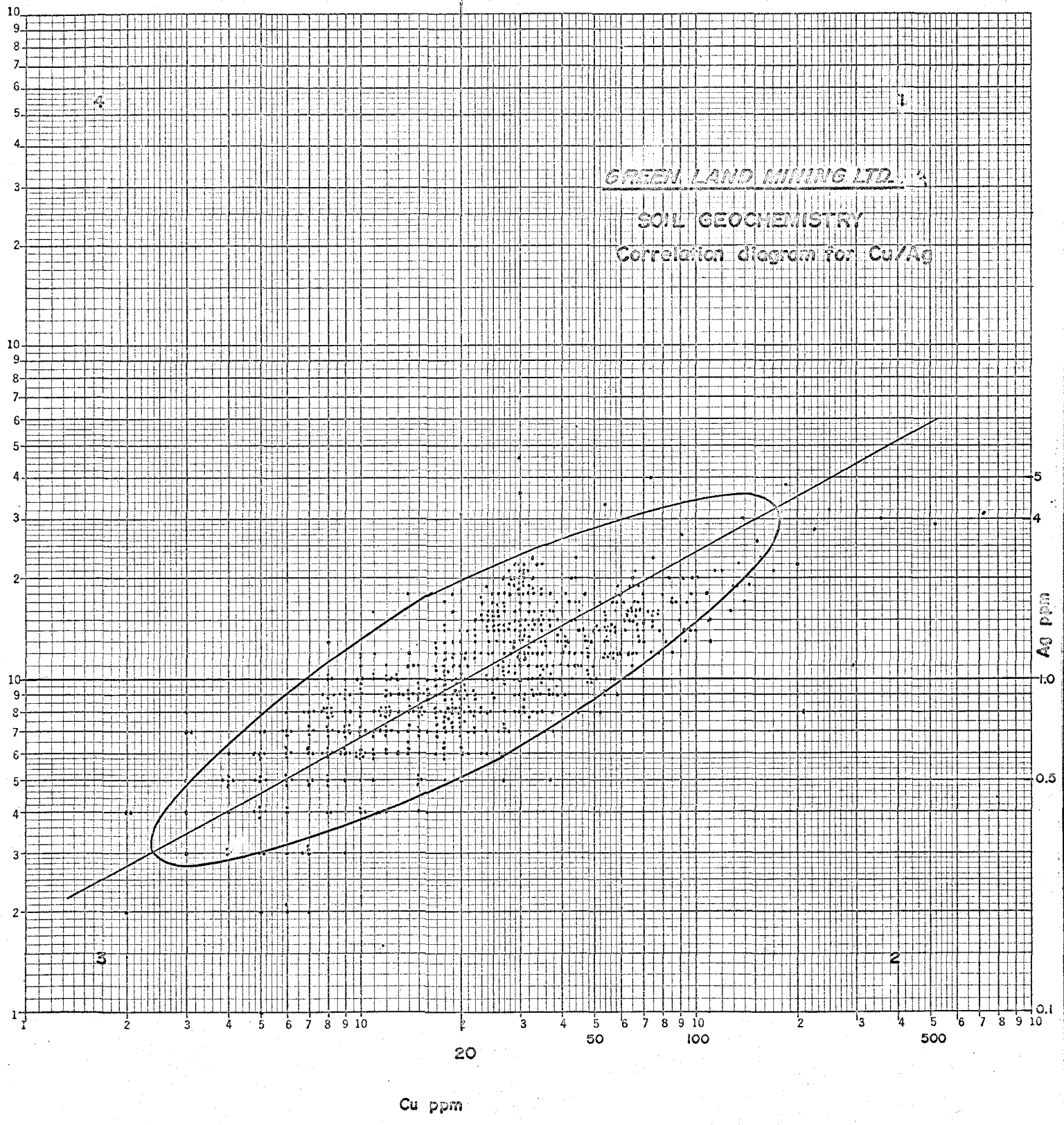
1) Statistical Analysis

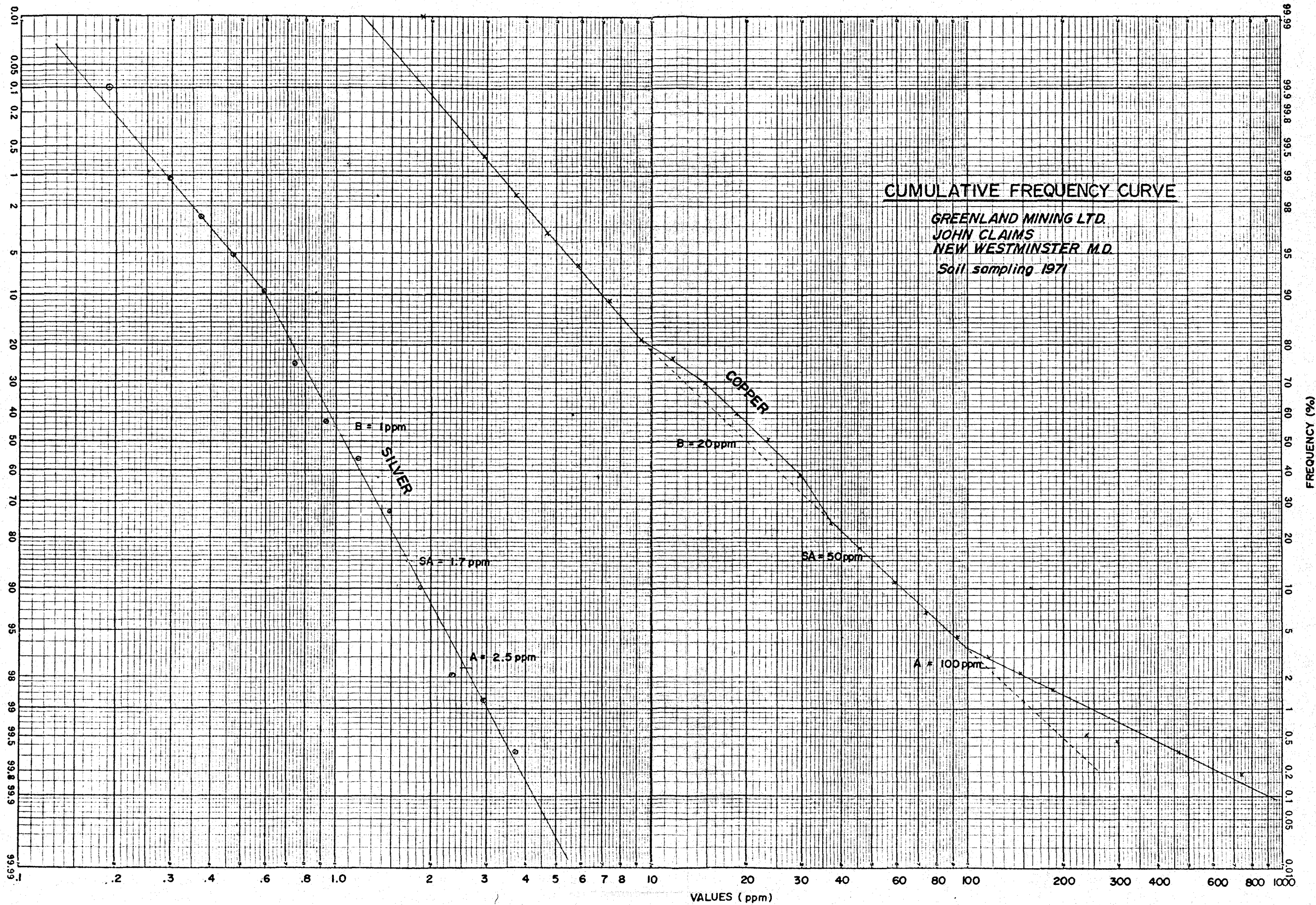
Logarithmic-cumulative frequency graphs were plotted for the copper and silver values respectively in order to find out various statistical parameters such as the background and threshold values. A correlation diagram was also plotted between copper and silver to find out how the 2 metal values at each station correlated with each other.

The copper cumulative frequency curve shows a mean background value of 20 ppm taken from the 50% level, a sub-anomalous threshold value of approximately 50 ppm, taken from the 16% level, and an anomalous threshold value of 115 ppm (say 100), taken from the 2½% level. The background is therefore in the 9-49 ppm range below which are negative anomalies and above which are positive anomalies. The negative anomalies are not important to further discussion in that in mining exploration one is not looking for low soil sample values. Above the background range from 50-99 ppm is the sub-anomalous range (This term is one used by the writer to denote the minimum value that is not anomalous, but not background either and, therefore, could still possibly indicate mineralization). The anomalous range are comprised of those values of 100 ppm or more.

68-120  
Logarithmic, 3 X 3 Cycles  
MADE IN CANADA

CCBS  
MICROGRAPH







The dispersion of the values around the background is indicated by the coefficient of deviation which in this case is 0.39, a rather average value.

There are a number of breaks in the copper curve which is indicative of a specific type of copper ion distribution. At the 3.5% level (100 ppm) the curve changes slope positively which shows an excess of high values at 100 ppm or greater. As shown on sheet 1, this is due largely to the road. There is also an excess number of values from about 10-40 ppm as is evidenced by the 'bump' in the curve. This is no doubt due largely to the excess of values within this range on the JOHN South Group of claims. In addition, a slight change in slope at the 80% level indicates a slight excess of values below 10 ppm.

The silver cumulative frequency curve indicates a mean background level of about 1.0 ppm, a sub-anomalous threshold value of about 1.7 ppm and an anomalous threshold value of about 2.5 ppm. Therefore the background ranges from about 0.7 ppm to 1.6 ppm, the sub-anomalous range, from 1.7 to 2.4 ppm and the anomalous range, 2.5 ppm and above. The coefficient of deviation in this case is 0.19 which is a lower value than that of copper and therefore denotes a narrower dispersion of values around the mean background value.

Gold was not analyzed statistically since the samples tested were picked from anomalous copper values and thus give a biased population. However, the results were discussed with Mr. Ken Bright of Bondar-Clegg who said that values above 20 ppb can generally be considered anomalous.

The correlation diagram indicates good correlation between the copper and silver values. In other words, where an anomalous copper value occurs, there is a good possibility that silver will be anomalous also at that location. The coefficient of correlation was calculated from the diagram. It can vary between  $\pm 1.0$ . If it is  $+1.0$ , then the values of the 2 metals are directly proportional to each other and the plots would fall in a straight line with positive slope going through the first and third quadrants. If it is  $-1.0$ , the results are inversely proportional to each other and the plots would fall in a straight line with negative slope going through the second and fourth quadrants. If it is zero ( $0.0$ ), then there is no relationship and the plots would be evenly distributed throughout all 4 quadrants. The coefficient of correlation in this case is  $+0.85$  which signifies a good positive correlation between silver and copper values.

2) Discussion of Anomalies

On the JOHN South Group, there are no anomalous copper values and only 2 sub-anomalous values. One of these correlates with the only anomalous silver value and is labelled A on both sheets 1a and 2a. Much of the rest of the silver values are around the sub-anomalous level and thus probably indicates a higher background level for this group. There are also 2 interesting anomalous gold zones and are labelled B and C on sheet 3a.

On the JOHN North Group, the results are somewhat more encouraging. Anomalies C - F are correlative between copper, silver and gold. Anomaly G is correlative between copper and silver.

Anomaly D is rather intriguing in that it follows the road with few anomalous values being found on the grid around it. Why the anomalous values are limited to the road could perhaps be explained by an impervious clay layer that limits the percolation of mineral ions, except for the road which cuts through this layer. As noted earlier there is much limonite staining and pyritization in the rocks in this area and therefore mineralization, even a minor amount, could be responsible for the anomaly. The anomaly is about 2,400 feet long and reaches a high of 725 ppm in copper, 3.2 ppm in silver and 135 ppb (considered very good) in gold.

Anomaly E is along the road and the adjacent grid lines. It is 2,000 feet long along the road, open on the east side and has a high of 250 ppm in copper, over 3 ppm in silver and 50 ppb in gold. Its largeness and character of distribution suggest a disseminated type mineralization. Joining onto this anomaly by a copper sub-anomaly is anomaly F which strikes in an east-west direction across the survey area. It is therefore about 1,900 feet long and is open on the east end as well as the anomaly E end. Its high in copper is 210 ppm, in silver 4 ppm and in gold 35 ppb, though these values are individually anomalous. The shape of this anomaly is indicative of vein-type or shear zone mineralization.

Anomaly G is small, about 400+ feet long and 200(?) feet wide. It has low anomalous values in copper and gold and sub-anomalous values in silver. It also is probably due to vein-type or shear zone mineralization though it could be minor.

Anomalous zone H is in an area of a number of anomalous and sub-anomalous values in copper and silver (no gold) that is perhaps related to the intrusive quartz diorite. This could easily be due to a higher background of the 2 metals within the intrusive. Within this zone is a long and narrow anomaly, 1,000 feet long, that is open on the west end and strikes east-west. It also suggests a source of vein or shear zone type mineralization.

The rest of the anomalous values bear little further discussion since they are non-correlative and/or single-value highs. However, silver anomalies I and J are of economic interest, though limited, and warrant looking into.

One fact that should be pointed out is that copper ions travel short distances through the soil and silver and gold travel hardly at all. Therefore, the location of the silver anomalous values, and perhaps more so that of the gold anomalous values, would be fairly indicative of the correct location of the mineral source compared to that of copper.

#### CONCLUSIONS AND RECOMMENDATIONS

The soil sample results over the JOHN South Group are rather disappointing and warrant little further exploration. Copper and silver anomaly A and gold anomalies B and C should be checked by prospecting and if there are no positive results, it is recommended to let the claims go.

The southern 10 claims of the JOHN North Group are much more anomalous, in general, and therefore warrant further work as follows:

1) The anomalies should be thoroughly prospected. Careful attention should be given to anomaly E which is considered by the writer to be the most important.

2) The property in general should be geologically mapped.


3) It may be necessary to 'cat' trench some of the anomalies in order to discover their source. This depends in part on (1) and (2) as well as economics and accessibility.

4) Depending on results above, an induced polarization survey may be warranted. However, pyritization unassociated with economic minerals may give unwanted anomalies.

5) Further work such as diamond drilling may be warranted on above results.

Respectfully submitted,

GOTRONICS SURVEYS LTD.



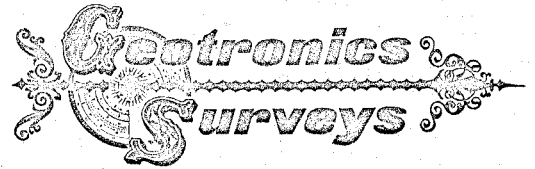
DAVID G. MARK  
Geophysicist

DGM:ly  
June 29, 1971

SELECTED BIBLIOGRAPHY

Mitchell, J.A.: Report on JOHN Groups, Harrison Lake, New Westminster Mining Division; Green Land Mining Ltd. (N.P.L.), October, 1970.

Monger, J.W.H.: Hope Map-Area, West Half, British Columbia; Geological Survey of Canada, Paper 69-47, 1970.



517 - 602 West Hastings Street, Vancouver, British Columbia, Canada ✖ Telephone 688-4342

RESUME OF TECHNICAL AND FIELD EXPERIENCE OF R. S. SIMPSON

1. Presently Field Manager for Trans-Arctic Explorations Ltd.
2. Two and one-half years of applied field experience in various aspects of geophysical surveying, staking, prospecting, blasting, sampling and geochemistry.
3. Instrument operator on ground magnetic surveys, Ronka EM-16, Sabre Magnetometer, Geotronics G-100 Magnetometer, Sharpe MF-1 Magnetometer, Sharpe Ground Scintillometer, Crone J.E.M. Shootback E.M., Sharpe Horizontal Loop E.M.
4. Above mentioned experience applied in the western United States and Canada but most extensively in the eastern and western Arctic regions of North America.



RESUME OF PROFESSIONAL AND TECHNICAL EXPERIENCE

OF

DAVID G. MARK, B.Sc.

EDUCATION

Graduate of the University of British Columbia in Science (B.Sc.) in Geophysics.

EXPERIENCE IN INDUSTRY

Experience, technical and interpretational, in various geophysical surveys: magnetometer, electromagnetic, self-potential, gravity, induced polarization, resistivity and seismic methods.

1968 - Present - Geophysicist for Geotronics Surveys Ltd., Vancouver, B.C.

1968 (exploration season) - Field Geophysicist for Geo-X Surveys Ltd., Vancouver, B.C.

1967 (exploration season) - Field Supervisor in geochemical work and geological mapping for Anaconda (Canada) Company.

1966 (exploration season) - Field Supervisor for geophysical and geochemical work and prospecting for Mastadon-Highland Bell Mines Ltd.

1965 (exploration season) - Prospecting and geological evaluation for New Taku Mines Ltd.

\* \* \* \* \*

Member of the British Columbia Geophysical Society and the Vancouver Branch of The Canadian Institute of Mining and Metallurgy.

P. Eng. applied for with the Association of Professional Engineers of B.C.

Soil Sampling Survey  
JOHN Claims

COST BREAKDOWN

3-man crew, May 12 to 26, 1971 (15 days)

Wages:

R. Simpson, 15 days @ \$75.00	\$1,125.00	
K. McCulloch, 15 days @ \$50.00	750.00	
E. Dodd, 15 days @ \$35.00	<u>525.00</u>	\$2,400.00
4x4 rental, 2 weeks @ \$125.00		250.00
Survey Supplies		75.00
Geochem Analysis:		
1,154 soil samples @ \$2.00 (Cu/Ag)	\$2,308.00	
100 soil samples @ \$2.00 (Au)	<u>200.00</u>	2,508.00
Mapping & Report		600.00
Engineering Fees		<u>300.00</u>
TOTAL COST		<u>\$6,133.00</u>

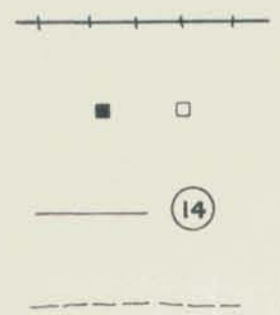


HARRISON LAKE

CAMP COVE

**LEGEND**

- SURVEY LINE & STATION
- CLAIM POST (LOCATED, ASSUMED)
- CLAIM LINE, CLAIM No.
- ROAD
- NOTE: VALUES ARE IN ppb
- <50 LESS THAN FIFTY ppb
- CONSIDERED ANOMALOUS



Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO 3706 MAP #7

TO ACCOMPANY GEOCHEMICAL REPORT BY D.G.MARK, B.Sc.

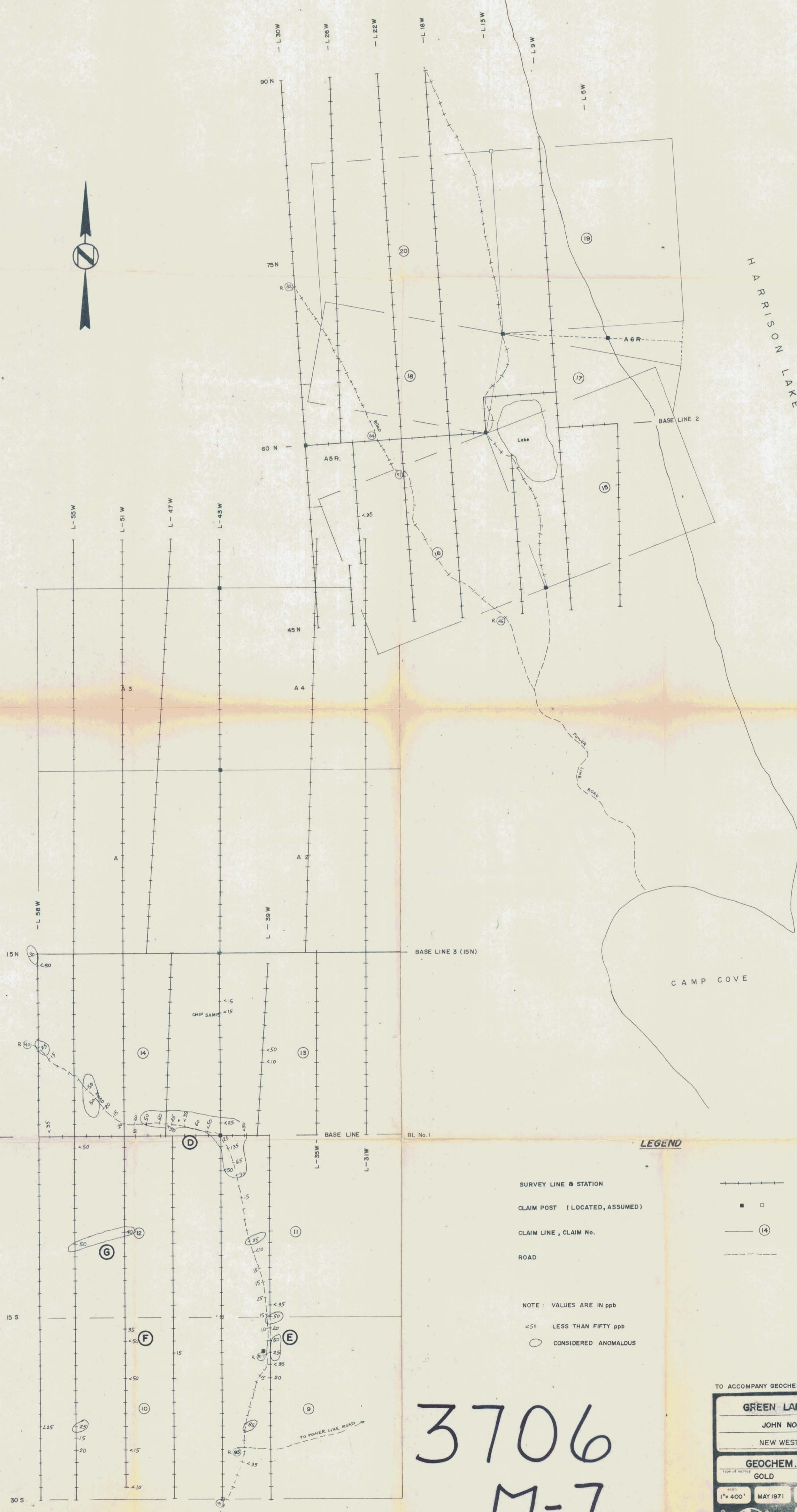
**GREEN LAND MINING**  
JOHN NORTH GROUP  
NEW WESTMINSTER M.D.

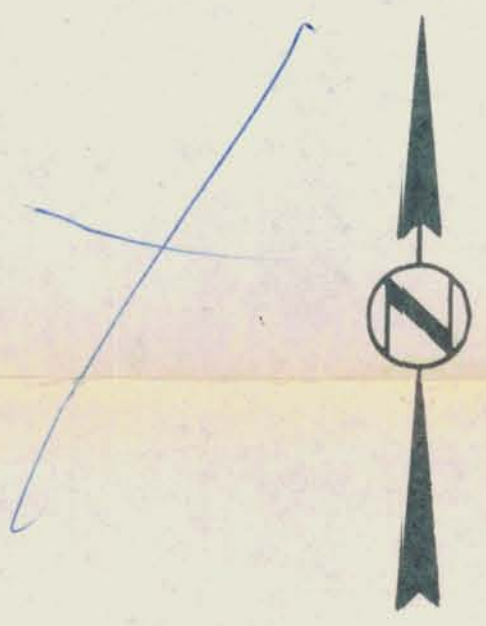
**GEOCHEM. SOIL SAMPLING**  
GOLD

Scale: 1" = 400'    Date: MAY 1971    Sheet: 71-44    of: 3    Drawn by: P.P.

**Geotronics Surveys Ltd.**  
117 - 882 West Hastings Street, Vancouver, British Columbia

3706  
M-7





**LEGEND**

- SURVEY LINE & STATION
- CLAIM POST (LOCATED, ASSUMED)
- CLAIM LINE, CLAIM No.
- ROAD
- CONTOURS: CONTOUR INTERVAL 0.5 ppm
- MEAN BACKGROUND 1ppm
- SUBANOMALOUS THRESHOLD VALUE 1.7 ppm
- ANOMALOUS THRESHOLD VALUE 2.5 ppm

Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. 3706 MAP #6

3706  
M-6

TO ACCOMPANY GEOCHEMICAL REPORT BY D.G.MARK, B.Sc.

**GREEN LAND MINING**  
JOHN NORTH GROUP  
NEW WESTMINSTER B.C.

**GEOCHEM. SOIL SAMPLING**  
SILVER - Survey plan & contours

1" = 400' MAY 1971 71-44 2 P.P.

**Geotronics Surveys Ltd.**



HARRISON LAKE

CAMP COVE



**LEGEND**

- SURVEY LINE & STATION**
- CLAIM POST (LOCATED, ASSUMED)**
- CLAIM LINE, CLAIM No.**
- ROAD**
- CONTOURS:**
  - CONTOUR INTERVAL 50 ppm
  - MEAN BACKGROUND 20 ppm
  - SUBANOMALOUS THRESHOLD VALUE 50ppm
  - ANOMALOUS THRESHOLD VALUE 100 ppm

Department of  
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**ASSESSMENT REPORT**  
 NO. 3706 MAP #5

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M-5

TO ACCOMPANY GEOCHEMICAL REPORT BY D.G.MARK, B.Sc.

<b>GREEN LAND MINING</b>	
JOHN NORTH GROUP	
NEW WESTMINSTER M.D.	
<b>GEOCHEM. SOIL SAMPLING</b>	
COPPER Survey plan & contours	
Scale 1" = 400'	Date MAY 1971
Drawn by I	Checked by P.P.
<b>Geotronics Surveys Ltd.</b> <small>Geotechnical &amp; Environmental Services</small>	