

TOMETER AND GEOCHEMICAL REPORT
on
THE FIR GROUP OF MINERAL CLAIMS, MERRITT AREA,
NICOLA MINING DIVISION, B.C.

by
J. Buchholz & P.E. Hirst, P.Eng.
November 1969

Claims: Fir 1-42, 44, 46, 48, 51-53, 55-96
Location: 8 miles north of Merritt, $50^{\circ}12'00''$
S.W.

Date of Work: September 16-November 7, 1969

Fort Reliance Minerals Limited

2101

2101

MAGNETOMETER AND GEOCHEMICAL REPORT
ON
THE FIR GROUP OF MINERAL CLAIMS
MERRITT AREA
NICOLA MINING DIVISION
BRITISH COLUMBIA

by

J. Buchholz and P.E. Hirst, P.Eng.

November, 1969

CLAIMS FIR 1 - 42, 44, 46, 48, 51 - 53, 55 - 96
LOCATION 8 miles north of Merritt, 50° 120° SW
DATE OF WORK September 16 - November 7, 1969
CLAIM OWNER Fort Reliance Minerals Limited

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Department of
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ASSESSMENT REPORT

NO. 2101 MAP

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MAPS IN POCKET

<u>Figure No.</u>	<u>Title</u>	<u>Scale</u>
#2 2	Property Location Map	1" = 1,000 feet
#3 3 ^{Missing ??} _{CV 7/71}	Magnetometer Survey	1" = 500 feet
#4 4	Soil Sample Survey Copper in ppm	1" = 500 feet
#5 5	Soil Sample Survey Molybdenum in ppm	1" = 500 feet
#6 6	Soil Sample Survey Zinc in ppm	1" = 500 feet
#7 7	Soil Sample Survey Copper, Molybdenum Zinc in ppm	1" = 500 feet

SUMMARY

Large portions of the Fir property are covered by till 20 feet or more in thickness. Because of the persistent till cover, the effectiveness of the geochemical survey may be somewhat in doubt. Nevertheless, a correlation between magnetic highs and copper anomalies near the contact between Guichon-Nicola rocks may be related to sulphide mineralization.

Molybdenum results are consistently low and are considered to be inconclusive.

The correlation between zinc results and copper results, similarly, is not particularly evident. Anomalous zinc values occur in areas underlain predominantly by sedimentary rocks. Moderately good correlation exists between magnetic lows and anomalous zinc values.

The magnetometer survey was effective in outlining differing lithologic units underlying the property.

INTRODUCTION

Fort Reliance Minerals Limited undertook, during the late summer of 1969, a combined magnetometer and geochemical survey designed to explore a large part of the 90 located FIR claims acquired by Fort Reliance in the fall of 1968. The work was prompted by the fact that the FIR claims cover a part of the southeast tip of the Guichon Batholith, long considered a favorable host for economic sulphide

mineralization, and because a positive aeromagnetic anomaly with dimensions of 3 x 2 miles straddles a tongue of Nicola Volcanics in contact with rocks of the Gulchon complex. The data gathered as a result of the field work have been compiled on the accompanying maps and are discussed in the body of this report.

CLAIMS

The claims were acquired by staking in the Fall of 1968 and recorded in Merritt November 7, November 25 and November 29 respectively.

They comprise three groups consisting of the following:

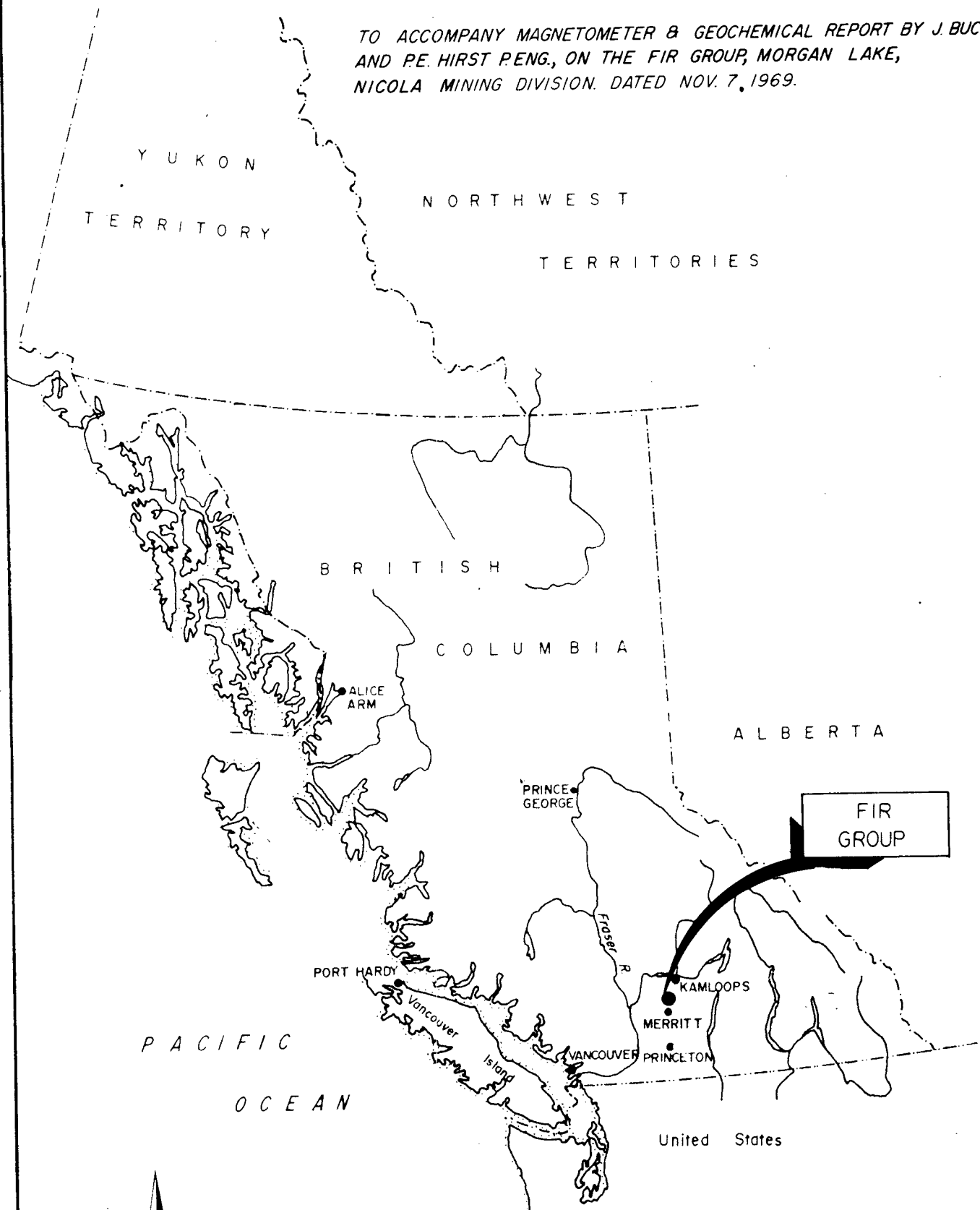
Group Fir 1: Fir 7 - 18, 44, 46, 48, 51 - 53, 61 - 74	Total 30 Claims
Group Fir 2: Fir 1 - 6, 19 - 32, 37 - 42, 75 - 80	Total 32 Claims
Group Fir 3: Fir 33 - 36, 55 - 60, 65, 66, 81 - 96	Total 28 Claims

Claim names and record numbers are listed below:

<u>Claim Name</u>	<u>Record Number</u>
Fir 1 - 42 inclusive	38299 - 38340 inclusive
Fir 44	38757
Fir 46	38758
Fir 48	38759
Fir 51 - 53 inclusive	38760 - 38762 inclusive
Fir 55 - 96 inclusive	38854 - 38895 inclusive

Full interest in the claims is held by Fort Reliance Minerals Limited.

TO ACCOMPANY MAGNETOMETER & GEOCHEMICAL REPORT BY J. BUCHHOLZ
AND P. HIRST PENG, ON THE FIR GROUP, MORGAN LAKE,
NICOLA MINING DIVISION. DATED NOV. 7, 1969.



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NO. **2101** MAP **#1**

FIG. 1

FORT RELIANCE MINERALS LIMITED
FIR GROUP OF MINERAL CLAIMS
MERRITT AREA BC.

INDEX MAP

SCALE: 1"=150 miles Approx.

LOCATION AND ACCESS

The property is located approximately 8 miles due north of Merritt between the headwaters of Hector and Jesse Creeks in the Nicola Mining Division. Access to the claims is by means of numerous logging roads east of Guichon Creek. Latitude $50^{\circ}12'N$ and Longitude $120^{\circ}45'W$ pass through the north east corner of the block. The Craigmont orebody - a massive deposit of chalcopyrite, magnetite and specular hematite occurs in a skarn zone near the contact of the Guichon Batholith and Nicola Volcanics 6 miles west of the claim block. Approximately 50 percent of the area covered by the Fir group has been staked previously. Nothing is known of any previous work carried out on this property.

GEOLOGY

The following brief description of the geology of the Highland Valley-Merritt area is intended as a setting for the claims and as background information to aid in the understanding of the interpretations and results obtained.

The geology of the Guichon Batholith consists of roughly concentric zonal phases of Triassic to early Jurassic granitic rocks in contact with older sediments and volcanics - the Nicola and Cache Creek groups. The various phases (6) of the Batholith, according to recent work (J.M. Carr; K.E. Northcote) range in composition from quartz diorite to granite with granodiorite being the predominant rock type within the Batholith. Post intrusive sediments and volcanics comprising

the Spences Bridge, Kingsvale and Kamloops groups overlie unconformably the western and northern boundaries of the Batholith. Fault and fracture systems of a regional type have created zones of brecciation and/or gouge. Most of these faults are not easily identified in the field. The Batholith is elongated northerly with dimensions of 40 by 16 miles. Geographically it occupies the valleys and moderately rugged mountains between Merritt and Ashcroft. Extensive glaciation during the Pleistocene epoch has modified much of the terrain up to elevations in excess of 6,000 feet. South-easterly trending swamps and drumlins and locally thick deposits of glacial material are among the glacial features easily recognized in the field.

MAGNETOMETER SURVEY

Instrument and Operator

The survey was completed by Mr. P. Folk using a McPhar M-500A vertical field, flux-gate magnetometer with a maximum sensitivity of 10 gammas and a maximum range of plus or minus 300,000 gammas.

Procedure

Prior to initiating the magnetometer survey along grid lines, readings were taken along random traverses to enable the operator to select background areas for control points. Control points were then established at the locations marked on the map after the magnetometer was adjusted to read "0" gammas at control point "A". Control points

were checked by reading the Base Lines at 200 foot intervals, then rechecked by repeating the process twice. All other stations were "tied" to one of these four base stations. Diurnal variations ranged as high as 130 gammas. Variations during "tie-in" periods (2 hour maximum) did not exceed 60 gammas and in all cases but two were less than 50 gammas. All readings were corrected for diurnal variations and adjusted to base stations. In the event of unsatisfactory closure at a control point, the traverse was rerun. Base stations were marked by means of pickets on which the instrument rested while readings were being taken. The operator removed all ferrous objects from his person while conducting the survey. Readings were taken at 200 foot intervals along lines spaced 400 feet apart. Approximately $23\frac{1}{2}$ line miles were covered by the survey. Results of the survey are shown in relative gammas and are accurate within 50 gammas.

Interpretation

Corrected gammas were plotted on the magnetometer map (Fig. 3) and contoured as shown. Three distinct and separate magnetic regions were outlined by this work. These three regions reflect underlying lithologically differing rock types with varying magnetic characteristics consisting of a magnetic low in the north east portion of the surveyed area; a pronounced magnetic high in the south area and an intermediate or background region between the northeast and south portions. Correspondingly the northeast magnetic low region reflects a sedimentary formation (Coldwater Beds) consisting of conglomerate greywacke and shale; the magnetically high south region reflects

intrusive rocks (Gulchon Batholith) consisting of diorite, granodiorite and the central section reflects volcanic rocks (Nicola Volcanics) consisting of andesite and related rocks. Field observations confirm this interpretation.

A number of magnetic highs within the intrusive rocks are located near the Gulchon-Nicola contact on the south edge of the grid areas. These highs are probably related to contamination of the Gulchon by Nicola Volcanic rocks, and subsequent concentration of magnetite.

GEOCHEMICAL SURVEY

Method of Geochemical Sampling

Soil samples were collected at intervals of 200 feet along picket lines and at depths of 10 - 16 inches in the upper part of the "B" horizon using small narrow bladed hand shovels obtained for this purpose. The samples were placed in standard-sized, heavy duty paper envelopes; partially dried and shipped to Bondar-Clegg & Company Ltd. North Vancouver, B.C. for analysis.

Method of Geochemical Analysis

Samples received by Bondar-Clegg were oven dried, screened to minus 80 mesh, and analyzed for copper, molybdenum and zinc employing standard HNO_3 - HCl acid solutions and atomic absorption spectrophotometry techniques. The atomic absorption unit consists of three major components: a hollow cathode lamp (separate lamps for

each element), a burner-atomizer, and a monochromator. The test solution is aspirated directly into the burner atomizer, and the respective transmittancy is read directly on a scale expansion unit on the monochromator. The respective metal contents are calculated by comparing the transmittancy with standard curves. Results of the method are accurate to 1 ppm for copper, molybdenum and zinc.

Results of the Geochemical Survey

The results of the geochemical survey are shown on the accompanying soil survey maps (Figs. 4, 5, 6 and 7). Results for copper and zinc have been contoured as shown for the grid areas. The remaining areas (Fig. 7) and molybdenum results of the grid areas have not been contoured.

The results for the copper analyses are shown contoured (Fig. 4). A number of small isolated highs occur near the contact between Gulchon-Nicola rocks. These anomalous areas coincide closely with the magnetic highs within the Gulchon intrusives and may be related to minor copper sulphide mineralization associated with magnetite. Two additional anomalous areas in the central portion of No. 1 Grid, require further explanation but may be due to concentrations of minor copper mineralization associated with possible shearing or faulting within Nicola rocks.

Anomalous values for zinc do not occur in areas where anomalous copper values are found. The zinc results, however show a clear association with underlying sediments (Coldwater beds) and

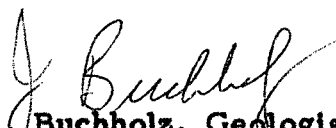
probably indicate a higher "environmental" background rather than anomalies of significance. Results for zinc are shown contoured - (Fig. 6).

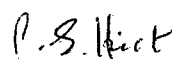
Molybdenum values are consistently low (1 - 4 ppm), and therefore the results are considered to be inconclusive.

CONCLUSIONS

In view of the extensive till cover on the property, further work would be required to assess the significance of the magnetic and geochemical results obtained.

Geological mapping and bulldozer trenching should be considered as additional and useful work during the next phase of exploration.


J. Buchholz, Geologist


P.E. Hirst, P.Eng.

November 7, 1969

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

In the Matter of COST OF MAGNETOMETER AND
GEOCHEMICAL SURVEY OF THE FIR GROUP OF MINERAL
CLAIMS, MERRITT AREA, NICOLA MINING DIVISION,
BRITISH COLUMBIA


I, JOHN BUCHHOLZ,

of 2219 Kelly Ave., in the City of Port Coquitlam,

in the Province of British Columbia, do solemnly declare that a magnetometer and geochemical survey of 90 located mineral claims owned by Fort Reliance Minerals Limited of Toronto, Ontario, was conducted during the Fall of 1969 and that the property related cost of said surveys total Thirteen Thousand One Hundred and Thirty-eight Dollars and Forty-two cents (\$13,138.42) of which Nine Thousand Dollars (\$9,000.00) are claimed for purposes of assessment credits for the said 90 Fir Claims.

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 5th
day of December, 1969, A.D.



A. Jeannotte
A Commissioner for taking Affidavits within British Columbia or
A Notary Public in and for the Province of British Columbia.

Sub-mining Recorder

In the Matter of

Statutory Declaration
(CANADA EVIDENCE ACT)

APPENDIX B - (Continued)

Geochemical analyses

1116 soil samples

Drafting

Burden

(additives & burden)

Accommodation

Transportation

of
 1968
 1969
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 1971
 1972
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 1974
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Exp. Mining Recorder

\$ 2,832.41
 400.00
 1,068.41
 1,942.55
 491.17

 \$13,138.42

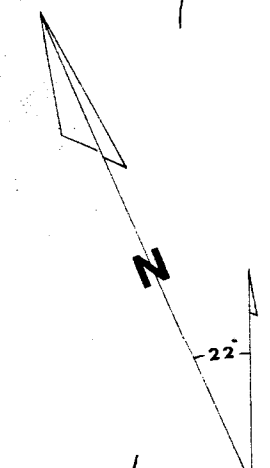
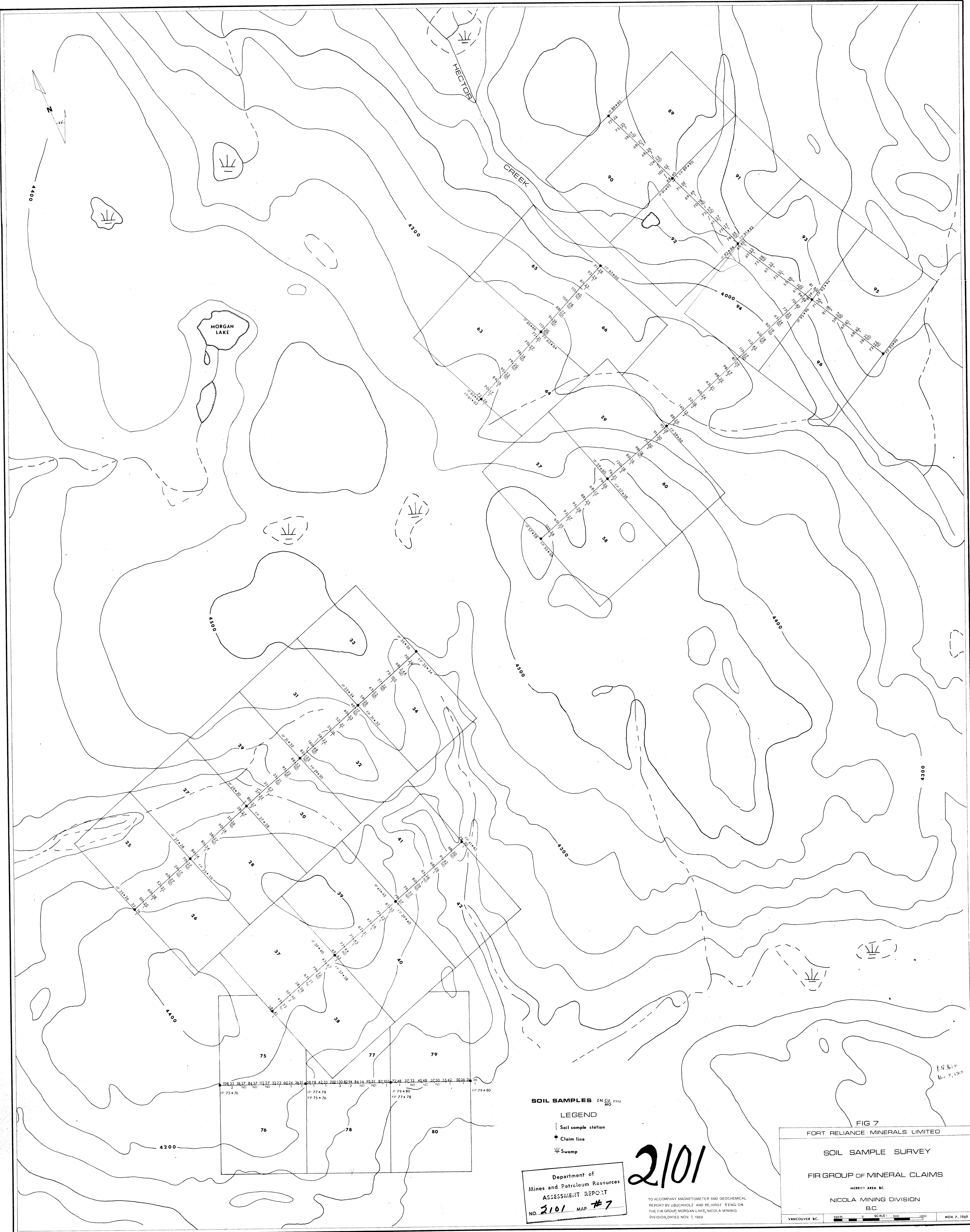
Apportionment of Costs

	<u>Amount Spent</u>	<u>Amount Claimed</u>	<u>Certificates of Work</u>
Line Cutting	\$ 5,056.94	\$3,500.00	35
Geochemical Survey	7,183.00	5,500.00	50
Magnetometer Survey	1,000.00	500.00	5
	<hr/>	<hr/>	<hr/>
Total	\$13,138.42	\$9,000.00	90
	<hr/> <hr/>	<hr/> <hr/>	<hr/> <hr/>

APPENDIX B

List of Personnel, Dates Employed and Expenditures Incurred

<u>Name & Address</u>	<u>Position</u>	<u>Work Performed</u>	<u>Date Employed</u> 1969	<u>Salary</u>
John Buchholz 2219 Kelly Ave. Port Coquitlam, B.C.	Geologist \$75/day	Supervision	September 16 - October 31	\$ 1,425.00
W. Gillies 1715 Dunbar Vancouver, B.C.	Helper \$600/mth. and bd.	Geochemical sampling, Line Cutting	September 10 - October 20	596.07
H. Buchholz c/o 308-540 Burrard St. Vancouver, B.C.	Helper \$550/mth. and bd.	Geochemical sampling, Line Cutting	September 10 - October 20	640.46
D. Duncan c/o Invermay Hotel Vancouver, B.C.	Helper \$600/mth. and bd.	Geochemical sampling, Line Cutting	September 16 - October 23	743.35
G. Beyko 11717 River Road North Surrey, B.C.	Prospector \$650/mth. and bd.	Prospecting, Geo- chemical sampling, Line Cutting	September 19 - October 23	802.00
Peter Folk 2858-128 Street White Rock, B.C.	Geological Assistant \$60/day	Line Cutting, Geo- chemical sampling, Magnetometer survey	September 16 - November 7	1,897.00
Peter Hirst 470 Granville Street Vancouver, B.C.	Consulting Geologist	Consulting		300.00



HECTOR
CREEK

MORGAN
LAKE

SOIL SAMPLES ZN CU PPM
RD

LEGEND

- Soil sample station
- Claim line
- Swamp

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ASSESSMENT REPORT
NO. 2101 MAP #7

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TO ACCOMPANY MAGNETOMETER AND GEOCHEMICAL
REPORT BY J. BUCHHOLZ AND R. HIRST, R.E.G. ON
THE FIR GROUP, MORGAN LAKE, NICOLA MINING
DIVISION, DATED NOV. 7, 1969

FIG 7

FORT RELIANCE MINERALS LIMITED

SOIL SAMPLE SURVEY

FIR GROUP OF MINERAL CLAIMS

MERRITT AREA, B.C.

NICOLA MINING DIVISION
B.C.

VANCOUVER, B.C. SCALE: 1:50,000 NOV. 7, 1969



**RELATIVE GAMMAS
LEGEND**

- Magnetometer station
- Logging road
- Claim line
- Swamp
- Magnetic low
- Magnetic high
- Topographic contours interval (200 ft)

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NO. 2101 N #3

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THE FIR GROUP MORGAN LAKE, NICOLA MINING DIVISION,
DATED NOV. 7, 1969

FIG. 3
FORT RELIANCE MINERALS LIMITED

MAGNETOMETER SURVEY

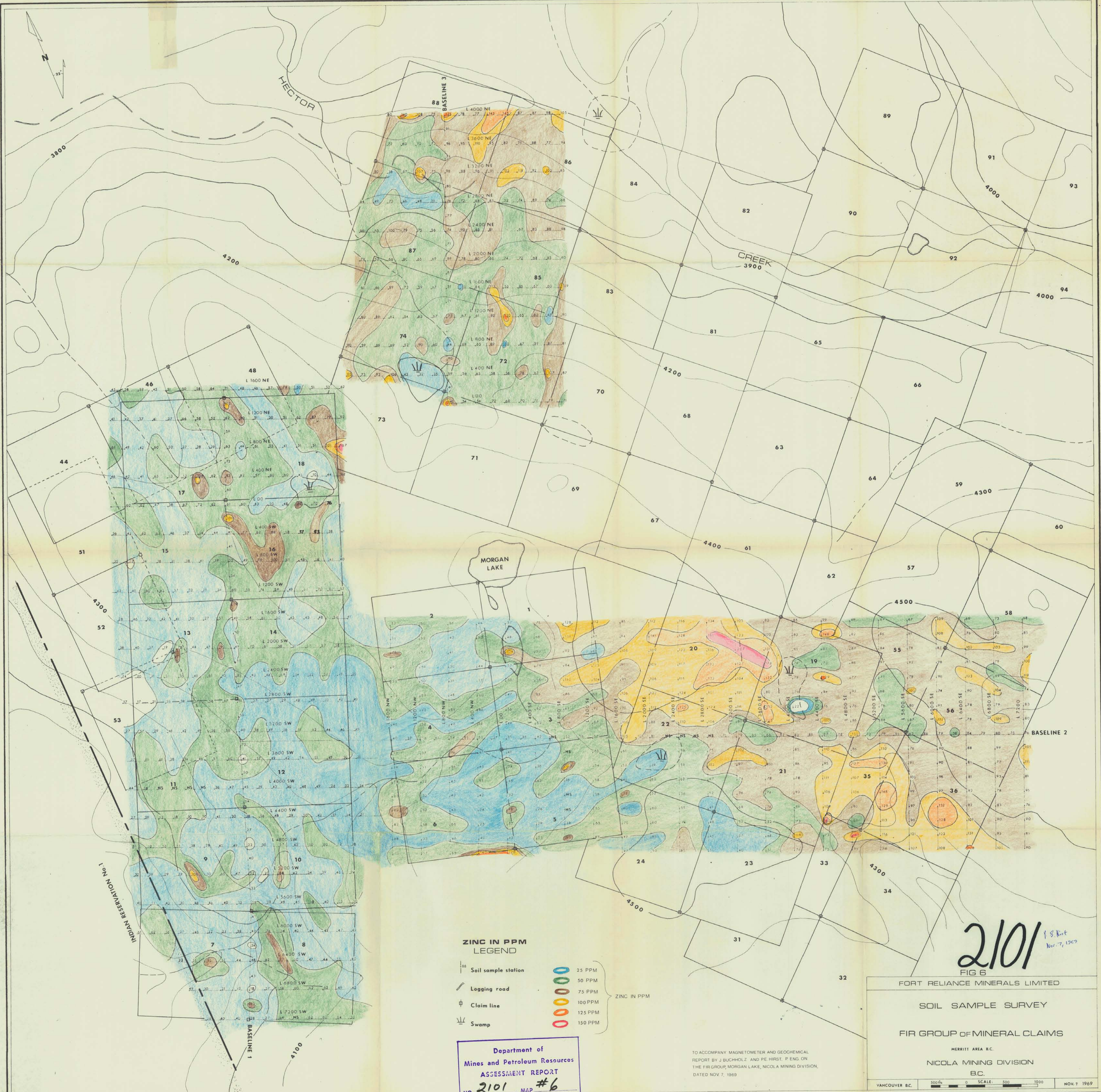
FIR GROUP OF MINERAL CLAIMS

MERRITT AREA BC.

NICOLA MINING DIVISION
BC.

VANCOUVER BC. 500 FT. 0 SCALE: 500 1000 NOV. 7, 1969

18.11.69
NOV. 7, 1969
2101



**ZINC IN PPM
LEGEND**

	Soil sample station		25 PPM
	Logging road		50 PPM
	Claim line		75 PPM
	Swamp		100 PPM
			125 PPM
			150 PPM

ZINC IN PPM

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NO. 2101 MAP #6

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THE FIR GROUP, MORGAN LAKE, NICOLA MINING DIVISION,
DATED NOV. 7, 1969

2101
FIG 6

FORT RELIANCE MINERALS LIMITED

SOIL SAMPLE SURVEY

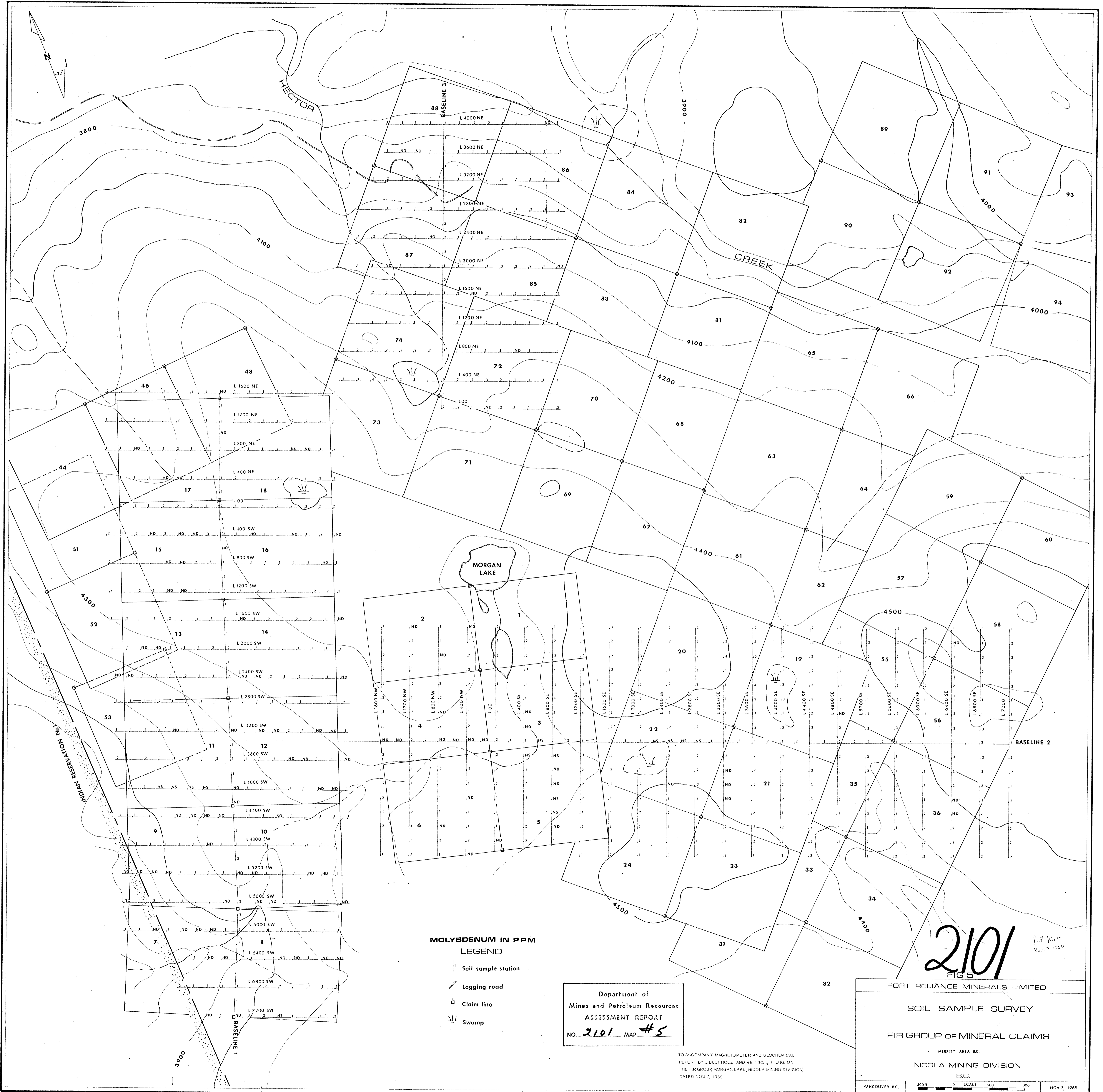
FIR GROUP OF MINERAL CLAIMS

MERRITT AREA B.C.

NICOLA MINING DIVISION
B.C.

SCALE: 1:5000

NOV. 7, 1969



MOLYBDENUM IN PPM

LEGEND

- ⊙ Soil sample station
- Logging road
- ▭ Claim line
- ⊞ Swamp

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THE FIR GROUP, MORGAN LAKE, NICOLA MINING DIVISION,
DATED NOV. 7, 1969

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FIG 5

FORT RELIANCE MINERALS LIMITED

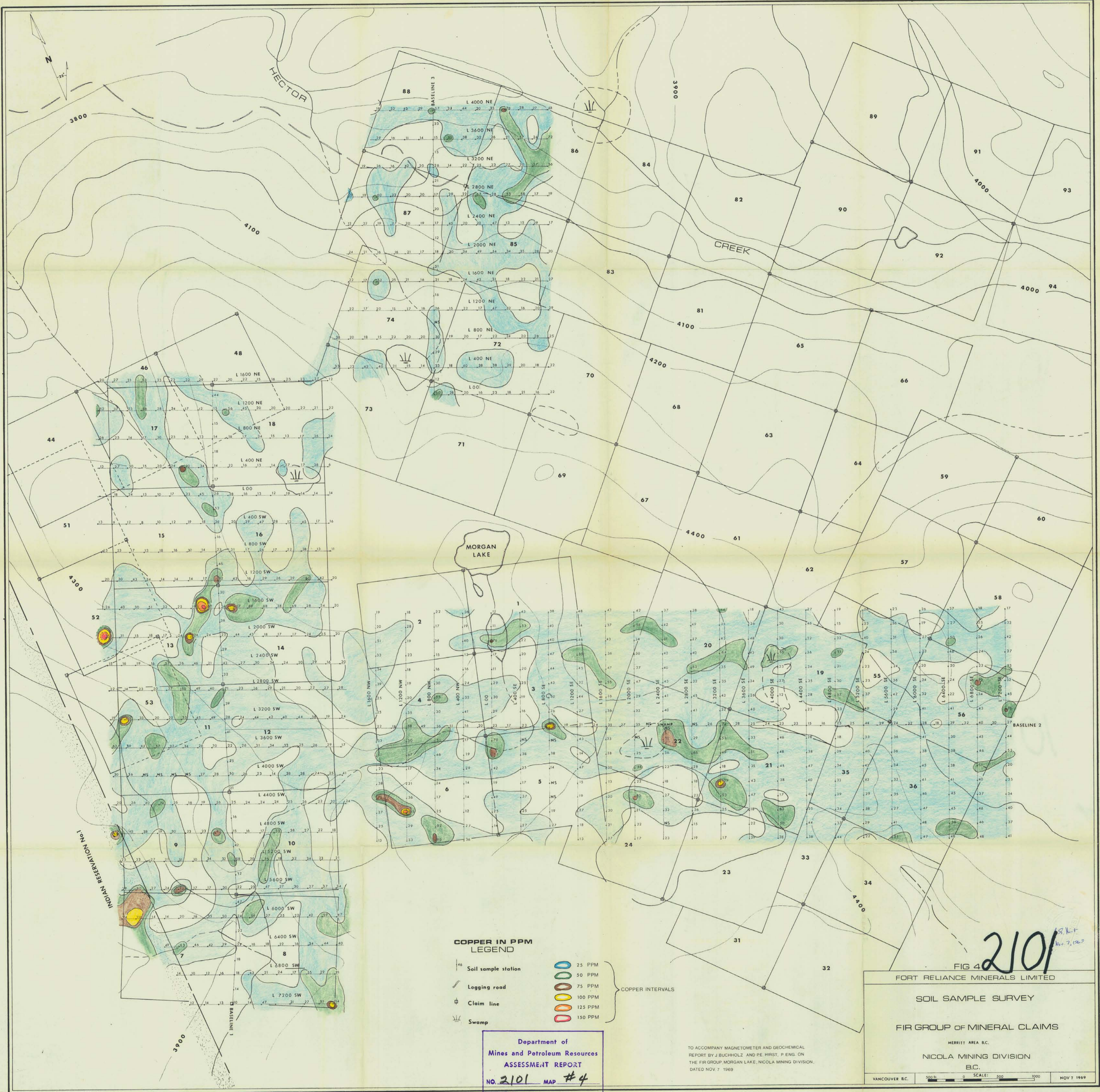
SOIL SAMPLE SURVEY

FIR GROUP OF MINERAL CLAIMS

HERRIT AREA B.C.

NICOLA MINING DIVISION
B.C.

VANCOUVER B.C. 0 500 1000 SCALE: 1:500 NOV. 7, 1969



**COPPER IN PPM
LEGEND**

- Soil sample station
 - Logging road
 - Claim line
 - Swamp
-
- 25 PPM
 - 50 PPM
 - 75 PPM
 - 100 PPM
 - 125 PPM
 - 150 PPM
- } COPPER INTERVALS

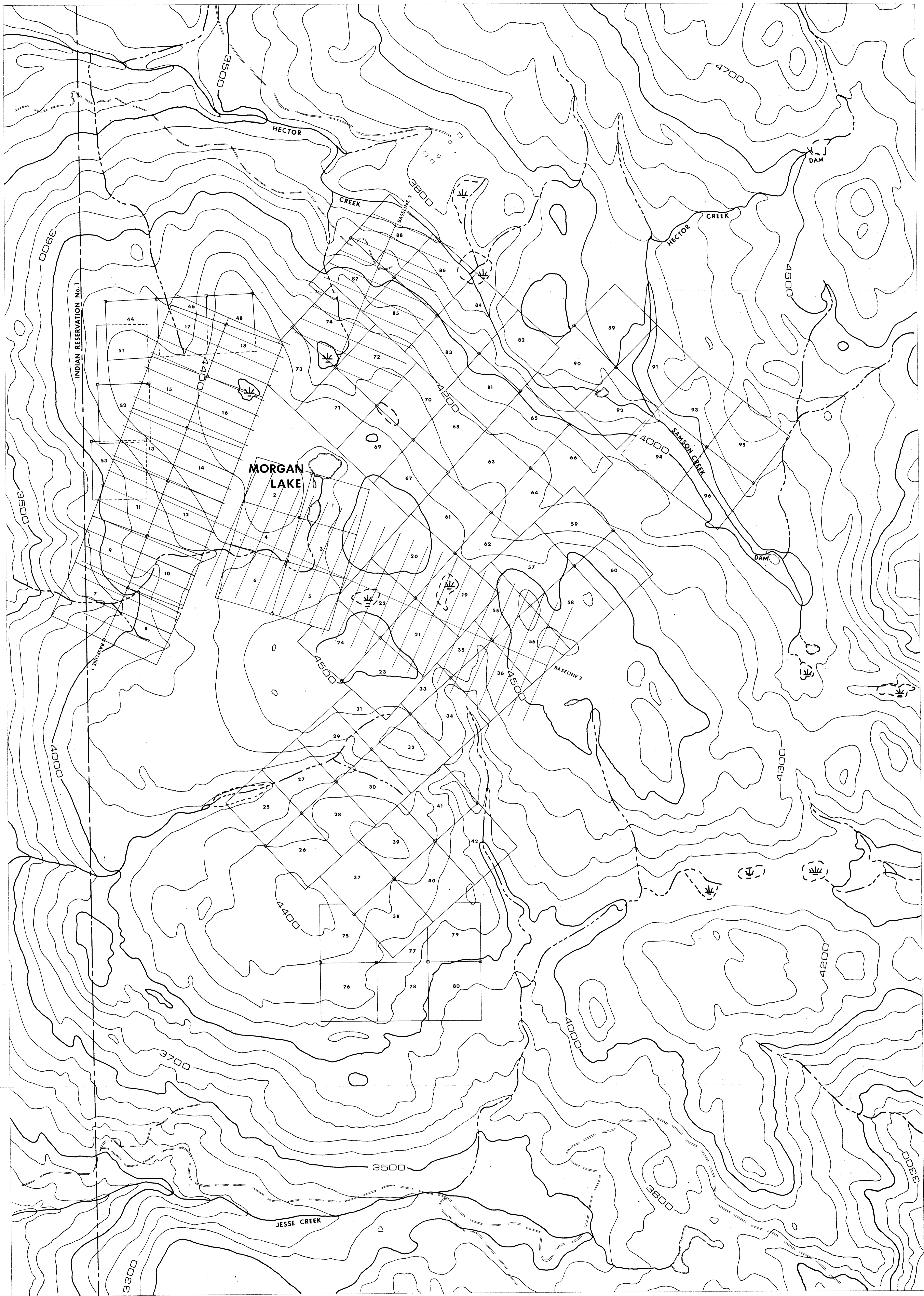
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ASSESSMENT REPORT
NO. 2101 MAP #4

TO ACCOMPANY MAGNETOMETER AND GEOCHEMICAL
REPORT BY J. BUCHHOLZ AND PE. HIRST, P. ENG. ON
THE FIR GROUP, MORGAN LAKE, NICOLA MINING DIVISION,
DATED NOV. 7, 1969

2101

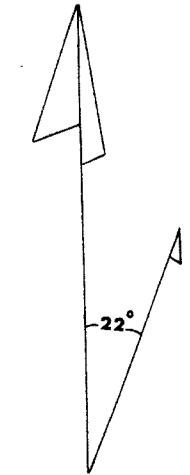
Nov 7, 1969

FIG 4
FORT RELIANCE MINERALS LIMITED
SOIL SAMPLE SURVEY
FIR GROUP OF MINERAL CLAIMS
MERRITT AREA B.C.
NICOLA MINING DIVISION
B.C.
VANCOUVER B.C. 500 ft 0 SCALE: 1" = 500' 2000' NOV 7 1969



2101

f.s. h.c.
Nov 7, 1969



- LEGEND**
- ⊕ Soil sample grid
 - Logging road
 - ⊥ Claim line
 - ⊞ Swamp

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ASSESSMENT REPORT
NO. 2101 MAP #2

TO ACCOMPANY MAGNETOMETER AND GEOCHEMICAL
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THE FIR GROUP, MORGAN LAKE, NICOLA MINING
DIVISION, DATED NOV. 7, 1969

FIG 2
FORT RELIANCE MINERALS LIMITED

PROPERTY LOCATION MAP

FIR GROUP OF MINERAL CLAIMS

MERRITT AREA BC
NICOLA MINING DIVISION
BC

VANCOUVER BC 1:50,000 SCALE 1:50,000 NOV. 7, 1969