

GEOCHEMICAL AND GEOLOGICAL REPORT

ON

ROOT - 1 MINERAL CLAIM

LIARD MINING DIVISION B. C.

Lat.  $58^{\circ}58'$

Long.  $130^{\circ}25'$

R. G. MACARTHUR.

OCTOBER 12, 1979.



## TABLE OF CONTENTS

<u>TEXT</u>	<u>PAGE</u>
INTRODUCTION	1
LOCATION AND ACCESS	1
CLAIMS AND OWNERSHIP	1
TOPOGRAPHY AND VEGETATION	1
REGIONAL GEOLOGY	1
PREVIOUS WORK	2
GEOLOGICAL MAPPING	2
Mineralization	2
SOIL GEOCHEMISTRY	3
Sampling Method	3
Laboratory Determination Method	3
PRESENTATION OF RESULTS	3
Discussion of Results	3
CONCLUSIONS AND RECOMMENDATIONS	4
SUMMARY	4

## APPENDICES

STATEMENT OF QUALIFICATIONS

STATEMENT OF COSTS

## LIST OF FIGURES

#1 Location Map Scale 1:250,000	1a
#2 Claim Map Scale 1:50,000	1b
#3 Soil Geochemistry - Cu, Zn, Pb Scale 1:2,500	In Pocket
#4 Soil Geochemistry Mo, W, Ag Scale 1:2,500	In Pocket
#5 Preliminary Geology	In Pocket

## INTRODUCTION

This report describes work carried out on the Noranda Exploration Company, Limited (No Personal Liability) Root - 1 mineral claim in Liard Mining District, during 1979.

The work described here was performed between August 9, and 18, 1979 by R. MacArthur and P. Moreton both employed by Noranda.

## LOCATION AND ACCESS

The L.C.P. for the Root - 1 claim is located approximately 3.5km south of the B.C./Yukon border and 40km east of Swift River, Yukon Territory.

A rough 4 wheel drive trail reaches to within approximately 2km of the property. A few days cat work would make the road usable for regular 4 wheel drive traffic during dry periods.

## CLAIMS AND OWNERSHIP

The Root - 1 claim was acquired by staking in October 1978. The following are the relevant details.

<u>Claim Name</u>	<u>Units</u>	<u>Record No.</u>	<u>Record Date</u>	<u>Owner</u>
Root - 1	6	716	Nov. 8, 1978	Noranda Exploration Company, Limited (No Personal Liability)

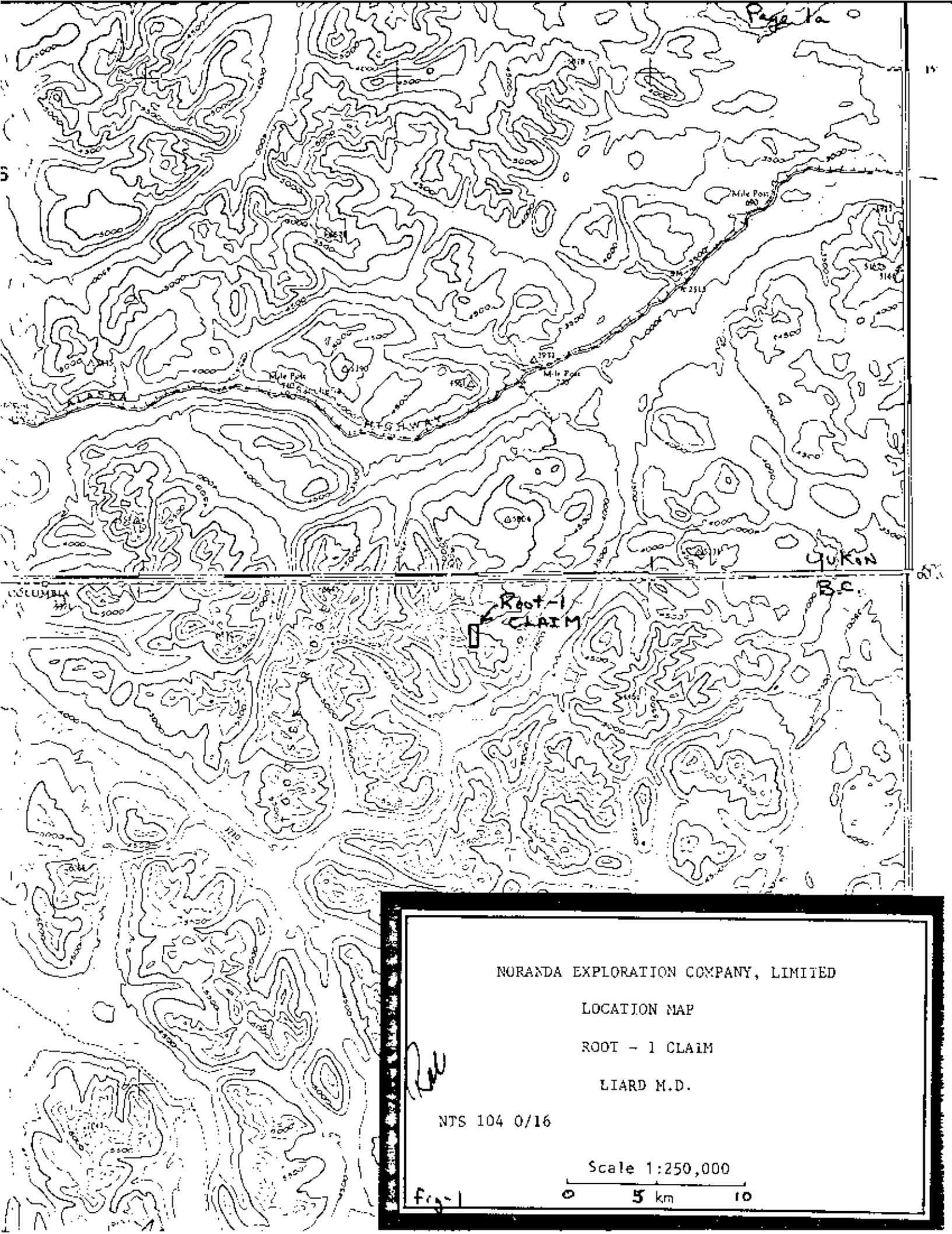
## TOPOGRAPHY AND VEGETATION

The property lies within the Cassiar Mountains. Maximum elevation on the property is approximately 1800 meters above sea level. Approximately 75% of the area of the property is above tree line which is at approximately 1500m above sea level on the north slopes.

The north east corner of the property is covered with a thick growth of stunted alpine spruce. The remainder of the property is covered with low alpine grasses and flowers, except the steep slopes and upper elevations which are generally bare.

## REGIONAL GEOLOGY

The area has been mapped regional by the G.S.C. on a scale of 1"= 4 mile. A description of their results is available in G.S.C. paper 68-55. The property lies near the north east edge of the Cassiar Batholith within a large embayment in the intrusive. An extensive skarn-hornfels zone has developed in the sediments along the edge of the intrusive.



M 1040/16W

Scale: 1:50,000



RIVER

Root-1 CLAIM

TOOT 1  
542 (5)

TOOT-1  
716 (11)

TOOT 2  
11537  
543 (5)

ROAD

BOOT

LOOT

TOOTSEE

763 (5)

CUB  
440 (7)

COL  
767 (5)

BLUE  
573 (7)  
BLUE 2  
670 (9)

A 11537

NAL  
763 (5)

LACC  
756 (4)

Tootsee  
Lake

NORANDA EXPLORATION COMPANY, LIMITED

CLAIM MAP

ROOT - 1 CLAIM

N.T.S. 104 0/16

Scale 1:50,000

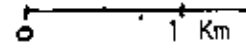


Fig 2

### PREVIOUS WORK

No previous work has been carried out on the property by Noranda.

A few old (expired) claim posts were observed on the property, however there are no government records of any work being carried out on the property.

### GEOLOGICAL MAPPING

Geological mapping has been completed for only part of the property and the results must be considered only preliminary.

The northwestern third of the property is underlain by intrusive rocks of the Cassiar Batholith, mainly quartz monzonite.

The remainder of the property is underlain by a sequence of Cambrian to Devonian shales, quartzite, carbonates and derived hornfels and skarn. There is a fairly uniform strike, northeast, with dip from 45° to 80° south east.

The distribution of the various lithologies and main structural features is shown in Fig. #4.

Due to the limited mapping carried out, a detailed interpretation of the structural relationships and ages of the various rocks is not possible.

### Mineralization.

Three types of significant mineralization have been observed on the property.

1. Molybdenite occurs in and associated with quartz veins cutting the quartz monzonite. The mineralized quartz veins vary from 1cm to 1m wide and usually occur within 100m of the intrusive sediment contact. Large veins (>20cm) can often be traced up to 100m along strike, but usually pinch and swell and have erratic mineralization. The majority of these veins strike north - northeast and dip steeply southwest or vertical. No areas of economic grade molybdenite over significant widths have been observed. No areas of intense quartz stockwork or veining have been located on the property.

2. Scheelite, molybdenite and powellite (or molyboscheelite) occur disseminated and in fractured wollastonite (tremolite) rich skarns. These wollastonite beds usually are interbedded with white quartzite. Mineralized horizons vary from < 1m to > 25m thick. Grab samples from the best showings discovered to date gave the following assays:

Sample #	%Mo	% Wo <sub>3</sub>	% Sn
J6512	0.092	0.72	0.01
J6513	0.110	0.14	0.01

3. Small stringers and blobs of galena and sphalerite occur in a limey cherty breccia horizon along the west side of the property.

## SOIL GEOCHEMISTRY

### Sampling Method

A total of 94 soil samples were collected at 50m intervals as shown in Fig. 3. Samples were collected from the B horizon, by digging a hole with a small grubhoe. Samples were placed in "Hi wet strength Kraft 3½"x6 ⅞" open end" envelopes on which grid locations were marked.

### Laboratory Determination Method (NORANDA LABOR. VANCOUVER)

The samples are first dried in a drying cabinet for a period of 24 - 48 hours. They are then screened and sifted to obtain a -80 mesh fraction.

To determine the amount of total extractable copper, molybdenum, lead, zinc and silver in each sample, the following procedure is employed:

A small amount of the -80 mesh material, 0.200 grams, is digested in 2ml of HClO<sub>4</sub> and 0.5ml of HNO<sub>3</sub> for approximately four hours. Following digestion, each sample is diluted to 5ml with demineralized H<sub>2</sub>O. A Varian Techtron Model AA-5 atomic absorption spectrophotometer is used to ascertain the content, in parts per million, of each element.

To determine tungsten, the following method is used:

A 1.0 gr sample is sintered with a carbonate flux and then dissolved in demineralized water. This solution is left to settle overnight. A KCNS solution is used to form a complex with tungsten. The samples are then compared with chlorimetric standards.

The method is sensitive to 2ppm.

### Presentation of Results.

The results of analysis for Cu, Pb, and Zn are shown on Fig. #3 in PPM. The results for Mo, Ag and W are shown in Fig. #4.

### Discussion of Results.

The results for moly indicate a large northeast trending patchy anomalous zone through the northwest half of the area sampled. The southwest edge of this anomalous zone is roughly parallel to the intrusive contact and probably reflects molybdenite mineralization localized along the contact.

Anomalous tungsten values show a pattern somewhat similar to molybdenum, however, the anomalous area is much larger, probably reflecting the more widespread distribution of scheelite in skarn horizons.

Values for Ag, Cu, Pb and Zn all seem to show the same general pattern as moly and tungsten with a large area of high values trending northeasterly through the sampled area.

A larger sample area with more detailed sampling would be required to outline any detailed pattern to the results.

#### CONCLUSIONS AND RECOMMENDATIONS

The results of work to date indicate widespread molybdenite and scheelite mineralization on the property.

The skarn hosted mineralization presents an attractive target for large low grade as well a smaller high-grade deposits of tungsten and molybdenum.

The geological mapping and geochemistry should be completed. Night prospecting with a U.V. light of all rock exposures should be carried out. Diamond drilling to test surface showings should be planned. The actual type, amount and exact location of drilling would best be determined after completion of the surface work.

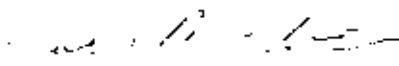
#### SUMMARY

A limited programme of geochemical soil sampling and geological mapping was carried out on the Root - 1 mineral claim in Liard M.D., Northern B.C.

The results of the programme indicate widespread molybdenite and scheelite mineralization.

Completion of the geological mapping, geochemical sampling and night (ultra violet light) prospecting is recommended to be followed by diamond drilling.

Respectfully yours

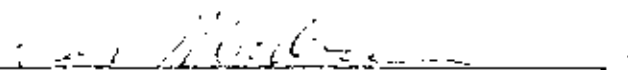
  
Ronald MacArthur.



STATEMENT OF QUALIFICATIONS

I, Ronald G. MacArthur of the town of Smithers, Province of British Columbia, do certify that:

- 1) I have been an employee of Noranda Exploration Company, Limited since May 1972.
- 2) I am a graduate of Dalhousie University with a Bachelor of Science Degree in Geology.
- 3) I am a member of the Canadian Institute of Mining and Metallurgy.
- 4) I am a member of the Geological Association of Canada.



R.G. MacArthur  
Geologist  
Noranda Exploration Company, Limited  
(No Personal Liability)

NORANDA EXPLORATION COMPANY, LIMITED

STATEMENT OF COST

PROJECT ROOT CLAIM

DATE NOVEMBER 1979

TYPE OF REPORT GEOLOGY & GEOCHEM

a) Wages:

No. of Days 9

Rate per Day \$81.17

Dates: from August 9/79 to August 18/79

Total Wages 9 x \$ 81.17 730.53

b) Food and Accomodation:

No of days 9

Rate per day \$29.24

Dates: from August 9/79 to August 18/79

Total Cost 9 x \$ 29.24 263.16

c) Transportation:

No of days 9

Rate per day \$ 63.33

Dates: from August 9/79 to August 18/79

Total Cost 9 x \$ 63.33 569.97

d) Instrument Rental:

Type of Instrument

No of days

Rate per day \$

Dates: from to

Total Cost X \$

Type of Instrument

No of days

Rate per day \$

Dates: from to

Total Cost X \$

f) Analysis (See attached schedule)		554.60
g) Cost of preparation of Report		
Author	162.34	
Drafting	270.00	
Typing	100.00	532.34
h) Other:		
Supervision: D.E. Cross, P. Eng.		
G.E. Dirom, P. Eng. 2 Days @ 226.00	452.00	
		452.00
		3,102.60
Total Cost		3,102.60

e) Unit costs for Geology		
No of days 9		
No of units 9 md		
Unit costs 170.5/22	/ md	
Total Cost	9 x \$170.5/22	1,534.61

UNIT COST FOR GEOCHEM:

No. of Units	94 Samples	
Unit Cost	14.55308	
Total Cost	94 x 14.55308	1,567.99
		<u>3,102.60</u>

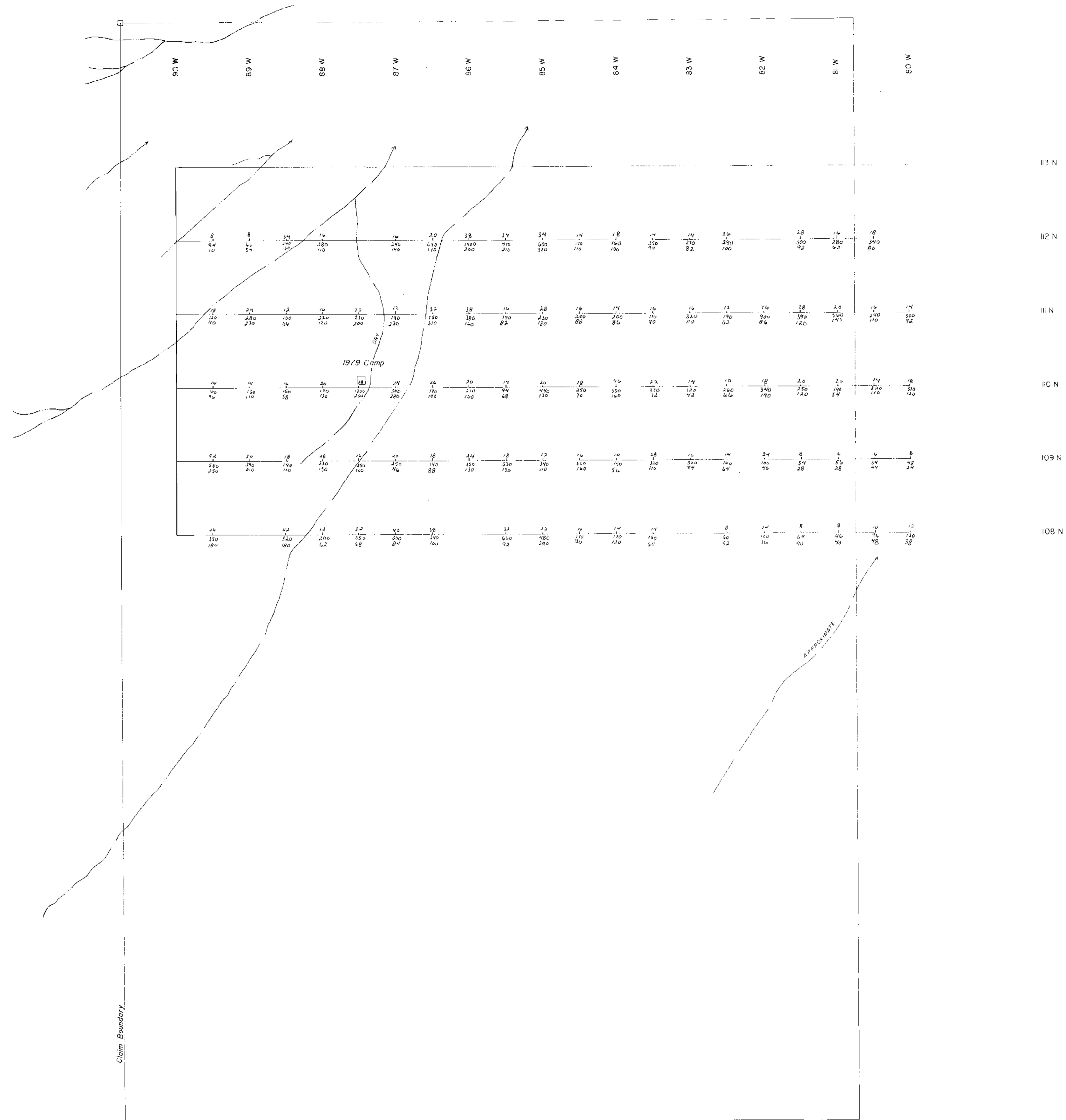
NORANDA EXPLORATION COMPANY, LIMITED  
(WESTERN DIVISION)

DETAILS OF ANALYSES COSTS

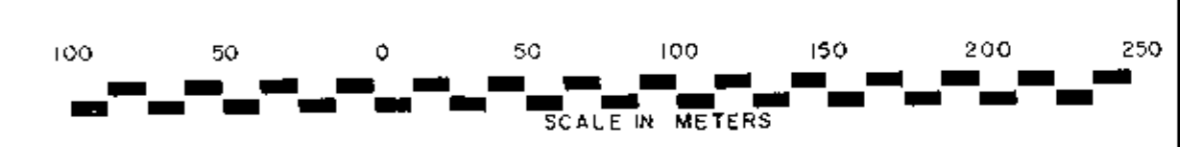
PROJECT: ROOT CLAIM NOVEMBER 1979

<u>ELEMENT</u>	<u>NO. OF DETERMINATIONS</u>	<u>COST PER DETERMINATION</u>	<u>TOTAL</u>
Cu	94	1.00	94.00
Zn	94	.60	56.40
Pb	94	.60	56.40
Mo	94	.60	56.40
Ag	94	.60	56.40
W	94	2.50	235.00

554.60



LCP-Root-1  
Tag no. 10050



*Rudolf M. Arthur*

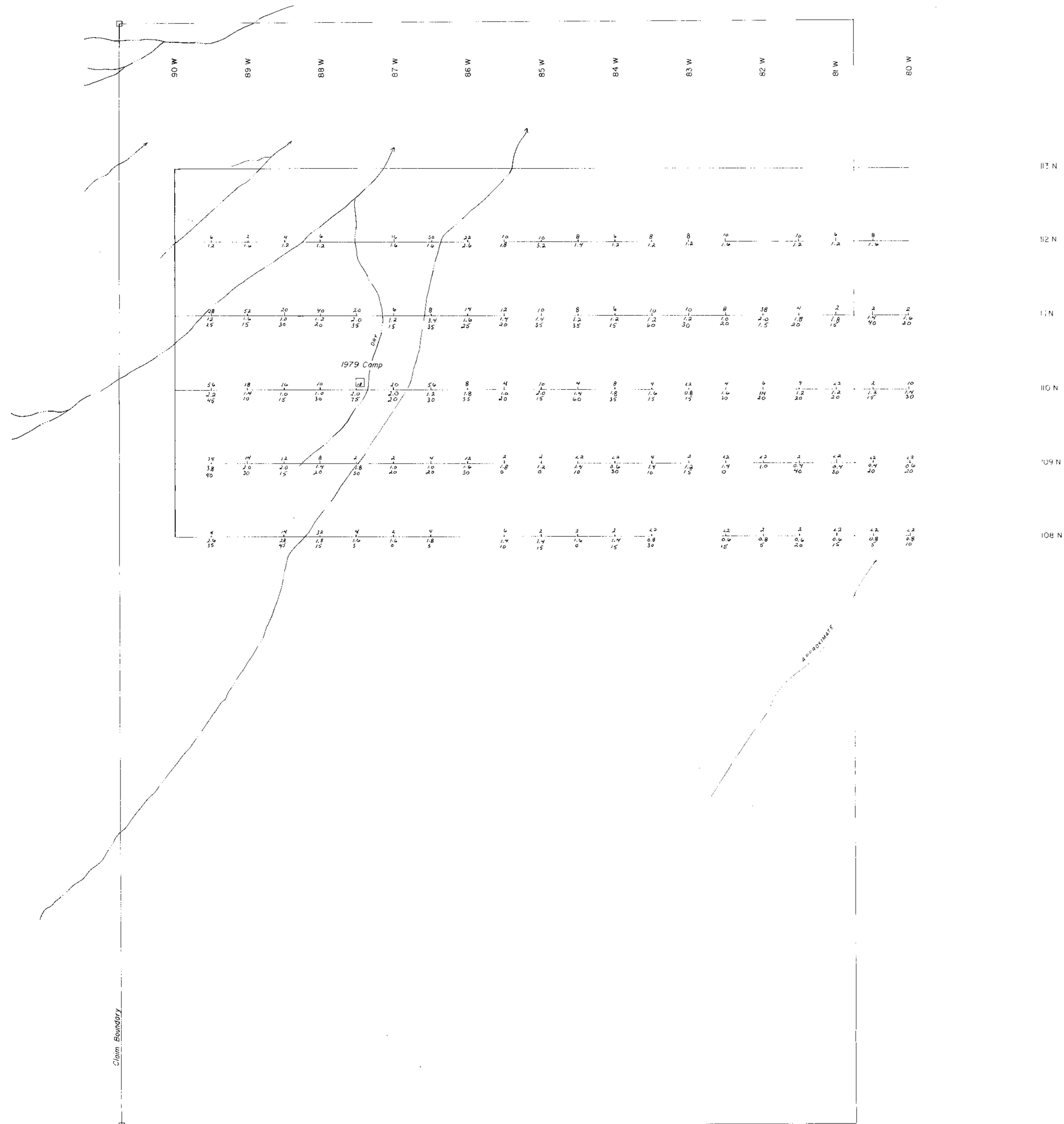
TO ACCOMPANY: GEOCHEMICAL AND GEOLOGICAL REPORT  
ON ROOT-1, M. C. LAIRD M. D., B. C.  
BY R. U. MAC ARTHUR

DATED: OCT. 12, 1979

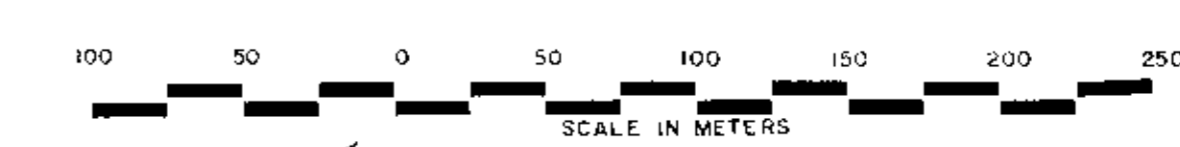
MINERAL RESOURCES BRANCH  
ASSAY ORDER NO. **7673**

ASSAY ORDER  
Cu  
Zn  
Pb

REVISED	ROOT-1 CLAIM	
	GEOCHEMICAL SOIL SURVEY	
	Cu, Zn, Pb, in P.P.M.	
PROJ. No.	SURVEY BY: R. U. MAC ARTHUR	DATE: OCT. 1979
N.T.S. 1:25,000	DRAWN BY: S. D. H.	SCALE: 1:2500
DWG. No. Fig 3	<b>NORANDA EXPLORATION</b>	
	OFFICE: VANCOUVER	



Claim Boundary  
LCP-Root-1  
Tag no. 10050



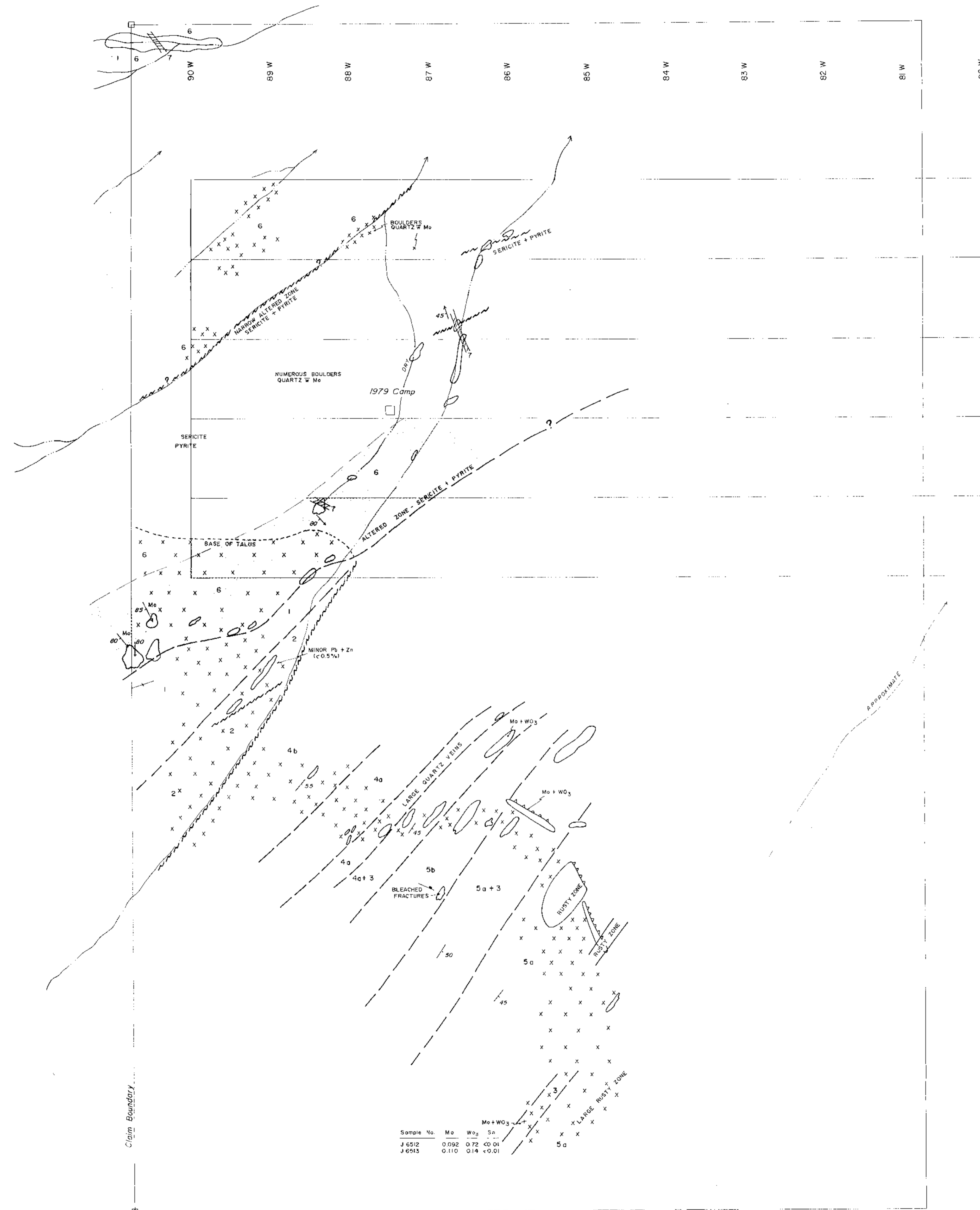
*Ronald MacArthur*

TO ACCOMPANY GEOCHEMICAL AND GEOLOGICAL REPORT  
ON ROOT-1 CLAIM, LAIRD M.D., B.C.  
BY H. G. MACARTHUR  
DATED - OCT. 12, 1979

MINERAL RESOURCES BRANCH  
ASSESSMENT REPORT  
No. **7673**

ASSAY ORDER  
Mo  
Ag  
W

REVISED	ROOT-1 CLAIM	
	GEOCHEMICAL SOIL SURVEY	
	Mo, Ag, W, in P.P.M.	
PROJ. No.	SURVEY BY: S. G. MACARTHUR	DATE: OCT. 1979
N.T.S. 104.00/16 W.	DRAWN BY: S. G. H.	SCALE: 1:2500
DWG. No.	<b>NORANDA EXPLORATION</b>	
Fig 4	OFFICE: VANCOUVER	



LCP - Root-1  
Tag no. 10050

Sample No.	Mo	W <sub>2</sub>	Sn
J 6512	0.092	0.72	0.01
J 6513	0.110	0.14	+0.01

113 N  
112 N  
111 N  
110 N  
109 N  
108 N

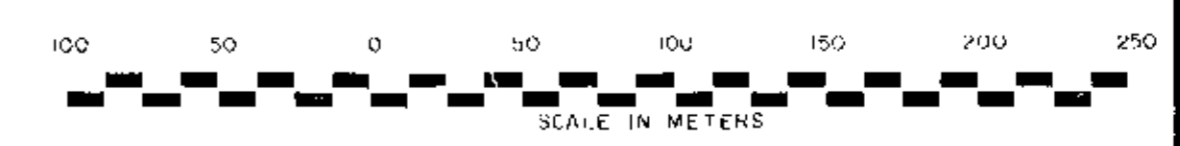
**LEGEND**

- 7 APLITE
- 6 QUARTZ MONZONITE
- 5 QUARTZITE
  - 5a White
  - 5b Dark
- 4 LIMESTONE
  - 4a Gray
  - 4b Black
- 3 WOLLASTONITE SKARN
- 2 LIMY CHERTY BRECCIA
- 1 GARNET-DIOPSIDE SKARN  
CALC-SILICATE HORNFELS

**SYMBOLS**

- STRIKE + DIP OF BEDDING
- QUARTZ VEIN WITH ATTITUDE
- FRACTURES OR JOINTS WITH ATTITUDE
- ▨ DYKE
- FAULT OR SHEAR ZONE
- GEOLOGICAL CONTACT
- ALTERED ZONE

MINERAL RESOURCES BRANCH  
ASSESSMENT REPORT  
**7673**  
NO.



*Ronald MacArthur*

TO ACCOMPANY GEOCHEMICAL AND GEOLOGICAL REPORT  
ON ROOT-1 CLAIM  
BY R. G. MACARTHUR  
DATED OCT. 12, 1979

REVISED	ROOT-1 CLAIM	
	PRILIMINARY GEOLOGY	
PROJ. No.	SURVEY BY: R. G. MACARTHUR	DATE: OCT 1979
N.T.S. 1:24,000 W	DRAWN BY: S. D. H.	SCALE: 1:25,000
DWG. No.	<b>NORANDA EXPLORATION</b>	
Fig 5	OFFICE: VANCOUVER	