

86-533-15161

GEOCHEMICAL REPORT  
ON  
SANDI - 4 MINERAL CLAIM

CARIBOO MINING DIVISION, B. C.  
N.T.S. 93 H/04E  
LAT.  $53^{\circ} 12' 11.5''$  N LONG.  $121^{\circ} 42' 4''$  W

by: R. G. MacArthur

FILMED

*Owner/Operator:* NORANDA EXPLORATION COMPANY LIMITED  
(NO PERSONAL LIABILITY)

September, 1986

GEOLOGICAL BRANCH  
ASSESSMENT REPORT

15,161

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## INTRODUCTION

### General

This report describes the results of a brief follow up geochem survey carried out on the SANDI-4 claims during June, 1986. The samples were collected by the Author in an effort to determine if some previously located single sample anomalies could be repeated and/or further defined. This type of detail follow up sampling has proven successful in locating high grade vein mineralization in other areas in British Columbia.

### Location and Access

The SANDI-4 claim is located on Sugar Creek, approximately 12.5 km northwest of Wells, B. C.

Access is via good logging roads from Highway #26 between Wells and Quesnel. The last few km of road up Sugar Creek require a 4-wheel drive vehicle.

### Claims and Ownership

The SANDI-4 claim is owned by Clearbrook Mines of Vancouver, B. C. The property was held under option by Noranda Exploration Company Limited, until 1985. The relevant details are outlined below.

<u>Claim</u>	<u>Record #</u>	<u># Units</u>	<u>Record Date</u>
SANDI-4	4933	6	June 24

### Topography and Vegetation

The area is one of moderate to steep relief. The claim is covered with mature forest of spruce, etc. Dense brush and Devils Club are common on damp slopes. Thick accumulations (more than one metre) of organic material are found on some side hill swamps, where ground water seeps occur.

### Regional Geology

The area is underlain by Upper Paleozoic metasedimentary rocks similar to those that host the gold deposits near Wells, B.C. These rocks, previously described by Holland (1954), Sutherland Brown (1957), Campbell et al (1973) and Struik (1980, 1982) are highly deformed and regionally metamorphosed to greenschist facies. Regional folds trend northwesterly and are overturned to the southwest. Dips range between 40 and 55 degree northeasterly (Alldrick, 1983).

The rock units have been most recently mapped by Struik (1982) and he has divided the rocks in the Sandi area into two main units:

- Unit (1) Snowsnoe Formation - consisting of olive micaceous quartzite, light olive grey phyllite, and slate, garnet-biotite-muscovite schist; and
- Unit (4) Antier Formation - consisting of black argillite, slate and siltite.

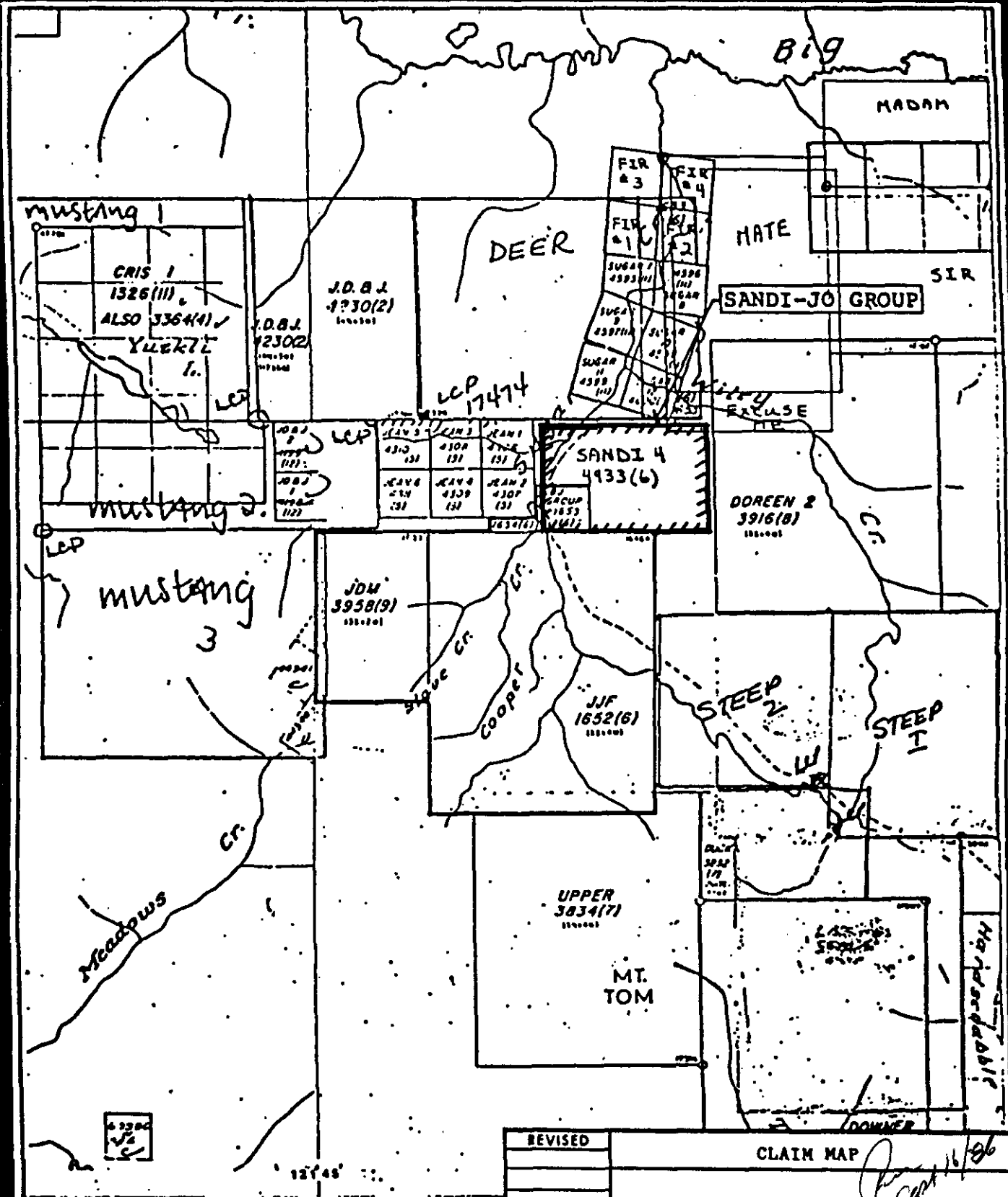
#### Previous Work

The property was covered by a reccy type Geochemical-Geological Survey carried out by Noranda Exploration Company Limited in 1984. This work is described in a report filed for assessment work, "GEOLOGICAL AND GEOCHEMICAL REPORT ON THE SANDI PROPERTY, by Robert J. Baerg, dated December 1984."



22° 00' 45'

REVISED	LOCATION MAP
	SANDI
	Clearbrook Mining Ltd. Option
PROJ. No.	SURVEY BY: DATE: <u>SDP/86</u>
M.T.R. <u>93H/4</u>	DRAWN BY: <u>R. Baerg</u> SCALE: <u>1:250,000</u>
DWG. No.	<b>NORANDA EXPLORATION</b>
1	OFFICE: <u>Prince George</u>



REVISED	CLAIM MAP	
	SANDI	
	Clearbrook Mining Ltd. Option	
PROJ. No.	SURVEY BY: <i>RN</i>	DATE: <i>Sept/86</i>
N.T.S. 2357/4	DRAWN BY: <i>RN</i>	SCALE: <i>1:50,000</i>
DWG. No. 2	<b>NORANDA EXPLORATION</b>	
	OFFICE: <u>Prince George</u>	

## GEOCHEMICAL SURVEY

### Sample Collection

Three sites that showed anomalous Cu, Zn, Pb responses from the 1984 work were selected for follow up. Detail soil samples were collected on a square grid pattern at a "nominal" 10 metres around the original site as shown on Figure #3. A grub hoe was used to dig holes.

All three selected sites were found to be on the edge of, or within a swampy side hill depression.

It was attempted to collect soil samples from the "B horizon", however in many cases there were thick organic accumulations and horizons were poorly defined. Samples with a high organic content are indicated with the abbreviation "Org" on Figure #3.

One anomalous stream sediment sample site from the 1984 survey was resampled. (Sample Site #38885 1984 Survey = 110 ppm Cu, 160 ppm Zn, 42 ppm Pb) The resampling at this site returned comparable results. (Sample #96157 = 778 ppm Cu, 150 ppm Zn, 38 ppm P, 0.6 ppm Ag, 46 ppm As, 10 ppb Au.)

Two other silt samples were collected from small creeks on the slope between the anomalous soil sites. The location of these samples and results are indicated on Figure #3.

One rock sample of highly pyritic quartz mica schist was collected from a soil sample hole as indicated on Figure #3.

### Analysis

All soil, silt, and rock samples were analyzed for Cu, Zn, Pb, Ag, As, Au at the Noranda Lab in Vancouver, B. C. A description of the analytical technique is outlined in Appendix III.

### Discussion of Results

The results of the sampling re-confirms the anomalous values indicated by the 1984 sampling.

The coincidence between organic rich samples and high Cu, Zn and Pb values is not encouraging. These metals may be accumulating in the organic material under hydromorphic conditions.

The anomalous silt sample results (Sample #96157) may also be the result of accumulation in the organic rich sediment in the slow moving, tiny, creek.

## CONCLUSIONS AND RECOMMENDATIONS

No further work is recommended on these follow up situations. Similar style follow up, followed by trenching may be successful in locating small, high grade deposits on this and adjoining properties.



BIBLIOGRAPHY

- Alldrick, D.J. (1983): The Mosquito Creek Mine, Cariboo Gold Belt.
- Baerg, Robert J (1984): Geological and Geochemical Report on the SANDI property. December, 1984. Noranda Exploration Company Limited Assessment Report.
- BCDM, (1947): MMAR pp. 111-128.
- Campbell, K.V. (1983): Report on the Clearbrook Mining Ltd., Sandi Mineral Property.
- Struick, L.C. (1980): Geology of the Barkerville-Cariboo River Area, Central British Columbia, Ph. D. Thesis, University of Calgary, 330 pp.
- Ibid, (1981): Snowshoe Formation, Central British Columbia, in Current Research, Pt. A, Geological Survey of Canada, Paper 81-1A.
- Ibid, (1982a): Geological Survey of Canada, O.F. 858, Map Series.
- Ibid, (1982b): Snowshoe Formation (1982), Central British Columbia, in Current Research, Pt. B, Geological Survey of Canada, Paper 82-1B, pp. 117-124.
- Sutherland Brown, A. (1957): Geology of the Antler Creek Area, Cariboo District, British Columbia, B.C. Ministry of Energy, Mines and Petroleum Resources, Bulletin 38, 105 pp.

APPENDIX I

STATEMENT OF COSTS

NORANDA EXPLORATION COMPANY, LIMITED  
(No Personal Liability)

PROJECT - Sandi - 4

DATE: Sept 86

TYPE OF REPORT - Geochemical Survey

a) WAGES:

1 day @ \$215/day \$ 215.00

b) TRANSPORTATION:

Prince George to claims & return  
1 day @ \$85/day 85.00

c) ANALYSIS:

23 samples-Cu, Zn, Pb, Ag, As, Au @ \$13.20 ea 303.60  
(Per Chemex Fee Schedule)

d) REPORT PREPARATION:

Drafting	50.00	
Typing	55.00	
Author	<u>93.00</u>	
	198.00	198.00

TOTAL COST - \$ 801.60

APPENDIX I I

STATEMENT OF QUALIFICATIONS

I, Ronald G. MacArthur hereby certify that:

1. I am a graduate of Dalhousie University with a Bachelor of Science Degree in Geology (1972).
2. I have been employed as a Geologist by Noranda Exploration since 1972.
3. I am a member of the Canadian Institute of Mining and Metallurgy.
4. I am a Fellow of the Geological Association of Canada.



Ronald G. MacArthur  
District Geologist,  
Central Cordillera District  
NORANDA EXPLORATION COMPANY, LIMITED  
(No Personal Liability)

## APPENDIX III

### ANALYTICAL METHOD DESCRIPTIONS FOR GEOCHEMICAL ASSESSMENT REPORTS

Revised:01/86

The methods listed are presently applied to analyse geological materials by the Noranda Geochemical Laboratory at Vancouver. (March, 1984)

#### Preparation of Samples

Sediments and soils are dried at approximately 80°C and sieved with a 80 mesh nylon screen. The -80 mesh (0.18 mm) fraction is used for analysis.

Rock specimens are pulverized to -120 mesh (0.13 mm). Heavy mineral fractions (panned samples) are analysed in its entirety, when it is to be determined for gold without further sample preparation. See addendum.

#### Analysis of Samples.

Decomposition of a 0.200 g sample is done with concentrated perchloric and nitric acid (3:1), digested for 5 hours at reflux temperature. Pulps of rock or core are weighed out at 0.2 g or less depending on the matrix of the rock, and twice as much acid is used for decomposition than that is used for silt or soil.

The concentrations of Ag, Cd, Co, Cu, Fe, Mn, Mo, Ni, Pb, V and Zn (all the group A elements of the fee schedule) can be determined directly from the digest (dissolution) with an atomic absorption spectrometer (AA). A Varian-Techtron Model AA-5 or Model AA-475 is used to measure elemental concentrations.

#### Elements Requiring Specific Decomposition Method

**Antimony - Sb:** 0.2 g sample is attacked with 3.3 mL of 6% tartaric acid, 1.5 mL conc. hydrochloric acid and 0.5 mL of conc. nitric acid, then heated in a water bath for 3 hours at 95° C. Sb is determined directly from the acid solution with an AA-475 equipped with electrodeless discharge lamp (EDL).

**Arsenic - As:** 0.2 - 0.4 g sample is digested with 1.5 mL of 70 % perchloric acid and 0.5 mL of conc. nitric acid. A Varian AA-475 equipped with an As-EDL measures the arsenic concentration of the digest.

**Barium - Ba:** 0.1 g sample is decomposed with conc. perchloric, nitric and hydrofluoric acid. Atomic absorption using a nitrous oxide-acetylene flame determines Ba from the aqueous solution.

**Bismuth - Bi:** 0.2 g - 0.3 g is digested with 2.0 ml of perchloric 70% and 1.0 ml of conc. nitric acid. Bismuth is determined directly from the digest into the flame of the AA instrument c/w EDL.

**Gold - Au:** 10.0 g sample (Pan-concentrates see below) is digested with aqua regia (1 part nitric and 3 parts hydrochloric acid). Gold is extracted with Methyl iso-Butyl ketone (MIBK) from the aqueous solution. Gold is determined from the MIBK solution with flame AA.

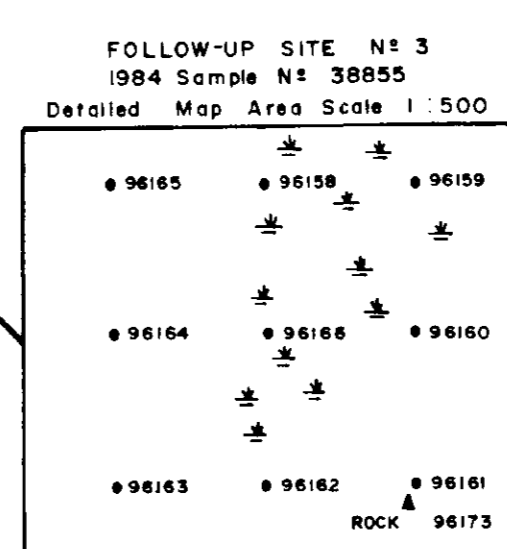
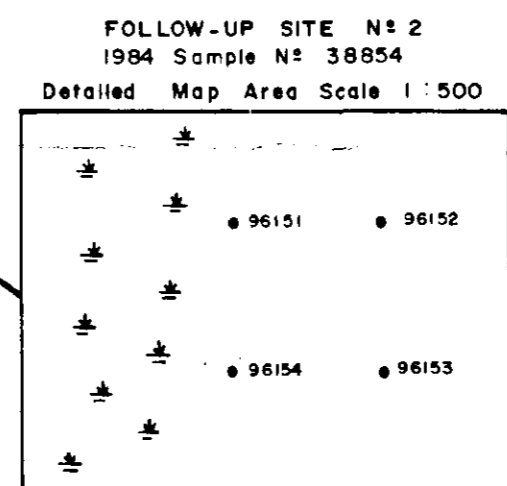
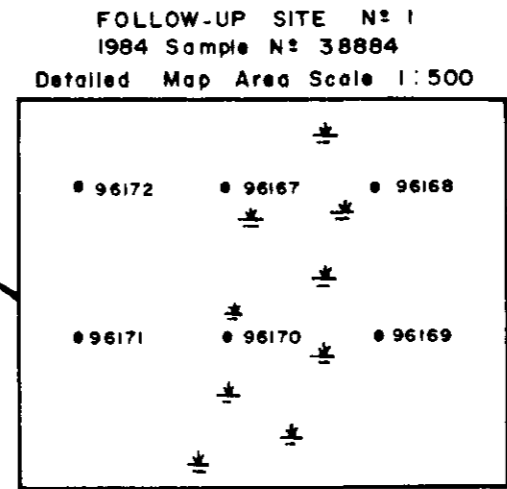
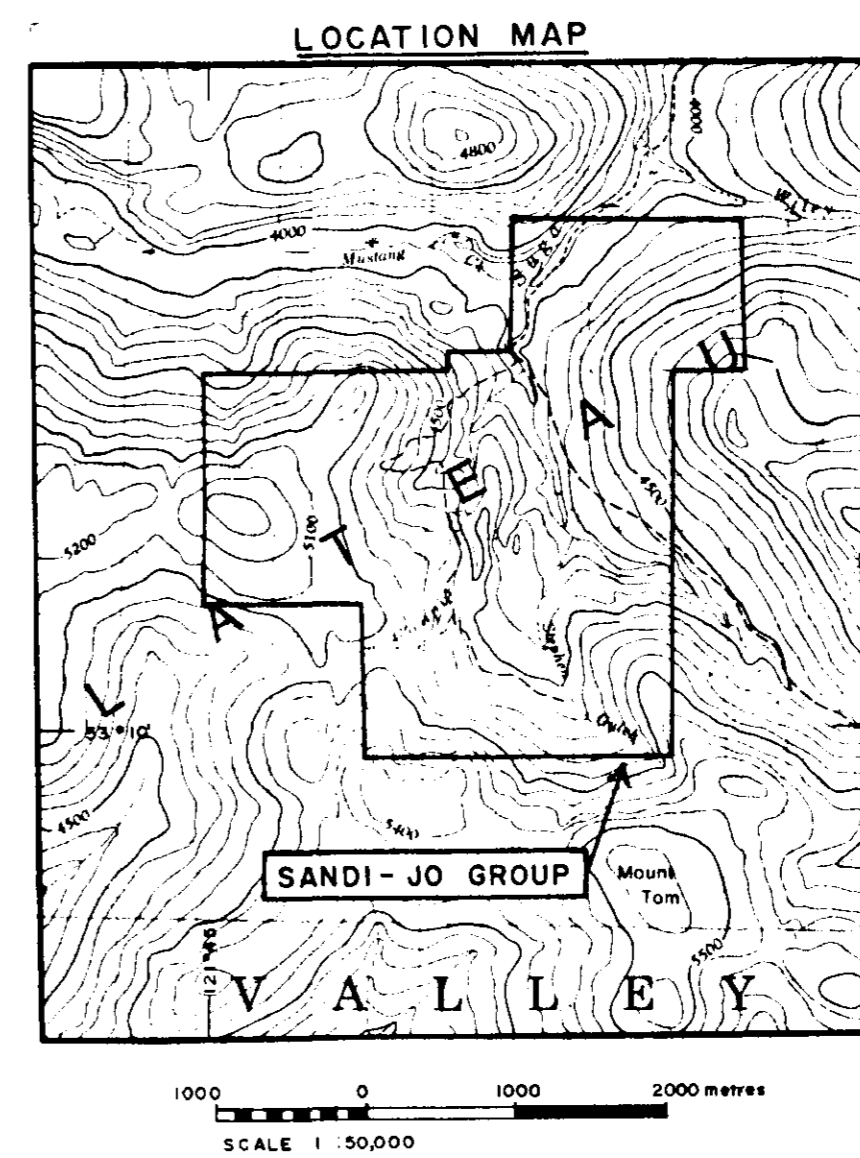
**Magnesium - Mg:** 0.05 - 0.10 g sample is digested with 4 ml perchloric/nitric acid (3:1). An aliquot is taken to reduce the concentration to within the range of atomic absorption. The AA-475 with a nitrous oxide flame determines Mg from the aqueous solution.

**Tungsten - W:** 1.0 g sample sintered with a carbonate flux and thereafter leached with water. The leachate is treated with potassium thiocyanate. The yellow tungsten thiocyanate is extracted into tri-n-butyl phosphate. This permits colourimetric comparison with standards to measure tungsten concentration.

**Uranium - U:** An aliquot, taken from a perchloric-nitric (3:1) decomposition, usually from the multi-element digestion, is diluted with water and a phosphate buffer. This solution is exposed to laser light, and the luminescence of the uranyl ion is quantitatively measured on the UA-3 (Scintrex).

#### LOWEST VALUES REPORTED IN PPM

Ag - 0.2	Mn - 20	Zn - 1	Au - 0.01 (10PPB)
Cd - 0.2	Mo - 1	Sb - 1	W - 2
Co - 1	Ni - 1	As - 1	U - 0.1
Cu - 1	Pb - 1	Ba - 10	
Fe - 100	V - 10	Bi - 1	



- LEGEND**
- Swamp
  - Logging Road
  - Cat Trail
  - Claim Post and Claim Boundary
  - 38856 Soil Sample Location ; Cu, Zn, Pb, Ag, Mo, Au, As
  - 41775 Silt Sample Location ; Cu, Zn, Pb, Ag, Mo, Au, As
  - 38953 Rock Sample Location ; Cu, Zn, Pb, Ag, Mo, Au, As

**1986 GEOCHEM ASSAYS**  
Values in PPM, except where noted.

SAMPLE No.	Cu	Zn	Pb	Ag	As	PPB Au
96167	32	80	12	0.6	52	10
96168	32	92	10	0.2	88	10 (organic)
96169	96	160	42	0.4	60	10 (organic)
96170	70	130	36	0.4	46	10 (organic)
96171	18	60	6	0.4	24	10
96172	16	52	6	0.2	28	10
96151	34	78	16	1.0	24	10 (organic)
96152	48	120	34	0.8	20	10
96153	14	70	38	0.4	22	10
96154	16	100	62	0.4	20	10 (organic)
96158	78	98	10	0.6	20	10 (organic)
96159	58	90	6	0.6	20	10 (organic)
96160	28	52	10	0.2	16	10
96161	68	96	18	0.6	20	10
96162	64	100	18	0.6	18	10 (organic)
96163	30	74	10	0.4	14	10
96164	26	92	12	0.4	16	10
96165	26	72	16	0.4	22	10
96166	110	120	20	1.0	28	10 (organic)
96173 RX	32	84	1	0.4	84	10
96155 SILT	2	88	8	0.4	18	10
96156	26	110	10	0.4	20	10
96157 SILT	78	150	38	0.6	46	10

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**15,161**

*Paul Wade  
Sept 19/84*

REVISED	COOPER CREEK - CLEARBROOK MINING LTD. OPTION	
AUG. 30, 1984, S.K.B.		
SEPT., 1986 S.K.B.		
	SILT, SOIL & ROCK GEOCHEM ASSAYS - 1984 WITH LOCATIONS AND RESULTS OF 1986 FOLLOW-UP	
PROJ No 53	SURVEY BY R. BAERG	DATE MAY 1984
N.T.S. 93H/4	DRAWN BY S.K.B.	SCALE 1:10,000
DWG No	<b>NORANDA EXPLORATION</b>	
FIG. 3	OFFICE	PRINTED SEP 23 1984