

GEOCHEMICAL AND PROSPECTING REPORT  
ON THE  
BEAR-1, BEAR-2 MINERAL CLAIMS

MT. MANSFIELD AREA  
ATLIN MINING DIVISION  
BRITISH COLUMBIA

Lat.  $59^{\circ}54'$  N  
Long.  $136^{\circ}40'$  W

N.T.S. 114P/15E

Owned and Operated by:

NORANDA EXPLORATION COMPANY, LIMITED  
(NO PERSONAL LIABILITY)

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

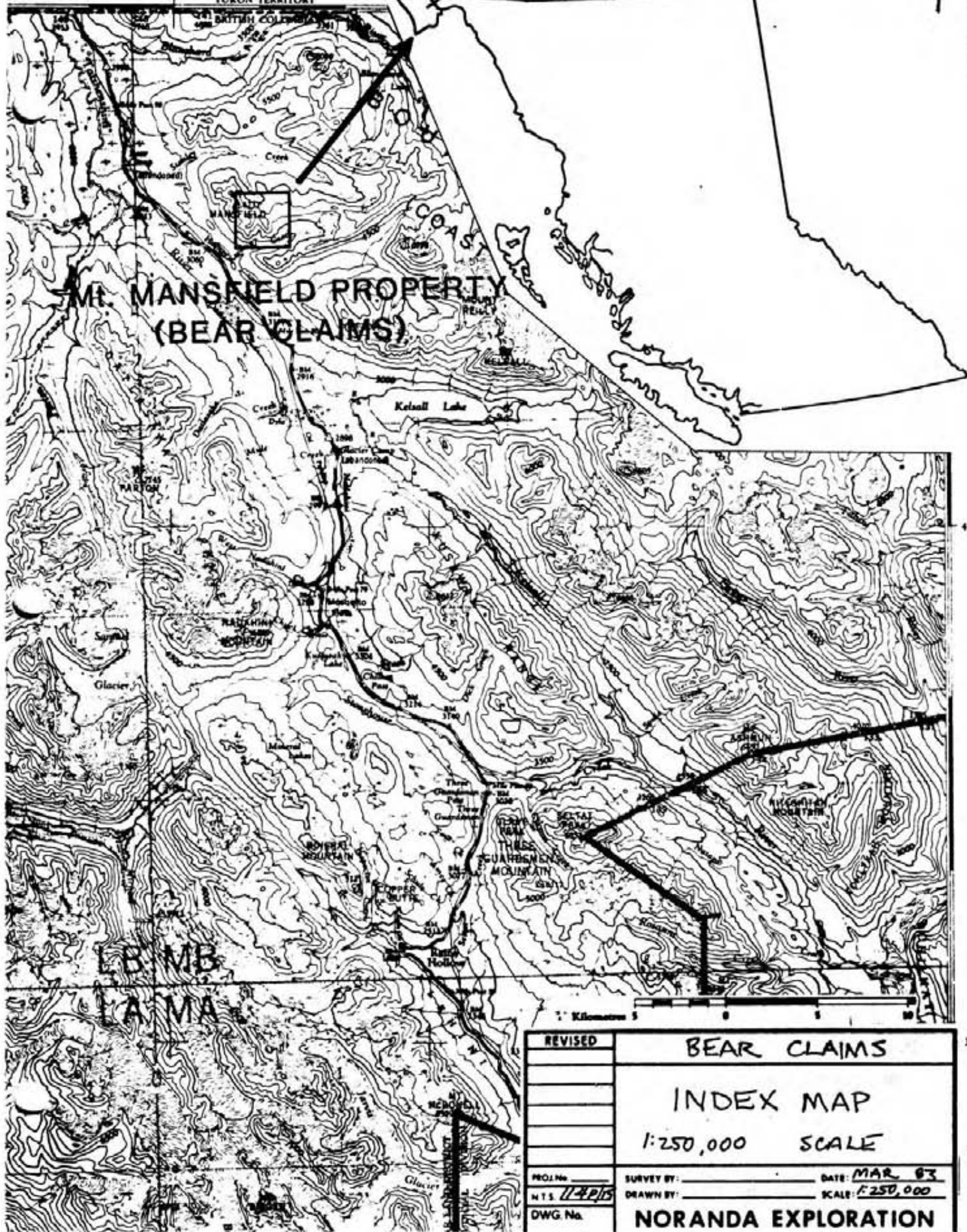
M.J. SAVELL

**11,168**

April 1983

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**MT. MANSFIELD PROPERTY  
(BEAR CLAIMS)**

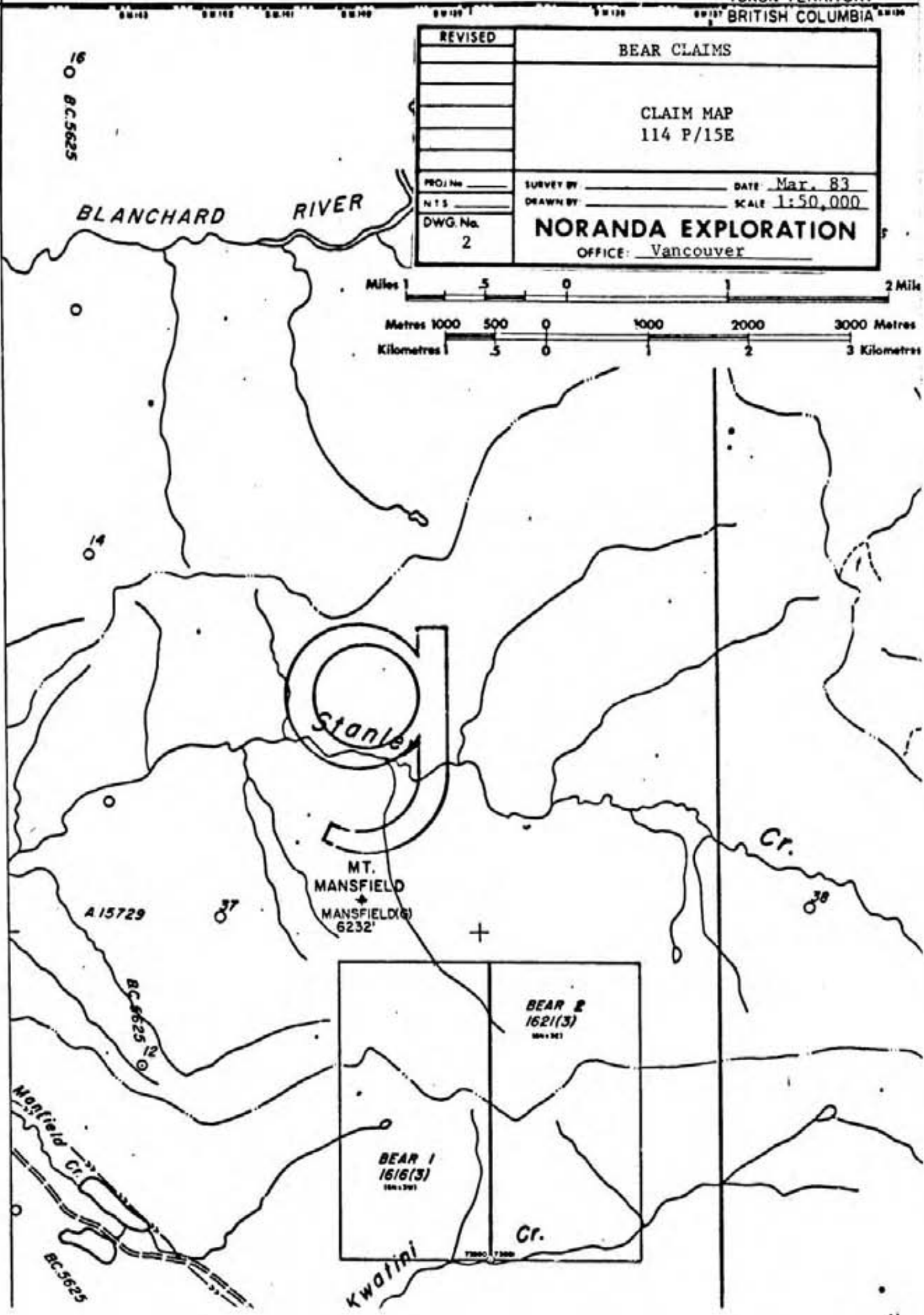
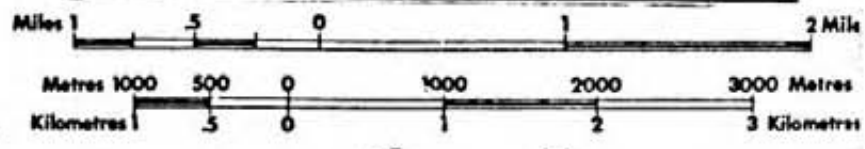
REVISED	<b>BEAR CLAIMS</b>	
	<b>INDEX MAP</b>	
	1:250,000	SCALE
PROJ. No. _____	SURVEY BY: _____	DATE: <b>MAR 63</b>
N.T.S. <b>1142/15</b>	DRAWN BY: _____	SCALE: <b>1:250,000</b>
DWG. No. _____	<b>NORANDA EXPLORATION</b>	

136°45'

YUKON TERRITORY  
BRITISH COLUMBIA

60°00'  
**M 114 P/15E**

REVISED	BEAR CLAIMS	
	CLAIM MAP	
	114 P/15E	
PROJ. No.	SURVEY BY	DATE <u>Mar. 83</u>
N.T.S.	DRAWN BY	SCALE <u>1:50,000</u>
DWG. No. <u>2</u>	<b>NORANDA EXPLORATION</b>	
	OFFICE: <u>Vancouver</u>	



W-51

## INTRODUCTION

This report describes the work performed by Noranda Exploration Company, Limited (No Personal Liability) on the Bear 1 and 2 mineral claims (Mt. Mansfield Property), Atlin Mining Division, during July and August 1982.

The claims were staked in February 1982 after a reconnaissance silt sampling program in the fall of 1981 produced weak Au values in sediments of creeks draining the Mt. Mansfield area. A published report by the B.C. Dept. of Mines (Bulletin 25, page 59) mentions float with gold values was found near Mt. Mansfield, thus aquisition and assessment of the ground was warranted.

## HISTORY AND PREVIOUS WORK

The area was probably looked at to some extent by prospectors using the Dalton Trail at the turn of the century, however no published reports on the Mt. Mansfield area exist. In 1945 a group of claims was staked by the Consolidated Mining and Smelting Company about 2.4 km southeast of Mt. Mansfield. Abundant float of white quartz mineralized with galena, pyrite, and chalcopryrite was found in loose overburden. "The gold content of most samples of the float was low, but in one it was high enough to encourage the owners to do some digging and blasting" (B.C.D.M. Bull. 25, pg. 59).

Following construction of the Haines Road in 1943, the region was mapped by K. DeP. Watson of the B.C. Dept. of Mines whose work was published as Bulletin No. 25. The area is currently being mapped by the G.S.C. The preliminary report by Campbell and Dodds on Operation St. Elias can be found in G.S.C. Paper 79-1A, pg. 17-20.

## LOCATION AND ACCESS

The property is located in the extreme northwest corner of British Columbia, just east of the Haines Road between Stanley Creek and Kwatini Creek on N.T.S. map sheet 114P/15E. The centre of the property is within 5 kilometres of the Haines Road, a two lane all-weather highway. From this point it is less than 135 kilometres to the deep water port of Haines, Alaska, almost half of which is paved.

Access was made by foot from the Haines Road except for the easternmost part of the property which was reached by helicopter.

## PHYSIOGRAPHY

The claims lie over the Boundary Ranges of the Coast Mountains, which are contained within the Coast Plutonic Belt of the Canadian Cordillera. The terrain is very rugged, and is typified by steep sided cirques and U-shaped valleys produced by Pleistocene to Recent alpine glaciation. Local relief varies from about 980m (3000 ft) at the Haines Road to 2044m (6232 ft) on Mt. Mansfield.



Vegetation on the property is restricted to grasses, mosses, flowers and small shrubs typical of an alpine tundra environment. Over half of the property is bedrock exposure and talus slopes devoid of vegetation, except for lichens.

#### CLAIMS AND OWNERSHIP

The property consists of the following claims:

<u>CLAIM</u>	<u># UNITS</u>	<u>RECORD #</u>	<u>RECORD DATE</u>	<u>OWNER</u>
BEAR-1	18	1616	March 9, 1982	Noranda Exploration Co., Ltd. (No Personal Liability)
BEAR-2	18	1621	March 9, 1982	" " "

#### GEOCHEMISTRY

Because of the high relief and moist climate of the area, abundant small creeks drain the property. Thus it was decided the most effective and practical geochemical survey would be a high density stream sampling program. As well, a few panned concentrates, rocks and talus samples were analyzed.

##### A. SILTS

1) Sampling - A total of 55 silt samples were collected from streams draining the property. (A sample of talus fines was treated in the same way as the silts) Sample sites were chosen such that only the fines size of organic free sediment, from active channel deposits away from the bank, was collected. As much water was squeezed out by hand as possible, and the material placed in "Hi Wet Strength Kraft 3 1/2" X 6 1/8" Open End" paper envelopes in which a tag with the sample number was marked. This number was also marked on the envelope and on a piece of fluorescent surveyor's ribbon hung as close as possible to the sample site. Sample locations were determined by their physiographic features and finding these on government published 1:50,000 scale topographic maps and aerial photographs. This position was marked on 1:10,000 scale enlargements of the topographic maps.

The samples were then hung and allowed to dry for several days before being shipped to the geochem lab of Noranda Exploration Company, Limited at 1050 Davie St., Vancouver, B.C. Here the samples were analyzed for Au, As, Ag, Cu, Zn, Pb, Mo, Fe and Mn. A few samples were also analyzed for Co and Ni.

2) Analytical Method - 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 As, Ag, Cu, Zn, Pb, Mo, Fe, Mn, Co and Ni 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>5</sub> and 0.5ml 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, except Fe, which is expressed as a percentage.

To determine the amount of total extractable Au in each sample, the following procedure is employed:

Ten grams of the -80 mesh material (or less if 10 grams not available) is roasted at 580°C for 1.5 hours and then digested with aqua regia. Au is ascertained by diluting this solution to 200ml with demineralized H<sub>2</sub>O and extracting the Au with 10mls of MIBK. An aliquot of this solution is then read on a Varian Techtron Model AA-5 atomic absorption spectrophotometer and a value in ppb is obtained.

3) Results - The results of the above analyses are shown on the following maps:

Fig. 3 - Au/Ag/As/Co (in ppm except Au in ppb)

Fig. 4 - Cu/Zn/Pb/Mo (in ppm)

Fig. 5 - Fe/Mn/Ni (in ppm except Fe in %)

The plots of sample locations, numbers and values have been computer generated.

A summary of results are shown on the following table:

SILTS	ppb	ppm							%	ppm	
	Au	Ag	As	Co	Cu	Zn	Pb	Mo	Fe	Mn	Ni
# of Analyses	55	55	55	4	55	55	55	55	55	55	4
Lowest Value	10	.2	1	20	22	44	2	1	2.1	250	64
Highest Value	60	1.4	210	24	440	3400	18	20	15.0	21000	74
Mean (log)	10.3	.22	18.9	22.9	98.5	119.2	2.9	1.4	5.11	955	70.4
Stand. dev. (lot)	.105	.144	.669	.04	.282	.297	.240	.272	.142	.323	0.28
Mean (arith)	10.9	.24	40.4	23	1184	190.1	3.5	1.9	5.39	1465	70.5
Stand. dev. (arith)	6.74	.174	42.75	2	71.8	4505	2.88	2.76	1.92	2813	4.43

The highest values in Au, Ag and As obtained as well as elevated values in Zn all come from an area due west of Mt. Mansfield. These weakly anomalous results may reflect an undiscovered, possibly talus covered, mineralized vein. Cu values are higher than usual in this area, reflecting a high background in the greenstones. The highest values are from samples collected due south of Mt. Mansfield, the source apparently being Cu bearing quartz veins from which the float was derived. The highest Zn value (3400 ppm, sample #822462) also had the highest Mn value (21000 ppm) which suggests a false anomaly produced by absorption of Zn onto manganese hydrous oxides.

## B. PANNED CONCENTRATES

1) Sampling - A total of 2 panned concentrates of bulk stream sediment samples were collected from the larger creeks draining the property. An attempt was made to be consistent in the selection of sample sites such that they would be most susceptible to the deposition of heavy minerals. Ideal sites are the upstream ends of gravel bars or in eddys around large boulders. Sand and gravel from the chosen sites was then dug out by shovel and placed into 9 litre metal buckets until full. Boulders larger than about 5cm were rinsed of fine sediment and disregarded. The area of the sample site was kept to about  $\frac{1}{2}$  X  $\frac{1}{2}$  metre. The sample was either panned at the collection site, or placed in large plastic bags and panned at a later date. Numbers were assigned to the samples and sites marked as with silt samples. For comparison, silt samples were collected at the same sites. Locations were recorded as with silt samples.

The samples were then concentrated using large conical metal pans down to a volume corresponding to a 20 to 25 gram sample weight. If the heavy mineral content was more than this, then the sample was panned until only heavy minerals remained. The concentrate was then carefully washed into small plastic bags and shipped to Noranda's geochem lab in Vancouver. Here the samples were analysed for Au, Cu, Zn, Pb, Ag and Fe.

2) Analytical Method - The samples are first dried and weighed, then roasted at 580°C for 1.5 hours. (Samples weighing over 40 grams are split into fractions of less than 40 grams and each split analyzed, their sum being the reported result.) The entire sample is then digested with 75ml of dilute aqua regia, and diluted to 200ml with demineralized water. An aliquot of this solution is run on a Varian Techtron Model AA-5 atomic absorption spectrophotometer to ascertain the content in parts per million of Cu, Zn, Pb, Ag and Fe. Au is ascertained by taking a 50ml aliquot of the same solution and extracting the Au with 10ml of MIBK. This solution is then read on the same spectrophotometer. All Au values are then normalized relative to a 20 gram sample weight.

3) Results - The results of the above analyses are shown on figures 3,4 and 5. Sample number 8226317, which was collected on a tributary of Stanley Creek having its source on the north side of the property is anomalous in Au (2340 ppb). Thus a more detailed assessment of this part of the property is warranted.

## C. ROCKS

1) Sampling - Four rock chip samples of outcrop and float material were analyzed, mainly as a check for Au. Locations were marked and determined as with silt samples.

2) Analytical Method - The samples are first crushed and pulverized to at least -150 mesh. From this pulp a 0.2 gram aliquot is taken and the method as described for silt geochemistry is that used to determine the total extractable Ag, As, Co, Cu, Zn, Pb, Mo, Fe, Mn and Ni. For Au, a 10 gram aliquot is taken and the method as described for Au in silts is used.



3) Results - The results are shown on figures 3,4 and 5. A description of each sample is given below.

<u>SAMPLE #</u>	<u>DESCRIPTION</u>
25236	Float of quartz-carbonate vein material with minor chalcopyrite, malachite
26457	As above
26461	Talus chips from rusty weathered greenstones
26784	Chip sample from malachite stained shear zone in greenstones.

### PROSPECTING

#### A REGIONAL GEOLOGY

The property is immediately east of the north-west trending Denali Fault System, a major intracontinental crustal break which separates the Insular belt from the Coast Plutonic belt of the Canadian Cordillera. The sedimentary and volcanic rocks in the vicinity of the property have been assigned to the Jurassic-Cretaceous Dezadeash Group, and consist of moderate to steeply northeasterly dipping, thinly interbedded limestones and slates overlain by greywackes and slates, which pinch out into a thick well bedded section of greenstone to the southeast. Further east these rocks are intruded by granodiorite of the Coast Plutonic Complex.

#### B. PROPERTY WORK

The objective of the 1982 programme was to locate and determine the nature of the occurrences as mentioned previously and to explore for others.

Two areas were found in which chalcopyrite mineralized white quartz float was fairly abundant, but no gold values were obtained in geochemical analyses. Prospecting failed to locate outcrop exposures of the source, however, frequent rock slides in this terrain could easily cover exposures intermittently. A small shear zone was found in the greenstones with minor malachite staining but had no Au values. Rusty, gossanous exposures of weathered pyritic greenstones occur sporadically on the property. A sample of talus chips from one exposure showed no Au content. A small creek draining the northwest corner of the property contains abundant boulders and gravel coated with a white to creamy, soft, chalky precipitate of what was presumed to be gypsum. To the east, the intrusive is barren and monotonous except for occasional quartz and aplite veins. At one locality, tourmaline was noted in a quartz vein. The granodiorite in places has a strong foliation in the northwest direction and in some places is almost schistose.

#### CONCLUSIONS AND RECOMMENDATIONS

The 1982 programme of silting and prospecting has failed to pinpoint any occurrences of Au mineralization as had been hoped. These exposures may be either talus covered and/or at higher, less accessible elevations. I therefore recommend that a further 4-6 man days be spent on prospecting and rock sampling the higher sections of the property. This would best be accomplished by setting up a helicopter supported fly camp at the head of the stream draining the north section of the property near the 5,000 foot elevation if possible. This stream contained an anomalous Au value in a

panned concentrate sample and has not been completely traversed.

APPENDIX 1

STATEMENT OF COSTS

NORANDA EXPLORATION COMPANY, LIMITED

STATEMENT OF COST

PROJECT BEAR CLAIMS DATE MAY 1983  
TYPE OF REPORT Prospecting and Geochem

a) Wages:

No. of Days 11  
Rate per Day \$ 120.64  
Dates From: July 1, 1982 - March 9, 1983  
Total Wages 11 x \$ 120.64 1,327.04

b) Food and Accomodation:

No of days 11  
Rate per day \$ 33.51  
Dates From: July 1, 1982 - March 9, 1983  
Total Cost 11 x \$ 33.51 368.61

c) Transportation:

No of days 11  
Rate per day \$ 80.11  
Dates From: July 1, 1982 - March 9, 1983  
Total Cost 11 X \$ 80.11 881.23

d) Instrument Rental:

Type of Instrument  
No of days  
Rate per day \$  
Dates From:  
Total Cost X \$

Type of Instrument  
No of days  
Rate per day \$  
Dates From:  
Total Cost X \$

f) Analysis (See attached schedule)		562.80
g) Cost of preparation of Report		
Author		482.56
Drafting		120.64
Typing		120.64
h) Other:		
Contractor		
Computer		<u>336.00</u>

Total Cost \$4,199.52

e) Unit costs for	Prospecting	
No of days		
No of units	11 m/d	
Unit costs	145.07 / day	
Total Cost	11 x 145.07	1,595.82

Unit Costs for Geochem

No. of Units	62 Samples	
Unit Costs	42.00/ Sample	
Total Cost	62 X 42.00	<u>2,603.70</u>

\$4,199.52



NORANDA EXPLORATION COMPANY, LIMITED  
(WESTERN DIVISION)

DETAILS OF ANALYSES COSTS

PROJECT:      BEAR CLAIMS                      (ROCKS)

<u>ELEMENT</u>	<u>NO. OF DETERMINATIONS</u>	<u>COST PER DETERMINATION</u>	<u>TOTAL</u>
Cu	4	1.50	6.00
Zn	4	.60	2.40
Pb	4	.60	2.40
Ag	4	.60	2.40
Mo	4	.60	2.40
Mn	4	.60	2.40
As	4	.60	2.40
Fe	4	.60	2.40
Au	4	3.00	<u>12.00</u>
			<u>\$34.80</u>

(TALUS)

Cu	1	1.50	1.50
Zn	1	.60	.60
Pb	1	.60	.60
Ag	1	.60	.60
Mo	1	.60	.60
Mn	1	.60	.60
As	1	.60	.60
Fe	1	.60	.60
Au	1	3.00	<u>3.00</u>
			<u>\$8.70</u>

NORANDA EXPLORATION COMPANY, LIMITED  
(WESTERN DIVISION)

DETAILS OF ANALYSES COSTS

PROJECT:      Bear Claims      (SILTS)

<u>ELEMENT</u>	<u>NO. OF DETERMINATIONS</u>	<u>COST PER DETERMINATION</u>	<u>TOTAL</u>
Cu	55	1.50	82.50
Zn	55	.60	33.00
Pb	55	.60	33.00
Ag	55	.60	33.00
Mo	55	.60	33.00
Mn	55	.60	33.00
As	55	.60	33.00
Fe	55	.60	33.00
Au	55	3.00	165.00
Ni	4	.60	2.40
Co	4	.60	<u>2.40</u>
			<u>\$483.30</u>
		<u>(PANS)</u>	
Cu	3	2.00	6.00
Zn	3	2.00	6.00
Pb	3	2.00	6.00
Fe	3	2.00	6.00
Ag	3	2.00	6.00
Au	3	2.00	<u>6.00</u>
			<u>\$36.00</u>

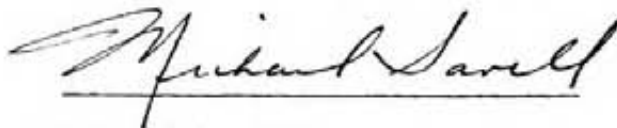
APPENDIX 11

STATEMENT OF QUALIFICATIONS

STATEMENT OF QUALIFICATIONS

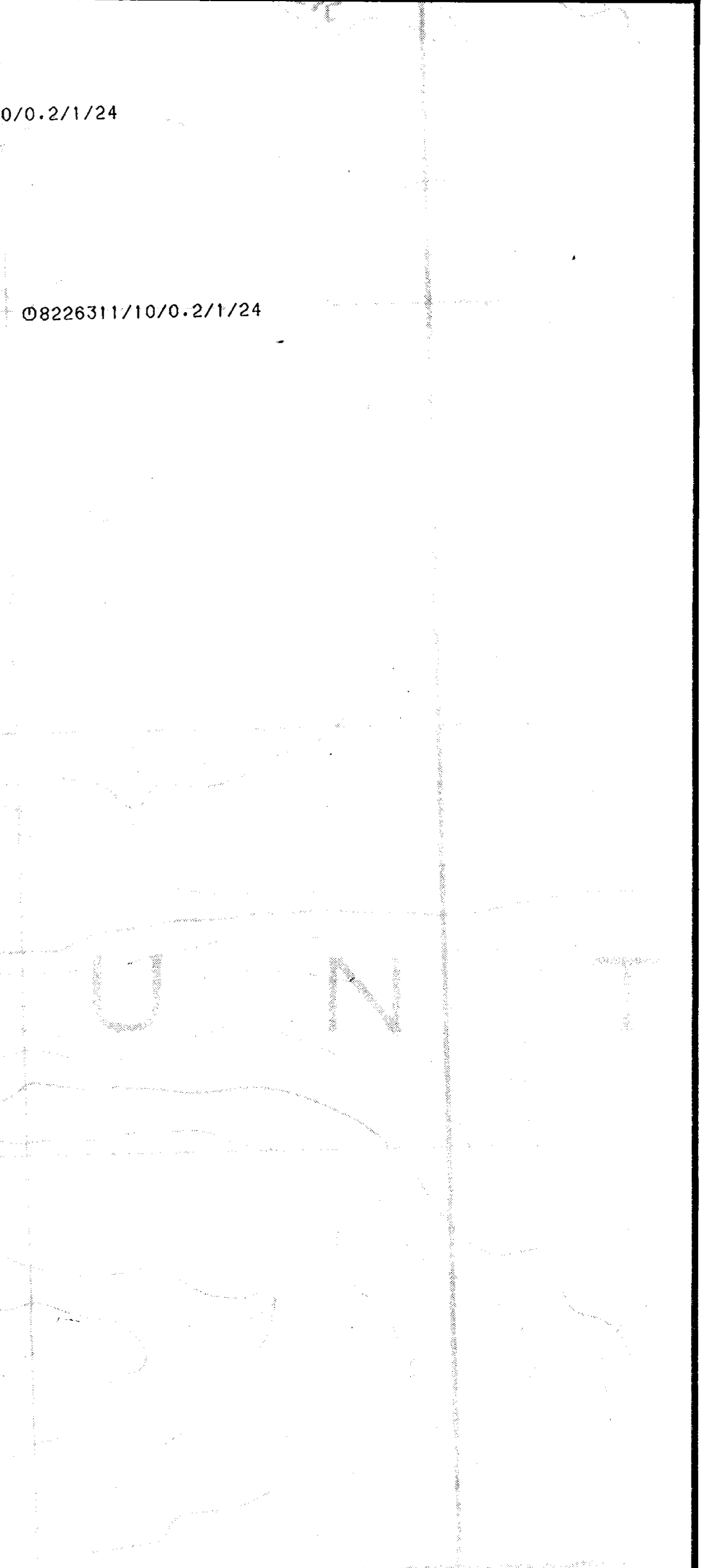
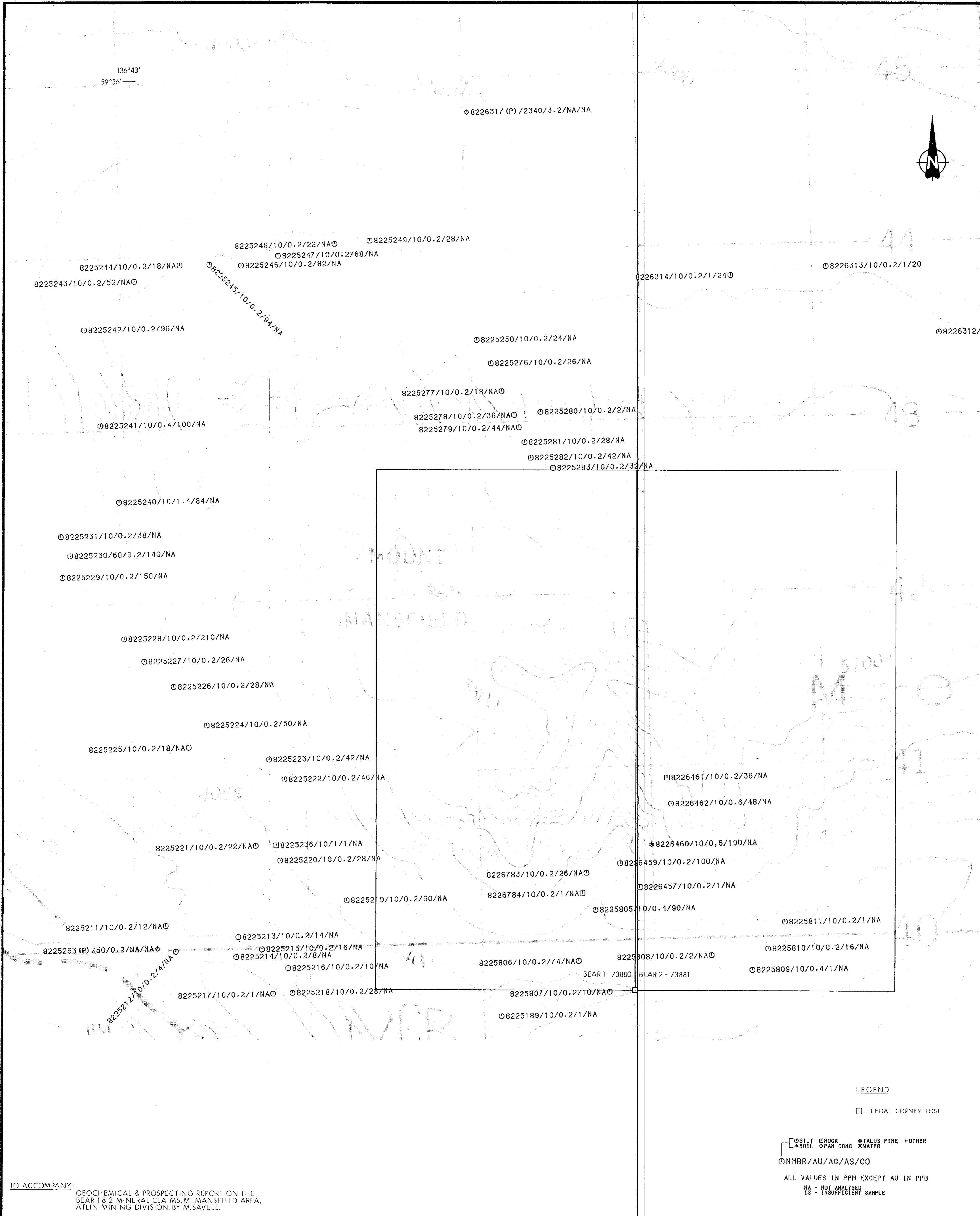
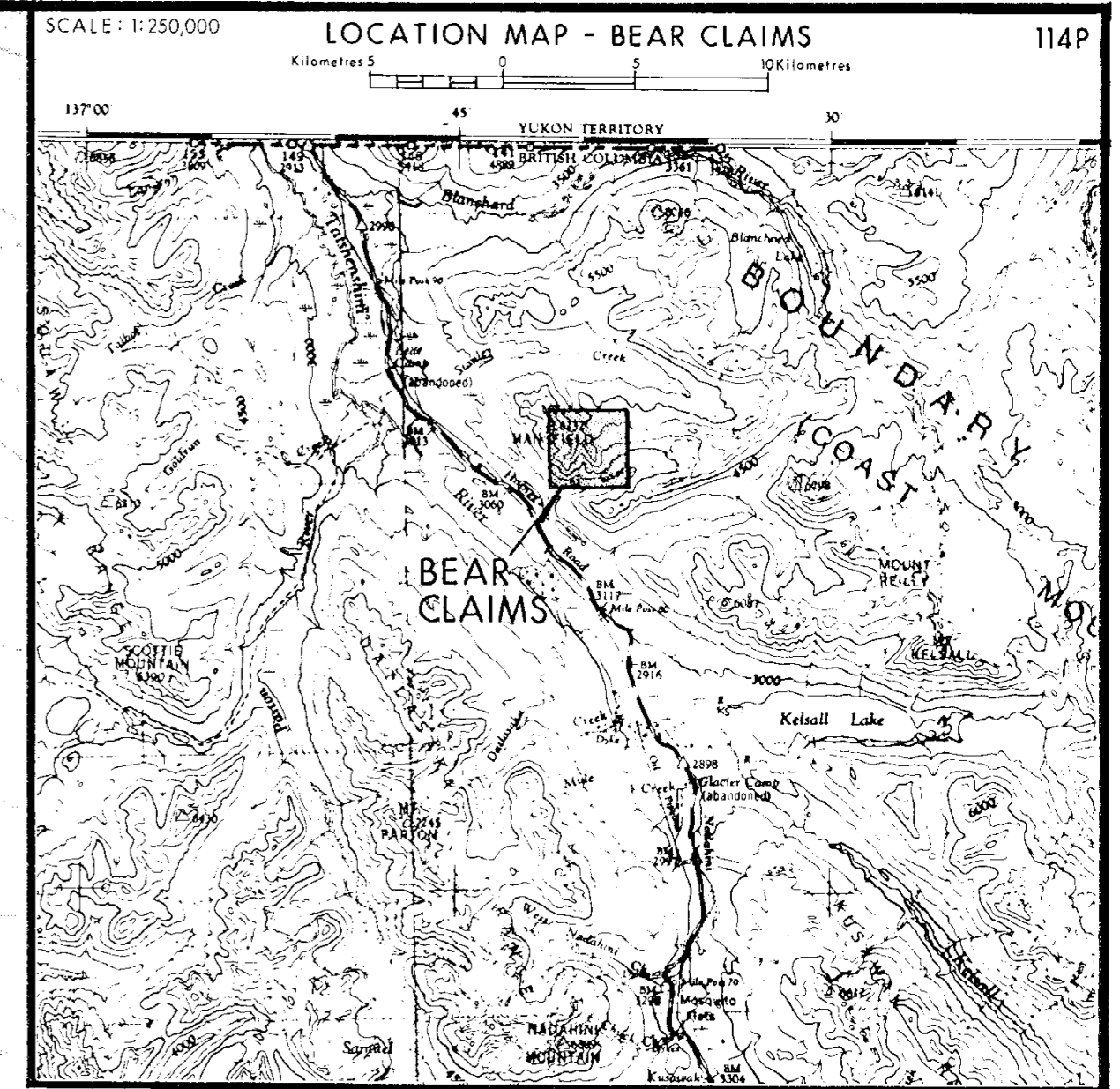
I, Michael Savell of the City of Vancouver, Province of British Columbia, do certify that:

1. I have been an employee of Noranda Exploration Company, Limited since May 1980.
2. I am a graduate of Dalhousie University with a Bachelor of Science degree in geology.



Michael Savell

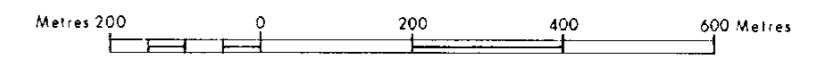
Project Geologist  
Noranda Exploration Company, Limited  
(No Personal Liability)



**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**11,168**

*Michael Savell*



**LEGEND**  
☐ LEGAL CORNER POST

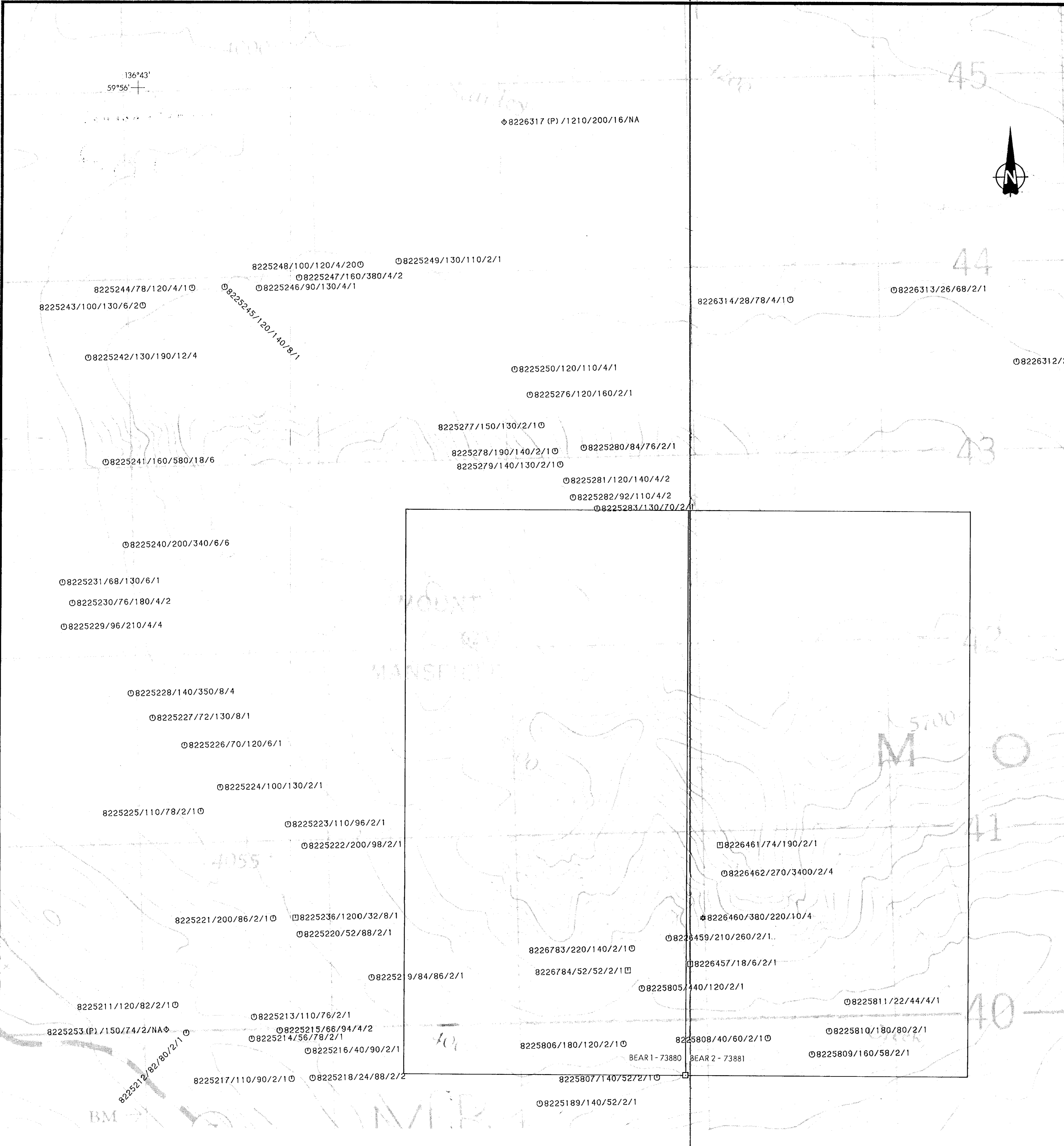
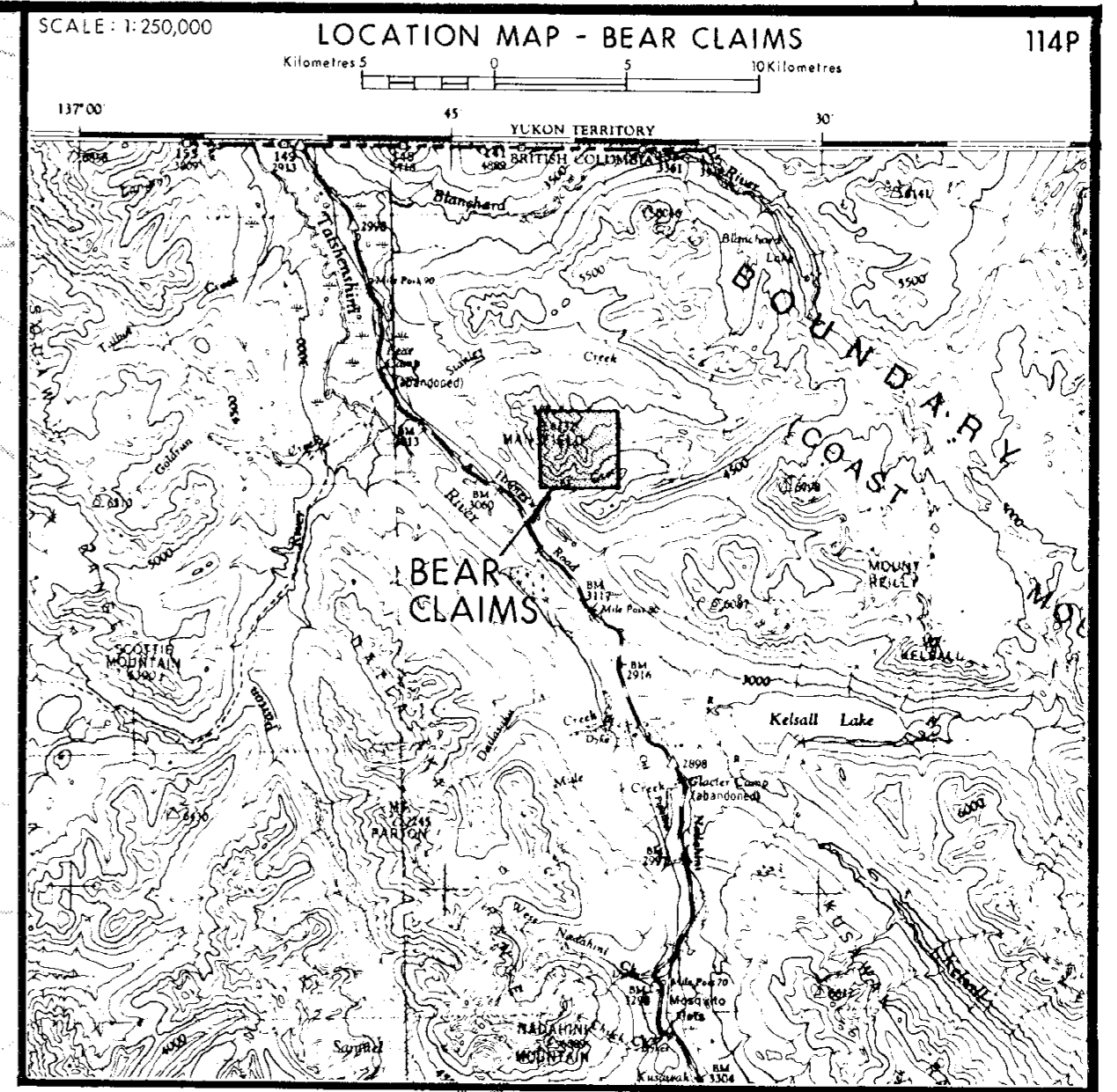
☐ SOIL    ☐ ROCK    \* TALUS FINE + OTHER  
☐ ASOIL    ☐ PAN CONC    ☐ WATER  
☐ NMBR/AU/AG/AS/CO

ALL VALUES IN PPM EXCEPT AU IN PPB  
NA - NOT ANALYSED  
IS - INSUFFICIENT SAMPLE

REVISED	MT. MANSFIELD PROPERTY (BEAR CLAIMS)
	Au, Ag, As, Co. GEOCHEMISTRY
PROJ No. 1012	SURVEY BY: M. Savell DATE: March/83
N.T.S. 114P/15E	DRAWN BY: M.S. & P.J.A., S.N. SCALE: 1:10,000
DWG. No. 3	<b>NORANDA EXPLORATION</b> OFFICE: Vancouver

TO ACCOMPANY: GEOCHEMICAL & PROSPECTING REPORT ON THE BEAR 1 & 2 MINERAL CLAIMS, MT. MANSFIELD AREA, ATLIN MINING DIVISION, BY M. SAVELL.

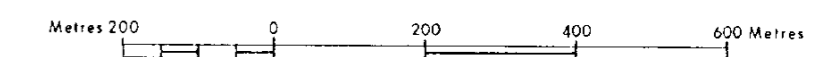




GEOLOGICAL BRANCH  
ASSESSMENT REPORT

11,168

*Michael Savell*



LEGEND  
□ LEGAL CORNER POST

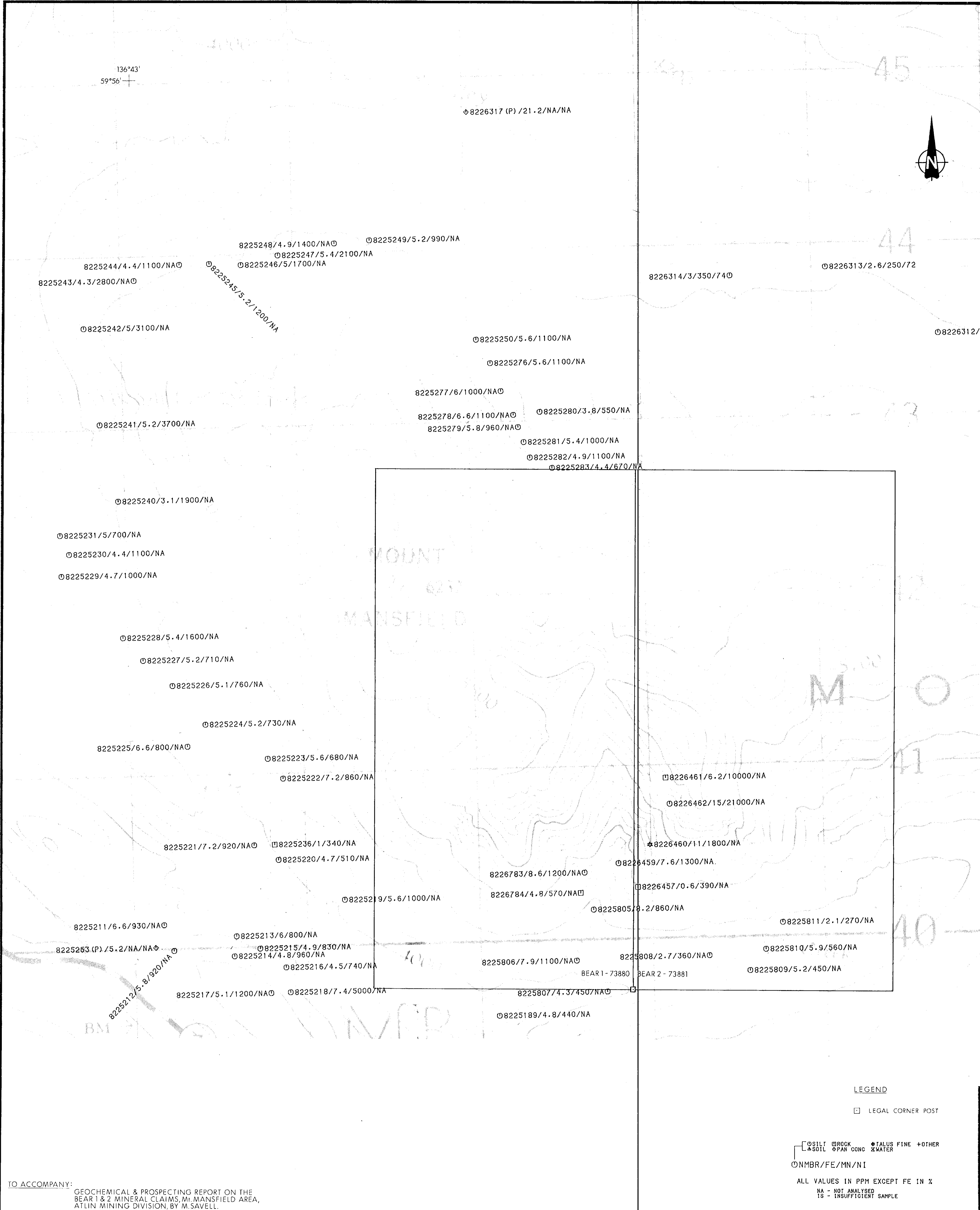
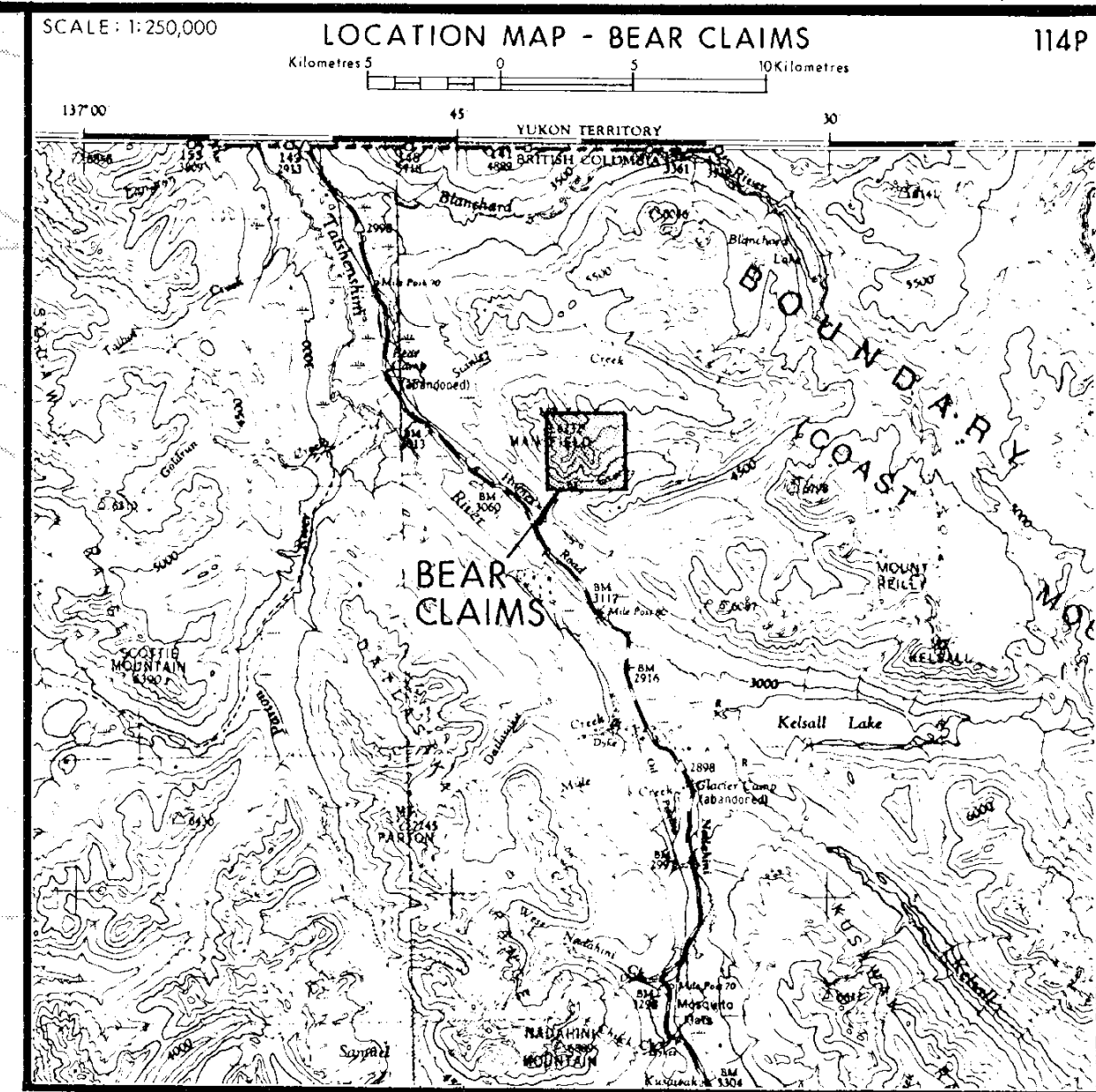
○ SILT & SOIL    □ ROCK PAN CONC    \* TALUS FINE + OTHER WATER

○ NMBR/CU/ZN/PB/MO

ALL VALUES IN PPM  
NA - NOT ANALYSED  
IS - INSUFFICIENT SAMPLE

REVISED	MT. MANSFIELD PROPERTY (BEAR CLAIMS)
	Cu, Zn, Pb, Mo. GEOCHEMISTRY
PROJ. No. 1012	SURVEY BY: M. Savell DATE: March/83
N.F.S. 114P/15E	DRAWN BY: M.S. & P.J.A., S.N. SCALE: 1:10,000
DWG. No. 4	<b>NORANDA EXPLORATION</b> OFFICE: Vancouver

TO ACCOMPANY: GEOCHEMICAL & PROSPECTING REPORT ON THE BEAR 1 & 2 MINERAL CLAIMS, MT. MANSFIELD AREA, ATLIN MINING DIVISION, BY M. SAVELL.



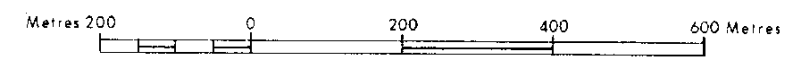
MT. MANSFIELD

MOUNT

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**11,168**

*Michael Savell*



**LEGEND**

☐ LEGAL CORNER POST

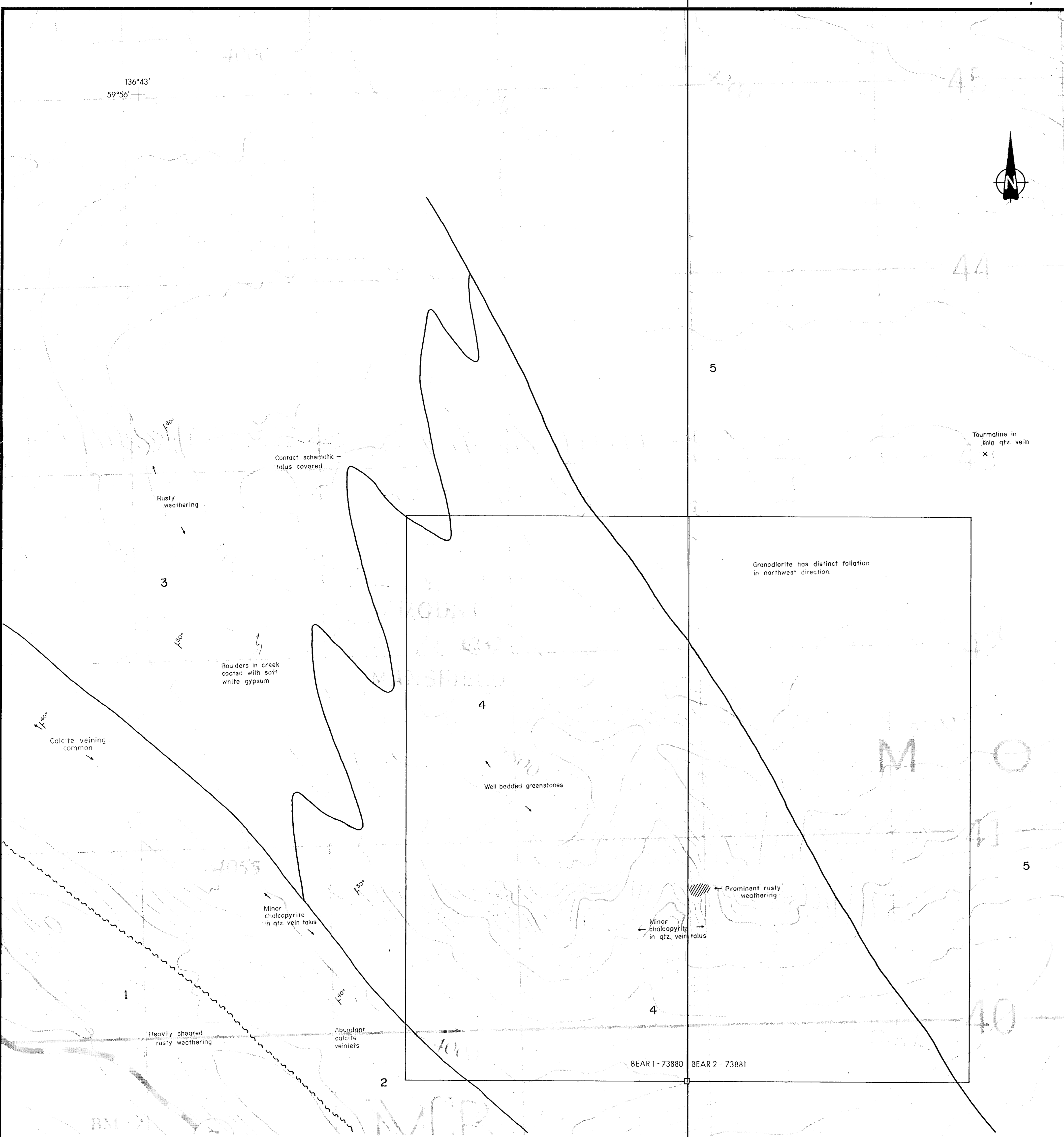
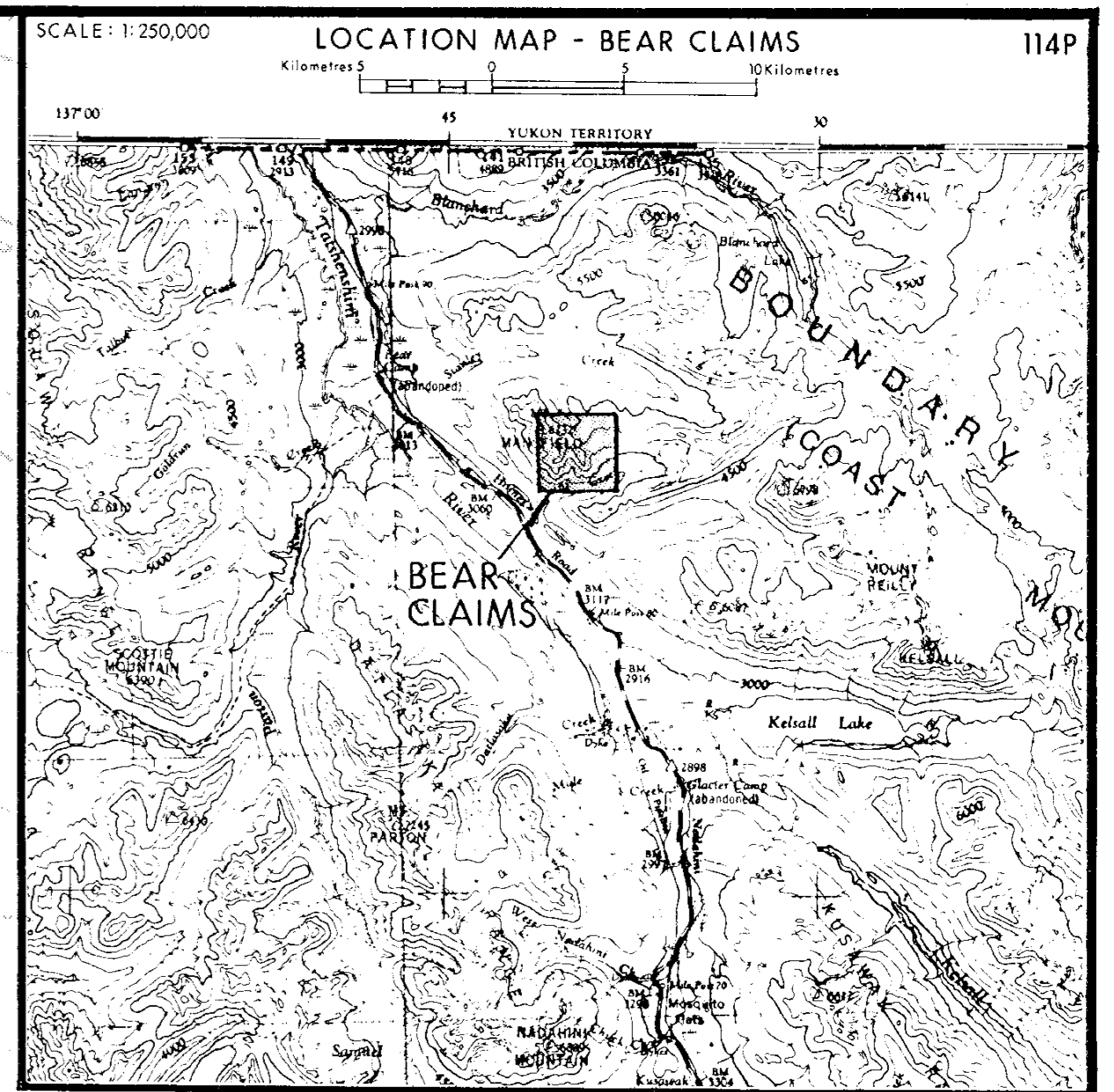
☐ SILT    ☐ ROCK    ☐ TALUS FINE    + OTHER  
☐ SOIL    ☐ PAN CONC    ☐ WATER

ONMBR/FE/MN/NI

ALL VALUES IN PPM EXCEPT FE IN %  
NA - NOT ANALYSED  
IS - INSUFFICIENT SAMPLE

REVISED	MT. MANSFIELD PROPERTY (BEAR CLAIMS)	
	Fe, Mn, Ni. GEOCHEMISTRY	
PROJ. No. 1012	SURVEY BY: M. Savell	DATE: March/83
N.T.S. 114 P/15E	DRAWN BY: M.S. & P.J.A., S.N.	SCALE: 1:10,000
DWG No. 5	<b>NORANDA EXPLORATION</b>	
	OFFICE: Vancouver	

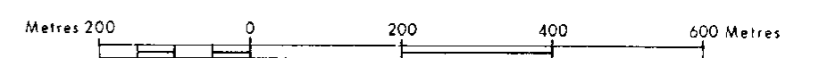
TO ACCOMPANY:  
GEOCHEMICAL & PROSPECTING REPORT ON THE  
BEAR 1 & 2 MINERAL CLAIMS, MT. MANSFIELD AREA,  
ATLIN MINING DIVISION, BY M. SAVELL.



GEOLOGICAL BRANCH  
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*Michael Savell*



- CRETACEOUS - TERTIARY (?)
- 5 granodiorite
- JURASSIC - CRETACEOUS
- 4 greenstones
  - 3 greywackes and slates
  - 2 interbedded limestones and slates
- PERMIAN - TRIASSIC
- 1 sheared, altered volcanics
- (ages after Campbell and Dodds - 1979 - in G.S.C. Paper 79-1A)

- LEGEND
- ☐ LEGAL CORNER POST
  - X STRIKE and DIP
  - CONTACT
  - ~ FAULT

REVISED	MT. MANSFIELD PROPERTY (BEAR CLAIMS)
	PROSPECTING MAP
PROJ. No. 1012	SURVEY BY M. Savell DATE March/83
N.T.S. 114 P/15E	DRAWN BY M.S. & P.J.A., S.N. SCALE 1:10,000
DWG No. 6	<b>NORANDA EXPLORATION</b> OFFICE Vancouver

TO ACCOMPANY: GEOCHEMICAL & PROSPECTING REPORT ON THE BEAR 1 & 2 MINERAL CLAIMS, MT. MANSFIELD AREA, ATLIN MINING DIVISION, BY M. SAVELL.