

83-#848-11680

10/84

1983 Assessment Report

Geochemical and Geophysical Survey

Claim: SAM

Commodity: Silver, Gold, Copper

Location: Pass Creek - Greenwood M.D.  
18 km north of Grand Forks  
82 E 1W  
49° 11' N  
118° 28' W

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Work Dates: October 1, 1983 to December 30, 1983

Submittal Date: December 30, 1983

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**11,680**

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## 1983 Assessment Report

### on the SAM MINERAL CLAIM

#### SUMMARY

A geophysical and geochemical survey was carried out on the Sam mineral claim from October 1, 1983 to October 28, 1983 the results of which disclosed two prime sub and anomalous areas which may indicate mineral zones comparables to zones known in the immediate area.

The Sam claim is located 18 km north of Grand Forks and within two km of two properties on which massive sulphide zones are known to occur and from which past production is documented.

The peripheral properties include one of production from which "1,250 tons of ore shipped up to 1920 assaying 0.43 oz Au/ton and 3.9 oz Ag/ton" and another where drilling revealed zones of up to "75 feet of .07 oz Au/ton to 26 feet of .20 oz Au/ton".

A total of 120 soil samples were obtained from the Sam claim for three line km in addition to one and one half km of VLF-EM and magnetometer surveys.

#### INTRODUCTION

During October 1983, geophysical and geochemical surveys were carried out on the SAM claim.

The purpose of the exploration program was to locate potential massive sulphide gold bearing zones comparable to those known to exist on properties in the immediate area.

As the surveys completed were successful in delineating potential areas of mineralization, this report relates information as to the results thereof and recommendations as to procedure for follow-up exploration on the claim group.

### PROPERTY

The property consists of one claim consisting of 16 units within the Similkameen Mining Division of N.T.S. map sheet 82E 1W. Particulars are as follows:

<u>Claim Name</u>	<u>Units</u>	<u>Record No.</u>	<u>Expiry</u>
SAM	16	3304	November 3, 1985 *

Pending approval of two years assessment work applied October 31, 1983.

### LOCATION AND ACCESS

The SAM claims are within 18 km north of Grand Forks within one km west of the Granby River and covering Pass Creek.

Access is via the paved North Fork highway north from Grand Forks which passes within 500 meters east of the property. The Miller Creek road located in the central part of the claim group and other secondary roads provide access to most of the property.

### WATER AND POWER

A year-round water supply would be available from the easterly flowing Pass Creek bisecting the property or from other minor water courses within the property boundaries.

A commercial power line is within one km of the property.

### PHYSIOGRAPHY AND CLIMATE

The property lies within the Christina Range of the Monashee Mountains characterized by moderate to steep forest sloped mountains to elevations of 1,750 meters.

Elevations on the property range up to 1,100 meters above sea level in the southwestern portion and from 610 meters near the mouth of Pass Creek.

Moderate stands of pine with fir, alder and poplar are predominant on the property with considerable recently logged off portions in the area.

The general climate is of long arid summers, with moderate winters which would provide a surface exploration season of up to 10 months of the year.

### HISTORY

The history of the area stems from placer deposits discovered along Rock Creek and Boundary Creek west of Grand Forks in the early 1850's.

Then in 1890 gold-copper deposits were discovered at Rosslund, 55 km east of Grand Forks stimulating prospecting throughout the area. The following year, large low-grade copper deposits were discovered near Phoenix, 13 km northeast of Grand Forks. The Phoenix district produced about 15 million tons of ore averaging slightly over 1.5% copper with significant gold and silver values. The Phoenix mine ceased operations in 1919, however was later reopened and in production to 1978.

In the immediate vicinity of the SAM mineral claim, exploration and development on the Pathfinder property (one km to the east) to 1920 resulted in "1,250 tons of ore being shipped assaying 0.43 oz. Au/ton and 3.9 oz. Ag/ton". On an adjacent property to the north, exploration has been intermittently carried out since 1901. In 1939 production from the Simpson Mine was of 364 tons of ore from which 2,592 ounces of gold and 90 ounces of silver were extracted. The Simpson is one of few zones known on the property. Diamond drilling during the 1970's on a mineral zone south of the Simpson Mine returned values ranging from "75 feet of .07 oz. Au/ton to 26 feet of .20 oz. Au/ton".

There is no known previous exploration on ground covered by the Sam mineral claim.

### GEOLOGY

The general geology of the area is of Nelson and Coryell and Valhalla Intrusives to the north in contact with sedimentary rocks and greenstones of Palaeozoic age to the south. Local to extensive areas of Intrusive also occur within the Palaeozoic rocks. Overlying are the Paleocene or Eocene Phoenix group of predominantly volcanics with minor tuffs and sediments and the Kettle River Formation of predominantly rhyolitic intrusives and flows in addition to local sediments.

The Sam claim is indicated to cover an irregular east-west contact between the Permian Anarchist Group and the Cenozoic Coryell Intrusions.

The Anarchist Group consists very largely of highly metamorphosed sedimentary rocks but includes also altered greenstones and possibly also altered intrusive rocks. The sedimentary members of the group are the altered equivalents of quartzite, slate and limestone, micaceous quartzites, mica schists, and crystalline limestone. The sheared greenstones possibly represent both intrusive and extrusive types.

A second group of rocks within the Anarchist series are light grey, granitic rocks, quite generally gneissic, the outcrops of which have in some cases a slightly rusty appearance. Quartz and microcline predominate with orthoclase and albitic-oligoclase generally present. These granitic rocks are intrusive into the schists of the Anarchist series.

Another group of rocks within the Anarchist series consists of sheared basic intrusives which can in local areas be represented as serpentine with considerable pyrite development in association with shear zones.

Feldspar porphyry "dykes" are also common. The rock is described as a "pale pink to flesh colored, fine grained rock with granitic texture. Quartz is fairly common and feldspar, shreds of biotite, hornblende, small individuals of apatite and some iron ore make up the balance of the rock."

The Coryell Intrusives are reddish to buff syenite that grade locally into granite or shankenite. Some of the smaller bodies are composed of augite monzonite or olivine syenite.

Mineralization on peripheral properties occurs as "veins" of massive pyrrhotite with accompanying pyrite and chalcopyrite in varying degrees and variable to no quartz.

The Simpson zone is described as "a quartz filled shear zone in the Anarchist greenstone skarn area which has been mineralized with pyrite pyrrhotite and chalcopyrite across a width of 100 feet or more". Former production from this area returned an average of 0.71 ounces of Au/ton and 0.25 ounces of silver per ton.

A second mineralized area is in part indicated by a gossan zone with "disseminated pyrite, pyrrhotite and chalcopyrite within quartz diorite over an area of 500 feet by 1,000 feet". The width of the zone is reported as approximately 30 feet.

On the Pathfinder there are reportedly four distinct veins "running parallel and from eight to 21 feet in width. There are good showings on all the veins".

## GEOCHEMICAL SURVEY

### 1. Survey Procedure

A grid system of north-south lines at 100 meter intervals was established covering a portion of the claim. A second localized grid system was established at the central-east part of the claim. A total of three line km were completed.

Samples were picked up at 25 meter intervals along the main grid lines. Samples were selected from the B horizon of the brown to brownish gray sandy-loam forest soil at a depth of commonly 30 centimeters. The soil was placed in a brown wet-strength paper bag with the grid co-ordinates marked thereon. A total of 119 samples were analysed.

### 2. Testing Procedure

All samples were tested by Acme Laboratories of Vancouver, B.C. The testing procedure is first to thoroughly dry the sample. Then .500 grams of material is digested with 3 ml. of 3:1:3 HCL to HNO<sub>3</sub> to H<sub>2</sub>O at 90 deg. more or less for one hour. The sample is diluted to 10 mls. with water. The samples were then analysed by atomic absorption for five metals - copper, zinc, silver, lead and arsenic.

### 3. Treatment of Data

In assessing the data results, the background, sub-anomalous and anomalous values were determined utilizing a pocket calculator with a mean and standard deviation read-out.

The sub-anomalous threshold value, which is a value not considered anomalous, but an indicator of potential mineralization, is taken as one standard deviation from the mean background value. The anomalous values or the prime indicator values are taken at two standard deviations from the mean background values.

The results of the data treatment were as follows:

	Cu	Ag	Pb	Zn	As
Mean background value	41	0.18	14	58	6.3
Sub-anomalous threshold value	73.8	0.28	21.6	76	9.0
Anomalous threshold value	106.6	0.38	29.2	94	11.7

All values are in parts per million.

## VLF-EM SURVEY

A Sabre Model 27 VLF-EM Receiver instrument manufactured by Sabre Electronics of Vancouver was utilized in the VLF-EM survey.

The VLF-EM Receiver measures the amount of distortion produced in a primary transmitted magnetic field - in this case Seattle at a frequency of 24.6 Khz - and a secondary magnetic field which may be induced by a conductive mass such as a sulphide body. The VLF-EM unit - due to its relatively high frequency - can detect low conductive zones such as fault or shear zones, carbonaceous sediments or lithological contacts.

The major disadvantage of the VLF method, however is that the high frequency results in a multitude of anomalies from unwanted sources such as swamp edges, creeks and topographical highs.

In processing the field results, the VLF-EM readings were Fraser Filtered. This method transforms the somewhat noisy, noncontourable dip-angle data into less noisy, contourable data. The positive values are only contoured with the conductive zones represented as peaks in positive values.

Two of the grid lines of the geochem survey were utilized for the VLF-EM and magnetometer survey for a total of one and one-half line km.

#### MAGNETOMETER SURVEY

The magnetometer survey was carried out utilizing a Model G-10 fluxgate magnetometer manufactured by Geotronics Instruments of Vancouver.

All rocks contain some magnetite from very small fractions of a percent up to several percent, and even several tens of percent in the case of magnetic iron deposits. The distribution of magnetite or certain characteristics of its magnetic properties may be used in exploration or mapped for other purposes.

The anomalies from naturally occurring rocks and minerals are due chiefly from the presence of the most common magnetic mineral magnetite or of related minerals including ilmenite and pyrrhotite (with sulfide mineralization).

Magnetic anomalies in the earth's magnetic field are caused by two different kinds of magnetism: induced and remanent. Induced magnetization refers to the action of the field on the material wherein the ambient field is enhanced and the material itself acts as a magnet.

The proportion of magnetism is related to the magnetic susceptibility of the material. Typically, more basic igneous rocks have a higher susceptibility than the acid igneous rocks; the latter in turn have a higher susceptibility than sedimentary rocks.



The remanent magnetization is often the predominant magnetization (relative to the induced magnetization) in many igneous rocks. The remanent mineralization is important in geological mapping.

Magnetic minerals may also occur in association with sulphide zones or may be decomposed through the action of dynamic or thermal metamorphism. Thus the survey results could indicate lithology structure, alteration patterns and most significantly, mineral zones in a favorable geological environment.

From the field data, an average determined value of 54,300 gammas was subtracted from each reading and the results were contoured on 500 gamma intervals.

#### RESULTS OF THE GEOCHEMICAL AND GEOPHYSICAL SURVEYS

The results of the surveys are shown on Figures 2 through 9 accompanying this report.

The significant areas for follow-up exploration would be the correlation anomalous areas indicated on the accompanying compilation map (Figure 9).

The more significant correlative zones are located at:

- A) The central southern portion of the main grid area where sub and anomalous zones of silver-zinc-lead values occur with extensions to the east and west of silver. A VLF-EM anomaly is indicated to project into the multielement anomaly from the west. A magnetometer low occurs peripheral to the north. This anomalous area is indicated to occur within the Anarchist Group of rocks.
- B) A general multielement correlative area extending along a single grid line. The sub and anomalous zones are transitional and overlapping. A predominant lead zone is enveloped locally by arsenic and overlapped locally by zinc, silver and lead zones. This area is indicated to occur within or near the contact of Valhalla Intrusive rocks.

Other single or local correlative areas could be significant and should be examined for the causitive source.

### CONCLUSIONS

The localized geophysical and geochemical surveys on the Sam claim were successful in delineating areas of potential economic mineralization. One of the two prime areas delineated occurs within the Anarchist Group of rocks where mineralization within a volcano-sedimentary association can occur. With the indicated associated VLF-EM anomaly, this model is suggested.

Area B could indicate a mineralized zone controlled by a north-south structure within or peripheral to a syenite or associated rocks of the Valhalla intrusives.

### RECOMMENDATIONS

It is recommended that detailed exploration be carried out in the two anomalous areas to localize prime target areas for testing by diamond drilling. The minor localized sub and anomalous areas should also be examined to determine their causitive source.

Recce surveys over the balance of the Sam claim should also be initiated.

Respectfully submitted,  
  
 Laurence Sookchoff, P. Eng.  
 Consulting Geologist

December 30, 1983  
 Vancouver, B.C.

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CERTIFICATE

I, Laurence Sookochoff, of the City of Vancouver, in the Province of British Columbia, do hereby certify:

That I am a Consulting Geologist with offices at 311-409 Granville Street, Vancouver, B.C. V6C 1T2

I further certify that:

1. I am a graduate of the University of British Columbia (1966) and hold a B.Sc. degree in Geology.
2. I have been practising my profession for the past seventeen years.
3. I am registered with the Association of Professional Engineers of British Columbia.
4. The information for the accompanying report is based on pertinent material as cited under references, and from the supervision of the geophysical and geochemical surveys reported on herein.
5. I have no direct, indirect or contingent interest in the property described herein, nor do I expect to receive any.



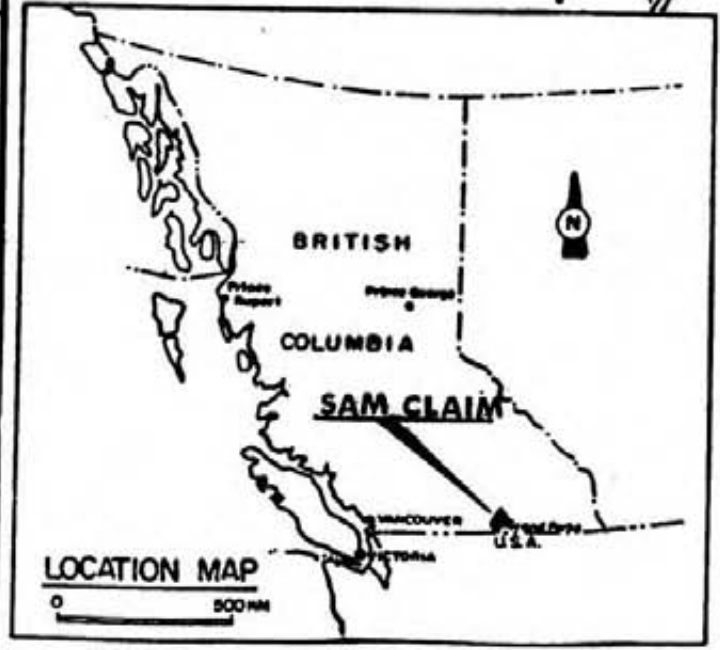
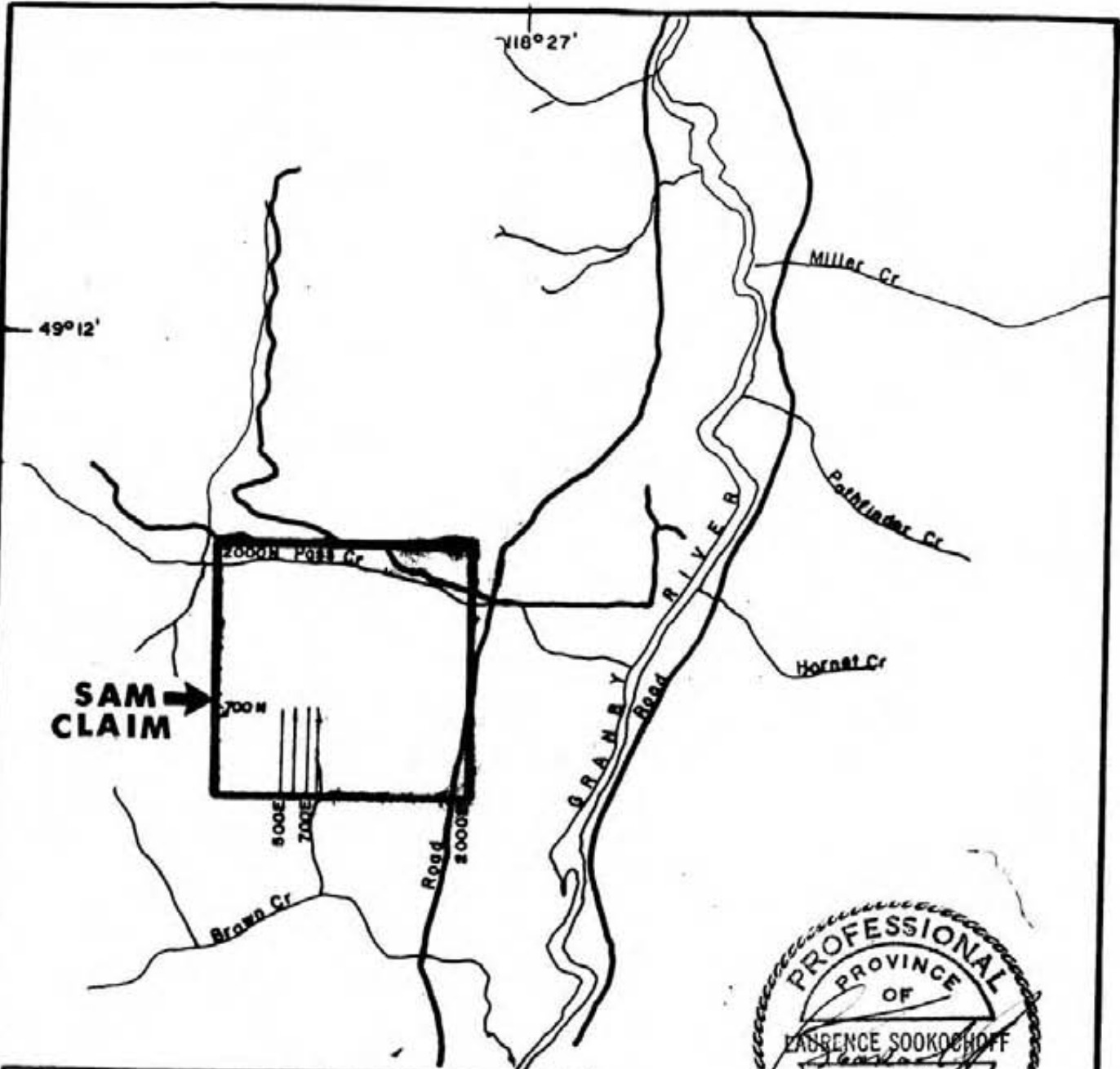
Laurence Sookochoff, P.Eng.  
Consulting Geologist

December 30, 1983  
Vancouver, B.C.

SAM MINERAL CLAIM  
 1983 ASSESSMENT REPORT  
 GEOPHYSICAL AND GEOCHEMICAL SURVEYS  
AFFIDAVIT OF EXPENSES

The geophysical and geochemical surveys were carried out on the SAM mineral claims, Greenwood M.D., B.C. from October 1., 1983 to December 30, 1983 to the value of the following.

Fieldwork 2 men October 26-28, 1983	
6 man days @ \$150	\$ 900.00
Vehicle rental, 3 days @ \$65 plus gas, mileage	290.00
Assaying 120 samples @ \$6.50	780.00
Field supplies	150.00
Room and Board 6 days @ \$40/day/man	240.00
Data compilation and draughting	340.00
Engineering, supervision and reports	<u>500.00</u>
	\$ 3,200.00
	=====



**FIGURE 1**

**SOOKCHOFF CONSULTANTS INC.**

**SAM CLAIM**

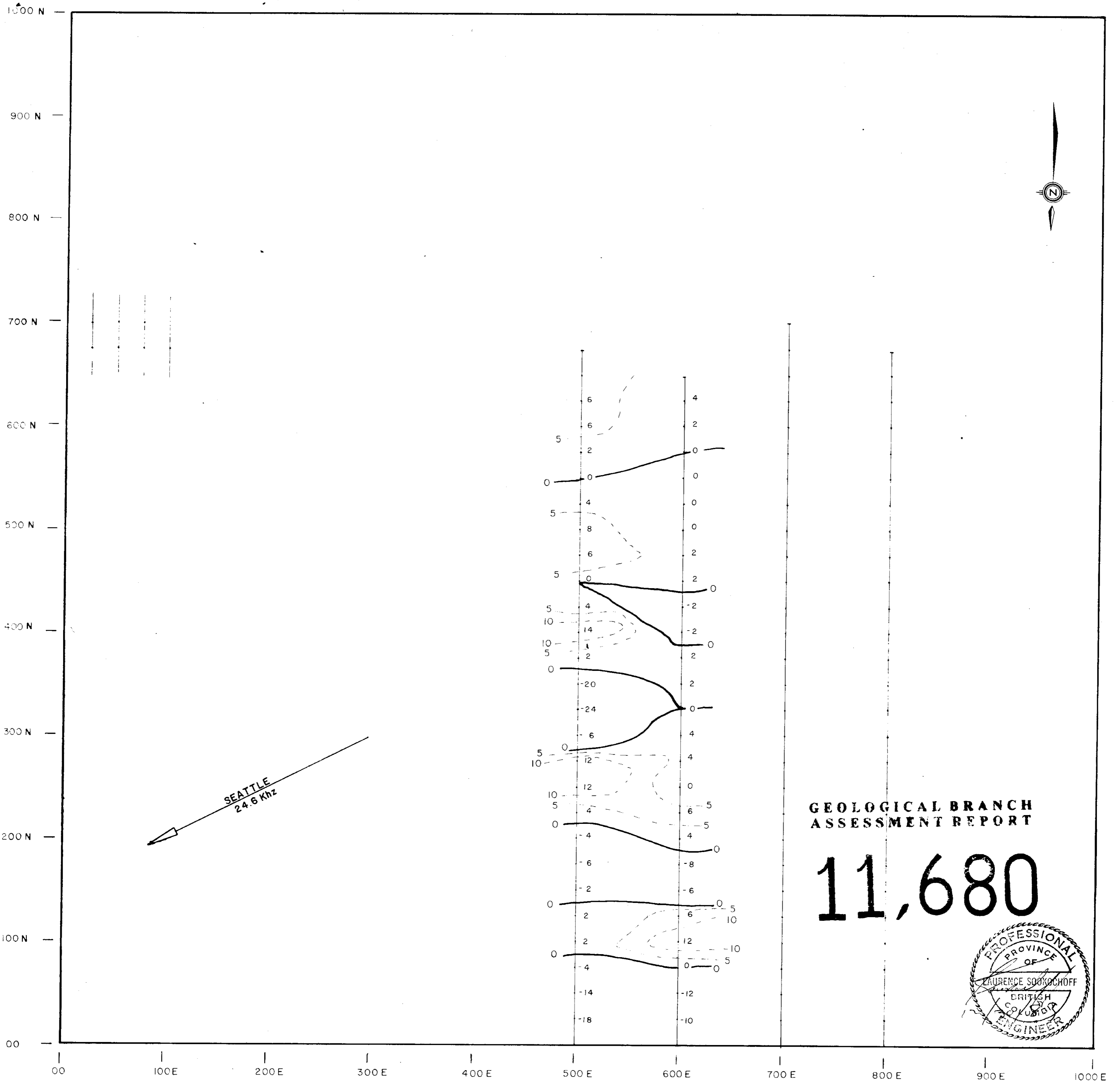
**LOCATION & CLAIM MAP**

**N.T.S. 82E 1W GREENWOOD M.D.**

0 1 2 3 km

**Scale 1:50000**

**DEC. 1983**



LEGEND  
 . STATION  
 CONTOUR INTERVAL +5°

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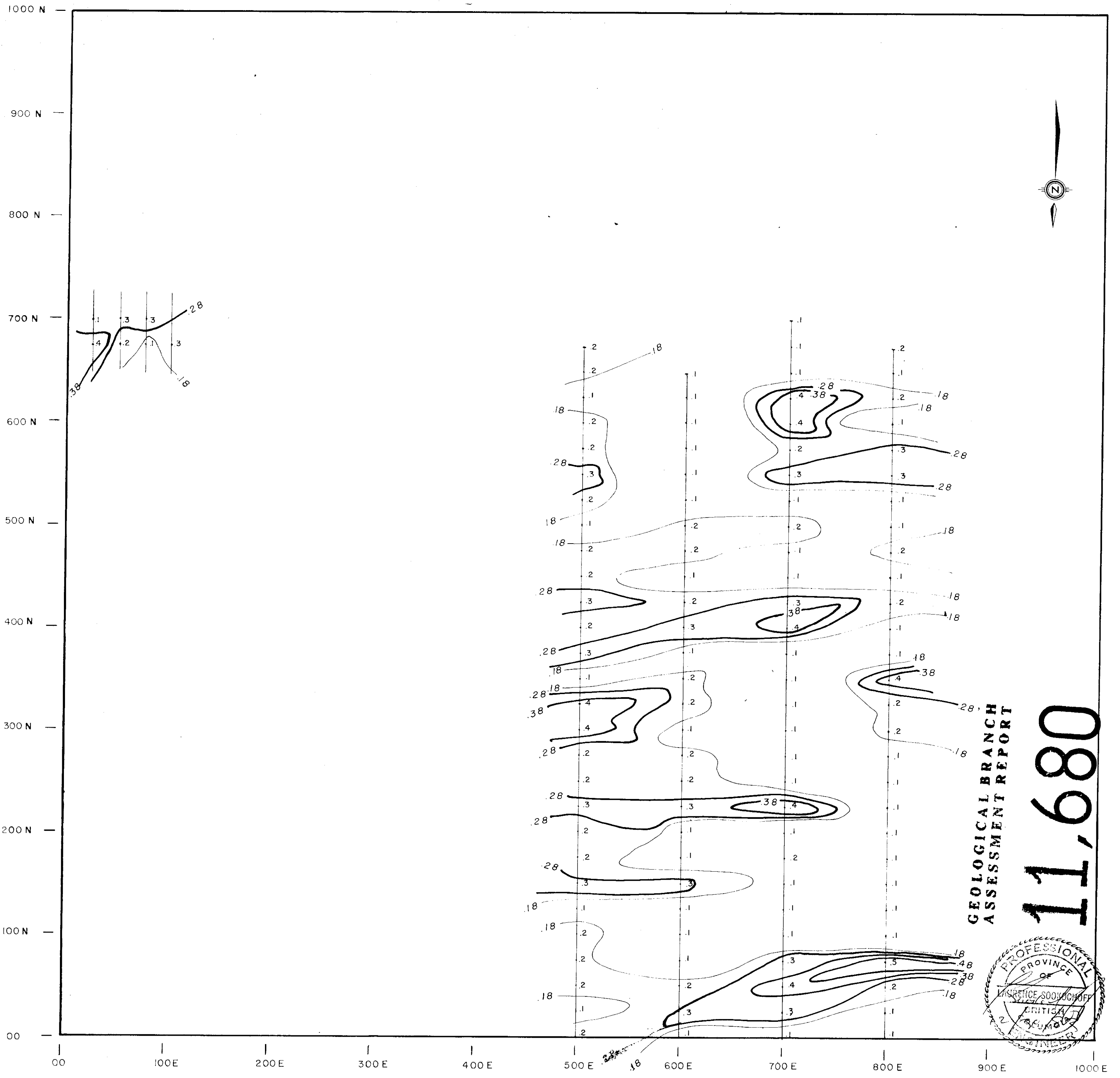
FIGURE 2

SOOKOCHOFF CONSULTANTS INC.	
SAM CLAIM	
N.T.S. 82E/IE	Greenwood M.D., B.C.
FRASER FILTERED VLF-EM SURVEY	
Scale 1:2500	December 1983









LEGEND

- STATION
- .18 PPM BACKGROUND
- .28 " SUB ANOMALOUS
- .38 " ANOMALOUS

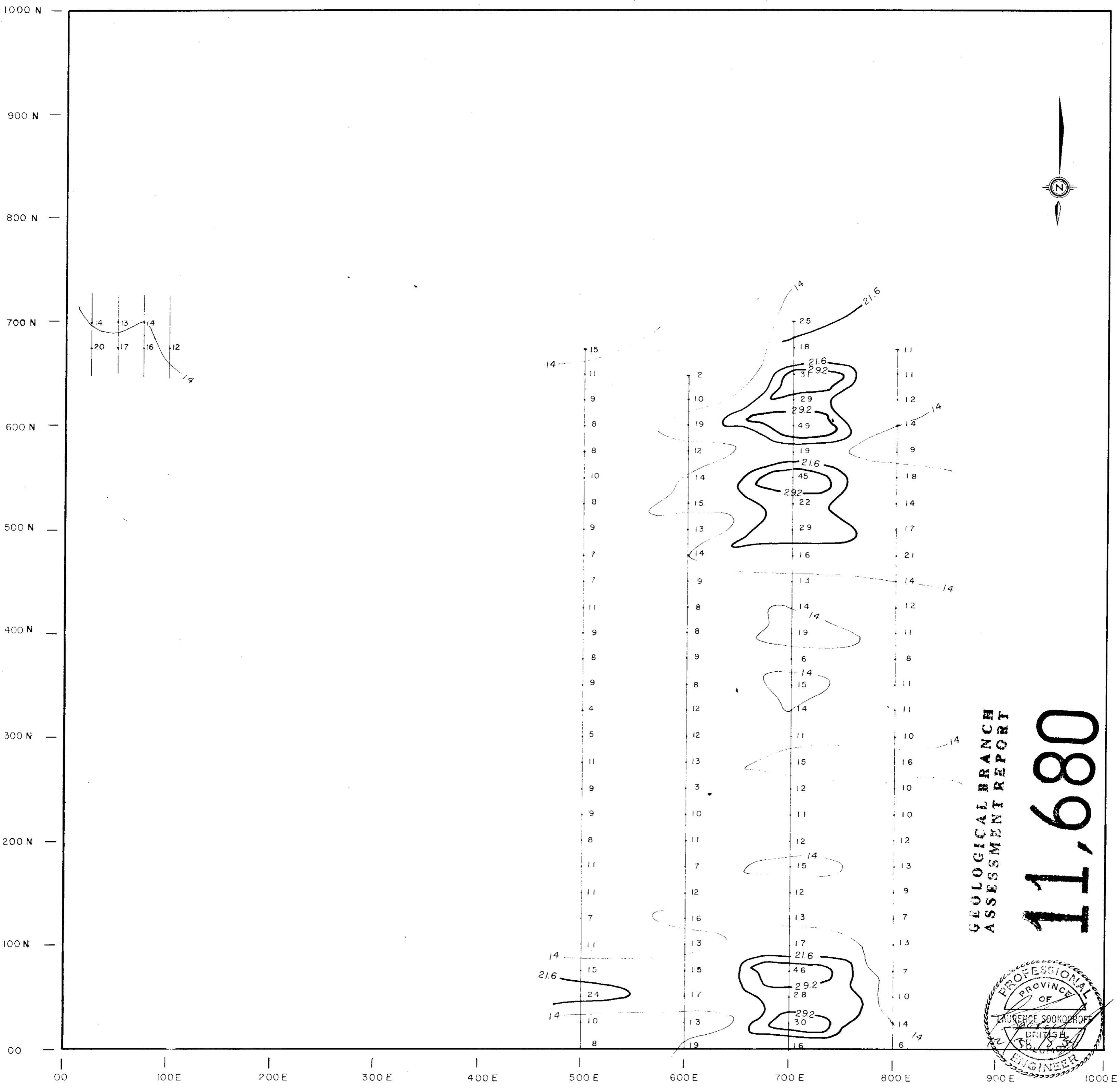
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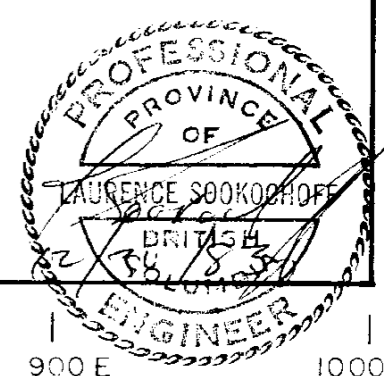
FIGURE 5

SOOKOCHOFF CONSULTANTS INC.	
SAM CLAIM	
N.T.S. 82E/1E	Greenwood M.D., B.C.
<b>Ag GEOCHEMISTRY</b>	
Scale 1:2500	December 1983



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LEGEND  
 . STATION  
 14 PPM BACKGROUND  
 21.6 " SUB ANOMALOUS  
 29.2 " ANOMALOUS

FIGURE 6

SOOKCHOFF CONSULTANTS INC.

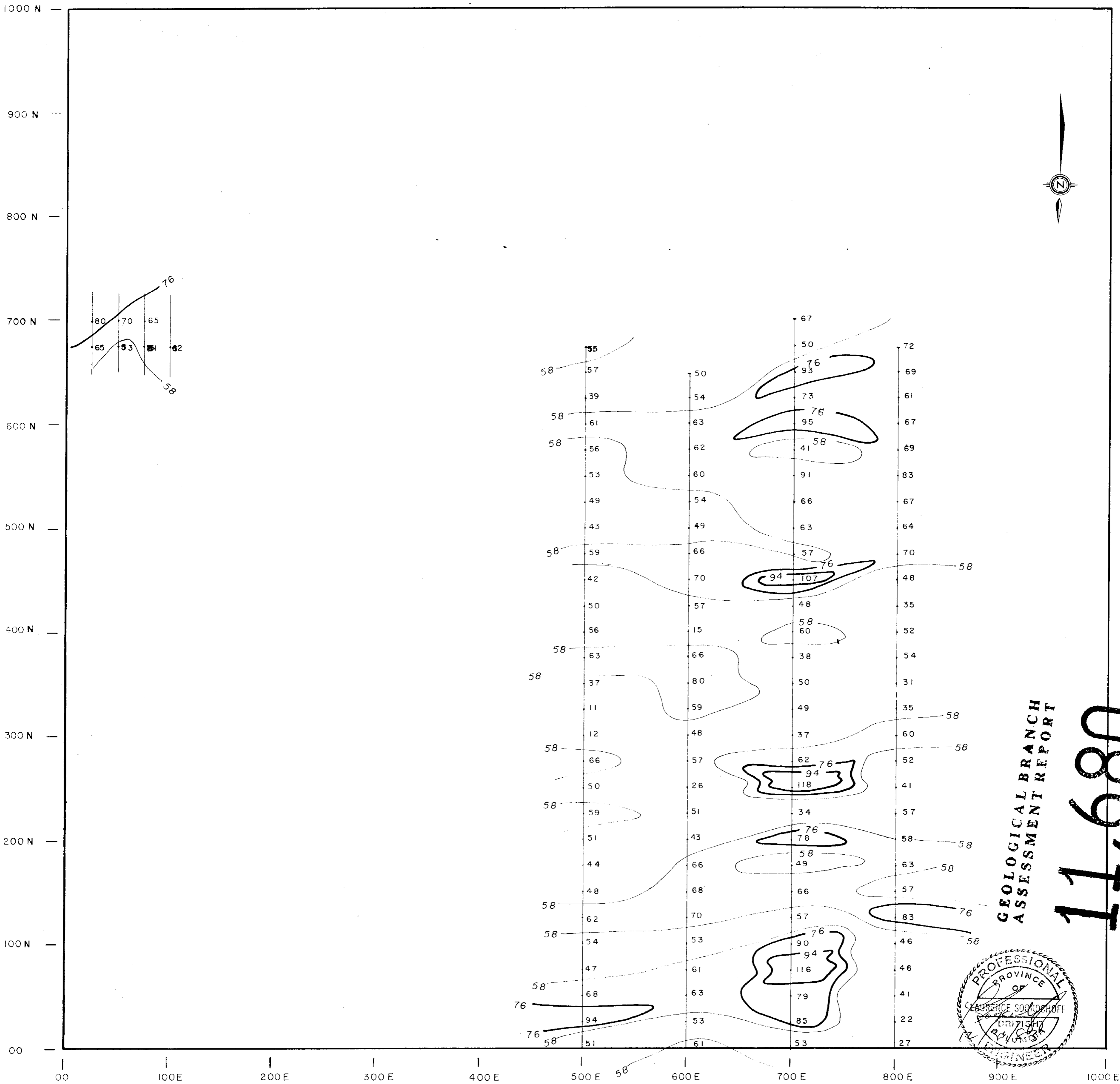
SAM CLAIM

N.T.S. 82E/IE Greenwood M.D., B.C.

**Pb GEOCHEMISTRY**

50 0 50 100 m

Scale 1:2500 December 1983



LEGEND  
 . STATION  
 58 PPM BACKGROUND  
 76 " SUB ANOMALOUS  
 94 " ANOMALOUS

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FIGURE 7

SOOKCHOFF CONSULTANTS INC.

SAM CLAIM

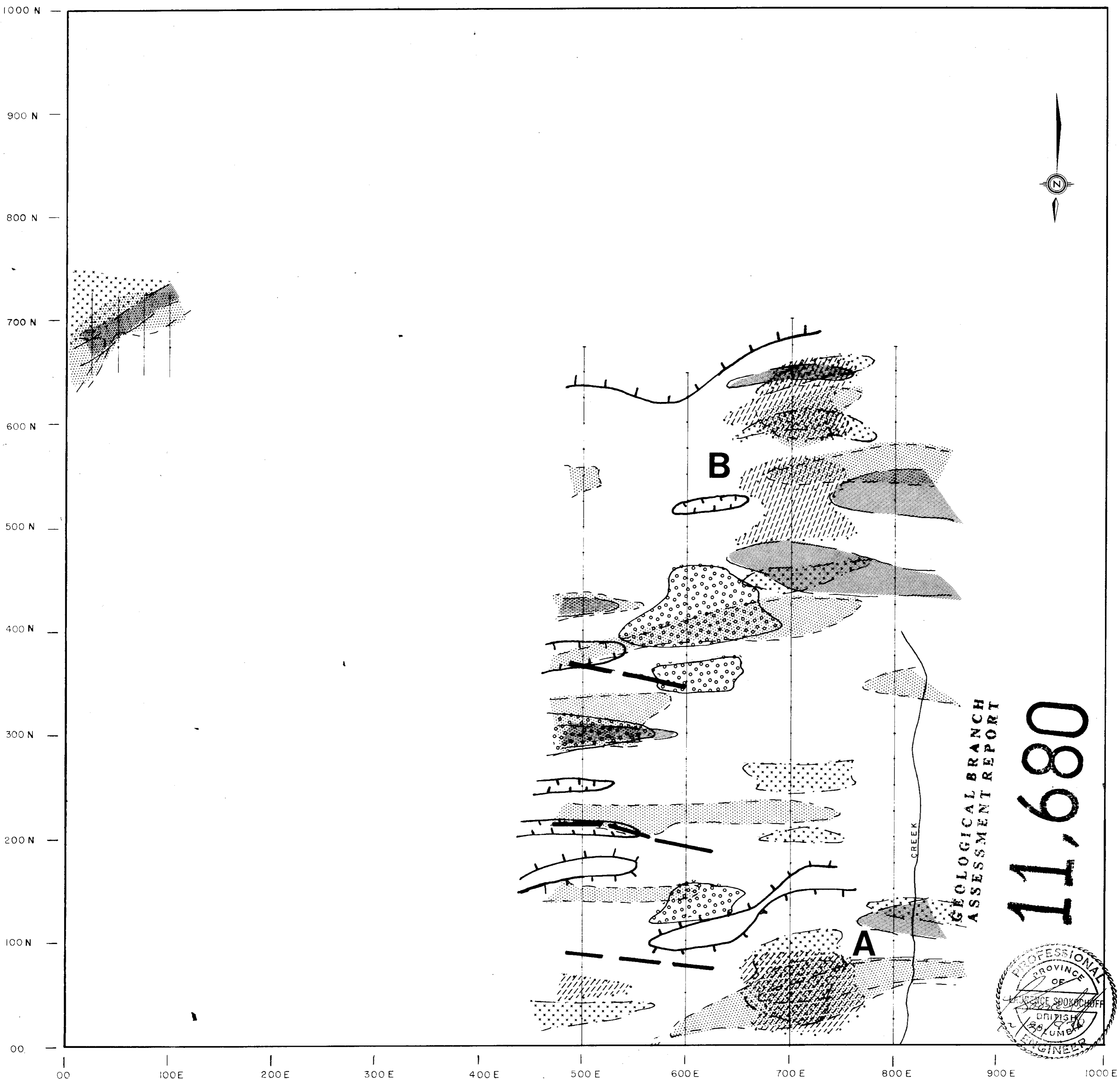
N.T.S. 82E/IE Greenwood M.D., B.C.

**Zn GEOCHEMISTRY**

50 0 50 100 m

Scale 1:2500 December 1983





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LEGEND

- |   |              |  |                     |
|---|--------------|--|---------------------|
| • | STATION      |  |                     |
|   | Zn Anomalous |  | VLF EM-ANOMALY AXIS |
|   | Pb "         |  | MAGNETOMETER HIGH   |
|   | Cu "         |  | MAGNETOMETER LOW    |
|   | As "         |  |                     |
|   | Ag "         |  |                     |

TO ACCOMPANY GEOCHEMICAL & GEOPHYSICAL REPORT BY L. SOOKOCHOFF P.ENG. DATED DEC. 30, 1983

FIGURE 9

SOOKOCHOFF CONSULTANTS INC.

SAM CLAIM

N.T.S. 82E/IE Greenwood M.D., B.C.

**COMPILATION MAP**

50 0 50 100 m

Scale 1:2500 December 1983