



41P12SW0112 63.1903 CHESTER

010

GEOPHYSICAL REPORT  
ON PROPERTY OF  
BEAVERBRIDGE MINES LIMITED

CHESTER TOWNSHIP  
SUDBURY MINING DIVISION  
PROVINCE OF ONTARIO

Introduction

From March 1st to March 9th, 1966, Sulmac Exploration Services Limited carried out a combined electromagnetic and ground magnetometer survey over the water-covered parts of a group of claims held by Beaverbridge Mines Ltd. The land portion of these claims, which is located in Chester Twp., Sudbury Mining Division, Ontario, was covered by a similar electromagnetic and ground magnetometer survey in November 1965.

The survey was run over a north-south grid, the picket lines being turned off every 200 feet from an east-west baseline and chained at 100 foot intervals.

Readings of dip angle were taken every 50 feet using a vertical loop electromagnetic unit, while in the case of the magnetometer survey readings were taken every 100 feet using a Sharpe Fluxgate magnetometer.

The results of the combined surveys and the interpretation are shown on the accompanying map, the results of the magnetometer survey being presented in contoured form. The base map is at a scale of 1" to 200 feet.

Purpose

The purpose of the survey was to try and detect any lenses or bands of sulphides that could be associated with the favourable geological environment as predicted by a geological assessment. In addition, a magnetometer survey was carried out at the same time to examine the precise correlation, if any, of E.M. conductors and magnetic rock units and to see if there is any structure that could be favourably associated with mineralization.

Property and Location

The property is located in Chester Township, Sudbury Mining Division, Ontario.

The survey was carried out over part of the property which consisted of the following mineral claims:

S 12032/ to 27 inclusive

S 125063 to 65 inclusive

The claims are situated on the northern side of Three Duck Lake in Chester Township. Access is by road and bush road from the town of Gogama which is about 12 miles to the northeast.

The property is relatively flat and covered mostly with cedar, spruce, birch, and poplar growth. Outcrop occurrence is limited.

#### Survey Specifications

The basic principle of any electromagnetic survey is that when an electrical conductor is subjected to a primary alternating field, a secondary current is induced in the conductor. This in turn produces a secondary alternating field, which together with the primary field, causes a resultant field of different amplitude and phase from the primary field. Thus, a conductor would be indicated by such distortions of the primary field.

This electromagnetic survey was carried out using a vertical loop electromagnetic prospecting unit. The primary field was set up by suspending a large triangular transmitting coil vertically from a mast and orienting so that it is pointed at the receiver coil position. The receiver coil is then tilted

about a horizontal axis until a minimum signal is obtained and the degree and direction of tilt or "dip angle" is measured by means of an attached clinometer. If there is no induced secondary field present, a minimum signal will be obtained when the receiver coil is in the horizontal position, so that any tilt or dip is indicative of a secondary field.

To complete this survey, the transmitter coil was set up on one line, and stations were read every 50 feet with the receiver coil 700 feet on either side of the transmitter on adjacent lines 400 to 1200 feet away. When these stations did not exist as picket points, they were located by the method of "pace and compass".

The magnetometer survey was done using a Sharpe MF-1 Fluxgate Magnetometer. This measures variations in the vertical component of the earth's magnetic field to an accuracy of  $\pm 10$  gammas. Corrections for diurnal variation were made by tying-in to previously established base stations at intervals not exceeding two hours. Readings with this instrument were taken every 100 feet along the picket lines.

In all, 334 readings or 3.8 miles of electromagnetic work and 139 readings or 2.6 miles of magnetometer work was done.

### General Geology\*

The general area of the property is underlain by a large granitic batholith of the Algonian period. This was itself intruded by acid and basic dykes at the end of the Algonian, and by diabase dykes of the Matachewan period.

Gold is known to occur in narrow quartz veins accompanying well defined fractures or "breaks" in the intrusive rock, or in quartz veins along the contact between the acid intrusive and a basic dyke commonly lamprophyre.

\*Geology of the Three Duck Lakes Area by H. C. Laird, Ontario Department of Mines, Volume XLI, Part III, 1932.

### Discussion of Results

The results of the magnetometer survey tied in very well to those of the previous survey and showed the area surveyed to exhibit low magnetic relief.

The vertical loop E.M. survey indicated the presence of two possible weak conductors on the reconnaissance phase of the survey. However, as the detail phase failed to detect their existence, it is considered that the E.M. results point to an absence of massive sulphides in economically significant amounts in the area surveyed down to a depth of at least 300 feet.

Summary and Conclusions

A ground magnetometer and vertical loop E.M. survey was carried out over the water-covered portion of a group of claims held by Beaverbridge Mines Ltd. and located in Chester Twp., Sudbury Mining Division, Ontario.

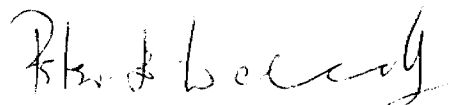
The results of the magnetometer survey tied in very well with those of the survey of November 1965 and showed the area surveyed to exhibit low magnetic relief.

The vertical loop E.M. survey indicated the presence of two possible weak conductors, which were not detected from detail set-ups. From this, it is considered unlikely that any massive sulphides are present in economically significant amounts down to a depth of 300 feet on the area surveyed. However, as this is primarily a gold property, lack of associated sulphides should not discourage further work.

It is, therefore, suggested that any additional work on this property be primarily geological in an endeavour to further explore the possibilities of mineralization.

Respectfully submitted,

SULMAC EXPLORATION SERVICES LIMITED



Peter E. Walcott, B.A.Sc., P.Eng.  
Geophysicist.

March 15, 1966



41P12SW0112 63.1903 CHESTER

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GEOPHYSICAL REPORT  
ON PROPERTY OF  
BEAVERBRIDGE MINES LTD.

CHESTER TOWNSHIP  
SUDBURY MINING DIVISION  
PROVINCE OF ONTARIO

Introduction

From November 19th to 27th, 1965, Sulmac Exploration Services Limited carried out a combined electromagnetic and ground magnetometer survey over a group of claims held by Beaverbridge Mines Ltd. located in Chester Township, Sudbury Mining Division, Ontario.

The survey was run over a north-south grid, the picket lines being turned off every 200 feet from an east-west baseline and chained at 100 foot intervals.

Readings of dip angle were taken every 50 feet using a vertical loop electromagnetic unit, while in the case of the magnetometer survey readings were taken every 100 feet using a Sharpe Fluxgate magnetometer.

The results of the combined surveys and the interpretation are shown on the accompanying map, the results of the

magnetometer survey being presented in contoured form. The base map is at a scale of 1" to 200 feet.

Purpose

The purpose of the survey was to try and detect any lenses or bands of sulphides that could be associated with the favourable geological environment as predicted by a geological assessment. In addition, a magnetometer survey was carried out at the same time to examine the precise correlation, if any, of E.M. conductors and magnetic rock units and to see if there is any structure that could be favourably associated with mineralization.

Property and Location

The property is located in Chester Township, Sudbury Mining Division, Ontario.

The survey was carried out over the following mineral claims:

S 120327 to 27 inclusive

S 125063 to 65 inclusive



The claims are situated on the northern side of Three Duck Lake in Chester Township. Access is by road and bush road from the town of Gogama which is about 12 miles to the northeast.

The property is relatively flat and covered mostly with cedar, spruce, birch, and poplar growth. Outcrop occurrence is limited.

#### Survey Specifications

The basic principle of any electromagnetic survey is that when an electrical conductor is subjected to a primary alternating field, a secondary current is induced in the conductor. This in turn produces a secondary alternating field, which together with the primary field, causes a resultant field of different amplitude and phase from the primary field. Thus, a conductor would be indicated by such distortions of the primary field.

This electromagnetic survey was carried out using a vertical loop electromagnetic prospecting unit. The primary field was set up by suspending a large triangular transmitting coil vertically from a mast and orienting so that it is pointed at the receiver coil position. The receiver coil is then tilted about a horizontal axis until a minimum signal is obtained and the degree and direction of tilt or "dip angle" is measured by

means of an attached clinometer. If there is no induced secondary field present, a minimum signal will be obtained when the receiver coil is in the horizontal position, so that any tilt or dip is indicative of a secondary field.

To complete this survey, the transmitter coil was set up on one line, and stations were read every 50 feet with the receiver coil 700 feet on either side of the transmitter on adjacent lines 400 to 1200 feet away. When these stations did not exist as picket points, they were located by the method of "pace and compass".

The magnetometer survey was done using a Sharpe MF-1 Fluxgate Magnetometer. This measures variations in the vertical component of the earth's magnetic field to an accuracy of  $\pm 10$  gammas. Corrections for diurnal variation were made by tying-in to previously established base stations at intervals not exceeding two hours. Readings with this instrument were taken every 100 feet along the picket lines.

In all, 1016 readings or 9.6 miles of electromagnetic work and 481 or 10.6 miles of magnetometer work was done.

### General Geology\*

The general area of the property is underlain by a large granitic batholith of the Algomian period. This was itself intruded by acid and basic dykes at the end of the Algomian, and by diabase dykes of the Matachewan period.

Gold is known to occur in narrow quartz veins accompanying well defined fractures or "breaks" in the intrusive rock, or in quartz veins along the contact between the acid intrusive and a basic dyke commonly lamprophyre.

\*Geology of the Three Duck Lakes Area by H. C. Laird, Ontario Department of Mines, Volume XLI, Part III, 1932.

### Discussion of Results

The results of the magnetometer survey show the property to exhibit moderate magnetic relief with a number of isolated magnetic highs.

These highs are interpreted as being caused by basic intrusions, but they could also be caused by basic phases in the batholithic intrusive that is assumed to underlie the property.

The vertical loop E.M. survey indicated no conductors on the part of the property surveyed. It is considered that the

E.M. results point to an absence of massive sulphides in economically significant amounts in the area surveyed down to a depth of at least 300 feet.

#### Summary & Conclusions

A ground magnetometer and vertical loop E.M. survey was carried out over claims held by Beaverbridge Mines Ltd. and located in Chester Township, Sudbury Mining Division, Ontario.

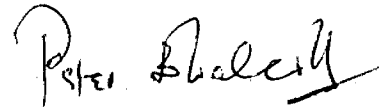
The magnetometer survey showed the property to be of moderate magnetic relief with several isolated magnetic highs. These highs are probably attributable to basic intrusions, but could also be caused by basic phases in the underlying granitic batholith.

The vertical loop E.M. survey did not indicate the presence of any conductors. From this it is considered unlikely that any massive sulphides are present in economically significant amounts down to a depth of 300 feet on the area surveyed. However, as this is primarily a gold property, lack of associated sulphides should not discourage further work.

It is, therefore, suggested that the electromagnetic and magnetic surveys be completed on the water covered parts of the property in the winter months, and be followed by a detailed geological examination of the magnetic anomalies.

Respectfully submitted,

SULMAC EXPLORATION SERVICES LIMITED



Peter E. Walcott, B.A.Sc., P.Eng.  
Geophysicist.

December 16, 1965



41P12SW0112 63.1903 CHESTER

030

## GEOLOGY

Beaverbridge Mines Limited

Chester Township Property

by

W. Walker, F.G.A.C.

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Summary

Your company owns ten mining claims, totalling about 240 acres, in the northwest part of Chester Township.

The preliminary studies of the property as a whole, i. e. geological and geophysical surveys, have now been completed.

The property lies within a long belt of Keewatin volcanics and Temiskaming sediments which is flanked by Algoman batholithic granite. Published reports indicate that the property is underlaid by part of a younger Algoman granite, in which remnants of basic volcanics are noted in nearby areas.

The recent studies suggest a change in emphasis: the volcanics, a large part of which are acid, prevail over intrusive material. It may be impossible to show decisively which of the acid rocks, all fine-grained, are volcanic and which are intrusive. The matter is of some importance because ore shoots may be expected to extend deeper in a predominantly volcanic sequence than they would in roof pendants.

Two environments of mineral occurrences have become apparent: one, the flanks of the magnetic highs, that is in the contact areas of acid and basic rocks, where three of the known mineral occurrences have been found; the other, in association with the major NNW fault zone which is followed by Three Duck Lakes and, on the Beaverbridge

property, by Weeduck Lake. The recent electromagnetic survey on the lake indicates conductors associated with this zone, on which veins are known southwest of the lake and on the adjacent property to the south.

On the Beaverbridge Lake vein, near the south shore of that lake, a channel sample over a width of five feet gave copper, gold, and silver values representing a gross of about \$8.50 per ton at present prices.

A programme of geochemical soil sampling is laid out on the flanks of the magnetic highs, from which further stripping of overburden with a bulldozer will be controlled.

Drilling requirements for the lake anomalies are now known. They will be allotted appropriate priorities when the drill requirements resulting from the geochemical work and stripping are also made known. It is evident that total requirements will be considerably in excess of the previously considered minimum 1000 feet.

### Introduction

#### Purpose

Preliminary studies of the property as a whole, i.e. geological and geophysical surveys, have now been completed, and the purpose of the present report is to review the data now available and to make recommendations for the next steps in exploring the property.

#### The property

Ten unpatented mining claims numbered S120321 to S120327 and S125063 to S125065, totalling about 240 acres, comprise the property, which falls in the Sudbury Mining Division.

### Location and Access

The property lies on Weeduck Lake in the northwest of Chester Township, 86 miles by air northwest of Sudbury, 70 air miles south-southwest of Timmins, and 75 miles by road west of Gowganda. From Gowganda one travels by Hwy 560 to mileage 26 from Gogama, thence 3 miles west on the government road, rehabilitated by your company, to the property.

Economic Facilities and the published descriptions of previous work and the general and economic geology of the area were noted in my report to the company of June 7th, 1965. Recent work suggests that earlier concepts may require modification, as described below.

### Acknowledgements

Thanks are expressed to Mr. M. Manderson and Mr. B. M. Young, neighbouring property owners, for their cooperation.

### Responsibilities

Milmoimt Explorations Limited undertook the road renewal, camp establishment, in cooperation with M. Hibbard, the line-cutting, and the stripping, trenching, and sampling.

Mr. Peter E. Walcott of Sulmac Exploration Services Limited made the magnetic and electromagnetic surveys and subsequent reports.

The writer mapped the area geologically and is responsible for the direction of the programme. In reviewing the geophysical data he has called upon the experience of Mr. W. R. L. Torrance.

### General Geology

Basic volcanics ("greenstones") in the Three Duck Lakes area had previously been considered as roof pendants - remnants of the old volcanics which were intruded by a younger Algonian granite. The



recent geophysical and geological surveys of the Beaverbridge property may be considered as a completed phase of extensive similar studies in the area currently under way, and ideas will no doubt be modified further as work progresses. Nevertheless, the fine-grained nature of the acid rocks, the presence of tuffs, and the linearity of the magnetic data lead to the supposition that the greater part of the acid rocks of the "younger granite" are in fact volcanic (or at least, near-surface intrusives). One might expect minor intrusives such as dykes, sills and small plugs to have accompanied the vulcanism: and the magnetic highs south of Beaverbridge Lake suggest minor plugs rather than flows. The writer has not seen as much of other parts of the belt as did Laird when he was writing his report to the Ontario Department of Mines, but the impression is of volcanics in predominance over intrusives. During his work on the Gomak property to the southeast, Reading gained a similar impression.

The oldest rocks on the property, if one considers the belt as synclinal, are probably the well-bedded siltstones which extend across the northern claims. On the remainder of the property, dacites, the fine-grained (volcanic) equivalents of granodiorites, prevail over microgranite and rhyolite. The quartz is commonly blue or light blue, and in places where the crystals are larger than those of other minerals, the rock may properly be called a dacitic quartz porphyry. No andesite outcrops were seen on the property but the writer has mapped them nearby, and it is reasonable to suppose that the high magnetic readings were over andesite. In two places Matachewan diabase was observed, and both may be boulders. That in the yard behind the camp has no magnetic representation,

whereas that 400' to the west, on the lakeshore is recorded as a magnetic high, perhaps because it is at a survey station.

Many faults some of which form fault zones are evident on the aerial photographs of the property and a comparison with the magnetic data indicates their disruptive affect. Weeduck Lake has been eroded out of the north end of a NNW fault zone against which the andesites in the southwest of the property terminate. A major ESE fault crosses the property just north of the camp. The numerous ENE faults are part of a set which offsets basic rocks indicated by a recent survey on the adjacent property to the east.

#### Economic Geology

The Three Duck Lakes area is generally considered as a gold camp, but nevertheless copper is commonly prominent and in places dominant in the association, and silver is also present.

The contacts between acid and basic units have provided a favourable environment for mineral deposition which is enhanced where nearby major faults have disrupted and shattered the formations to provide channelways for mineralisation.

These three factors favouring ore deposition are combined on the Beaverbridge property: copper-gold-silver mineralisation of reasonable grade and width (5ft at \$8.50 per ton at present prices) has been demonstrated following recent stripping on the Beaverbridge Lake vein (south of the lake); This and a secondary copper and limonite capping occurrence in the southwest of the property are on the flanks of magnetic highs, i.e. near the contacts between acid and basic units (rhyolites and andesites?); and the property straddles the major NNW fault zone followed by the Three Duck Lakes, along

which mineralisation is known at the south boundary of the property and at the "spectacular discovery of native gold" described by Laird, a quarter mile to the south.

Within the now magnetic acid rocks, the electromagnetic survey on Weeduck Lake indicated several small conductors such as one looks for in the search for auriferous pyrite veins. Mr. Walcott has noted two places, in the northwest and northeast of the lake (A & B). In addition on the east side of the NW narrows (C) is a series of fluctuations, and at D, south of the east headland of the lake, is a crossover. All are within the main NNW fault zone, and the south end of B is also on one of the ENE faults which offsets the formations on the property to the east.

A small increase in conductivity is common at the more magnetic formations.

#### Conclusions and Recommendations

Mineralisation, favourable rock type, and structure, the three prime requisites of any exploration programme, coincide on the property. Areas for concentrated work have been delimited.

On land, two areas, 1 and 2 are outlined for soil sampling. Samples should be taken on the existing lines (at 200ft spacing) at 25ft intervals. In area 1, Beaverbridge Lake, approximately 200 samples will be required; in area 2, W of Weeduck Lake approximately 100 samples will be required; and in area 3, the headland 6 samples. As the overburden is commonly shallow, stripping with a bulldozer may be anticipated to follow up the geochemical data.

Drilling is required to test the Beaverbridge Lake vein at depth, and to test the conductors under the lake. As the lake

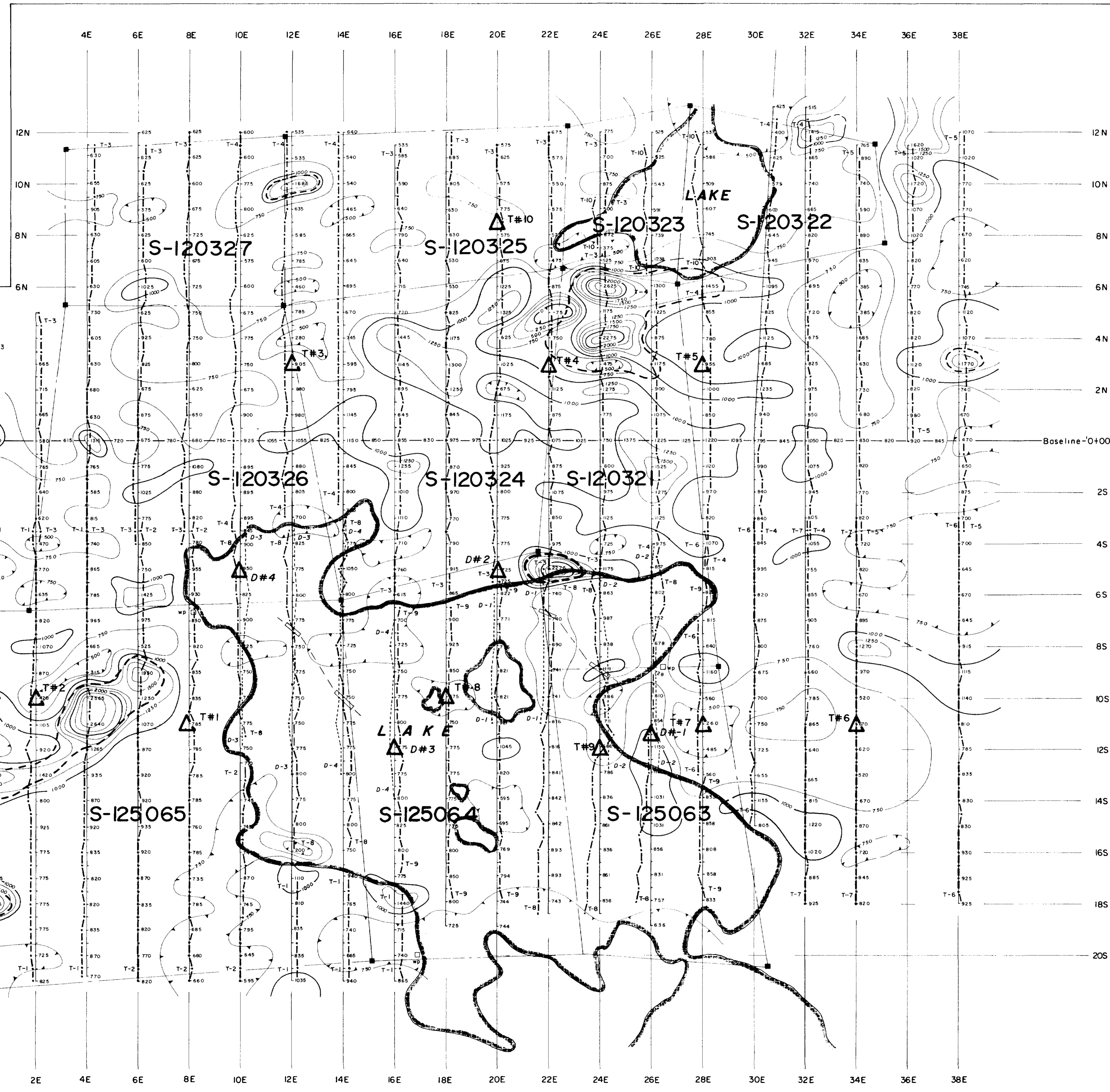
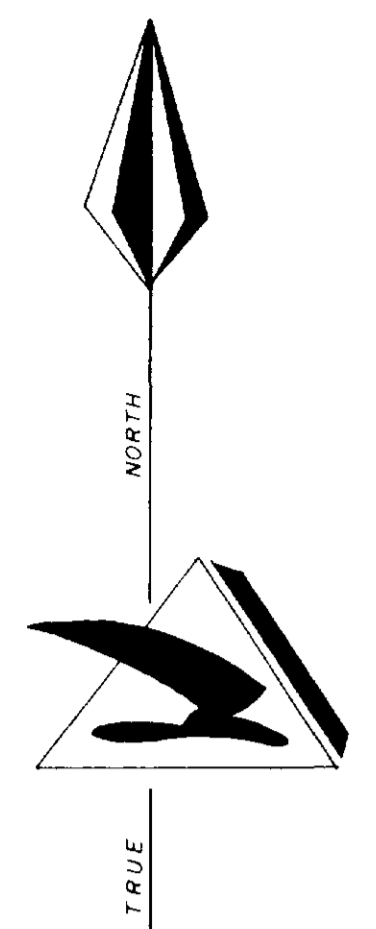
conductors can be best drilled from land, precise data for set-ups may conveniently await the results of the soil sampling, at which time drill priorities will be given.

Respectfully submitted,

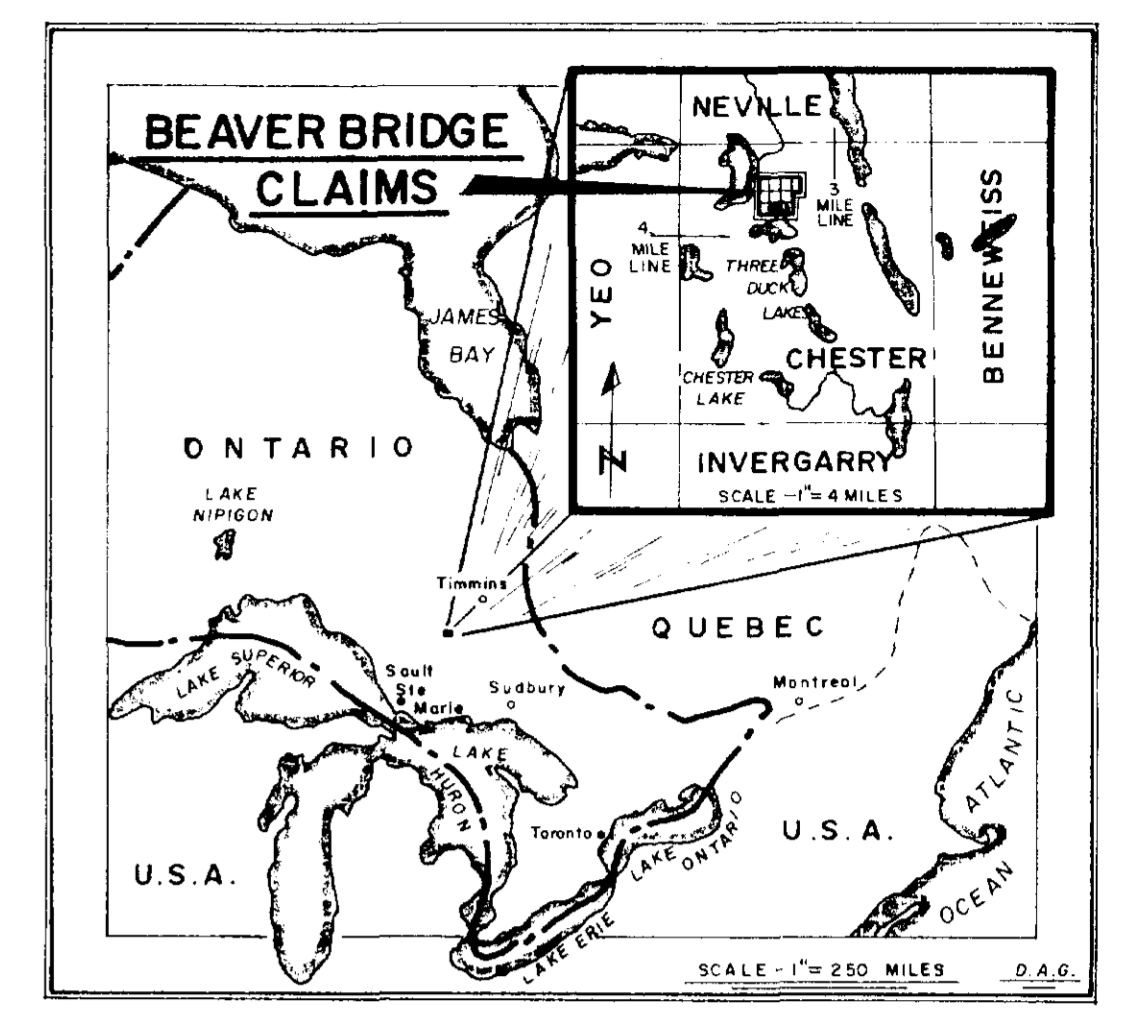
CHEW-WALKER ASSOCIATES



W. Walker, F.G.A.C.



**LOCATION MAP**



**LEGEND**

**ELECTROMAGNETIC SURVEY**

- RECONNAISSANCE Profile of Electromagnetic Readings (a)
- DETAIL Dip Angle -1±20°
- T#2 Electromagnetic Transmitter Location
- D-2 Transmitter Location Reference
- Possible weak Conductor

**MAGNETOMETER SURVEY**

- Contour Interval 250 Gammas
- 1000 Gamma Contour
- 250 Gamma Contour
- Magnetic Depression
- Outline of Magnetic High

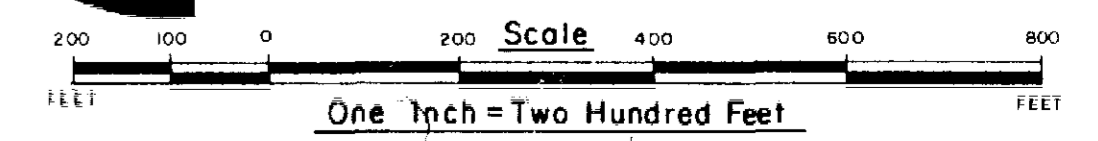
**MAP SYMBOLS**

- Claim Post and Claim Boundary
- Lake Outline

**BEAVER BRIDGE MINES LTD.**  
 CHESTER TOWNSHIP, DISTRICT OF SUDBURY, ONTARIO  
 SUDBURY MINING DIVISION

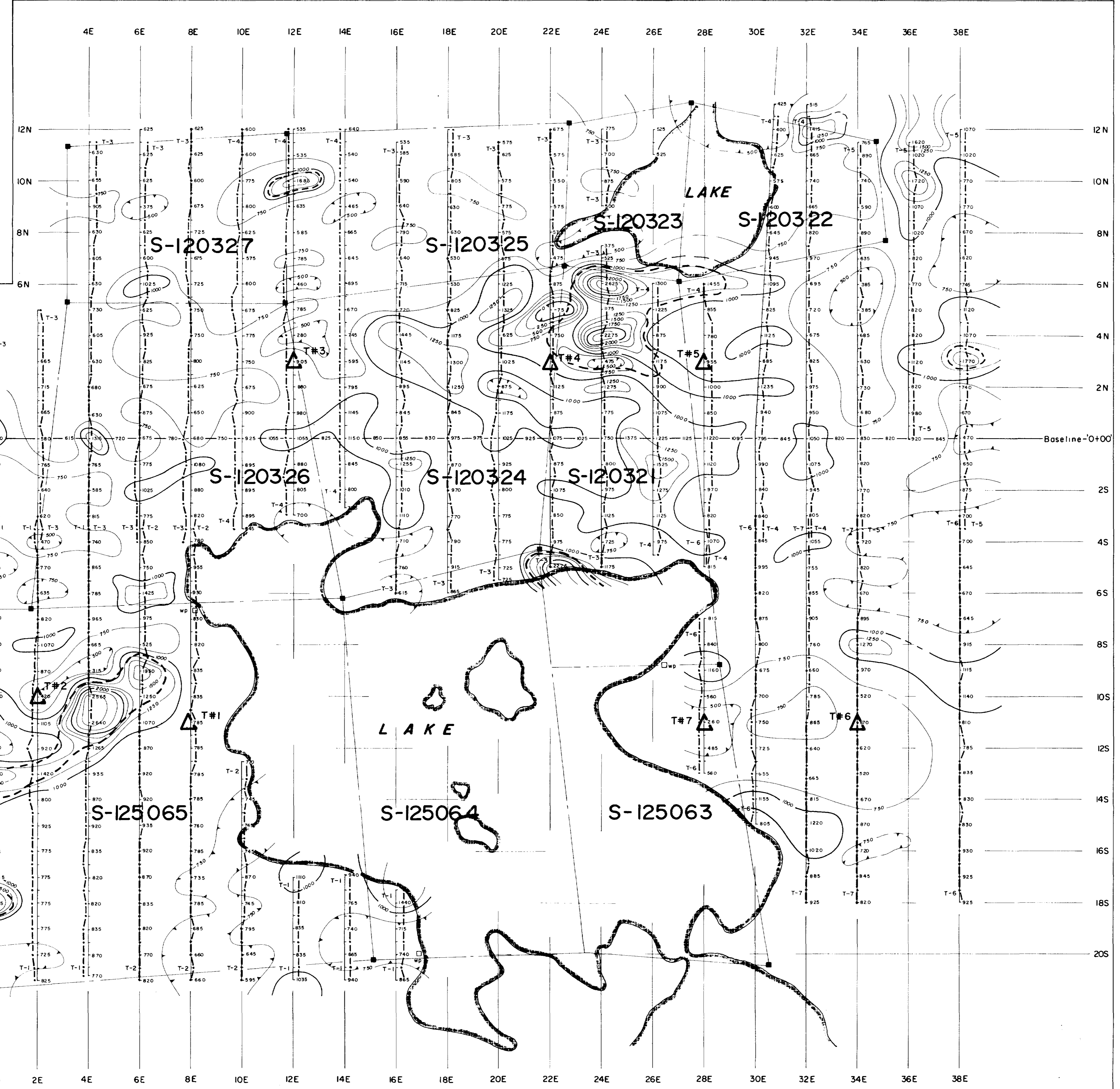
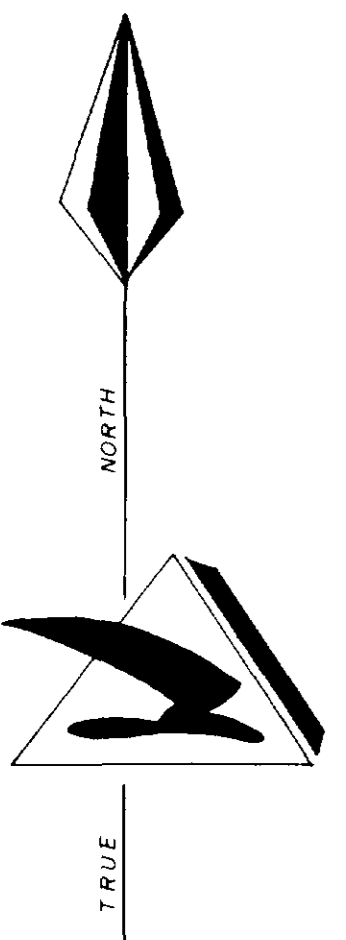
**ELECTROMAGNETIC  
 AND  
 MAGNETOMETER SURVEY**

**SULMAC EXPLORATION SERVICES LIMITED**  
 NOV - DEC - 1965 REVISED MAR, 1966

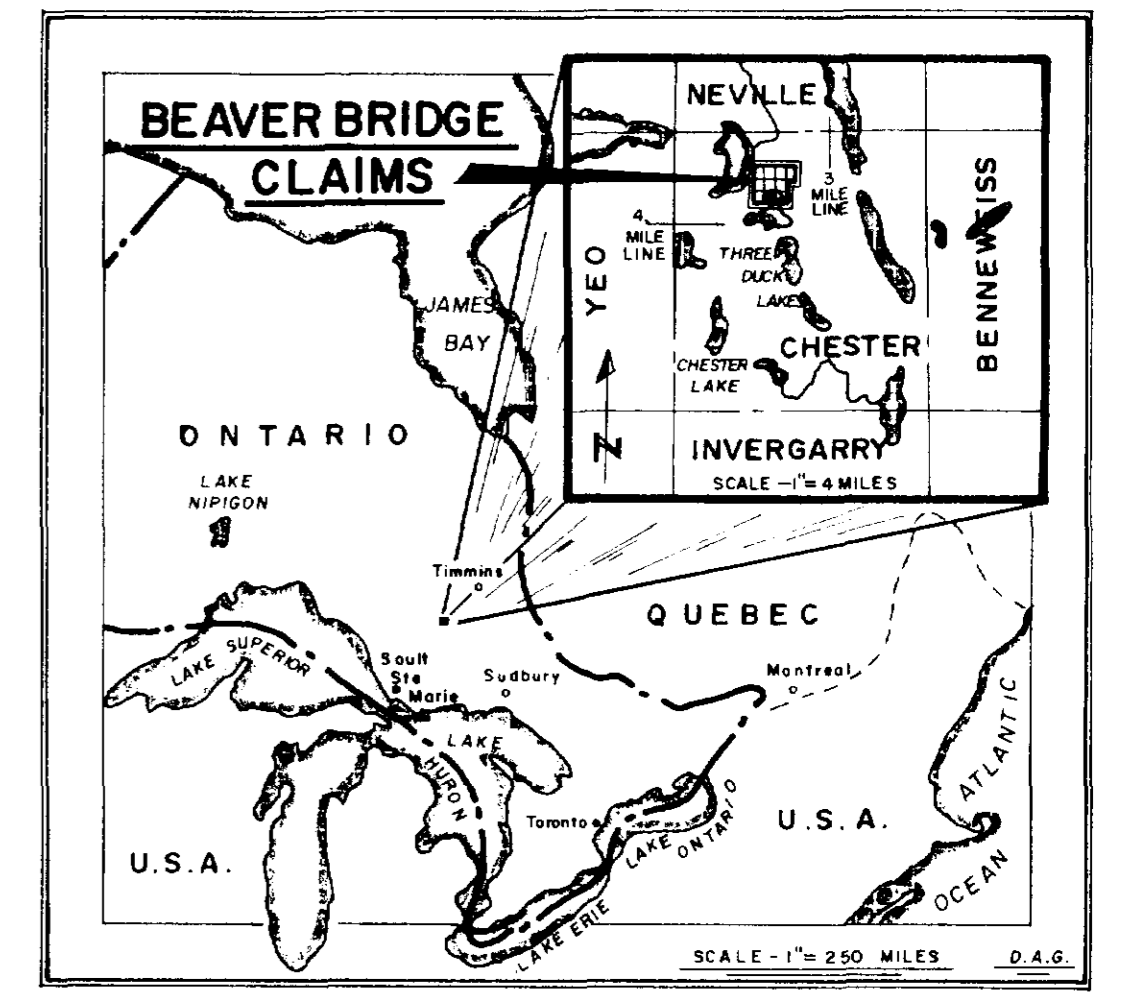


GEOPHYSICIST: W. WALCOTT, R. H. KELLY DRAWN BY: G. A. GRANT





**LOCATION MAP**



**LEGEND**

**ELECTROMAGNETIC SURVEY**

- Profile of Electromagnetic Readings (a)
- Dip Angle -1=20°
- T#2  $\Delta$  Electromagnetic Transmitter Location
- T-2 Transmitter Location Reference

**MAGNETOMETER SURVEY**

- Contour Interval 250 Gammas
- 1000 Gamma Contour
- 250 Gamma Contour
- Magnetic Depression
- Outline of Magnetic High

**MAP SYMBOLS**

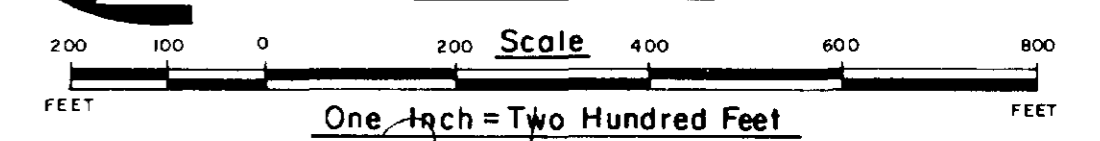
- Claim Post and Claim Boundary
- Lake Outline

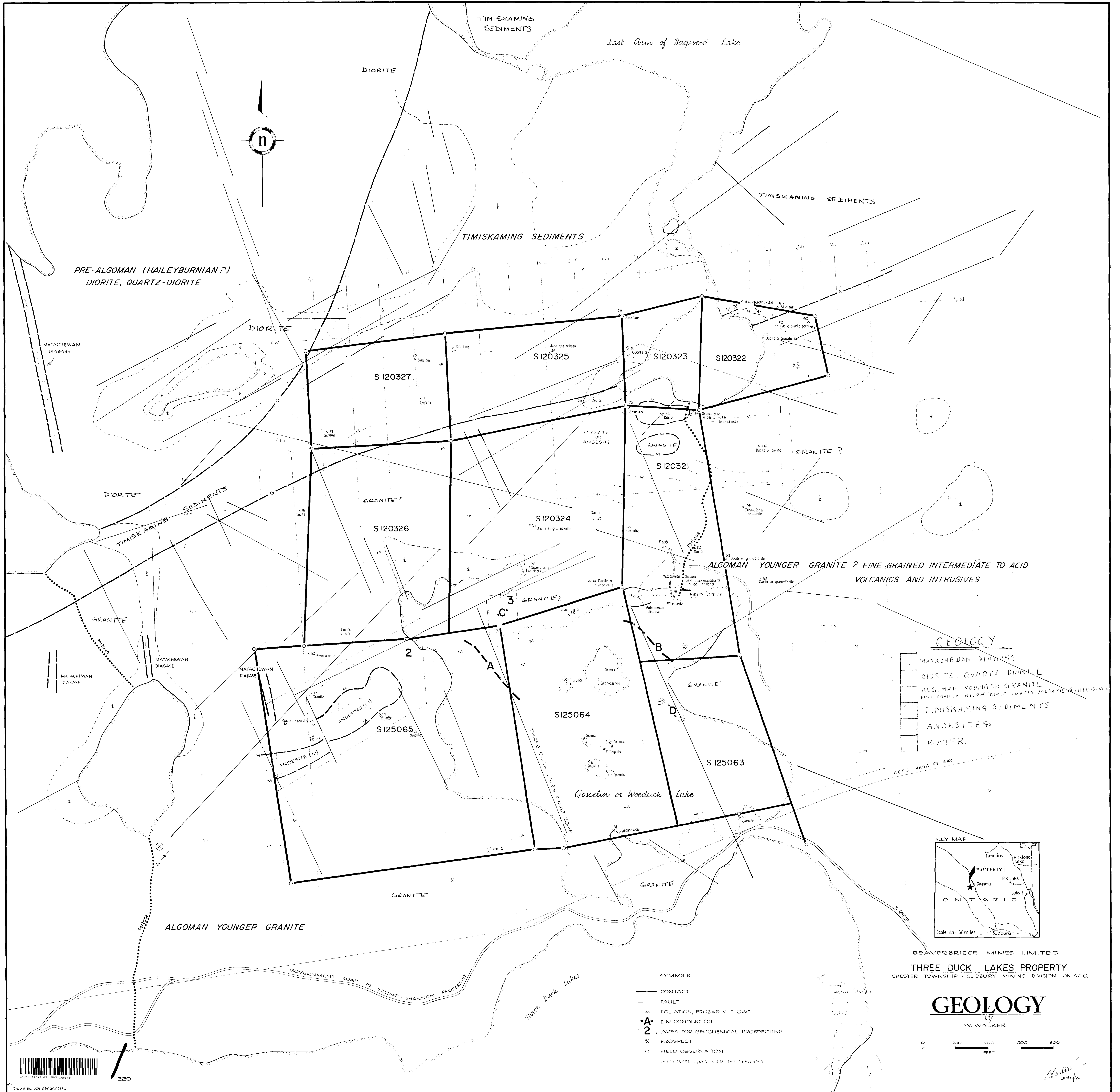
**BEAVER BRIDGE MINES LTD.**

CHESTER TOWNSHIP, DISTRICT OF SUDBURY, ONTARIO  
SUDBURY MINING DIVISION

**VERTICAL LOOP  
ELECTROMAGNETIC  
AND  
MAGNETOMETER SURVEY**

**SULMAC EXPLORATION SERVICES LIMITED**  
NOV. - DEC. 1965





PRE-ALGOMAN (HAILEYBURNIAN?)  
DIORITE, QUARTZ-DIORITE

TIMISKAMING  
SEDIMENTS

East Arm of Bagsword Lake

DIORITE

TIMISKAMING  
SEDIMENTS

TIMISKAMING  
SEDIMENTS

DIORITE

S120325

S120323

S120322

S120327

DIORITE  
ANDESITE

S120321

DIORITE

GRANITE?

S120324

ALGOMIAN YOUNGER GRANITE? FINE GRAINED INTERMEDIATE TO ACID  
VOLCANICS AND INTRUSIVES

3

GRANITE?

FIELD OFFICE

**GEOLOGY**

- MATACHEWAN DIABASE
- DIORITE, QUARTZ-DIORITE
- ALGOMIAN YOUNGER GRANITE?
- FINE GRAINED INTERMEDIATE TO ACID VOLCANICS & INTRUSIVES
- TIMISKAMING SEDIMENTS
- ANDESITES
- WATER

GRANITE

MATACHEWAN  
DIABASE

MATACHEWAN  
DIABASE

S125064

GRANITE

S125065

S125063

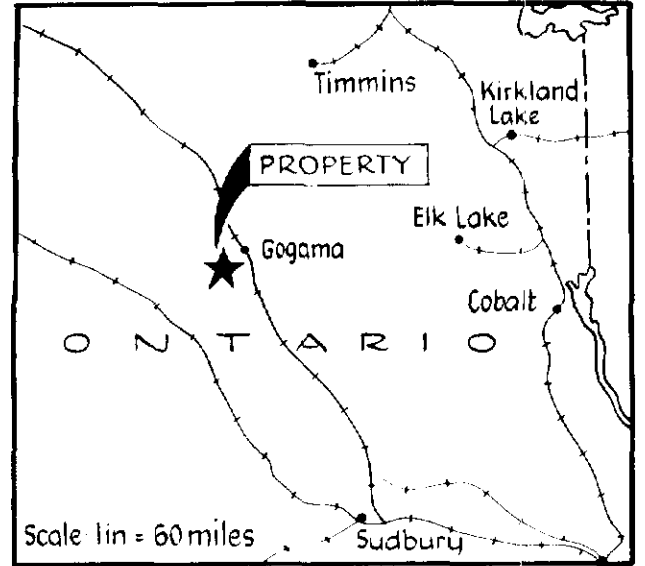
Gosselin or Woodduck Lake

ALGOMIAN YOUNGER GRANITE

GOVERNMENT ROAD TO YOUNG - SHANNON PROPERTIES

Three Duck Lakes

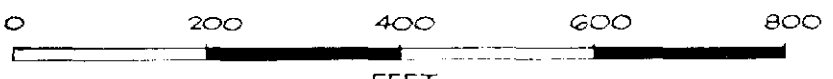
**KEY MAP**



BEAVERBRIDGE MINES LIMITED  
THREE DUCK LAKES PROPERTY  
CHESTER TOWNSHIP - SUDBURY MINING DIVISION, ONTARIO

**GEOLOGY**

W. WALKER



- SYMBOLS**
- CONTACT
  - FAULT
  - M FOLIATION, PROBABLY FLOWS
  - A- EM CONDUCTOR
  - 2 AREA FOR GEOCHEMICAL PROSPECTING
  - x PROSPECT
  - x+1 FIELD OBSERVATION
  - GEOPHYSICAL LINES - VXD FOR TRAWERS



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