42A05NW0120 2.2827 WHITESIDES

010

GEOLOGICAL REPORT

SMITH-MORRISON PROPERTY

WHITESIDES TOWNSHIP

PORCUPINE MINING DIVISION

ONTARIO

Peter T. George, P.Eng.,
Consulting Geologist
August 1978

INTRODUCTION

The following report describes the results of geological mapping and geophysical surveying on the Smith-Morrison Property. Geophysical surveys were completed on and in the immediate vicinity of Bean Lake during the period April 10 to 20, 1978. A geological survey was completed by the author during the period June 1 to June 24, 1978.

PROPERTY, DESCRIPTION

The property consists of 17 contiguous, unpatented mining claims designated as follows:

Claim Number	Recording Date
P399023-031 inclusive	November 1, 1976
P462331-332 inclusive	November 1, 1976
P492817-819 inclusive	November 1, 1976
P493127-129 inclusive	November 1, 1976

PROPERTY LOCATION AND ACCESS

The property is located in central Whitesides Township approximately twenty miles west of Timmins, Ontario.

Summer and winter access is available to within ¼ mile of the property via Highway 101 West and the Malette Lumber Road that originates from Highway 101 West in Denton Township.

During the summer months a secondary lumber road provides direct access to the central part of the property.

PROPERTY HISTORY

All significant geological and geophysical data obtained in previous work on the property are summarized on Map 1 (in pocket).

(a) GEOPHYSICS

During 1955 Broulan Reef Mines carried out a McPhar 1000/5000 vertical loop EM survey on a 400 foot north-south grid. The survey covered the area of the property west and south of Bean Lake. One conductive zone was outlined during the survey.

In 1964 Lucky Strike Exploration Limited completed magnetic and vertical loop broadside EM surveys on a 400 foot north-south grid. The survey covered the area east of Bean Lake. One conductor was located during the survey.

In 1968 Claw Lake Molybdenum Mines carried out an IP survey in the northwest quarter of the property. The survey was carried out on north-south lines and is reported to have outlined an anomalous zone 1600 feet long. The data has not been filed for assessment work.

(b) DRILLING

In 1955-56 Hollinger Mines completed 2000 feet of drilling in the immediate area of the sulphide showing located east of Bean Lake. One packsack hole intersected 40 feet of massive sulphide mineralization (pyrrhotite and pyrite). The massive sulphide mineralization was not encountered in any of the other holes. The mineralization occurs immediately east of the Lucky Strike Mines electromagnetic anomaly. Four packsack holes were drilled southwest of Bean Lake. No significant mineralization was encountered.

In 1956 Broulan Reef Mines drilled four holes (W-1 to W-4) in the vicinity of the sulphide showing and electromagnetic anomaly west and south of Bean Lake.

In 1964 Rowan Consolidated Mines completed thirteen drill holes with a total footage of 4700 feet. All of the holes were collared on or to the south of claim P493129.

Claw Lake Molybdenum Mines drilled one hole in the area of the IP anomaly located by their geophysical survey.

PROPERTY GEOLOGY

The property is underlain by Archean volcanic rocks that have been intruded by Archean gabbro. A series of northwesterly trending diabase dikes of probably Proterozoic age intrude the volcanic rocks and gabbro.

LITHOLOGIES

Mafic Volcanic Rocks

Mafic volcanic rocks underlie the south and east portion of the property. Three mafic volcanic rock types were recognized on the property. Dark green, fine to very fine grained, massive to weakly schistose rocks present on the property are probably mafic volcanic flows. No pillow structures were observed in the field however spherultic pillow selvages were reported in drill holes on the property.

Mafic volcanic tuffs consisting of thin bedded, fine grained chloritic pyroclastic material are common on the property. The tuffaceous rocks generally carry disseminated pyrite and pyrrhotite. Locally a few occurrences of thin chert bands with associated pyrite, pyrrhotite and magnetite were observed.

One outcrop of mafic volcanic breccia was located on the main road just north of Lucquer Lake. The rock consists of angular to subrounded elongate fragments (5 to 10 cm by 2 to 4 cm) of mafic volcanic rock in a fine grained chloritic matrix. Many of the fragments display chilled margins.

Iron Formation

Iron formation is not well developed on the property however a few occurrences of mafic volcanic tuff carry sufficient banded chert, pyrite, pyrrhotite, and magnetite to warrant being designated as iron formation. The iron formation is well exposed in trenches 3 and 4 near the volcanic rock-gabbro contact.

Gabbro

The gabbroic rocks on the property are massive, fine to coarse grained and equigranular. The rocks consist of approximately 50% light grey plagioclase and 50% pyroxene. The sulphide content varies from nil to 50% with pyrrhotite the dominant sulphide mineral. Chalcopyrite is present in most samples containing obvious amounts of sulphide mineralization.

The gabbro-volcanic rock contact appears to be conformable south of Bean Lake and north of Persson Lake which indicates that the gabbro occurs as a sill.

On the basis of the regional geology the stratigraphic tops of the volcanic strata are to the north. The gabbro contact that crosses the property is the basal contact of the sill.

Diabase

A northwest trending swarm of diabase dikes crosses the property. The diabase is fine to medium grained, equigranular, dark grey, massive, and fresh in appearance.

STRUCTURAL GEOLOGY

The major structural feature on the property is the contact between the gabbroic and volcanic rocks. The contact has an east-west strike direction in the northeast and southwest sectors of the property. The contact is conformable and on the basis of regional geological data volcanic tops are to the north. The contact marks the base of a large gabbro sill. In the central sector of the property the contact has a north-south strike direction. In this area of the property the contact could be either a fault or a conformable intrusive contact. Two Hollinger drill holes intersected the north-south contact east of Bean Lake and no evidence of a fault zone was reported in the drill logs.

The author would interpret the contact zone as a conformable intrusive contact that has been drag folded on a regional scale.

All of the bedding attitudes observed by the author indicate near vertical dips throughout the property.

MINERALIZATION

Two types of sulphide showings occur on the property. Massive to disseminated pyrite with minor pyrrhotite occurs in association with iron formation within the mafic volcanic rocks. Massive to disseminated pyrrhotite occurs within the gabbroic rocks on the property.

The sulphide mineralization within the gabbroic rocks is of economic interest because of the potential for copper-nickel mineralization in this geological environment. All of the known sulphide showings in gabbro on the property occur near the base of the gabbro sill.

A number of massive sulphide zones have been intersected in drilling. No assay data is available. Hollinger Mines intersected in excess of 43 feet (the packsack hole stopped in massive sulphides) of massive sulphides east of Bean Lake. Subsequent drill holes in the area failed to locate further massive sulphides.

The following is a brief description of mineralization exposed in trenches on the property.

Trench 1 (Figure 1)

Trench1 is located east of Bean Lake in the vicinity of the Hollinger drilling. The trench is 260 feet long. Approximately 30 feet of rusty weathering fine to medium grained gabbro is explosed in the trench. The rock is deeply weathered. Blasting to a depth of 2 feet failed to provide fresh samples. Pyrrhotite is present disseminated throughout the gabbro. Minor amounts of chalcopyrite were observed.

Trench 2 (Figure 1)

Trench 2 is located approximately 1000 feet west of Bean Lake. Fine to medium grained gabbro is exposed in the trench. The east side of the exposure contains up to 50% pyrrhotite with minor chalcopyrite. A grab sample from this showing assayed 0.10% Cu and 0.18% Ni. The sulphide zone has a strike of 030°.

Trench 3 (Figure 1)

Trench 3 is located approximately 100 feet south of Trench 2. Medium to coarse grained gabbro is exposed in the trench in contact with fine grained mafic tuff and agglomerate. No significant sulphide mineralization was seen.

Trench 4

Trench 4 is located approximately 300 feet southwest of Trench 3. Medium to coarse grained gabbro occurs in contact with mafic volcanic tuffs and iron formation. The iron formation contains pyrite and magnetite. The gabbroic rocks are rusty weathering and contain disseminated pyrrhotite, pyrite and chalcopyrite.

Trench 5

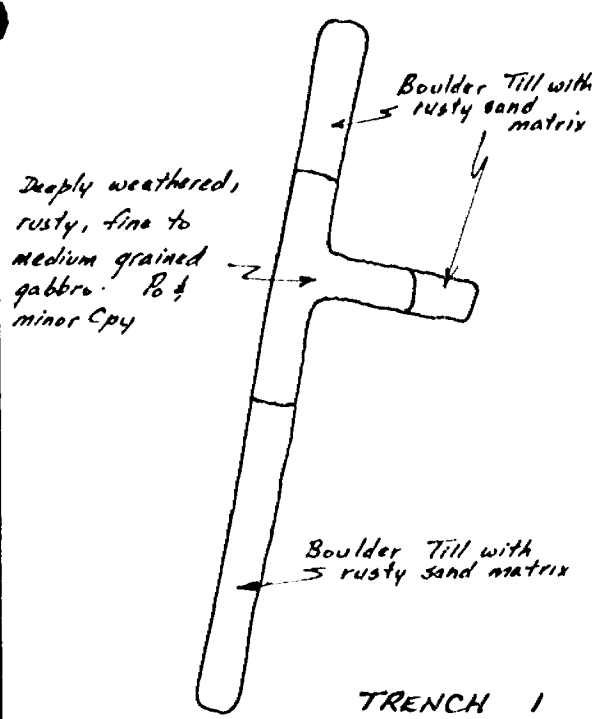
Trench 5 is located on the south shore of Bean Lake immediately west of the No.1 post of clain P 492817. Fine to medium grained gabbro is exposed in the trench. Disseminated pyrrhotite and chalcopyrite occur within the gabbro. A grab sample from this trench assayed 0.65% Cu and 0.25% Ni.

Trench 6

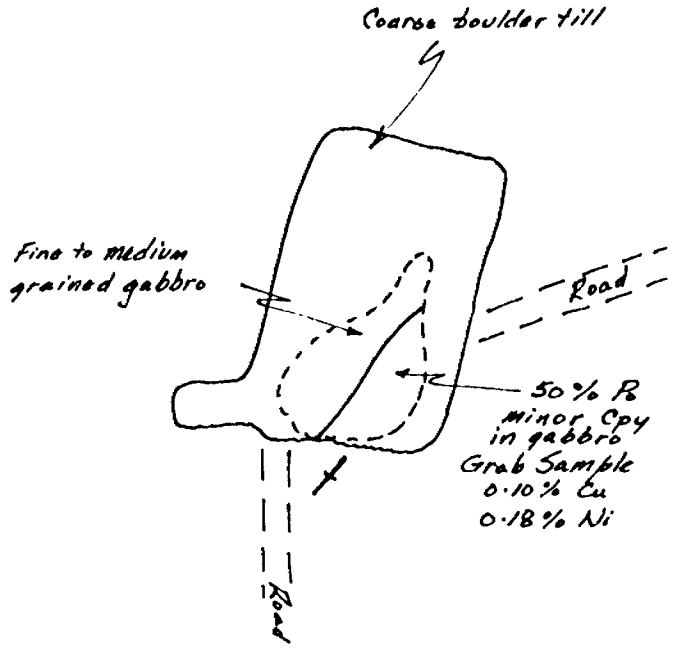
Trench 6 is located approximately 500 feet east of Trench 5 on the south shore of Bean Lake. Medium to coarse grained gabbro containing disseminated pyrrhotite is exposed in the trench.

CONCLUSIONS AND RECOMMENDATIONS

The property is underlain by the basal section of a gabbroic sill that contains significant amounts of sulphide mineralization. The nature of the massive mineralization (See Trench 2) indicates that the sulphides segregated during crystallization of the gabbroic magma. This is economically significant as any nickel present in the magma would be preferentially concentrated in the sulphide fraction rather than the silicate fraction during crystallization.



TRENCH 1



TRENCH 2

TRENCH 3

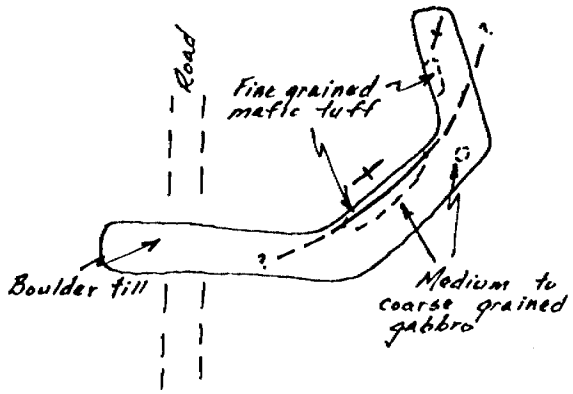


FIGURE 1

SKETCH MAPS OF NEW TRENCHES

Scale: 1" = 50'

SEE MAP 1 (in pocket) for Locations

The geological environment that exists on the property warrants an exploration program for Ni-Cu mineralization.

Two untested electromagnetic anomalies occur in the south sector of the property and both warrant exploration by drilling. The anomaly located by Lucky Strike Mines occurs immediately west of the area drilled by Hollinger Mines. One packsack hole drilled by Hollinger intersected in excess of 43 feet of massive sulphides. The orientation of subsequent drilling by Hollinger would not have tested the sulphide zone if an east-west strike is present. The Lucky Strike electromagnetic anomaly has an east-west strike direction and may be caused by the sulphide zone intersected by Hollinger.

The electromagnetic anomaly located during April 1978 by the present property owner has not been tested by drilling.

All geophysical surveys that have been completed on the property were undertaken along north-south grid lines. In the central portion of the gabbro mass in the vicinity of claims P 399023 to 399026 inclusive the rocks have a north-south strike direction. Any conformable sulphide zones in this area would not be detected by surveys carried out on north-south grid lines.

The central portion of the property should be covered by magnetic and electromagnetic surveys along a series of east-west grid lines.

Respectfully submitted,

Peter T. George, P.Eng.,
Consulting Geologist

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GEOPHYSICAL SURVEYS

SMITH-MORRISON PROPERTY

CLAIM P399023

Peter T. George, P.Eng.,

Consulting Geologist

August 1978

INTRODUCTION

Geophysical surveys were carried out on claim P399023 of the Smith-Morrison Property to provide magnetic and electromagnetic survey coverage of Bean Lake. Field work was completed during the period April 10-20, 1978.

PROPERTY, LOCATION AND ACCESS (See Inset Map in pocket)

The property is located in central Whitesides Township, Porcupine Mining Division, Ontario.

Access to the property is via the Malette Lumber Company road that extends north from Highway 101 West.

PROPERTY GEOLOGY

Claim P399023 is underlain by a gabbro sill. Sulphide mineralization occurs within the gabbro to the east, west, and south of the claim.

PROPERTY PREVIOUS WORK

No previous geophysical surveys have been recorded that cover the Bean Lake area.

GEOPHYSICAL SURVEYS

Electromagnetic surveys were completed utilizing an APEX Parametrics Maxmin II horizontal loop unit and a McPhar SS 15 vertical loop unit.

The magnetic survey was completed utilizing a Scintrex MF-1 fluxgate magnetometer.

A north-south grid was established on Bean Lake.

GEOPHYSICAL RESULTS

Horizontal Loop EM Survey (Figure 2)

The horizontal loop EM survey was carried out utilizing a 300 foot cable, and 444 and 1777 Hz frequencies.

A weak anomalous response was detected that indicated a depth of burial of 120 to 160 feet to the top of the conductive source.

A vertical loop electromagnetic survey was recommended to further evaluate the conductor.

Vertical Loop EM Survey (Figure 3)

The vertical loop EM survey has defined an east-northeast trending conductive zone near the west end of Bean Lake. The anomaly may extend further to the northeast between lines 4E and 7E. The anomaly is open to the west.

The data also suggests the presence of a conductive zone south of the area surveyed along the south shore of Bean Lake.

Magnetic Survey (Figure 4)

Maximum magnetic relief on the property 1370 gammas.

The 1200 gamma anomaly near the end of line 0 is due to a northwesterly trending diabase dike that is exposed in outcrop on the south shore of Bean Lake.

The anomaly that occurs near the north end of line 7E is also probably due to a diabase dike.

The remainder of the property displays low magnetic relief.

The EM anomaly located by the vertical loop survey is non magnetic.

CONCLUSIONS

An east-northeast trending electromagnetic anomaly has been located near the west end of Bean Lake. The conductive zone is non magnetic.

It is probably that overburden in the vicinity of the conductor is 125 to 150 feet thick.

The conductive zone is probably caused by a sulphide zone within gabbro.

The zone warrants evaluation by drilling in view of the potential for copper-nickel mineralization in this geological environment.

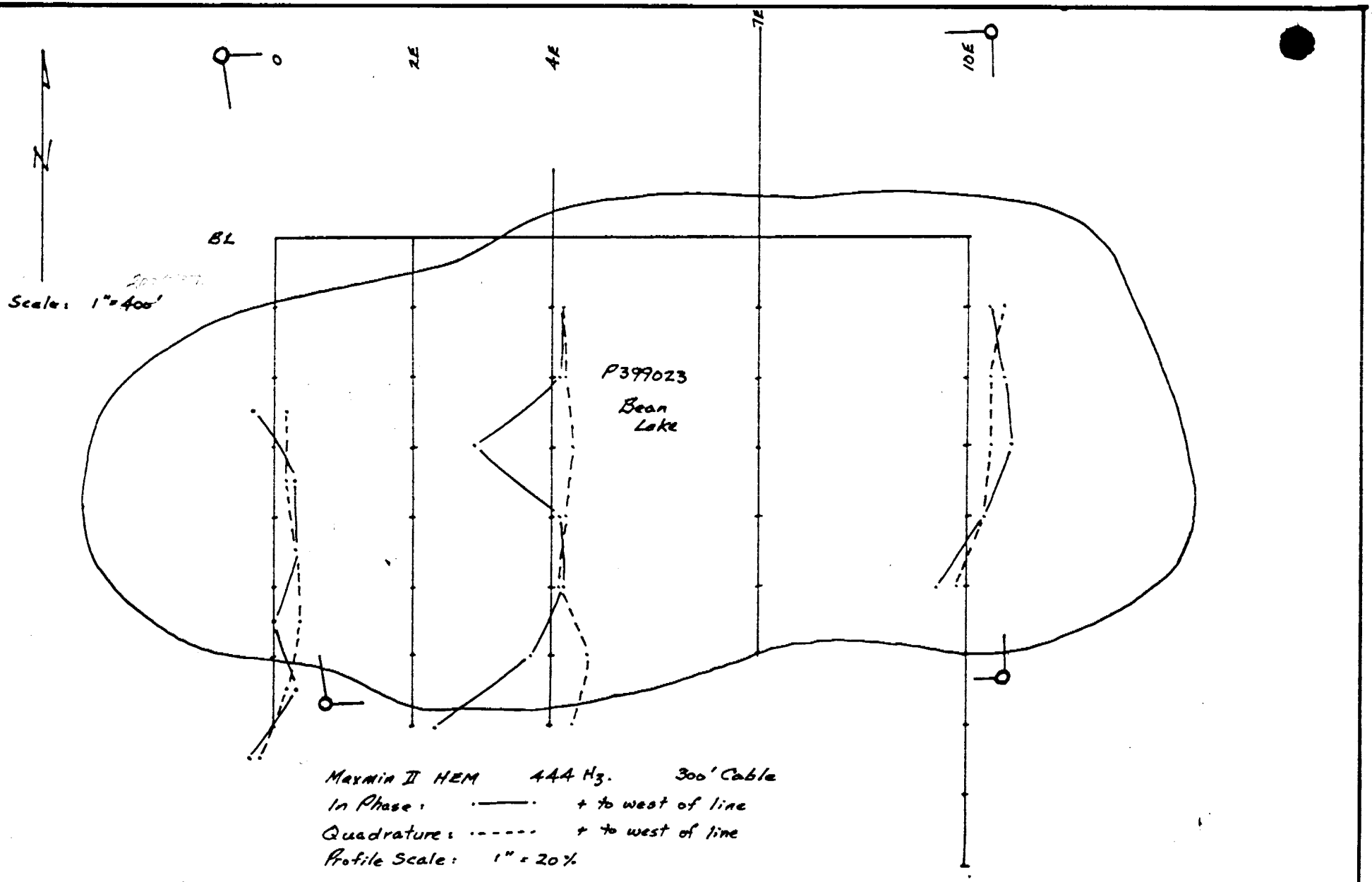
RECOMMENDATIONS

Additional electromagnetic survey work should be completed prior to drilling. A number of east-west lines should be run north of Bean Lake to check the possible extension of the conductive zone to the northeast. A number of north-south lines should be run to the west of Bean Lake to check the possible extension of the conductive zone to the west.

Electromagnetic coverage should be completed south of Bean Lake to evaluate the possible conductor indicated by the current survey.

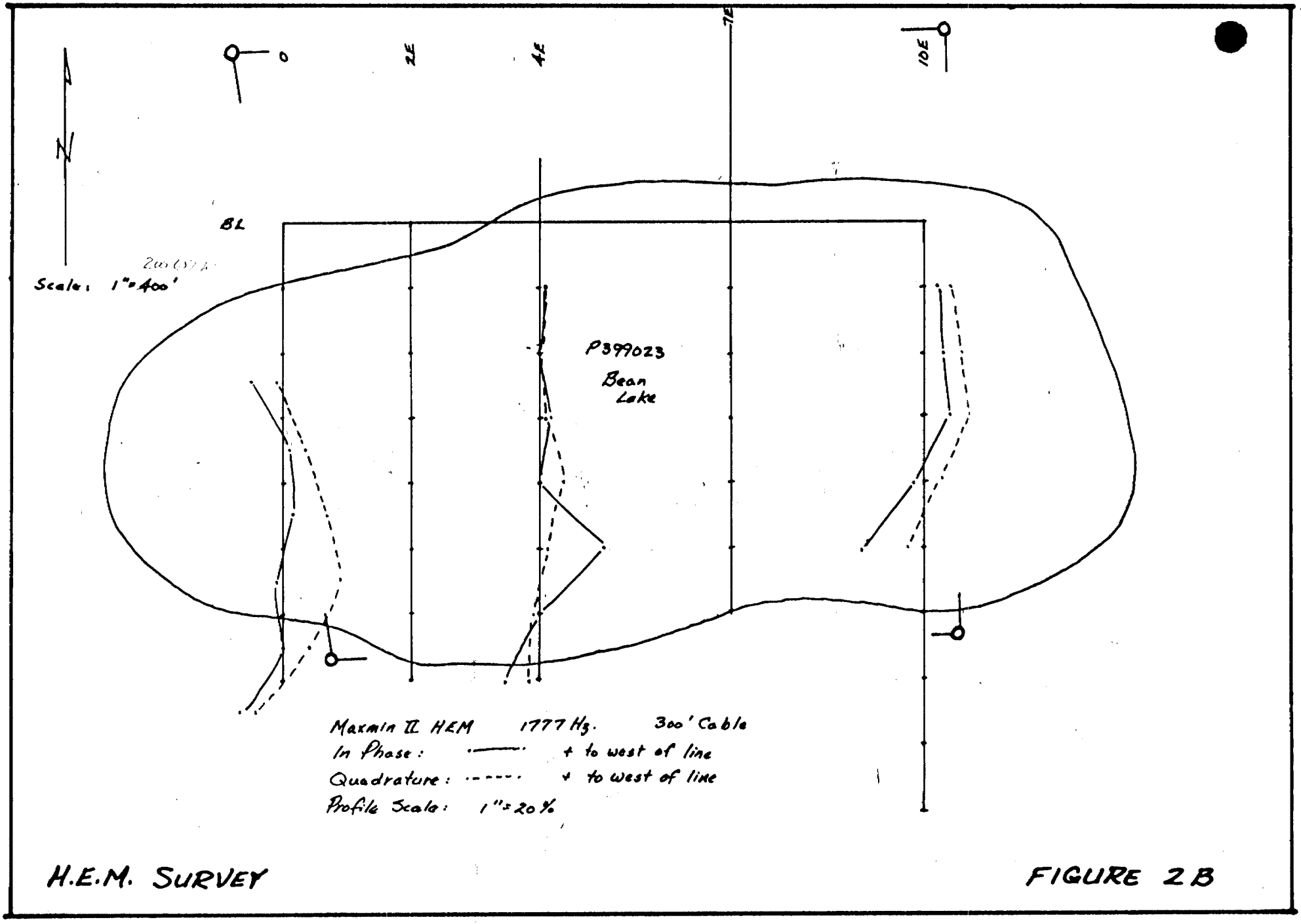
Respectfully submitted,

Peter T. George, P.Eng.,
Consulting Geologist



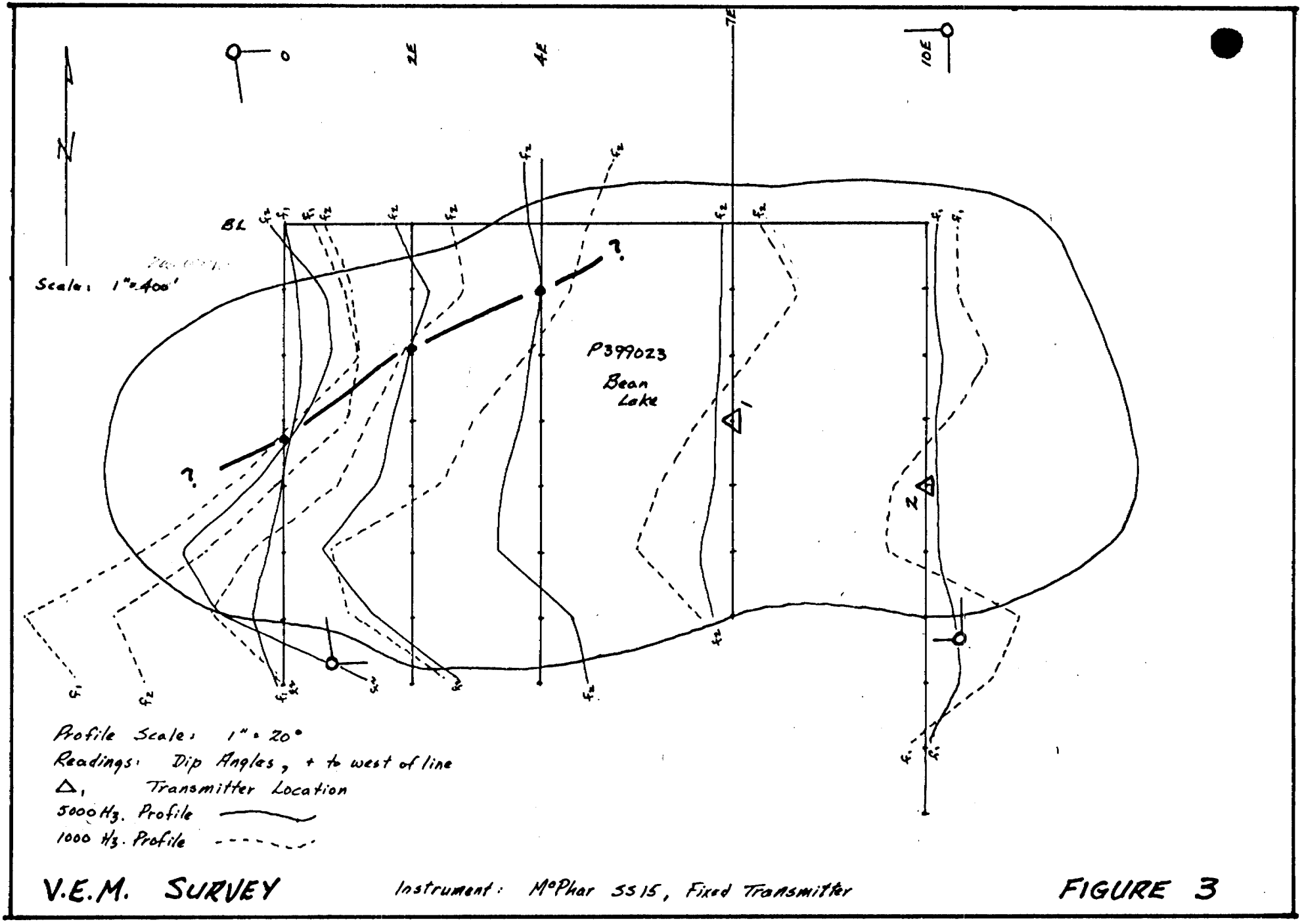
H.E.M. SURVEY

FIGURE 2A



H.E.M. SURVEY

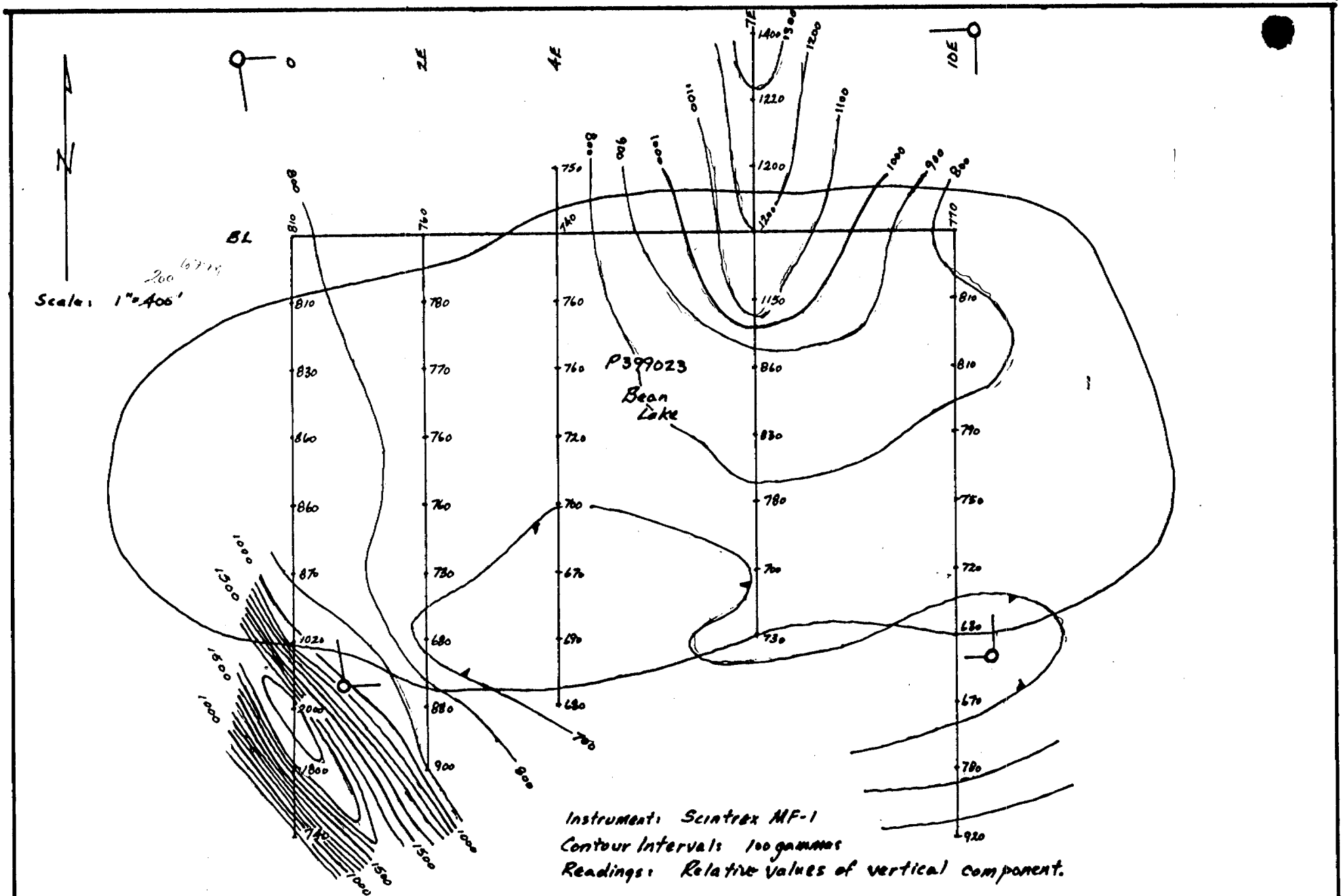
FIGURE 2B



V.E.M. SURVEY

Instrument: McPhar 3515, Fixed Transmitter

FIGURE 3



MAGNETOMETER SURVEY

FIGURE 4

Ontario

Ministry of Natur[al Resources]

GEOPHYSICAL – GEOLOGIC[AL]
TECHNICAL DATA

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900

TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT
FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

Type of Survey(s) GEOPHYSICAL

Township or Area WHITESIDES

Claim Holder(s) W.F. MORRISON
2219 KENNEDY RD., AGINCOURT, ONT

Survey Company GEOEX LIMITED

Author of Report Peter T. George

Address of Author P.O. Box 70, Timmins, Ont

Covering Dates of Survey April 10 – June 7, 1978
(linecutting to office)

Total Miles of Line Cut 0.97

SPECIAL PROVISIONS CREDITS REQUESTED

ENTER 40 days (includes line cutting) for first survey.

ENTER 20 days for each additional survey using same grid.

	DAYS per claim
Geophysical	
–Electromagnetic	60
–Magnetometer	20
–Radiometric	
–Other	
Geological	
Geochemical	

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)

Magnetometer ______ Electromagnetic ______ Radiometric ______
(enter days per claim)

DATE: October 30/78 SIGNATURE: Peter T. George
Author of Report or Agent

Res. Geol. L.D. Qualifications 63.2350

Previous Surveys

File No.	Type	Date	Claim Holder

MINING CLAIMS TRAVERSED EM
List numerically VL HL

(prefix)	(number)
P	399023 ¼ mol ½
	15 days 10 days

TOTAL CLAIMS 1

If space insufficient, attach list

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS - If more than one survey, specify data for each type of survey

Number of Stations VEM 44, HEM 18, Mag 48 — Number of Readings VEM 104, HEM 72, Mag 48

Station interval 100' — Line spacing 200' & 300'

Profile scale VEM 1 inch = 20° HEM 1 inch = 20%

Contour interval Mag - 100 gammas

MAGNETIC

Instrument Scintrex MF-1 Fluxgate

Accuracy - Scale constant ± 20 gammas.

Diurnal correction method Base Stns Along Base line

Base Station check-in interval (hours) 0.5 maximum.

Base Station location and value 00/00 810 gammas

ELECTROMAGNETIC

Instrument VEM - McPhar SS15, HEM - Apex Parametrics

Coil configuration 2 Surveys - vertical loop & horizontal loop

Coil separation HEM 300' VEM 300' to 1000'

Accuracy VEM ± 1°, HEM ± 1%

Method: VEM ☒ Fixed transmitter ☐ Shoot back HEM ☒ In line ☐ Parallel line

Frequency HEM - 444 Hz & 1777 Hz VEM 1000 Hz & 5000 Hz (specify V.L.F. station)

Parameters measured HEM - In phase & quadrature components of secondary field
VEM - Inclination of secondary field

GRAVITY

Instrument

Scale constant

Corrections made

Base station value and location

Elevation accuracy

INDUCED POLARIZATION RESISTIVITY

Instrument

Method ☐ Time Domain ☐ Frequency Domain

Parameters - On time — Frequency

- Off time — Range
- Delay time
- Integration time

Power

Electrode array

Electrode spacing

Type of electrode

Ontario

Ministry of Natural Resources

File _____

GEOPHYSICAL – GEOLOGICAL – GEOCHEMICAL TECHNICAL DATA STATEMENT

TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT
FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

Type of Survey(s) GEOLOGICAL

Township or Area WHITESIDES

Claim Holder(s) W.F. MORRISON
2219 Kennedy Rd., Agincourt, Ont

Survey Company GEOEX Limited

Author of Report P.T. George

Address of Author GEOEX Ltd., POBox 20, Timmins, Ont

Covering Dates of Survey June 1 - Sept. 10, 1978
(linecutting to office)

Total Miles of Line Cut Systematically traversed utilizing Flagged Tie Lines & Base lines. (28.5 miles traversed)

SPECIAL PROVISIONS CREDITS REQUESTED

ENTER 40 days (includes line cutting) for first survey.

ENTER 20 days for each additional survey using same grid.

DAYS per claim

Geophysical
--Electromagnetic _____
--Magnetometer _____
--Radiometric _____
--Other _____
Geological 40
Geochemical _____

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)

Magnetometer _____ Electromagnetic _____ Radiometric _____
(enter days per claim)

DATE: October 30, 1978 SIGNATURE: P.T. George
Author of Report or Agent

L.D.

Res. Geol. _____ Qualifications _____

Previous Surveys

File No.	Type	Date	Claim Holder

MINING CLAIMS TRAVERSED
List numerically

(prefix)	(number)	
P	399023	✓
P	399024	1/2
P	399025	1/2
P	399026	1/3 mtr
P	399027	1/4
P	399028	1/2
P	399029	1/4
P	399030	✓
P	399031	1/2
P	462331	1/2
P	462332	1/2
P	492817	✓
P	492818	1/2
P	492819	1/2
P	493127	✓
P	493128	✓
P	493129	✓

TOTAL CLAIMS 17

If space insufficient, attach list

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS - If more than one survey, specify data for each type of survey

Number of Stations _____ Number of Readings _____

Station interval _____ Line spacing _____

Profile scale _____

Contour interval _____

MAGNETIC

Instrument _____

Accuracy - Scale constant _____

Diurnal correction method _____

Base Station check-in interval (hours) _____

Base Station location and value _____

_____

ELECTROMAGNETIC

Instrument _____

Coil configuration _____

Coil separation _____

Accuracy _____

Method: ☐ Fixed transmitter ☐ Shoot back ☐ In line ☐ Parallel line

Frequency _____
(specify V.L.F. station)

Parameters measured _____

GRAVITY

Instrument _____

Scale constant _____

Corrections made _____

_____

Base station value and location _____

_____

Elevation accuracy _____

INDUCED POLARIZATION RESISTIVITY

Instrument _____

Method ☐ Time Domain ☐ Frequency Domain

Parameters - On time _____ Frequency _____

- Off time _____ Range _____

- Delay time _____

- Integration time _____

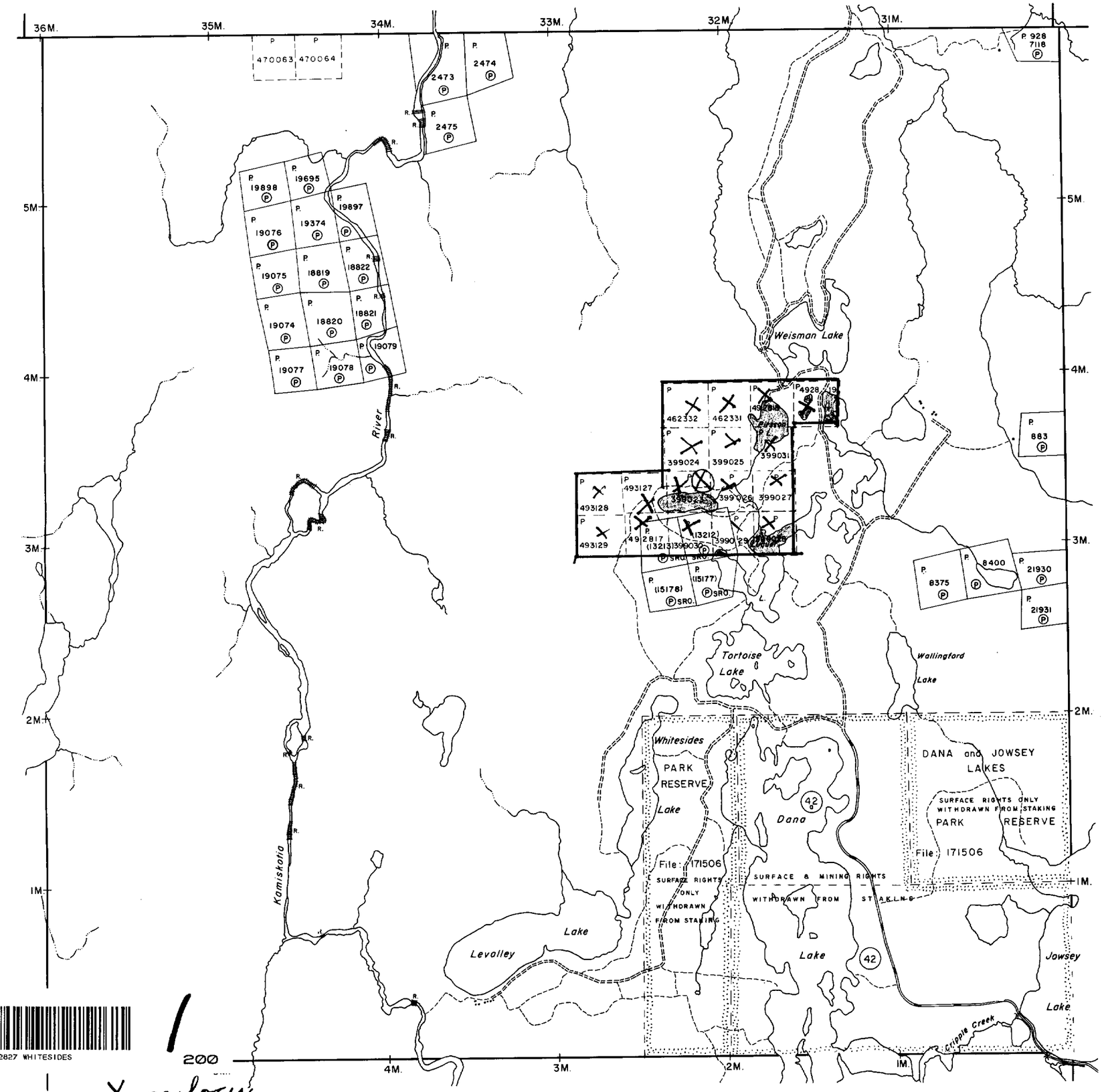
Power _____

Electrode array _____

Electrode spacing _____

Type of electrode _____

Massey Twp. - M.296



Frey Twp. - M.819

Carscallen Twp. - M.267

Keefer Twp. - M.290

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X geology
⊗ geophysical

Bob K.

THE TOWNSHIP OF

2.2827

WHITESIDES

DISTRICT OF
COCHRANE

PORCUPINE
MINING DIVISION

SCALE: 1-INCH = 40 CHAINS

LEGEND

PATENTED LAND	Ⓟ
CROWN LAND SALE	C.S.
LEASES	Ⓛ
LOCATED LAND	Loc.
LICENSE OF OCCUPATION	L.O.
MINING RIGHTS ONLY	M.R.O.
SURFACE RIGHTS ONLY	S.R.O.
ROADS	
IMPROVED ROADS	
KING'S HIGHWAYS	
RAILWAYS	
POWER LINES	
MARSH OR MUSKEG	
MINES	
CANCELLED	C.

NOTES

400' Surface Rights Reservation along the shores of all lakes and rivers.

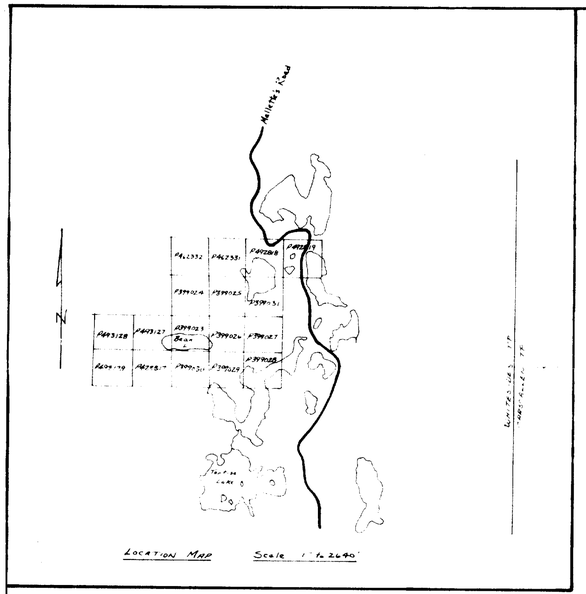
Areas withdrawn from staking under Section 42 of the Mining Act (R.S.O. 1960, Sec. 43 (1970)

Index No.	File	Date	Disposition
(42)	171506		S.R. & M.R.
(42 d)	171506	28/1/71	S.R. & M.R

DATE OF ISSUE
NOV - 2 1978
SURVEYS AND MAPPING BRANCH

PLAN NO. M.318

ONTARIO
MINISTRY OF NATURAL RESOURCES
SURVEYS AND MAPPING BRANCH



LEGEND

- 4 — Diabase
- 3 — Gabbro
- 2 — Iron Formation
- 1 — Volcanic Rocks
  - 1a Mafic Volcanic Rocks, massive
  - 1b Mafic Volcanic Rocks, breccia
  - 1c Mafic Volcanic Rocks, tuff
  - 1d Felsic Volcanic Rocks

po pyrrhotite py pyrite
cpy chalcopyrite mt magnetite

- Outcrop
- Inferred Geological Contact
- Bedding Attitude
- Trench
- Drill Hole with vertical depth of overburden
- Electromagnetic Anomaly
- Claim Post
- Road
- Trail
- Lake
- Esker

2.2827

SMITH - MORRISON PROPERTY

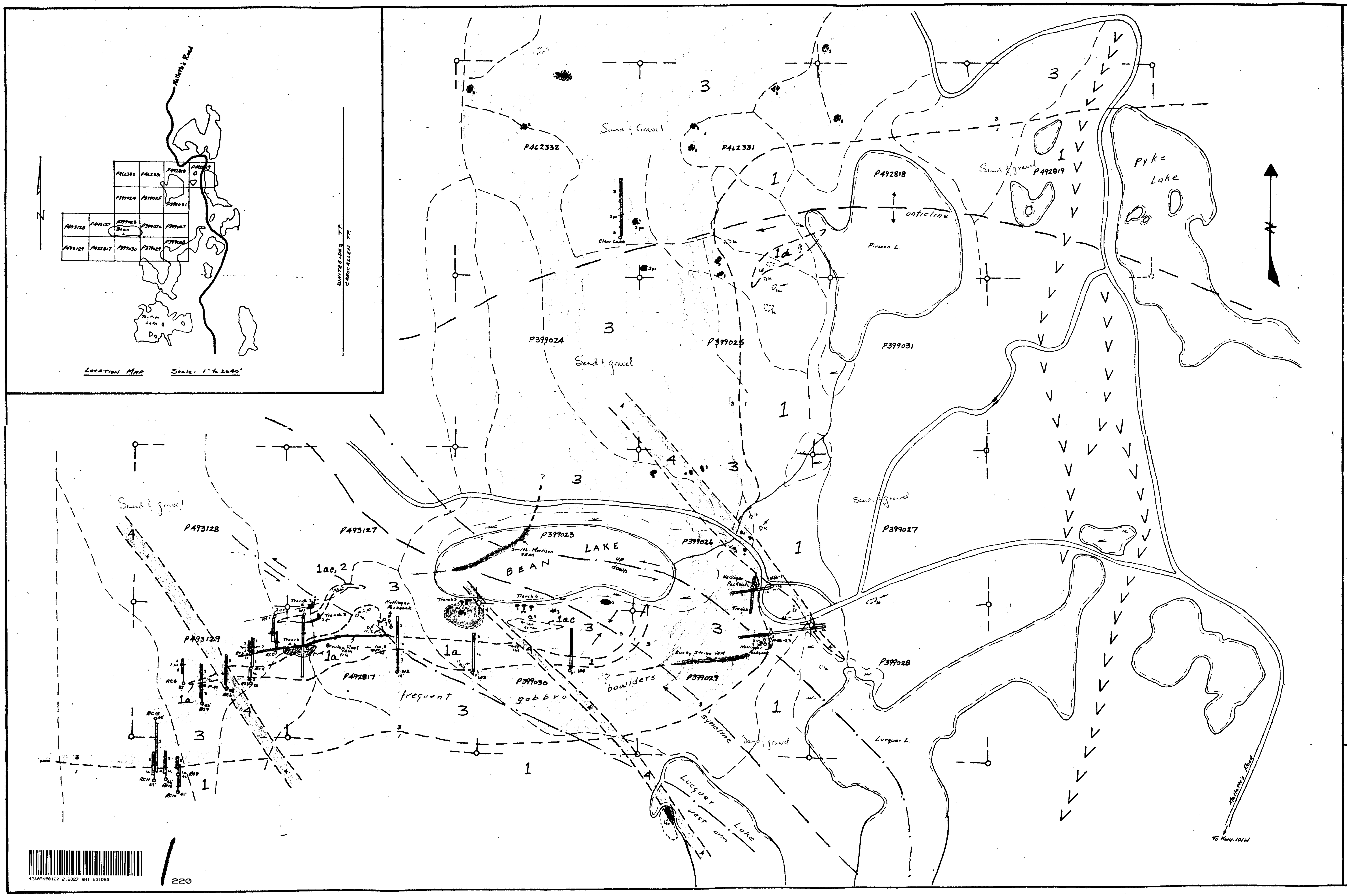
TRAVERSE LOCATIONS

Scale 1 inch to 400 feet

Peter T George, P.Eng.
Consulting Geologist

June 1978

42A05NW0120 2.2827 WHITESIDES



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220

LEGEND

Inferred / outcrop

4 Diabase

3 Gabbro

2 Iron Formation

1 Volcanic Rocks

1a 1a Mafic Volcanic Rocks, massive

1b 1b Mafic Volcanic Rocks, breccia

1c 1c Mafic Volcanic Rocks, tuff

1d 1d Felsic Volcanic Rocks

po pyrrhotite — py pyrite

cpy chalcopyrite — mt magnetite

Outcrop

Inferred Geological Contact

Bedding Attitude

Trench

Drill Hole with vertical depth of overburden

Electromagnetic Anomaly

Claim Post

Road

Trail

Lake

>>> Esker

up / down Inferred fault direction of throw

Inferred fold axis-direction of plunge

SMITH-MORRISON PROPERTY

GEOLOGY

Scale: 1 inch to 400 feet

Peter T. George, P.Eng.,
Consulting Geologist

June 1978

22827