



010

Report on a
Magnetic Survey
Geordie Lake Property
Seeley Lake Area
Northwestern Ontario

RECEIVED

JUL 29 1987

MINING LANDS SECTION

Robin Jowett
Chris Ludwig
St. Joe Canada Inc.
Toronto, Ontario

July, 1987.



42D16SW0028 2.10245 SEELEY LAKE

010C

TABLE OF CONTENTS

	<u>PAGE</u>
INTRODUCTION.....	1
PROPERTY, LOCATION & ACCESS.....	1
PREVIOUS EXPLORATION.....	1
GEOLOGY.....	1
MAGNETIC SURVEY - PROCEDURES AND EQUIPMENT.....	2
MAGNETIC SURVEY - INTERPRETATION OF RESULTS.....	2
CONCLUSIONS AND RECOMMENDATIONS.....	3
CERTIFICATE OF QUALIFICATION.....	4

LIST OF APPENDICES

- APPENDIX I Specifications of Survey Equipment
- APPENDIX II Map 1 - Plan Map of Magnetic Profiles
 (back pocket) Map 2 - Plan Map of Magnetic Contours

INTRODUCTION:

MPH Consulting Limited was contracted to conduct a ground magnetometer survey over 49 unpatented claims of St. Joe Canada Inc.'s Geordie Lake property near Marathon, Ontario.

The purpose of the survey was to trace a magnetite-rich sulphide zone observed in outcrop that has platinum group metal potential and to map the gabbro-syenite contact which appears to control the mineralization.

PROPERTY, LOCATION & ACCESS:

The Geordie Lake property is located in the Seeley Lake area of the Thunder Bay Mining Division, 14km northwest of the town of Marathon. Highway 17, the main route from Marathon to Thunder Bay, passes through the property and the interior of the claim group can be accessed by a logging road leading north from the highway.

The topography is extremely rugged with north-trending ridges often with scarp faces. The area is generally well wooded with spruce, pine, poplar and birch.

PREVIOUS EXPLORATION:

Ameranium Mines Limited carried out magnetometer, electromagnetic and geological surveys on the property in 1964 in search for copper-nickel sulphides associated with gabbroic rocks. Disseminated chalcopyrite and chalcocite were known to occur in outcrop. There is no record of any exploration since this time and the copper prospect has never been evaluated for its platinum group metal potential.

GEOLOGY:

The Geordie Lake property is located near the center of the Neohelikian-aged Coldwell Alkaline Complex (Figure 1), a multiphase intrusion approximately 25km in diameter. Disseminated copper mineralization occurs in a north-trending zone within Center 2 gabbroic rocks in close proximity to a syenite contact. The zone of mineralization varies in width from 5 to 40m and contains up to 5% sulphides. Magnetite is generally present in the mineralized zone and can constitute up to 40% of the rock.

Selective grab samples collected by the Ontario Geological Survey from the copper occurrence analyzed up to 1.73% copper, 394ppm nickel, 110ppb platinum, 2,130ppb palladium, 220ppb gold and 7ppm silver from gabbroic rock with disseminated sulphides, and up to 32.3% copper, 1,050ppm nickel, 4,250ppb platinum, 2,775ppb palladium, 1,080ppb gold and 112ppm silver from chalcopyrite-magnetite-rich stringers and pods.

Fleck Resources have outlined a low grade, large tonnage deposit on the eastern margin of the Coldwell Complex that is amenable to open pit mining (42.6 million tonnes grading 1.34g/t platinum and palladium and 0.46% copper), [Figure 1].

MAGNETIC SURVEY - PROCEDURES AND EQUIPMENT:

MPH Consulting Limited of Toronto conducted a magnetic survey on the Geordie Lake property on behalf of St. Joe Canada Inc. between January 30 and March 20, 1987. The survey covered the 49 unpatented mining claims shown in Figure 2. A cut grid with lines spaced 100m apart and stations chained and picketed at 25m intervals was used for control. Approximately 65.4 line km of total field surveying was completed. Readings were recorded every 12.5m on all east-west grid lines.

An EDA PPM 350 proton precision magnetometer was used to measure the total field values. An EDA PPM 400 base station was employed to record and correct for diurnal variations. The specifications for these instruments are given in Appendix A.

The geophysical data was stored on diskette and computer-generated maps were produced and interpreted by St. Joe Mineral's geophysical department in Tucson, Arizona.

The data are presented as stacked profiles and as contours (Maps 1 & 2, respectively). Both maps are at a scale of 1:2500.

MAGNETIC SURVEY - INTERPRETATION OF RESULTS:

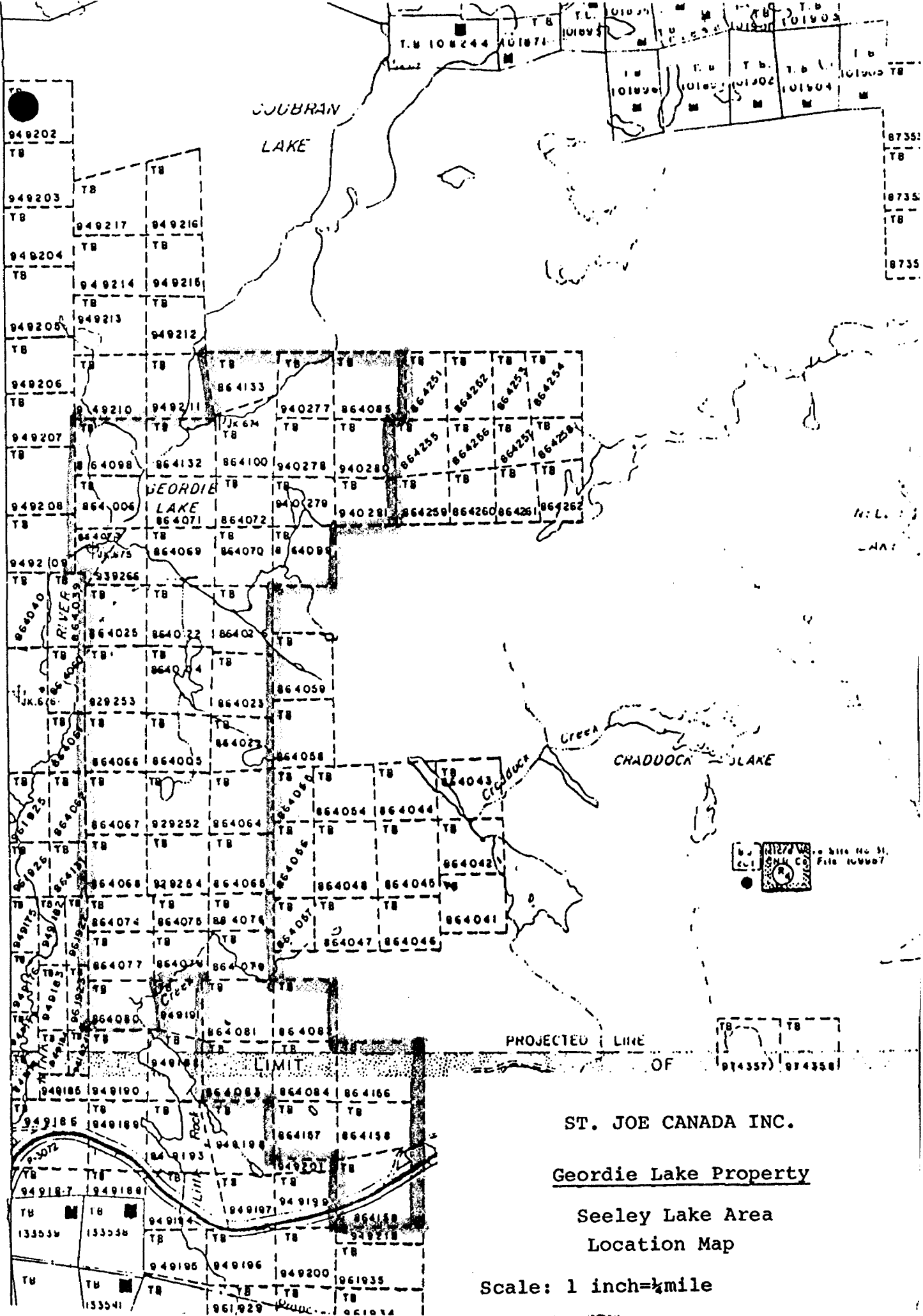
The unfiltered (raw) field data profiled in Map 1 are very difficult to interpret due to the very erratic (spikey) nature of the magnetic response.

The contour map was computer-processed by first gridding drift-corrected median-filtered field data on a 12.5 meter square mesh with a minimum horizontal curvature algorithm. These gridded data were then Fourier transformed with a two-dimensional low-pass filter on a wavelength of 50 meters. Between the median and low-pass filtering, most of the complicating and geologically uninteresting "noise" has been suppressed. These filtered data were then contoured on a 500-gamma interval.

The magnetic survey has defined several NNE-trending, very strong low anomalies. The strongest and most strike-persistent low can be followed from at least Line 0+00 to 25+00S, centered near the baseline at its north end to about 4+00W at its south end. It varies in width from about 40 to 50 meters at the north and south ends, to a maximum of about 225 meters on Line 14+00S in the very strong central portion.

This feature reaches about -20,000 gammas in amplitude on Line 13+00S - a very strong low. It correlates very well with the mineralized gabbro unit. The east margin corresponds reasonably well with the gabbro-syenite contact. The syenite is seen to be 1000 to 2000 gammas above background and much less erratically magnetized than the gabbro.

51'
50'
49'
48'



ST. JOE CANADA INC.
Geordie Lake Property
 Seeley Lake Area
 Location Map

Scale: 1 inch = 1/4 mile

Figure 2

The strong magnetic low is probably the result of "self-reversal" remanent magnetization. This commonly occurs where exsolved phases of the hematite-ilmenite solid solution series are present, particularly where ilmenite predominates. Magnetite with a "normal" reversed field remanence is a less likely possibility. The syenite is also anomalously magnetic, but would appear to be normally polarized.

Another quite strong NNE-trending low is seen about 350 meters east of the main low. It extends from Line 1+00S to 14+00S, ranging in width from about 40 meters to 130 meters. It is so similar in magnetic character to the main anomaly that a similar gabbro unit can be reasonably inferred. This unit then becomes a secondary platinum target, particularly along its west margin where it contacts what magnetically appears to be the syenite.

Two other weaker and less extensive lows are noted in the north part of the area between and subparalleling the two strong lows. They are located more or less between Lines 0+00 and 5+00S, near coordinates 1+00E and 3+00E. They are also probably gabbro units.

A rather complex zone of low magnetic response is present near 5+00W on Lines 14+00S through 23+00S. This response is of unknown significance, but may also be gabbroic in composition.

A fairly strong magnetic high defines the west margin of the main low on Lines 6+00S through 12+00S. It reaches an amplitude of about 9000 gammas on Line 7+00S. This unit is also of unknown significance, but may be a magnetite-rich zone of the syenitic phase.

Because of the obvious remanent magnetic responses present, dip interpretation becomes ambiguous (unless the absolute direction of the remanent polarization were determined from oriented samples).

CONCLUSIONS AND RECOMMENDATIONS:

The magnetic survey has successfully traced the extent of the mineralized horizon over a strike length of 2500m. Several zones with a similar magnetic response that warrant further investigation have also been delineated.

A field program consisting of detailed geological mapping, trenching of the known copper occurrence and its interpreted strike extension, and Induced Polarization surveys over the selected areas of interest is recommended.

CERTIFICATE OF QUALIFICATION

I, Robin Jowett of 883 Sunningdale Bend, Mississauga, Ontario do hereby certify that:

1. I am a graduate of the University of Toronto and hold a BSc degree in geological sciences (1977).
2. I am a geologist employed by St. Joe Canada Inc. and have practiced my profession continuously since graduation.
3. I am a member of the Geological Association of Canada.
4. I personally supervised the field work described herein.



Robin Jowett

Dated at Toronto this 29th day of July, 1987.



42D16SW0028 2.10245 SEELEY LAKE

900

October 7, 1987

Your File: 237,359

Our File: 2.10245

Mining Recorder
Ministry of Northern Development and Mines
435 James Street South
P.O. Box 5000
Thunder Bay, Ontario
P7C 5G6

Dear Madam:

RE: Notice of Intent dated September 22, 1987
Geophysical (Magnetometer) Survey on Mining Claims
TB 864004, et al, in Seeley Lake Area

The assessment work credits, as listed with the above-mentioned Notice of Intent, have been approved as of the above date.

Please inform the recorded holder of these mining claims and so indicate on your records.

Yours sincerely,

R.M. Charnesky (Mrs.)
Acting Manager
Mining Lands Section
Mineral Development and Lands Branch
Mines and Minerals Division

Whitney Block, Room 6610
Queen's Park
Toronto, Ontario
M7A 1W3

Telephone: (416) 965-4888

RM:pl

cc: St. Joe Canada Inc.
1116-111 Richmond St. W.
Toronto, Ontario
M5H 2J4

Mr. David E. Molloy
49 Normandale Road
Unionville, Ontario
L3R 4J8

Mr. G.H. Ferguson
Mining and Lands Commissioner
Toronto, Ontario

Resident Geologist
Thunder Bay, Ontario



Recorded Holder
ST. JOE CANADA INC.

Township or Area
SEELEY LAKE AREA

Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
Geophysical Electromagnetic _____ days Magnetometer <u>40</u> days Radiometric _____ days Induced polarization _____ days Other _____ days Section 77 (19) See "Mining Claims Assessed" column Geological _____ days Geochemical _____ days Man days <input type="checkbox"/> Airborne <input type="checkbox"/> Special provision <input checked="" type="checkbox"/> Ground <input checked="" type="checkbox"/> <input type="checkbox"/> Credits have been reduced because of partial coverage of claims. <input type="checkbox"/> Credits have been reduced because of corrections to work dates and figures of applicant.	TB 864004-006 inclusive 864022-023 inclusive 864025-027 inclusive 864064-066 inclusive 864067-072 inclusive 864098 864100 864132 929252-254 inclusive 864131

Special credits under section 77 (16) for the following mining claims

30 Days Magnetometer	20 Days Magnetometer	10 Days Magnetometer
TB 864099	TB 864133 939266	TB 864073

No credits have been allowed for the following mining claims

not sufficiently covered by the survey insufficient technical data filed

The Mining Recorder may reduce the above credits if necessary in order that the total number of approved assessment days recorded on each claim does not exceed the maximum allowed as follows: Geophysical - 80; Geological - 40; Geochemical - 40; Section 77(19) - 60.



Recorded Holder
ST. JOE CANADA INC

Township or Area
SEELEY LAKE AREA

Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
Geophysical Electromagnetic _____ days Magnetometer _____ 40 _____ days Radiometric _____ days Induced polarization _____ days Other _____ days Section 77 (19) See "Mining Claims Assessed" column Geological _____ days Geochemical _____ days Man days <input type="checkbox"/> Airborne <input type="checkbox"/> Special provision <input checked="" type="checkbox"/> Ground <input checked="" type="checkbox"/> <input type="checkbox"/> Credits have been reduced because of partial coverage of claims. <input type="checkbox"/> Credits have been reduced because of corrections to work dates and figures of applicant.	TB 864157 864159 940277 to 281 inclusive 864074 to 085 inclusive

Special credits under section 77 (16) for the following mining claims

<u>10 DAYS MAGNETOMETER</u>	<u>30 DAYS MAGNETOMETER</u>
TB 864156	TB 864158

No credits have been allowed for the following mining claims

not sufficiently covered by the survey insufficient technical data filed

The Mining Recorder may reduce the above credits if necessary in order that the total number of approved assessment days recorded on each claim does not exceed the maximum allowed as follows: Geophysical - 80; Geological - 40; Geochemical - 40; Section 77(19) - 60.



Ministry of Natural Resources

File # 864004

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) Magnetometer
Township or Area Seeley Lake (G613)
Claim Holder(s) St. Joe Canada Inc.
111 Richmond W. Ste 1116, Toronto
Survey Company MPH Consulting Limited
Author of Report Robin Jaquet
Address of Author 883 Sunningdale Mississauga
Covering Dates of Survey Jan 30 - March 1987 LSJIG
(linecutting to office)
Total Miles of Line Cut 71.63 kms.

MINING CLAIMS TRAVERSED
List numerically

..... See attached list
(prefix) (number)

SPECIAL PROVISIONS
CREDITS REQUESTED

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

ENTER 20 days for each
additional survey using
same grid.

Geophysical DAYS
 per claim.
-Electromagnetic _____
-Magnetometer 40
-Radiometric _____
-Other _____
Geological _____
Geochemical _____

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

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

DATE: July 28, 1987 SIGNATURE: Robin Jaquet
Author of Report or Agent

Res. Geol. _____ Qualifications 2.10009

Previous Surveys

File No.	Type	Date	Claim Holder

TOTAL CLAIMS 49

If space insufficient, attach list

OFFICE USE ONLY

GEOPHYSICAL TECHNICAL DATA

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

Number of Stations 5232 Number of Readings 5232
Station interval 12.5 m Line spacing 100m
Profile scale 1000 gammas per cm
Contour interval 500 gammas

MAGNETIC

Instrument EPA ppm 350 proton precision magnetometer with EPA ppm 400 base station
Accuracy - Scale constant +/- 0.02 gammas sensitivity, +/- 15 ppm at 23C accuracy
Diurnal correction method automatic through cable link to base station (interpolation)
Base Station check-in interval (hours) 6 hours maximum
Base Station location and value on the grid.

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

SELF POTENTIAL

Instrument _____ Range _____

Survey Method _____

Corrections made _____

RADIOMETRIC

Instrument _____

Values measured _____

Energy windows (levels) _____

Height of instrument _____ Background Count _____

Size of detector _____

Overburden _____

(type, depth - include outcrop map)

OTHERS (SEISMIC, DRILL WELL LOGGING ETC.)

Type of survey _____

Instrument _____

Accuracy _____

Parameters measured _____

Additional information (for understanding results) _____

AIRBORNE SURVEYS

Type of survey(s) _____

Instrument(s) _____

(specify for each type of survey)

Accuracy _____

(specify for each type of survey)

Aircraft used _____

Sensor altitude _____

Navigation and flight path recovery method _____

Aircraft altitude _____ Line Spacing _____

Miles flown over total area _____ Over claims only _____

GEOCHEMICAL SURVEY – PROCEDURE RECORD



Numbers of claims from which samples taken _____

Total Number of Samples _____

Type of Sample _____
(Nature of Material)

Average Sample Weight _____

Method of Collection _____

Soil Horizon Sampled _____

Horizon Development _____

Sample Depth _____

Terrain _____

Drainage Development _____

Estimated Range of Overburden Thickness _____

SAMPLE PREPARATION

(Includes drying, screening, crushing, ashing)

Mesh size of fraction used for analysis _____

General _____

ANALYTICAL METHODS

Values expressed in: per cent
p. p. m.
p. p. b.

Cu, Pb, Zn, Ni, Co, Ag, Mo, As, -(circle)

Others _____

Field Analysis (_____ tests)

Extraction Method _____

Analytical Method _____

Reagents Used _____

Field Laboratory Analysis

No. (_____ tests)

Extraction Method _____

Analytical Method _____

Reagents Used _____

Commercial Laboratory (_____ tests)

Name of Laboratory _____

Extraction Method _____

Analytical Method _____

Reagents Used _____

General _____

LIST OF CLAIMS

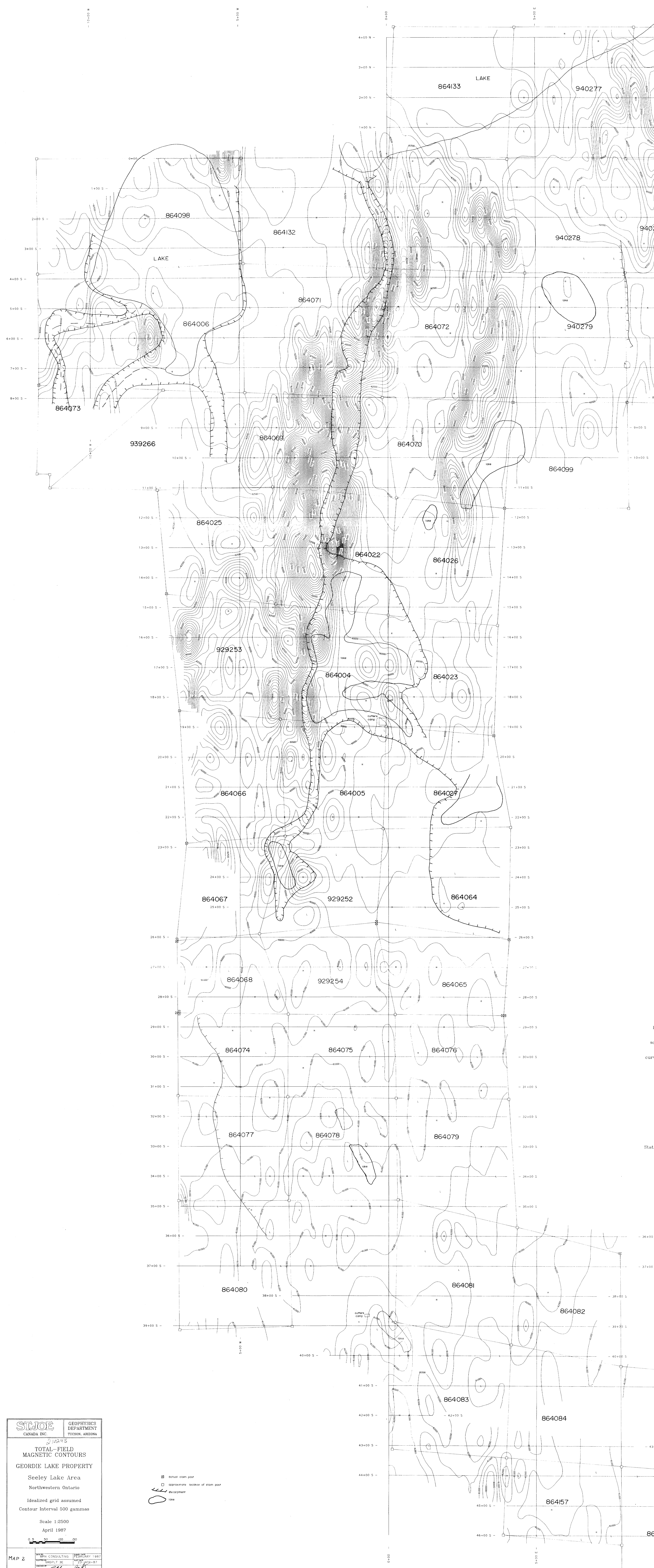
CLAIM NO.

TB864156 ✓
864157 ✓
864158 ✓
864159 ✓
940277 ✓
940278 ✓
940279 ✓
940280 ✓
940281 ✓
864074 ✓
864075 ✓
864076 ✓
864077 ✓
864078 ✓
864079 ✓
864080 ✓
864081 ✓
864082 ✓
864083 ✓
864084 ✓
864085 ✓
864004 ✓
864005 ✓
864006 ✓

CLAIM NO.

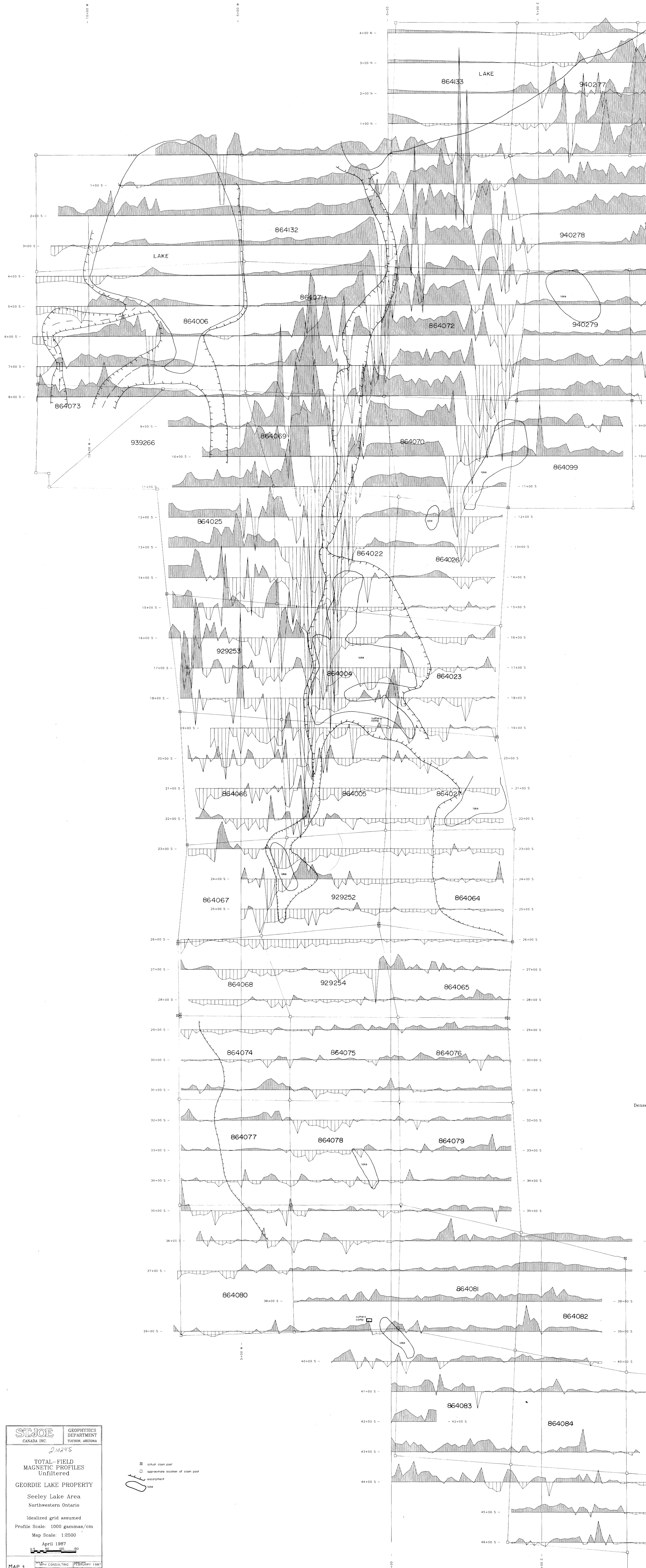
TB864022 ✓
864023 ✓
864025 ✓
864026 ✓
864027 ✓
864064 ✓
864065 ✓
864066 ✓
864067 ✓
864068 ✓
864069 ✓
864070 ✓
864071 ✓
864072 ✓
864073 ✓
864098 ✓
864099 ✓
864100 ✓
864132 ✓
864133 ✓
929252 ✓
929253 ✓
929254 ✓
939266 ✓
864131 ✓

A handwritten signature in black ink, appearing to be 'R. J. ...', located in the lower right quadrant of the page.



STJOE CANADA INC.	GEOPHYSICS DEPARTMENT TUCSON, ARIZONA
210245	
TOTAL-FIELD MAGNETIC CONTOURS	
GEORDIE LAKE PROPERTY	
Seeley Lake Area	
Northwestern Ontario	
Idealized grid assumed	
Contour Interval 500 gammas	
Scale 1:2500	
April 1987	
MAP 2	GPH CONSULTING FEBRUARY 1987 SKRPLT JE DEPW





STJOE GEOPHYSICS
CANADA INC. DEPARTMENT
TUCSON, ARIZONA

216245

**TOTAL-FIELD
MAGNETIC PROFILES
Unfiltered**

GEORDIE LAKE PROPERTY
Seeley Lake Area
Northwestern Ontario

Idealized grid assumed
Profile Scale: 1000 gammas/cm
Map Scale: 1:2500
April 1987

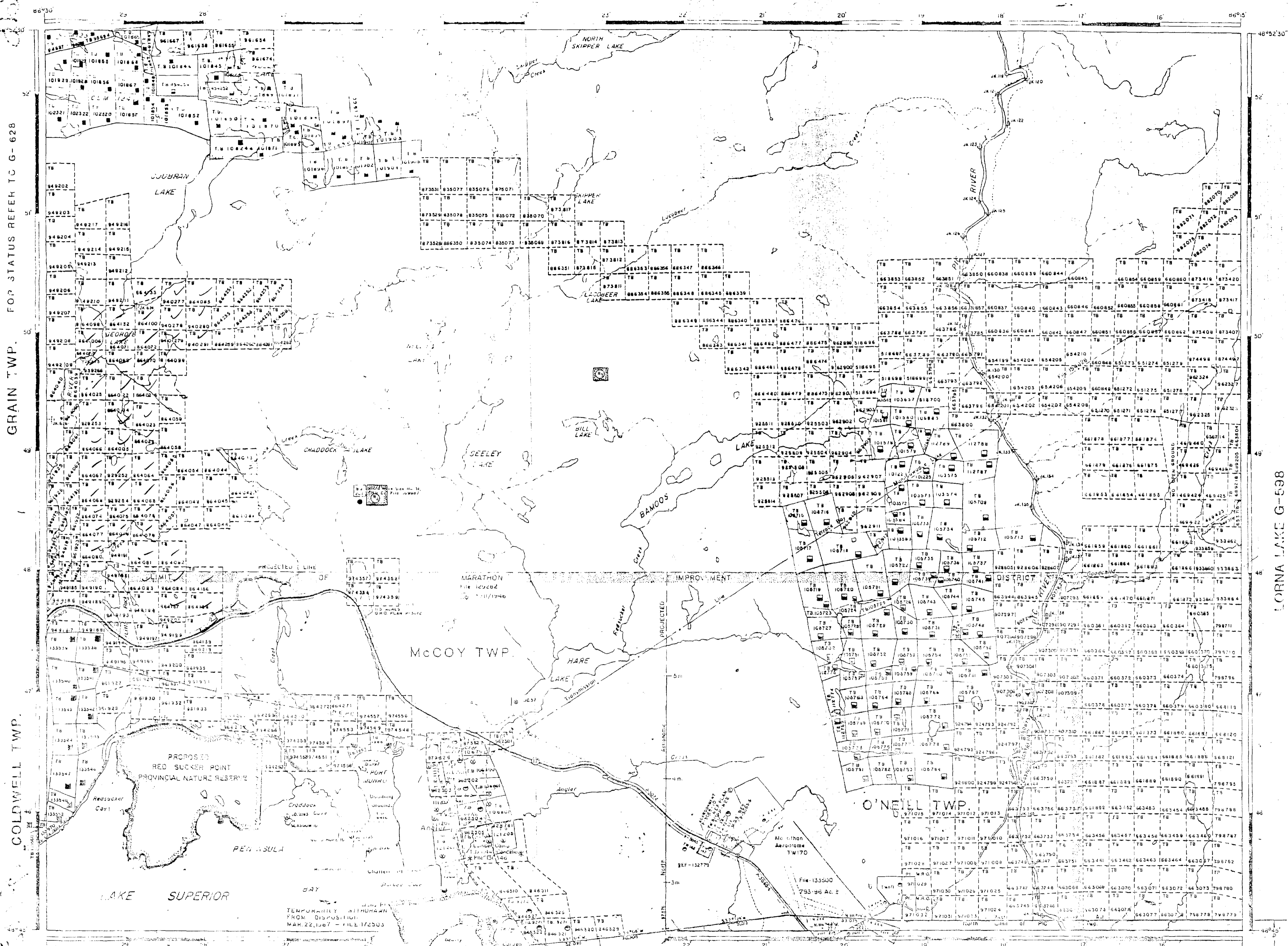
MAP 1

STJOE CONSULTING FEBRUARY 1987
REPORT TO: GEFON TE
PROJECT: 216245

☒ actual camp post
 □ approximate location of camp post
 lake
 copper camp

Denser

MARINET LAKE G-601



AREA SHOWN THIS MAP IS WITHDRAWN FROM STAKING PURSUANT TO PROVISIONS SECTION 32 OF THE MINING ACT, R.S.O. 1980, CHAPTER 268. DISPOSITION BY EXPLORATORY LICENCE OF OCCUPATION ONLY.

LAND UNDER WATER IN LAKE SUPERIOR IS WITHDRAWN FROM STAKING BY ORDER IN COUNCIL, DATED APRIL 30, 1912.

LEGEND

- Highway
- Water
- Marsh
- Proposed
- Abandoned
- Original
- Traverse

DISPOSITION OF CROWN LANDS

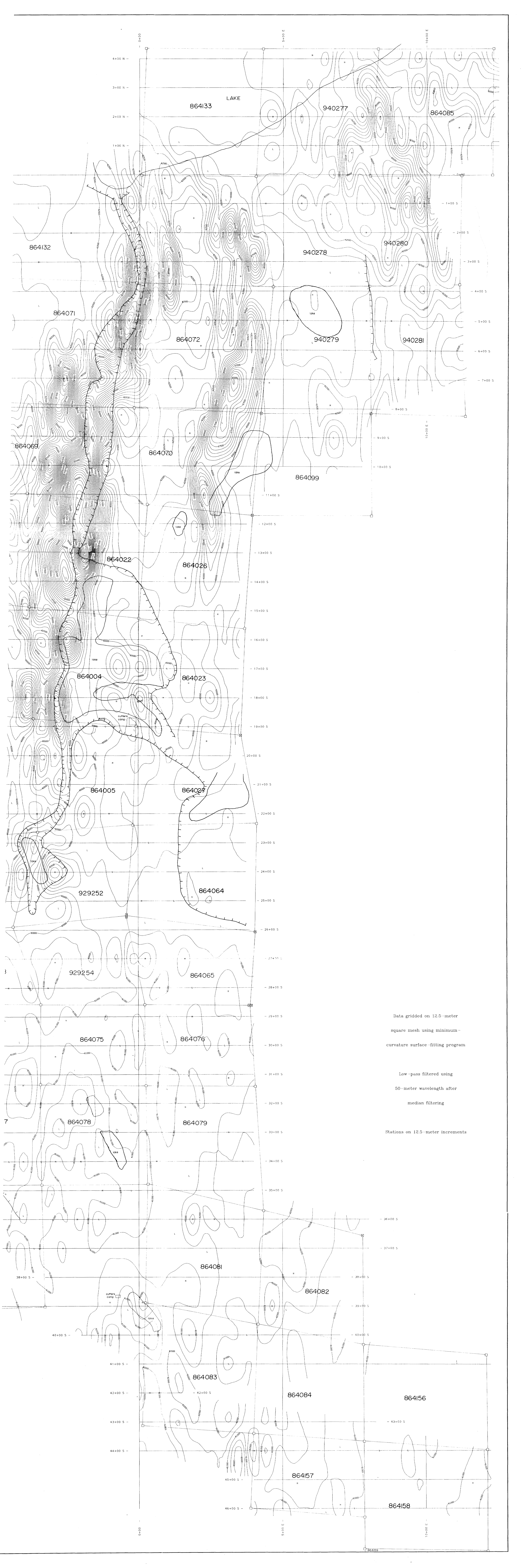
TYPE OF DOCUMENT	SYMBOL
PATENT SURFACE & MINING RIGHTS	[Symbol]
SURFACE RIGHTS ONLY	[Symbol]
MINING RIGHTS ONLY	[Symbol]
LEASE SURFACE & MINING RIGHTS	[Symbol]
SURFACE RIGHTS ONLY	[Symbol]
MINING RIGHTS ONLY	[Symbol]
DISPOSAL OF OCCUPATION	[Symbol]
ORDER IN COUNCIL	[Symbol]
RESERVATION	[Symbol]
CANCELLED	[Symbol]
SANITARY GRAVES	[Symbol]

SCALE 1:50,000 (40 METERS)

AREA
SEELYE LAKE
M.N.R. ADMINISTRATIVE DISTRICT
TERRACE BAY
MINING DIVISION
THUNDER BAY
LAND TITLES / REGISTRY DIVISION
THUNDER BAY

Ministry of Land Management
Natural Resources Branch
Ontario
9001 2ND ST.
TORONTO, ONT. M5H 1K5
FEBRUARY 1999





Data gridded on 12.5-meter square mesh using minimum-curvature surface-fitting program

Low-pass filtered using 50-meter wavelength after median filtering

Stations on 12.5-meter increments

