



32D04NE0485 2.2902 MCGARRY

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VLF EM 16
ELECTROMAGNETIC SURVEY
MCGARRY TOWNSHIP, ONTARIO

On behalf of
Lee Geo-Indicators Limited

RECEIVED

JUN 03 1979

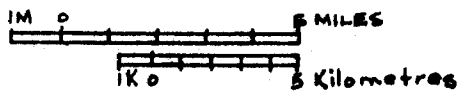
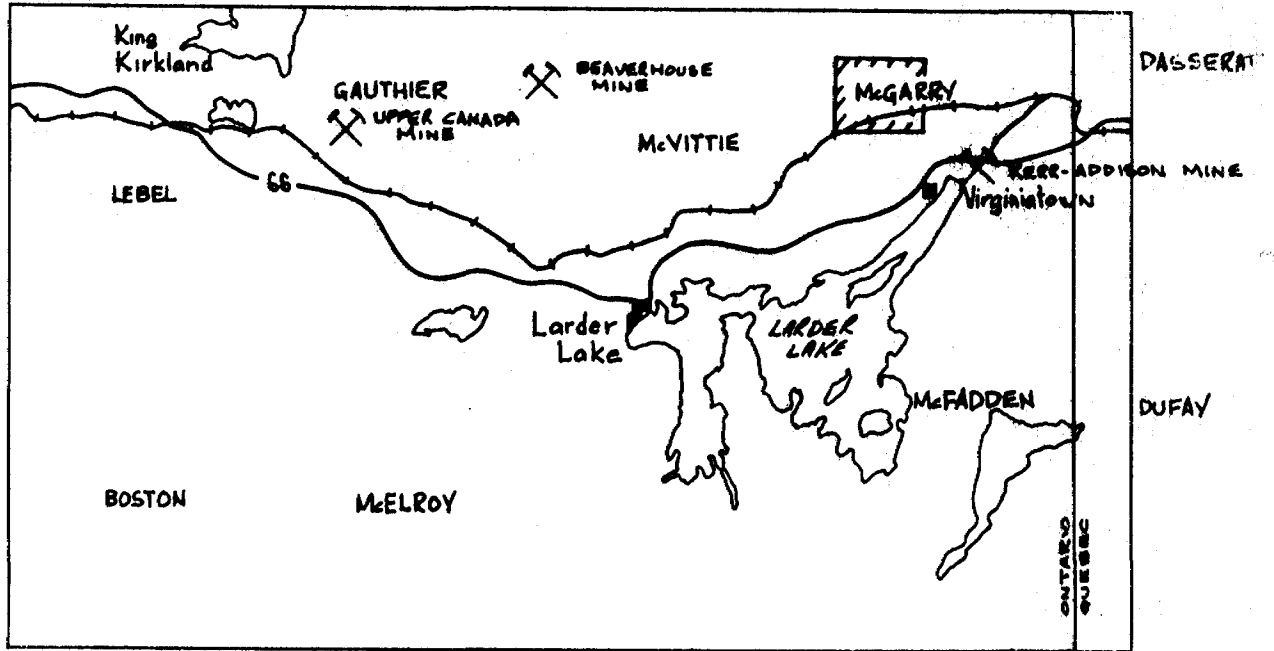
MINING LANDS SECTION

By:
Lee Geo-Indicators Limited
Hulbert A. Lee, Ph.D., P.Eng.
May, 1979

94 Alexander Street
Box 68
Stittsville, Ontario
K0A 3G0

Tel: (613)836-1419

INDEX MAP



ELECTROMAGNETIC SURVEY, MCGARRY TOWNSHIP

ONTARIO

INTRODUCTION

Between March 5th to 21st, 1979, a geophysical crew headed by Alex Mathias, under the supervision of the author, carried out an electromagnetic survey on the McGarry property. McGarry Township, Ontario, on behalf of Lee Geo-Indicators Limited. The claims over which the survey was carried out, are registered with the Ontario Ministry of Natural Resources under the following claim numbers:

L441495	L441499	L441498
L428754	L428753	L428752
L428751	L428750	L428749
L428743	L428742	L441501
L522858	L422255	L422254
L422251	L428744	L428741
L422250		

The VLF electromagnetic survey involved 14.5 line miles at 400' centres and oriented in a north north-west direction.

The instrument used was a VLF CRONE EM16 using a frequency transmitted from NAA Cutler, Maine. The stations reading interval

was 100 feet and 779 readings were taken.

The purpose of the present survey was to delineate zones of conductivity within the underlying rocks. These zones could represent concentrations of minerals having metallic conductive properties. Such minerals are pyrite, pyrrhotite, chalcopyrite (but not sphalerite) and graphite. Some open jointing and shearing may be conductive as well as some clay. It is rarely possible for EM data alone to differentiate between these various sources of conductivity.

PREVIOUS WORK

Basal tills surveys (Lee, 1975a, 1975b) showed extensive gold clasts in the till between Lines 28W and 48E. A biogeochemical survey (Scott, 1975) showed weak gold zones in the vegetation up-ice of the gold anomaly. Five short inclined diamond drill holes gave a N-S section about 100' west of L12E (Perry 1975, and Lee 1975b). The rocks encountered were sheared tholeiitic basalt near the railroad track and highly altered calc-alkaline dacitic tuffs farther north. Gold values intersected were low. A ground magnetic survey was made over the property about the same time as this electromagnetic survey (Lee, 1979). The geological outcrop map which covers McGarry Township is at a scale of 1 inch to 1000 feet (Thomson, 1941).

DISCUSSION OF RESULTS

The accompanying map on a scale of 1" to 400' shows the electromagnetic data in profile form, the tilt angles being plotted at a scale of 1" = 100% and the northerly inclinations plotted on the left hand side of the line, whereas the southerly inclinations were registered on the right hand side.

The present VLF electromagnetic survey has outlined a number of anomalies and these have been labelled A, A', B, C, D, E, F, and G.

ANOMALY A

This anomaly crosses L36W, L32W and L28W. It is a strong conductor at L36W and a weak conductor farther east. The rocks are shown on the township map as fine grained sediments. Chemical analyses on similar sediments along L48E showed them to be dacitic tuffs. Other parallel lines of conductors 200' and 400' farther north (A') also crossing L40W to L24W show generally moderate strengths. Some old pitting in chloritic and andesite rock has been done near the eastern end of these anomalies between L24W and L20W for gold exploration.

ANOMALY B

This anomaly is located on L12W 550'N and extends easterly crossing L8W, L4W, L0 and again picks up in L12E, L16E and L20E. The conductors include those of moderate strength and weak. The rocks are shown on the township map to be basalt and andesite. Photo-geology shows a linear and a clay zone to the south but the anomaly appears to be on rock and till north of the clay plain. About 100 feet west of L12E shallow drilling intersected dacitic lapilli tuff carrying an estimated 10% disseminated pyrite in the position of the moderate strength conductor.

ANOMALY C

This anomaly is located on L12E at 1100'N and crosses L10E and L20E. It is weak to moderate in conductivity and is in terrain generally underlain by calc-alkaline dacitic tuffs.

ANOMALIES D AND E

Anomaly D is located on L28E at 1320'N and crosses L24E and L20E. It is a moderate strength conductor.

Anomaly E is located on L36E 1050'N and crosses L40E. The conductivity is weak. Anomalies D and E have subparallel northeasterly trends and may be shear zones.

ANOMALY F

This anomaly is located on L40E at 680'N and crosses L36E and L32E. It is a moderate strength anomaly. Some old pitting close to this anomaly exposes andesite, dacitic tuff, quartz veining and pyrite.

ANOMOLY G

This anomaly is located on L40E at 2100'N and extends across L48E and L52E. The conductivity is strong. The township map shows that the rocks in the vicinity are basalt and pillow lava. Photogeology shows a prominent linear along the trend of this conductor.

CONCLUSIONS AND RECOMMENDATIONS

This electromagnetic survey shows 7 conductors; six of them are moderate to weak. The seventh, anomaly A, is strong and may contain lenses of massive sulphide. It is recommended that detailed geology and prospecting be carried out along this conductor. Short inclined diamond drill holes could determine its nature as the overburden is generally thin.

The other 6 conductors are weak to moderate in strength and are likely due to pyrite in contact with waters along shear zones. These are of interest to gold exploration and it is recommended that they be further prospected by backhoe trenching and that detailed geological mapping be carried out.

Respectively submitted

Hulbert A. Lee

Hulbert A. Lee, P. Eng.

REFERENCES CITED

Lee, H.A. (1975a):

Geo-Indicators for gold and gold clasts within McGarry Township, Ontario (32 D/4); Ontario Ministry of Natural Resources, Assessment Files, Kirkland Lake, July, 1975.

Lee, H.A. (1975b):

The second basal till search for gold within McGarry Township, Ontario (32 D/4); Ontario Ministry of Natural Resources, Assessment Files, Kirkland Lake, December, 1975.

Lee, H.A. (1979):

Magnetic survey, McGarry Township, Ontario, 32 D/4; Ontario Ministry of Natural Resources, Assessment Files, Kirkland Lake, May, 1979.

Perry, J. (1975):

Lee-Canico-Texasgulf Joint Venture, McGarry Township, diamond drill program, August, September; Ontario Ministry of Natural Resources, Assessment Files, Kirkland Lake.

Scott, S.A. (1975):

Biogeochemical survey over shear zones, McGarry Township, Ontario (32 D/4), on behalf of Lee-Canico-Texasgulf Joint

Venture, Ontario Ministry of Natural Resources, Assessment
Files, Kirkland Lake.

Thompson, Jas. E. (1941):

Township of McGarry, Ontario; Ontario Dept. Mines Annual
Report, Vol. L, pt.VII, 1941.



32D04NE0465 2.2882 MCGARRY

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MAGNETIC SURVEY
MCGARRY TOWNSHIP, ONTARIO, 32 D/4

On behalf of
Lee Geo-Indicators Limited

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JUN 05 1979

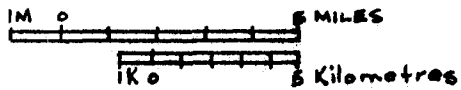
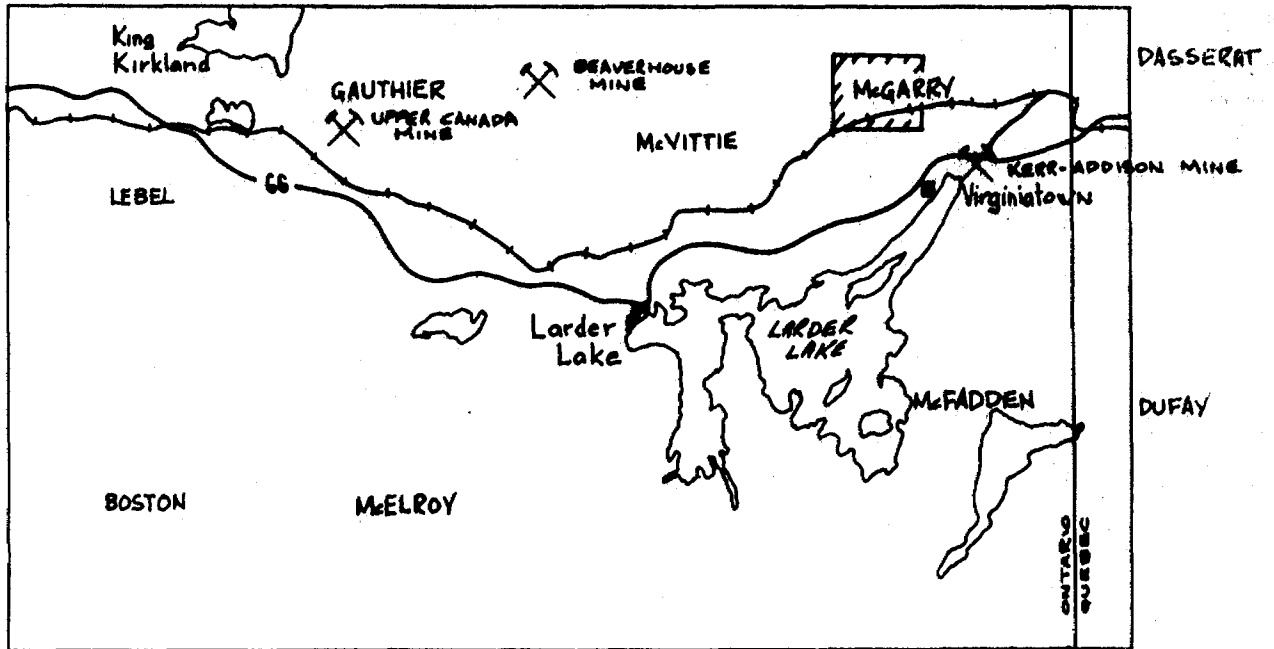
MINING LANDS SECTION

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INDEX MAP



MAGNETIC SURVEY, MCGARRY TOWNSHIP,
ONTARIO

INTRODUCTION

Between 12th of February and 2nd of March, 1979, line-cutting and chaining were carried by a crew headed by Alex Mathias, under the supervision of the author on the McGarry property. McGarry Township, Ontario, on behalf of Lee Geo-Indicators Limited. The claims over which the line-cutting and chaining were done, are registered with the Ontario Ministry of Natural Resources under the following claim numbers:

L441495	L441499	L441498
L428754	L418753	L428752
L428751	L428750	L428749
L428743	L428742	L441501
L522858	L422255	L422254
L422251	L428744	L428741
L422250		

A total of 14.5 line-miles were cut and chained, and an additional 2.1 miles chained along a railway baseline.

Between 5th of March and 21st of March, 1979, a geophysical magnetic survey was carried out across the above listed claims. The magnetic survey involved 14.5 line-miles covering all the property with lines at 400' centres oriented in a north-northwest direction. A total of 863 readings were made over 820 stations.

The instrument used was a McPhar M700 magnetometer unit. A base station was set up on the baseline at L0 with a reading established at 290 gammas. Intermediate base stations were set up as shown on the map and diurnal corrections were made at about 1 hour intervals by tie in with these intermediate stations.

The purpose of the present survey was to delineate the magnetic expression within the underlying rocks. The isomagnetic lines expressed by the magnetic contours are dependent on the various magnetic intensities of the underlying rocks, and may be due to conditions near, or at unknown depths below the surface.

Higher magnetic anomalies normally indicate the presence of some basic rocks and sedimentary rocks which may have a relatively high iron content, but in special circumstances may be due, or partly due, to concentrations of magnetic minerals. By means of the magnetic anomalies, various rock bodies or structural features, such as faults or folds, may be traced into, or across, areas of few or no outcrops. In many instances, however, no interpretation

of particular anomalies may be possible without further geological information.

PREVIOUS WORK

Basal till surveys (Lee, 1975a, 1975b) showed extensive gold clasts in the till between Lines 28W and 48E straddling the railway track. A biogeochemical survey (Scott, 1975) showed weak gold zones in the vegetation up-ice of the gold anomaly. Five short inclined diamond drill holes gave a N-S section about 100' west of Line 12E (Perry, 1975 and Lee, 1975b). The rocks encountered were sheared tholeiitic basalt near the railroad track and highly altered calc-alkaline dacitic tuff farther north. Gold values intersected were low. An electromagnetic survey was made over this property about the same time as this magnetic survey (Lee, 1979). The geological outcrop map which covers McGarry Township is at a scale of 1 inch to 1000 feet (Thompson, 1941) and is used in the following discussion of results.

DISCUSSION OF RESULTS

The accompanying map on a scale of 1" to 400' shows the magnetic data in contour form, the contours being plotted at 100 gamma intervals. A second map shows an overlay of geology as interpreted from the magnetic data correlated with an approximate

plot of the geology from Thompson's map. The map-unit numbers are those from Thompson (1941) but the arrangement of discussion below is geographical for the property.

Unit 5

South of the railway track the isograms have an easterly trend of low magnetic values of 300 to 800 gammas and will reflect the strike of these formations. The rocks are said to be chiefly conglomerate.

Unit 2A

Underlying the railroad between L0 and L36 a low magnetic linear trends easterly. Previous drilling, about 100' west of L12E, intersected a sheared chloritic tholeiitic basalt with quartz veining.

Again along L0 and 300 to 1000 feet north of the baseline the magnetic values are moderately higher and the rocks are said to be basalt.

A third basalt body occurs between L40E and L52E at 1000 to 1900'N where the magnetic data shows a plateau between 300 and 800 gammas. The magnetic data suggests a fault boundary for the northwestern edge of this body.

Unit 6A

At the western edge of the property a band or wedge about 500' wide shows east trending isograms which reflect both the strike of the formation and direction of shearing. These isogram trends are parallel to several lines of moderate to weak electromagnetic conductors (Lee, 1979). The rocks are said to be fine grained sediments, but by correlation with chemically analyzed similar rocks farther east on the property they may be dacitic tuffs.

At the eastern edge of the property similar rocks of this unit show an undulating magnetic expression of 600 to 900 gammas.

Unit 7A & 6A

An easterly trending higher magnetic ridge is developed on this unit. The rocks are said by Thompson to be trachyte and sediments. Chemical analyses done later show them to be calc-alkaline dacites and textures are tuffaceous to lapelli. These dacitic tuffs and exhalites are intermixed with pinkish feldspathic porphyritic feeder dykes (?).

Unit 4A

This unit has a relatively low (300 to 800 gammas) magnetic level with no dominant trends. The underlying rocks are said to be diorite.

Unit 4B

This unit has a slightly higher magnetic expression (500 to 800 gammas) but locally is as much as 16,000 gammas. The underlying rocks are said to be gabbro.

CONCLUSIONS AND RECOMMENDATIONS

One model for gold control is a change of rocks from ductile to brittle especially along a fault system. Such conditions are likely to be found along the edges of unit 6A & 7A.

This unit is bounded on the south by a sheared chloritic tholeiitic basalt, probably a fault zone. On the west it is bounded by basalt; on the northwest by dacitic tuff or sediments.

The magnetics also show a northeasterly trending shear crossing this unit.

The strong gold anomaly in till conforms in shape to unit 6A & 7A.

The cause of the magnetic anomaly and further search for gold can be investigated by:

- a) detailed geology survey tied in to the picket grid;
- b) by trenching, as the outcrops are very small and low; while overburden is thin
- c) by low angle diamond drill holes.

Respectfully submitted

Hulbert A. Lee
Hulbert A. Lee, P.Eng.

REFERENCES CITED

Lee, H.A. (1975a):

Geo-Indicators for gold and gold clasts within McGarry Township, Ontario (32 D/4); Ontario Ministry of Natural Resources, Assessment Files, Kirkland Lake, July, 1975.

Lee, H.A. (1975b):

The second basal till search for gold within McGarry Township, Ontario (32 D/4); Ontario Ministry of Natural Resources, Assessment Files, Kirkland Lake, December, 1975.

Lee, H.A. (1979):

Electro-Magnetic survey, McGarry Township, Ontario, 32 D/4; Ontario Ministry of Natural Resources, Assessment Files, Kirkland Lake, May, 1979.

Perry, J. (1975):

Lee-Canico-Texasgulf Joint Venture, McGarry Township, diamond drill program, August, September; Ontario Ministry of Natural Resources, Assessment Files, Kirkland Lake.

Scott, S.A. (1975):

Biogeochemical survey over shear zones, McGarry Township, Ontario (32 D/4), on behalf of Lee-Canico-Texas Gulf Joint

Venture, Ontario Ministry of Natural Resources, Assessment
Files, Kirkland Lake.

Thompson, Jas. E. (1941):

Township of McGarry, Ontario; Ontario Dept. Mines Annual
Report, Vol. L, pt.VII, 1941.

GEOPHYSICAL TECHNICAL DATA

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

Number of Stations 781 Number of Readings 779
Station interval 100 ft Line spacing 400 ft
Profile scale 1 inch = 100%
Contour interval

MAGNETIC

Instrument
Accuracy - Scale constant
Diurnal correction method
Base Station check-in interval (hours)
Base Station location and value

ELECTROMAGNETIC

Instrument VLF Crone EM 16
Coil configuration
Coil separation
Accuracy
Method: [x] Fixed transmitter [] Shoot back [] In line [] Parallel line
Frequency NAA Cutlerr Maine (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



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) Geophysical, Magnetometer
Township or Area McGarry Township
Claim Holder(s) Lee Geo-Indicators Limited
Survey Company Alex Mathias
Author of Report H.A. Lee
Address of Author Stittsville, Ontario
Covering Dates of Survey Feb. 12/79 to March 21/79
(linecutting to office)
Total Miles of Line Cut 14.5 plus additional 2.1
chained along railway base lines

MINING CLAIMS TRAVERSED
List numerically

L441495	111425
(prefix)	(number)
L441499	111422
L441498	
L428754	
L428753	
L428752	287521
L428751	
L428750	8750
L428749	87
L428743	
L428742	8742
L441501	1501
L522858	522858
L422255	
L422254	
L422251	
L428744	
L428741	8741
L422250	22250

If space insufficient, attach list

SPECIAL PROVISIONS CREDITS REQUESTED

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

ENTER 40 days (includes line cutting) for first survey.
ENTER 20 days for each additional survey using same grid.

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)
Magnetometer _____ Electromagnetic _____ Radiometric _____
(enter days per claim)

DATE: April 5/79 SIGNATURE: Hubert A. Lee
Author of Report or Agent

Res. Geol. _____ Qualifications 2. 1625 & on this file

Previous Surveys
File No. Type Date Claim Holder

File No.	Type	Date	Claim Holder

TOTAL CLAIMS 19

OFFICE USE ONLY

GEOPHYSICAL TECHNICAL DATA

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

Number of Stations 820 Number of Readings 863
Station interval 100 ft. (interm. 50') Line spacing 400 ft.
Profile scale
Contour interval 100 gammas

MAGNETIC

Instrument McPhar M700
Accuracy - Scale constant
Diurnal correction method Interm. base stations
Base Station check-in interval (hours) 1/hour at interm. base stations
Base Station location and value L + 00 at 290 gammas

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

Mc GARRY

DISTRICT OF
TIMISKAMING

LARDER LAKE
MINING DIVISION

SCALE: 1 INCH = 20 CHAINS

LEGEND

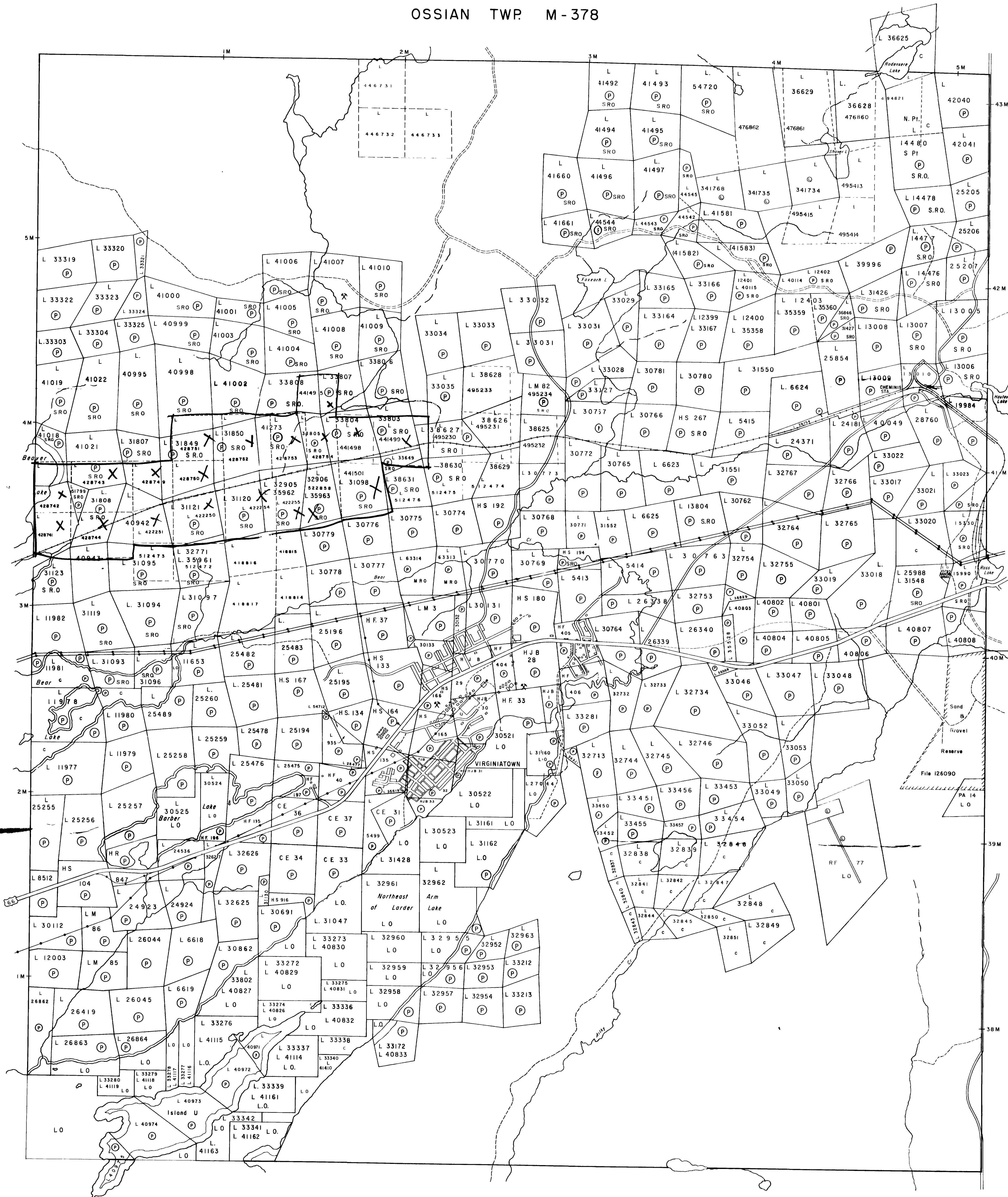
- PATENTED LAND Ⓟ
- CROWN LAND SALE C.S.
- LEASES L
- LOCATED LAND Loc.
- LICENSE OF OCCUPATION L.O.
- MINING RIGHTS ONLY M.R.O.
- SURFACE RIGHTS ONLY S.R.O.
- ROADS —
- IMPROVED ROADS —
- KING'S HIGHWAYS —
- RAILWAYS —
- POWER LINES —
- MARSH OR MUSKEG —
- MINES —
- CANCELLED —

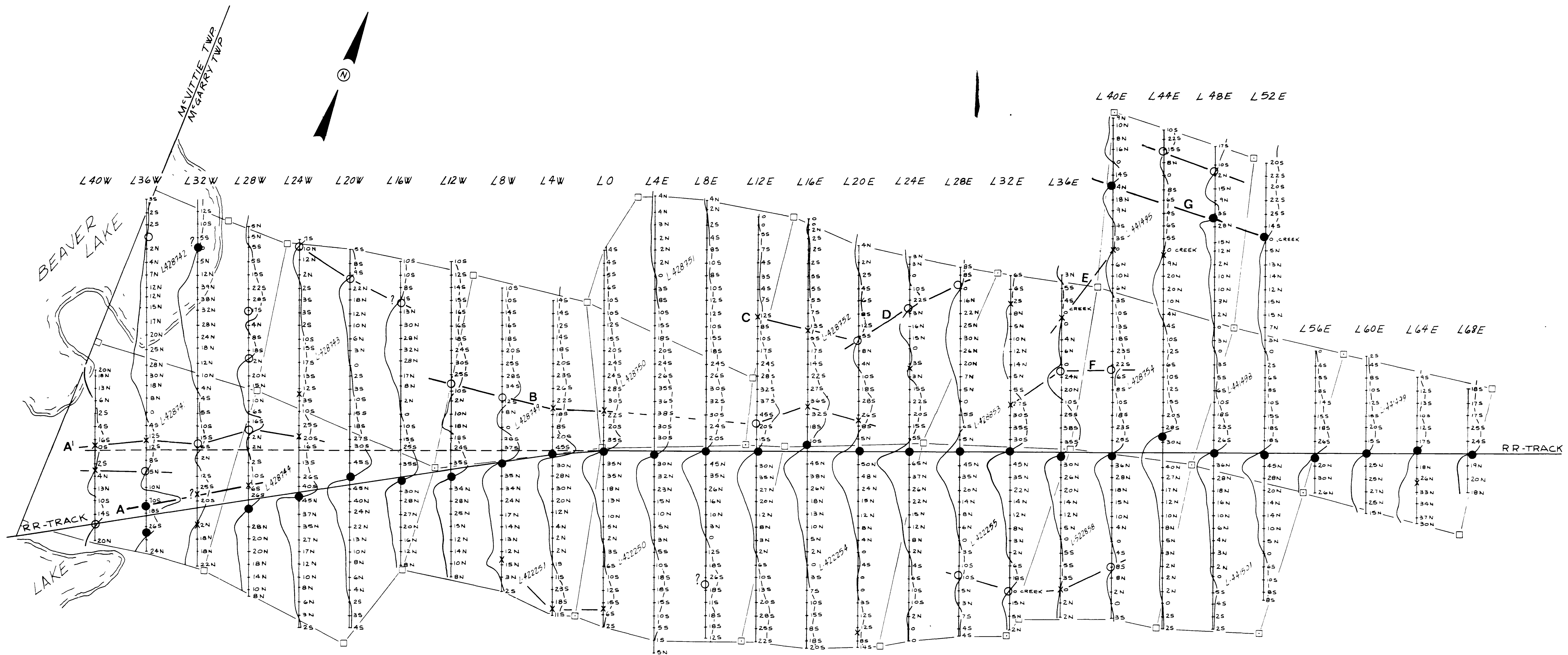
NOTES

400' surface rights reservation along the shores of all lakes and rivers.

McVITTIE TWP. M-370

PROVINCE OF QUEBEC



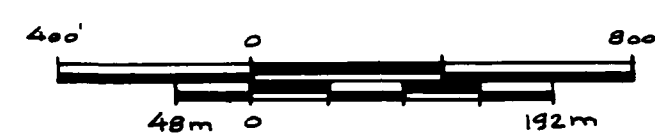


LEE GEO-INDICATORS LIMITED - STITTSVILLE
 MCGARRY TOWNSHIP PROPERTY, ONTARIO

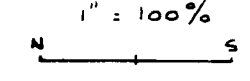
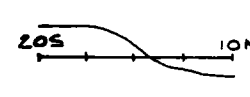

ELECTROMAGNETIC VLF SURVEY

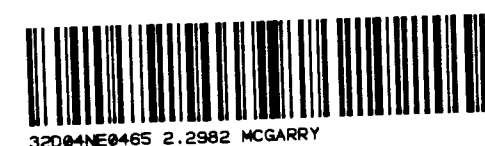
BY
 A MATHIAS AND H. A. LEE
 MARCH, 1979

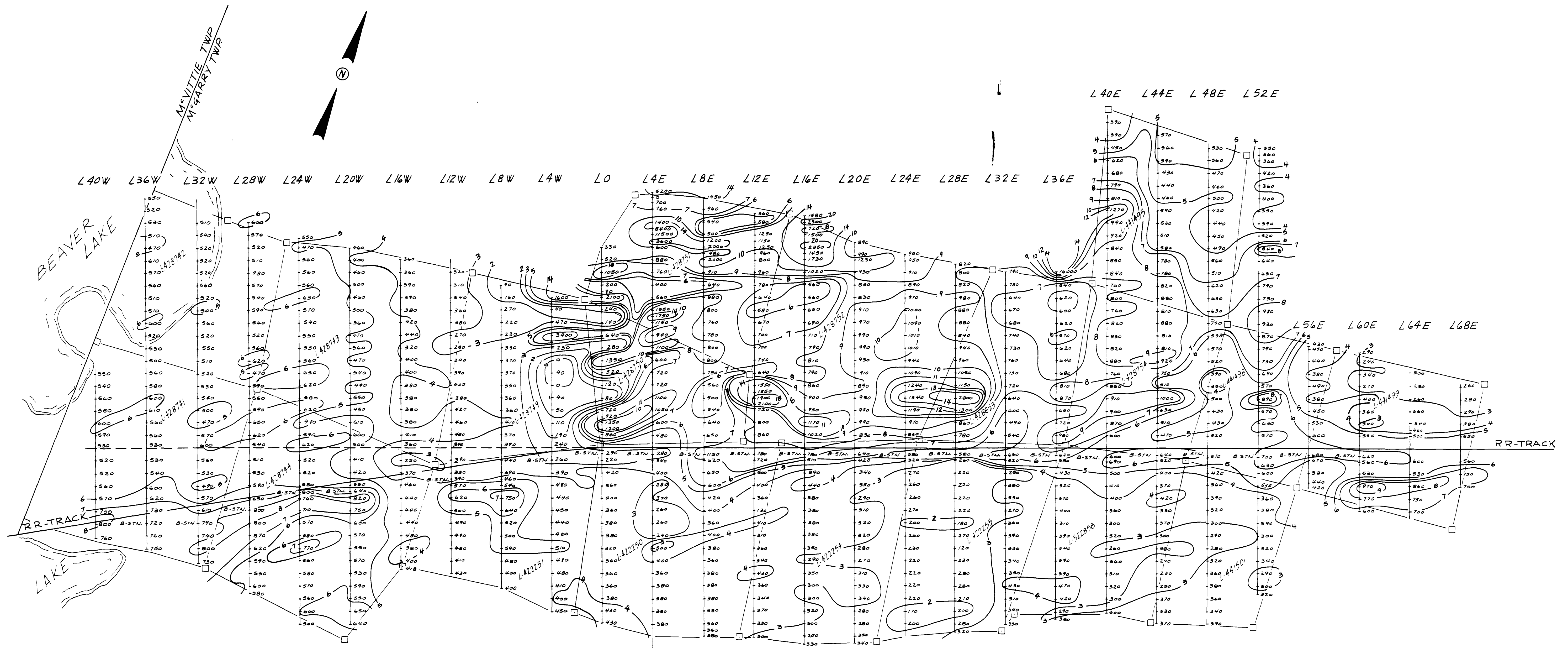
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LEGEND

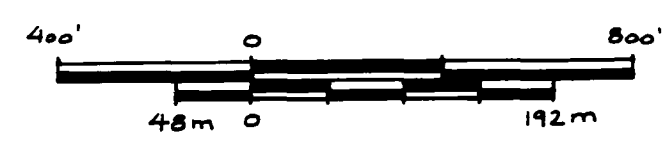
- TILT ANGLES 
- PROFILE OF TILT ANGLES 
- TRUE CROSS OVER 
- POSSIBLE CONDUCTOR (0 TO 10%) X
- CONDUCTOR, MODERATE (10 TO 40%) O
- CONDUCTOR, STRONG (OVER 40%) ●
- TRANSMITTER STATION NAA CUTLER, MAINE
- INSTRUMENT USED EM16 VLF CRONE
- CLAIM NO. L42874
- CLAIM POST □
- RAILWAY RR TRACK





LEE GEO-INDICATORS LIMITED - STITTSVILLE
 MCGARRY TOWNSHIP PROPERTY, ONTARIO

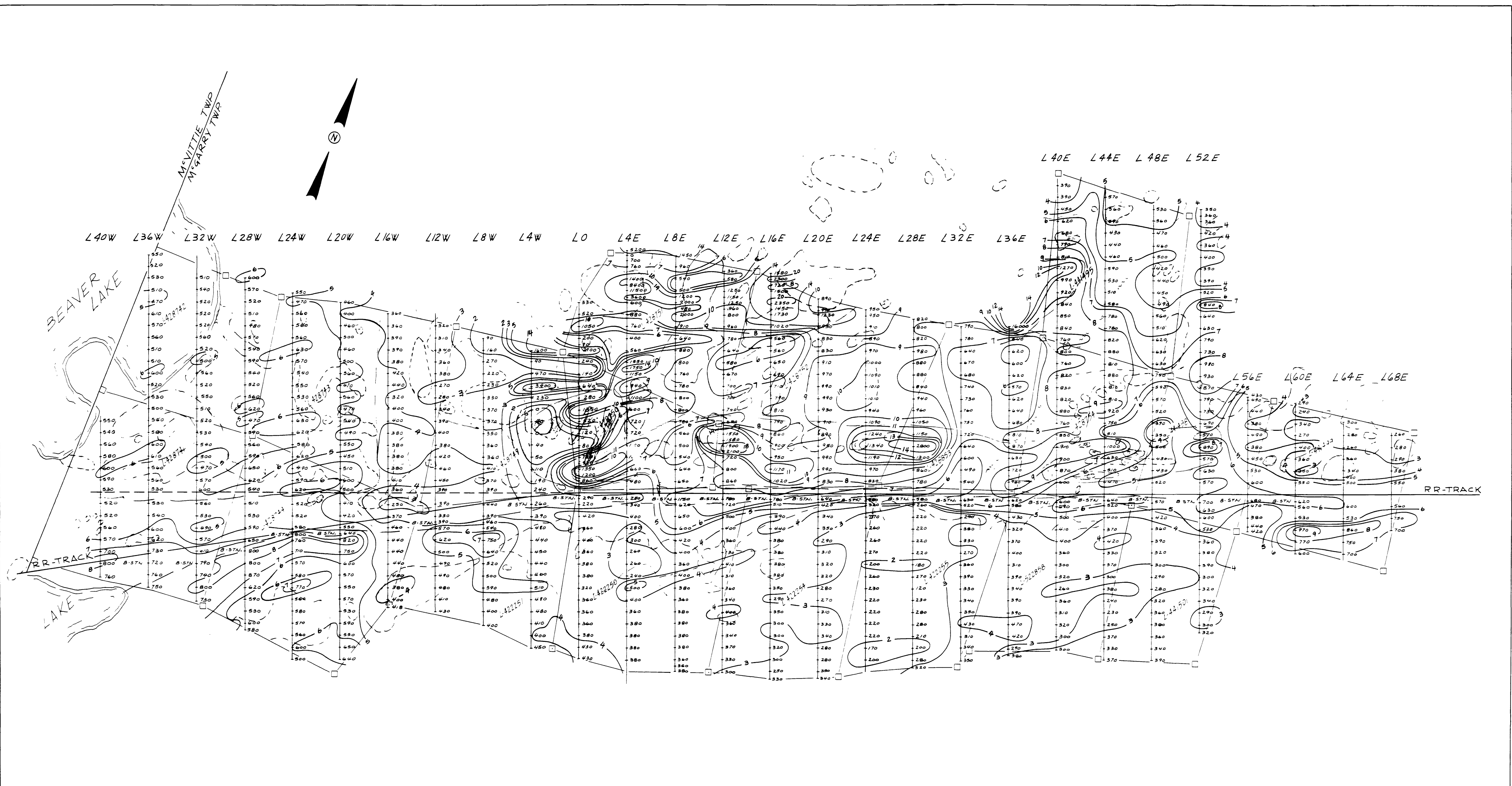
MAGNETOMETER SURVEY
 BY
 A MATHIAS AND H. A. LEE
 MARCH, 1979
 SCALE 1:4,800 (1"=400')



LEGEND

- CONTOURS, 800 GAMMAS
- INSTRUMENT USED MCPHAR M700
- BASE STATION B-STN.
- CLAIM NO. L428741
- CLAIM POST
- RAILWAY RR TRACK





LEE GEO-INDICATORS LIMITED - STITTSVILLE
 MCGARRY TOWNSHIP PROPERTY, ONTARIO

MAGNETOMETER SURVEY

BY

A MATHIAS AND H. A. LEE

MARCH, 1979

SCALE 1" = 4,800' (1" = 400')



GEOLOGY LEGEND

- 7a RED FELDSPAR RAPHOBLASTS IN CALC-ALKALINE DACITE
- 6a CALC-ALKALINE DACITIC TUFF, SEDIMENTS
- 5 CONGLOMERATE
- 4a DIORITE
- 4b GABBRO
- 2a THOLEIITE BASALT

LEGEND

- CONTOURS, 800 GAMMAS
- INSTRUMENT USED MOPHAR M700
- BASE STATION B.-STN.
- CLAIM NO. L42874
- CLAIM POST □
- RAILWAY RR TRACK

