

A-731



32D04SE0014 2.10719 MCVITTIE

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REPORT ON AN
AIRBORNE MAGNETIC AND VLF-EM SURVEY
LARDER LAKE AREA
HEARST, McELROY, GAUTHIER AND McVITTIE TOWNSHIPS
LARDER LAKE MINING DIVISION, ONTARIO

for
SUDBURY CONTACT MINES LTD.

RECEIVED

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MINING LANDS SECTION

TERRAQUEST LTD.
Toronto, Canada

December 21, 1987



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LIST OF MAPS IN JACKET

- * No. A-731-1, Total Magnetic Field
- No. A-731-2, Vertical Magnetic Gradient
- No. A-731-3, VLF-EM Survey
- No. A-731-4, Interpretation

Note: There are three survey areas, therefore there are three of each of the above listed maps.

* Please Note: original assessment submittal consisted of Larder Lake South maps only. Larder LK West and East maps (8) added to this file Oct /89 from OMEP submittal # 0187-6-C-200.



1. INTRODUCTION

This report describes the specifications and results of a geophysical survey carried out for Sudbury Contact Mines Ltd. of 2302-401 Bay Street, Toronto, Ontario, M5H 2Y4 by Terraquest Ltd., 240 Adelaide Street West, Toronto, Canada. The field work was completed on October 26, 1987 and the data processing, interpretation and reporting from October 27 to December 21, 1987.

The purpose of a survey of this type is two-fold. One is to prospect directly for anomalously conductive and magnetic areas in the earth's crust which may be caused by, or at least related to, mineral deposits. A second is to use the magnetic and conductivity patterns derived from the survey results to assist in mapping geology, and to indicate the presence of faults, shear zones, folding, alteration zones and other structures potentially favourable to the presence of gold and base-metal concentration. To achieve this purpose the survey area was systematically traversed by an aircraft carrying geophysical instruments along parallel flight lines spaced at even intervals, 100 metres above the terrain surface, and aligned so as to intersect the regional geology in a way to provide the optimum contour patterns of geophysical data.

2. THE PROPERTY

LARDER LAKE WEST (A-731.1)

The Larder Lake West property is located in Hearst, McElroy, Gauthier and McVittie townships, in the Larder Lake Mining Division of Ontario and extends northwest from the town of Larder Lake. The property is crossed by Highways 66 and 624 and by the Nipissing Central Railway.

The latitude and longitude are 48 degrees 05 minutes, and 79 degrees 45 minutes respectively, and the N.T.S. reference is 32D/4.

The survey area is shown in figure 2.

LARDER LAKE EAST (A-731.2)

The Larder Lake East survey area is located primarily in Hearst and McVittie townships, in the Larder Lake Mining Division of Ontario and is centred about the town of Larder Lake and overlaps approximately half of the Larder Lake West survey area.

The latitude and longitude are 48 degrees 06 minutes, and 79 degrees 43 minutes respectively, and the N.T.S. reference is 32D/4.

The survey area is shown in figure 2.

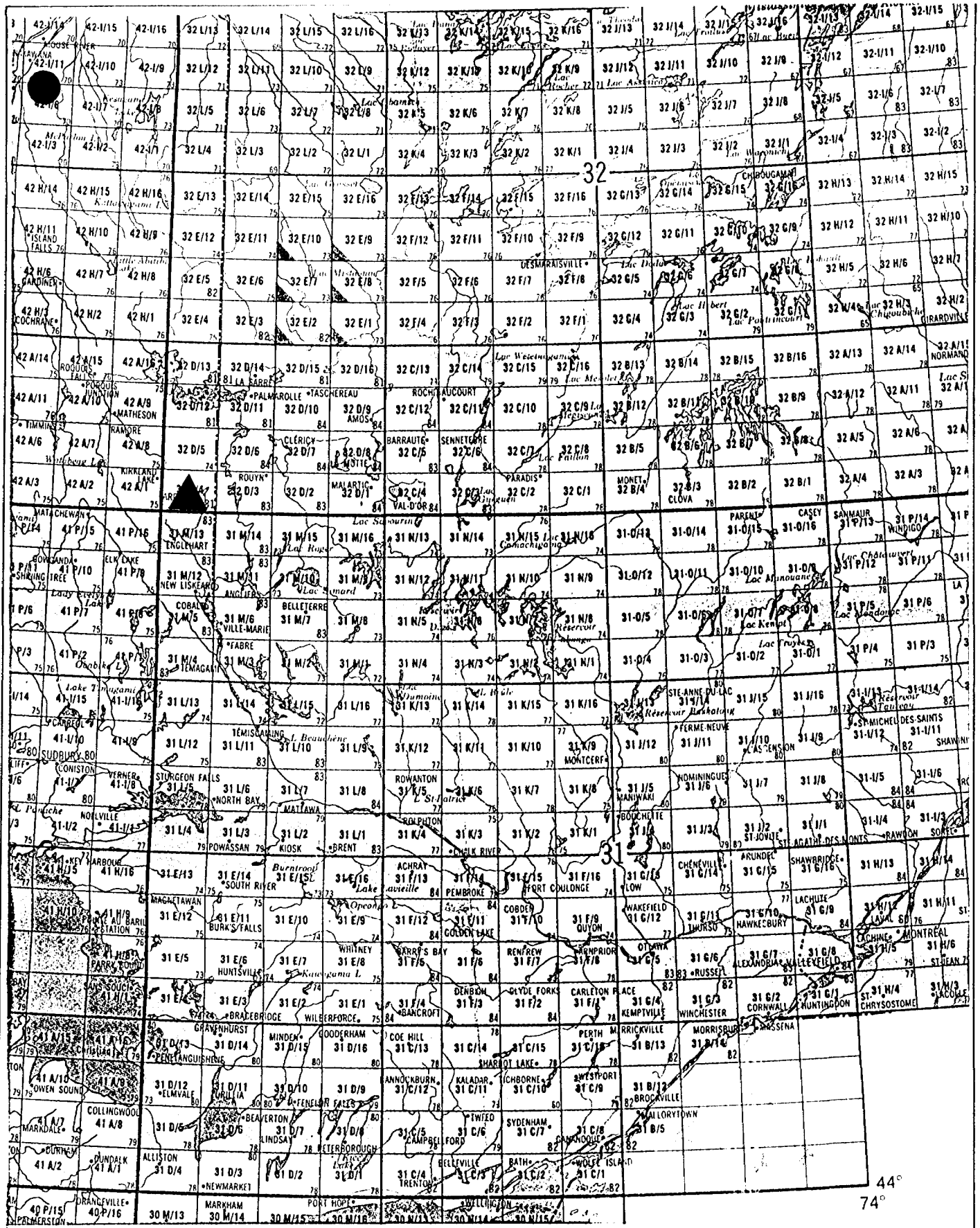


FIGURE 1. General Location



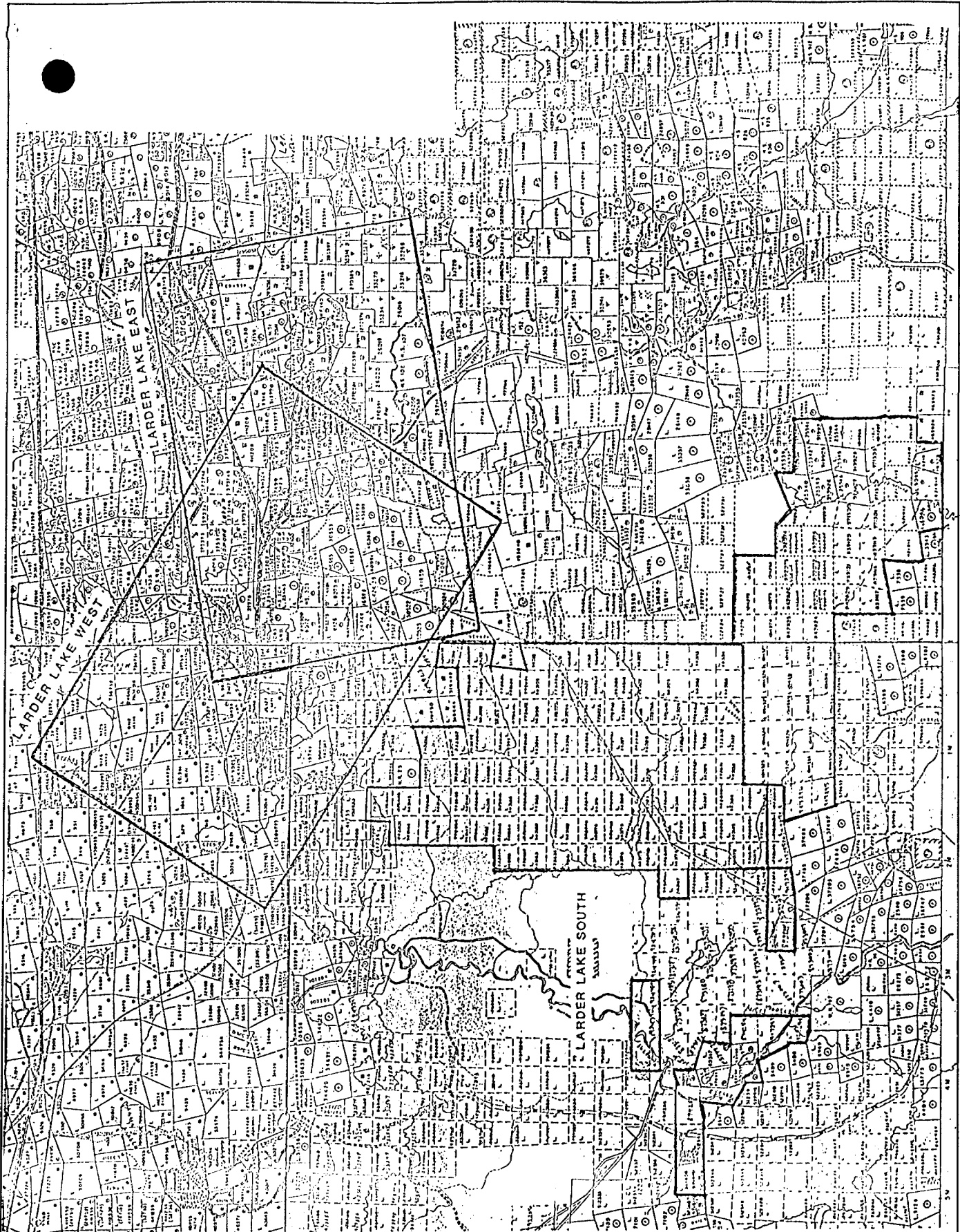


FIGURE 2 Claim Location Map
(exact locations not certified)

LARDER LAKE SOUTH (A-731.3)

The Larder Lake South property is located in Hearst and McElroy townships, in the Larder Lake Mining Division of Ontario approximately 4 kilometres southwest of the town of Larder Lake. The property is crossed by numerous bush roads.

The latitude and longitude are 48 degrees 03 minutes, and 79 degrees 46 minutes respectively, and the N.T.S. reference is 32D/4.

The survey area is shown in figure 2 and the claims are listed below:

L	740036-740037	(2)
	980091-980114	(24)
	980117-980138	(22)
	980142-980165	(24)
	980167	(1)
	980171-980191	(21)
	✓ 924789-924791	(3)
	✓ 917299	(1)
	✓ 893024	(1)
	889138	(1)
	512342	(1)
	✓ 894250-894252	(3)
	✓ 894254	(1)
	✓ 857996-857999	(4)
	✓ 857993-857994	(2)
	341405	(1)
	✓ 917293-917294	(2)
	✓ 917295-917296	(2)
	✓ 1014324-1014342	(19)
	✓ 1014266-1014269	(4)
	✓ 1044272-1044275	(4)
	842824-842826	(2)
	✓ 842829	(1)
	✓ 858117-858121	(5)
	✓ 892071-892075	(5)
	✓ 9711300-9711303	(4)
	921911-921917	(7)
	✓ 982901-982902	(2)
	✓ 982904-982905	(2)
	25340-25346	(7)
	(919924-919928) (repeat) ... Total 178 claims	

3. GEOLOGY

Map References

1. Map 32E: Kirkland Lake Area. scale 1:31,680. O.D.M. 1923.
2. Map 33B: Larder Lake Area. scale 1:47,520. O.D.M. 1924.
3. Map 1947-1: Township of Hearst. scale 1:12,000. O.D.M. 1947.
4. Map 1950-3: Township of McElroy. scale 1:12,000. O.D.M. 1950.
5. Map 2205: Timmins-Kirkland Lake, Geological Compilation Series. scale 1:253,440. O.D.M. 1973.

All three survey areas are underlain predominantly by clastic metasediments and mafic to intermediate metavolcanics trending to the east. The clastic metasediments (formerly known as the Timiskaming Sediments) are isoclinally folded and are represented by conglomerate, greywacke, siltstone, slate and argillite. These are host to iron formation toward the north. Minor alkalic metavolcanics trend east-west along the northern edge of the survey area.

These rocks have been intruded by felsic intrusives represented by syenite, monzonite and feldspar-porphyry and by mafic intrusives represented by gabbro, diorite and lamprophyre. A narrow unit of ultramafic intrusives trends to the northwest along the southern edge of the survey area.

The dominant structural features trend to the northeast, northwest and east-west. The Larder Lake Fault system trends irregularly across the survey area just north of the town of Larder Lake.

The survey area hosts numerous gold showings and three past producing mines, the Raven River Mine, Canadian Associated Gold Fields Mine and the Crown Reserve Mine all immediately north of the town of Larder Lake. Most of the gold mineralization appears to be structurally controlled along or close to the Larder Lake Fault in carbonate veins without significant sulphides. Copper, nickel, zinc, lead and asbestos mineralization occurs to the south and are associated with the intrusive rocks.

4. SURVEY SPECIFICATIONS

4.1 Instruments

The survey was carried out using a Cessna 182 aircraft, registration C-FAKK, which carries a magnetometer and a VLF electromagnetic detector.

The magnetometer is a proton precession type based on the Overhauser effect. The Overhauser effect allows for polarization of a

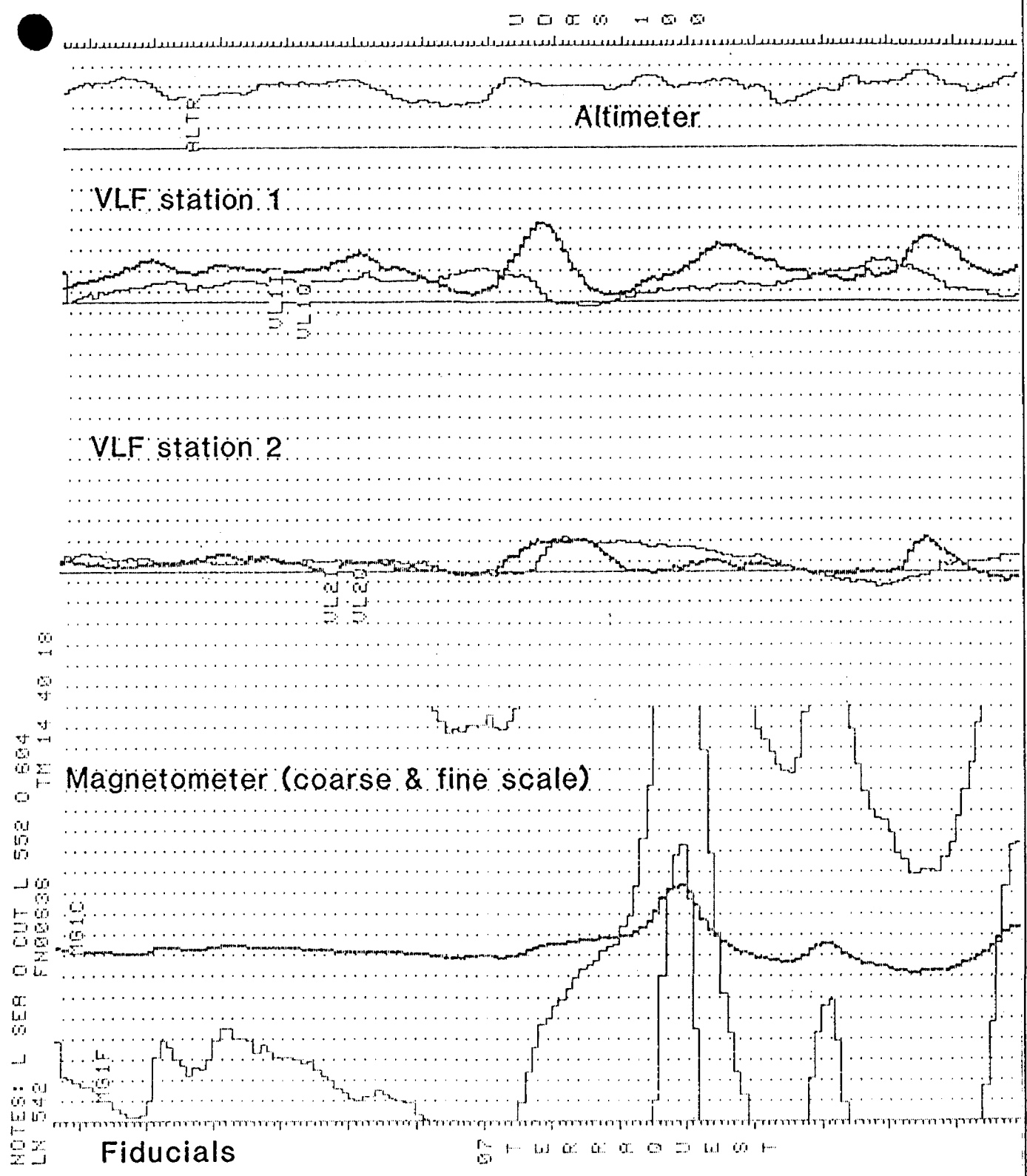


FIGURE 3. Sample of analogue data



proton rich liquid of the sensor by adding a "free radical" to it and irradiating it by RF magnetic field. Strong precession signals are generated with modest RF power. The sensor element is mounted in an extension of the right wing tip. It's specifications are as follows:

Resolution: 0.5 gamma
Accuracy: 0.5 gamma
Cycle time: 0.5 second
Range: 20,000 - 100,000 gammas in 23 overlapping steps
Gradient tolerance: Up to 5000 gammas per metre
Model: GSM-9BA
Manufacturer: GEM Systems Inc., 105 Scarsdale Rd.,
Don Mills, Ontario, M3B 2R5

The VLF-EM unit uses three orthoganol detector coils to measure (a) the total field strength of the time-varying EM field and (b) the phase relationship between the vertical coil and both the "along line" coil (LINE) and the "cross-line" coil (ORTHO). The LINE coil is tuned to a transmitter station that is ideally positioned at right angles to the flight lines, while the ORTHO coil transmitter should be in line with the flight lines. It's specifications are:

Accuracy: 1%
Reading interval: 1/2 second
Model: TOTEM 2A
Manufacturer: Herz Industries, Toronto

The VLF sensor is mounted in the left wing tip extension.

Other instruments are:

- . King KRA-10A Radar altimeter
- . UDAS-100 data processor with Digidata nine track tape recorder, manufactured by Urtec Ltd., Markham, Ontario.
- . Geocam video camera and recorder for flight path recovery, manufactured by Geotech Ltd., Markham, Ontario.

4.2 Lines and Data

LARDER LAKE WEST (A-731.1)

a) Line spacing: 100 metres
b) Line direction: 030 degrees
c) Terrain clearance: 100 metres
d) Average ground speed: 156 km/hr.
e) Data point interval:
 Magnetic: 27 metres
 VLF-EM: 27 metres
f) Tie Line interval: 2 kilometres
g) Channel 1 (LINE): NAA Cutler, 24.0 kHz

- h) Channel 2 (ORTHO): NAA Cutler, 24.0 kHz
- i) Line km over survey area: 306 line km

LARDER LAKE EAST (A-731.2)

- a) Line spacing: 200 metres
- b) Line direction: 350 degrees
- c) Terrain clearance: 100 metres
- d) Average ground speed: 156 km/hr.
- e) Data point interval:
 - Magnetic: 27 metres
 - VLF-EM: 27 metres
- f) Tie Line interval: 2 kilometres
- g) Channel 1 (LINE): NLK Seattle, 24.8 kHz
- h) Channel 2 (ORTHO): NSS Annapolis, 21.4 kHz
- i) Line km over survey area: 155 line km

LARDER LAKE SOUTH (A-731.3)

- a) Line spacing: 100 metres
- b) Line direction: 315 degrees
- c) Terrain clearance: 100 metres
- d) Average ground speed: 193 km/hr.
- e) Data point interval:
 - Magnetic: 11 metres
 - VLF-EM: 11 metres
- f) Tie Line interval: 2 kilometres
- g) Channel 1 (LINE): NAA Cutler, 24.0 kHz
- h) Channel 2 (ORTHO): NLK Seattle, 24.8 kHz
- i) Line km over survey area: 580 line km
- j) Line km over claim groups: 362 km

4.3 Tolerances

- a) Line spacing: Any gaps wider than twice the line spacing and longer than 10 times the line spacing were filled in by a new line.
- b) Terrain clearance: Portions of line which were flown above 125 metres for more than one km were reflown if safety considerations were acceptable.
- c) Diurnal magnetic variation: Less than twenty gammas deviation from a smooth background over a period of two minutes or less as seen on the base station analogue record.
- d) Manoeuvre noise: Approximately +/-5 gammas.

4.4 Photomosaics

For navigating the aircraft and recovering the flight path, semi-controlled mosaics of aerial photographs were made from existing air photos. Each individual photograph was photographically adjusted to conform to the NTS map system before the mosaic was assembled.

5. DATA PROCESSING

Flight path recovery was carried out in the field using a video tape viewer to observe the flight path as recorded by the Geocam video camera system. The flight path recovery was completed daily to enable reflights to be selected where needed for the following day.

The magnetic data was levelled in the standard manner by tying survey lines to the tie lines. The IGRF has not been removed. The total field was contoured by computer using a program provided by Dataplotting Services Inc. To do this the final levelled data set is gridded at a grid cell spacing of 1/10th of an inch at map scale.

The vertical magnetic gradient is computed from the total field data using a method of transforming the data set into the frequency domain, applying a transfer function to calculate the gradient, and then transforming back into the spatial domain. The method is described by a number of authors including Grant, 1972 and Spector, 1968. The computer program for this purpose is provided by Paterson, Grant and Watson Ltd. of Toronto

The VLF data was treated automatically so as to normalize the non conductive background areas to 100 (total field strength) and zero (quadrature). The algorithms to do this were developed by Terraquest and will be provided to anyone interested by application to the company.

All of these dataprocessing calculations and map contouring were carried out by Dataplotting Services Inc. of Toronto.

- Grant, F.S. and Spector A., 1970: Statistical Models for Interpreting Aeromagnetic Data; Geophysics, Vol 35
Grant, F.S., 1972: Review of Data Processing and Interpretation Methods in Gravity and Magnetics; Geophysics Vol 37-4
Spector, A., 1968: Spectral Analysis of Aeromagnetic maps; unpublished thesis; University of Toronto

INTERPRETATION

6.1 General Approach

To satisfy the purpose of the survey as stated in the introduction, the interpretation procedure was carried out on both the magnetic and VLF data. On a local scale the magnetic gradient contour patterns were used to outline geological units which have different magnetic intensity and patterns or "signatures". Where possible these are related to existing geology to provide a geological identity to the units. On a regional scale the total field contour patterns were used in the same way.

Faults and shear zones are interpreted mainly from lateral displacements of otherwise linear magnetic anomalies but also from long narrow "lows". The direction of regional faulting in the general area is taken into account when selecting faults. Folding is usually seen as curved regional patterns. Alteration zones can show up as anomalously quiet areas, often adjacent to strong, circular anomalies that represent intrusives. Magnetic anomalies that are caused by iron deposits of ore quality are usually obvious owing to their high amplitude, often in tens of thousands of gammas.

VLF anomalies are categorized according to whether the phase response is normal, reverse, or no phase at all. The significance of the differing phase responses is not completely understood although in general reverse phase indicates either overburden as the source or a conductor with considerable depth extent, or both. Normal phase response is theoretically caused by surface conductors with limited depth extent.

Areas showing a smooth response somewhat above background (ie. 110 or so) are likely caused by overburden which is thick enough and conductive enough to saturate at these frequencies. In this case no response from bedrock is seen.

The VLF-EM conductor axes have been identified and evaluated according to the Terraquest classification system (Figure 4). This system correlates the nature and orientation of the conductor axes with stratigraphic, structural and topographic features to obtain an association from which one or more origins may be selected. Alternate associations are indicated in parentheses.

6.2 Interpretation

The magnetic and VLF-EM data are shown in contoured format on maps in the back pocket. An interpretation map is also provided. The following notes are intended to supplement these maps.

FIGURE 4

TERRAQUEST CLASSIFICATION OF VLF-EM CONDUCTOR AXES

<u>SYMBOL</u>	<u>CORRELATION</u>	<u>ASSOCIATION: Possible Origins</u>
a , A	Coincident with magnetic stratigraphy	Bedrock magnetic horizons: stratabound mineralogic origin or shear zone
b , B	Parallel to magnetic stratigraphy	Bedrock non-magnetic horizons: stratabound mineralogic origin or shear zone
c , C	No correlation with magnetic stratigraphy	Association not known: possible small scale stratabound mineralogic origin, fault or shear zone, overburden
d , D	Coincident with magnetic dyke	Dyke or possible fault: mineralogic or electrolytic
f , F	Coincident with topographic lineament or parallel to fault system	Fault zone: mineralogic or electrolytic
ob , OB	Contours of total field response conform to topographic depression	Most likely overburden: clayey sediments, swampy mud
cul , CUL	Coincident with cultural sources	Electrical, pipe or railway lines

NOTES

- 1 - Upper case symbols denote a relatively strong total field strength
- 2 - Underlined symbols denote a relatively strong quadrature response
- 3 - Mineralogic origins include sulphides, graphite, and in fault zones, gouge
- 4 - Electrolytic origins imply conductivity related to porosity or high moisture content

LARDER LAKE WEST AND EAST SURVEY AREAS (A-731.1 AND A-731.2)

The Larder Lake East and West survey areas were flown at approximately 40 degrees to each other. Contouring programs used to show the data in map format are based on x-y coordinates orthogonal to the flight line direction. In order to merge the data from the two areas the chosen x-y coordinates of the final plot would be orthogonal to either one of the grids or to some average of the two grids. In either case, it would be difficult to identify any orientation bias within the merged presentation. Instead, the two areas have been individually contoured and interpreted according to their own flight path directions. For the most part the trends are similar, minor variations occur where the magnetic trends are parallel to the flight line. In these cases, the preferred interpretation should be taken from the data set that crosses the magnetic trends at the highest angle. The following text encompasses the east and west survey areas.

The total magnetic field has a relief of approximately 1,500 gammas and shows the general trend of the lithologies. The vertical magnetic gradient data improves the resolution of the magnetic anomalies and has been used to delineate the stratigraphy and structure.

The mafic to intermediate metavolcanics (Unit 1) correlate with a complex, arcuate band of moderate to strong magnetic responses. Magnetic horizons (Unit 1m) within this unit are probably related to increased concentrations of iron bearing minerals such as pyrrhotite or magnetite or possibly to more mafic compositions including minor intrusives.

Exposures of mafic intrusives (Unit 8) to the west and east correlate with strong magnetic responses and in part appear to be stratigraphically continuous with the magnetic members of the mafic to intermediate metavolcanics.

The Banded Iron Formation north of Larder Lake correlates well with strong magnetic responses. The interpreted width is probably exaggerated due to the overwhelming effect often associated with bodies of high magnetic susceptibilities. The interpretation of this horizon is not consistent on the overlap area between the east and west survey blocks. The interpretation over the eastern block is preferred as the flight lines cross the body at a much steeper angle. Enhancement of this horizon by the calculated vertical magnetic gradient map suggests that the iron formation extends to the west across the western survey block.

The felsic intrusives (Unit 9) correlate with moderate magnetic

responses. Both interpretation maps suggest that the felsic intrusive beneath the town of Larder Lake is semi-conformable and extends westward as several discrete parallel horizons. The north-south trending anomaly near Diamond Lake is interpreted to be a felsic dyke extending southwards from the plug to the north.

Exposures of the alkalic metavolcanics (Unit 4) correlate with moderate to weak magnetic responses. It would probably be difficult to discriminate this lithology by magnetic mapping where they occur next to magnetically active lithologies.

The clastic metasediments (Unit 6) correlate with weak magnetic responses which are generally overwhelmed by responses from the adjacent lithologies. Any magnetic responses within this unit are interpreted to be derived from intercalated metavolcanics.

Magnetically interpreted faults trend to the northeast and northwest and a few to the east. The Larder Lake Fault can be detected readily to the west as it follows the metasedimentary - metavolcanic contact. In the overlap area and toward the east the fault can best be identified by a weak magnetic trough. Both these interpretation maps suggest that the Larder Lake Fault may be a reactivation along the combined system of an east-west fault and a northeast fault system. Together these impart an en echelon form to the Larder Lake Fault at a detailed scale and a sinusoidal form at larger scales on regional maps.

The VLF-EM data shows numerous weak to moderate strength conductor axes and several strong conductive zones. Cultural sources such as power lines, roads and built up areas show moderate to strong responses. Conductor axes related to conductive overburden appear to be restricted to river valleys, swamps, small lakes and the edges of the Southwest Arm of Larder Lake.

Most of the conductor axes that cross magnetic stratigraphy are interpreted to be related to structure, either faults or shear zones. These suggest that there are considerably more east and southeast trending faults than shown on the magnetic interpretation map. Note that any faults trending to the northeast possess poor coupling with both the Cutler and Seattle transmitters. Conductivity associated with structural sources may be related to: a) minerals such as gouge, sulphides or graphite along the structure, or b) an ionic effect created by water or porosity along the structure or to clay in an overlying topographic depression. Those parallel to known quartz carbonate veins should be investigated for their gold potential.

Those conductor axes that coincide with or are parallel to the magnetic stratigraphy possess potential for bedrock stratabound

sources. These sources include sulphides and graphite and should be followed up on the ground using EM or IP methods. Of particular interest are the iron formations with good VLF-EM responses and several of the magnetically active mafic to intermediate metavolcanics to the south.

LARDER LAKE SOUTH (A-731.3)

The total magnetic field has a very large relief of over 7,000 gammas and shows two major anomalies trending to the northwest, one at the north and one at the south end of the survey area and one extremely large anomaly trending to the northeast across the centre of the survey area. The vertical magnetic gradient improves the resolution of these anomalies and enhances subtle magnetic trends in the magnetically quiet areas.

The strong northeast trending anomaly has a maximum relief of approximately 6,000 gammas and correlates with outcrops of gabbro, diorite and lamprophyre (Unit 8). Outcrops of this rock suite also occur to the southwest and southeast and correlate with moderately strong magnetic responses. The exposures of serpentinite (Unit 7) to the southwest, correlate with very strong responses with a relief of approximately 2,000 gammas. Exposures of serpentinite in the south central portion of the survey area also correlate with strong magnetic responses. The magnetically interpreted widths of all these rock types with high magnetic responses are prone to exaggeration, a feature commonly associated with high magnetic susceptibilities.

The felsic intrusives correlate with weak to moderate strength magnetic responses, shown as Unit 9 and 9m respectively on the interpretation map. These different magnetic levels are probably related to compositional differences. The 9m unit in the southeast corner of the survey area correlates with exposures of syenite porphyry and are interpreted to possess increased concentrations of magnetite or pyrrhotite. The large felsic intrusive complex in the vicinity of Misema River is characterized by concentric rings of alternating high and low magnetic responses. It is speculated that these rings are caused by either magmatic variations or periodic physio-chemical cycles during crystallization.

The mafic to intermediate metavolcanics (Unit 1) correlate with moderate magnetic responses throughout most of the survey area. The stronger responses to the northeast, designated as Unit 1m on the interpretation map, may be derived from increased concentrations of magnetite or pyrrhotite or possibly more mafic compositions including semi-conformable mafic intrusives.

All the clastic metasediments within the survey area (Unit 6)

correlate with weak magnetic responses, and are interpreted to impart an insignificant magnetic response. Any responses that do correlate with the clastic metasediments are interpreted to be derived from either underlying or intercalated metavolcanics or intrusives.

Magnetically interpreted faults trend to the northwest, northeast and east-west, many correlating with topographic features. The interpretation over the northern part of the survey suggests that there are at least two generations of northeast trending faults. The major west-northwest trending fault along the northern edge of the serpentinite along the southern part of the survey area does not show well on the magnetic map as it is parallel to the magnetic stratigraphy.

The VLF-EM data shows numerous weak to moderate and several strong conductor axes. Most of these show a preferred orientation to the east-southeast, biased by the Cutler transmitter direction. Most of the broad poorly defined conductive zones coincide with swampy areas, lakes or recessive lithology and are probably related to conductive, clayey overburden. The quadrature responses of conductor axes that are parallel to the flight lines become meaningless and therefore are shown as conductors with insignificant quadrature response.

Those conductor axes that are oblique to the magnetic stratigraphy and are characterized by sharp outlines are interpreted to possess structural origins, either as fault or shear zones. North and northeast trending structures do not couple well with the Cutler transmitter therefore their relative intensity may be greater than indicated by this set of data.

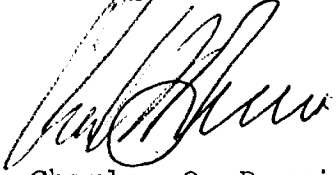
A few conductor axes are coincident with magnetic stratigraphy and therefore possess potential for stratabound bedrock sources such as graphite or sulphides. These warrant further investigation and should be followed up on the ground using EM or IP methods. Of particular interest are the conductor axes that coincide with the mafic intrusives to the southwest and to the mafic metavolcanics to the northeast.

7. SUMMARY

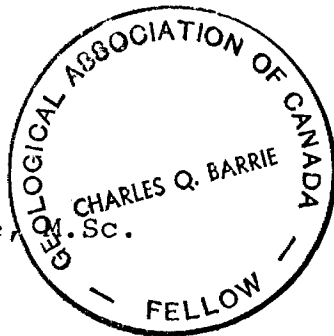
An airborne combined magnetic and VLF-EM survey has been done on three survey areas at line intervals of 100 metres on two areas and 200 metres on the East block. The total field and vertical gradient magnetic data, VLF-EM data and interpretation maps are produced at a scale of 1:10,000.

The magnetic data has been used to modify and update the existing geology and has shown a number of new contacts and faults. A number of VLF-EM conductor axes were found of which most are associated with structural origins and a few are believed to have potential sulphide origins and have been recommended for additional investigation.

TERRAQUEST LTD.



Charles Q. Barrie,
Geologist



Dual
2.8305



Ministry of
Northern Development
and Mines

Land Management

Report of Work
(Geophysical, Geological,
Geochemical and Expenditures)



32D04SE0014 2.10719 MCVITTIE

900

W8708-436 2.10719 Mi

Type of Survey(s) Airborne Magnetometer & EM	Township or Area Gauthier, McVittie
Claim Holder(s) R.A. MacGregor	Prospector's Licence No. K-15070
Address Skead Holdings Ltd.	T-1956
Survey Company c/o P.O. Box 1110, Sault Ste. Marie, Ontario P6A 5N7	Total Miles of line Cut
Name and Address of Author (of Geo-Technical report) Terraquest Ltd.	Date of Survey 24 10 87
Name and Address of Author (of Geo-Technical report) C.O. Barry, 121 Richmond St. West, Toronto, Ontario	

Credits Requested per Each Claim in Columns at right

Mining Claims Traversed (List in numerical sequence)

Special Provisions	Geophysical	Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	- Electromagnetic - Magnetometer	
For each additional survey using the same grid: Enter 20 days (for each)	- Radiometric - Other	
Man Days	Geophysical	Days per Claim
Complete reverse side and enter total(s) here	- Electromagnetic - Magnetometer - Radiometric - Other	
Airborne Credits	Electromagnetic Magnetometer Radiometric	40 40

Mining Claim			Mining Claim		
Prefix	Number	Expend. Days Cr.	Prefix	Number	Expend. Days Cr.
SEE ATTACHED LIST					
ONTARIO GEOLOGICAL SURVEY ASSESSMENT FILES RESEARCH OFFICE FEB 1 1988 RECEIVED					

Expenditures (excludes power stripping)

Type of Work Performed

Performed on Claim(s)

Calculation of Expenditure Days Credits

Total Expenditures \$ ÷ 15 = Total Days Credits

Instructions
Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

Total number of mining claims covered by this report of work. **86**

Date **Oct. 30/87**

Recorded Holder or Agent (Signature) *[Signature]*

For Office Use Only

Total Days Cr. Recorded **6400**

Date Recorded **Nov 4 1987**

Date Approved as Recorded **28 Jan 88**

Mining Recorder *[Signature]*

Branch Director *[Signature]*

Certification Verifying Report of Work

I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report is true.

Name and Postal Address of Person Certifying
R.A. MacGregor, c/o P.O. Box 1110, Sault Ste. Marie, Ont. P6A 5N7

Date Certified **Oct. 30/87**

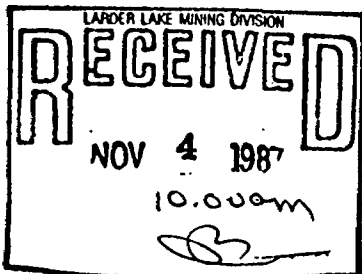
Certified by (Signature) *[Signature]*

AIRBORNE MAGNETOMETER & EM SURVEY

LIST OF CLAIMS

* New at Maximum of 80 days
Geophysical

* L667832 ✓	25 EM 25 MAG	GEOPHYSICAL AIRBORNE	L979566 ✓	
* 667833 ✓	15 EM 15 MAG		980319 ✓	L1014271 ✓
* 736729 ✓	10 EM 10 MAG		980385 ✓	✓1014272 ✓
* 736730 ✓	10 EM 10 MAG		980386 ✓	✓1014273 ✓
* 736731 ✓	10 EM 10 MAG		980387 ✓	✓1014274 ✓
* 736732 ✓	10 EM 10 MAG		980388 ✓	✓1014275 ✓
* 760496 ✓	10 EM 10 MAG		980395 ✓	✓1014323 ✓
* 800064 ✓	10 EM 10 MAG		980396 ✓	✓1014324 ✓
* 821910 ✓	10 EM 10 MAG		980400 ✓	✓1014325 ✓
* 821928 ✓	10 EM 10 MAG		981875 ✓	✓1014326 ✓
859823 ✓			981993 ✓	✓1014327 ✓
892019 ✓			981994 ✓	✓1014328 ✓
892020 ✓			981995 ✓	✓1014329 ✓
892246 ✓			981998 ✓	✓1014330 ✓
893730 ✓			981998 ✓	✓1014331 ✓
893731 ✓			982373 ✓	✓1014332 ✓
917318 ✓			983351 ✓	✓1014333 ✓
919850 ✓			983352 ✓	✓1014334 ✓
919851 ✓			983353 ✓	✓1014335 ✓
919852 ✓			983354 ✓	✓1014336 ✓
919853 ✓			983355 ✓	✓1014337 ✓
919854 ✓			983356 ✓	✓1014338 ✓
919855 ✓			983357 ✓	✓1014339 ✓
919919 ✓			983358 ✓	✓1014340 ✓
919920 ✓			1014268 ✓	✓1014341 ✓
919921 ✓			1014269 ✓	✓1014342 ✓
919922 ✓			1014270 ✓	✓1014686 ✓
919923 ✓			982757 ✓	✓1014687 ✓
				✓1014688 ✓
				✓1014689 ✓
				✓1014694 ✓
				✓1014695 ✓



Land Management



ADDITION TO REPORT OF WORK
 (Geophysical, Geological, Geochemical and Expenditures)

#436/87

WB708-436

Please type or print.
 If number of mining claims traversed exceeds space on this form, attach a list.
 Only days credits calculated in the "Expenditures" section may be entered in the "Expend. Days Cr." columns.
 Do not use shaded areas below.

Mining Act

Type of Survey(s) **Airborne Magnetometer & EM** Township or Area **Hearst, Melroy**
 Claim Holder(s) **R.A. MacGregor** **Gauthier, McVittie**
Skead Holdings Ltd. **R-15070**
 Address **c/o P.O. Box 1110, Sault Ste. Marie, Ontario P6A 5N7** **T-1956**
 Survey Company **Terraquest Ltd.** Date of Survey (from & to) **24 10 87** **30 10 87** Total Miles of line Cut
 Name and Address of Author (of Geo-Technical report) **C. Barry, 121 Richmond St. West Toronto, Ontario M5H 2K1**

Credits Requested per Each Claim in Columns at right

Mining Claims Traversed (List in numerical sequence)

Special Provisions	Geophysical	Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	- Electromagnetic	
For each additional survey: using the same grid: Enter 20 days (for each)	- Radiometric	
	Geological	
	Geochemical	
Man Days	Geophysical	Days per Claim
	- Electromagnetic	
	- Radiometric	
	- Other	
	Geological	
	Geochemical	
Airborne Credits	30 - EM	Days per Claim
	30 - MAG.	
Note: Special provisions credits do not apply to Airborne Surveys.	Electromagnetic	40
	Magnetometer	40
	Radiometric	

Mining Claim		Expend. Days Cr.	Mining Claim		Expend. Days Cr.
Prefix	Number		Prefix	Number	
	L821918	30			
	924787				
	924788				
	1014690				
	1014691				

Expenditures (excludes power stripping)

Type of Work Performed

Performed on Claim(s)

Calculation of Expenditure Days Credits

Total Expenditures \$ ÷ 15 = Total Days Credits

Total number of mining claims covered by this report of work. **5**

Instructions
 Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

For Office Use Only

Total Days Cr. Recorded **380** Date Recorded **Jan. 11/88** Mining Recorder **M. C. Wayne**
 Date Approved as Recorded **18 March 88** Branch Director **[Signature]**

Date **Jan. 6/88** Record of Holder or Agency Signature **[Signature]**

Certification Verifying Report of Work

I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work & witnessed same during and/or after its completion and the annexed report is true.

and Postal Address of Person Certifying **R.A. MacGregor, c/o P.O. Box 1110, Sault ste. Marie, Ontario P6A 5N7**

Date Certified **Jan. 6/88** Certified by Signature **[Signature]**

Mining Act 2.10719

Type of Survey: **Airborne Magnetometer & EM** Township or Area: **Hearst & McElroy**
 Claim Holder(s): **R.A. MacGregor / L. Lacasse, R. Kosy, G. Kosy** Prospector's Licence No.: **K-15070, K18234, K19754, & K1992**
 Address: **c/o P.O. Box 1110, Sault Ste. Marie, Ontario P6A 5N7**
 Survey Company: **Terraquest Ltd.** Date of Survey (from & to): **24 Nov 87 30 Nov 87** Total Miles of line Cut: _____
 Name and Address of Author (of Geo-Technical report): **C.O. Barry, 121 Richmond St. West, TORONTO, Ontario**

Credits Requested per Each Claim in Columns at right

Mining Claims Traversed (List in numerical sequence)

Special Provisions	Geophysical	Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	- Electromagnetic - Magnetometer	
For each additional survey: using the same grid: Enter 20 days (for each)	- Radiometric - Other	
	Geological	
	Geochemical	

Man Days	Geophysical	Days per Claim
Complete reverse side and enter total here	- Electromagnetic - Magnetometer - Radiometric	
	Geological	
	Geochemical	

Airborne Credits	Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys.	Electromagnetic: 40 Magnetometer: 40 Radiometric: _____

Mining Claim			Mining Claim		
Prefix	Number	Expend. Days Cr.	Prefix	Number	Expend. Days Cr.
SEE ATTACHED SHEET					
RECEIVED					
NOV 09 1987					
MINING LANDS SECTION					

Expenditures (excludes power striping):
 Type of Work Performed: _____
 Performed on Claim(s): _____
 Calculation of Expenditure Days Credits:
 Total Expenditures: **S** ÷ 15 = _____ Total Days Credits

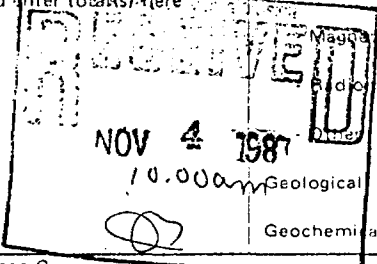
Instructions: Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

Date: **Oct. 30/87** Recorded Holder or Agency Signature: *[Signature]*

For Office Use Only
 Total Days Cr. Recorded: **5140** Date Recorded: **Nov 4/87**
 Mining Recorder: *[Signature]* Branch Director: *[Signature]*
 Date Approved as Recorded: **18 March 88**

Certification: Verifying Report of Work
 I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report is true.

Name and Postal Address of Person Certifying: **R.A. MacGregor, c/o P.O. Box 1110, Sault Ste. Marie, Ont. P6A 5N7**
 Date Certified: **Oct. 30/87** Certification (Signature): *[Signature]*

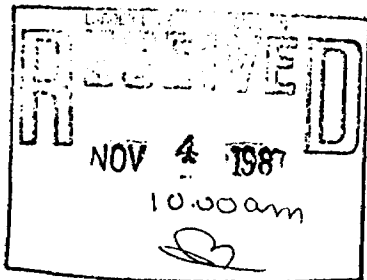


Total number of mining claims covered by this report of work: **66**

AIRBORNE MAGNETOMETER & EM SURVEY

* MAXIMUM OF 80 DAYS
 * GEOPHYSICAL NOW RECORDED. LIST OF CLAIMS

* L821911	30 Airborne EM 30 Airborne MAG	L✓893824	✓L971301
* 821912	" "	✓894250	✓971302
* 821913	" "	✓894251	✓971303
* 821914	" "	✓894252	982901
* 821915	" "	✓894254	✓982902
* 821916	" "	✓917293	982903 ↓?
* 821917	" "	✓917294	✓982904
✓842829		✓917295	✓982905
✓857993		✓917296	982906
✓857994		917297	982907
✓857996		917298	982908
✓857997		917299	982909? - Filed Only Oct. 1/87
✓857998		919924	982910
✓857999		919925	✓1014266
✓859117		919926	✓1014267
✓859118		919927	990392
✓859119		919928	
✓859120		924783	
✓859121		924784	
✓859138		924785	
✓892071		924786	
✓892072		✓924789	
✓892073		✓924790	
✓892074		✓924791	
✓892075		✓971300	





Ministry of Northern Development and Mines

Management Report of Work

(Geophysical, Geological, Geochemical and Expenditure)

DOCUMENT No. W8808-112

Mining Act

- Instructions: - Please type or print.
 - If number of mining claims traversed exceeds space on this form, attach a list.
 Note: - Only days credits calculated in the "Expenditures" section may be entered in the "Expend. Days Cr." columns.
 - Do not use shaded areas below.

April 26

Type of Survey(s) Airborne Magnetometer / VLF		Township or Area McElroy Township
Claim Holder(s) Legacy Explorations Ltd.		Prospector's Licence No. T4601
Address 27 Queen St. East, Suite 402, Toronto, Ont. MSC 2H6		
Survey Company Terraquest Ltd.	Date of Survey (from & to) 20 10 87 26 10 87 Day Mo. Yr. Day Mo. Yr.	Total Miles of line Cut
Name and Address of Author (of Geo-Technical report) Charles Barrie		

Credits Requested per Each Claim in Columns at right

Special Provisions	Geophysical	Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	- Electromagnetic	
	- Magnetometer	
For each additional survey: using the same grid: Enter 20 days (for each)	- Radiometric	
	- Other	
	Geological	
	Geochemical	

Man Days	Geophysical	Days per Claim
Complete reverse side and enter total(s) here.	- Electromagnetic	
	- Magnetometer	
	- Radiometric	
	- Other	
	Geological	
	Geochemical	

Airborne Credits	Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys	
Electromagnetic	40
Magnetometer	40
Radiometric	

Mining Claims Traversed (List in numerical sequence)

Mining Claim		Expend. Days Cr.	Mining Claim		Expend. Days Cr.
Prefix	Number		Prefix	Number	
L	980091		L	980114	
	980092			980117	
	980093			980118	
	980094			980119	
	980095			980120	
	980096			980121	
	980097			980122	
	980098			980123	
	980099			980124	
	980100			980125	
	980101			980126	
	980102			980127	
	980103			980128	
	980104			980129	
	980105			980130	
	980106			980131	
	980107			980132	
	980108			980133	
	980109			980134	
	980110			980135	
	980111			980136	
	980112			980137	
	980113			980138	

Expenditures (excludes power stripping) OF GEOPHYSICAL SURVEY

Type of Work Performed ASSESSMENT FILES OFFICE
Performed on Claim(s) MAY 6 1988
Calculation of Expenditure Days Credits
Total Expenditures \$ ÷ 15 =

Instructions
 Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

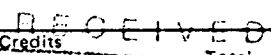
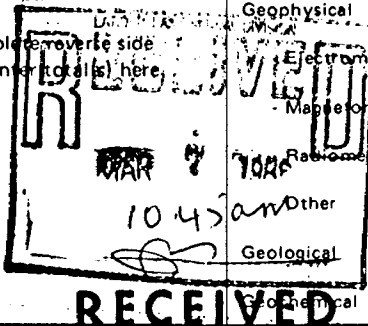
Date March 4/88	Recorded Holder or Agent (Signature) <i>Alan C. Hubachsch</i>
---------------------------	--

For Office Use Only		Mining Recorder
Total Days Cr. Recorded 7360	Date Recorded March 7/88	<i>M. A. Weierman</i>
	Date Approved as Recorded 5 May 88	Branch Director <i>R. A. Brown</i>

Certification Verifying Report of Work

I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report is true.

Name and Postal Address of Person Certifying



Total number of mining claims covered by this report of work. **92**

formed by

L980142

980143

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980191

RECEIVED

APR 5 1988

MINING LANDS SECTION

RECEIVED
APR 5 1988
10:45am

W. A. HUBACHECK CONSULTANTS LTD.

W. A. HUBACHECK, B.Sc., P.ENG.
RESIDENCE
(416) 845-2954

141 ADELAIDE ST. WEST
SUITE 603
TORONTO, ONTARIO
M5H 3L5
(416) 364-2895
FAX (416) 364-5384

P. C. HUBACHECK, P.GEOL.
RESIDENCE
(416) 822-6150

July 25, 1989

Mr. A. Barr,
Mineral Development and Lands Branch,
880 Bay St., Third Floor
Toronto, Ont.
M5S 1Z8

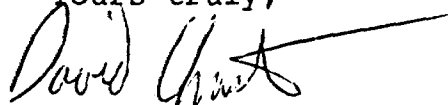
Dear Mr. Barr:

Legacy Exploration Ltd. recorded an Airborne Magnetometer/VLF Survey January 13, 1988 (File No. 2.10719) on a group of 92 claims in McElroy Township. This survey covered a large area outside this claim group. Since the survey was flown, Sudbury Contact Mines Ltd. has optioned the 92 claim group from Legacy Exploration and staked a new group of contiguous claims (21 claims) numbered as follows:

L1041466 - L1041486 inclusive, also in McElroy Township.

As discussed over the phone with you on July 25th, we would like to apply the Airborne Geophysical Survey to the new claim group if at all possible, to receive assessment credits.

Yours truly,



DAVID W. CHRISTIE
Project Geologist
for Sudbury Contact Mines Ltd.

DWC/ber

RECEIVED

AUG - 2 1989

MINING LANDS SECTION

W. A. HUBACHECK CONSULTANTS LTD.

199 BAY STREET
SUITE 1110
TORONTO, ONTARIO
M5J 1L4

RESIDENCE
(416) 848-2954

BUSINESS
(416) 364-2895

RECEIVED

APR 5 1988

March 4, 1988

MINING LANDS SECTION

Mining Recorder,
Ministry of Northern Development and Mines
4 Government Road, East,
Kirkland Lake, Ont.
P2N 1A2

Dear Sirs:

Please find enclosed a report of work for Legacy Explorations Ltd., concerning airborne magnetic and VLF surveys in the Larder Lake area. The assessment report coded as A-731 submitted by Terraquest Ltd. has already been forwarded to Queen's Park. In communications with Frances, I informed her that the work credits will be assigned to three separate parties namely R.A. MacGregor, Skead Holdings and Legacy Explorations.

Mr. R. MacGregor has already submitted a report of work. However, we have delayed Legacy's report of work until the transfer of mining claims was completed.

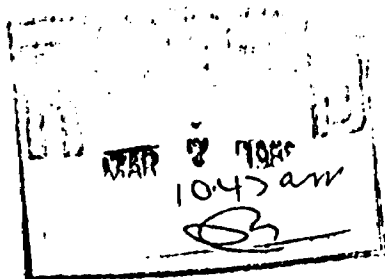
Thank you.

Sincerely,

Peter C. Hubacheck

PETER C. HUBACHECK

PCH/ber



Mining Lands Section
3rd Floor, 880 Bay Street
Toronto, Ontario
M5S 1Z8

Telephone: (416) 965-4888

August 15, 1989

File: 2.10719

REGISTERED

Sudbury Contact Mines Ltd.
603-141 Adelaide Street W.
Toronto, Ontario
M5H 3L5

Dear Sir:

RE: Airborne Geophysical Certificate on Mining Claims:
L 1041466 to 486 inclusive in McElroy Township.

Enclosed is an Airborne Geophysical Certificate issued under Section 78 of the Mining Act R.S.O. 1980.

It is your responsibility to file this certificate with the mining recorder no later than sixty (60) days from the date of issue of the certificate.

Upon recording of this certificate the time for performing the first and all subsequent periods of work for claims listed shall fall due one year later than the times prescribed in subsection 1 of Section 76.

Yours sincerely

W.R. Cowan
Provincial Manager, Mining Lands
Mines and Minerals Division

LS:eb
Enclosure

cc: Mining Recorder
Kirkland Lake, Ontario



Ministry of
Northern Development
and Mines

Airborne
Geophysical
Certificate

Mining Act

This is to certify that Sudbury Contact Mines Ltd. has met the requirements of Section 78 of the Mining Act,
with respect to the following mining claims in the Township (or ~~area~~) of McElroy.

Mining Claims (Please list)

L 1041466 to 486 incl.

Date	Provincial Mining Lands Mgr.
August 16, 1989	<i>W. Rowa</i>

R. A. MACGREGOR, P. ENG.

MINING ENGINEER

~~XXXXXXXXXXXX~~

SAULT STE. MARIE, ONTARIO

~~XXXXXX~~

P.O. BOX 1110
SAULT STE. MARIE
ONTARIO P6A 5N7

OFFICE:
705-949-5928

HOME:
705-949-4250

Dec. 30, 1987

Mining Recorder

Ministry of Northern Development & Mines
4 Government Rd. East
KIRKLAND Lake, Ontario
P2N 1A2

Dear Sir:

In checking Report of Work for Airborne Survey 436/87
it was noted that claim L919921 was inadvertently omitted from the
list of claims.

Would you please have this claim added to the claim list
of this work report.

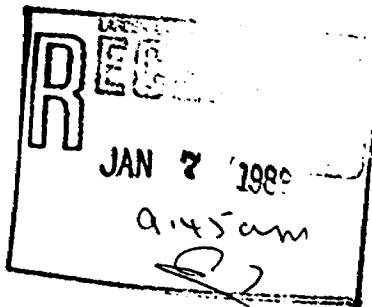
Yours truly



R.A. MacGregor, P. Eng.

RAM/jh

Encl.


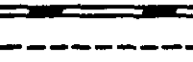

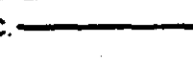
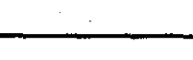
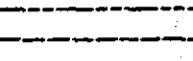
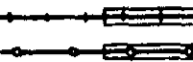



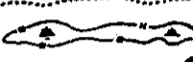




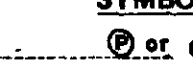

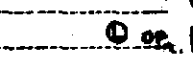


Katrine Tp.












MUNICIPALITY OF LARDER LAKE

IMPROVEMENT DISTRICT OF
MC GARRY

LEGEND

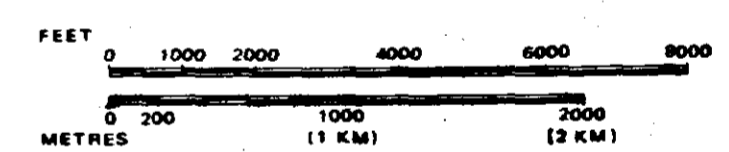
- HIGHWAY AND ROUTE No. 
- OTHER ROADS 
- TRAILS 
- SURVEYED LINES:
 - TOWNSHIPS, BASE LINES, ETC. 
 - LOTS, MINING CLAIMS, PARCELS, ETC. 
- UNSURVEYED LINES:
 - LOT LINES 
 - PARCEL BOUNDARY 
 - MINING CLAIMS ETC. 
- RAILWAY AND RIGHT OF WAY 
- UTILITY LINES 
- NON-PERENNIAL STREAM 
- FLOODING OR FLOODING RIGHTS 
- SUBDIVISION OR COMPOSITE PLAN 
- RESERVATIONS 
- ORIGINAL SHORELINE 
- MARSH OR MUSKEG 
- MINES 
- TRAVERSE MONUMENT 

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	
" SURFACE RIGHTS ONLY	
" MINING RIGHTS ONLY	
LEASE, SURFACE & MINING RIGHTS	
" SURFACE RIGHTS ONLY	
" MINING RIGHTS ONLY	
LICENCE OF OCCUPATION	
ORDER-IN-COUNCIL	
RESERVATION	
CANCELLED	
SAND & GRAVEL	

NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 6, 1913, VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 380, SEC. 63, SUBSEC. 1.

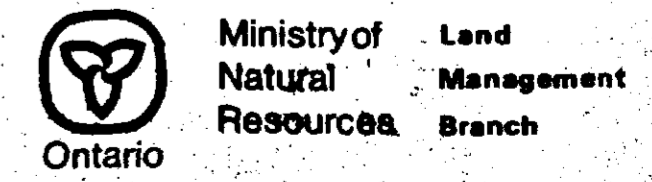
SCALE: 1 INCH = 40 CHAINS



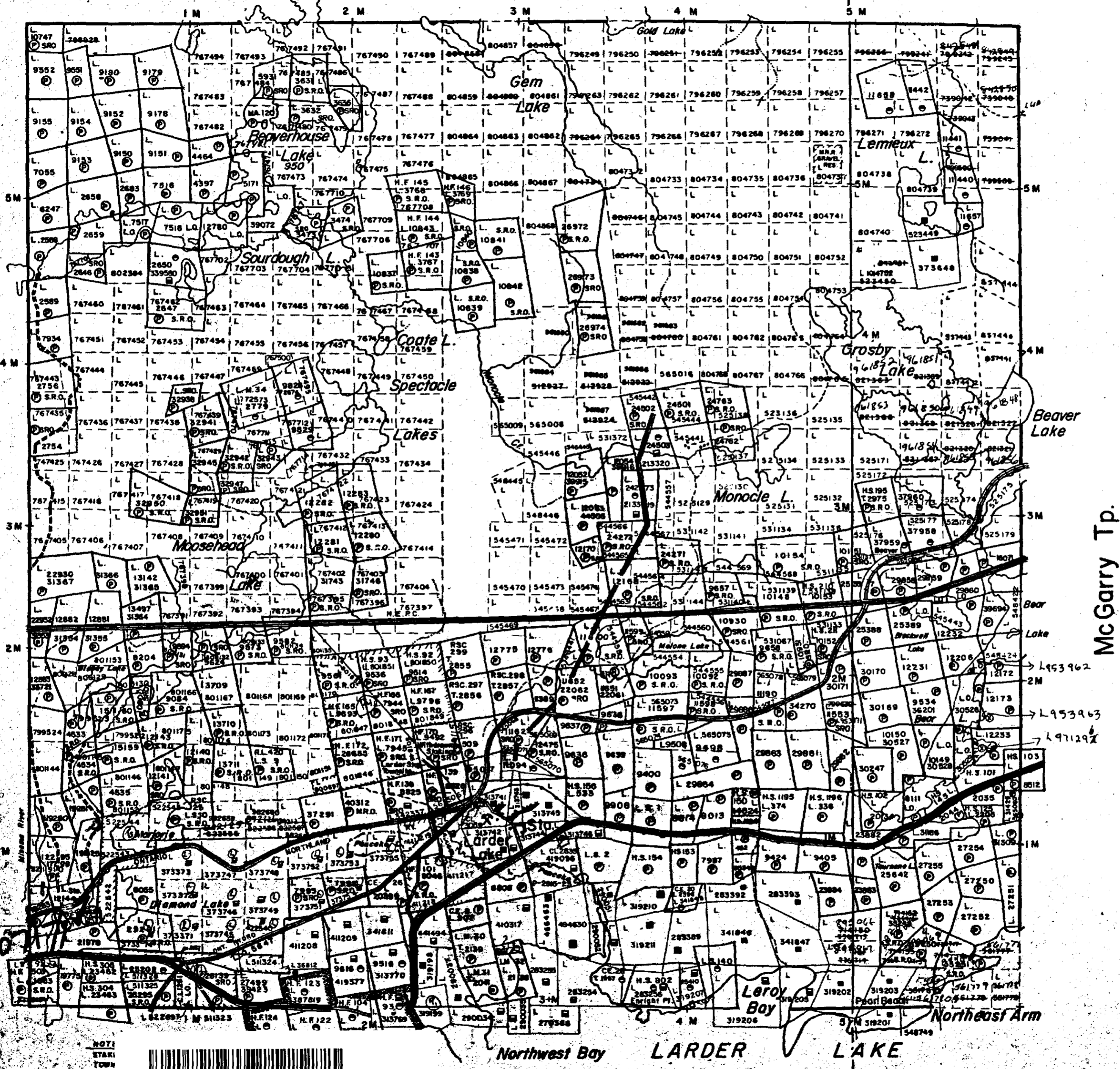
- ① SEC 36/80 NW 66/84 01/03/84 MR 15R
- ② SEC 36/80 NW 23/85 11/27/85 MR 15R
- ③ SEC 36/80 W 9/80 01/03/84 MR 15R
- ④ W-22/86 6/3/86 SEC 36/80 MR 15

McVITTIE

M.N.R. ADMINISTRATIVE DISTRICT
KIRKLAND LAKE
MINING DIVISION
LARDER LAKE
LAND TITLES / REGISTRY DIVISION
TIMISKAMING



Date: SEPTEMBER 1984 Number: G-3163



Gauthier Tp.

McGarry Tp.

NOTE:
STARI
TOWN
TO 8



OF LARDER LAKE

IMPROVEMENT DISTRICT OF
MC GARRY

200 Hurst Tp.

320045E0014 2.16719 MCVITTIE

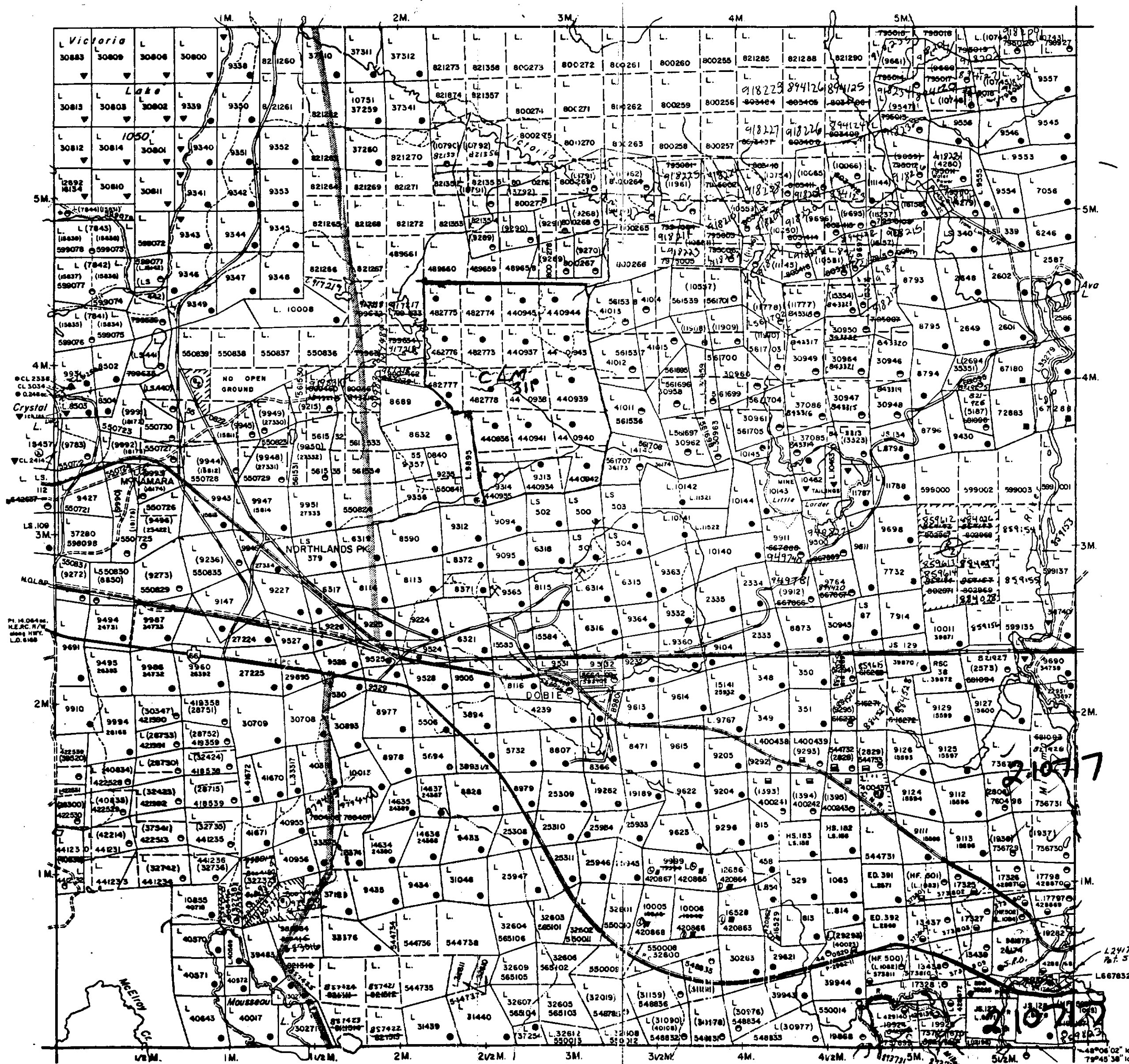
REFERENCES

AREAS WITHDRAWN FROM DISPOSITION

- M.R.O. - MINING RIGHTS ONLY
- S.R.O. - SURFACE RIGHTS ONLY
- M+S. - MINING AND SURFACE RIGHTS

Description	Order No.	Date	Disposition	File
(R1) Sec 36/80 W38/85	24/2/85	24/2/85	M+S	
Sec 36/80 022/85	30/12/85	30/12/85	M+S	
(R1) Sec 36/80 W38/85	30/12/85	30/12/85	M+S	
(R2) Sec 36/80 N14/86	31/01/86	31/01/86	M+S	
Sec 36/80 05/86	31/01/86	31/01/86	M+S	File 9-00 Feb 19/86

ARNOLD TP.



SAND and GRAVEL

(M) M.T.C.	PIT No. 1666	FILE 101421
(M) M.T.C.	PIT 3F-27	

LEBEL TP.

MCVITTIE TP.

DATE OF ISSUE
JUN 15 1987
LARDER LAKE
MINING RECORDERS OFFICE

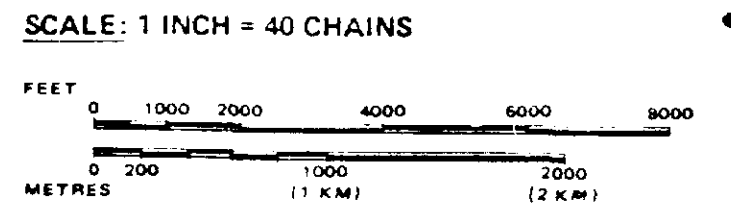
LEGEND

- HIGHWAY AND ROUTE No.
- OTHER ROADS
- TRAILS
- SURVEYED LINES:
 - TOWNSHIPS, BASE LINES, ETC.
 - LOTS, MINING CLAIMS, PARCELS, ETC.
- UNSURVEYED LINES:
 - LOT LINES
 - PARCEL BOUNDARY
 - MINING CLAIMS ETC.
- RAILWAY AND RIGHT OF WAY
- UTILITY LINES
- NON-PERENNIAL STREAM
- FLOODING OR FLOODING RIGHTS
- SUBDIVISION OR COMPOSITE PLAN
- RESERVATIONS
- ORIGINAL SHORELINE
- MARSH OR MUSKEG
- MINES
- TRAVERSE MONUMENT
- Power Line

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	
" SURFACE RIGHTS ONLY	
" MINING RIGHTS ONLY	
LEASE, SURFACE & MINING RIGHTS	
" SURFACE RIGHTS ONLY	
" MINING RIGHTS ONLY	
LICENCE OF OCCUPATION	
ORDER-IN-COUNCIL	
RESERVATION	
CANCELLED	
SAND & GRAVEL	

NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 6, 1913, VESTED IN ORIGINAL PATENTEES BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 380, SEC. 53, SUBSEC. 1.



TOWNSHIP
GAUTHIER
M.N.R. ADMINISTRATIVE DISTRICT
KIRKLAND LAKE
MINING DIVISION
LARDER LAKE
LAND TITLES / REGISTRY DIVISION
TIMISKAMING

Ministry of Natural Resources
Land Management Branch
Ontario

Date JANUARY, 1985
Number G-3211



REFERENCES

AREAS WITHDRAWN FROM DISPOSITION

- M.R.O. - MINING RIGHTS ONLY
- S.R.O. - SURFACE RIGHTS ONLY
- M.+S. - MINING AND SURFACE RIGHTS

Description Order No. Date Disposition File

① SURFACE RIGHTS WITHDRAWN FROM STAKING SECTION 36/80 ORDER NO. W 14/80

② Surface and Mining Rights Withdrawn from Staking, section 36/80 order No. W 65/84

③ MINING RIGHTS WITHDRAWN FROM STAKING SECTION 36 / 80 ORDER NO. W 9 / 85

④ Surface and Mining Rights Withdrawn from Staking, section 36/80 order No. W 17/85

O 32 / 85 OPENS W 17 / 85.

⑤ Surface and Mining Rights Withdrawn from Staking, section 36/80 order No. W 36/85

O 22 / 85 OPENS W 36 / 85

⑥ Surface and Mining Rights Withdrawn from Staking, section 36/80 order No. W 3/85

- O 24 / 85 OPENS PART OF W 38 / 85.
- O 25 / 85 OPENS PART OF W 38 / 85.
- O 26 / 85 OPENS PART OF W 38 / 85.
- O 63 / 87 OPENS PART OF W 38 / 85.

⑦ Surface and Mining Rights Withdrawn from Staking, section 36/80 order No. W 7/86

O 74 / 86 OPENS PART OF W 7 / 86.

⑧ Surface and Mining Rights Withdrawn from Staking, section 36/80 order No. W 18/86

O 64 / 87 OPENS PART OF W 8 / 86.

⑨ Surface and Mining Rights Withdrawn from Staking, section 36/80 order No. W 9/86

⑩ Surface and Mining Rights Withdrawn from Staking, section 36/80 order No. W 61/86

O 75 / 86 OPENS W 61 / 86.

⑪ Surface and Mining Rights Withdrawn from Staking, section 36/80 order No. W 50/86

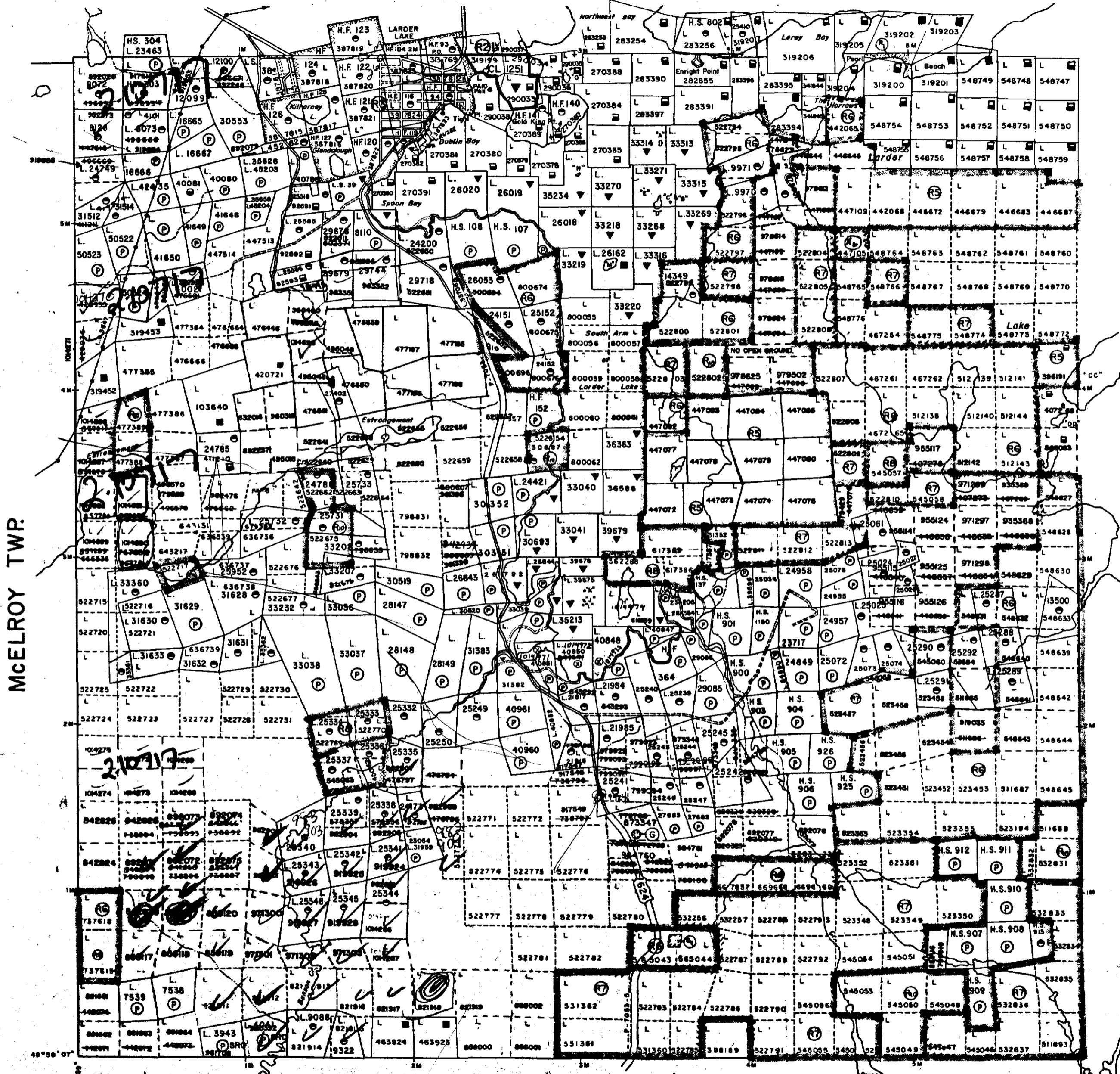
O 60 / 87 OPENS PART OF W 50 / 86.

NOTES

Township of Hearst lies entirely within the CORPORATION of the TOWNSHIP of LARDER LAKE. File 29282

Staking of mining claims within the Town of Larder Lake shown thus subject to Sec. 37(b) of the Mining Act (R.S.O.1970)

McVITTIE TWP.



MCELROY TWP.

McFADDEN TWP.

SKEAD TWP.

LEGEND

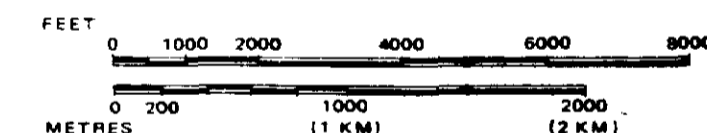
- HIGHWAY AND ROUTE No.
- OTHER ROADS
- TRAILS
- SURVEYED LINES:
 - TOWNSHIPS, BASE LINES, ETC.
 - LOTS, MINING CLAIMS, PARCELS, ETC.
- UNSURVEYED LINES:
 - LOT LINES
 - PARCEL BOUNDARY
 - MINING CLAIMS ETC.
- RAILWAY AND RIGHT OF WAY
- UTILITY LINES
- NON-PERENNIAL STREAM
- FLOODING OR FLOODING RIGHTS
- SUBDIVISION OR COMPOSITE PLAN
- RESERVATIONS
- ORIGINAL SHORELINE
- MARSH OR MUSKEG
- MINES
- TRAVERSE MONUMENT

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	⊙ or ●
" SURFACE RIGHTS ONLY	⊙ SRD or ●
" MINING RIGHTS ONLY	⊙ or ●
LEASE, SURFACE & MINING RIGHTS	■
" SURFACE RIGHTS ONLY	■
" MINING RIGHTS ONLY	■
LICENCE OF OCCUPATION	▽
ORDER-IN-COUNCIL	OC
RESERVATION	⊙
CANCELLED	⊙
SAND & GRAVEL	⊙

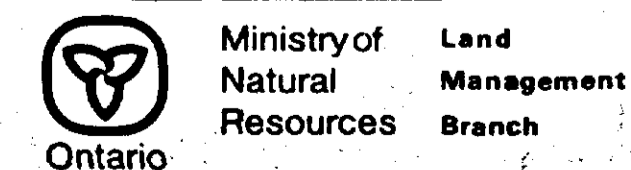
NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 6, 1913, VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 380, SEC. 63, SUBSEC. 1.

SCALE: 1 INCH = 40 CHAINS



Replaced on Aug 19, 1987

TOWNSHIP
HEARST
 M.N.R. ADMINISTRATIVE DISTRICT
KIRKLAND LAKE
 MINING DIVISION
LARDER LAKE
 LAND TITLES / REGISTRY DIVISION
TIMISKAMING



Date FEBRUARY, 1985

Number

G-3213



32045E0014 2.10719 MCVITTIE

REFERENCES

AREAS WITHDRAWN FROM DISPOSITION

- M.R.O. - MINING RIGHTS ONLY
- S.R.O. - SURFACE RIGHTS ONLY
- M.+S. - MINING AND SURFACE RIGHTS

Description Order No. Date Disposition File

(R1) SURFACE AND MINING RIGHTS WITHDRAWN FROM STAKING SECTION 36/80 ORDER NO. W.13/86

(R2) SURFACE AND MINING RIGHTS WITHDRAWN FROM STAKING SECTION 36/80 ORDER NO. W.18/86

PART (R3) REOPENED BY ORDER NO. O-12/89L

PART (R4) REOPENED BY ORDER NO. O-13/89L

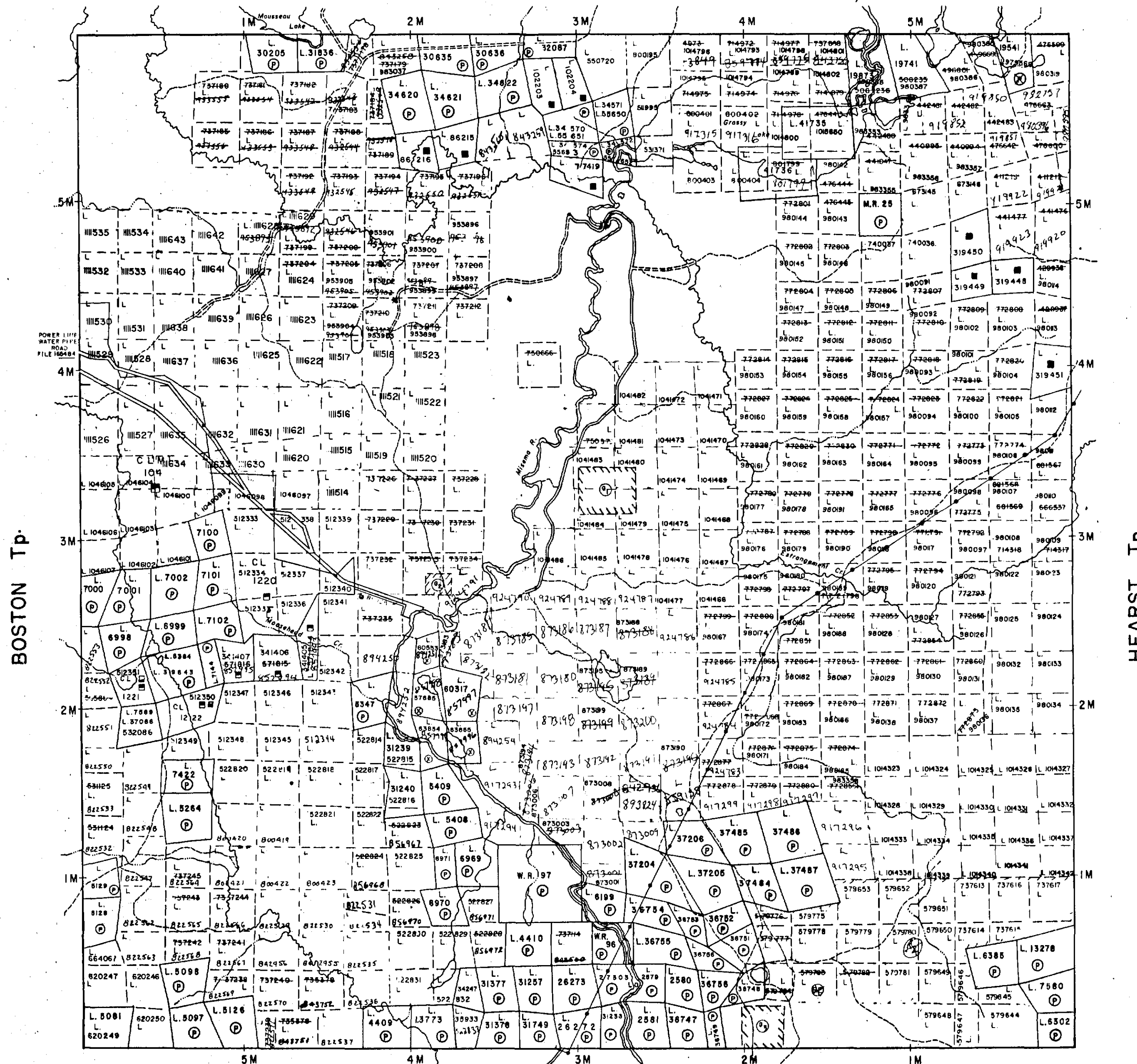
SAND AND GRAVEL

- (N1) M.N.R. Gravel File 179165
 - (N2) Gravel Pit File 113703
 - (N3) M.N.R. Gravel File 160982
- * Application for Surface Rights Parts Under Public Lands Act.

NOTICE OF FORESTRY ACTIVITY
THIS TOWNSHIP / AREA FALLS WITHIN THE _____

TIMISKAMING MANAGEMENT UNIT
AND MAY BE SUBJECT TO FORESTRY OPERATIONS.
THE MNR UNIT FORESTER FOR THIS AREA CAN BE CONTACTED AT: P.O. BOX 129
SWASTIKA, ONT.
POK ITO
705-642-3222

GAUTHIER Tp.



CATHARINE Tp.

LEGEND

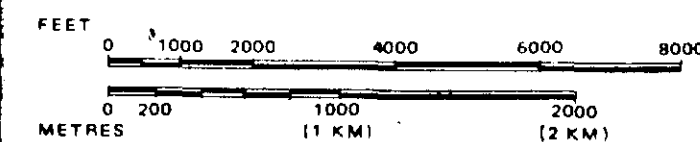
- HIGHWAY AND ROUTE No.
- OTHER ROADS
- TRAILS
- SURVEYED LINES:
 - TOWNSHIPS, BASE LINES, ETC.
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- UNSURVEYED LINES:
 - LOT LINES
 - PARCEL BOUNDARY
 - MINING CLAIMS ETC.
- RAILWAY AND RIGHT OF WAY
- UTILITY LINES
- NON-PERENNIAL STREAM
- FLOODING OR FLOODING RIGHTS
- SUBDIVISION OR COMPOSITE PLAN
- RESERVATIONS
- ORIGINAL SHORELINE
- MARSH OR MUSKEG
- MINES
- TRAVERSE MONUMENT

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	
" SURFACE RIGHTS ONLY	
" MINING RIGHTS ONLY	
LEASE, SURFACE & MINING RIGHTS	
" SURFACE RIGHTS ONLY	
" MINING RIGHTS ONLY	
LICENCE OF OCCUPATION	
ORDER-IN-COUNCIL	
RESERVATION	
CANCELLED	
SAND & GRAVEL	

NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 6, 1913, VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 380, SEC. 63, SUBSEC. 1.

SCALE: 1 INCH = 40 CHAINS



TOWNSHIP

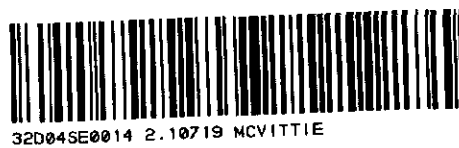
McELROY
M.N.R. ADMINISTRATIVE DISTRICT
KIRKLAND LAKE
MINING DIVISION
LARDER LAKE
LAND TITLES / REGISTRY DIVISION
TIMISKAMING

Ministry of Natural Resources
Land Management Branch
Ontario

Date JANUARY, 1985 Number **G-3214**

DATE OF ISSUE
JUL 17 1989
LARDER LAKE
MINING RECORDER'S OFFICE

TOWNSHIP SUBJECT
TO
FORESTRY OPERATIONS



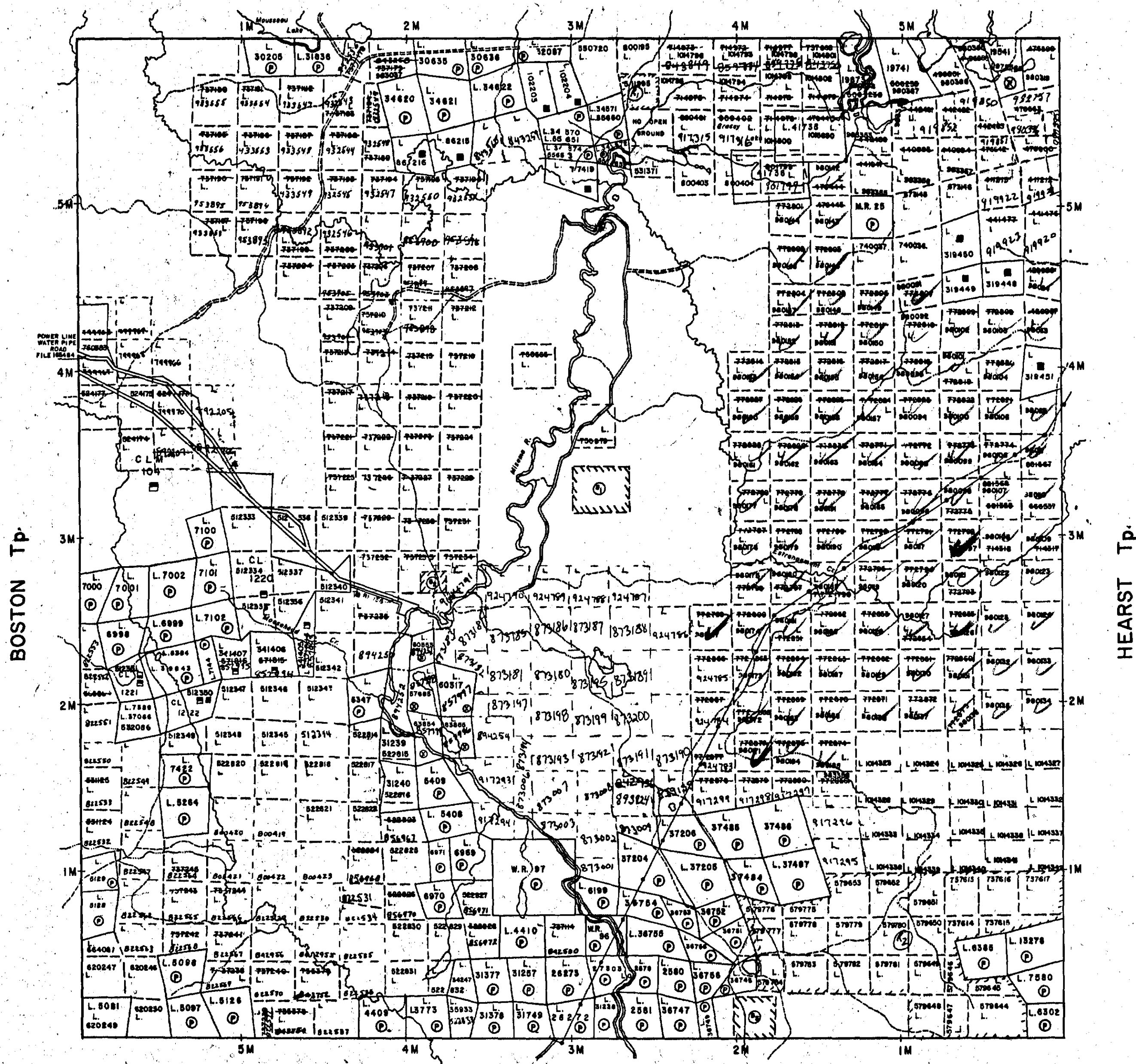
REFERENCES

AREAS WITHDRAWN FROM DISPOSITION

- M.R.O. - MINING RIGHTS ONLY
- S.R.O. - SURFACE RIGHTS ONLY
- M.+S. - MINING AND SURFACE RIGHTS

Description	Order No.	Date	Disposition	File
(P) SURFACE AND MINING RIGHTS WITHDRAWN FROM STAKING SECTION 36/80 ORDER NO. <u>W.13/86</u>				
(P) SURFACE AND MINING RIGHTS WITHDRAWN FROM STAKING SECTION 36/80 ORDER NO. <u>W.18/86</u>				

GAUTHIER Tp.



SAND AND GRAVEL

- (1) M.N.R. Gravel File 179165
 - (2) Gravel Pit File 113703
 - (3) M.N.R. Gravel File 160982
- * Application for Surface Rights Parts Under Public Lands Act.

NOTICE OF FORESTRY ACTIVITY

THIS TOWNSHIP / AREA FALLS WITHIN THE _____
 TIMISKAMING MANAGEMENT UNIT
 AND MAY BE SUBJECT TO FORESTRY OPERATIONS.
 THE MNR UNIT FORESTER FOR THIS AREA CAN BE CONTACTED AT: P.O. BOX 129
 SWASTKA, ONT.
 POK ITO
 705-642-3222

LEGEND

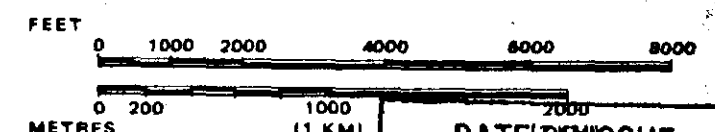
- HIGHWAY AND ROUTE No.
- OTHER ROADS
- TRAILS
- SURVEYED LINES:
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- LOTS, MINING CLAIMS, PARCELS, ETC.
- UNSURVEYED LINES:
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- PARCEL BOUNDARY
- MINING CLAIMS ETC.
- RAILWAY AND RIGHT OF WAY
- UTILITY LINES
- NON-PERENNIAL STREAM
- FLOODING OR FLOODING RIGHTS
- SUBDIVISION OR COMPOSITE PLAN
- RESERVATIONS
- ORIGINAL SHORELINE
- MARSH OR MUSKEG
- MINES
- TRAVERSE MONUMENT

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	
" SURFACE RIGHTS ONLY	
" MINING RIGHTS ONLY	
LEASE, SURFACE & MINING RIGHTS	
" SURFACE RIGHTS ONLY	
" MINING RIGHTS ONLY	
LICENCE OF OCCUPATION	
ORDER-IN-COUNCIL	
RESERVATION	
CANCELLED	
SAND & GRAVEL	

NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 6, 1913, VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 380, SEC. 63, SUBSEC. 1.

SCALE: 1 INCH = 40 CHAINS



DATE OF ISSUE

APR 14 1988

TOWNSHIP

McELROY

M.N.R. ADMINISTRATIVE DISTRICT
 KIRKLAND LAKE
 MINING DIVISION

LARDER LAKE
 LAND TITLES / REGISTRY DIVISION
 TIMISKAMING

Ministry of Natural Resources
 Land Management Branch
 Ontario

Date JANUARY, 1985

Number

G-3214

CATHARINE Tp.



32045E8914 2.10719 HCVITTE

REFERENCES

AREAS WITHDRAWN FROM DISPOSITION

- M.R.O. - MINING RIGHTS ONLY
- S.R.O. - SURFACE RIGHTS ONLY
- M.+S. - MINING AND SURFACE RIGHTS

Description Order No. Date Disposition File

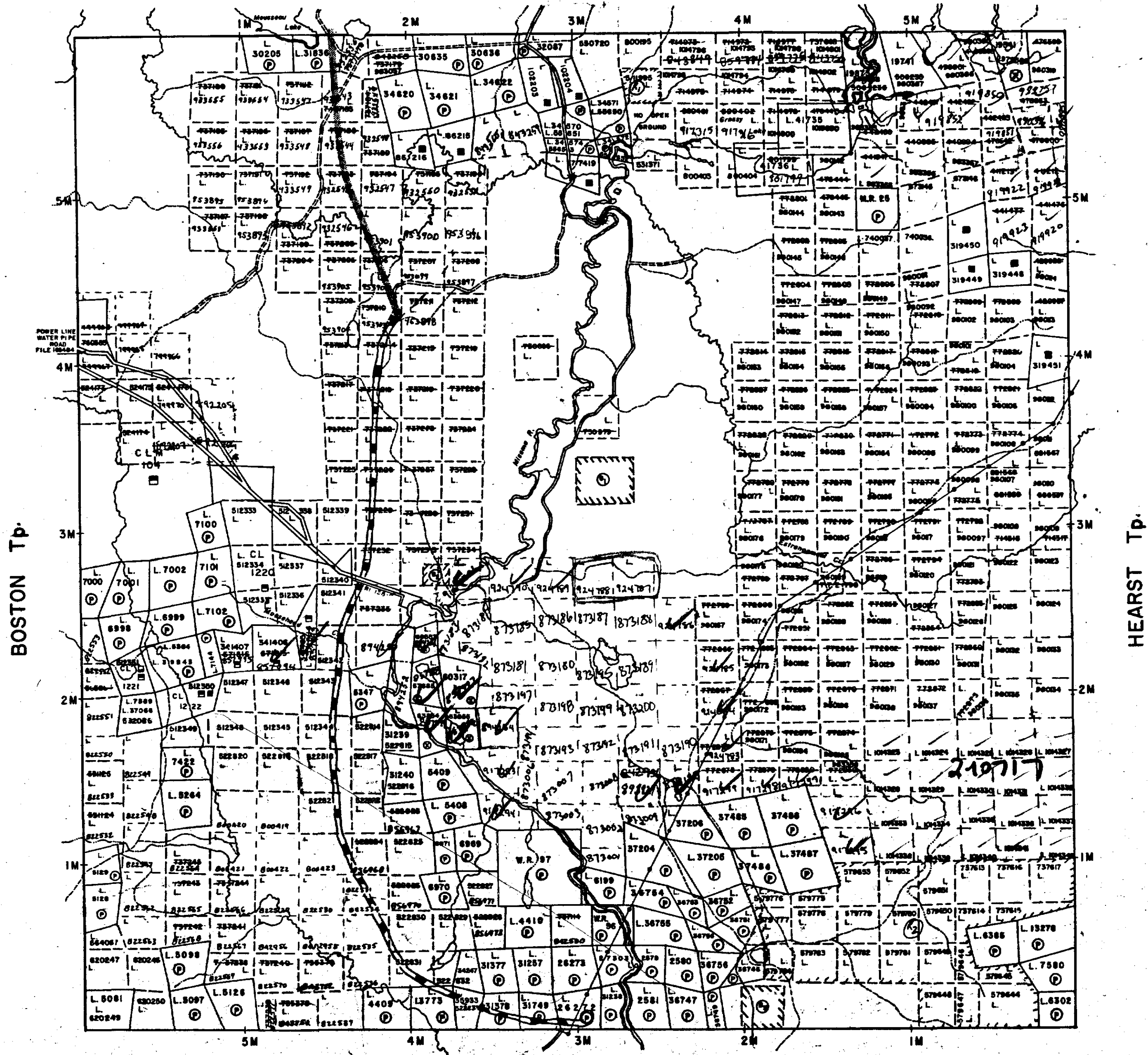
① SURFACE AND MINING RIGHTS WITHDRAWN FROM STAKING SECTION 36/80 ORDER NO. W.13/86

② SURFACE AND MINING RIGHTS WITHDRAWN FROM STAKING SECTION 36/80 ORDER NO. W.18/86

SAND AND GRAVEL

- ① M.N.R. Gravel File 179165
 - ② Gravel Pit File 113703
 - ③ M.N.R. Gravel File 160982
- * Application for Surface Rights Parts Under Public Lands Act.

GAUTHIER Tp.



BOSTON Tp.

HEARST Tp.

CATHARINE Tp.

LEGEND

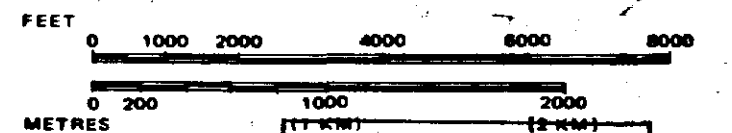
- HIGHWAY AND ROUTE No.
- OTHER ROADS
- TRAILS
- SURVEYED LINES:
 - TOWNSHIPS, BASE LINES, ETC.
 - LOTS, MINING CLAIMS, PARCELS, ETC.
- UNSURVEYED LINES:
 - LOT LINES
 - PARCEL BOUNDARY
 - MINING CLAIMS ETC.
- RAILWAY AND RIGHT OF WAY
- UTILITY LINES
- NON-PERENNIAL STREAM
- FLOODING OR FLOODING RIGHTS
- SUBDIVISION OR COMPOSITE PLAN
- RESERVATIONS
- ORIGINAL SHORELINE
- MARSH OR MUSKOG
- MINES
- TRAVERSE MONUMENT

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	
" SURFACE RIGHTS ONLY	
" MINING RIGHTS ONLY	
LEASE, SURFACE & MINING RIGHTS	
" SURFACE RIGHTS ONLY	
" MINING RIGHTS ONLY	
LICENCE OF OCCUPATION	
ORDER-IN-COUNCIL	
RESERVATION	
CANCELLED	
SAND & GRAVEL	

NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 4, 1913, VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 300, SEC. 63, SUBSEC. 1.

SCALE: 1 INCH = 40 CHAINS



DATE OF ISSUE
DEC 11 1987
TOWNSHIP LARDER LAKE
MINING RECORDER'S OFFICE

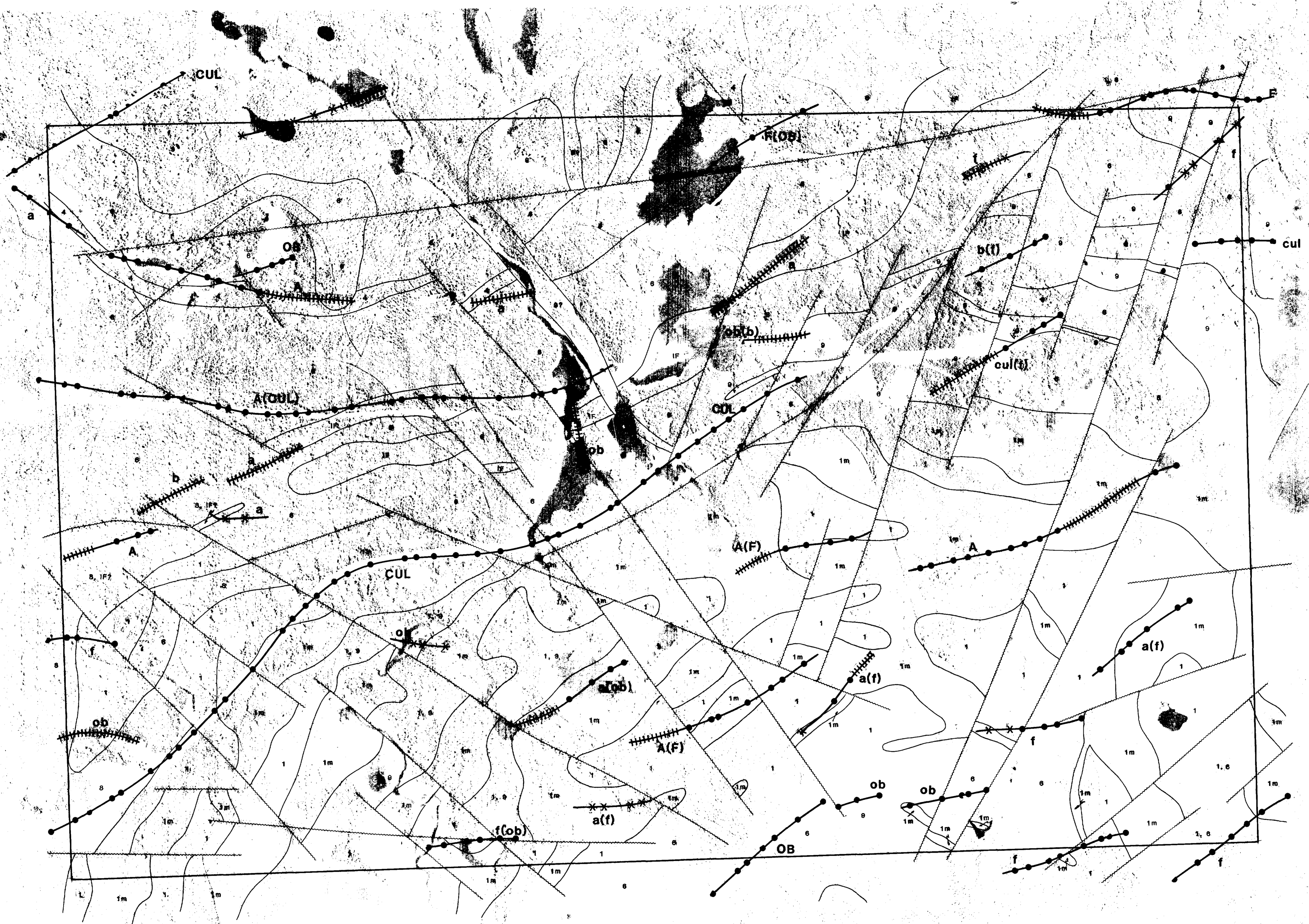
McELROY
M.N.R. ADMINISTRATIVE DISTRICT
KIRKLAND LAKE
MINING DIVISION
LARDER LAKE
LAND TITLES / REGISTRY DIVISION
TIMISKAMING

Ministry of Land Management
Natural Resources Branch
Ontario #10

Date JANUARY, 1985 Number **G-3214**



320845E0014 2.18719 MCVIITTE



2. 10/19

VLF Transmitter
 NAA Cutler, 24.0 kHz
 Azimuth 107

- LITHOLOGY**
- 9 Felsic Intrusives
 - 8 Mafic Intrusives
 - 6 Clastic Metasediments
 - 4 Alkalic Metavolcanics
 - 1m Magnetic Unit Within 1
 - 1 Mafic to Intermediate Metavolcanics
 - IF Iron Formation

- LEGEND**
- Terrain Clearance 100 meters
 - Line Spacing 100 meters
- INTERPRETATION**
- Contact
 - - - Fault
 - Property Boundary
- VLF-EM Conductor Axes**
- normal quadrature
 - x - reverse quadrature
 - + - total field only
- See text for classification of VLF-EM conductor axes

SUDBURY CONTACT MINES LTD.

INTERPRETATION

LARDER LAKE WEST
 ONTARIO

N.T.S. NO. 32D/4

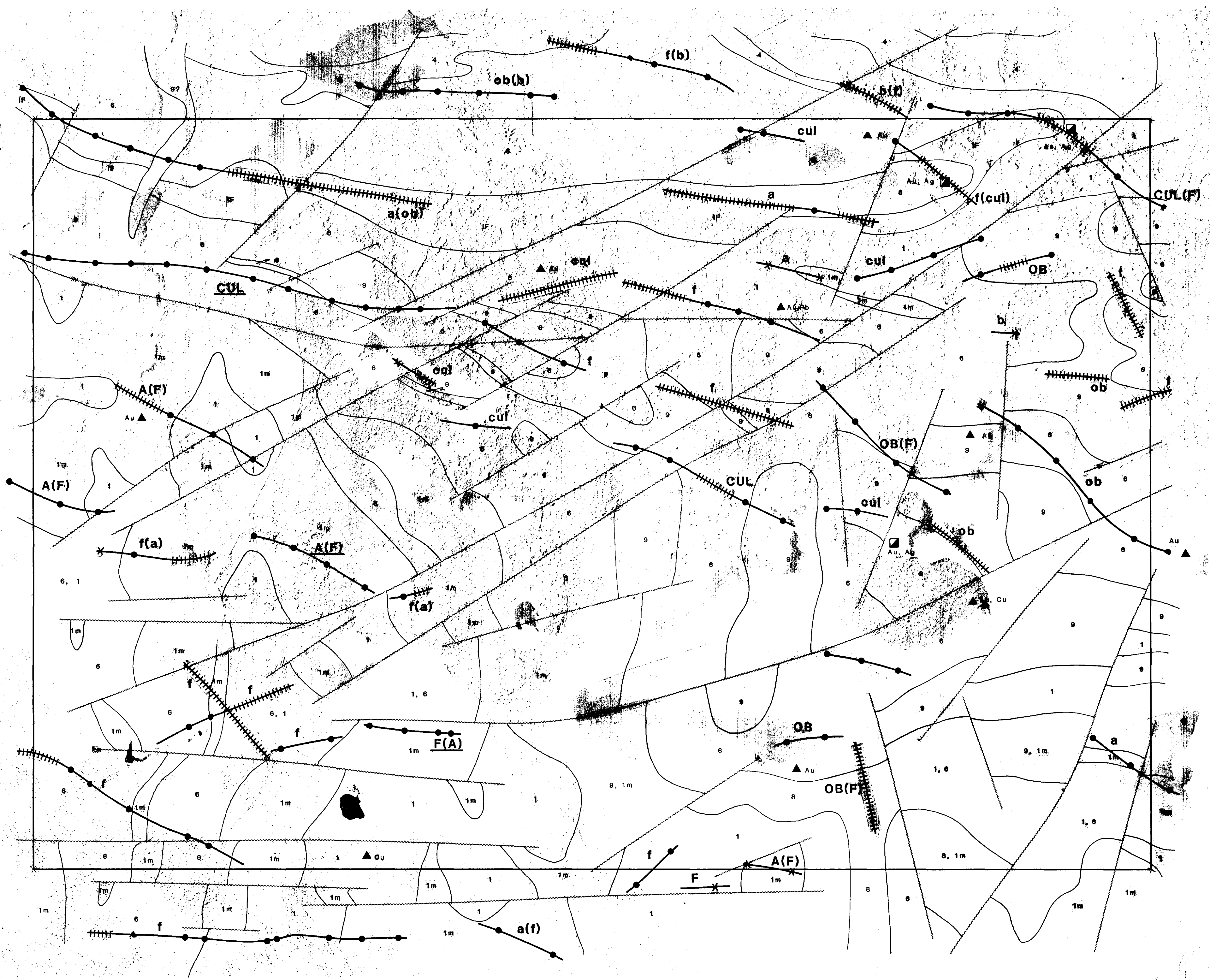
DRAWING NO. A-731.1-4

SCALE: 1:10,000

DATE December 1987

TERRAQUEST LTD.
 TORONTO, CANADA





2.10719

SUDBURY CONTACT MINES LTD.

INTERPRETATION

LARDER LAKE EAST
ONTARIO

N.T.S. NO. 32D/4

DRAWING NO. A-731.2-4

SCALE: 1:10,000

DATE: December 1987

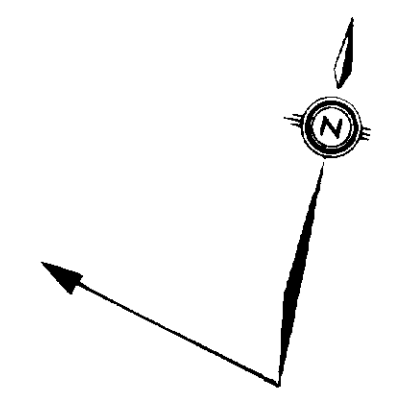
TERRAQUEST LTD.
TORONTO, CANADA

LITHOLOGY

- 9 Felsic Intrusives
- 8 Mafic Intrusives
- 6 Clastic Metasediments
- 4 Alkalic Metavolcanics
- 1m Magnetic Unit Within 1
- 1 Mafic to Intermediate Metavolcanics
- IF Iron Formation

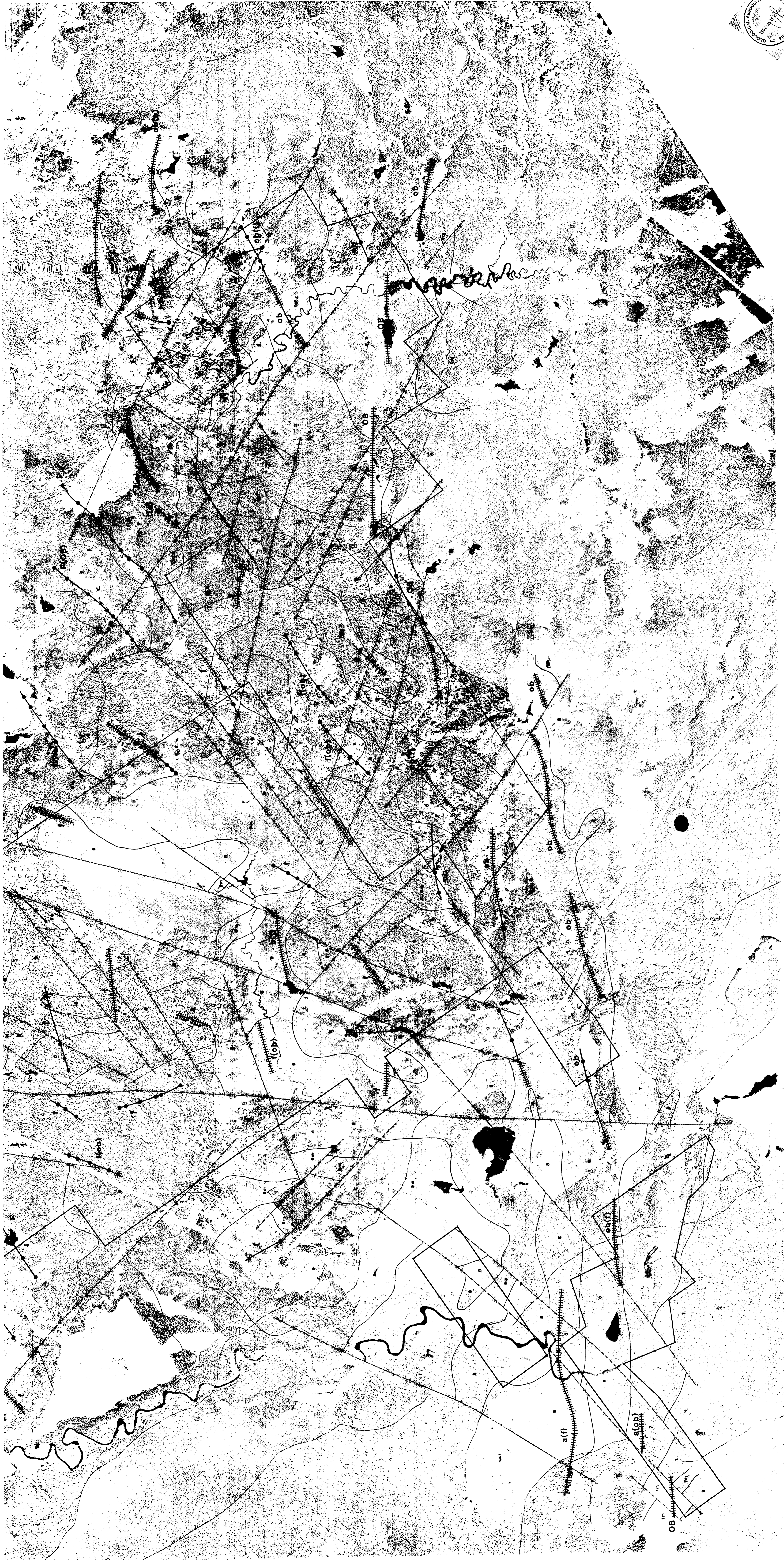
LEGEND

- Terrain Clearance 100 meters
- Line Spacing 200 meters
- INTERPRETATION**
- Contact
- Fault
- Property Boundary
- VLF-EM Conductor Axes**
- normal quadrature
- ×----- reverse quadrature
- ++++ total field only
- See text for classification of VLF-EM conductor axes



VLF Transmitter
NLK Seattle, 24.8 kHz
Azimuth 286



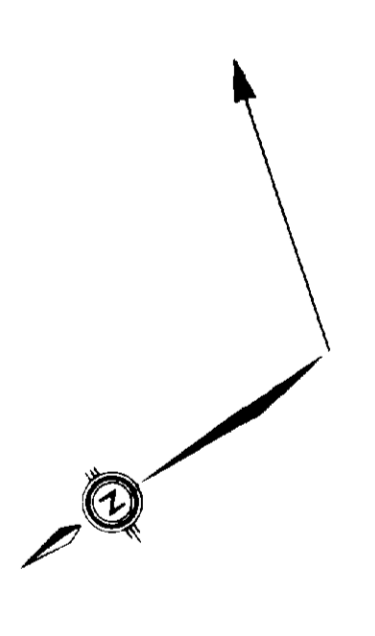


SUDBURY CONTACT MINES LTD.

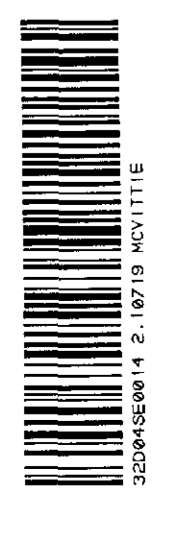
INTERPRETATION
 LARDER LAKE SOUTH
 ONTARIO
 N.T.S. NO. 320/4
 SCALE: 1:10,000
 DRAWING NO. A-721.5-4
 DATE: December 1987
TERRACONEST LTD.
 TORONTO, CANADA

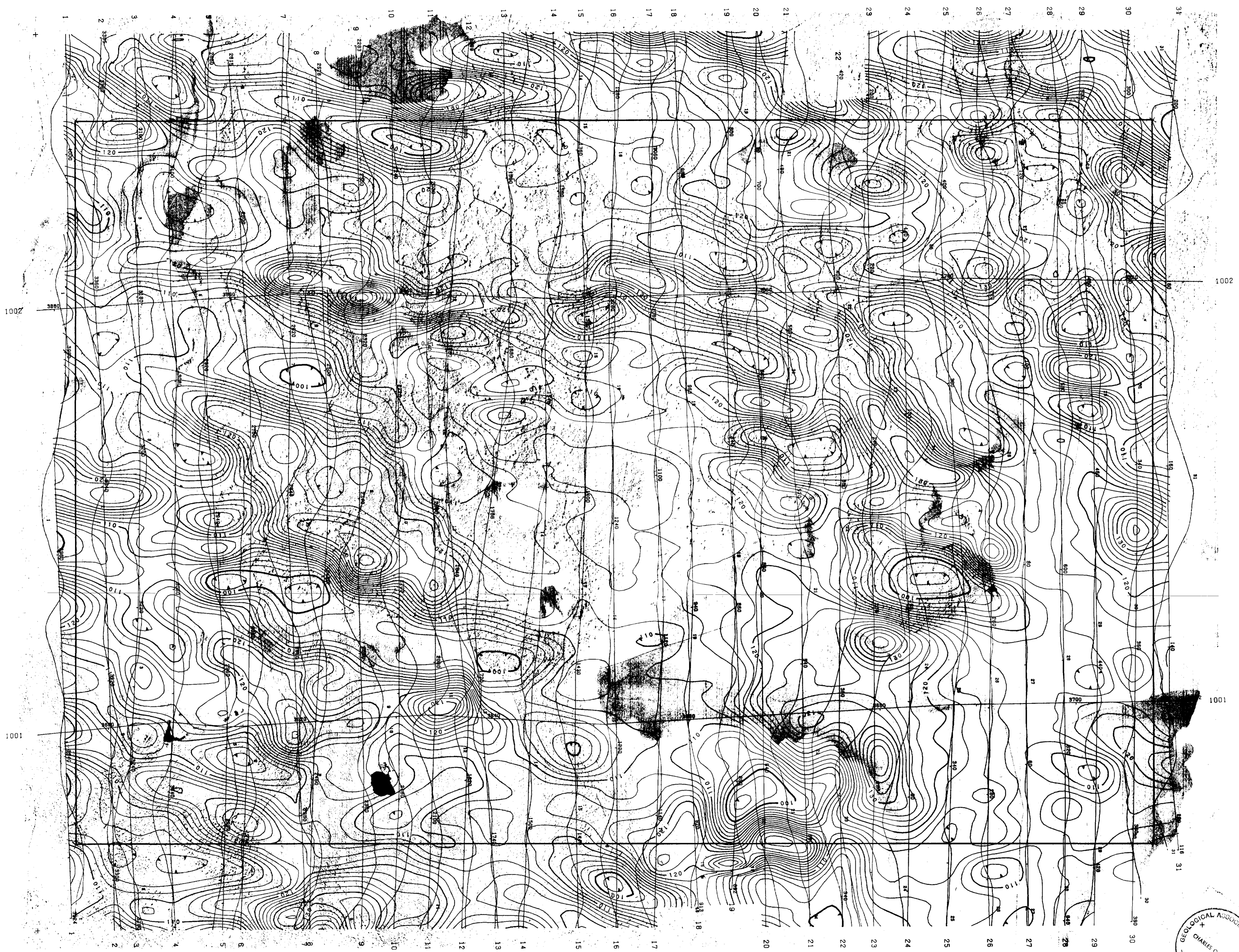
LEGEND
 Terrain Contour: 100 meters
 Line Spacing: 100 meters
INTERPRETATION
 Contact
 Fault
 Property Boundary
 normal structure
 total field only
 VLFEM Conductor Axes
 See text for classification of VLFEM conductor axes

LITHOLOGY
 9m | Magnetic Unit Within 9
 8 | Felsic Intrusives
 8 | Gabbro, Diorite Lamprophyre
 7 | Serpentine
 6 | Clastic Metasediments
 1m | Magnetic Unit Within 1
 1 | Melic to Intermediate Metavolcanics



VLF Transmitter
 NAA Coder, 24.0 MHz
 Azimuth 107

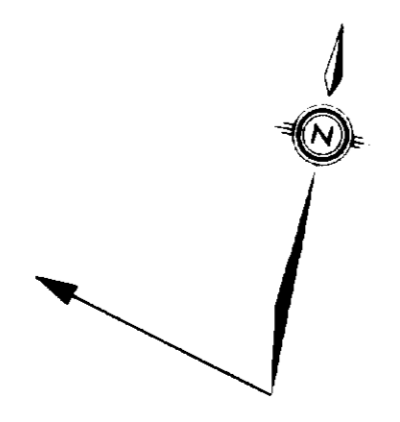




2.10719



290



VLF Transmitter
NLK Seattle, 24.8 kHz
Azimuth 286

LEGEND

- Terrain Clearance 100 meters
- Line Spacing 200 meters
- TOTAL FIELD STRENGTH (Contours)**
- 50%
- 10%
- 2%
- QUADRATURE (Profiles)**
- Normal Slope
- Reverse Slope

SUDBURY CONTACT MINES LTD.

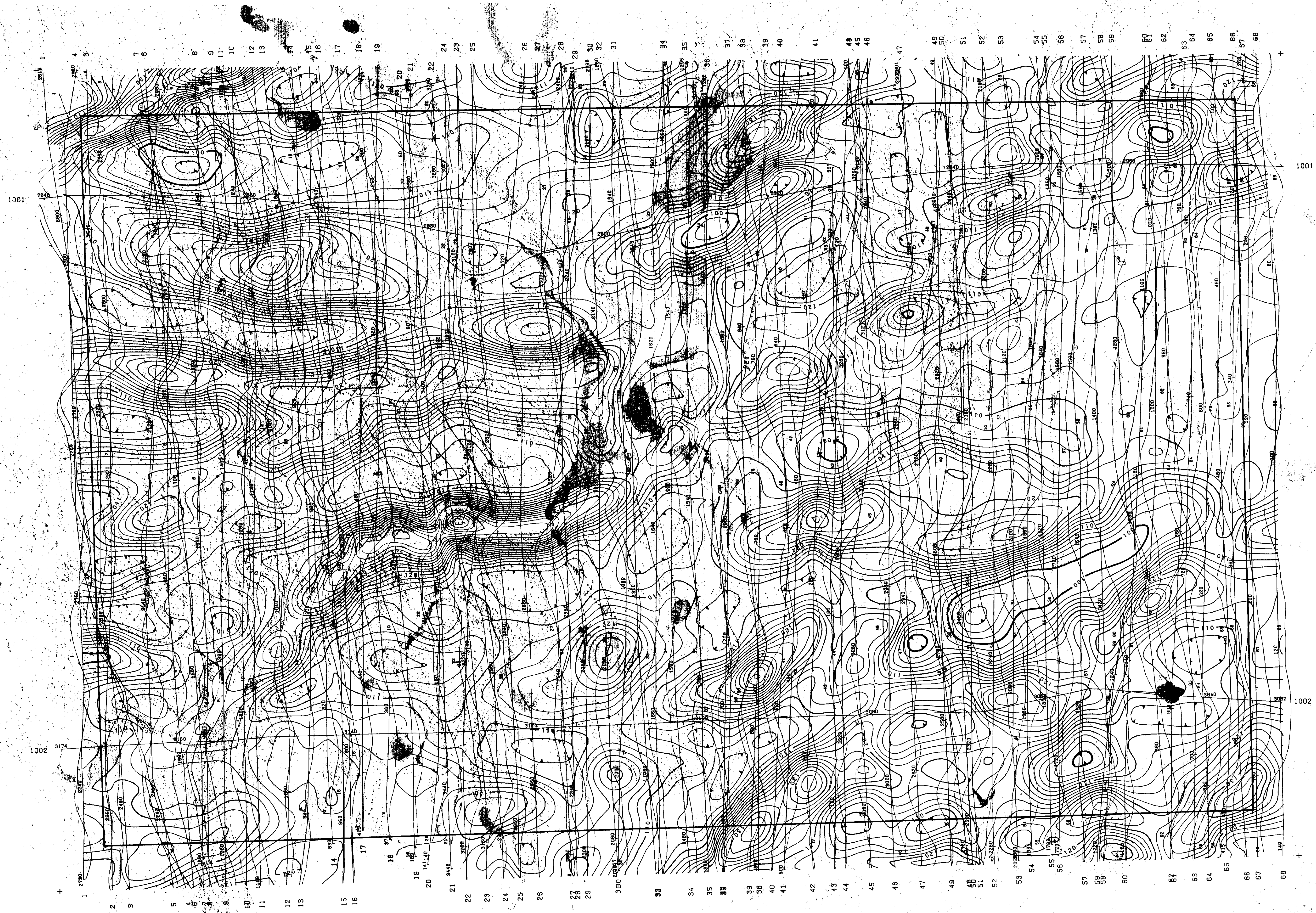
AIRBORNE VLF-EM SURVEY
CONTOURS OF TOTAL FIELD STRENGTH
PROFILES OF QUADRATURE

LARDER LAKE EAST
ONTARIO

N.T.S. NO. 32D/4 DRAWING NO. A-731.2-3
SCALE: 1:10,000 DATE: December 1987

TERRAQUEST LTD. TORONTO, CANADA

0187-6-C-200



VLF Transmitter
 NAA Cutler, 24.0 kHz
 Azimuth 107

LEGEND

Terrain Clearance 100 meters
 Line Spacing 100 meters

TOTAL FIELD STRENGTH (Contours)
 50%
 10%
 2%

QUADRATURE (Profiles)
 Normal Slope Reverse Slope
 +10% +10%
 -10% -10%

2.10719

SUBBURY CONTACT MINES LTD.

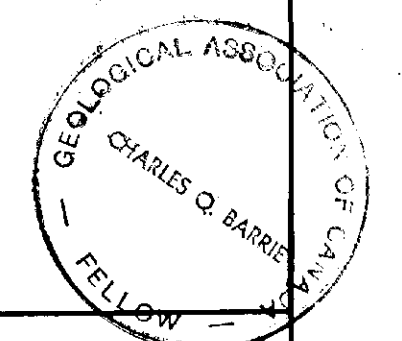
AIRBORNE VLF-EM SURVEY
 CONTOURS OF TOTAL FIELD STRENGTH
 PROFILES OF QUADRATURE

LARDER LAKE WEST
 ONTARIO

N.T.S. NO. 32D/4 DRAWING NO. A-731.1-3

SCALE: 1:10,000 DATE: December 1987

TERRAQUEST LTD.
 TORONTO, CANADA





SUBBURY CONTACT MINES LTD.

AIRBORNE VLF-EM SURVEY
 CONTOURS OF TOTAL FIELD STRENGTH
 PROFILES OF QUADRATURE

2.10.19

LARDER LAKE SOUTH
 ONTARIO

DRAWING NO. A-731.3-3
 DATE December 1987

SCALE 1:10,000

TERRAQUEST LTD.
 TORONTO, CANADA

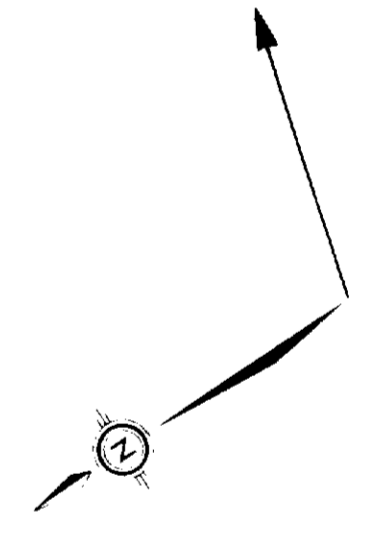
LEGEND

Terrain Contours 100 meters
 Line Spacing 100 meters

TOTAL FIELD STRENGTH (Contours)
 50%
 2%

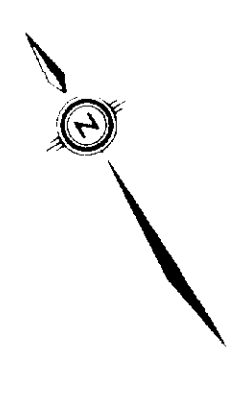
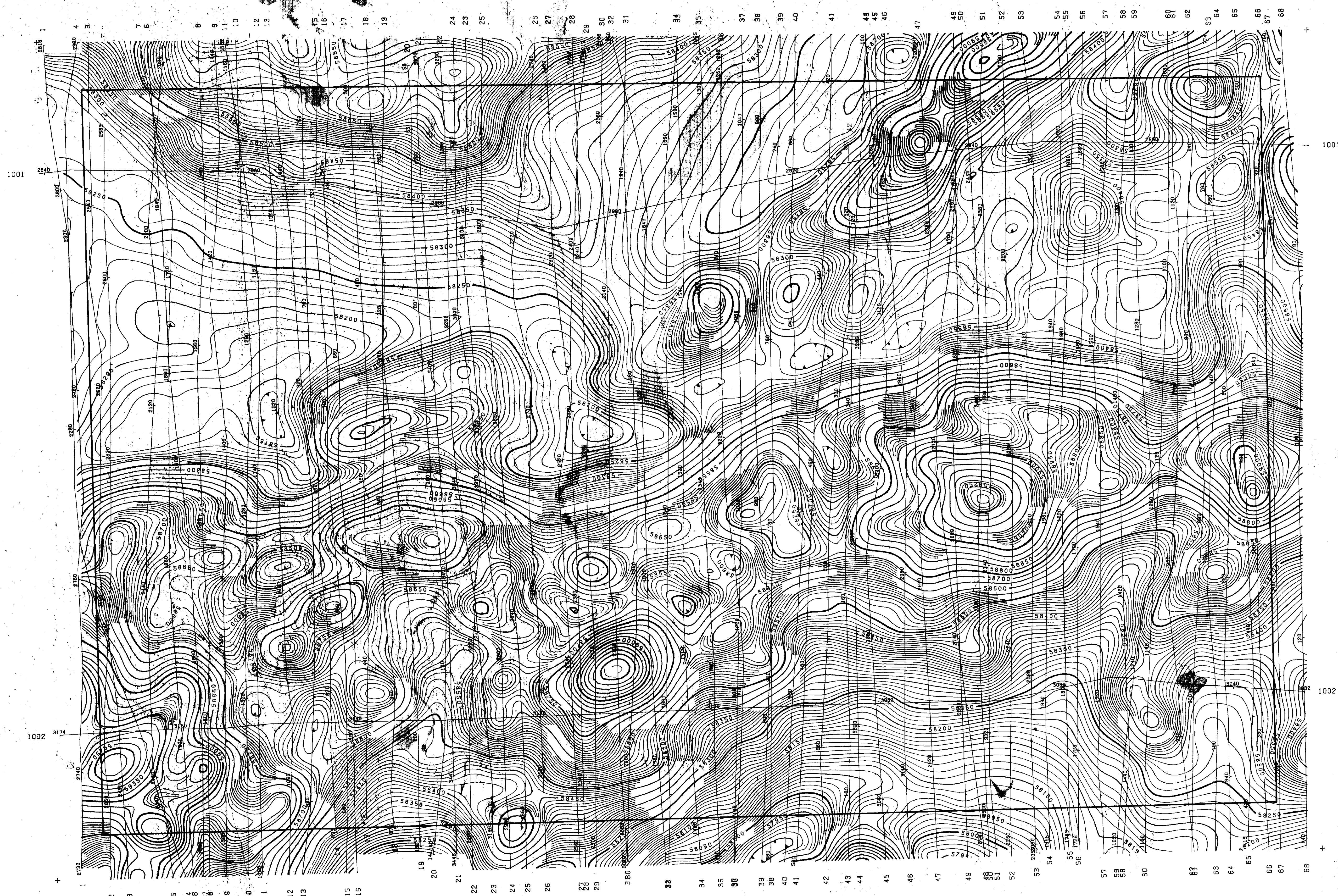
QUADRATURE (Profiles)
 Normal Slope
 Reverse Slope

+10%
 -10%



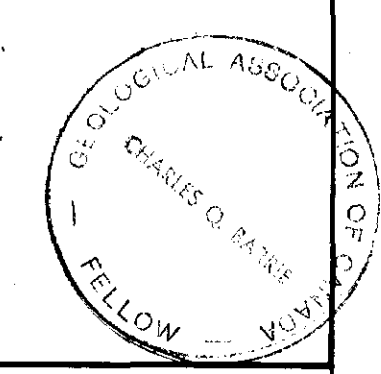
VLF Frequency
 NAA Carrier 24.0 MHz
 Azimuth 1.07





LEGEND

- Terrain Clearance 100 meters
- Line Spacing 100 meters
- TOTAL MAGNETIC FIELD**
- 1000 gammas
- 250 gammas
- 50 gammas
- 10 gammas



SUDBURY CONTACT MINES LTD.

**AIRBORNE MAGNETIC SURVEY
TOTAL MAGNETIC FIELD**

LARDER LAKE WEST
ONTARIO

N.T.S. NO. 32D/4 DRAWING NO. A-731.1-1
SCALE 1:10,000 DATE December 1987

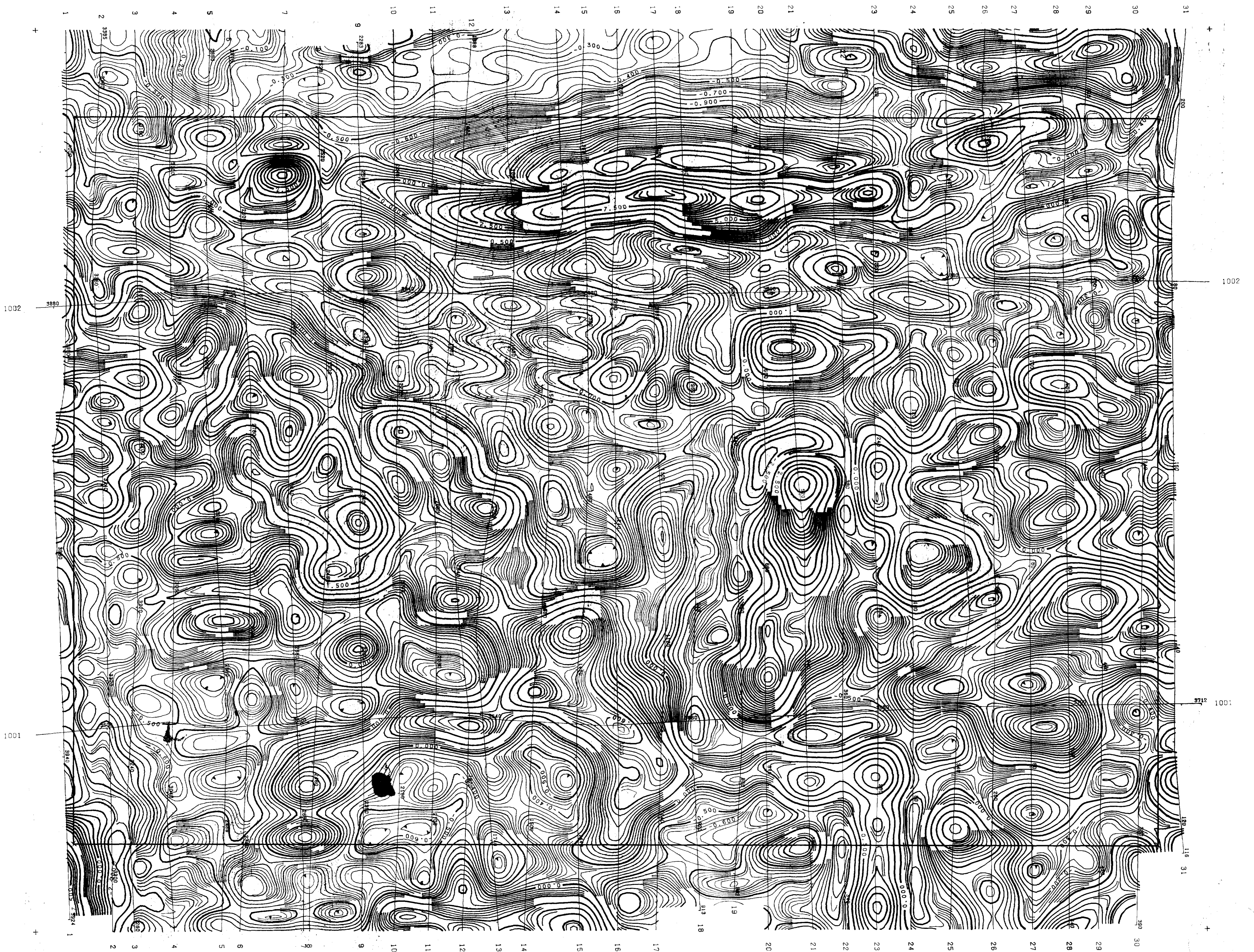
TERRAQUEST LTD. ↑
TORONTO, CANADA



320

51550 0 20





1002

1001

1002

1001



306458814 2 18719 MCVT11E

340



LEGEND

- Terrain Clearance 100 meters
- Line Spacing 200 meters
- VERTICAL MAGNETIC GRADIENT**
- 2.500 gammas/meter
- .500 gammas/meter
- .100 gammas/meter
- .025 gammas/meter

SUDBURY CONTACT MINES LTD.

AIRBORNE MAGNETIC SURVEY
 VERTICAL MAGNETIC GRADIENT
 Calculated From Total Field

LARDER LAKE EAST
 ONTARIO

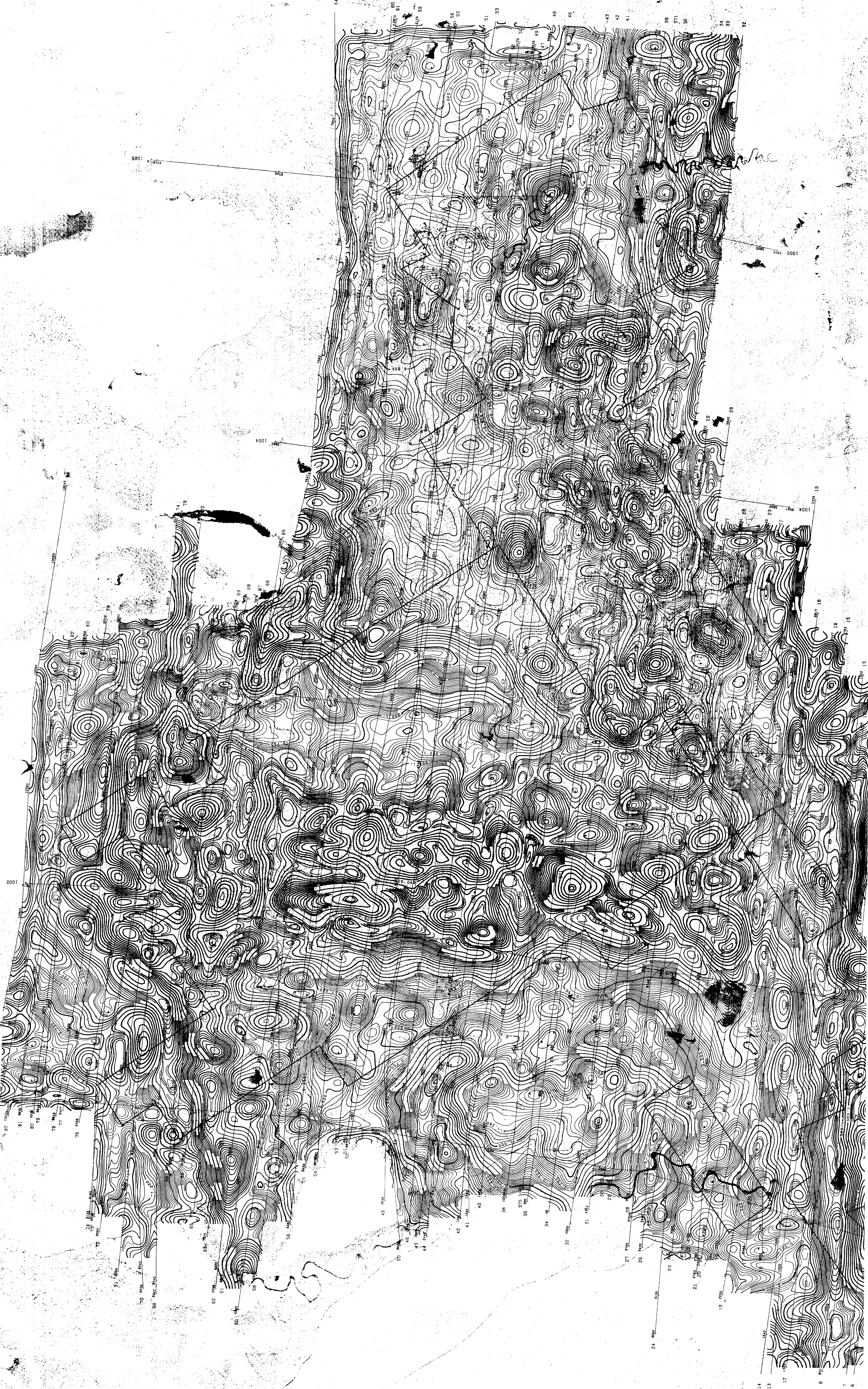
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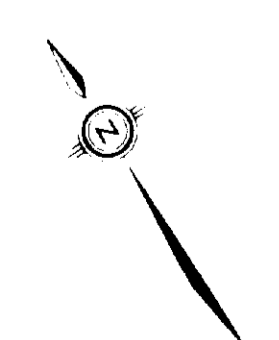
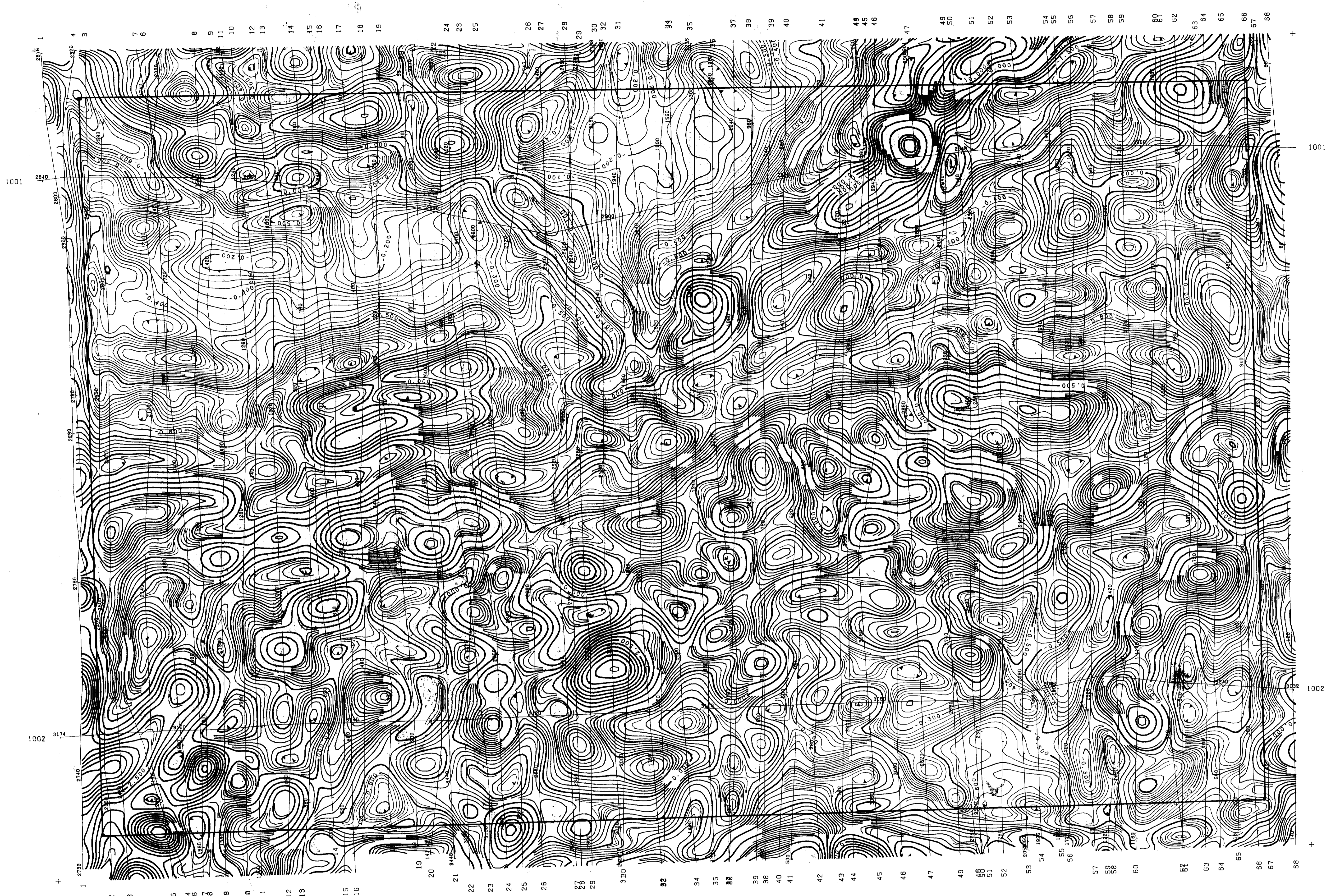
DRAWING NO. A-731.2-2

SCALE 1:10,000

DATE December 1987

TERRAQUEST LTD. ↑
 TORONTO, CANADA





LEGEND


- Terrain Clearance 100 meters
 - Line Spacing 100 meters
- VERTICAL MAGNETIC GRADIENT**
- 2.500 gammas/meter
 - 500 gammas/meter
 - 100 gammas/meter
 - 025 gammas/meter

SUDBURY CONTACT MINES LTD

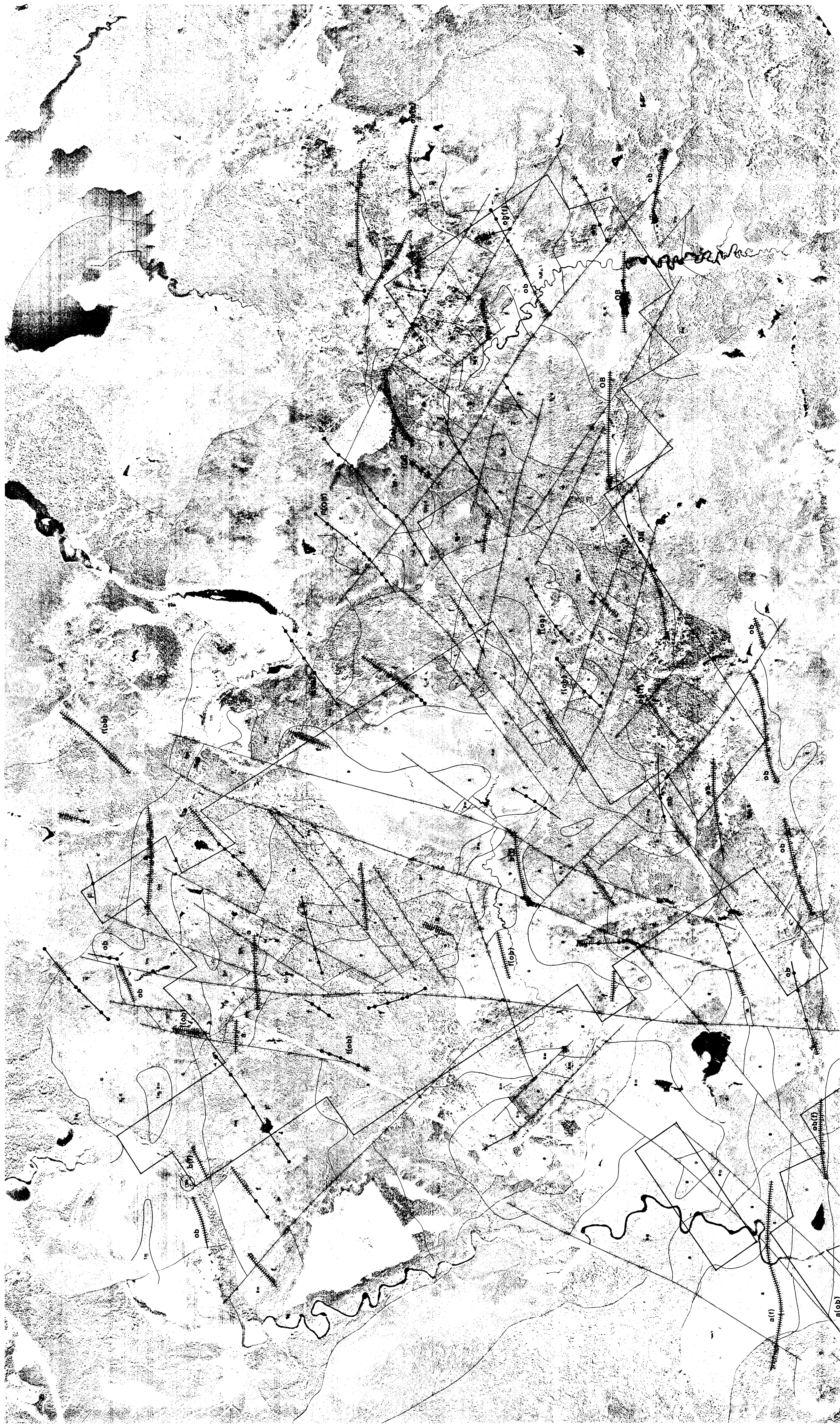
AIRBORNE MAGNETIC SURVEY
 VERTICAL MAGNETIC GRADIENT
 Calculated From Total Field

LARDER LAKE WEST
 ONTARIO

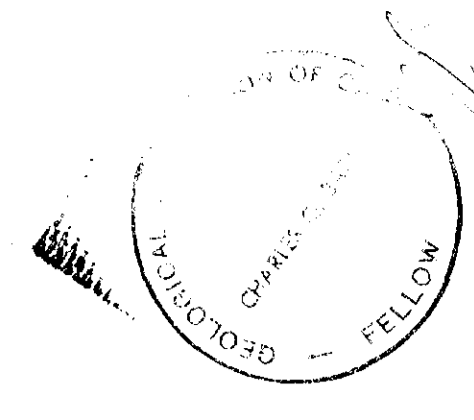
N.T.S. No. 32D/4 DRAWING NO. A-731.1-2
 SCALE 1:10,000 DATE December 1987

TERRAQUEST LTD. 
 TORONTO, CANADA



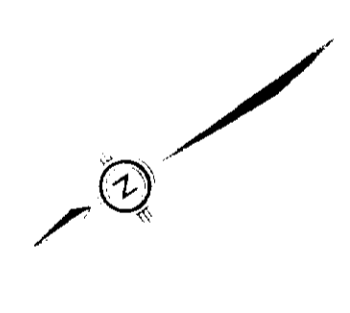


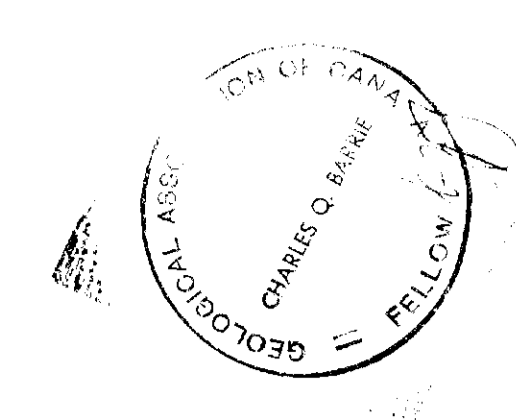




SUDBURY CONTACT MINES LTD.
AIRBORNE MAGNETIC SURVEY
TOTAL MAGNETIC FIELD
 LARDER LAKE SOUTH
 ONTARIO
 32D/4
 N.T.S. NO. 32D/4
 SCALE 1:10,000
 DRAWING: A-751.3-1
 DATE: December 1987
TERRACONEST LTD.

LEGEND
 Terrain Contour 100 meters
 Line Spacing 100 meters
TOTAL MAGNETIC FIELD
 1000 gammas
 500 gammas
 250 gammas
 10 gammas





SUDBURY CONTACT MINES LTD.

AIRBORNE MAGNETIC SURVEY
 VELOCITY CORRECTED
 MAGNETIC GRADIENT
 CALCULATED FROM TOTAL FIELD
 2-10-79

LARDER LAKE SOUTH
 ONTARIO

N.T.S. NO. 320/4 DRAWING NO. A-731.3-2
 SCALE 1:10,000 DATE December 1987

IRRAWADDY LTD.

LEGEND

Interval Contour Interval 100 meters
 Line Spacing 100 meters
 Line Spacing 100 meters

VERTICAL MAGNETIC GRADIENT

5.00 gamma/meter
 6.00 gamma/meter
 7.00 gamma/meter

