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KENNETH H. DARKE CONSULTANTS LIMITED

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PROJECTS UNIT

Report on

ELECTROMAGNETIC & MAGNETOMETER SURVEYS

on the

LARCHE-ROUSSEAU PROPERTY

BADEN TOWNSHIP, ONTARIO

Larder Lake Mining Division

for

AUGUST PORCUPINE GOLD MINES LIMITED

K.H. Darke, P.Eng.

KENNETH H. DARKE CONSULTANTS LIMITED

August 18, 1975

Report on
ELECTROMAGNETIC & MAGNETOMETER SURVEYS
on the
LARCHE-ROUSSEAU PROPERTY
BADEN TOWNSHIP, ONTARIO
for
AUGUST PORCUPINE GOLD MINES LIMITED

Introduction:

Geophysical Surveys, consisting of an Electromagnetic (horizontal loop) and a Magnetic (Magnetometer) Survey, were completed this May on 11 contiguous mining claims that constitute a portion of the Baden Township, Ontario Property of Larche-Rousseau currently held under option by August Porcupine Gold Mines Limited.

Object of the Magnetometer Survey was twofold: (a) to locate any magnetic highs that could be indicative of Diabase Dikes; or (b) if possible to outline areas of magnetic lows that might delineate Syenite Porphyry Intrusives both known to occur on the Property. Object of the Electromagnetic (HEM) Survey was an attempt to detect and trace-out the possible strike extensions of a known pyritic shear zone (gold-bearing) beneath overburden, or to detect other similar shear zones.

The following Report and accompanying maps describe the results and give an interpretation of the aforementioned Geophysical Surveys.

Sources of Information:

This Report is based upon a personal knowledge of the Larche-Rousseau Property gained from a property examination; and from the examination & interpretation of the original field notes supplied by the geophysical survey operators ... all the plan maps showing the results of said surveys that accompany this Report were prepared by the writer.

Property Description:

Reference Map: O.D.M. Plan No. M.205; BADEN TOWNSHIP.

The Property described in this report consists of 11, contiguous, un-
patented, 40-acre mining claims all located in Baden Township, Larder Lake Mining
Division, District of Timiskaming, Ontario; and further described as follows: ...

L. 267332 & 33	2	claims
L. 353676 - 79 inclusive ...	4	"
L. 371679 - 83 " ...	5	"
	<u>11</u>	claims

The recorded holder of each of the aforementioned 11 mining claims at the date of this Report is Mid-North Engineering Services Limited (Miner's License A 22041); Suite 1402, 390 Bay Street; Toronto, Ontario M5H 2Y2 who are acting as Agents for August Porcupine Gold Mines Limited.

Location & Access:

The Property is located in the south-central part of Baden Township at Longitude 80°43' W / Latitude 48°03' N; or approximately eight miles northwest of the town of Matachewan, Ontario. Highway No. 66 connects Matachewan with the city of Kirkland Lake to the east; and Highway No. 65 connects it with the village of Elk Lake to the south. Secondary Highway No. 566 (gravel) extending westward from Matachewan traverses through the northwestern part of Powell Township approximately three miles due south of the Property.

An abandoned power transmission line, that formerly connected Matachewan & Timmins, traverses diagonally across the center of the Larche-Rousseau Property. The eastern claims extend across an arm of Matachewan Lake (West Montreal River); the southern claims encompass portions of Mistinikon Lake ... this latter lake has been formed as the result of a water-control dam built across the "Great Northern Bend" of the West Montreal River at Matachewan Falls located on claim L. 413960 at the southeastern corner of the Larche-Rousseau Property.

Access to the Property can be gained from Highway No. 566 by boat along Mistinikon Lake (3.5 miles); or directly by float-equipped aircraft to either Mistinikon Lake or Matachewan Lake ... an aircraft docking area & campsite has been cleared on the north shore of Mistinikon Lake (claim L. 371679); a good trail connects this site with the main gold showings located approximately one-half mile to the northwest.

Geology:

The general area encompassing Baden Township has been mapped geologically during several different periods by the Ontario Department of Mines ... the regional geology is shown on Geological Compilation Map No. 2205, Timmins-Kirkland Lake (1972). The detailed geology of the area encompassing the Larche-Rousseau Property itself is covered in reports by: ...

- (i) W.S. Dyer, 1935: Geology and ore deposits of the Matachewan-Kenogami area; O.D.M., Vol. 44, pt. 2, pp. 47 & 48 (Theodore Kallies); with accompanying coloured Map No. 44b at a scale of one inch to one mile; and
- (ii) H.L. Lovell, 1967: Geology of the Matachewan Area; O.D.M. Geological Report 51, p. 31 (M. King); with accompanying coloured Map 2109, Baden and Alma Townships, at a scale of one inch to one-half mile.

The general Baden Township area is also covered by G.S.C. Aeromagnetic Map 290G (Rev.), "Radisson Lake".

(a) Regional Geology:

The Baden Township region forms a small part of a large belt of "greenstones" extending from southwest of Timmins, Ontario to Chibougamau, Quebec. All the consolidated rocks of the region are of Precambrian age ... they consist essentially of an older, altered & deformed "Archean" basement complex (Metavolcanics, Metasediments, Mafic & Ultramafic Intrusives, Felsic Intrusives) all of which have been cut by Diabase Dikes; and are overlain in part by a younger "Proterozoic" series of generally flat-lying sediments (Cobalt Group). This capping of Cobalt Group sediments is present to the south in Powell Township but does not extend into Baden Township itself.

Rock types present on the Larche-Rousseau Property consist essentially of

mafic volcanics (Andesite, Basalt, Andesite Porphyry, Agglomerate, Carbonatized & amygdaloidal rocks), with numerous, northerly-trending, cross-cutting Diabase Dikes; locally, there are small Silicic Intrusives (Syenite, Syenite Porphyry).

The most prominent structural feature in the area is the Montreal River-Whiskeyjack Fault which trends northwesterly through the eastern part of the Property ... said fault bisects & forms the main control on the course of the West Montreal River (Matachewan Lake). A number of local shear zones have also been mapped on the Property.

(b) Economic Geology:

Detailed exploration of the Lerche-Rousseau Property has been confined essentially to a small area (300 ft. wide by 700 ft. long) centered at the common corner post of four claims (L.267332 & 33, L.353678 & 79) ... gold showings located there were first described in the literature in 1935 (Dyer). Work completed to date on these gold showings has consisted essentially of stripping, the blasting of shallow trenches & pits, sampling & assaying ... there is no indication that diamond drilling or any other sub-surface testing has ever been undertaken.

The area encompassing the Main Gold Showings extends easterly along strike from 2+30 W to 4+50 E over a width ranging from 0+80 S to 1+50 N. Gold values have been found associated with quartz stringer veins & stockworks located within & adjacent to shear zones that cut through Andesite; and to a lesser extent, within adjacent Syenite Intrusives. The Main Gold Showing contains a number of parallel, east-west-trending shears that have been exposed across a minimum width ranging from 30 to 50 feet, and traced intermittently along a strike length of 500 feet. These gold-bearing shear zones disappear under overburden to the east, and extend into Syenite on the west for approximately 15 ft. before again disappearing into an overburden-covered area.

Geophysical Surveys:

During the period May 9th - 29th, 1975 August Porcupine Gold Mines Limited completed linecutting & geophysical surveys on the land areas of 11 contiguous claims

of the total 18-Claim Group that constitutes the Larche-Rousseau Property. Electromagnetic (horizontal loop) and Magnetic surveys were carried out on a grid system of north-south bearing picket lines established at 400-foot intervals from 16+00 W to 36+00 E; stations (pickets) were established by chaining at 100-foot intervals along each picket line and the Base Line (BL 0+00). In addition, the Magnetic Survey also covered a "detailed grid" cut at 100-foot intervals from 7+00 W to 7+00 E with stations extending from 5+00 S. to 5+00 N.

The Horizontal Loop Electromagnetic (HEM) Survey was carried out using a McPhar VHEM Unit at a 200-foot coil separation; a Sherpe MF-1 Fluxgate Magnetometer was used throughout the Magnetic Survey.

The geophysical survey results are presented in plan form on two maps at a scale of one inch to 200 ft. that accompany and constitute an integral part of this Report.

(a) Electromagnetic Survey:

The HEM Survey failed to detect any anomalous conductivity other than isolated, very weak, one-line conductors centered at 16+00 E / 10+00 N; 16+00 E / 3+50 N; and 24+00 E / 10+00 S. Their cause or significance if any is currently unknown.

The gold-bearing pyritic shear zones present in the Main Gold Showing (centered around the Base Line from 1+00 W to 4+00 E) were not detected by the HEM Survey.

(b) Magnetometer Survey:

The maximum magnetic reading on the Property was 3,400 gammas and the minimum was 70 gammas ... giving a maximum magnetic relief on the ground of 3,330 gammas. General background values (Andesitic rock types) ranged from approximately 400 - 600 gammas.

The Magnetometer Survey located seven major zones of magnetic highs ... designated on the accompanying contoured plan map as Anomalous Zones "A" to "G" inclusive; and a number of local zones of magnetic lows.

1. Magnetic Anomalies "A" to "G" inclusive:

These seven magnetic anomalies are being considered herein as a single group since they all have similar characteristics & are considered to have a common cause.

The aforementioned anomalies are generally linear in shape, trend north-south, and have peak highs ranging from 1,000 to 3,400 gammas; that is, approximately 500 - 3000 gammas above general background values.

In each case, these seven anomalies are considered to represent Diabase Dikes ... outcrops of Diabase occur locally and are found coincident with several of the Mag Highs; other anomalies are completely masked by the overburden cover.

Anomaly "B" is considered to represent the northerly strike extension of either Anomaly "C" or "D" ... insufficient data is available because of the 400-foot line spacing in that area to determine its probable linear shape & exact location.

Similarly, the actual shape of Anomaly "A" could not be positively determined because of the lack of more closely-spaced picket lines immediately to the east & west. However, it is probably linear-shaped as indicated by the writer's interpretation & subsequent contouring of the survey results located north of the Base Line; the contouring south of the Base Line reflects the actual values spread-out between Picket Lines 16W & 12W.

Anomaly "G" is considered to represent the probable southerly strike extension of Anomaly "D"; that is, it is interpreted as being a Diabase Dike located between Picket Lines 0+00 & 4+00 W.

2. Magnetic Lows:

A number of local magnetic low areas (less than 300 gammas) situated between Picket Lines 4E & 12W and centered around the Base Line are considered to represent the more siliceous phases of a Syenite Porphyry Intrusive that outcrops in places in that general area. Because the Porphyry Intrusive contains disseminated Magnetite in part it

was not possible to accurately separate all areas of Intrusive from the enclosing Andesite ... one such area of Intrusive outcrops (2+00 W / 1+00 N) is not reflected by the magnetic contouring.

3. A strong magnetic high (3,500 gammas) located on the Base Line at 1+50 W was deliberately disregarded in the contouring since detailed work in the immediate surrounding area showed that it had no areal extent whatsoever ... said mag high occurs in an overburden-covered area and probably represents a transported boulder of Diabase or a piece of tramp iron.

Summary & Conclusions:

The Geophysical Surveys (HEM; Magnetic) completed this spring on a portion of the Larche-Rousseau Property as described herein detected a number of magnetic anomalies (both highs & lows); the HEM Survey did not detect any significant conductive zones.

The magnetic highs (designated as Anomalies "A" to "C" inclusive) are all considered to represent linear-shaped Diabase Dikes.

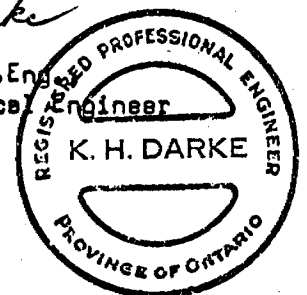
The magnetic lows (less than 300 gammas) are considered to represent the more siliceous phases of a Syenite Porphyry that intrudes Andesite in the area from 10+00 W to 5+00 E centered about the Base Line.

TIMMINS, Ontario
August 18, 1975

Respectfully submitted,

K.H. Darke

K.H. Darke, P.Eng.
Consulting Geological Engineer





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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 GEOPHYSICAL
Township or Area BADEN TOWNSHIP
Claim holder(s) MID-NORTH ENGINEERING SERVICES LIMITED
(August Porcupine Gold Mines Limited)
Author of Report K.H. Darke, P.Eng.
Address P.O. Box 983; TIMMINS, Ontario P4N 7H6
Covering Dates of Survey May 9th - 29th, 1975
(linecutting to office)
Total Miles of Line cut 10.9

MINING CLAIMS TRAVERSED	
List numerically	
L. (Prefix)	267332 (number) ^{1/2 met}
L.	267333 ^{4 covered}
L.	353676
L.	353677
L.	353678 ^{1/3}
L.	353679
L.	371679 ^{3/3}
L.	371680
L.	371681 ^{1/2}
L.	371682 ^{1/2}
L.	371683 ^{1/4}

Area of claims not covered = $2\frac{1}{2}$

EM
 $11 \times 20 = 220 \div (11 + 2) = 17$ days per claim.

Mag
 $11 \times 40 = 440 \div (11 + 2) = 34$ days per claim.

TOTAL CLAIMS 11

If space insufficient, attach list

<u>SPECIAL PROVISIONS CREDITS REQUESTED</u>	<u>DAYS per claim</u>
Geophysical	
--Electromagnetic	<u>20</u>
--Magnetometer	<u>40</u>
--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: Aug. 18th, 1975 SIGNATURE: K.H. Darke
Author of Report or Agent

PROJECTS SECTION
Res. Geol. _____ Qualifications 63.2388
Previous Surveys 2.1272 EM (1973)
-different instrument
Checked by _____ date _____
GEOLOGICAL BRANCH _____
Approved by _____ date _____
LD
GEOLOGICAL BRANCH _____
Approved by _____ date _____

OFFICE USE ONLY

Show instrument technical data in each space for type of survey submitted or indicate "not applicable"

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS

Number of Stations 557 Mag.; 385 E.M. Number of Readings 616 Mag.; 770 E.M.
Station interval 100 ft. (some Mag @ 50 ft.)
Line spacing 400 ft.; detailed grid 100 ft. in places.
Profile scale or Contour intervals E.M.: 1" = 20⁰; Mag.: Contour Interval 100 gammas.
(specify for each type of survey)

MAGNETIC

Instrument Sharpe MF-1 Fluxgate Magnetometer
Accuracy - Scale constant + or - 5 gammas
Diurnal correction method Check on Base Stations at no greater than one hour intervals.
Base station location Main Station @ Base Line 0+00/0+00; other stations on Base Line 0+00 @ 100-foot intervals.

ELECTROMAGNETIC

Instrument McPhar VHEM Electromagnetic Unit
Coil configuration Horizontal Loop
Coil separation 200 ft.
Accuracy + or - 1%
Method: Fixed transmitter Shoot back In line Parallel line
Frequency 2400 Hz & 600 Hz
(specify V.L.F. station)
Parameters measured In-phase & Out-of-phase components of the secondary field from a conductor.

GRAVITY

Instrument _____
Scale constant _____
Corrections made _____
Base station value and location _____

Elevation accuracy _____

INDUCED POLARIZATION - RESISTIVITY

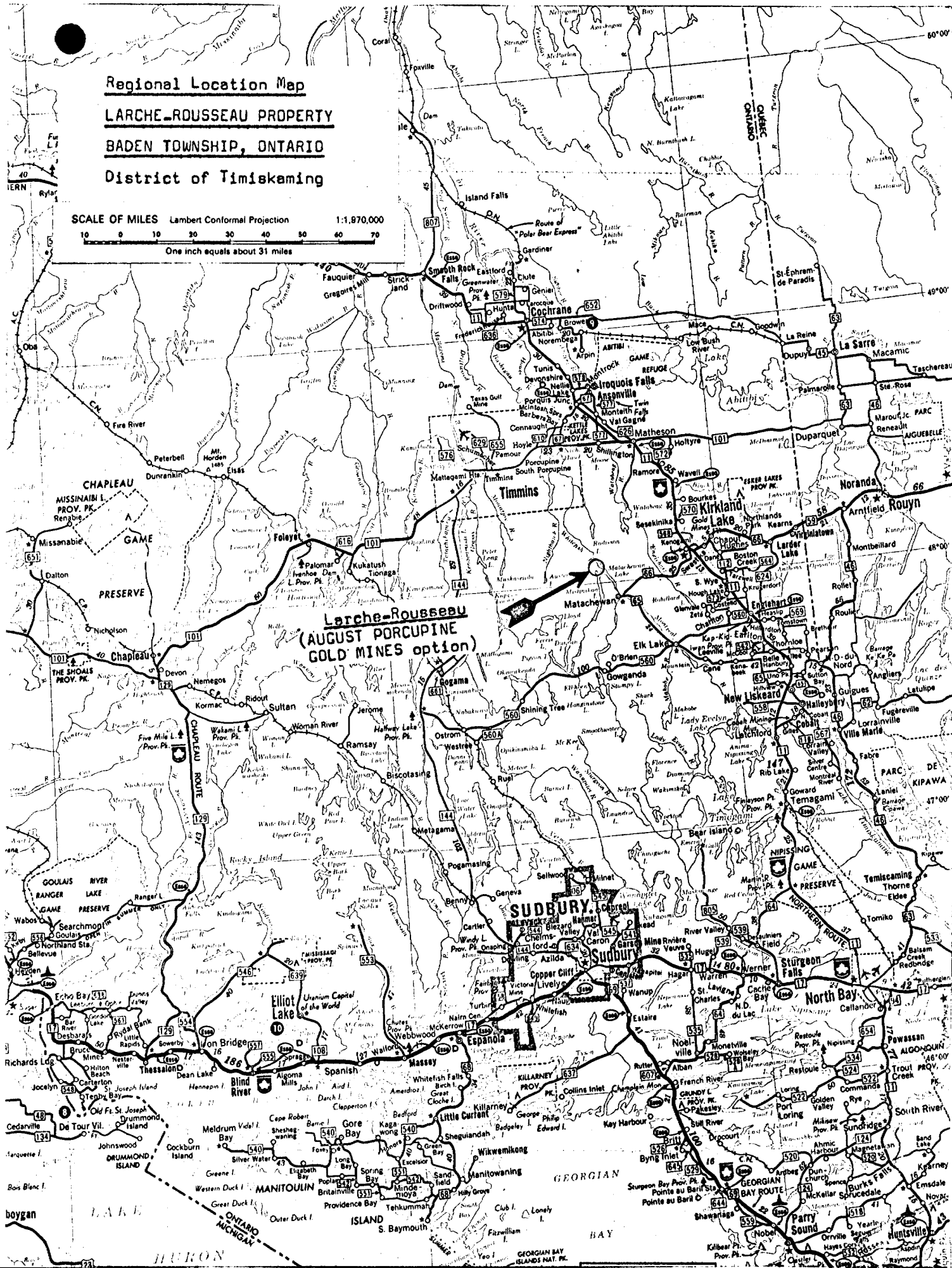
Instrument _____
Time domain _____ Frequency domain _____
Frequency _____ Range _____
Power _____
Electrode array _____
Electrode spacing _____
Type of electrode _____

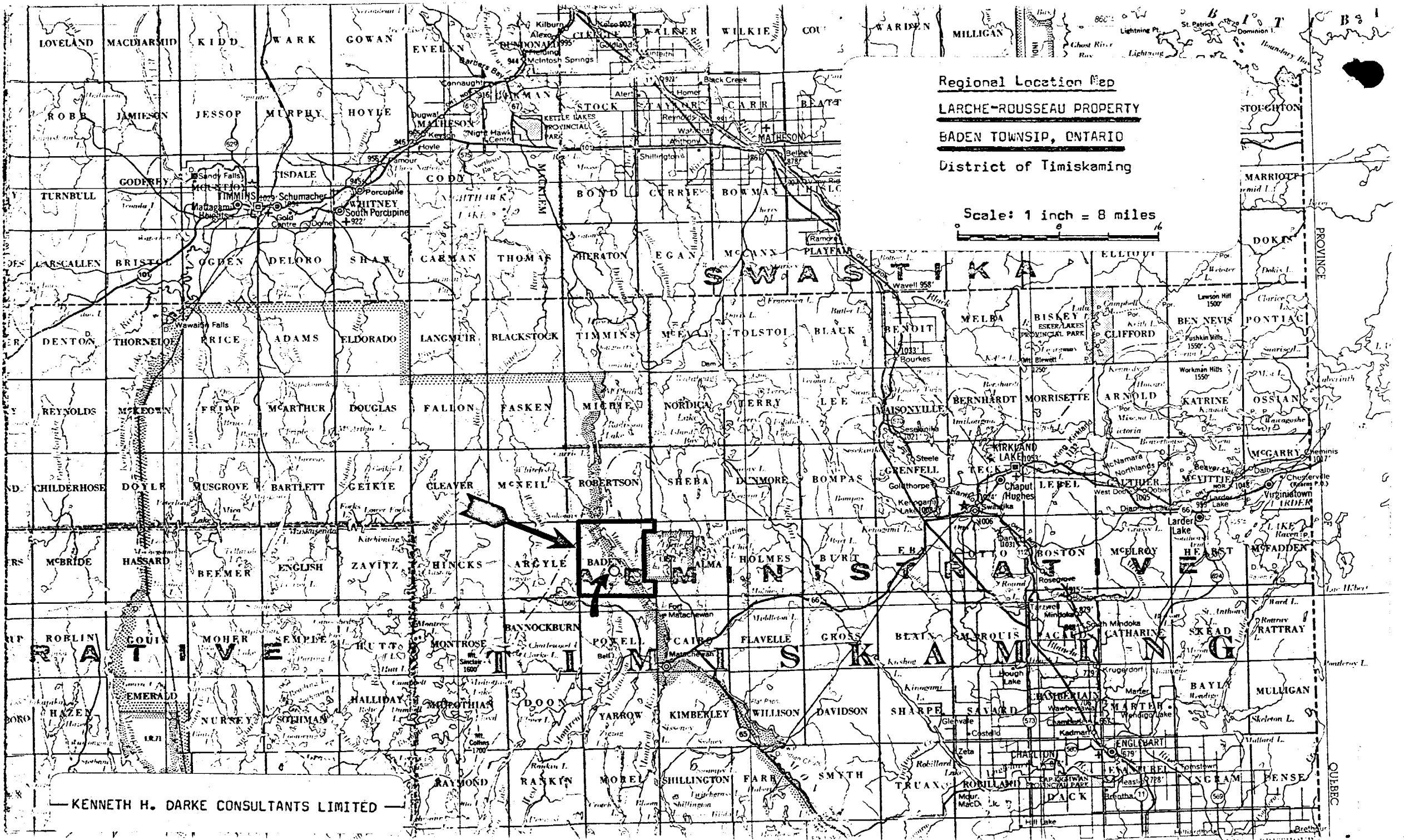
Regional Location Map
LARCHE-ROUSSEAU PROPERTY
BADEN TOWNSHIP, ONTARIO
District of Timiskaming

SCALE OF MILES Lambert Conformal Projection 1:1,870,000
10 0 10 20 30 40 50 60 70
One inch equals about 31 miles

Larche-Rousseau
(AUGUST PORCUPINE
GOLD MINES option)

SUBBURY





Regional Location Map

LARCHE-ROUSSEAU PROPERTY

BADEN TOWNSHIP, ONTARIO

District of Timiskaming

Scale: 1 inch = 8 miles



Argyle Twp. M.203

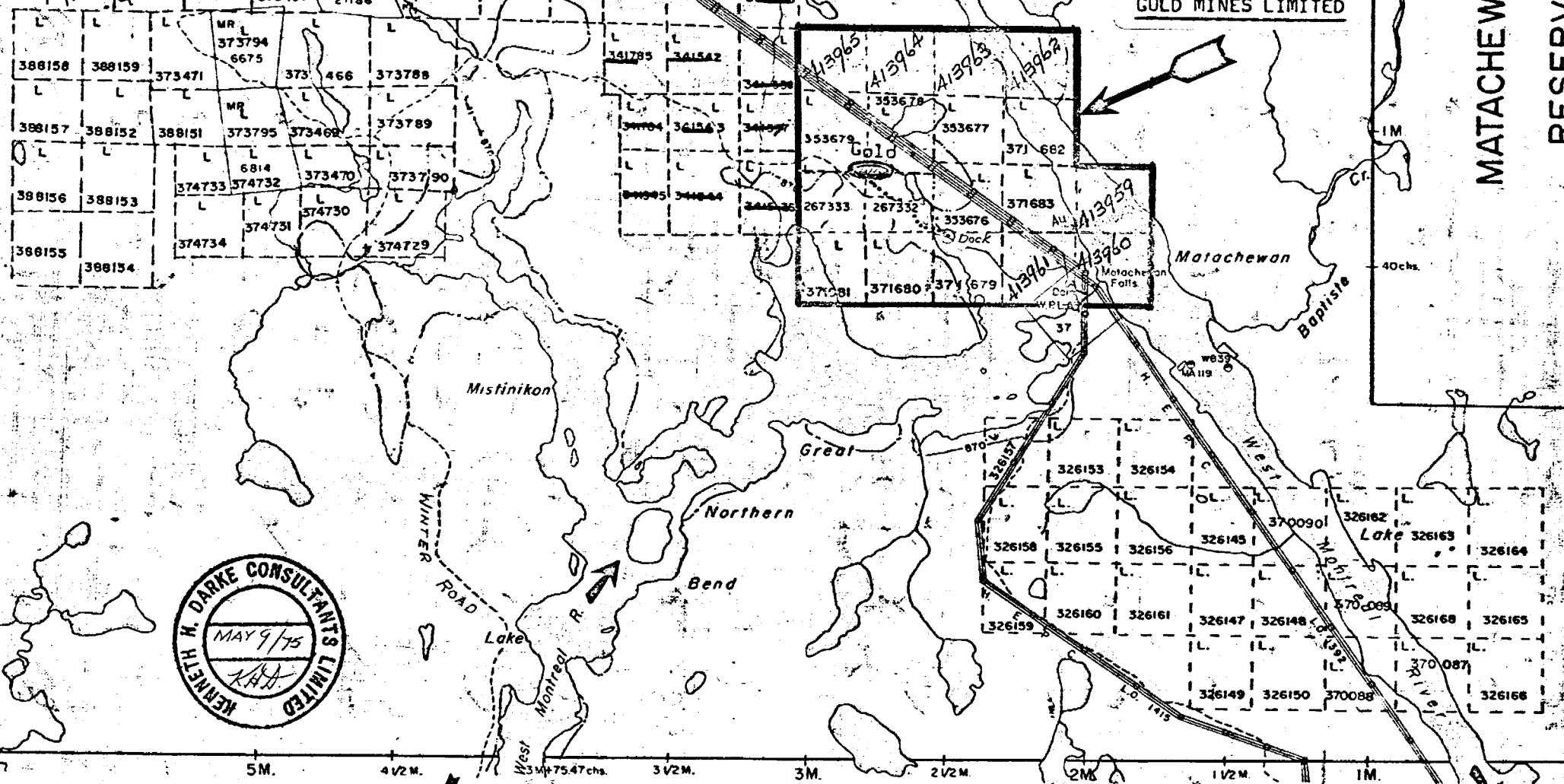
Claim Location Map

LARCHE-ROUSSEAU PROPERTY

BADEN TOWNSHIP, ONTARIO

Larder Lake Mining Division

Scale: 1 inch = 2640 feet



MATACHEWAN INDIAN

RESERVE No. 72

Alma Twp. M.202

Powell Twp. M.241

Robertson Twp. M.310

Sheba Twp M.385

THE TOWNSHIP OF

2.1898

BADEN

DISTRICT OF TIMISKAMING

LARDER LAKE MINING DIVISION

SCALE: 1-INCH 40 CHAINS

LEGEND

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

NOTES

- 400' surface rights reservation around all lakes and rivers.
- Summer resort locations patented for surface rights only shown thus ⊙
- Flooding rights to contour 870' to H.E.P.C L.O. 7601. File 12290 vol. 2.

MINING LANDS - DATE OF ISSUE
 SEP - 3 1975
 MINISTRY OF NATURAL RESOURCES

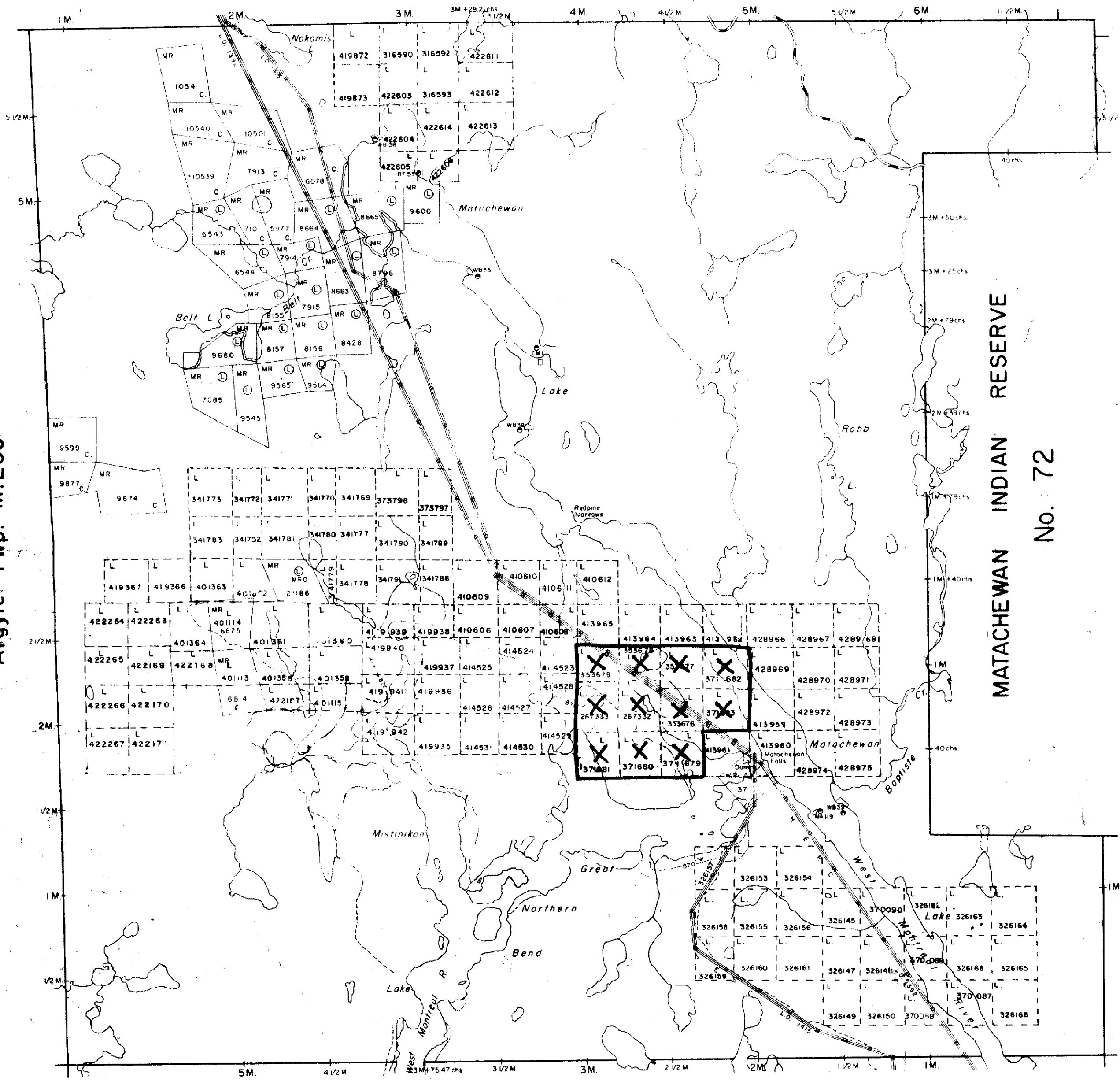
PLAN NO. **M.205**

ONTARIO
 MINISTRY OF NATURAL RESOURCES
 SURVEYS AND MAPPING BRANCH

Argyle Twp. M.203

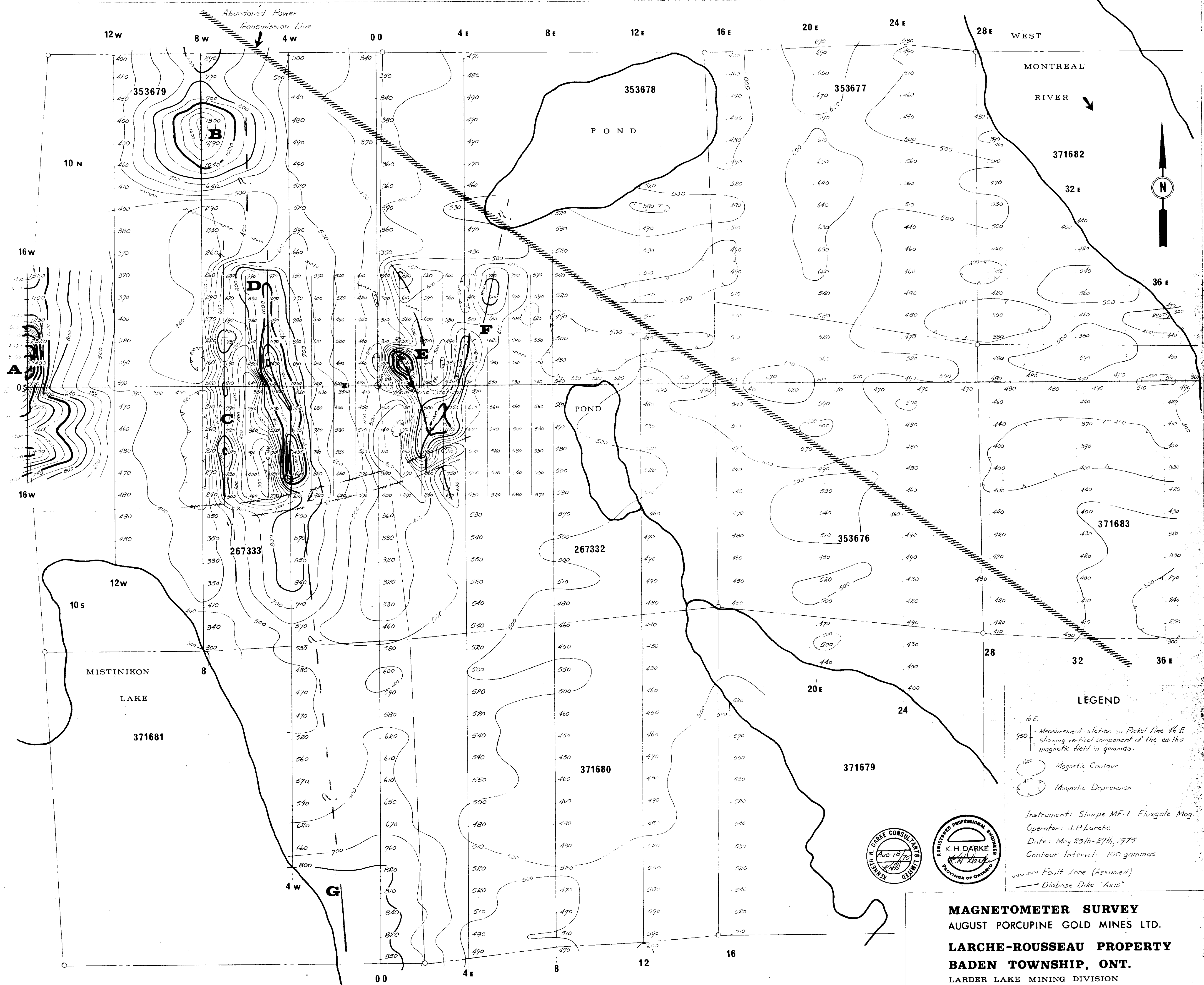
Alma Twp. M.202

MATACHEWAN INDIAN RESERVE No. 72

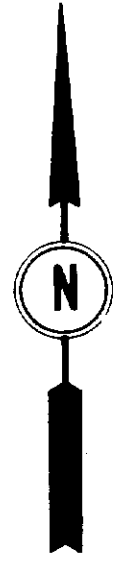


Powell Twp. M.241





MONTREAL RIVER



371682

32 E

36 E

371683

32 E

36 E

371683

32 E

36 E

371683

32 E

36 E

371683

32 E

36 E

371683

32 E

36 E

371683

32 E

36 E

371683

32 E

36 E

371683

32 E

36 E

371683

LEGEND

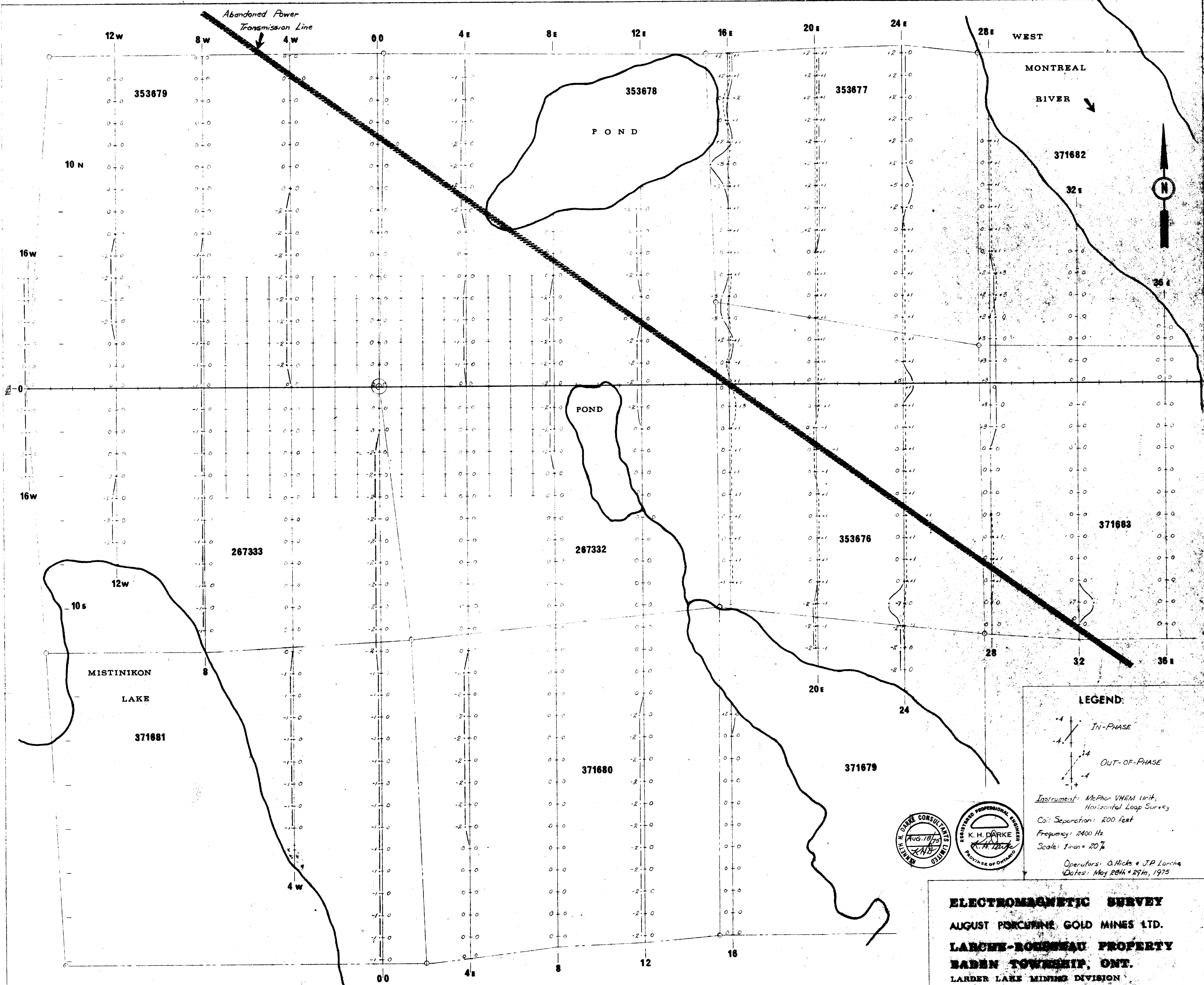
- 16 E
950 Measurement station on Picket Line 16 E showing vertical component of the earth's magnetic field in gammas.
- 1000 Magnetic Contour
- 1000 Magnetic Depression
- Instrument: Shupe MF-1 Fluxgate Mag.
- Operator: J.P. Larche
- Date: May 25th-27th, 1975
- Contour Interval: 100 gammas
- Fault Zone (Assumed)
- Diabase Dike "Axis"



MAGNETOMETER SURVEY
AUGUST PORCUPINE GOLD MINES LTD.
LARCHE-ROUSSEAU PROPERTY
BADEN TOWNSHIP, ONT.
 LARDER LAKE MINING DIVISION

Scale: 1 inch = 200 feet



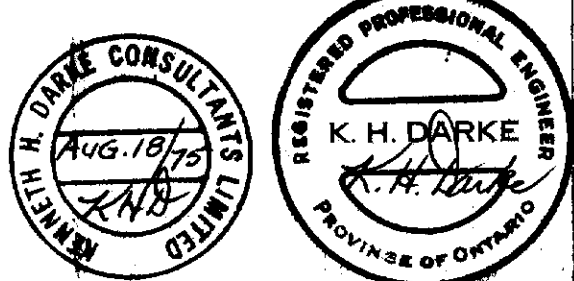


LEGEND:

In-PHASE
 OUT-OF-PHASE

Instrument: McPhar VHEM Unit,
 Horizontal Loop Survey
 Coil Separation: 200 feet
 Frequency: 2400 Hz
 Scale: 1 in = 20'

Operators: A. Hicks & J.P. Larche
 Dates: May 28th & 29th, 1975



ELECTROMAGNETIC SURVEY
AUGUST PORCUPINE GOLD MINES LTD.
LARCHE-ROUSSEAU PROPERTY
BADEN TOWNSHIP, ONT.
LARDER LAKE MINING DIVISION

Scale: 1 inch = 200 feet

