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REPORT ON THE  
AIRBORNE GEOPHYSICAL SURVEY

ON THE PROPERTY OF  
PREMIER RESOURCES LTD.

BADEN TOWNSHIP, ONTARIO

BY

H. FERDERBER GEOPHYSICS LTD.

RECEIVED

NOV - 5 1986

MINING LANDS SECTION

October 24, 1986  
Val d'Or, Quebec

R.A. Campbell B.Sc.  
Geologist

*Val  
26609*

REPORT ON THE  
AIRBORNE GEOPHYSICAL SURVEY  
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PREMIER RESOURCES LTD.  
BADEN TOWNSHIP, ONTARIO

INTRODUCTION

On July 27, 1986 an airborne geophysical survey was carried out on the property of Premier Explorations Inc., in Baden Township, Ontario. Magnetic and VLF-electromagnetic data was collected by the airborne division of H. Ferderber Geophysics Ltd. The survey was flown from a base at Val d'Or, Quebec. A total of 34.7 line miles of data was collected.

The magnetic survey provides information which helps define the underlying geological structures and identifies any potential economic concentrations which may contain variations in accessory magnetic minerals. The VLF-electromagnetic survey helps define conductive zones which may represent shear zones and/or metallic sulphide deposits containing gold mineralization.

PROPERTY LOCATION, ACCESS AND DESCRIPTION

The property is comprised of 28 unpatented mining claims in the northwest corner of Baden Township, Larder Lake Mining Division, Ontario. They cover approximately 448 hectares, are listed in Appendix 1, and are registered with the Ontario Mining Recorder at Kirkland Lake.

The property is located approximately 31 km northwest of the town of Matachewan, 58 km southeast of the city of Timmins and 54 km southwest of the town of Kirkland Lake. A road from Matachewan to Radisson Lake passes within 3 km of the eastern boundary of the property. Numerous skidder bush roads are located just east of the property. Access can also be obtained by Matachewan Lake - Montreal River system which passes through the centre of the property. An abandoned Ontario Hydro line bisects the property from north to south.

Most of the claim group is forested. Numerous lakes are located on the property, the biggest being Matachewan Lake. Swamp are situated in the northwest part of the property and around a small lake in the southwestern corner of the group. Ontario Division of Mines Map P.900 shows that the overburden cover is thin. The relief is moderate with numerous steep hills located on the property.

Supplies, services and manpower are readily available in the Matachewan-Timmins-Kirkland Lake area.

GEOLOGY

The property is located near the western end of the Abitibi Volcanic Belt of the Superior Province of the Canadian Shield. The Abitibi Volcanic Belt extends for nearly 350 miles in an east-west direction from Timmins to Chibougamau. It is host to a variety of precious and base metal deposits including the Timmins, Kirkland Lake, Noranda, Val d'Or and Chibougamau mining camps.

The Abitibi Volcanic Belt is comprised of a complex assemblage of interbedded volcanic and sedimentary rocks intruded by a variety of intrusives from ultrabasic to granitic in composition. The rocks are Archean in age and have been metamorphosed to a greenschist facies. Numerous late Precambrian diabase dykes cut formations of the belt. The rocks generally strike east-west, have a vertical dip and are highly folded and faulted. Geological interpretation of the Abitibi Volcanic Belt is complicated by both the side scattering of outcrops and the complex structural relationships.

The Ontario Department of Mines compilation map 2205 and geological map 2109 show that the property is located near the contact of mafic volcanic flows/pyroclastic rock and a felsic/silicic intrusive body to the north and east. A small felsic/silicic intrusive is also shown to lie near the southwest corner of the property. These maps indicate that Montreal River-Whiskey Jack Creek Fault strikes southeast to northwest through the middle of the property. The Mistinikon Lake Fault striking north-south through the property offsets the Montreal River Fault north of the Matachewan Lake.

The Matachewan area was first prospected for gold in 1909. Interest was heightened in the 1930's and between 1934 and 1957 two mines (the Matachewan Consolidated Mines Ltd. and Young-Davidson Mines Ltd.) located 16 miles south of the property, produced 956,117 oz. of gold.

The Ontario Department of Mines, report 51 and maps 2109 and P.900 and the Ontario Geological Survey Mineral Deposits Circular 18 describe the work performed in Baden Township. In the northeast corner of the property, 650 feet from the head of Matachewan Lake a 308 foot shaft was sunk by Thesaurus Gold Mines Ltd. Between 1919 and 1923 drifts were established at the 100 and 300 foot levels, totally 330 feet of lateral development. The shaft was dewatered and resampled in 1934. Andesite tuff and hornblende-mica granite cut by north striking diabase dykes were encountered.

Gold was found in three quartz veins and surrounding alteration zones. Grab samples collected in 1963 from the dump produced gold assays of trace to 0.14 oz/ton. Two 1959 drill logs show assays of 0.3 to 0.6 oz Au/ton over narrow widths.

In 1948 E.J. Thompson drilled one hole near the northwest shore of Matachewan Lake for a depth of 160 feet, no assays were reported. The Baden Creek Occurrence drilled in 1959 is located near the southern boundary of the property on the east shore of Matachewan Lake. Two holes were drilled totalling 260 feet intersecting a quartz vein in syenite prophyry. An assay averaging 0.06 oz/ton over 2 feet was reported. In 1960 to 1966 Richore Gold Mines Ltd. outlined a gold occurrence 0.8 km north of the east end of Belt Lake. A sheared fractured zone, striking northeast, containing quartz-carbonate stringers and minor pyrite, 300 feet long and 3

feet wide, was delineated in metavolcanics and granite just north of near the southwestern boundary of the property. Grab samples were collected in 1963 from the dump assayed 0.10 to 0.27 oz Au/ton. A total of 1,498 feet was drilled, intersecting a few quartz stringers. The best assays obtained were 0.01. The approximate locations of the Thesaurus Gold Mines Shaft and the Baden Creek and Richore Gold Mines Ltd occurrences are plotted on map GI-1.

#### INSTRUMENTATION AND SURVEY METHODS

The survey completed using a Cessna 172, fixed wing aircraft (CF-AAV) owned and operated by H. Ferderber Geophysics Ltd. It was piloted by D. Fauvelle of Val d'Or. The navigator/operator was G. Mullan, also from Val d'Or. Geophysical sensors were mounted in modified wing tips. GEM-GSM-9 BA Overhauser Proton Precession Magnetometer and Herz Totem 2AG VLF-electromagnetic systems were used. The magnetometer has a resolution of 0.5 recorded on analogue tape. The VLF-EM measures the change in total field and vertical quadrature field on two channels simultaneously, with an accuracy of 1%. The data is then transferred to a printer. The transmitting station at Annapolis, Maryland, (NSS), frequency 21.4 kilo herz was used.

The survey was conducted at an aircraft altitude of 250 feet above ground level. The altitude was measured with a Bonzer Mark 10 radar altimeter. A survey speed of approximately 100 miles per hour was used. Navigation was visual with reference to air photo mosaics at a scale of one inch to 1320 feet. Lines flown at 55° and 235° at spacings of 440 feet were recovered from the photo mosaics. Manual fiducials were recorded simultaneously on the geophysical tapes and solid state memory.

## DATA PRESENTATION

Flight lines, fiducial points and geophysical responses were reproduced from the air photo mosaics on maps at a scale of 1:15840 (one inch to 1320 feet). The outline of the claim group and claim map are shown on each sheet.

The aeromagnetic data was corrected for diurnal variations by using a base line as reference. The data was then reduced to a base level of 58,000 gammas, contoured at 20 gamma intervals and presented on Map MG-1.

The VLF-EM was transferred from the Totem 2AG memory to printed form. A base value was determined and the change in the total field strength as a percentage of the base value was calculated. The values were plotted on Map EM-1 and the positive values were contoured at intervals of 2%. The conductor axes were determined and labelled 1, 2, 3, etc. No priority was attached to the numbering system.

## DISCUSSION OF RESULTS

### Magnetic Survey

The magnetic relief is relatively flat on the property. The highest readings are in the extreme eastern part of the surveyed area where the relief is 300 gammas above background. This zone indicates the presence of an underlying late diabase dyke. Just west of this dyke the contour interval and shape suggest the possibility of two small diabase dykes underlying the property

The rest of the magnetic data seems to delineate two types of rock units underlying the property. The zones of lower magnetic susceptibility probably represent felsic/silicic intrusive rocks. Areas slightly higher susceptibility indicate the presence of mafic volcanic flows/pyroclastic rocks. The felsic/silicic intrusive bodies are located in the north central, central and southern parts of the claim group. The geophysical interpretation is presented in Map GI-1.

Changes in the contour shape and pattern suggest that a fault zone strikes north-south through the eastern end of the property.

#### VLF-EM Survey

The VLF-EM survey outlined 5 conductive zones on the property, striking  $320^{\circ}$  to  $360^{\circ}$ . Most conductive zones are located over or very near topographical features and could be considered to be responses from weak conductive overburden. Three of these zones 2, 3, and 5 are presumed to follow conductive overburden trends underlying bedrock structures such as faults, fractures and contacts.

Conductor zone 1 is comprised of 2 conductors following the shores of 2 lakes at the eastern end of the property. It is probably the result of conductive overburden along the shorelines but the southern limb is situated over the supposed contact between the volcanics and felsic intrusive.



Zone 2 generally follows the shoreline of Matachewan Lake but extends 1600 beyond the shoreline. This zone is located along the inferred contact between the volcanic units and felsic intrusive, near the Montreal River-Wiskey Jack Creek Fault and is situated in the vicinity of the Baden Creek occurrence. It probably defines a fault line.

Conductive zone 3 is located in the central part of the property. The southern part of the south limb follows the western shore of Matachewan Lake. This zone could represent a fault zone since it is situated near the north-south trending Mistinikon Lake Fault.

Conductor 4 is located along the edge of a swamp and is probably caused by conductive overburden reflecting the change in topography.

Conductive zone 5 is comprised of 2 limbs striking  $320^{\circ}$  near the western property boundary. The southern limb is located along a creek but near the Richmore Gold Mines Occurrence and along a contact. This zone may define a fault/shear zone.

Zone 2, 3, 4 and 5 all seem to be cut by a cross-cutting shear/fault zone striking approximately  $50^{\circ}$  across the property. The location of this inferred fault is located on map GI-1.

#### CONCLUSIONS AND RECOMMENDATIONS

The airborne geophysical survey was successful in outlining possible geological contacts and fault/shear zones on the Premier Explorations property in Baden Township. The geophysical interpretation is presented in map GI-1. Included on this map are the approximate location of gold occurrences on the property.

These occurrences are quartz veins and shear zones striking northeast-southwest and containing small amounts of sulphides usually in felsic/silicic rocks near the contacts with the surrounding volcanic rocks. The geophysical interpretation indicates inferred contacts and the possibility of 4 shear/fault zones on the property. These shear/fault zones strike northwest to north. An inferred cross-cutting fault striking northeast cuts 3 of these shears/faults. Since gold has been found in northeast striking veins and shear zones the intersection of these two types of fault/shears would be a good target for gold mineralization.

Further gold exploration work is warranted on the property. A ground horizontal loop-EM survey should be conducted at two directions northwest-southeast and northeast-southwest, using a short cable length to delineate conductors that could represent possible cross-cutting fault/shear zones. A ground gradient magnetic survey should be performed to better outline the geological contacts. After the ground geophysical program, the property should be mapped placing emphasis in areas of geophysical anomalies. Any mineralization shear/fault zones and quartz veins should be sampled and assayed for gold.

Respectfully submitted,

H. Ferderber Geophysics Ltd.

*R.A. Campbell*

R.A. Campbell, B.Sc.  
Geologist

APPENDIX 1 - CLAIM LIST

L 843814 ✓  
15 ✓  
16 ✓  
17 ✓  
18 ✓  
19 ✓  
20 ✓  
21 ✓  
843824 ✓  
25 ✓  
26 ✓  
843839 ✓  
40 ✓  
41 ✓  
42 ✓  
43 ✓  
44 ✓  
45 ✓  
46 ✓  
856364 ✓  
65 ✓  
856566 ✓  
67 ✓  
68 ✓  
856570 ✓  
71 ✓  
858098 ✓  
99 ✓



900

Type of Survey: **ULF-EM**  
**AIRBORNE MAGNETOMETER 4 VLF - 1**  
 Claim Holder(s): **JIM FORBES - RUN CRICHTON - PREMIER EXPLORATIONS INC. K18275 - K18365 - T1762**  
 Address: **33 PREMIER AVE. WEST 4600 AVE. SWASTIKA CNT. - STWEEDESMUIR AVE. KIRKLAND LAKE CNT. - KIRKLAND LAKE CNT.**  
 Survey Company: **H. FERBERBER GEOPHYSICS LTD.** Date of Survey (from & to): **27 07 86** Total Miles of line Cut: \_\_\_\_\_  
 Name and Address of Author (of Geo-Technical report): **R. CAMPBELL 169 PERRAULT AVE. VAL D'OR P.Q. J9P 2H1**

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	

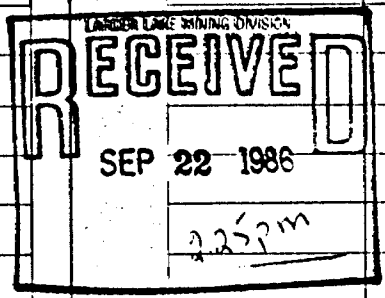
  

Man Days	Geophysical	Days per Claim
Complete reverse side and enter total(s) here	- Electromagnetic	
	- Magnetometer	
	- Radiometric	
	- Other	
	Geological	
	Geochemical	

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

Mining Claim		Expend. Days Cr.	Mining Claim		Expend. Days Cr.
Prefix	Number		Prefix	Number	
L	843814		L	858099	
	843815			856364	
	843816			856365	
	843817			856570	
	843818			856571	
	843819				
	843820				
	843821				
	843839				
	843840 CPF				
	843841 CPF				
	843842 CPF				
	843843 CPF				
	843844				
	843845				
	843846				
	843823				
	843824				
	843825				
	856566				
	856567				
	856568				
	858098				



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. **28**

For Office Use Only  
 Total Days Cr. Recorded: **2240** Date Recorded: **SEP 22 1986** Mining Recorder: *[Signature]*  
 Date Approved/Recorded: **86-11-13** Director: *[Signature]*

Date: **SEPT. 22/86** Recorded Holder or Agent (Signature): *Carl P. Forbes*

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: **CARL P. FORBES 33 PREMIER AVE. WEST KIRKLAND LAKE CNT. P2N 2S7**  
 Date Certified: **SEPT. 22/86** Certified by (Signature): *Carl P. Forbes*

Robertson Twp. M.310

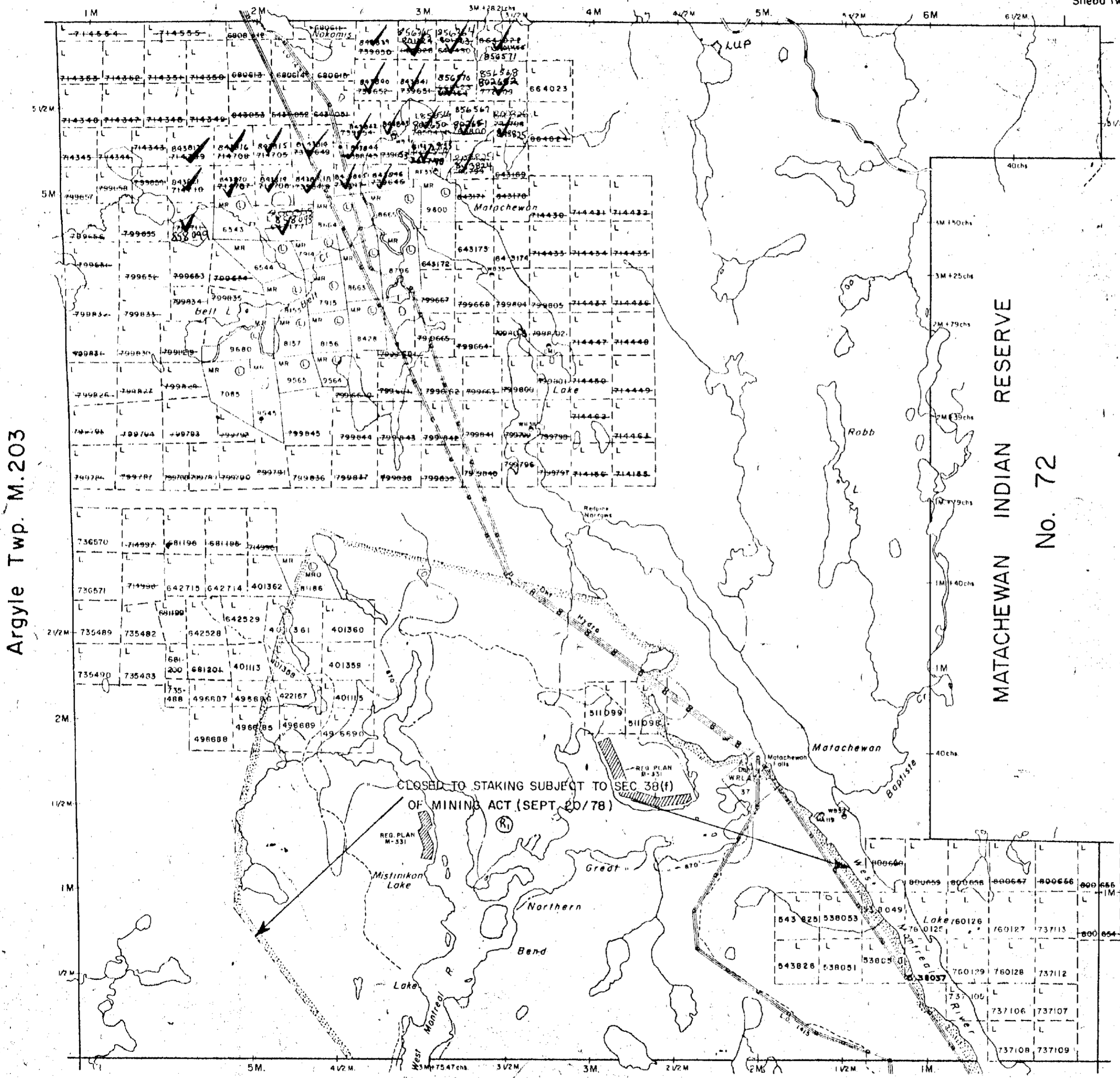
Sheba Twp M.385

THE TOWNSHIP OF  
OF  
**BADEN**

DISTRICT OF  
TIMISKAMING

LARDER LAKE  
MINING DIVISION

SCALE: 1-INCH 40 CHAINS



LEGEND

- PATENTED LAND ⊙ or ⊕
- 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 X
- CANCELLED ⊙
- PATENTED S.R.O. ⊙

NOTES

- 400' surface rights reservation along the shores of all lakes and rivers.
- Flooding rights to contour elevation 870' to Ont. Hydro, L.O. 7601. File: 12290 v2
- Part of Township closed to staking The Mining Act Sec 38(f) R.S.O. 1970 September 20, 1978
- Mining and surface rights withdrawn from prospecting, staking out, sale or lease, Sec 36, The Mining Act R.S.O. 1980 No. NAW 65/83, Nov. 18, 1983, 4:35 p.m.

MAY 23 1986

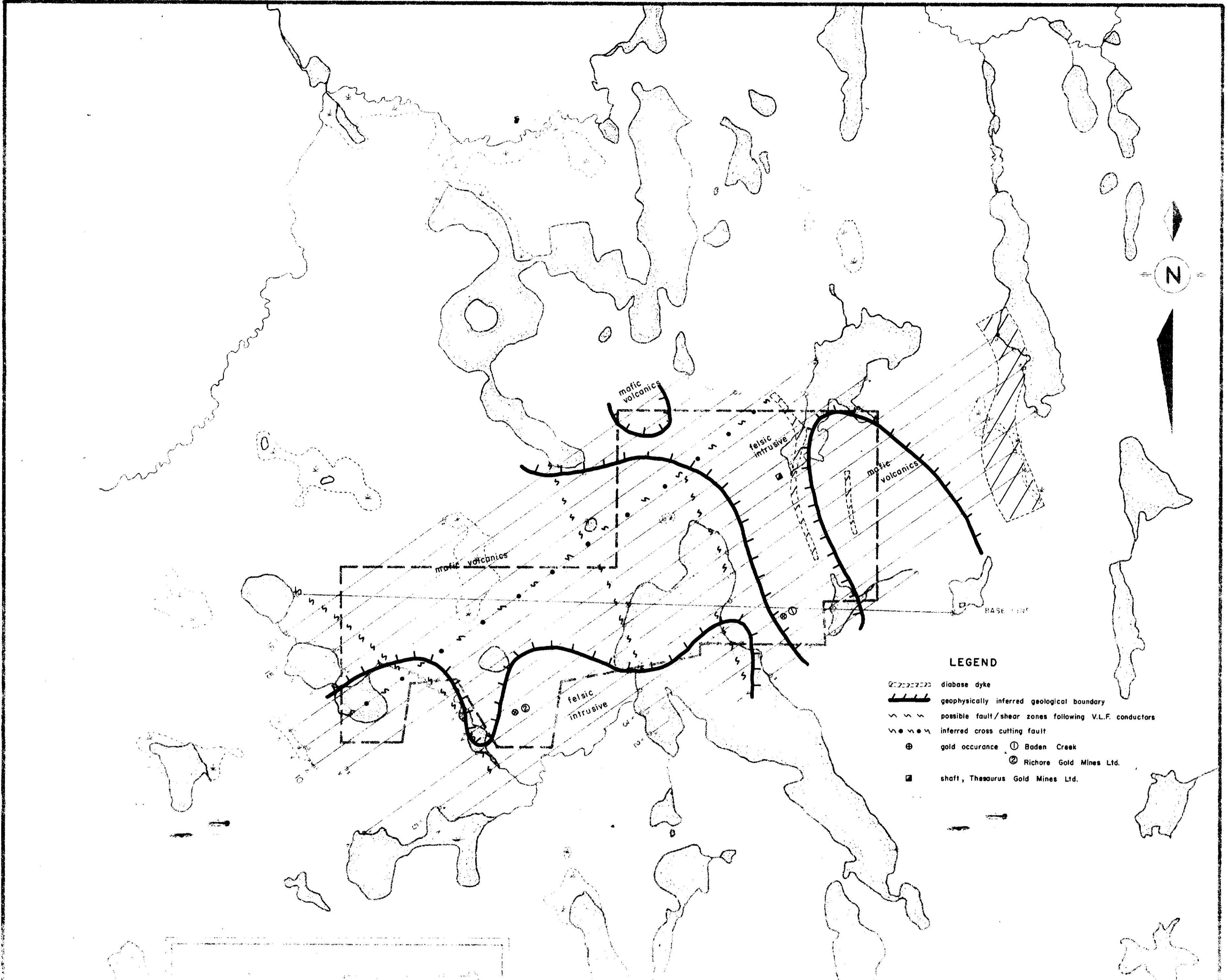
PLAN NO. **M.205**

ONTARIO  
MINISTRY OF NATURAL RESOURCES  
SURVEYS AND MAPPING BRANCH

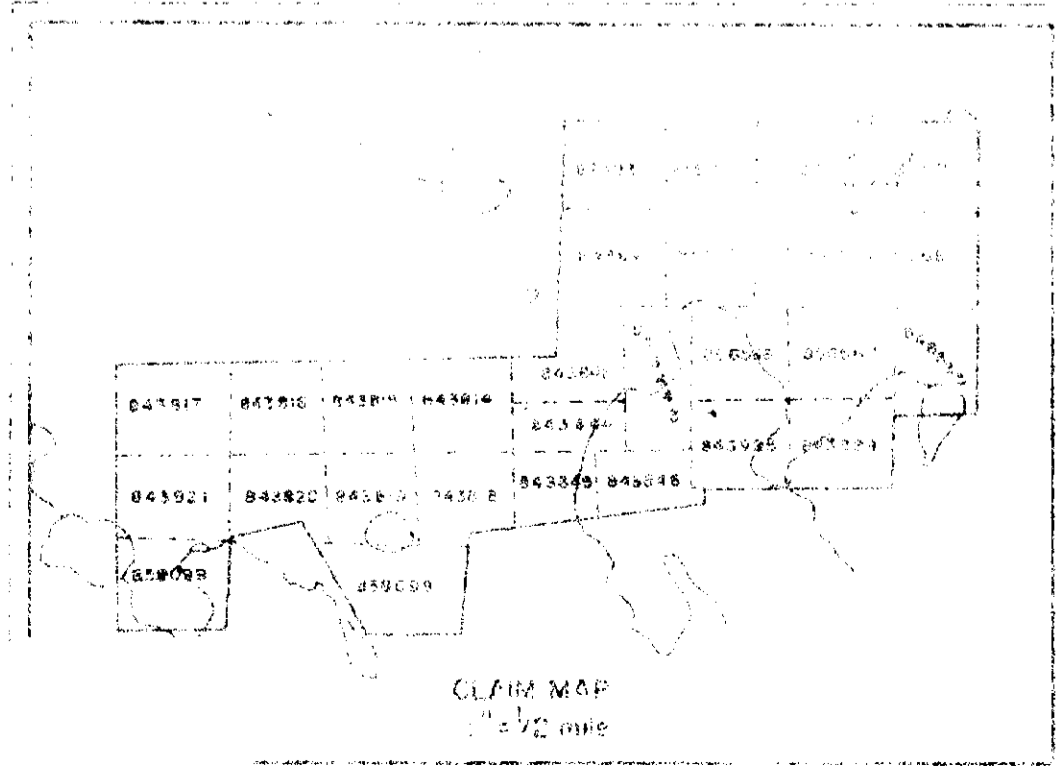


42A025E0142 2.9522 BADEN

Powell Twp. M.241



- LEGEND**
- diabase dyke
  - geophysically inferred geological boundary
  - possible fault/shear zones following V.L.F. conductors
  - inferred cross cutting fault
  - gold occurrence ① Baden Creek  
② Richore Gold Mines Ltd.
  - shaft, Thesaurus Gold Mines Ltd.

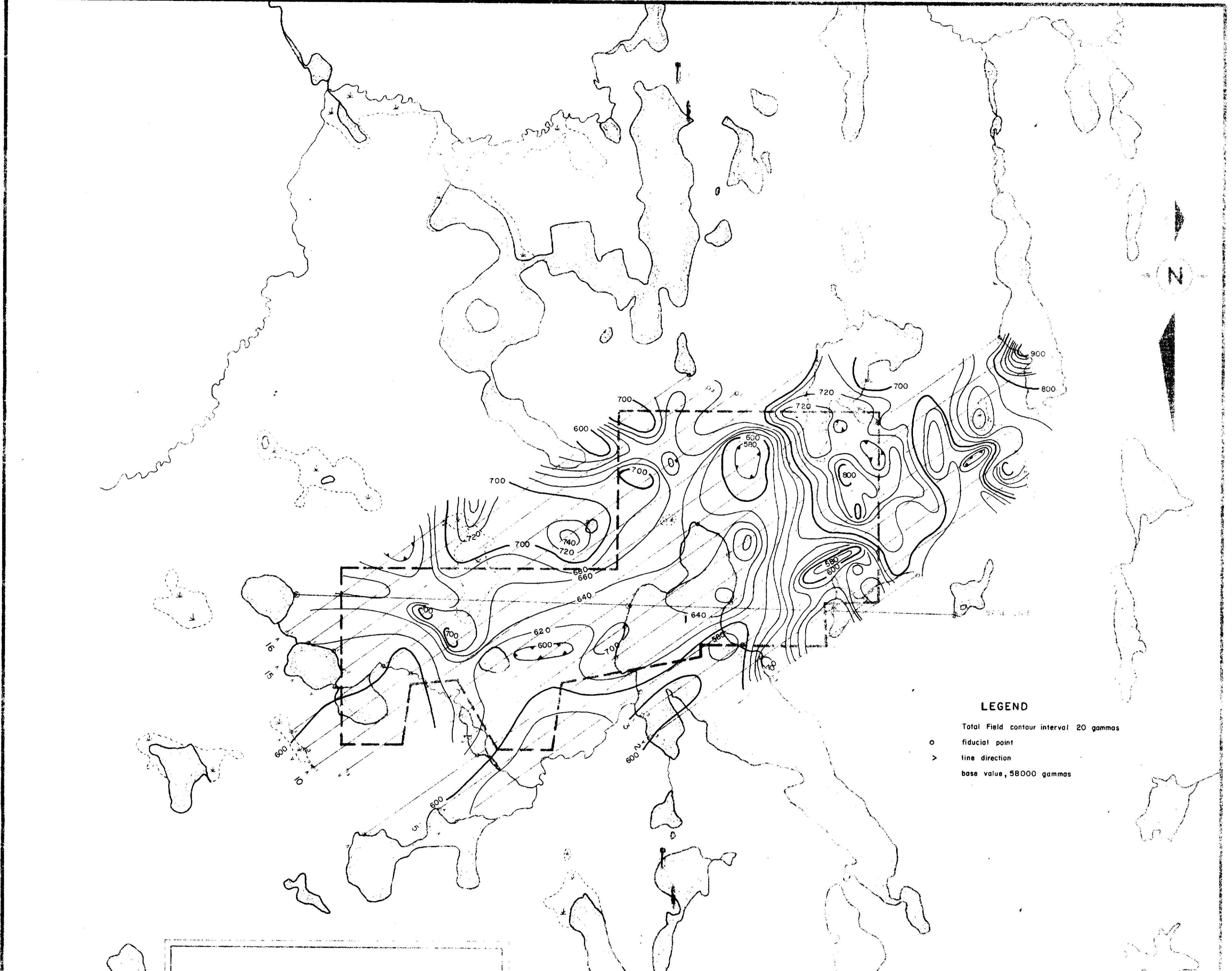


**GEOPHYSICAL INTERPRETATION MAP 29522**

PREMIER EXPLORATIONS INC

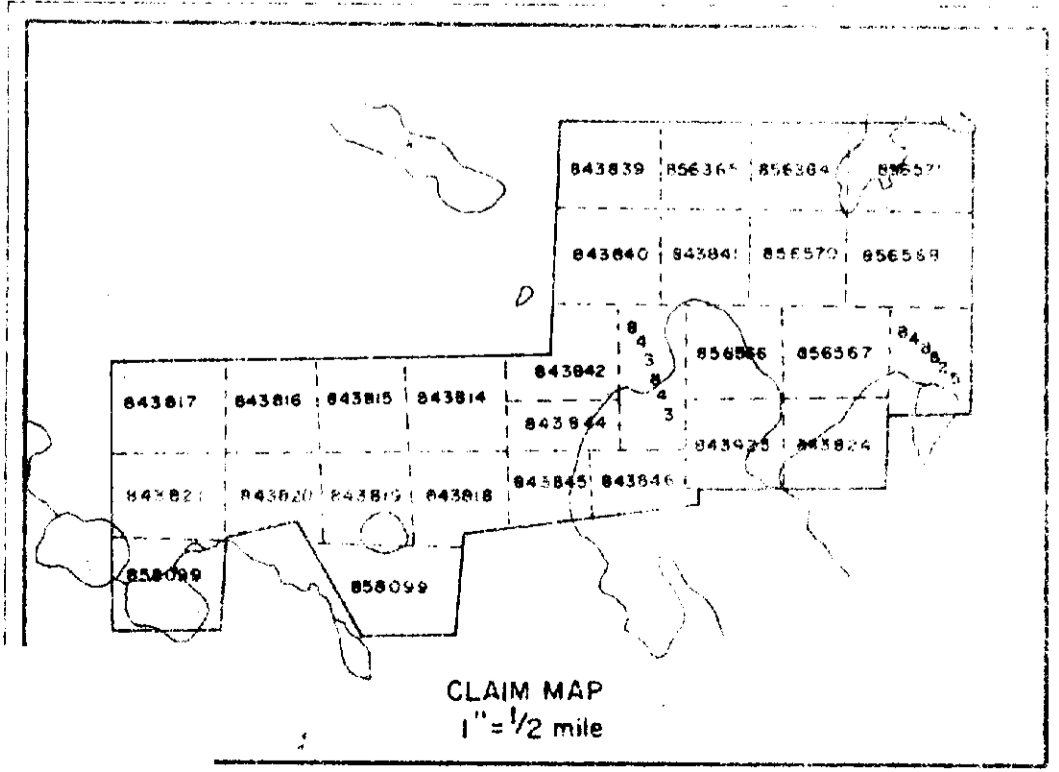
PROJECT BADEN	AREA BADEN TWP, ONT.
SCALE 1" = 1/4 mile	DATE JULY 1986
DRAWN BY RA Colwell H. Ferderber Geophysics Ltd.	MAP OR SHEET NO. GI-1





**LEGEND**

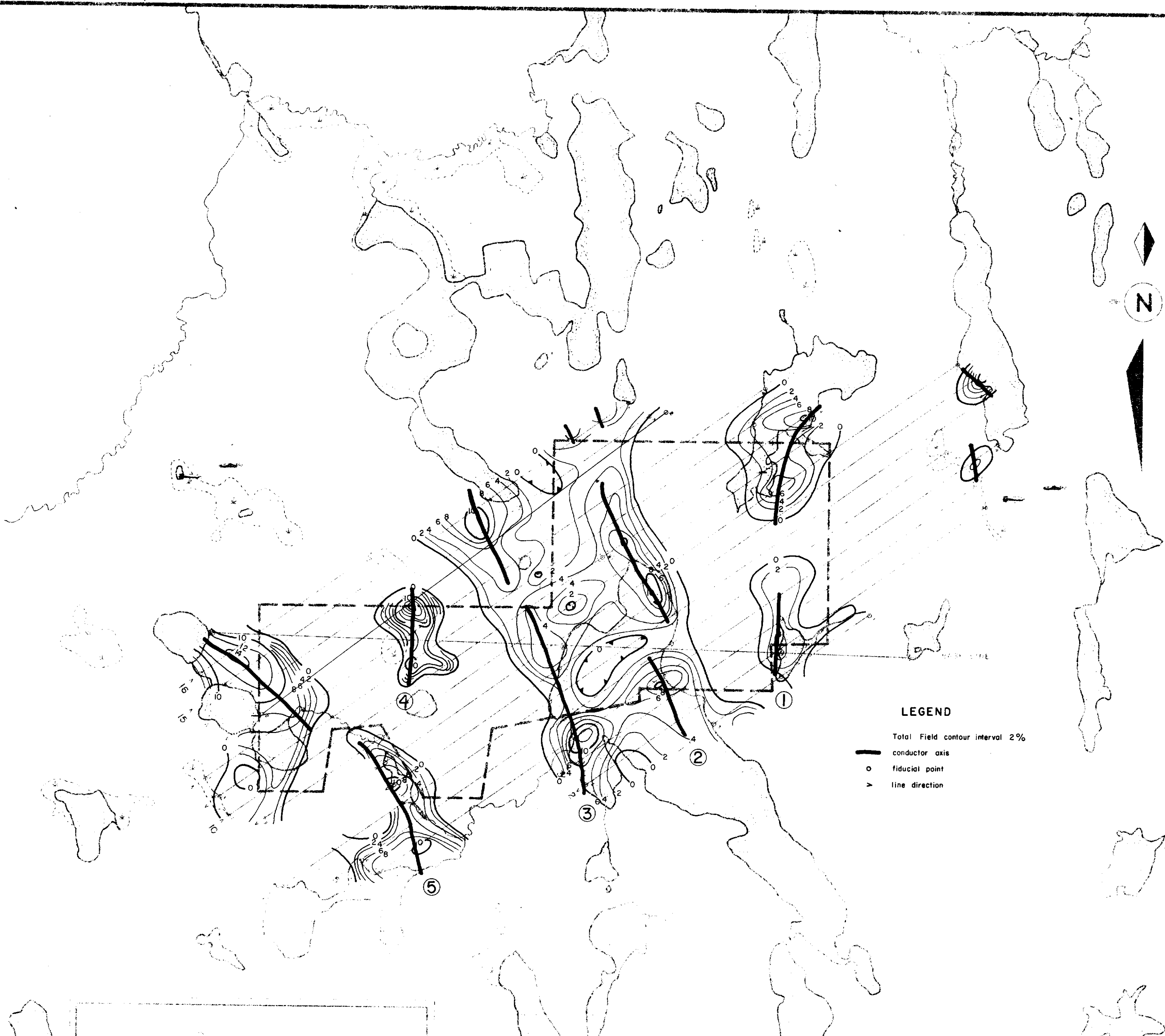
- Total Field contour interval 20 gammas
- o fiducial point
- > line direction
- base value, 58000 gammas



TYPE OF WORK		<b>AIRBORNE MAGNETIC SURVEY</b> <i>29522</i>	
CLIENT			
PREMIER EXPLORATIONS INC.			
PROJECT		AREA	
BADEN		BADEN TWP, ONT	
SCALE		DATE	
1" = 1/4 mile		JULY 1986	
DRAWN BY		MAP OF SHEET NO.	
<i>S.J.</i>		MG-1	

*RA Goulet*  
H. Ferderber Geophysics Ltd.

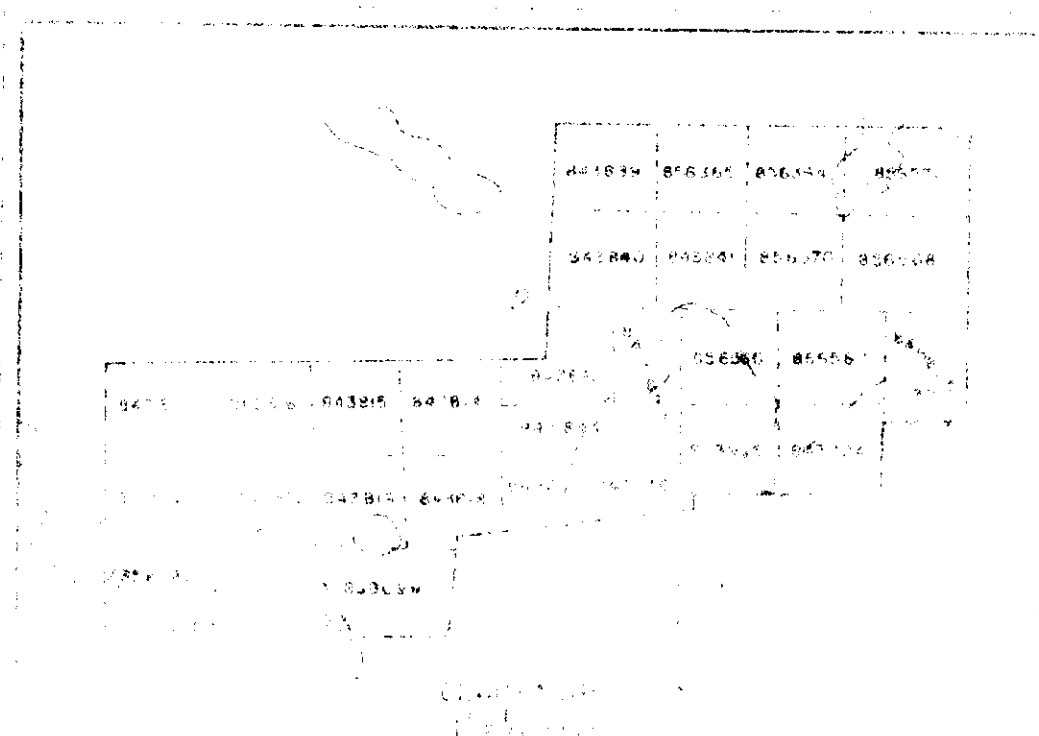




LEGEND

Total Field contour interval 2%

- conductor axis
- o fiducial point
- > line direction



TYPE OF WORK	
AIRBORNE V.L.F.-EM SURVEY 29522	
CLIENT:	
PREMIER EXPLORATIONS INC.	
DATE:	
JUN 1964	
PROJECT:	
RA GARDNER	
MAP SCALE:	
1:50,000	
MAP NO.:	
EM-1	

