



42A07SW2008 2.23819

LANGMUIR

010

Report of Work

On the

**Langmuir South Property** 

Langmuir Township, Ontario

NTS 42 A

Porcupine Mining Division

**Mining Claims** 

1236285, 1236286, 1236287, and 1236288

For

Starfire Minerals Inc.

And

Kenrich Eskay Mining Inc.

June 26, 2002 Timmins, Ontario

Matthew Johnston Consulting Geophysicist 1226 Gatineau Blvd. Timmins, Ont. P4R 1E3

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Мар	Scale
Total Field Magnetic Survey - Contours and Posted Data	1:5000
Max Min HLEM Survey Profiles - 440 Hz.	1:5000
Max Min HLEM Survey Profiles - 1760 Hz.	1:5000
Max Min HLEM Survey Profiles - 3520 Hz.	1:5000

#### 1.0 INTRODUCTION

The Langmuir South property of Starfire Minerals consists of 4 unpatented mining claims numbered 1236285, 1236286, 1236287, and 1236288, located in Langmuir Township. During early June 2002, a program of line-cutting and geophysical surveys was conducted over this claim group. The geophysical program consisted of total field magnetic and horizontal loop electromagnetic surveying. M.C. Exploration Services Inc., of South Porcupine, Ontario, carried out the line-cutting and geophysical surveys.

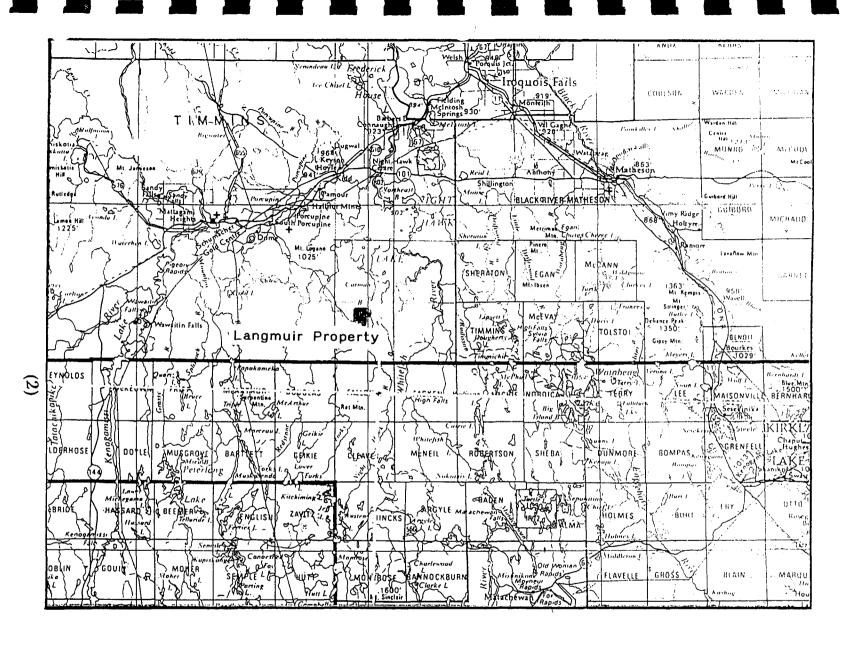
#### 2.0 Location And Access

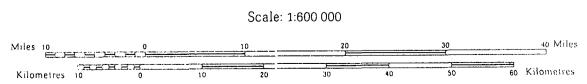
The Langmuir South property is located approximately 25 kilometers southeast of the city of Timmins, Ontario. The claim group is located in central Langmuir Township, on the west shore of St. Peter Bay, which is part of the Night Hawk River. Access to the grid is south from Timmins along Pine street south. A number of roads, trails and snowmobile paths lead in to the property (see figures 1 and 2).

#### 3.0 Summary of 2002 Geophysical and Line Cutting Program

The line cutting on the Lanmuir South grid totaled 16.5 kilometers, which consisted of a 1.1 kilometer long baseline striking at 090 degrees. The grid lines were cut every 100 meters along this baseline and ranged in length between 150 and 1500 meters. The grid lines were cut every 100 meters with pickets chained at 25-meter intervals along all lines.

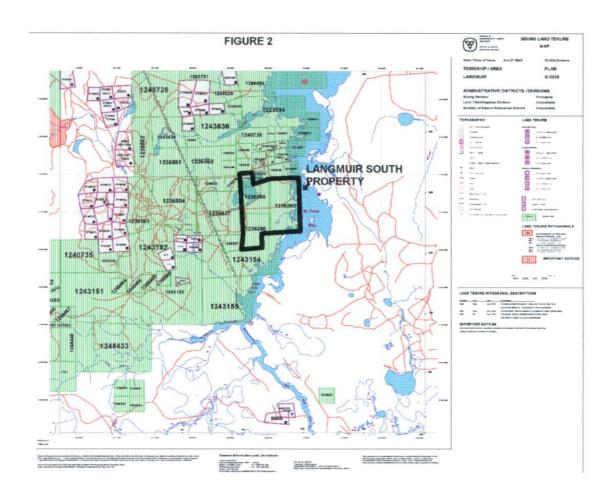
The geophysical program consisted of total field magnetic surveying and Max Min II horizontal loop electromagnetic surveying electromagnetic surveying. The total magnetic field survey, using a GEM GSM-19 magnetometer, totaled 16.5 kilometers with readings collected every 12.5 meters along all lines. The horizontal loop electromagnetic





Langmuir Property
Location Map

Figure 1



survey was conducted utilizing the Apex Parametrics Max Min II; with three frequencies of 444, 1760 and 3520 Hz. Recorded. A total of 12.6 kilometers of HLEM data was collected at 25-meter station intervals.

The total field magnetic survey data has been presented as contours of total magnetic intensity with posted data. The HLEM data has been presented as standard profiles for each frequency with posted data. All maps have been plotted at a scale of 1:5000. A description of both instruments and survey methods can be found in appendix A.

#### 4.0 Discussion of Results

The magnetic survey on the Langmuir South grid indicates a relatively noisy magnetic background, with magnetic values ranging between 55414 and 61189 nT. The background magnetic field strength is 57651 nT. The isomagnetic contour pattern suggests an underlying lithology striking in a northeast-southwest direction; disrupted by isolated linear magnetic highs striking east west and northwest-southeast; as well numerous isolated 'bulls-eye' magnetic highs. The most significant magnetic anomalies on the grid are the magnetic highs trending east-west located between line 0 and 400E from 900S to 1400S. The strongest is coincident with line 800W and the less well defined anomaly strikes north-south between lines 1000W and 1100W.

The Max Min HLEM survey revealed numerous conductors throughout the grid area. The conductor locations thought to reflect bedrock sources have been summarized in the table below:

Conductor Location	Comments
1100E/490S	Weak conductor
1000E/180S	Well defined strong conductor
900E/160S	Weak conductor
800E/490S	Well defined conductor

700E/80S	Well defined conductor
700E/570S	Well defined conductor
600E/330S	Well defined conductor
600E/600S	Well defined conductor
400E/710S	Not fully defined by survey
400E/875S	Weak conductor
400E/1370S	Weak conductor
300E/730S	Weak conductor
200E/750S	Weak conductor
150E/740S	Weak conductor

### 5.0 Conclusions and Recommendations

The HLEM and magnetic surveys over the Langmuir South grid located numerous and significant geophysical anomalies, which would be prospective for mineral exploration. The sources of the bedrock conductors would be very prospective zones in which to further explore. These zones are often prospective for base metal deposits. A program of prospecting or geological mapping in these areas and throughout the grid area is recommended in order to further evaluate the Langmuir South property.

Any existing geological or geochemical information for the surveyed grid will aid in further assessing the geophysical anomalies.

Respectively Submitted,

Matthew Johnston Consulting Geophysicist

Appendix A

## Theory of Operation:

#### Apex MaxMin I-9

•The MaxMin I ground Horizontal Loop ElectroMagnetic (HLEM) systems are designed for mineral & water exploration and for geoengineering applications. They expand the highly popular MaxMin II and III EM system concepts. The frequency range (in Hz) is extended to seven octaves from four. The ranges and numbers of coil separations are increased and new operating modes are added. The receiver can also be used independently for measurements with power line sources. The advanced spheric and powerline noise rejection is further improved, resulting in faster and more accurate surveys, particularly at large coil separations. Several receivers may be operated along a single reference scale. Mating plug in data acquisition computer is available for use with MaxMin I for automatic digital acquisition and processing. The computer specifications are in separate data sheets.

## **Specifications**

- Frequencies 110, 220, 440, 880, 1760, 3520, 7040, 14080 Hz plus 50/60Hz power line frequency (receiver only).
- Modes MAX1: HL mode, Tx & Rx coil planes horizontal and coplanar.

MAX2: V coplanar loop mode, Tx & Rx coil planes V & coplanar

MAX3: V coaxial loop mode, Tx & Rx coil planes V & coaxial MIN1: P loop mode 1 (Tx coil plane H & Rx coil plane V.

MIN2: Ploop mode 2 (Tx coil plane V & Rx coil plane H.

 Coil Separation 12.5,25,50,75,100,125,150,200,300,400 meters standard 10,20,40,60,80,100,120,160,200,240,320 m, internal option

50,100,200,300,400,500,600,800,1000,1200,1600 ft internal opt -Parameters IP and Q components of the secondary magnetic field, in % Measured of primary (Tx) fld. Fld amplitude and/or tilt of PL fld.

- Readouts Analog direct readouts on edgewise panel meters for IP, Q and tilt, and for 50/60Hz amplitude. Additional digital readouts when using the DAC, for which interfacing and controls are provided for plug-in.
- Range of Analog IP and Q scales;  $0 \pm 20\%$ ,  $0 \pm 2-\%$ , 0 Readouts  $\pm 100\%$ , switch activated. Analogue tilt scale  $0 \pm 75\%$  grade (digital IP & Q  $0 \pm 102.4\%$ ).

 $\square$ Readability Analogue IP and Q 0.05% to 0.5%, analogue tilt 1% grade (digital IP & Q 0.1%).

 $\square$ Repeatability  $\pm 0.05\%$  to  $\pm 1\%$  normally, depending on frequency, coil spacing & conditions.

DSignal Powerline comb filter, continuous spherics noise clipping, Filtering autoadjusting time constants and other filtering.

 $\Box Warning\ \ Lights$   $\ \ Rx\ signal\ \ and\ \ reference\ \ warning\ \ lights\ \ to\ \ indicate$  potential errors.

 $\square$ Survey Depth From surface down to 1.5 times coil separation used.  $\square$ Transmitter 110Hz: 220atm 220Hz: 215atm 440Hz: 210atm 880Hz: 200atm

Dipole moments 1760Hz: 160atm 3520Hz: 80atm 7040Hz:40atm 14080Hz: 20atm

- Reference Cable Light weight unshielded 4/2 conductor teflon cable for maximum temperature range and for minimum friction.
- Intercom Voice communication link via reference cable.
- Rx Power Supply Four standard 9V batt (0.5Ah, alk). Life 30 hrs continuous duty, less in cold weather. Rechargeable batt optional.
- Tx Power Supply Rechargeable sealed gel type lead acid 12V-13Ahr batt (4x 6V-6½Ah) in canvas belt. Opt 12V-8Ahr light duty belt pack.
- Tx Battery For 110-120/220-240VAC, 50/60/400 Hz and 12-15VDC supply Charger operation, automatic float charge mode, three charge status indicator lights. Output 14.4V-1.25A nominal.
- Operating Temp -40 □ C to +60 □ C

☐ Tx weight 8 kg ☐ Tx weight 16 kg with standard batt.

IP=In-Phase/ Q=Quadrature/ H= Horizontal/ V= Vertical/ PL= Powerline

## **HLEM Theory**

•The MaxMin I is a frequency domain, horizontal loop electromagnetic (HLEM) system, based on measuring the response of conductors to a transmitted, time varying electromagnetic field. The transmitted, or primary EM field is a sinusoidally varying field at any of the eight varying frequencies. This field induces an electromotive force (emf), or voltage, in any conductor through which the field passes (defined by Faraday's Law). The emf causes a secondary current to flow in the conductor in turn generating a secondary electromagnetic field. This changing secondary field induces an emf in the receiver coil (by Faraday's Law) at the same frequency, but which differs from the primary field in magnitude and phase. The difference in phase (phase angle) is a function of the conductance of the conductor(s), both the target and the overburden, and host rock. The magnitude of the secondary field is dependant on the conductance, dimension, depth, geometry as well as on the interference from the overburden and host rock. The two parameters, phase angle and magnitude are measured by measuring the strength of the secondary field in two components; the real field, In-phase with the primary field, and the imaginary field, Quadrature or 90° out-of-phase from the primary field. The magnitude and phase angle of the response is also a function of the frequency of the primary field. A higher frequency field generates a stronger response to weaker conductors. A low frequency tends to pass through weak conductors and penetrate to a deeper depth. The lower frequency also tends to energize the full thickness of a conductor, and give better measure of it's true conductivity-thickness "\aa", in mho's per meter. For these reasons, two or more frequencies are usually used. A lower frequency for better penetration and a higher frequency for stronger response to weaker conductors. The transmitted primary field also creates an emf in the receiver coil, which is much stronger than that of the secondary and must be corrected for by the receiver. This is done by electronically creating an emf in the receiver, whose magnitude is determined by the distance between the transmitter and receiver. The phase is derived from the receiver via an interconnecting cable.

#### Method

The MaxMin I is a two-man continuously portable EM system. Designed to measure both the vertical and horizontal In-Phase (IP) and Quadrature (QP) components of the

anomalous field from electrically conductive zones. The plane of the Transmitter (Tx) was kept parallel to the mean slope between the TX and Receiver (Rx) at all times. This ensures a horizontal loop system measuring perpendicular to the anomalous targets. The grid being surveyed should also be secant chained in order to keep a constant separation (between Tx and Rx) to eliminate anomalous response derived from cable loss over rough terrain. Crews attempted to keep a constant separation for a qualitative survey. Three frequencies; 440Hz, 1760Hz, and 3520Hz were selected to resolve complex conductors if/when encountered. The 100 meter coil spacing, chosen to detect possible deep conductors also ensures a more consistent survey overall (a large spread gives better penetration over areas of conductive layers, eg. clay). The crews read the cross-lines only to cut the geology at a perpendicular angle for better cross-over response

GEM Systems Advanced Magnetometers GSM-19

V 4.0

**GEM Systems Inc** 

52 West Beaver Creek Road, Unit 14

Richmond Hill, Ontario

Phone; (905) 764- 8008 Canada, L4B-1L9 Fax ; (905) 764- 9329

## Instrument Description

The sensor is a dual coil type designed to reduce noise and improve gradient tolerance. The coils are electrostatically shielded and contain a proton rich liquid in a pyrex bottle, which also acts as an RF resonator.

The sensor cable is coaxial, typically RG-58/U, up to 100m long.

The staff is made of strong aluminum tubing sections. This construction allows for a selection of sensor elevations above the ground during surveys. For best precision the full staff length should be used. Recommended sensor separation in gradiometer mode is one staff section, although two or three section separations are sometimes used for maximum sensitivity.

The console contains all the electronic circuitry. It has a sixteen key keyboard, a 4x20 character alphanumeric display, and sensor and power input/ output connectors. The keyboard also serves as an ON-OFF switch.

The power input/output connector also serves as a RS232 input/output and optionally as analog output and contact closure triggering input.

The keyboard front panel, and connectors are sealed (can operate under rainy conditions)

The charger has two levels of charging, full and trickle, switching automatically from one to another. Input is normally 110V 50/60Hz. Optionally, 12V DC can be provided.

'The all-metal housing of the console guarantees excellent EM protection.

## **Instrument Specifications**

Resolution

0.01 nT, magnetic field and gradient

Accuracy

0.20 nT over operating range

Range

20,000 to 120,000 nT automatic tuning, requiring initial

setup

Gradient Tolerance over 10,000 nT/m

Operating Interval 3 seconds minimum, faster optional. Reading initiated

from keyboard, external

external source optional.

trigger, or carriage return via

Input/Output 6 pin weatherproof connectors

Power Requirements 12V, 200mA peak, 30mA standby, 300mA peak with Gradiometer

Power Source

Internal 12V, 1.9Ah sealed lead-acid battery standard,

Input; 110/220VAC, 50/60Hz and/or 12VDC Battery Charger

Output; 12V dual level charging

Operating Ranges Temperatures; -40°C to +60°C

Battery Voltages; 10.0 V min to 15.0V max Humidity; up to 90% relative, non condensing

Storage Temperature -50°C to +65°C

Dimensions

Console; 223 X 69 X 240 cm Sensor Staff: 4 x 450mm sections

Sensor; 170 x 71 mm diameter

Weight; Console 2.1Kg Staff 0.9Kg Sensors; 1.1Kg

## Magnetic Survey

## Theory;

The magnetic method is based on measuring alteration in the shape and magnitude of the earth's naturally occurring magnetic field caused by changes in the magnetization of the rocks in the earth. These changes in magnetization are due mainly to the presence of the magnetic minerals, of which the most common is magnetite, and to a lesser extent ilmenite, pyrrhotite, and some less common minerals. Magnetic anomalies in the earth's filed are caused by changes in two types of magnetization; (1) Induced, caused by the magnetic field being altered and enhanced by increases in the magnetic susceptibility of the rocks, which is a function of the concentration of the magnetic minerals. (2) Remanent magnetism is independent of the earth's magnetic field, and is the permanent magnetization of the magnetic particles (magnetite, etc..) in the rocks. This is created when these particles orient themselves parallel to the ambient field when cooling. This magnetization may not be in the same direction as the present earth's field, due to changes in the orientation of the rock or the field. The unit of measurement (variations in intensity) is commonly known as the Gamma which is equivalent to the nanotesla (nT).

### Method;

The magnetometer, GSM-19 with an Overhauser sensor measures the Total Magnetic Field (TFM) perpendicular to the earth's field (horizontal position in the polar region). The unit has no moving parts, produces an absolute and relatively high resolution measurement of the field and displays the measurement on a digital lighted display and is recorded (to memory). Initially, the tuning of the instrument should agree with the nominal value of the magnetic field for each particular area. The Overhauser procession magnetometer collected the data with a 0.2 nanoTesla accuracy. The operator read each and every line at a 12.5 m interval with the sensor attached to the top of three (56cm) aluminum tubing sections. The readings were corrected for changes in the earth's magnetic field (diurnal drift) with a similar GSM-19 magnetometer, >>base station << which automatically read and stored the readings at every 30 seconds. The data from both units was then downloaded to PC and base corrected values were computed.



# **Work Report Summary**

**Transaction No:** 

W0260.01095

Status: APPROVED

**Recording Date:** 

2002-JUN-28

Work Done from: 2002-JUN-01

Approval Date:

2002-AUG-16

to: 2002-JUN-27

Client(s):

124403

DAVIS, PAUL CHARLES

155614

LAFOREST, DENIS

188148

ROBERT, JACQUES

203056

TREMBLAY, MICHAEL A

Survey Type(s):

EΜ

LC

MAG

W	Work Report Details:									
CI	aim#	Perform	Perform Approve	Applied	Applied Approve	Assign	Assign Approve	Reserve	Reserve Approve	
Р	1236285	\$2,889	\$2,889	\$2,800	\$2,800	\$0	0	\$89	\$89	2003-JUN-30
Р	1236286	\$2,910	\$2,910	\$2,000	\$2,000	\$0	0	\$910	\$910	2003-JUN-30
Р	1236287	\$1,138	\$1,138	\$800	\$800	\$0	0	\$338	\$338	2006-JUL-02
Р	1236288	\$3,881	\$3,881	\$3,200	\$3,200	\$0	0	\$681	\$681	2004-JUL-02
		\$10,818	\$10,818	\$8,800	\$8,800	\$0	\$0	\$2,018	\$2,018	=

**External Credits:** 

\$0

Reserve:

\$2,018 Reserve of Work Report#: W0260.01095

\$2,018

Total Remaining

Status of claim is based on information currently on record.



42A07SW2008 2.23819

LANGMUIR

Ministry of Northern Development and Mines

Ministère du Développement du Nord et des Mines

Date: 2002-AUG-16



GEOSCIENCE ASSESSMENT OFFICE 933 RAMSEY LAKE ROAD, 6th FLOOR SUDBURY, ONTARIO P3E 6B5

Tel: (888) 415-9845

Submission Number: 2.23819 Transaction Number(s): W0260.01095

Fax:(877) 670-1555

PAUL CHARLES DAVIS P.O. BOX 596 PORCUPINE, ONTARIO P0N 1C0 CANADA

Dear Sir or Madam

### **Subject: Approval of Assessment Work**

We have approved your Assessment Work Submission with the above noted Transaction Number(s). The attached Work Report Summary indicates the results of the approval.

At the discretion of the Ministry, the assessment work performed on the mining lands noted in this work report may be subject to inspection and/or investigation at any time.

If you have any question regarding this correspondence, please contact STEVEN BENETEAU by email at steve.beneteau@ndm.gov.on.ca or by phone at (705) 670-5855.

Yours Sincerely,

Ron Gashinski

Senior Manager, Mining Lands Section

Rncodal.

Cc: Resident Geologist

Paul Charles Davis (Claim Holder)

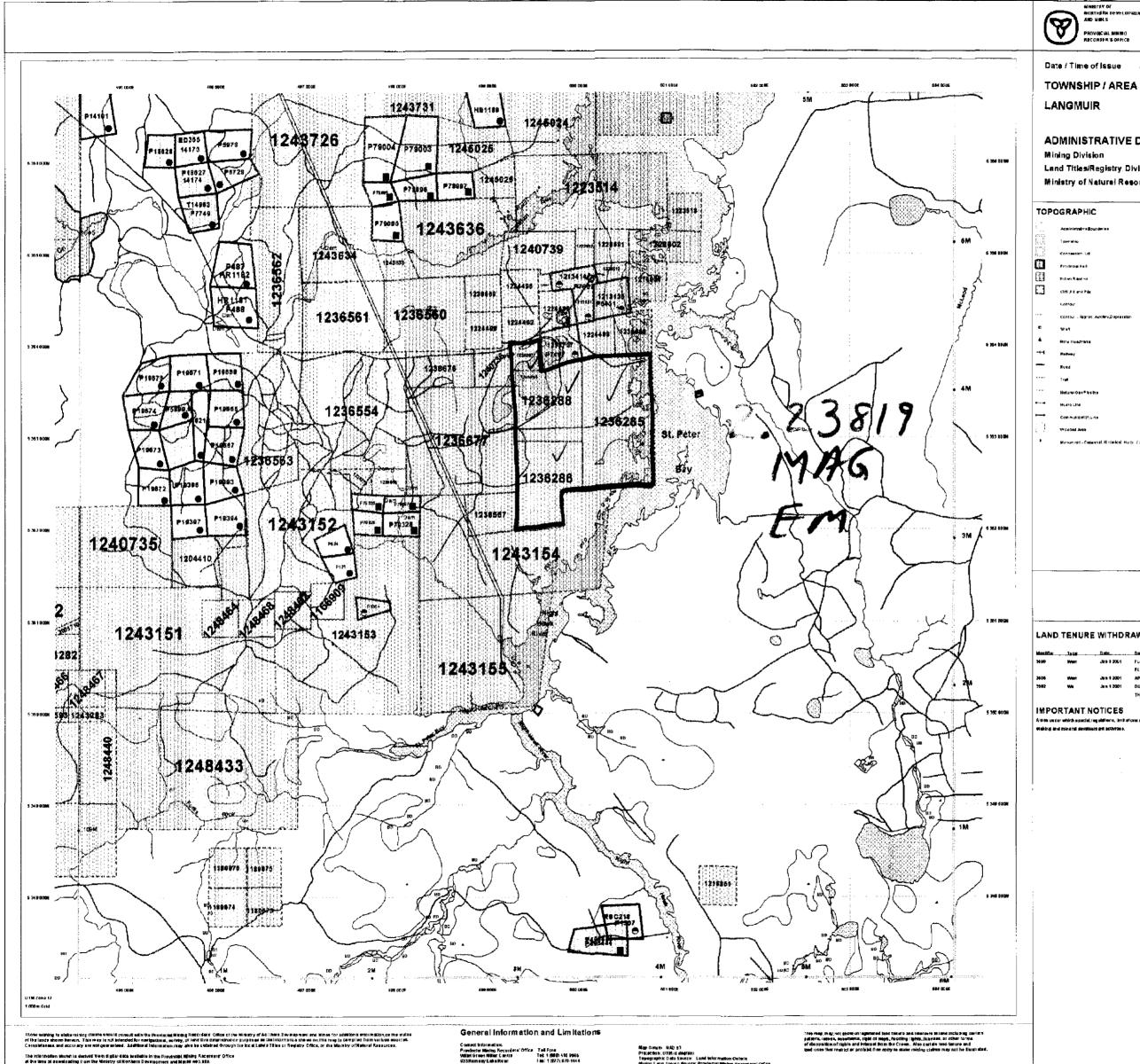
Denis Laforest (Claim Holder)

Michael A Tremblay (Claim Holder)

Assessment File Library

Paul Charles Davis (Assessment Office)

Jacques Robert (Claim Holder)



MINING LAND TENURE

Date / Time of Issue Jun 28 2002

12:22h Eastern PLAN

LANGMUIR

G-3226

**ADMINISTRATIVE DISTRICTS / DIVISIONS** 

Mining Division

Porcupine Unavailable

Land Titles/Registry Division Ministry of Natural Resources District Unavailable

LAND TENURE

Surface Rights Only 4

Aligning Regerits () may

Surface And Mining Right

Shidien ill det ye Cliff Fit and Pile

Surface if gets Cinly **3** 

TY could Area

€ Milying Rights Only Ú

9

LAND TENURE WITHDRAWALS



IMPORTANT NOTICES

LAND TENURE WITHDRAWAL DESCRIPTIONS

Description.
FLOODING RUNH 19 ON INGHT HAWA LARE FO THE CONTION FLOODING RUNH 19 ON INGHT HAWA LARE FO THE CONTION PROPERTY DISTRICT ON THE PROPERTY DISTRICT RUNH WITHOUT APPLICATION PERIODIC MESSES APPLICATION WHO PROPERTY DISTRICT LANGUAGE THE PUBLIC LANGUA SET SEGO, WITHDRAWN

IMPORTANT NOTICES

