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PROJECTS
SECTION

REPORT ON
GEOPHYSICAL SURVEY
LEE LAKE PROPERTY

BROAD SCOPE DEVELOPMENTS LIMITED

GREENLAW TOWNSHIP
SUDBURY MINING DIVISION
ONTARIO

April 14, 1972

CANA EXPLORATION CONSULTANTS LIMITED

The President and Directors,
Broad Scope Developments Limited,
1617 Park Royal Boulevard,
Mississauga, Ontario

Gentlemen:

This report describes the results of a program of geophysical surveys carried out to cover a 16-claim property, known as the Lee Lake property, located in Greenlaw Township, Sudbury Mining Division, Ontario. The results are interesting and the data are depicted on the accompanying plan, plotted to a scale 1" = 200'. There are indications which warrant further work. One outstanding zone warrants test diamond drilling.

PROPERTY, LOCATION AND ACCESS -

The 16 claims covered by the surveys are identified as follows:

S-269551 to S-269562, inclusive
S-324111 to S-324113, inclusive
and S-329567

They are contiguous mining claims situated at the northwest part of Greenlaw Township, at Lee Lake, as shown on the claim map inserted in the plan accompanying this report. An old shaft formerly owned by Lee Gold Mines Limited and Athona Mines Limited, abandoned January 1935, is located in Claim S-324111 at the north part of the claim group.

Lee Lake is located about one mile to the northwest of the west end of a large lake known as Ridout Lake and a smaller lake known as Hotstone Lake. There is a private bush road owned by Kormak Lumber Company reaching Hotstone Lake and Ridout Lake from a small village known as Kormak located on the C. P. R. about 25 miles east of Chapleau. A new gravel road was built two years ago from Chapleau to Kormak. The distance from Kormak to Hotstone Lake is about 11 road miles.

There are small bush planes servicing the Chapleau area. White River Air Services was used throughout the program. The distance from Chapleau to Lee Lake is 28 air miles.

GEOLOGY -

General geology of the area is on Map 2116 and Map No. F. 285, O. D. M. In short, the property is located at the west central part of a 22-mile wide greenstone belt which is remarkable by the occurrence of wide zones of acid volcanics across the central part. There are narrower zones of sediments and banded iron formation located to the north and south of the acid volcanics and several small and somewhat isolated basic intrusives across the south part of the belt.

According to a report by J. F. Donovan, Geological Report 63, 1968, and Map 2121, O. D. M., a small outcrop of serpentinite is located about 2 miles to the south-southeast of your property. This

rock carries stringers and veinlets of asbestos and is the only ultra-basic intrusive found in the Halcrow-Kidout Area.

Outcrop geology of the property area is on Maps P. 259, P. 324, 2120 and 2121, O. D. S. These maps showed that the property area is mostly drift covered with few small outcrop areas of intermediate to basic volcanics and acid volcanics. There is a small outcrop of banded iron formation near the southwest corner of Claim S-324113. Inferred geology showed a wide, east-westerly band of acid volcanics (with volcanic breccia, acidic schist and feldspar porphyry) to the immediate north of the property. There are two smaller bands of the same located at the east part of the property. These bands are inferred as located within the intermediate to basic volcanics. A narrow dike or band of rhyolite porphyry is located at the shaft area.

MINERAL OCCURRENCES -

The area was known as the Swayze Gold Area with numerous gold occurrences, mainly along the zones of acid volcanics. Some of these gold occurrences are associated with noticeable sulphide mineralization. One sulphide showing is located to the immediate south of Lee Lake, probably at the east part of Claim S-260501.

The old shaft located on the claim was sunk to a depth of 250 feet, with levels established at 125 and 250 feet. Gold occurs along a narrow band of rhyolite porphyry which was once described as a quartz

porphyry dike from 10 feet to 20 feet wide, striking S50°E, cutting sheared diorite (which was later classified as intermediate to basic volcanic), dipping at 80°N. Quartz and carbonates heavily mineralized with pyrite and showing narrow streaks of chalcopyrite were noted on either side of the porphyry in highly schistose rocks. This occurrence was traced for 300 feet. Four of 11 shallow diamond drill holes reported to have shown values in gold from 0.25 to 0.64 ounces per ton. Several quartz veins are located to the immediate east of a small lake located in Claim S-324118.

AEROMAGNETIC DATA -

Aeromagnetic data on maps 2246G and 2245G showed a magnetic anomaly located to the west of the claim group. The anomaly runs northwest-southeast and is apparently outlined over an area of mostly drift material. It is isolated from other elongated magnetic zones outlined in the general area. The anomaly is about 100 to 120 gammas (atborac) above background. There is a magnetic low area located to the immediate southwest of the shaft area and a magnetic low located at the south central part of the property.

SURVEY DATA -

The program was carried out in February and March, 1972 under bad snow conditions.

A line grid with picket lines spaced at 400 foot intervals,
turned off from two base lines with a bearing of N60°W, was established
on the 16 claims for the geophysical surveys. All stations were chained
at 100 foot intervals.

The magnetic survey was carried out by using base-check
method with a Fluxgate magnetometer.

The electromagnetic survey was carried out at the northwest
part of the property by using an SE-200 unit with parallel line method.
It was noted that the rather rugged topography has affected the data con-
siderably and a Ronke EM-16 instrument with transmitter station NAA
was used to cover the southeast and apparently more rugged part of the
property. Some of the anomalies obtained by the SE-200 survey were
checked by using the Ronke EM-16 instrument and choice indications
obtained by the Ronke EM-16 survey were checked by using the SE-200
unit with transmitter stationary.

The magnetic readings and contours, and electromagnetic
readings and profiles with interpretations are given on the plan accom-
panying this report. Also given are topographic features and claim
posts and claim boundaries noted by the field crew.

MAGNETIC SURVEY RESULTS AND INTERPRETATION -

The magnetic survey encountered several interesting
features which are apparently not shown by the aeromagnetic data.

They are described as follows:

- (1) A strong magnetic anomaly which runs parallel to the base line across the central part of a small lake located on Claims S-324112 and S-324113. The anomaly has high readings of about 2000 to 5300 gammas above background readings in the order of 400 to 500 gammas. The anomaly is about 1600 feet long, up to about 200 feet in width. The small lake is an excellent feature for a correlation with outcrop geology given on government maps. The east part of the anomaly runs through an outcrop area of chlorite-hornblende-feldspar schist, immediately to the south of a network of quartz veins and several hundred feet to the north of a small outcrop or iron formation located about 200 feet to the south of the small lake where the readings are slightly lower than background. This is apparently not the banded chert-magnetite iron formation but the poorly banded fine-grained, schistose, rusty brown rock, closely associated with volcanic rocks and classified as iron formation. According to J. F. Donovan (Report 63, O. D. M., 1968) along the north shore of Kidout Lake, quartz, calcite, siderite, limonite, pyrite and epidote are common constituents of this type of iron

formation. At another location along Ridout River a narrow sulphide vein with chalcopyrite, pyrrhotite, and pyrite is associated with such type of schistose iron formation.

It follows that the magnetic anomaly is inferred as indicating an interesting anomalous condition within volcanic schist.

(2) About 1000 to 1500 feet to the south of the above-described anomaly, the survey outlined a somewhat irregular shaped anomaly over a high ground area with outcrops indicated as massive andesite and/or basalt. This anomaly, though similar in magnitude to (1), could be due to relatively heavier concentrations of magnetic minerals in massive basalt.

(3) The two bands of acidic volcanics shown at the east part of the property are apparently indicated by two magnetic low zones with readings from 300 to 500 gammas in Claims S-269561 and S-269562. Their indicated strikes are west-northwesterly rather than the east-west indicated strike shown on geological maps. A 700 foot wide weak magnetic zone located between the said two low magnetic zones could be the eastern extension of the strong anomaly described in (1) but off-set by an inferred northwesterly fault or

shear which lies on strike with the Wakami River-Hotstone Lake fault zone.

- (4) There are weak magnetic indications showing that the above-said fault zone may extend to the immediate east of the shaft area. It follows that the gold-bearing structure could have been cut off to the east but open to the west.

ELECTROMAGNETIC SURVEY AND CHECK SURVEY RESULTS -

- (1) **Base Line Zone:** This is a conducting zone indicated by the SE-200 survey, the Ronka EM-16 survey and by the check survey. The strongest and central section of this zone runs along the south rim of the 1600 foot long magnetic anomaly located on Claims S-324112 and S-324113. Strong Ronka EM-16 indications with typical reversed out-of-phase responses are located along this central section and to the immediate east. The strongest in-phase changes are from plus 76% to minus 24%, and the strongest out-of-phase changes are from minus 12% to plus 21%. The strongest indication encountered by the SE-200 check survey with stationary transmitter is from 16' south to 12' north. The conductor zone is inferred as indicating considerable concentrations of conductive minerals along a shear structure and locally dips steeply to the north with the

center of conduction from about 200 feet below surface.

Test diamond drilling is warranted.

- (2) Other SE-200 indications: A double checked marginal SE-200 cross-over is located at L32E, west-northwest of the shaft area. Magnetic contours in the area indicated that the location is along the south boundary of the west extension of the gold-bearing structure. Surface examination should be carried out to check this interpretation and the possibility of this cross-over.

An SE-200 anomalous condition encountered from 1000' north to 1200' north of L16W could not be accounted for by rugged topography and should be checked by using other methods.

- (3) The Ronka EM-16 survey encountered several other VLF conductor zones which are depicted on the plan accompanying this report. They are, as a rule, poor conductors but may serve as target zones for geological prospecting. This is particularly true with such zones or conducting points located on Claims S-269562 and S-269561 for the possibility of favourable gold-bearing structures. In fact, it may be advisable to check some of the better

indications with a vertical unit where the terrain is not too rugged.

CONCLUSIONS AND RECOMMENDATIONS -

The ground geophysical surveys encountered an interesting anomalous zone at the west central part of the property. The zone has a 1600 foot long strong magnetic anomaly associated with a conductive inferred structure. The conductions were detected by both the VLF and the vertical loop electromagnetic methods to indicate the occurrence of a good conductor zone from a depth of about 200 feet to warrant test diamond drilling. Choice location for the first drill hole is given on the plan accompanying this report.

There are several other indications encountered by the survey which require further electromagnetic check work and/or geological examination for better interpretation prior to possible diamond drilling.

Respectfully submitted,

CANA EXPLORATION CONSULTANTS LIMITED



S. S. Szetu, Ph. D., P. Eng.
Consulting Geologist

SSS:rk

Toronto, Ontario
April 14, 1972

Appendix - Details of Instruments, etc.

- (a) Type of instrument:- 1) SE-200, Serial No. 485, manufactured by Scintrex Limited, Toronto.
- 2) Fluxgate MF-1 magnetometer, Serial No. 30538, manufactured by Scintrex Limited, Toronto.

3) Electromagnetic survey - Ronka EM-16, Serial #5, manufactured by Geonics Limited of Toronto.

- (b) Specifications:- 1) SE-200 E. M. unit; frequency 1250 c. p. s.; separation up to 500', - 2' (null); batteries - 2 x 6 volt #731 Eveready, 1 x 9 volt #216 Eveready.

2) Fluxgate MF-1 magnetometer; maximum sensitivity = 20 gammas on 1,000 gamma range; ranges \pm 1,000, 3,000, 10,000, 30,000, 100,000 gammas; batteries: 12 x 1.5 V flashlight "C" cells.

3) Ronka EM-16 - horizontal primary field from VLF transmitting station NAA, Cutler, Maine, U. S. A., freq. 17.8 kHz, selected by plug-in units; vertical measured field with in-phase and quadrature components with \pm 1% accuracy of readings, \pm 150% range of measurements for in-phase and \pm 40% for quadrature; null-detection by an earphone, real and quadrature components out-put read-out from mechanical dials; size 16 x 6.5 x 3.5 in.; receiver powered by six size AA penlight cells.

- (c) Survey procedures:- For the SE-200 survey, parallel line method was used with transmitter located 400' to the east or west of the receiver on the next line, as described in this report. For conductor tracing, the transmitter stationary method was used.

For the magnetic survey, base-check method was used with control stations established at 800' and 1200' intervals along the base lines.

For the Ronka EM-16 survey the proper transmitting station (NAA) was selected with coil parallel to the primary field. On all stations established on the ground, readings were taken with operator facing northerly along lines of the primary field. Both in-phase and out-of-phase readings were taken in %.

GEOPHYSICAL - GEOLOC
TECHNICAL DATA STATEMENT



900

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 Ground Surveys
Township or Area Greenlaw Township
Claim holder(s) Cana Exploration Consultants Ltd., &
Broad Scope Developments Ltd.
Author of Report S. S. Szetu, Ph. D., P. Eng.
Address Ste. 426, 12 Richmond St. East, Toronto.
Covering Dates of Survey Feb. 15th to April 14th, 1972.
(linecutting to office)
Total Miles of Line cut 15.44 miles

MINING CLAIMS TRAVERSED
List numerically

S.....	269551
(prefix)	(number)
S.....	269552
S.....	269553
S.....	269554
S.....	269555
S.....	269556
S.....	269557
S.....	269558
S.....	269559
S.....	269560
S.....	269561
S.....	269562
S.....	324111
S.....	324112
S.....	324113
S.....	329567
TOTAL CLAIMS <u>16</u>	

If space insufficient, attach list

SPECIAL PROVISIONS
CREDITS REQUESTED

ENTER 40 days (includes
line cutting) for first
survey.

ENTER 20 days for each
additional survey using
same grid.

	DAYS per claim
Geophysical	
-- Electromagnetic	40
-- Magnetometer	20
-- Radiometric	
-- Other	
Geological	
Geochemical	

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)

Magnetometer _____ Electromagnetic _____ Radiometric _____
(enter days per claim)

DATE: April 20/72 SIGNATURE: S. S. Szetu
Author of Report

OFFICE USE ONLY

PROJECTS SECTION

Res. Geol. _____ Qualifications 63, 1064
Previous Surveys rd.

Checked by _____ date _____

GEOLOGICAL BRANCH _____

Approved by _____ date _____

GEOLOGICAL BRANCH _____

Approved by _____ date _____

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS

Number of Stations 743 Number of Readings 743
Station interval 100ft.
Line spacing 400 ft.
Profile scale or Contour intervals 1/10" = 1', 1/2", 4%; Contours: 500, 750, 1000, 2000 & 3000 gammas
(specify for each type of survey)

MAGNETIC

Instrument Fluxgate MF-1
Accuracy - Scale constant 20 gammas on 1,000 gamma range
Diurnal correction method Base-check
Base station location 1.0+00, 0+00

ELECTROMAGNETIC

Instrument SE-200 & Ronka EM-16
Coil configuration "A" for SE-200
Coil separation 400 ft. for SE-200 survey
Accuracy + 2° for SE-200; + 1% for Ronka EM-16
Method: [x] Fixed transmitter [] Shoot back [] In line [x] Parallel line
Frequency 1250 c. p. s. for SE-200; 17.8 kHz, Station NAA, Cutler, Maine for Ronka EM-16
(specify V.L.F. station)
Parameters measured In & out-of-phase components for the V. L. F. EM survey

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

Denyes Twp. - M.758

THE TOWNSHIP OF
OF
GREENLAW

DISTRICT OF
SUDBURY

SUDBURY
MINING DIVISION

SCALE: 1-INCH = 40 CHAINS

LEGEND

PATENTED LAND	Ⓢ
CROWN LAND SALE	C.S.
LEASES	Ⓛ
LOCATED LAND	L.O.
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	C.

NOTES

400' Surface Rights Reservation around
all lakes and rivers.

2.844

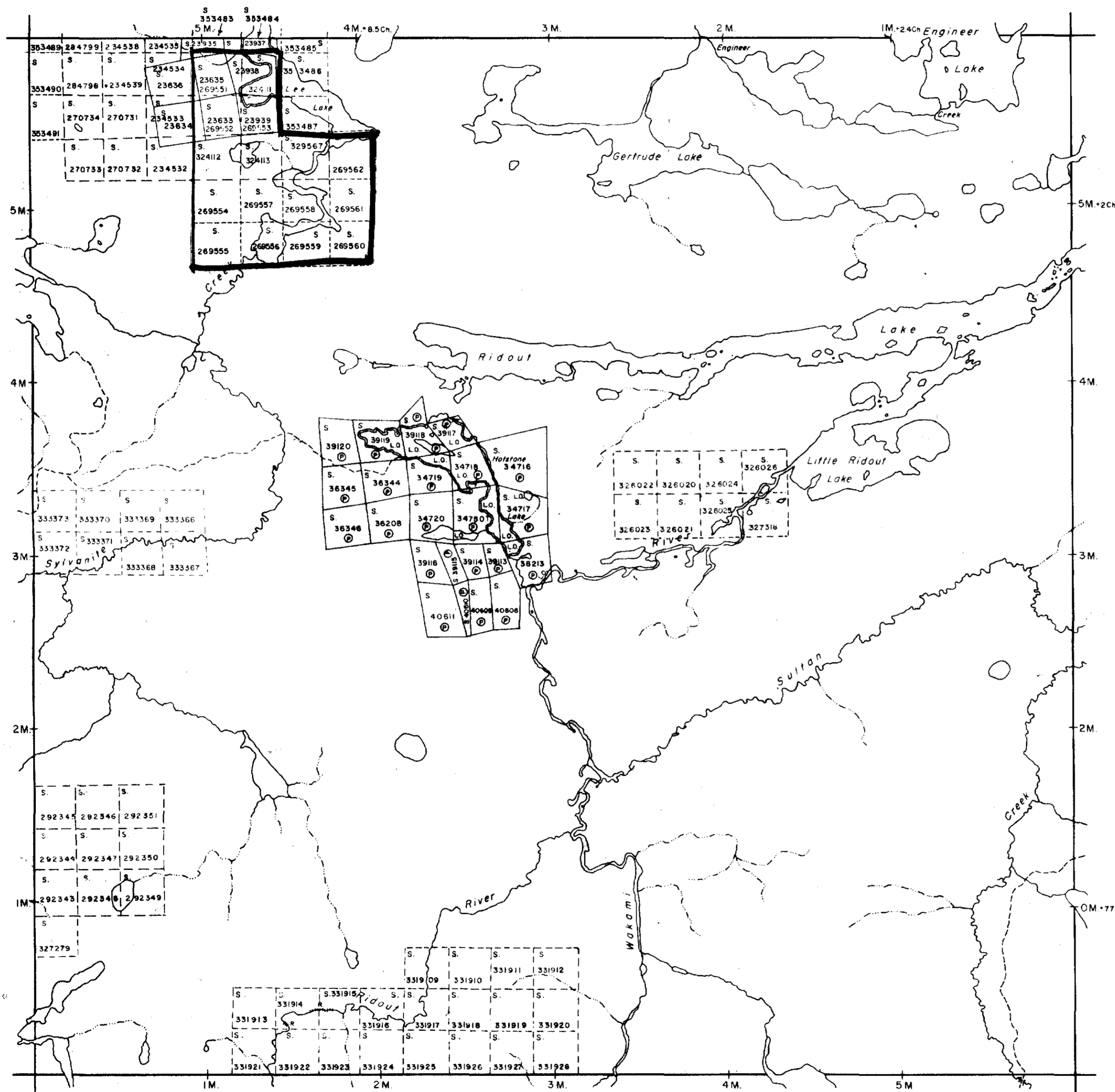
DATE OF ISSUE
MAY 1972
ONT. DEPT. OF MINES
AND NORTHERN AFFAIRS

PLAN NO. **M.895**

ONTARIO
DEPARTMENT OF MINES
AND NORTHERN AFFAIRS

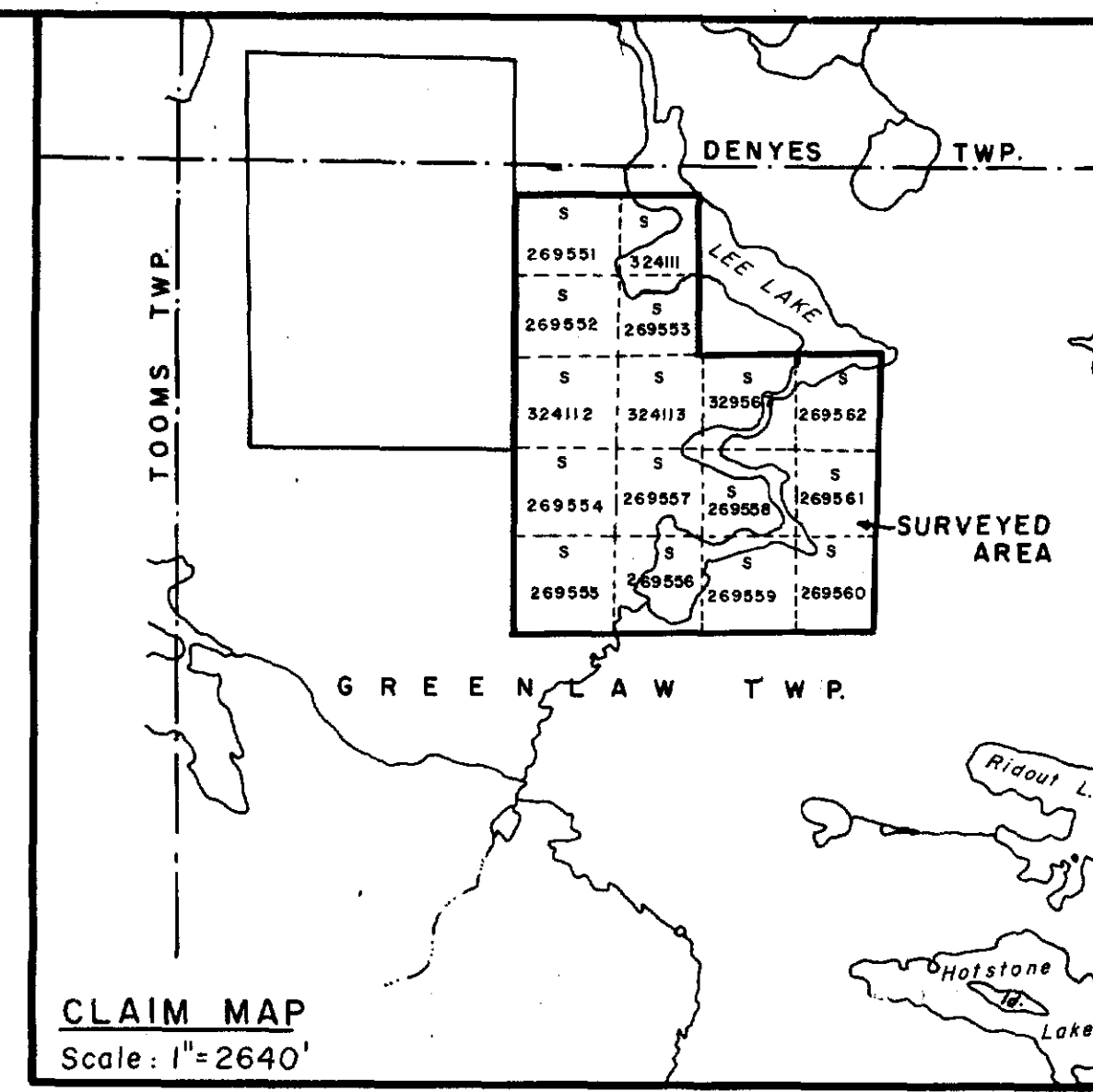
Tooms Twp. - M.1159

Cunningham Twp. - M.744



Twp. 22 - M.1196





LEGEND

- High ground.
- Steep slope.
- Outcrop.
- Claim line and assumed claim boundary.
- Claim post.
- Witness post.
- Old cabin.
- Shaft.
- S-269553 Claim number.
- Proposed diamond drill hole.
- Magnetic readings plotted to the right hand side of each station along cut and chained picket line.
- C.S. Magnetic control station.
- B.S.C. Magnetic base control station.
- Control station at camp-site.
- Magnetic contours:
 - Below 500 gammas.
 - 500 - 750 "
 - 750 - 1000 "
 - 1000 - 2000 "
 - 2000 - 3000 "
 - 3000 - 5500 "
- Electromagnetic dip angles obtained by using a SE-200 unit with parallel line method plotted left of each stn. (TE) or (TW) denotes transmitter to the east or west of each traverse. Scale of profile: 1/10" = 1° dip.
- Electromagnetic check survey data obtained by using a SE-200 unit with transmitter stationary.
 - △ T-1 denotes number and location of transmitter.
 - [T-1] denotes transmitter used for traverse.
 - Scale of profile: 1/10" = 1/2° dip.
- Electromagnetic readings obtained by using a Ronka EM-16 instrument with transmitter station NAA, operator facing north. In-phase readings plotted left, out-of-phase readings plotted right and below the magnetic readings at each station.
 - Scale of profiles: 1/10" = 4% phase change.
 - In-phase profile: ———, out-of-phase profile: - - - - -
- Electromagnetic conductor obtained by vertical loop SE-200 survey and/or check survey.
- VLF electromagnetic conductor obtained by using Ronka EM-16 with transmitter station NAA.

GEOPHYSICAL SURVEY DATA ON LEE LAKE PROPERTY
BROAD SCOPE DEVELOPMENTS LIMITED
GREENLAW TOWNSHIP
SUDBURY MINING DIVISION
ONTARIO
 SCALE: 1" = 200' APRIL 1972
Can Exploration Consultants Limited.

