Rec. in Sudbury
Jan. 1 70

GSC AEROMAGNETIC MAP
1488G (NEGATIVE
ANOMALY).

recorded holder
MacDonnell, A.

63 A - 556

GEOPHYSICAL ENGINEERING & SURVEYS LTD.,

NORTH BAY, ONTARIO

REPORT ON THE

GEOLOGY OF PART OF

THE LAVERGNE RARE EARTHS PROPERTY

SPRINGER & FIELD TOWNSHIPS, ONTARIO

FOR

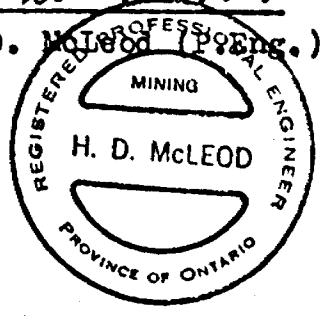
GEOPHYSICAL ENGINEERING & SURVEYS LTD.,

REPORT NO. 381 N.B

N.T.S. 31 L/5

November 18, 1969

H.D. McLeod (P.Eng.)



ODM FILE 63A 556

SUMMARY, CONCLUSIONS & RECOMMENDATIONS

The Lavergne Rare Earths claims of Geophysical Engineering & Surveys Ltd., were geologically mapped in 1968 and an area of low ground tested by one drill hole in 1969.

The geological mapping located small exposures of the carbonatite-type intrusive rocks but no mineralization of interest. The drill hole located a wide section of carbonate veining containing ~~with~~ bastnäsite and other unusual mineralization.

The main part of the mineralized zone lies on the patented lot to the west and extends a short distance only into these claims. As a result no further exploration is warranted except that necessary to keep the claims in good standing.

ACCOMPANYING MAPS

(1) Dwg. 3270 - "Geological Map".

BASTNAESITE - A FLUOROCARBONATE OF THE CERIUM METALS $[(RF)CO_3]_2$

UP TO 69% R.E.

INTRODUCTION

The Geophysical Engineering and Surveys Ltd., Lavergne Rare Earths property consists of two patented lots - lots 6 and 7 concession 6 Springer Township - and fifteen claims, numbered T 60510, T60511 and T 60519 to T 60531 inclusive, comprising lot 5 concession 6 and N½N½ lot 6 concession 5 Springer Township, S½ lot 6 and SE¼S½ lot 7 concession 1 Field Township. This report will describe the claims only.

The ground was acquired on the basis of carbonate veins carrying values in rare earth elements located on the Lavergne farm (N½ lot 6 concession 6 Springer Township).

The geological mapping was done during May and June 1968 by the writer assisted by P.P. Master, a graduate of a university in India. Mapping was done along pace and compass traverses using the claim lines as control. Traverses were made at 200-foot intervals. The map accompanying this report shows the details on the claims only. A much larger area was covered but no credits are claimed for that portion of the work.

LOCATION & ACCESS

The claims are located in the north part of Springer Township and south part of Field Township, a distance of five miles to the north of Sturgeon Falls, Ontario. Approximate co-ordinates are 46°26' north and 79°58' west.

Access is by a concession road (road 13) west from highway 64 at a point 6 miles to the north of Sturgeon Falls.

TOPOGRAPHY

The claims area is covered by low outcrop hills separated by small swamps and areas of clay or gravel overburden. One creek or series of beaver ponds crosses the central

part in an easterly direction.

Timber growth is mainly small maple and birch with thick moose maple and hazel undergrowth. Some stands of small spruce and balsam are present and a few larger spruce and white pine were seen.

GEOLOGY

Table of Formations

Pleistocene

clay, gravel, granite boulders

Precambrian

carbonate vein zones

Syenite

Granite

Granite gneiss

Description of Formations

Granite Gneiss This is the main rock type and oldest formation in the area. It consists of coarse-grained banded red granite with a variable content of biotite mica. The main minerals are potash and calcic feldspar and quartz. Biotite mica normally is not abundant but in some sections forms 30% to 40% of the volume.

Small coarse pegmatitic segregations are common, these being composed mainly of feldspars and quartz.

Rarely lenses or zones of hornblende metadiorite or metagabbro were seen.

Granite - A small area of medium-grained massive red granite was mapped on claims T 60510 and T 60511. This is composed of red and white feldspars and quartz with biotite as an accessory mineral. It is believed to be related

to the syenite and intrusive into the granite gneiss.

Syenite Irregular intrusions of a fine to medium-grained massive red rock occur in claims T 60523 and T 60528. The intrusive is composed almost wholly of potash feldspar and quartz thus the field nomenclature is not accurate. Accessory mineralization is erratically distributed and consists of a medium-green mineral believed to be epidote. The formation definitely is younger than and intrusive into the granite gneisses.

Carbonate Vein Zones Carbonate veining on the claims was found in the drill hole only and consists of syenite or granite or granite gneiss replaced by white calcite in the form of veins and stringers, the carbonate content ranging from 10% to 90% of the volume. Wide sections composed of 40% to 50% carbonate are present. Normally the veins are strongly leached, rusted and vuggy.

MINERALIZATION

Unusual mineralization is confined mainly to the carbonate veins and host rocks adjoining the veins. Most of the minerals remain unidentified however varying amounts of bastnäsite, potash feldspar, rutile, hematite, limonite, magnetite, chlorite, pyrite and fluorite have been recognised. Other primary green and black minerals and secondary yellow and green minerals have not been identified. Yellow fluorescence may be caused by xenotime.

STRUCTURE

The syenite, granite and carbonate appear to be related phases of a carbonatite type of intrusive that apparently have intruded the granite gneisses in stages resulting in

relatively small isolated exposures.

DIAMOND DRILLING

One hole, as shown on the geological plan, was drilled to a depth of 706 feet. This intersected a wide zone of altered and brecciated granite and granite gneiss intruded by dikes of syenite and carbonate veins.

I, Herbert Douglas McLeod, resident at 673 Norman Avenue, North Bay, Ontario certify that:

(1) I am a graduate of Queen's University in Kingston, Ontario with a B Sc degree in engineering geology and mineralogy.

(2) That I graduated in the year 1946.

(3) That I am a paid up member of the Association of Professional Engineers of the Province of Ontario.

(4) That I have actively practised my profession for a period of 25 years.

(5) That I personally performed part of the work and supervised the remainder done in producing this report.

H.D. McLeod

H.D. McLeod (P.Eng.)

THE MINING ACT

DEPARTMENT OF MINES
PROJECTS SECTION

Assessment Work Credits

FILE: 63A.556

DATE: December 19, 1969.

Name A. MacDonnell

Township or Area: Field Township & Springer

Type of Survey and Number of Assessment Days Credits per Claim	Mining Claims
GEOPHYSICAL ☐ Special Provision ☐ Man days ☐ Ground ☐ Airborne Magnetometer ..... days Electromagnetic ..... days ....days	T 60510 60511 60519 to 31 inclusive
GEOLOGICAL 22 days ☐ Special Provision ☒ Man days	
RADIOMETRIC ..... days ☐ Ground ☐ Airborne	
GEOCHEMICAL .....days	
☐ Notice of Intent to be issued (credits have been reduced because of insufficient or partial coverage of claims)	
☐ No assessment credits have been allowed for the following mining claims as they were not sufficiently covered by the survey.....	

900

The Mining Recorder may reduce the above credits if necessary in order that the total number of approved assessment days recorded on each claim does not exceed the maximum allowed as follows:

Geophysical – 80; Geological – 40; Geochemical – 40; Radiometric – 20;

ASSESSMENT WORK BREAKDOWN

1. Type of Survey Geological Mapping,

2. Township or Area Springer Township,

3. Numbers of Mining Claims Traversed by Survey T 60510, T 60511, T 60519, T 60520, T 60521, T 60522, T 60523, T 60524, T 60525, T 60526, T 60527, T 60528, T 60529, T 60530, T 60531.

4. Number of Miles of Line Cut Nil Flown

*5. Number of Stations Established

*6. Make and type of Instrument Used

*7. Scale Constant or Sensitivity

*8. Frequency Used and Power Output

9. Summary of Assessment Credits (details on reverse side)

Total 8 hour Technical Days (Include Consultants, Draughting etc.)

Total 8 hour Line-Cutting Days

Calculation

48 (Technical) x 7 = 336 + ____ (Line-cutting) = 336 ÷ 15 (Number of claims) = 22 (Assessment credits per claim)

The dates listed on this form represent working time spent entirely within the limits of the above listed claims ☒ Check
If otherwise, please explain

Dated: September 26, 1969 Signed:

Note: (A) * Complete only if applicable.
(B) Complete list of names, addresses and dates on reverse side.
(C) Submit separate breakdown for each type of survey.
(D) Submit in duplicate.

ASSESSMENT WORK BREAKDOWN

1. FIELD WORK

Type of Work	Name & Address	Dates Worked	Number of 8 hour days
Geological Mapping			
	P.P. Master, North Bay, Ontario	May 15-June 15/69	25
	H.D. McLeod North Bay, Ontario	May 15-June 15/69	20

2. CONSULTANTS

Name & Address	Dates Worked (specify in field or office)	Number of 8 hour days

3. DRAUGHTSMAN, TYPING, OTHERS (specify)

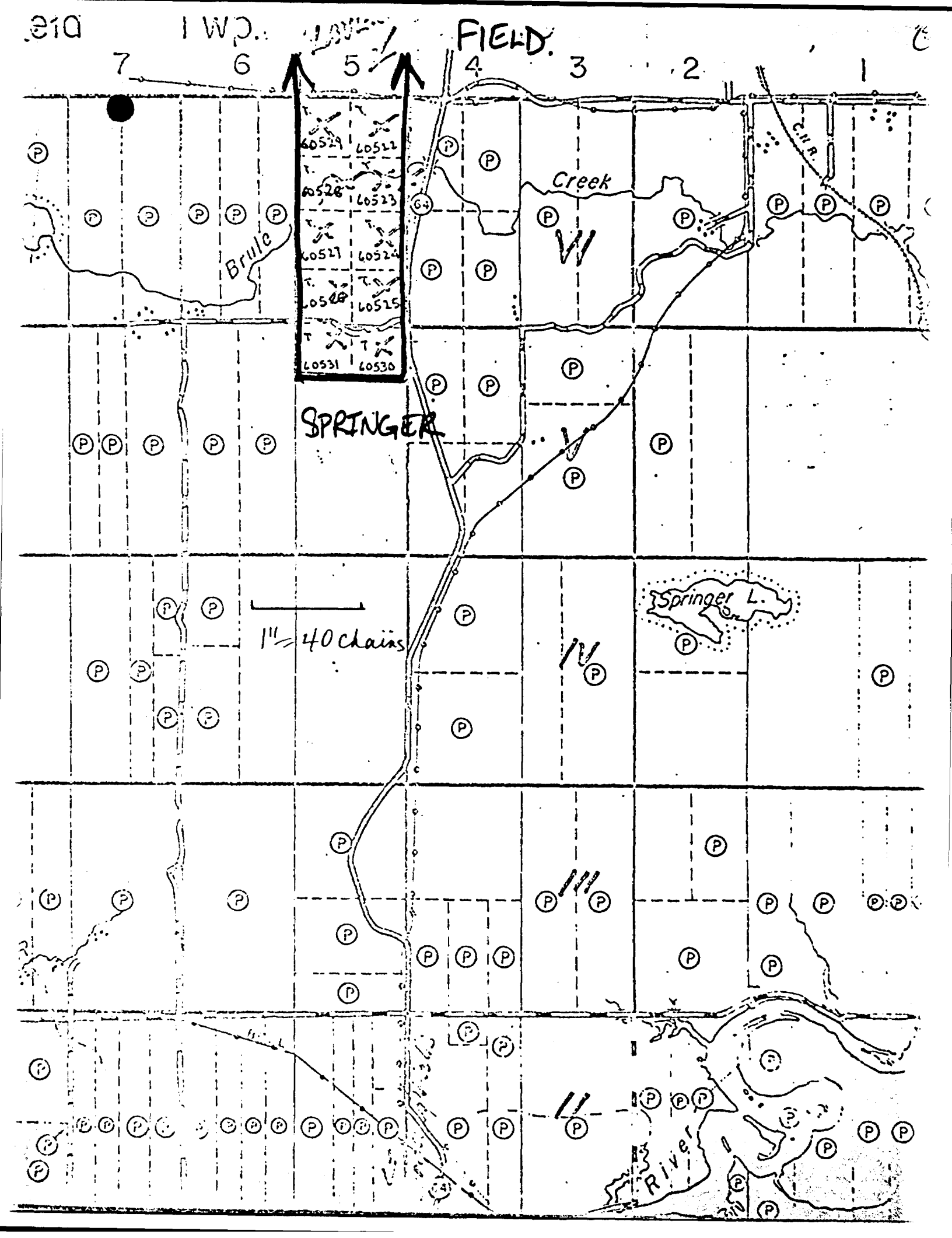
Name & Address	Type of Work	Dates Worked	Number of 8 hour days
B. Hopkins, North Bay, Ontario	Drafting	July 5-10, 1969	2
E. Greason, North Bay, Ontario	Typing	July 25, 1969	1

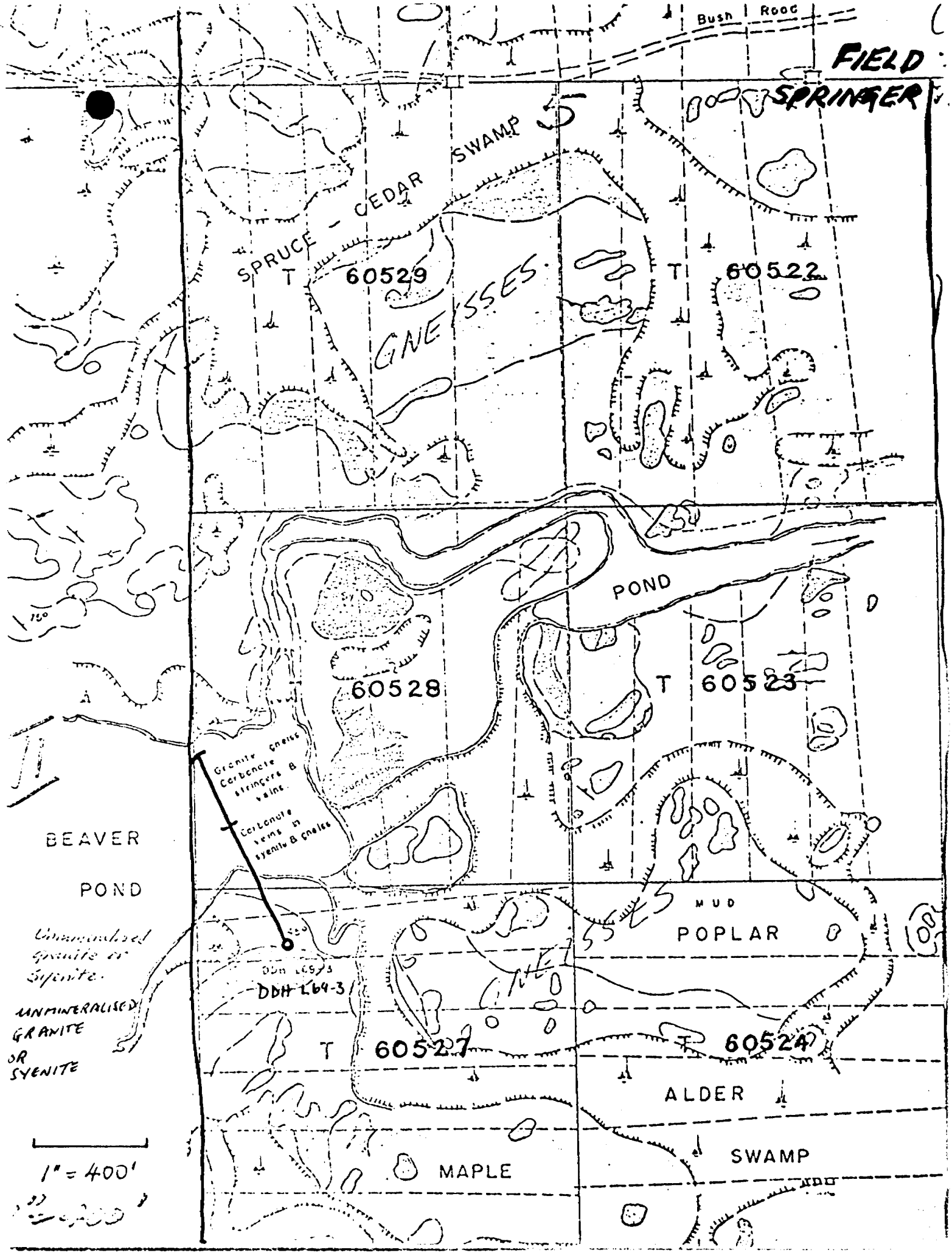
TOTAL 8 HOUR TECHNICAL DAYS 48

4. LINE-CUTTING

Name	Address	Dates Worked	Number of 8 hour days

TOTAL 8 HOUR LINE-CUTTING DAYS


FIELD.
7
6
5
4
3
2
1
60529
60522
60528
60523
60527
60524
60526
60525
60531
60530
Creek
Brule
SPRINGER
Springer L.
1" = 40 chains
River


Bush Road
FIELD
SPRINGER
SPRUCE - CEDAR SWAMP
T 60529
GNEISSES
T 60522
POND
60528
T 60523
Granite gneiss
Carbonate stringers & veins
Carbonate veins in syenite & gneiss
BEAVER POND
Unmineralised granite or syenite.
UNMINERALISED GRANITE OR SYENITE
DDH L64-3
MUD
POPLAR
T 60527
T 60524
ALDER
SWAMP
MAPLE
1" = 400'

Sudbury Mining Div. (New)

ONTARIO

Nov 16 9

DEPARTMENT OF MINES

A separate form is required for each type of work to be recorded

1969

THE MINING ACT REPORT OF WORK

To the Recorder of Temiskaming Mining Division

Geophysical Engineering and Surveys Limited -- C 28645

name of Recorded Holder — Miner's Licence

Suite 4900 P.O. Box 49 - Toronto Dominion Centre, Toronto, Ontario.

Post Office Address

do hereby report the performance of 330 days of Geological Mapping, type of work

not before reported to be applied on the following contiguous claims

Claim No.	Days	Claim No.	Days	Claim No.	Days
T 60510	22	T 60523	22	T 60529	22
T 60511	22	T 60524	22	T 60530	22
T 60519	22	T 60525	22	T 60531	22
T 60520	22	T 60526	22		
T 60521	22	T 60527	22		
T 60522	22	T 60528	22		

All the work was performed on Mining Claim (s) All Field Twp.

(In the case of geological and/or geophysical survey (s) where more than 18 claims are involved attach a schedule)

READ CAREFULLY: THE FOLLOWING INFORMATION IS REQUIRED BY THE MINING RECORDER.

For Manual Work, Stripping or Opening up of Mines, Sinking Shafts or Other Actual Mining Operations – Names and addresses of the men who performed the work and the dates and hours of their employment.
For Diamond and other Core Drilling - Footage, No. and angle of holes and diameter of core. Name and address of owner or operator of drill. Dates when drilling was done. Signed core log and sketch in duplicate.
For Compressed Air or Other Power Driven or Mechanical Equipment
Type of drill or equipment. Names and addresses of men engaged in operating equipment and the dates and hours of their employment.
For Power Stripping - Type of equipment. Name and address of owner or operator. Amount expended. Dates on which work was done. Proof of actual cost must be submitted within 30 days of recording.
With each of the above types of work sketches are required to show the location and extent of the work in relation to the nearest claim post. In the case of diamond or other core drilling the sketch must be submitted in duplicate.
For Geological and Geophysical Survey - The names and addresses of men employed as well as dates. Type of instrument used in the case of geophysical survey. Reports and maps in duplicate must be filed with the Minister within 60 days of recording.
For Land Survey - the name and address of Ontario Land surveyor.

The Required Information is as Follows: (Attach a list if this space is insufficient)

Date September 26th, 1969

H.D. McLeod
Signature of ~~Recorded Holder~~ or Agent

THE PENALTY FOR MAKING A FALSE STATEMENT IN THIS REPORT AND/OR CERTIFICATE IS $500. OR SIX MONTHS IMPRISONMENT OR BOTH

The Mining Act
Certificate Verifying Report of Work

H.D. McLeod

73 Norman Avenue, North Bay, Ontario.
(Post Office Address)

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.

That the annexed report is true.

Dated 19 69

Signature

LANDER LAKE MINING DIV. RECEIVED SEP 30 1969 PM 1 2 3 4 5 6

T 60510
(T 60510)

63A.556

PROJECTS SECTION
TEL: 416-365-6918

ONTARIO
DEPARTMENT OF MINES
Mining Lands Branch

PARLIAMENT BUILDINGS
TORONTO 2, ONTARIO

January 7, 1970.

Mr. K. Clemiss,
Acting Mining Recorder,
118 Cedar Street,
Sudbury, Ontario.

Dear Sir:

Re: Mining Claim No. T 60510 et al,
Field Township

The geological assessment work credits as shown on the attached list have been approved as of the date above. Please inform the recorded holder and so indicate on your records.

Yours very truly,

Fred H. Matthews,
Supervisor.

/as

C.C. Geophysical Engineering & Surveys Ltd.,
2189 Algonquin Avenue,
North Bay, Ontario,
Attn: H.D. McLeod.

C.C. Resident Geologist,
Dept. of Mines,
1349 La Salle Blvd.,
Sudbury, Ontario.

FIELD
(M-808) TWP.

McDonell, A

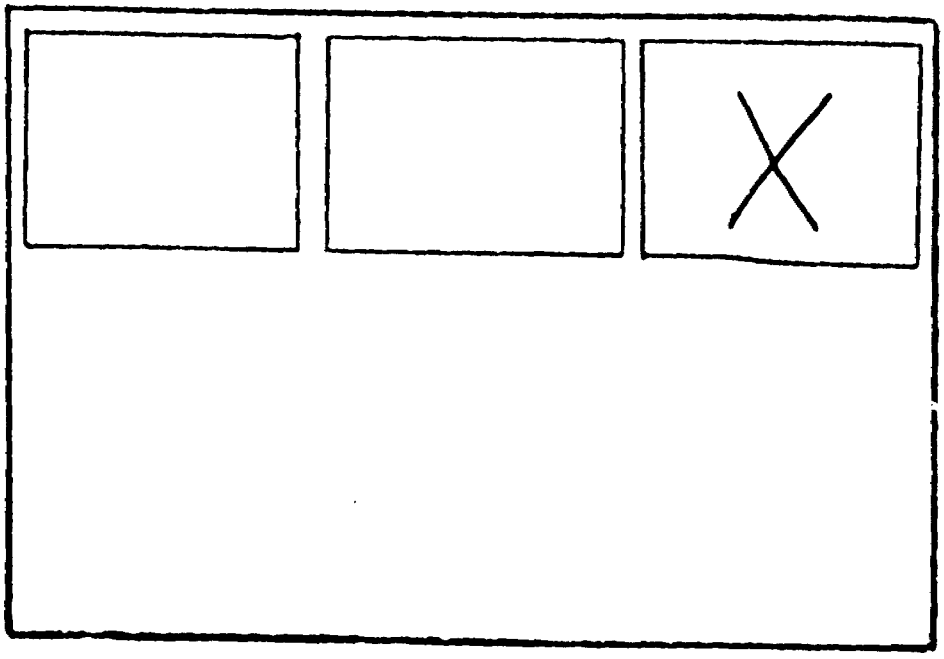
1" = 40 chains

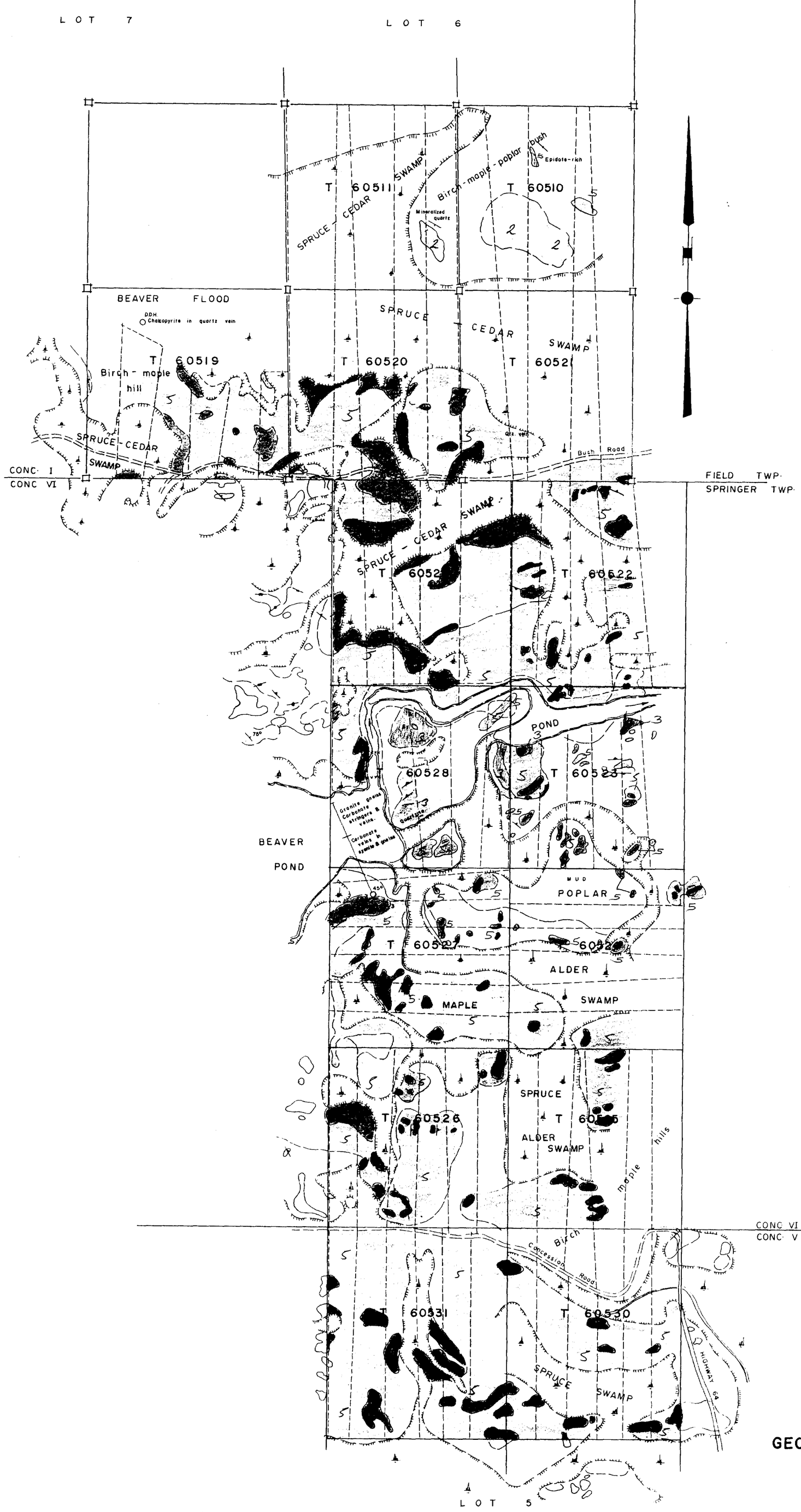
Springer Twp.

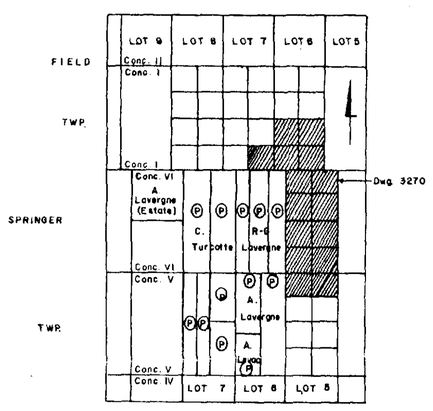
SEE ACCOMPANYING MAP(S) IDENTIFIED AS

FIELD -0010-B1 #1

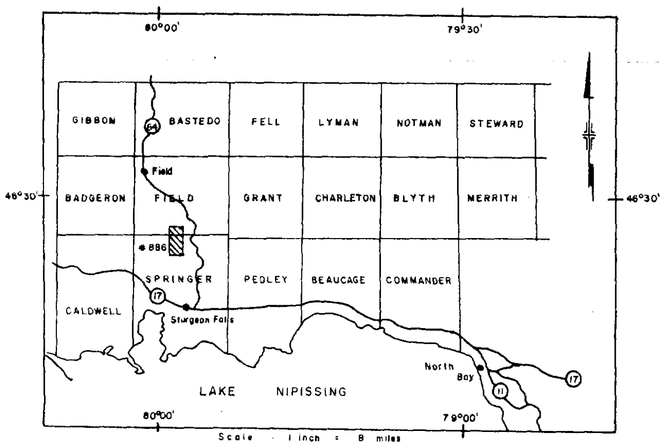
LOCATED IN THE MAP CHANNEL IN THE FOLLOWING SEQUENCE (X)







LOCATION MAP
SHOWING
STURGEON FALLS



1 — Carbonate vein zones

2 — Mineralized "Syenite" or Granite

3 — Unmineralized Granite or Syenite

4 — Granite (Massive)

5 — Gneisses

— Boundary of pond or stream

— Swamp Boundary : presumed, defined

— Bushroad

— Highway

— Beaverdam

— Strike & dip of gneissosity, inclined

" " " " " , vertical

— Strike & dip of bedding or banding

— Vertical
— Inclined — Strike & dip jointing

— Traverse

Geology done by H.D. McLeod and P.P. Master

FIELD - 0010-B1 #1

0010-B1

GEOLOGICAL MAP

OF PART OF

LAVERGNE RARE EARTH PROPERTY

IN

SPRINGER TOWNSHIP

PROVINCE OF ONTARIO

FOR

GEOPHYSICAL ENGINEERING AND SURVEYS LTD.

BY

GEOPHYSICAL ENGINEERING AND SURVEYS LTD.

400' 200' 0 400' 800'

REGISTERED PROFESSIONAL ENGINEER
MINING
H. D. McLEOD
PROVINCE OF ONTARIO

H.D. McLeod P.Eng.

Drawn by: bgh Checked	Oct. 1969	Job 886	N.T.S: 31L5	DWG 3270

1/200