

REPORT ON GEOPHYSICAL SURVEYS,  
TWIN LAKES AND ADJOINING CLAIMS GROUPS,  
GARRISON TOWNSHIP  
LAIDER LAKE MINING DIVISION  
PROVINCE OF ONTARIO.

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Introduction:

The following report describes the geophysical surveys recently completed on Canadian Johns-Manville Company Limited claims located in Garrison Township, Larder Lake Mining Division, Province of Ontario.

Cutting and chaining of picket lines were contracted to Jean Alix Company Limited of Val d'Or, Quebec. Picket lines, spaced at 300 foot intervals, were cut at right angles to an east-west trending base line. Pickets were fixed every 50 feet along these offset lines by chainage.

Magnetometer surveying was conducted by T. Cox, geophysical operator and fieldman with Canadian Johns-Manville Company Limited, using a Jalander type instrument. H. Brown assisted during the course of this program. Readings were recorded at 50 foot intervals along the offset lines. The results of this survey are shown on the accompanying "Geomagnetic Contour Plans" on a scale of one inch equals 200 feet.

Electromagnetic surveying was carried out by R. A. Haley, geophysical operator with this Company, using a MoPhar Vertical loop reconnaissance unit. G. Leavoy and T. McChristie alternated as assistants during the course of this work. Electromagnetic readings were recorded at 100 foot intervals along the offset lines and the results of this survey are shown on the accompanying "Electromagnetic Profile Plans" on a scale of one inch equals 200 feet.

Supervision and interpretation of this work were the responsibility of the writer, Regional Geologist with Canadian Johns-Manville Company Limited at Matheson, Ontario.

Property:

The claims surveyed are situated in the northwest part of Garrison ship and are divided into three groups as shown below: -

Property: (cont'd)

Twin Lakes Group - L-88823 - 37 inclusive - 15 claims

Main Extension Group II - L-84870 - 72 - 74 - 80 inclusive - 9 claims

Collins Lake Group II - L-84871 - 73 - 2 claims.

A total of 26 claims, comprising approximately 1,040 acres, was surveyed during the course of this work.

Locations of the three groups of claims are shown on the accompanying "Key Map" on a scale of one inch equals 1320 feet.

Location and Accessibility:

The Canadian Johns-Manville claims are located in the northwest part of Garrison Township, Larder Lake Mining Division, Province of Ontario. Michaud Township bounds the Group to the west; Company patented claims to the north; Collins Lake Group I claims to the southeast and Highway #101 crosses the south part of the claims. The main access road from Highway #101 to the Garrison camps on the patented claims crosses the east part of the group. Consequently, ready access by car or truck is provided to this block of claims.

Topography:

An extensive area of muskeg covers a large part of the claims group. However, sand dunes of low relief occur scattered over the property and are most pronounced along the east and south sides. Several low volcanic outcrops were noted in the northwest section of the claims.

Drainage is to the north by an unnamed creek and its tributaries. This water system has its source at Twin Lakes.

Timber consists of scrub spruce, with cedar and alders in the muskeg and other low-lying sections of the claims. Pines, poplar and birch occur on the ridges and dunes.

### Previous Work:

Garrison Township was mapped in detail by J. Satterly during 1947. A report and a geological plan, on a scale of 1" = 1000 feet, were published in the Fifty-Eighth Annual Report on the Ontario Department of Mines. (Vol. LVIII, Part IV, 1949).

Geological mapping was also carried out in the area by G. W. Knight, A. G. Burrows, P. E. Hopkins and A. L. Parsons and a report entitled "Abitibi - Night Hawk Gold Area" was published in 1919 by the Ontario Department of Mines. In 1924 T. L. Oledhill re-examined the Township as part of a survey of the Lightning River Gold Area. This data was published by the Department in 1925.

There was considerable exploration activity in Garrison Township during the 1940's with most of the work being concentrated along the Destor-Peroupine Fault Zone where erratic gold values were encountered. Canadian Johns-Manville Company Limited commenced work in this Township during the early 1950's and as a result of the discovery of chrysotile fibre mineralization, claims have been acquired over the ultrabasic intrusives as same were allowed to lapse. The claims surveyed occur along the south contact of the main Garrison ultrabasic sill and were acquired to test for parallel intrusives and/or sulphide mineralization.

### Line Cutting and Chaining:

A base line was started from a point on the Michaud - Garrison Townships boundary at 42+35 feet south of the No. 3 post of patented mining claim L-55337. This base line was cut to the east for a length of 81+00 feet. Right angled offset lines were established at 300 foot intervals along the base line and were cut north and south to the boundaries of the claims group. Pickets with numbered locations were fixed at 50 foot intervals along the offset lines by chaining. All the lines were tied in along the north and south claim boundaries by chaining to increase the accuracy of the plans.

Line Cutting and Chaining (cont'd)

Line cutting and chaining were contracted to J. Alix Company Limit Val d'Or, Quebec and were carried out during the period July 8th - 26th inclus 1965. A total of 30.8 miles of line was out and chained during the course of program.

Magnetometer Survey:

A magnetometer survey was conducted over the Garrison Township cla by T. Cox, geophysical operator and fieldman with Canadian Johns-Manville Comp Limited. H. Brown assisted during the course of this work which was carried o during the period January 3rd - 31st, 1966.

Magnetic readings were recorded using a Jalander type instrument h sensitivities of 10, 30 and 100 gammas per division for scales 1, 2 and 3 resp ively. This instrument was checked on Munro Mine Base Station No. 2 (Munro -E Hill) and a correction was applied to Jalander readings so that a gamma value 1220 corresponds to an absolute value of  $57,599 \pm 15$  gammas as established at (Government Magnetic Base Station located at Matheson.

On the claims surveyed, base control stations were established as ed below: -

- B. C. S. No. 1 - 29+35 feet south of the Base line on line 45+00E - 1140
- B. C. S. No. 2 - on the base line at 27+00E - 830 gammas
- B. C. S. No. 3 - on the base line at 9+00E - 920 gammas
- B. C. S. No. 4 - on the base line at 54+00E - 740 gammas
- B. C. S. No. 5 - on the base line at 69+00E - 650 gammas

During the course of the survey, base control stations were observ at regular intervals (four readings per day) as a check on the working conditi the instrument and to record the daily diurnal variation. Stations were space 25 foot intervals along the picket lines and a total of 2,788 readings was rec on the claims group.

The results of the survey are depicted on the accompanying "Geo-Ma Contour Plans" on a scale of one inch equals 200 feet. Contour lines of equal

Magnetometer Survey: (cont'd)

magnetic intensity have been drawn at 500 gamma intervals from 500 to 2000 gammas.

Electromagnetic Survey:

An electromagnetic survey was conducted over the Garrison Township claims by R. A. Haley, geophysical operator with Canadian Johns-Marville Company Limited. G. Leavoy and T. McChristie alternated as assistants during the course of this work. The survey was carried out during the period January 3rd - 31st, inclusive, 1966.

Readings were recorded using a MoPhar vertical loop reconnaissance electromagnetic unit on a frequency of 1,000 cycles per second. The MoPhar unit is suitable for use as a reconnaissance and relatively detail electromagnetic unit, employing three separate configurations for different geological conditions. In this case the transmitter was held vertically at a distance of 400 feet from the receiver; the receiver was tilted about the axis joining the two coils until a null was observed. This configuration is the most suitable for steeply dipping conductors, giving a minimum response from flat-lying overburden, and is unaffected by elevation differences.

The transmitter and receiver were moved on separate lines, 400 feet apart and readings were recorded at 100 foot intervals. Under these operating conditions, a depth penetration of 200 feet would be attained. Null widths which were extremely low were recorded at each station but have not been shown on the accompanying plans.

Walki-Talki units were used by operators of the transmitting and receiving coils for position control during the survey. A total of 1410 stations was recorded on the Twin Lakes and adjoining claims.

The results of the MoPhar survey are shown on the accompanying "Electromagnetic Profile Plans" on a scale of one inch equals 200 feet.

### General Geology

The geology of the area Garrison Township was mapped in detail by J. Satterly and assistants and the results are shown on Map No. 1949 - 1 which accompanies the geological report on this Township issued by the Ontario Department of Mines. In order to show the general geology of the region discussed in this report, the following "Table of Formations" has been included and was taken directly from the Fifty-Eighth Annual Report of the Ontario Department of Mines being Vol. LVIII, Part IV, 1949, entitled "Geology of Garrison Township" and compiled by J. Satterly.

### Table of Formations

#### CEENOZOIC

Recent:

Peat

Pleistocene:

Sand, gravel, boulders; boulder clay; varved clay.

Great unconformity

#### PRECAMBRIAN

Keweenaw (?):

Quartz diabase, diabase, olivine diabase.

Intrusive contact

Matachewan (?):

Quartz diabase, diabase.

Intrusive contact

Algoman (?):

Granite, syenite, feldspar porphyry, quartz-feldspar porphyry, felsite, lamprophyre

Intrusive contact

Haileyburian (?):

Diorite, gabbro, diabase, peridotite, dunite, serpentine.

Intrusive contact.

Volcanics:

{ Rhyolite, fragmental lava.  
{ Andesite, basalt; pillow lava, diabasic lava, spherulitic lava, fragmental lava; tuff and chert; talc-chlorite schist.

Faulted contact

Sediments:

Greywacke, arkose, quartzite, argillite, conglomerate, iron formation, chlorite schist.

### General Geology:

On the claims surveyed a few scattered outcrops of andesitic volcanics have been noted in the northwest part of Sheet G-6. These outcrops are also shown on Satterly's 1000 scale geological plan of the Township. The major portion of the property is overburden-covered and on the basis of geophysical and limited diamond drilling data has been assumed to be entirely underlain by intermediate volcanic rocks with narrow acidic bands. Feldspar porphyry and diabase dikes cut these volcanic formations.

To the north of the group on Company patented claims, an intrusive sill-like body of basic-ultrabasic rocks extends in an easterly direction across Garrison Township. This complex pinches and swells (100 feet to one-half mile) along strike, dips from 45° - 65° north and is offset by numerous cross structures. Chrysotile fibre mineralization occurs in the intensely serpentized peridotite of this complex. The Destor-Peroupine fault zone is situated to the south of the map area and is comprised of intensely altered sediments and interbanded volcanics, ranging in width from 500 to 2500 feet.

### Interpretation of Magnetometer Surveys:

The interpretation has been based upon a study of the contoured magnetometer plans, diamond drilling, other geophysical and geological data on the Twin Lakes and adjoining claims, J. Satterly's 1000 scale geological plan and report of Garrison Township and aerial photographs.

On the Twin Lakes and adjoining claims covered in this report the magnetic readings are relatively low in value and uniform throughout. Minor exceptions occur in the northwest and southeast parts of the claims. In general, the magnetic readings range in value from 300 to 2000 gammas, however, the majority are within the limits of 500 and 900 gammas. As the claims are indicated to be underlain by intermediate volcanic rocks having uniform magnetic properties and as tests show the central part of the map area to have overburden depths - mainly sand - exceeding 200 feet, the variations in the magnetic intensity appear to be

Interpretation of Magnetometer Survey: (cont'd)

a function of the overburden depth. Magnetic readings in the northwest part of the claims attain a maximum value of 2110 gammas over volcanic outcrops. In the north-central and southeast parts of the group values exceed 1000 gammas and these areas are adjacent to outcroppings of intermediate volcanic rocks. As the greater part of the property is extensively covered with thick deposits of sand, the results of the magnetometer survey are patternless and of little value.

Several cross structures offset the basic-ultrabasic intrusives to the north and four of these have been shown on the accompanying plans. The most easterly fault is indicated on a magnetic-topographic basis on the claims surveyed as well as by the geology to the north. These structures are closely parallel and strike in a northeasterly direction.

Interpretation of Electromagnetic Survey:

The interpretation has been based upon a study of the "Electromagnetic Profile Plans" and other geophysical surveys on adjoining claims groups.

On the Twin Lakes Group the results of the vertical loop electromagnetic survey are extremely weak and uniform. The conductors shown are all in the weak classification and appear to be of little interest. In the south part of the claims on Sheet No. 11, the conductors occur in a more shallow overburden area and may represent minor disseminated sulphide mineralization. To the north on Sheet No. 6, the conductors occur where overburden depths are not known to exceed 200 feet. In consequence these zones are of no economic importance. Readings recorded over the rest of the claims group are so flat and uniform that same require no further comment.



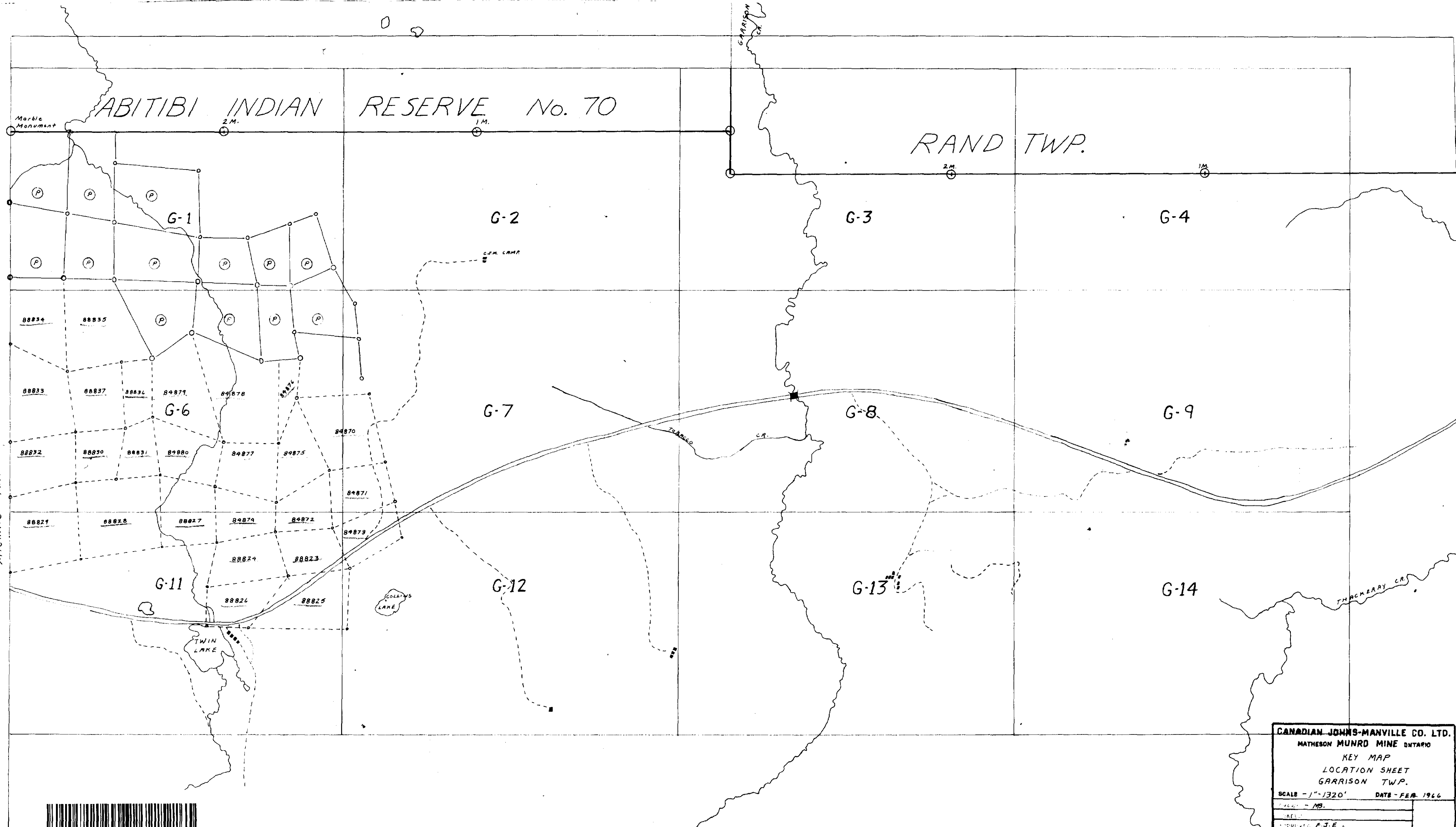
Conclusions and Recommendations:

Geophysical surveys - both magnetic and electromagnetic - have failed to reveal any anomalies or conducting zones of interest on the Garrison Township claims. In consequence no further exploration work is warranted for this property at this time.

*F. J. Eveleigh*

Submitted: February 4th, 1966

by: F. J. Eveleigh.



CANADIAN JOHNS-MANVILLE CO. LTD.  
 MATHESON MUNRO MINE ONTARIO  
 KEY MAP  
 LOCATION SHEET  
 GARRISON TWP.  
 SCALE - 1" = 1320' DATE - FEB. 1966  
 DRAWN BY - M.B.  
 CHECKED BY - F.J.E.

*F. J. E.*



32D125W0170 63.1874 GARRISON

## GEOL. LEGEND

- 6 Quartz diabase, diabase.
- 5 Granite 5a, Syenite 5b, Feldspar porphyry 5c, Quartz feldspar 5d, Felsite 5e, Lamprophyre 5f.
- 4 Diorite 4a, Gabbro diabase 4b,
- 4c Peridotite & Dunite (Serpentinized) (Asb. - Asbestos recognized)
- 4d Pyroxenite 4d.
- 3 Rhyolite fragmental lava
- 2 Andesite basalt pillow lava 2a, Diabasic lava 2b, Spherulitic lava 2c, Fragmental lava 2d, Tuff & chert 2e, Talc-chlorite schist 2f.
- 1 Greywacke 1a, Arkose 1b, Quartzite 1c, Argillite or shale 1d, Conglomerate 1e, Iron formation 1f, Chlorite schist 1g.
- Cb Carbonate rock
- 

## GEO-MAG SYMBOLS

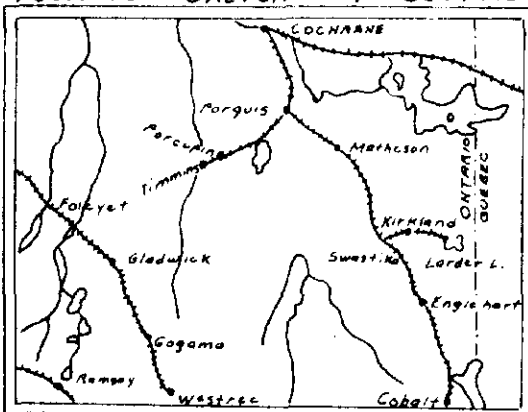
- 500  
1000 Contour interval 500 gammas
- BCS#1 Magnetic Base Control Station
- Geological Contact  
G- Geological  
M- Magnetic  
T- Topographic
- Fault Zone



32D12SW0170 63.1874 GARRISON

210

LOCATION SKETCH - 1" = 50 Miles



## TOPO-SYMBOLS

- Outcrop
- Higher ground
- Scarp
- Muskeg or Swamp
- Creek
- Drill hole
- Bush road
- Direction in which lava flows face, indicated by shape of pillows
- 
- 

## ELECTRO-MAG SYMBOLS

- Scale - 40 units = 1 inch
- Conducting Zone - S = Strong, M = Medium, W = Weak
- RONKA H.L. UNIT
- In phase curve
- Out phase curve
- NPCS Not proper coil spacing
- East - Positive. West - Negative

## M<sup>c</sup>PHAR V.L. UNIT

- Dip angle profile
- North & East - Positive
- South & West - Negative

Geol. Survey by -  
Mag. Survey by - T. Cox & H. Brown  
E.M. Survey by - R. A. Haley &  
G. Leavoy, T. McChristie.

CANADIAN JOHNS-MANVILLE CO. LTD.  
MATHESON MUNRO MINE ONTARIO

LEGEND SHEET  
PROVINCE OF ONTARIO

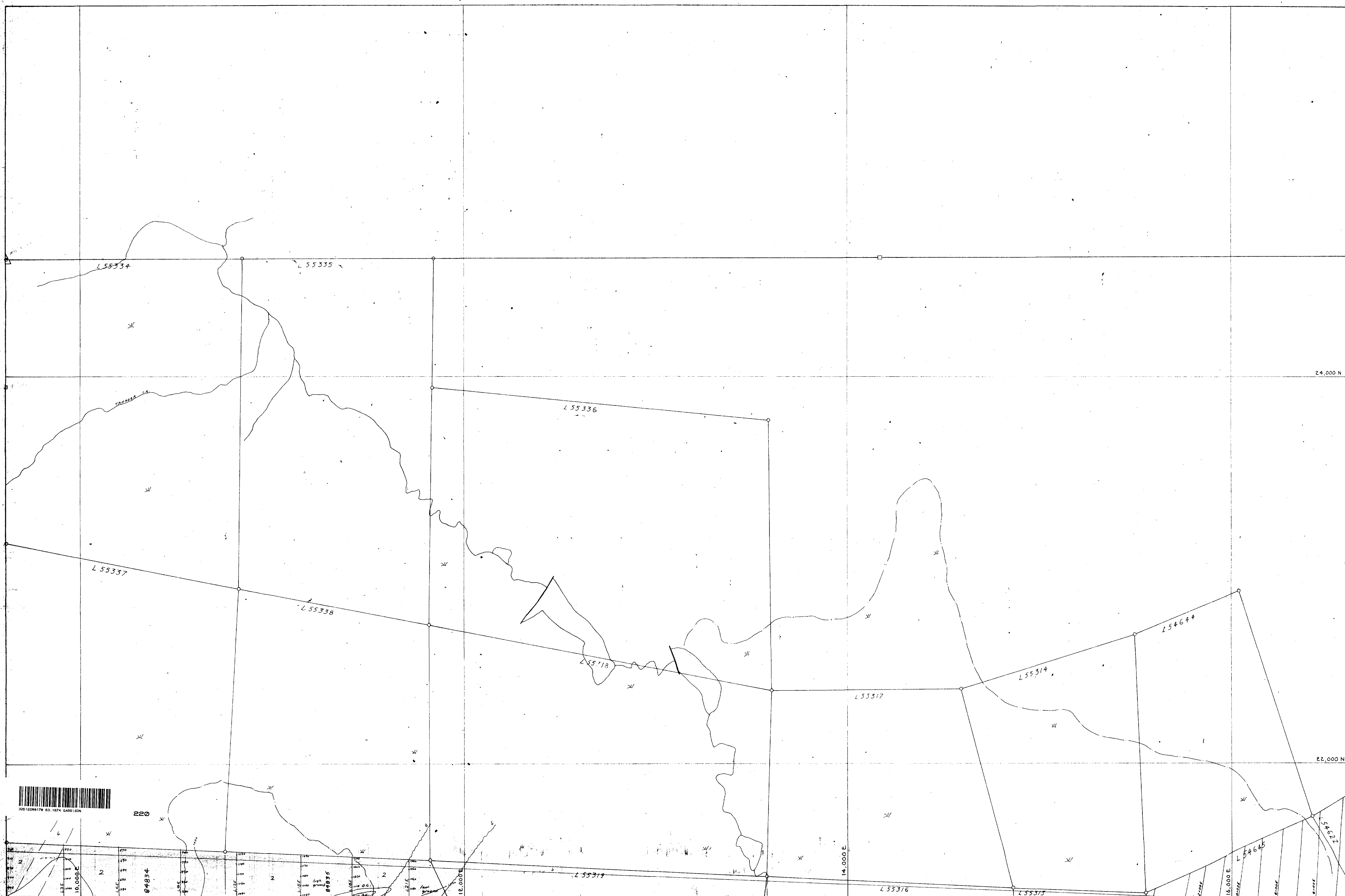
SCALE DATE

DRAWN - MB.

TRACED

APPROVED - F.J.E.

*F. J. E.*



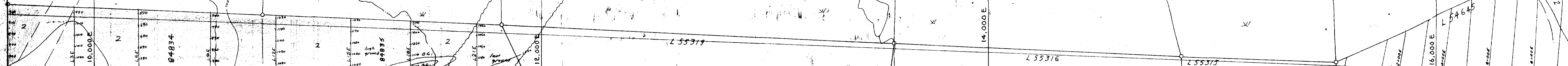
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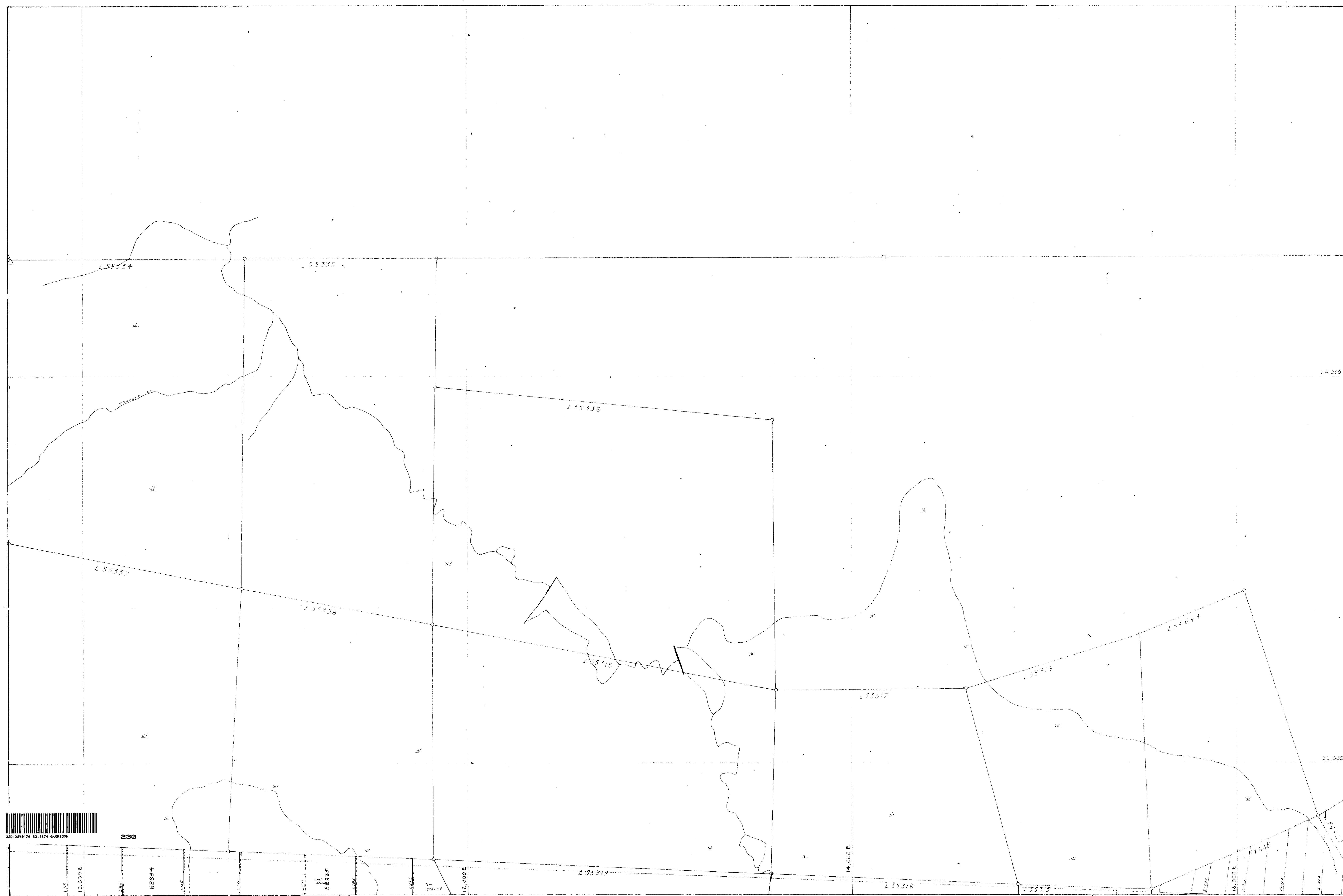
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320 12296178 83 1074 GARRISON

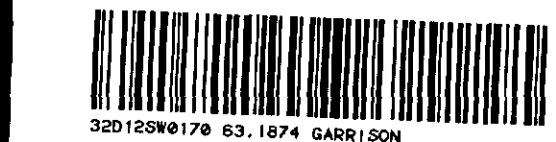
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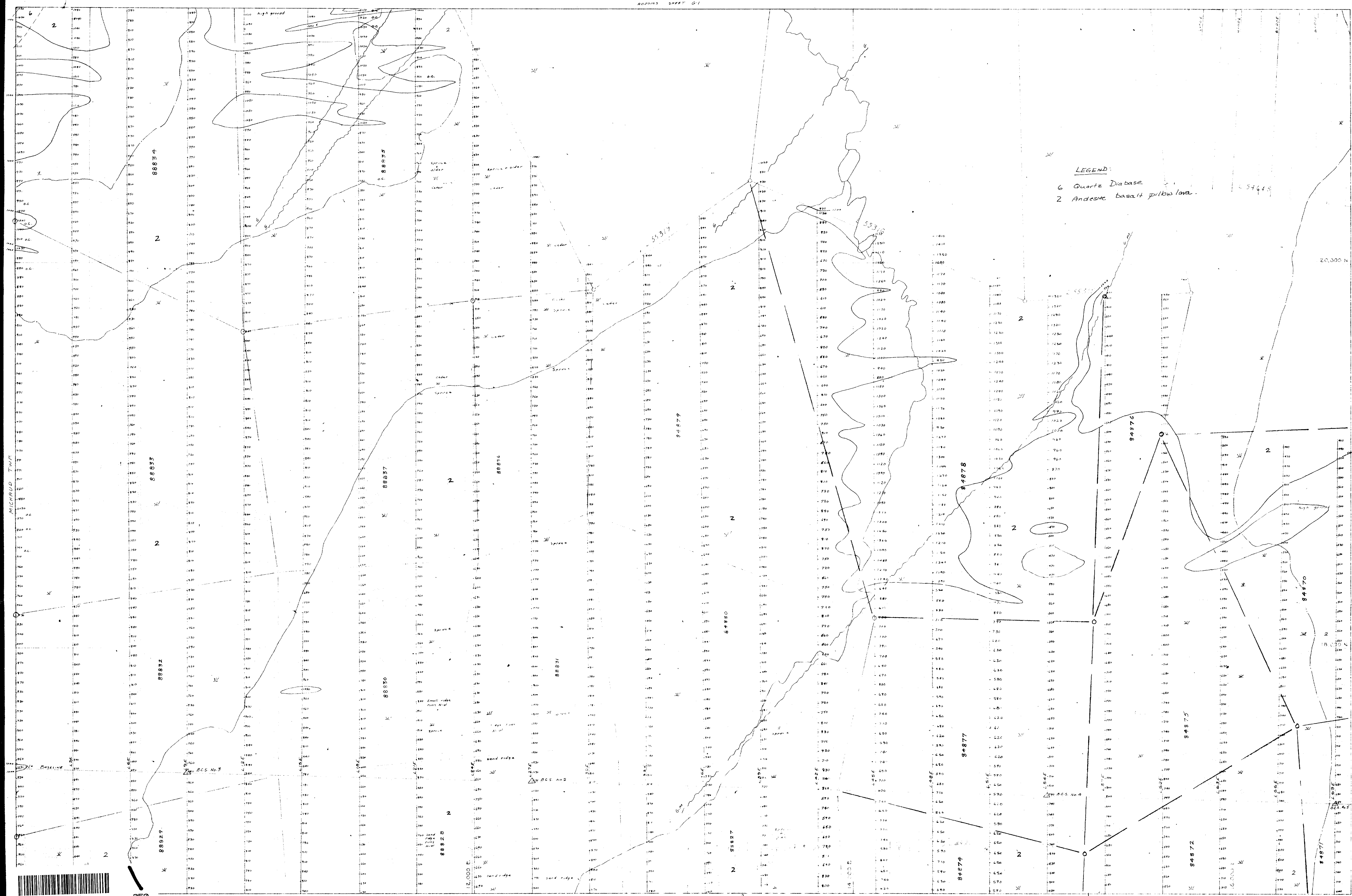


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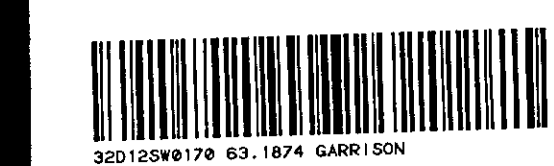
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LEGEND:  
 6 Quartz Diabase  
 2 Andesitic basalt pillow lava.





1" = 200'

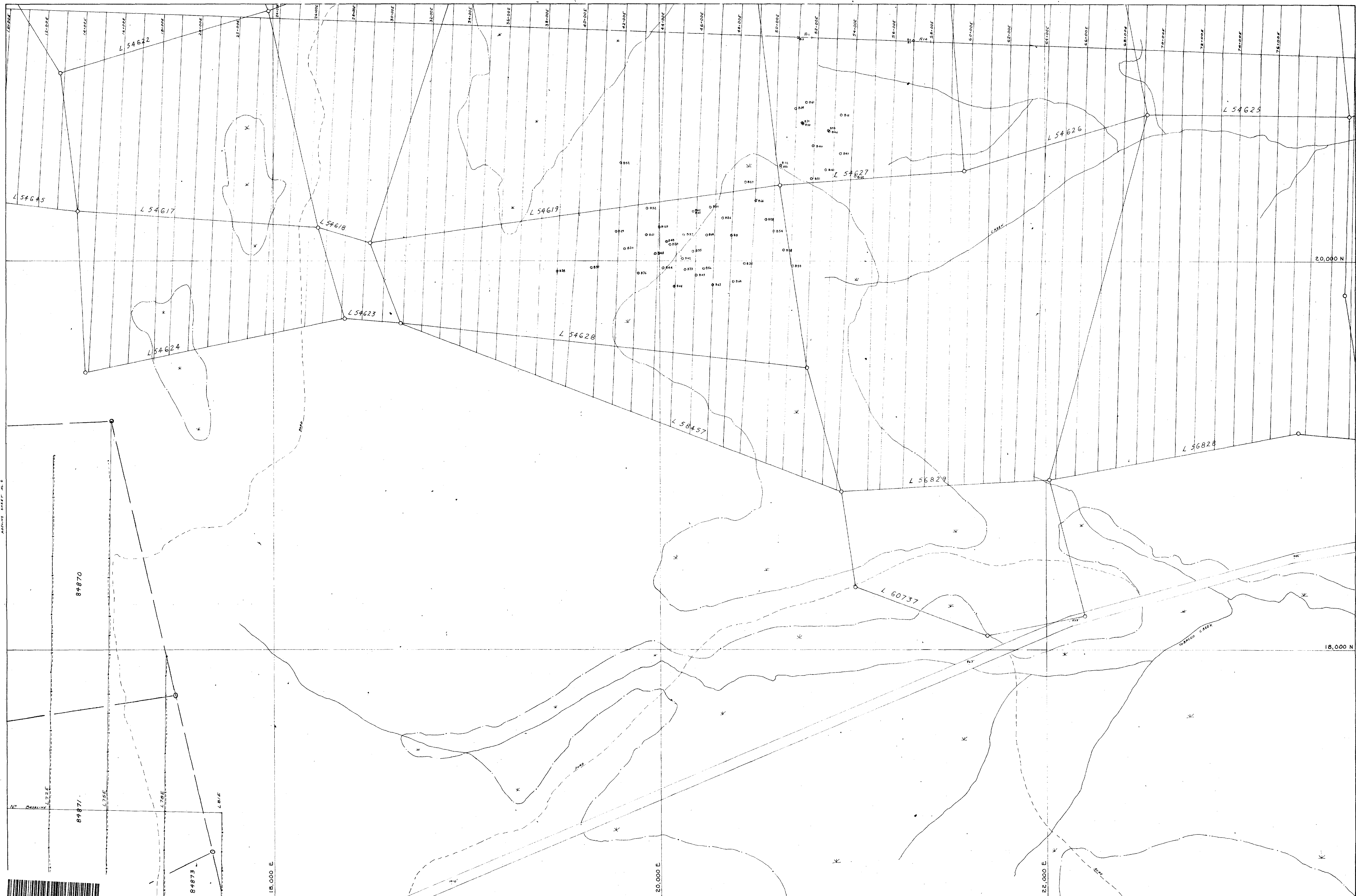


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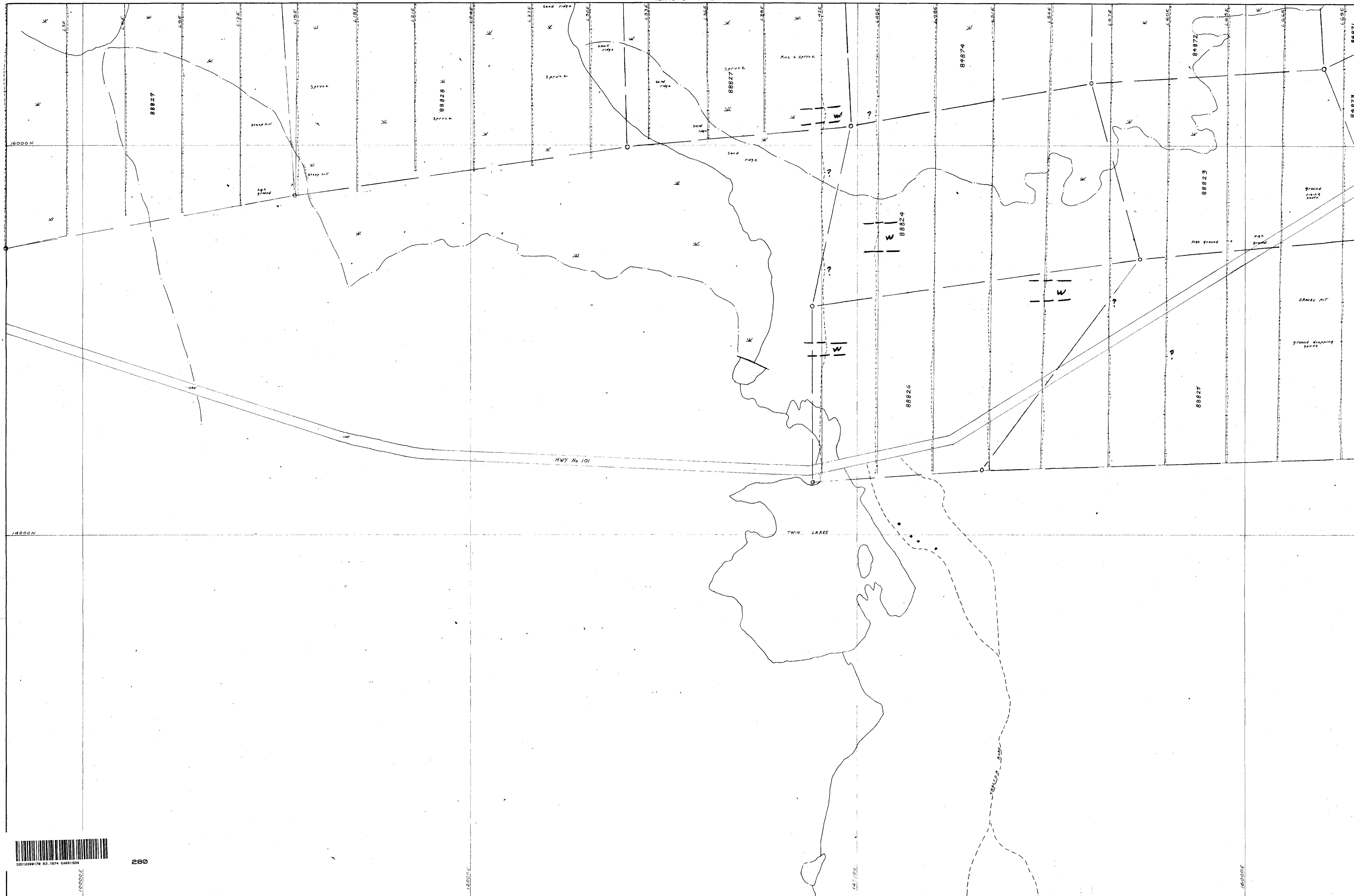
Garrison Twp Group - plan showing GEO-MAGNETIC CONTOURS

CANADIAN JOHNS-MANVILLE CO. LTD. Sheet No. 7

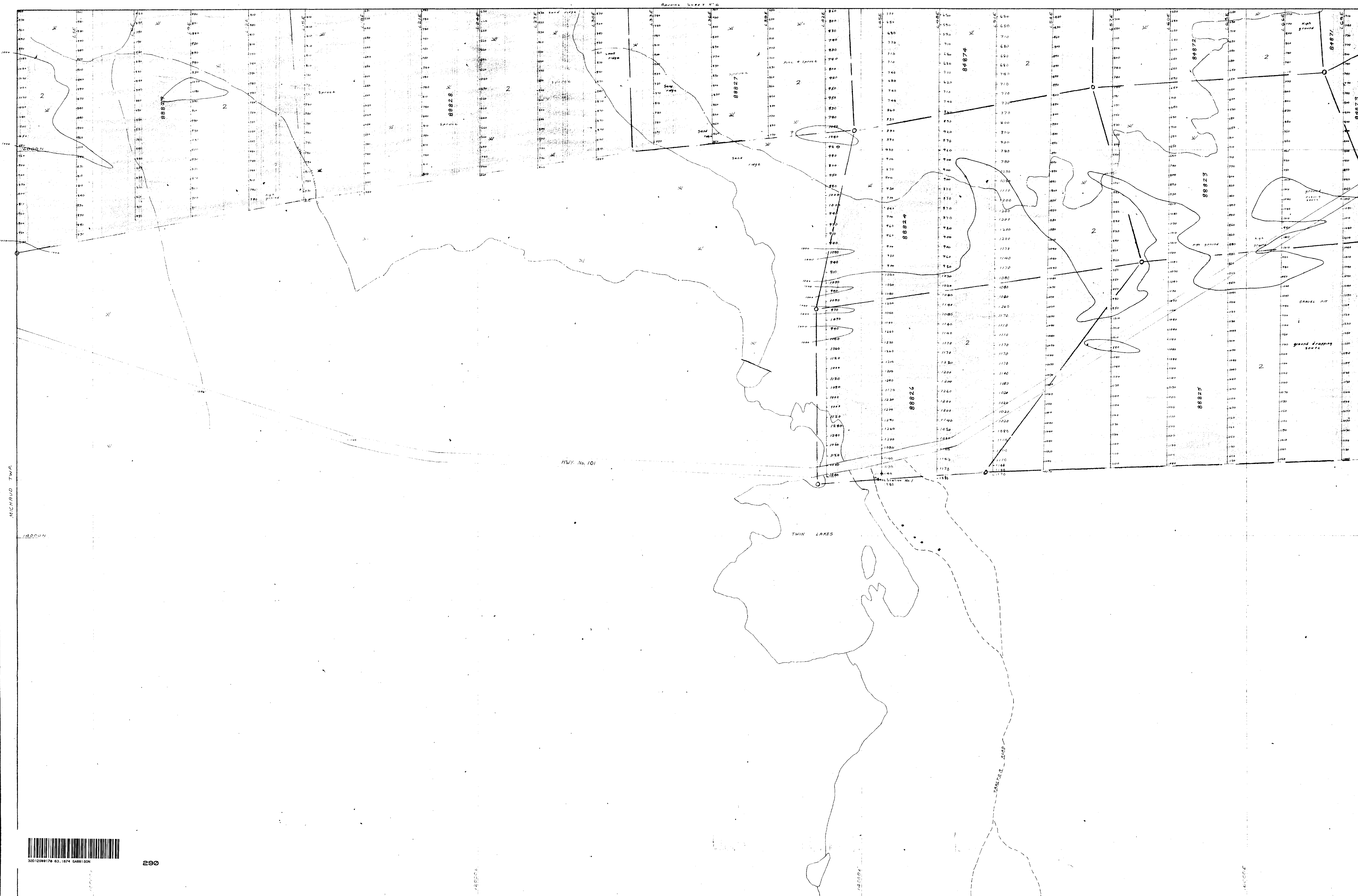




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280



MICHAUD TWP.

14200N

HWY. No. 101

TWIN LAKES



280

1" = 200'

GARRISON TWP. PLAN SHOWING G.F.D. MAGNETIC CONTOURS

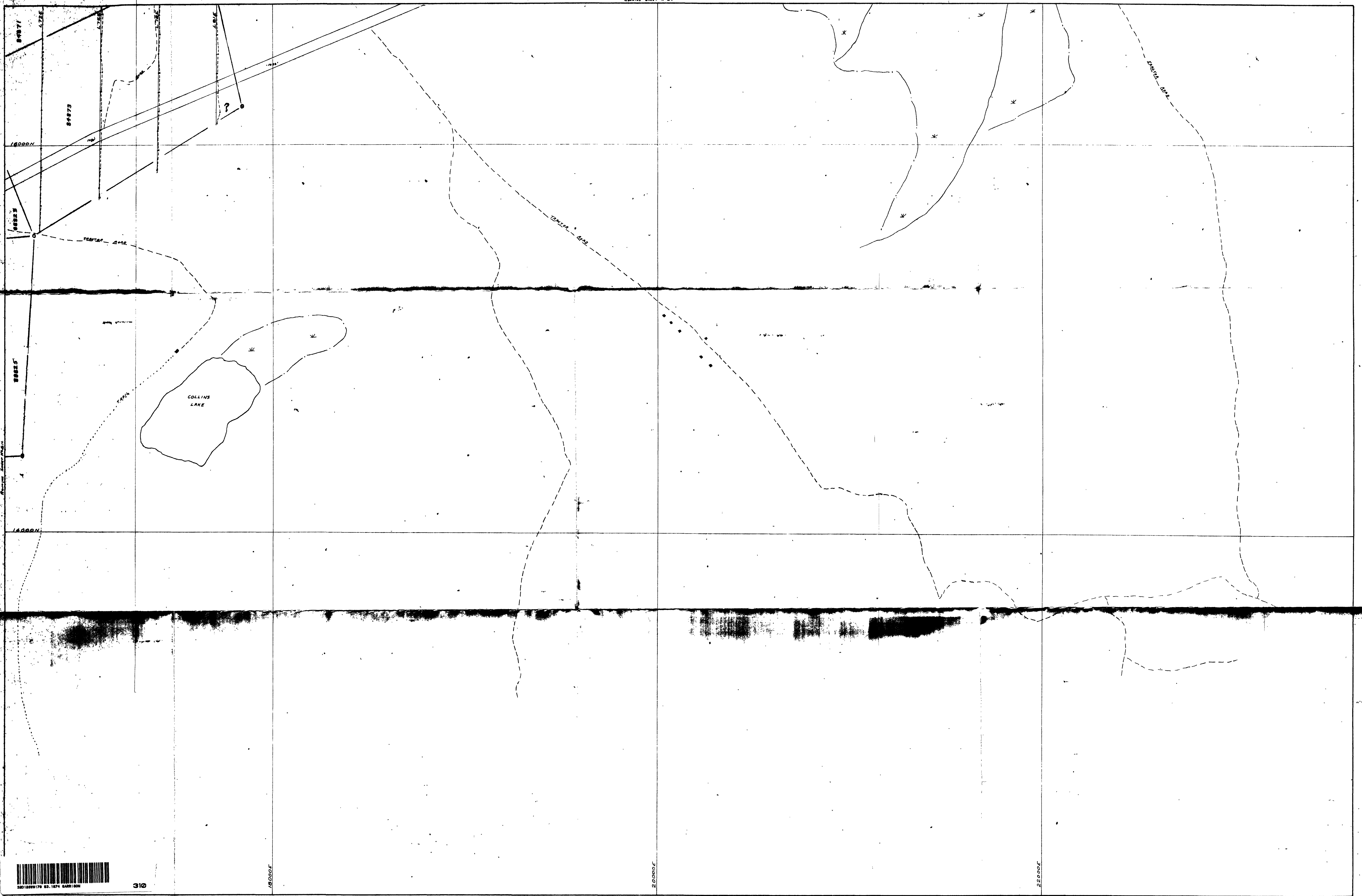
CANADIAN JOHNS-MANVILLE CO. LTD. SHEET N° - G11



300

GARRISON TWR PLAN SHOWING GEO-MAGNETIC CONTOURS

Abel CANADIAN JOHNS-MANVILLE CO. LTD. SHEET N°-G 12



310

1" = 200'

GARRISON TWA PLAN SHOWING ELECTRO-MAGNETIC PROFILES

Handwritten signature and text: CANADIAN JOHNS-MANVILLE CO. LTD. SHEET N-612