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SUPPLEMENT TO  
REPORT ON GEOMAGNETIC AND GEOLOGICAL SURVEYS  
OF  
WRIGHT HARGREAVES MINES PROPERTY  
ATIKWA LAKE AREA, KENO



52F05NE0056 63.318 ATIKWA LAKE (GRAPNEL)

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RESULTS OF THE GEOMAGNETIC SURVEY

The results of the magnetometer survey are shown on the accompanying geomagnetic contour map on which the contour lines represent lines of equal vertical magnetic intensity.

The magnetometer work was undertaken on the claims as it was found that the zones carrying copper and gold values on the adjoining Noranda property had a higher magnetic intensity than the surrounding rock and because areas of hornblende alteration, considered by the Noranda staff to be related to gold values, were also of higher magnetic susceptibility. At the time of the present survey, the Noranda staff were planning a very detailed magnetic survey across the main "central zone" which is largely exposed, to gather further information on the association of gold values and magnetometer readings. Our survey was not carried out over the east portion of the property where the geological examination had indicated the amphibolite to be an unfavourable host rock for sulphide solutions.

Magnetic intensity is not uniform over any rock type but is more so over the granite area than any other. The average value over granite is about 225 gammas with local highs and lows. The lensy nature of the greenstone inclusions in the granite

complicates the magnetic picture but a tentative geological contact between the main granite mass and the greenstone body has been indicated on the accompanying map.

The magnetic level of the greenstones would appear to be about 300 gammas but the main characteristic of the magnetic intensity of lavas is its extreme irregularity. This irregularity is due to several factors. Anomalies near the granite-greenstone contact are common and are due to the development of magnetite by thermal metamorphism. However, the chief cause of magnetic anomalies in the lavas is the development of rust zones trending in a northwesterly direction. This is clearly shown on the geomagnetic contour map where rust occurrences are indicated along with the anomaly zones. This association is consistent and of considerable importance in guiding development work on the property. An example of this is in claim K15450 where an anomaly with a peak value of 3056 gammas occurs on line 158 at 1100 east. This represents a portion of the widest rust zone found on the property. Almost all rusted zones are indicated by magnetic values from 300 to 2500 gammas above the general level of the andesites. Other highs are found in areas where no rust was observed and where these have any degree of continuity along the prevailing strike they warrant close examination.

In many places the amphibolite and diorite appear to merge and in part the amphibolite may be recrystallized andesite. Anomalies in amphibolite and recrystallized andesite are due to the development of magnetite. The diorite is variable in its magnetic properties and contacts can not be reliably detected by magnetic means. Anomalies in diorite are probably caused by

radio magnetite and have no economic significance.

It will be seen that the magnetic picture of the Wright Hargreaves claims is one of extreme variability. Without the great amount of outcrop the interpretation<sup>of</sup> magnetic results would be of little value in tracing contacts between the various rock types. However the rust zones do have a consistent and marked reflection in the magnetic results and it is believed that this is a most important feature in guiding subsequent exploration of the claims.

Respectfully submitted,

GARDINER, LOW and MORROW,

  
M. C. GARDINER.

Haileybury, Ontario,

September 18, 1952

MCG/M.



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## SUMMARY

Geological and geomagnetic surveys of the Wright Hargreaves property show that it possesses the most important structural and metamorphic features considered to be associated with gold and copper values in the Atikwa Lake area.

The geological mapping shows a large area of andesitic rocks to occur in the western part of the property, granite in the northeast claim, amphibolite in the eastern portion and diorite in the south central section.

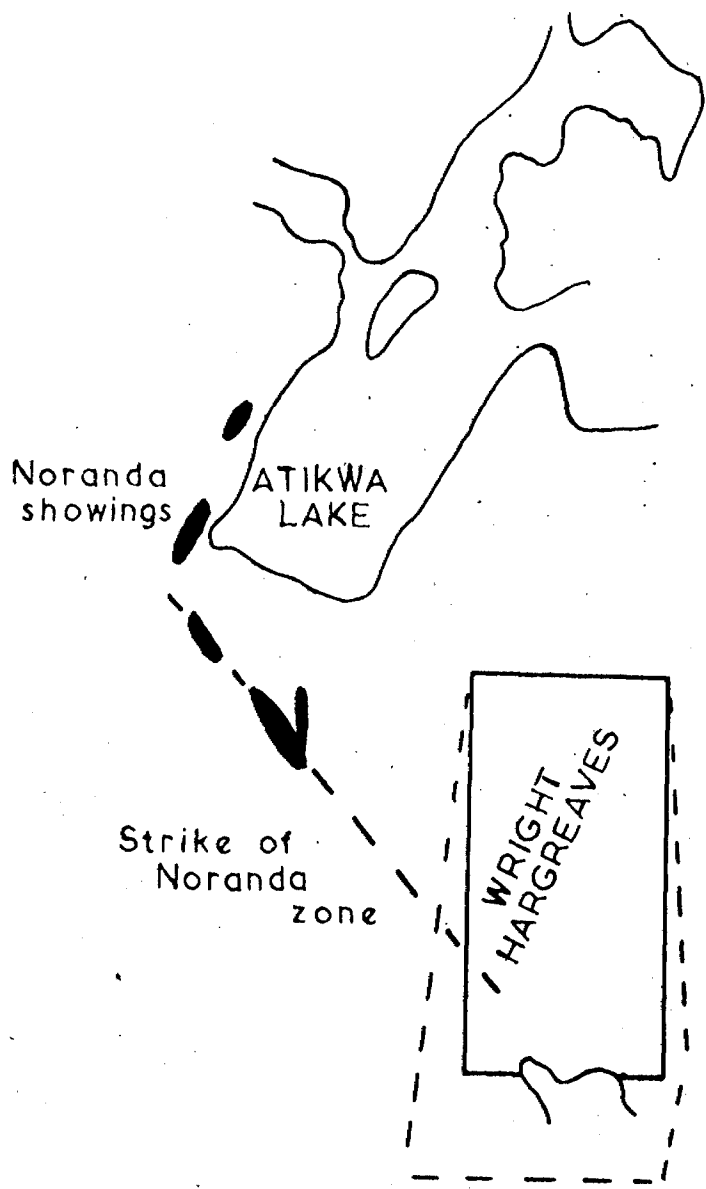
In view of these favourable relationships a program of surface work is proposed to develop the rusted zones and anomaly areas shown on the accompanying geological and geomagnetic maps.

## INTRODUCTION AND HISTORY OF AREA

The general area in the vicinity of Atikwa Lake has been subjected to spasmodic prospecting for a number of years, principally for gold. The present activity is the result of a discovery giving encouraging values in gold and copper by prospectors employed by Noranda Mines in the summer of 1951.

The original discovery was made about one quarter of a mile southwest of the bay of Atikwa Lake shown on the sketch map which is a part of this report. A zone showing fair development of rust in andesites was grab sampled by the prospectors and these samples returned low values in copper but two of the samples gave encouraging gold values. Further surface work revealed narrow zones of massive chalcopyrite which were confined to the rims of pillow lavas and a zone of brecciation. Further trenching and sampling was done on this discovery which is known locally as the "high grade copper zone" and which has an almost north-south strike on the sketch map. Surface work gave sufficient encouragement to warrant a diamond drilling program which showed this deposit to be shallow.

A self potential geophysical survey was carried out on the area around the discovery and an anomaly was found immediately to the west of the "high grade copper zone". This was drilled as it does not outcrop and a considerable body of copper-gold bearing material was developed. This body has a strike of north 25° west, has a westerly dip and a plunge to the northwest. No specific values were given but it is understood that drilling to depth has been very encouraging. It was mentioned that an area 100 feet by



SKETCH MAP SHOWING APPROXIMATE  
RELATIONSHIP OF NORANDA  
DEVELOPMENTS TO  
WRIGHT HARGREAVES CLAIMS

Scale  $\frac{1}{2}$  mile  
= 1 inch

200 feet would run 1.3% copper. This zone is referred to as the "low grade copper zone".

Proceeding to the north along the north 25° west strike a third body has been developed by drilling and intensive surface work which is important for its gold values. Here also the values occur in pillowed andesite which is most unlikely looking material and is rather unique in the fact that there is practically no quartz in association with the values. The development of coarse hornblende alteration and patches of white feldspars ranging in size from  $\frac{1}{8}$ " to  $1\frac{1}{4}$ " are regarded by the staff as most encouraging indications of gold values. It is their experience that when both types of alteration are found together with pillowed andesites the gold values are present. This deposit, known as the "central zone" is being drilled at the present time and bulk sampling by means of an adit is under consideration. It is reported that a body 28' by 200' would average 0.15 ozs. in gold.

Two other gold deposits have been found to the north and north east of the "central zone" but little information is available on these.

Over 18,000' of drilling has been done by Noranda and winter camps are being built at the present time. The sampling of the core has been complicated by the fact that it is most difficult to establish any agreement between the values in the split core and in the sludge samples. It is known that much visible gold is present and that this generally occurs with the hornblende.



It should be pointed out that the location of the various Noranda zones is fairly accurate with respect to the lake as they were located on a map by Noranda staff. However, the position of the Wright Hargreaves claims with respect to the lake and the extension of the Noranda zones is not known accurately. It is known that the Wright Hargreaves group is further south than shown on the claim map and that the claims have a much greater north south extent than four normal sized claims.

PROPERTY, LOCATION and ACCESS.

The Wright Hargreaves Mines group consists of 8 mining claims, being K15444 to K15451 inclusive located about one-half mile south of the west end of Atikwa Lake in the district of Kenora, Ontario. The claims are adjacent to the Noranda holdings on the west. These eight claims have an area exceeding 400 acres.

The claims are most readily reached by plane from Kenora which lies about 45 miles to the northwest. It may also be reached by water from Regina Bay which is about 30 miles southeast of Kenora on highway No. 70. The water route is by Regina Bay, Dogpaw Lake and Caviar Lake. Small boats can travel this route with one short portage on which a tractor is available to take the loaded boats. At the end of the water route there is a 4 mile portage into Atikwa Lake on which there is a truck and a tractor. The charge for the longer portage is \$5.00 per trip.

SURVEY PROCEDURE

A north-south base line was run from a central point on the north boundary to Turtle Lake in the south part of the claims.

Two supplementary base lines were run down either side of Turtle Lake and east-west traverse lines at 300 foot intervals were turned off all three base lines and extended to the limits of the claim group. Pickets were placed every 100 feet on base lines and traverse lines.

Using an Askania vertical variometer, observations of vertical magnetic intensity were made along base lines and picket lines with a maximum spacing of 100 feet. In important sections, intermediate readings were taken. Readings were plotted in gammas, a unit of magnetic field intensity approximately equal to 1/50,000th. of the earth's total vertical field and the results are shown as a magnetic contour map.

Rock outcrops were mapped from the nearest chainage stake on the picket lines by pace and compass. In mapping, particular attention was given to the various types of alteration and structures believed to be associated with gold and copper values on the Noranda ground.

#### REGIONAL GEOLOGY

Reconnaissance geological mapping of the general area was carried out by E. M. Burwash<sup>1</sup>. An extensive series of volcanic rocks is shown by Burwash to lie to the west of the Wright Hargreaves claim group with the red granite or biotite granite contact tentatively drawn almost north south through the Wright Hargreaves claims. In the area of Atikwa Lake, Burwash noted a hornblende granite or quartz diorite which he established

1. Burwash, E.M. "Geology of the Kakagi Lake Area"  
Ontario Department of Mines - Vol. XLII, Part IV, 1933.

as older than the red granite.

Numerous varieties of intrusives and various classifications of the Keewatin are discussed by Burwash but only those that have a bearing on the geology of the Wright Hargreaves claims will be considered here.

### GEOLOGY OF THE WRIGHT HARGREAVES CLAIMS

Since magnetic prospecting is, in general, simply an extension of geological methods, no separate discussion will be made of the magnetic results. Rather, in the interests of brevity and clarity, the magnetic data and geological data and the inferences drawn jointly from them will be discussed together.

#### Table of Formations

##### Genozoiic

Pleistocene: Clay, sand, boulders

##### Precambrian

Algoman(?) : Feldspar porphyry dikes  
Biotite granite

Laurentian(?) : Diorite, quartz diorite

Keewatin: Amphibolite (?)  
Andesitic lavas with agglomerate  
and recrystallized andesite.

##### Volcanic Rocks:

Volcanic rocks of andesitic types outcrop abundantly in the western and central parts of the property. These lavas range from fresh, fine grained greenish andesites to coarse recrystallized varieties very similar in the hand specimen to a diorite.

Pillow lavas are well developed in the southwestern portion of the property and are infrequently found in the central portion. In the northwestern claims the andesites are massive and structureless. The development of pillows is of importance as the gold and copper values on the Noranda property are concentrated in the selvages of the pillows. A number of fairly reliable pillow determinations were made in the southwest corner indicating pillow tops to the southwest and the flows to have a northwest strike.

A type of alteration frequently associated with values on the Noranda property is the development of white feldspar spots varying in size from  $\frac{1}{8}$  to  $1\frac{1}{2}$  inches. These locations have been noted on the geological map accompanying this report and it will be seen that the most frequent occurrence of these spots is also in the southwest portion of the property. This type of alteration has been noted in other areas where copper mineralization is found - particularly in Temagami and Noranda.

Coarse hornblende alteration is also found on the Wright Hargreaves claims. Such alteration is believed by the Noranda staff to be an indicator of gold values. This type of alteration has been noted in a number of places on the Wright Hargreaves claims but it is doubtful that its occurrence is as important as the two types of alteration described above.

Agglomerate and flow breccia are found within the volcanic series. The flow breccia would conceivably be of importance as marking a zone of weakness within the lavas. A portion of the high grade copper occurrence on the Noranda ground occurs within breccia.

A number of rust zones are found on the Wright Hargreaves property and these are almost entirely within the volcanic rocks. It appears that the andesite is the favourable host rock for the mineralizing solutions. This is clearly shown on lines 1500 S and 1800 S at 1200' east where wide and strong rust zones occur in a small body of andesite which is completely surrounded by amphibolite.

The rust zones are of the utmost importance from a prospecting and development view point and it will be seen that they occur in definite northwesterly trending zones. Most of the anomalies in andesite areas coincide with rust zones and mineralization.

Amphibolite occurs in abundance in the east central and southeasterly portions of the property. The origin of this rock type is not known. It is brownish black in colour and consists of amphibole or amphibole with some feldspar. It varies in texture from fairly fine grained to very coarse. It was thought that it represented a strongly metamorphosed equivalent of the andesites as it seems to occur as a belt between the granites to the north and east and the andesites to the south and west. However, sharp contacts may be seen between fresh andesite and amphibolite and granite is in contact with good andesite in the northeast corner of the property. It may be of intrusive origin but in any case close examination has shown that it is definitely not a host rock for the sulphide solutions. Anomalies in amphibolite and recrystallized andesite are due to the development of magnetite.

Intrusive Rocks:

Diorite and quartz diorite of fine to medium grained texture is found in the central part of the Wright Hargreaves property. It occurs as a number of irregular bodies and as small dikes. This rock type was considered by Burwash to be of Laurentian age so it has thus been tentatively assigned to the Laurentian in the Table of Formations. There does not appear to be any relationship between the diorite and the occurrence of any important alteration or mineralization. The small diorite dikes may possibly be later than the larger bodies of diorite. The diorite is variable in its magnetic properties and contacts can not be reliably detected by magnetic means. Anomalies in diorite are probably due to magnetite.

The biotite granite is limited in distribution to the northeast part of the property. It is a white to pink normal medium grained granite with hornblende developed occasionally. Anomalies near the granite-greenstone contact are common and are due to the development of magnetite by thermal metamorphism.

Numerous fresh looking feldspar porphyry dikes are found cutting andesites, amphibolites and diorites. These occur in great abundance on the property and only a small number of the larger ones have been mapped.

Structural Geology:

Minor shearing, flow alignment and the attitude of pillows indicates a northwesterly trending series of volcanic rocks with tops to the southwest. This is in agreement with the observations on the adjoining Noranda ground. The regional strike

is north  $25^{\circ}$  -  $35^{\circ}$  west.

The only pronounced lineament shown on aerial photographs is the northwesterly striking valley of low ground shown in the northeasterly part of the geological map. This may represent a fault but if so there is no evidence for this from detailed mapping.

The massive nature of the volcanic rocks is rather surprising considering their proximity to the granite contact and the number of other intrusive rocks on the property. It is apparent that any zone of weakness is a favourable channel for mineralizing solutions when even such minor structures as pillow edges and small breccia zones afford such a channel. Any marked shear zone would thus be of great importance but the only shear noted in mapping of any strength is the one on line 2700 south and 400 feet north.

#### ECONOMIC GEOLOGY

As noted previously, the Noranda staff regard the following as the most important leads to copper and gold values:

- (1) Existence of rusted zones
- (2) Development of pillow lavas
- (3) Occurrence of feldspar spots in andesites
- (4) Development of hornblende alteration

These structures and types of alteration are all found on the Wright Hargreaves property and furnish very definite encouragement for further surface work.

It should be pointed out that early work on the Noranda rusted zones returned only low values in almost every case and it

was only when these zones were blasted open that the encouraging copper and gold values were obtained. Furthermore, the zones were not strongly rusted or sheared and were most unimpressive looking. The rusted zones mapped on the Wright Hargreaves ground have definite continuity and lie along the apparent strike of the zones under development on the adjoining Noranda ground. Surface work is now proceeding along this zone on the Noranda property about 1000 feet west of the Wright Hargreaves boundary.

The fact that small amounts of chalcopyrite were found in several locations is important and it is felt that these zones of rust and anomaly zones in andesite merit intensive prospecting and surface work.

#### CONCLUSIONS AND RECOMMENDATIONS

From consideration of results of development on the adjoining Noranda claims and a study of rock exposures and magnetic results, it is felt that the Wright Hargreaves property affords an opportunity for further exploration by surface methods.

It is therefore recommended that such work be carried out along the rusted zones and anomaly zones in andesites as indicated on the accompanying maps.

Respectfully submitted,

GARDINER LOW and MORROW

  
M. C. Gardiner.

Haileybury, Ontario,

August 13, 1952.



REPORT OF WORK

The information listed below is furnished in accordance with the regulations of the Ontario Department of Mines.

Name of owners - Wright Hargreaves Mines Ltd.(held under option)

Address of owners - Kirkland Lake Ontario.

Claim numbers - K15444 to K15451 inclusive.

Name of organization carrying out assessment work - Gardiner, Low and Morrow

Address of organization carrying out assessment work - Box 328, Haileybury, Ontario.

Dates during which the survey was made -

Linecutting - May 16 - 28, 1952

Geological mapping - May 30 - June 11, 1952

Geophysical field work - June 1 - 9, 1952

Office work - geological-July 30 - August 9, 1952

- geophysical-July 27 - 29, 1952

Names and addresses of persons engaged in survey.

E. Anglehart - Plaza Hotel - Rouyn, P. Q.

E. Letellier - Haileybury, Ontario.

A. Nelson - " "

T. Atkinson - " "

M. C. Gardiner- " "

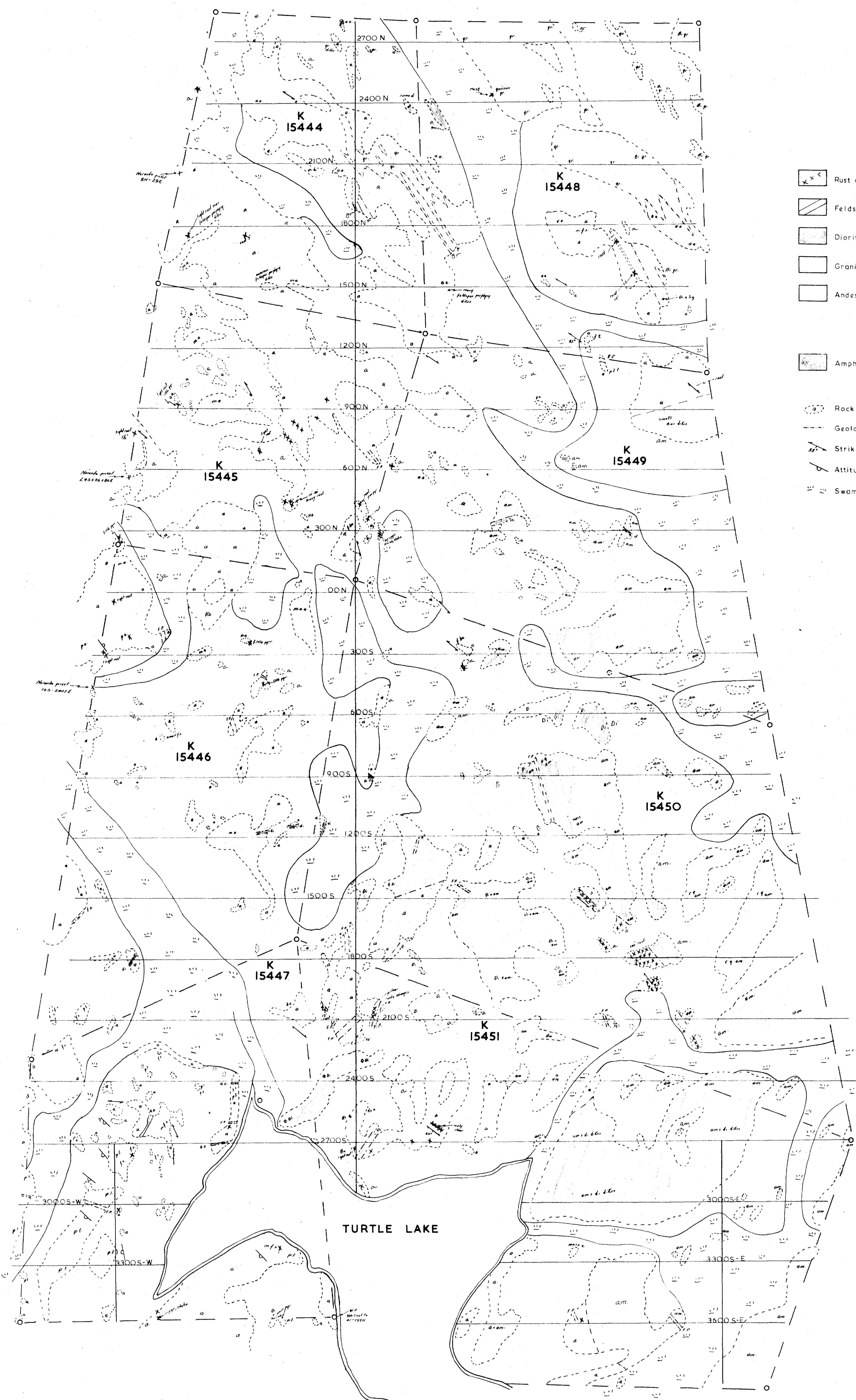
R. A. Watt - Restoule, Ontario.

J. H. Low - 98 Rivercrest Road, Toronto, Ontario.

DISTRIBUTION OF WORK IN 8 HOUR DAYS

	<u>Anglehart</u>	<u>Letellier</u>	<u>Nelson</u>	<u>Atkinson</u>	<u>Gardiner</u>	<u>Watt</u>	<u>Low</u>	<u>Days</u>
Line cutting and picketing	12	12	12	6				42
Geological field work					15		15	30
Geophysical field work				11		11		22
Geophysical office work					3½		3½	7
Geological office work					10		10	20
<hr/>								
Total number man-days required for survey								<u>121</u>

	<i>geological</i>	<i>geophysical</i>	<i>8 claims</i>	
<i>line</i>	<del>42</del>	42	$8 \overline{) 50 \overset{24}{00}}$	$8 \overline{) 284}$ 35.5'
<i>field</i>	30	22	628	
<i>office</i>	20	7	$8 \overline{) 200}$ 25	
	<hr/>	<hr/>		
	50 x 4 = 200	71 x 4 = 284		
	25' <del>6</del> deeper claim	35.5' days per claim		

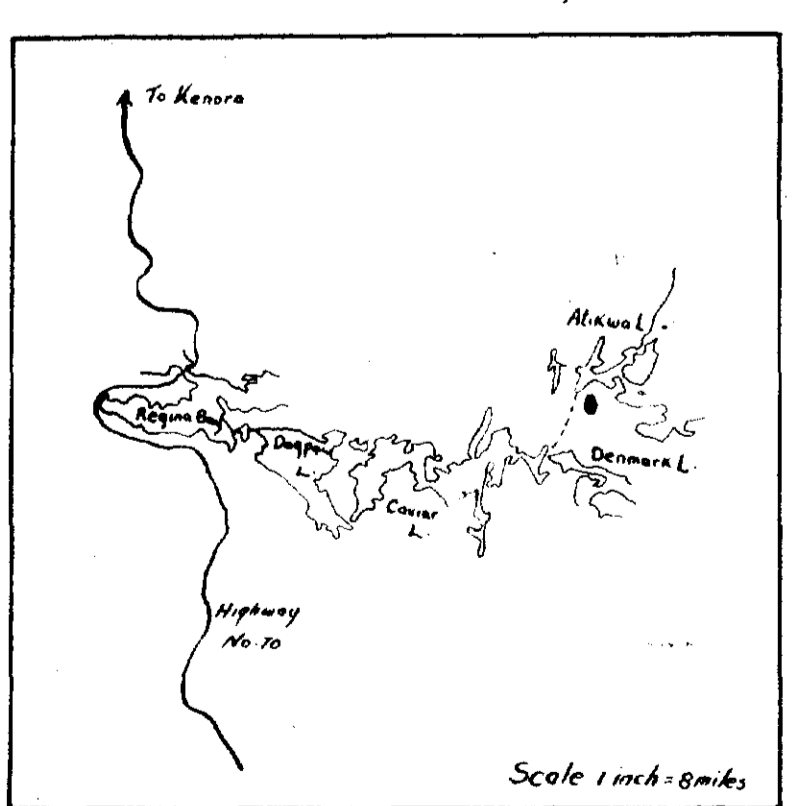
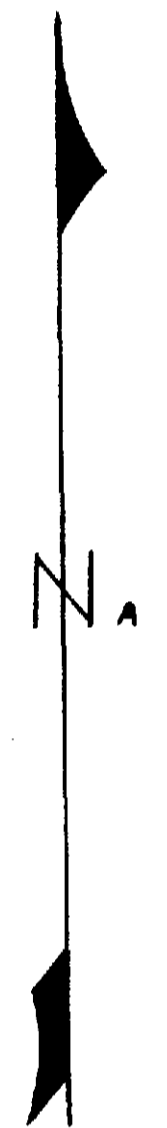


**LEGEND**

- Rust occurrence - pyrite (pyn) - pyrrhotite (pyn) - chalcopyrite (chalco)
- Feldspar porphyry (FP)
- Diorite (di) - quartz diorite (q.di)
- Granite (gr)
- Andesite (a) - altered andesite (aa) - flow top (ft.) - massive andesite (ma) - flow breccia (fbx) - pillow lava (pl.) - recrystallized andesite (rx.a) - andesite with feldspar spots (fs.) - andesite with hornblende developed (hb.)
- Amphibolite (am)

**SYMBOLS**

- Rock outcrop
- Geological boundary, approximate
- Strike and dip of schistosity
- Attitude of pillow lavas
- Swamp, low ground

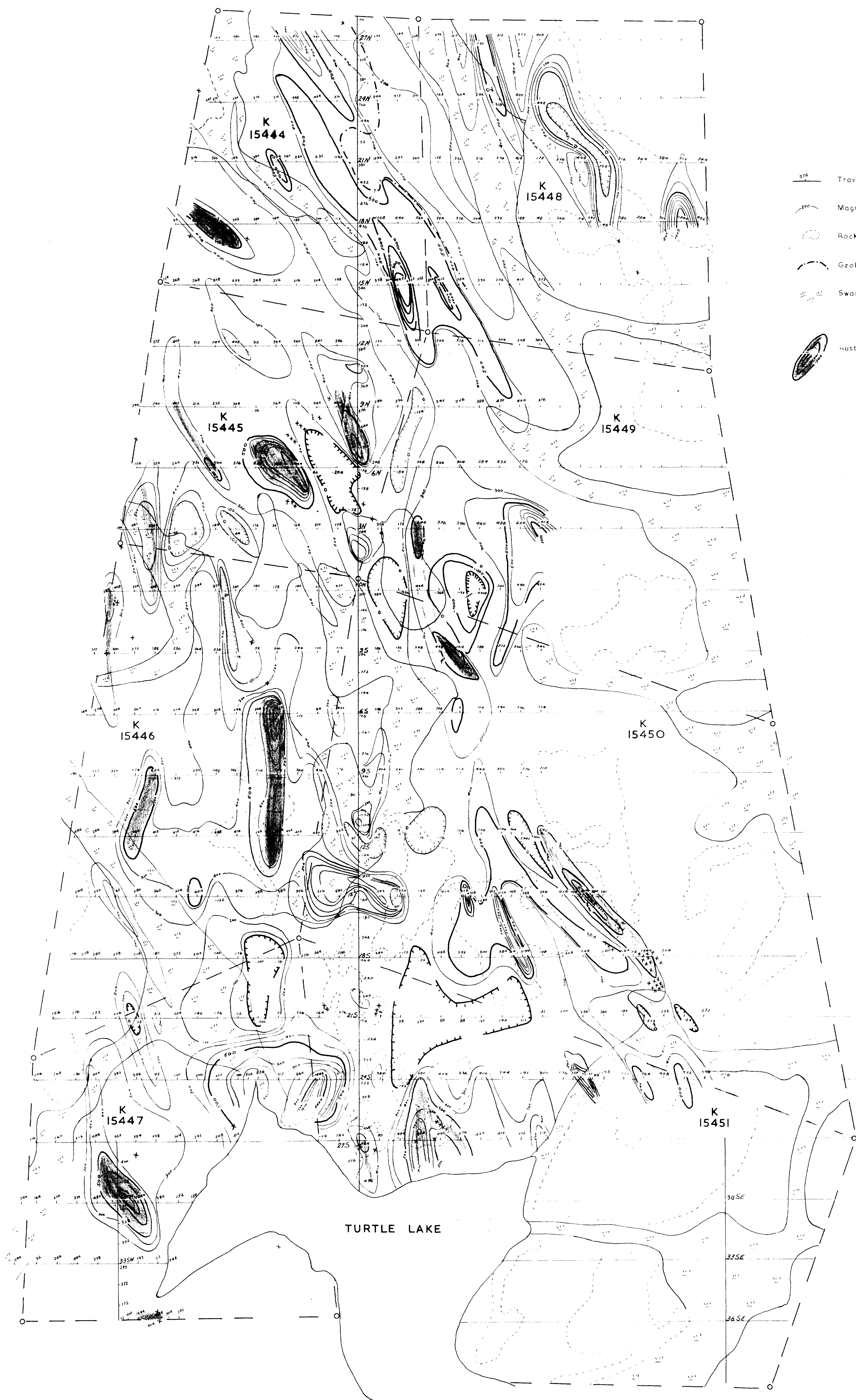


Location Map

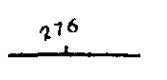
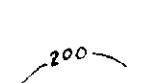
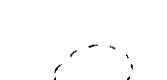



**GEOLOGICAL OUTCROP MAP**  
**WRIGHT HARGREAVES MINES GROUP**  
 ATKWA LAKE AREA - KENORA DISTRICT, ONT.  
 Scale 1 inch = 200 feet  
 July 17 1952

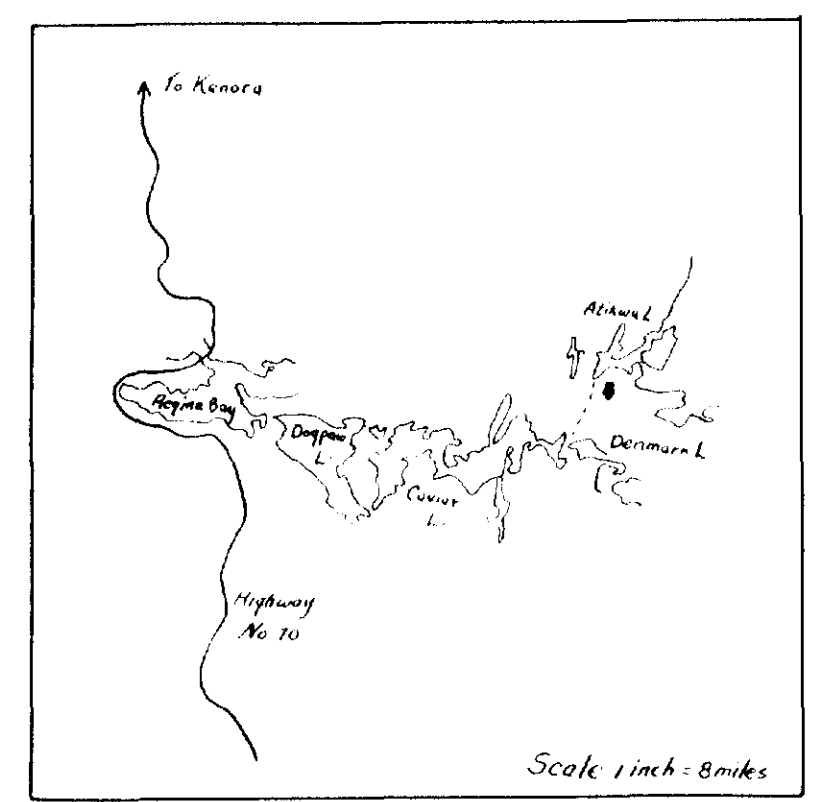
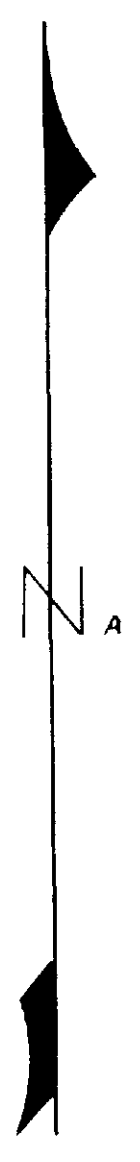
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**LEGEND**

-  Traverse line, magnetometer station, gammas
-  Magnetic contour, gammas
-  Rock outcrop
-  Geological contact indicated by magnetic results
-  Swamp, low ground
-  Rust zones and/or mineralization suggested by magnetic anomalies in andesite areas



Location Map

GEOMAGNETIC CONTOUR MAP  
 (To accompany geological outcrop map)  
**WRIGHT HARGREAVES MINES GROUP**  
 ATKWA LAKE AREA - KENORA DISTRICT, ONT.  
 Scale 1 inch 200 feet  
*M. Pauline* July 22, 1952

