



32D04SE0314 63.2430 HEARST

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SUMMARY

The mining property consist of a rectangular 18 block claim group which lies in the Larder Lake Mining District of Ontario in Hearst and McElroy townships. The claim group was acquired by Amax Exploration, Inc. in 1968 to investigate the occurrences of several nickel-copper showings located on the property. The writer completed a geological survey over the claims during the summer of 1968.

The property is largely underlain by Timiskaming sediments, mainly conglomerate with lesser greywacke and arkose. Numerous small intrusive bodies of serpentinite with some diorite and pyroxenite are located in the conglomeratic horizon and are Halleyburian in age. Algoman intrusives, chiefly diorite, feldspar porphyry and quartz-feldspar porphyry are scattered over the property. All these rock-units are Precambrian in age.

The mineralization worthy of interest on the property consists of Ni-Cu bearing sulphides occurring in the showings located in the northwestern section of the area. The sulphides, mainly pyrrhotite with a little chalcopyrite in a peridotitic matrix? appear as disseminations in small rusty-sheared zones developed in the conglomerate. The occurrences of slightly better than trace nickel values in the sulphides are closely related with the serpentinitized peridotite which intrudes through the conglomerate in that area.

INTRODUCTION

The Amax Group 2 property consists of 18 claims and lies approximately four miles southwest of the town of Larder Lake.

The claim group is located in the southern part of McElroy and Hearst townships. The 18 claims form a rectangular block divided into two equal portions by the McElroy-Hearst township line. The claims are numbered as follows:

<u>McElroy Township</u>		<u>Hearst Township</u>	
	No.		No.
102323 - 102326	<u>4</u>	102351 - 102355	<u>5</u>
102346 - 102350	<u>5</u>	102327 - 102330	<u>4</u>
	<u>9</u>		<u>9</u>

The property is easily accessible by a well-kept truck road which goes southward from highway 624,

McELROY Twp.  
HEARST Twp.

2 mile Post



L 103396	L 103354	L 103353	L 103279	L 103363		
L 101432	L 102348	L 102347	L 102346	L 102351	L 102352	L 102353
L 101435	L 102249	L 102326	L 102325	L 102327	L 102328	L 102354
	L 98155	L 102223	L 102224	L 102230	L 102229	L 102256

CATHARINE Twp.

SKEAD Twp.

PROPERTY POSITION  
 18 CLAIM  
 AMAX GROUP 2  
 McELROY - HEARST TOWNSHIPS  
 LARDER LAKE MINING DISTRICT, ONTARIO  
 To Accompany Report By: J. C. DUMESNIL  
 SCALE: 1" = 1/2 mile | FIGURE 2

three miles from the town of Larder Lake. The geological survey was completed by the writer during part of the month of September.

#### MAPPING PROCEDURE

The geological mapping of the claim group was controlled by a 400 foot grid. A base line was turned off by a transit in the central portion of the property from the McElroy-Hearst township<sup>due</sup> east and due west respectively. Picket lines were turned off at right angles with the base line every 400 feet except in the western section of the area where a few lines were cut every 200 feet. The picket lines were chained and numbered every 100 feet with reference to the base line and the township line.

The geology is presented on one map sheet located in the back folder of this report. The scale is 1 inch to 400 feet.

#### GEOLOGY ON AMAX GROUP 2

The regional geology of Hearst and McElroy townships has been described by J. E. Thompson<sup>1</sup> and E. M. Abraham<sup>2</sup>. The reports with the accompanying maps were used for a preliminary understanding of the geology of the property.

All the rock-units underlying the property are Precambrian in age. The area is almost completely covered by Timiskaming sedimentary rocks composed largely of conglomerate with lesser greywacke and arkose. Isolated bands of Keewatin basic volcanics are associated with the conglomerate. Numerous small intrusive bodies of serpentinitized peridotite, pyroxenite, and diorite of Haileyburian in age outcrop throughout the area. Algoman intrusive diorite occurs in the northwestern part of the area.

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<sup>1</sup>O.D.M. Report No. 56, Vol. LXI, part III, 1947, map No. 1947-1

<sup>2</sup>O.D.M. Report No. 59, Vol. LIX, part VI, 1950, map No. 1950-3

The main rock-units are classified in the table below in accordance with the O.D.M. reports No. 56 and No. 59.

TABLE OF FORMATIONS

Quaternary

Pleistocene: clay, sand, gravel, boulders

- Great Unconformity -

Precambrian

- Intrusive Contact -

Algoman: Syenite porphyry, feldspar porphyry, quartz-feldspar porphyry, diorite, gabbro.

- Intrusive Contact -

Haileyburian: Diorite, pyroxenite, serpentized peridotite.

- Intrusive Contact -

Timiskaming: conglomerate, greywacke, arkose, quartzite

- Great Unconformity -

Keewatin: basic volcanic

KEEWATIN VOLCANICS

In the central-northern part of the property a medium to coarse-grained rock outcrops with a diabasic texture. This rock could be a metamorphic equivalent of the basalt or simply a gabbro dyke. This rock has been mapped as an intrusive gabbroic rock because it exhibits some intrusive characteristics. The rock is locally well-jointed, massive, brownish-grey coloured on the weathered surface. Close to the eastern boundary of the area several outcrops closely associated with the conglomerate have been considered as a basic volcanic rock. The rock is fine to medium-grained, dark green coloured on the fresh surface, locally sheared and brecciated and some pillow remnants have been recognized. All the ultramafic rocks mapped on the east side of the township line have been formerly mapped by the O.D.M. as basic volcanics.

### TIMISKAMING SEDIMENTS

Conglomerate is the dominant sedimentary rock in the area and strikes generally north-east with a vertical to steep dip. The percentage of pebbles and boulders is usually high. The pebbles are composed mainly of greenstone on the west side of the township line and the matrix is made up of greywacke material, whereas they are mostly acidic with an arkose matrix on the east side. The size of the coarse aggregate ranges generally from  $\frac{1}{2}$  inch up to 4 inches in diameter. Usually the conglomerate contains some beds of greywacke and arkose.

The fine-grained sediments are found in the southwest section of the area and consist of dark green coloured quartzitic greywacke and slightly pinkish arkose. These sedimentary rocks strike slightly north from east and dip about  $75^{\circ}N$ . They are massive and the bedding is generally poorly developed in the rock.

### HAILEYBURIAN INTRUSIVES

Rocks of Haileyburian in age are represented on the property largely by small irregular shaped masses of serpentinite with some pyroxenite and diorite. The main mass occurs in the central-western section of the area, the nucleus of which is occupied by a spotted green diorite apparently grading into serpentinitized peridotite. The diorite is cut by a few dyklets of Algomian syenite porphyry.

The serpentinite usually outcrops in isolated bosses about 50 feet in diameter and a few feet high throughout the area occupied by the conglomeratic horizon.

The serpentinitized peridotite is generally weakly magnetic, fine to medium-grained and dark green coloured on the fresh surface. The weathered surface is soft and varies in colour from whitish-grey to brownish-red. On several outcrops, tiny veinlets of chrysotile-asbestos serpentine have been noted cutting the rock in all directions.

A joint system is particularly well defined in the northwest corner of claim L-102325. A sharp intrusive contact between the ultramafic rock and the conglomerate has been observed in the southeastern corner of claim L-102352. It is evident from the field observation that the Haileyburian intrusives cut the Timiskaming sediments and are consequently younger in age.

ALGOMAN INTRUSIVES

Small diorite bodies were mapped in the north-western part of the area. The rock is typically light green in colour, massive with feldspar and amphibole as the dominant mineral constituents.

Some syenite-feldspar porphyry occur in the central-eastern part of the area. The rock is composed of white feldspar phenocrysts embedded in a dark grey matrix.

Many dykes and dyklets of quartz-feldspar porphyry and feldspar porphyry cut the conglomerate. A few syenite porphyry dykes have been noted in the Haileyburian diorite.

ECONOMIC GEOLOGY

A few old showings occur in the property and are mostly located on claims L-102328 and L-102348.

Most of the trenches occurring on claim L-102328 are barren of sulphides and a few show some disseminated cubic pyrite. On claim L-102348, the old pits were sunk in the conglomerate on small rusty zones and exhibit some pyrrhotite, pyrite with a little chalcopyrite disseminated in a peridotitic matrix (?). Two samples taken in the pits at location 28W-10N assayed 0.06% Cu; 0.08% Ni and 0.05% Cu; 0.12% Ni respectively. The relatively high content of nickel is probably due to the serpentinized peridotite which intrudes through the conglomerate in that area. Some disseminated pyrrhotite has also been noted in a gabbro dyke which cuts the conglomerate in the northeastern corner of claim L-102325.

October 22, 1968  
Kirkland Lake, Ontario

*J. C. Dumesnil*  
.....  
J. C. Dumesnil, Geologist



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ASSESSMENT REPORT - MAGNETOMETER SURVEY

18 CLAIM AMAX GROUP 2

MCELROY - HEARST TOWNSHIPS

LARDER LAKE MINING DISTRICT, ONTARIO

S. N. Watowich

January 31, 1969.

## INTRODUCTION

A group of 18 contiguous claims situated in McElroy and Hearst townships of the Larder Lake Mining Division is called the Amax Group 2. The township 3-mile post is situated almost in the center of the claims group. The property is located about four miles southwest of the town of Larder Lake. Index maps, claims maps and accessibility descriptions are located in the geological section of this combined report. The claims are numbered as follows:

<u>McElroy Township</u>		<u>Hearst Township</u>	
<u>Claim</u>	<u>No.</u>	<u>Claim</u>	<u>No.</u>
102323 - 102326	4	102351 - 102355	5
102346 - 102350	5	102327 - 102330	4
	<u>9</u>		<u>9</u>

## HISTORY

The area shows signs of old prospecting which has exposed small areas of sulphides. However no evidence of line cutting or other surveys was observed or located in assessment files.

## PRESENT MAGNETOMETER SURVEY

During July and August of 1968 about 16 miles of picket lines were read at every 100-foot station for a total of 873 stations. This work was performed by Mr. Alex Mathias of Kirkland Lake, an experienced geophysical operator working for Amax Exploration, Inc. The instrument used was the McPhar Fluxgate, Serial No. 6494 with a rated sensitivity of 20 gammas per scale division on the 1000 gamma range. The readability is a maximum of 5 gammas with a temperature drift of less than 50 gammas under normal field conditions.

This magnetometer survey is correlated with the Amax Group 1 block of claims about one and one-half miles to the north and consequently with the Dave Lowe Option property adjacent and to the north of Amax Group 1. These surveys tie into the Larder Lake magnetic base station and correlate with it by the addition of 57350 gammas to every value on the plan. Five magnetic base stations are shown to be distributed across the claims block.

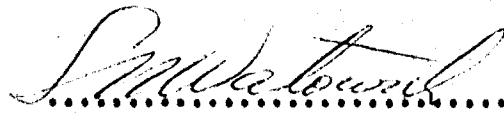
Generally the area was staked on the basis of a number of small sulphide occurrences. The prominence of pyrrhotite suggested the advisability of a magnetometer survey. The country rock is composed of a series of Timiskaming clastic sediments. Magnetically these rocks have a low intensity and range between 350 to 700 gammas forming the base level of the area. Although the regional schistosity within these sedimentary formations is northeast the magnetic structure is distinctly east-west. This structure is due to the intrusion of basic and ultrabasic lenses. These lenses are often narrower than 100 feet. Remarkably the magnetite content varies as noted by the non-anomalous diorite at 32W-13N and the pyroxenite at 28E-8N.

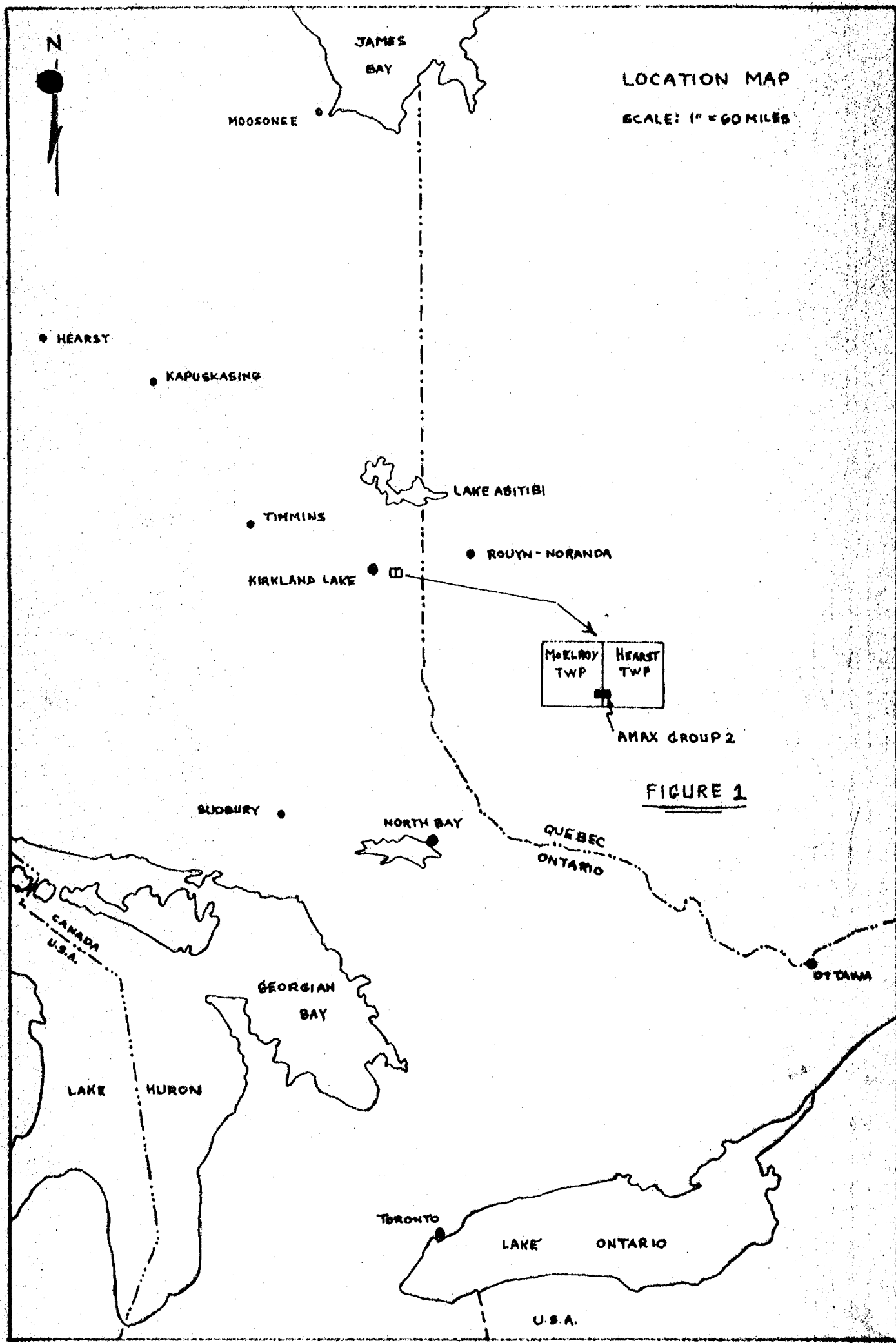


In the southeast corner a poorly exposed magnetically high mass appears to be due to ultrabasic and basic volcanic units. An example of the response from massive pyrrhotite is shown at point 28W-10N by a reading of 3140 gamma. However, the sulphides appear limited on strike by the low magnetic susceptibility across the adjacent lines.

In general the survey has defined the geometry of the basic and ultrabasic intrusives in this area. A clearer interpretation and understanding of the multiple and narrow intrusions along an east-west trend has resulted from the survey.

January 31, 1969,  
Kirkland Lake, Ontario.

  
.....  
S. N. Watovich,  
Geologist-In-Charge,  
Amex Exploration, Inc.,  
Kirkland Lake, Ontario.



LOCATION MAP

SCALE: 1" = 60 MILES

FIGURE 1



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## SUMMARY

A 32 contiguous claim group was acquired by Amax Exploration, Inc. in 1968 in the Larder Mining District of Ontario. These claims are located in McElroy and Hearst townships, two miles south of the Kirkland-Larder east-west trending fault near which the Kirkland Lake-Larder Lake gold deposits are located.

A geological survey was carried out by the writer during the summer of 1968 to investigate the occurrences of Ni-bearing sulphides located in the basic volcanic rock along a metapyroxenite contact.

The property is underlain by a basement complex of Keewatin basic volcanics and Timiskaming sediments which have been intruded and considerably affected by Algonian intrusives lying in the western and central-eastern parts of the area. Algonian intrusives consist mainly of metapyroxenite with substantial portions of diorite and lesser syenite. The edge of a peridotite stock occupies the northern boundary of the property.

The sulphide mineralization is not widespread in the area and consists generally of disseminated and locally concentrated pyrrhotite and pyrite with little chalcopyrite. The mineralized zones occur along the volcanic-Algonian intrusive contact in the enclosing volcanic rocks and in the vicinity of the sediment-lavas contact. Only trace nickel values were found in the disseminated pyrrhotite mineralization. The shearing is the controlling feature of the disseminated sulphide material.

## INTRODUCTION

During the period from July into August of 1968 a geological survey was done over a 32 contiguous claim group acquired by Amax Exploration, Inc. The claims are located in McElroy and Hearst townships in the Larder Lake Mining District of Ontario.

The main purpose of this survey was to delimit the ultrabasic intrusive mapped by government geologists (O.D.M.) as Algonian hornblendite and regarded as a basic differentiate of the McElroy syenite stock. However the syenite stock is distinct and unrelated to the ultrabasic intrusion.

If so, what might its relationship be with the

peridotite intrusive occurring as the north extension of the hornblendite and with the serpentinite belt located in the southern part of the McElroy township. This relationship may be important for the understanding of Ni-bearing sulphides in that area. The mapping was carried out in conjunction with an electromagnetic and magnetometer survey.

LOCATION AND ACCESS

The property is located in the northern part of McElroy and Hearst townships (fig. 1) the township line of which subdivides the claim group into twenty-eight contiguous mining claims in McElroy township and four mining claims in Hearst township. The claims are numbered as follows (fig. 2):

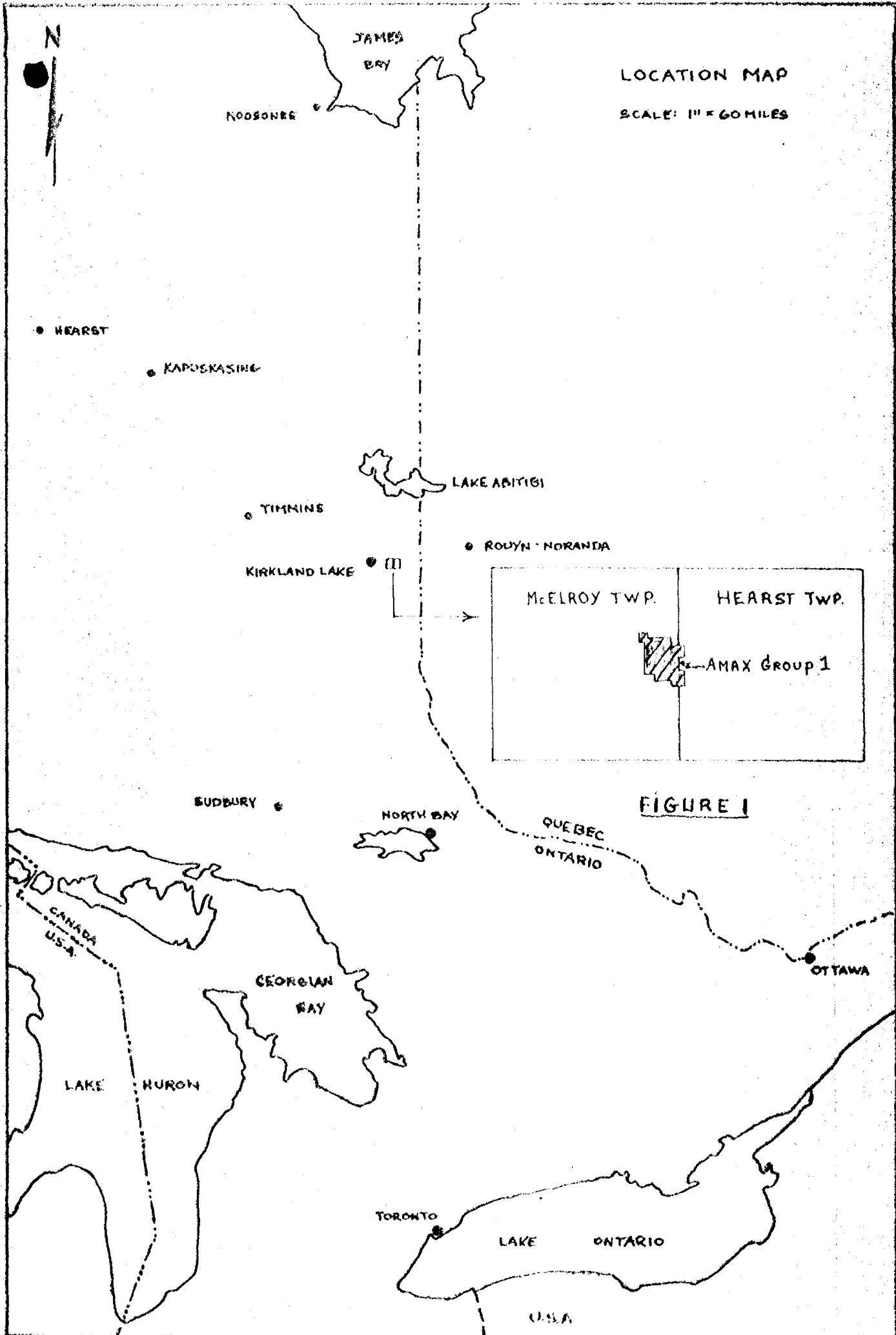
<u>McElroy Township</u>	<u>No.</u>	<u>Hearst Township</u>	<u>No.</u>
102305 - 102314	10	102315 - 102316	2
102317 - 102322	6	102931 - 102932	2
102335 - 102345	11		4
- 102930	1		
	<u>28</u>		

The property lies about four miles southwest of the town of Larder Lake, two and one-half miles south of highway 66 and three miles west of highway 624.

A 3-mile truck road connects the western boundary of the property with highway 624, three miles from the town of Larder Lake. The property is also reached from highway 66 by a bush-road, one-half of a mile from the town of Larder Lake, which is suitable for a swamp-type vehicle. This road leads to the central portion of the claim group. An old electric power line, now dismantled, traverses the claims in McElroy township in a southeasterly direction from highway 66 to the abandoned Cathroy-Larder Gold Mine in McElroy township.

MAPPING PROCEDURE

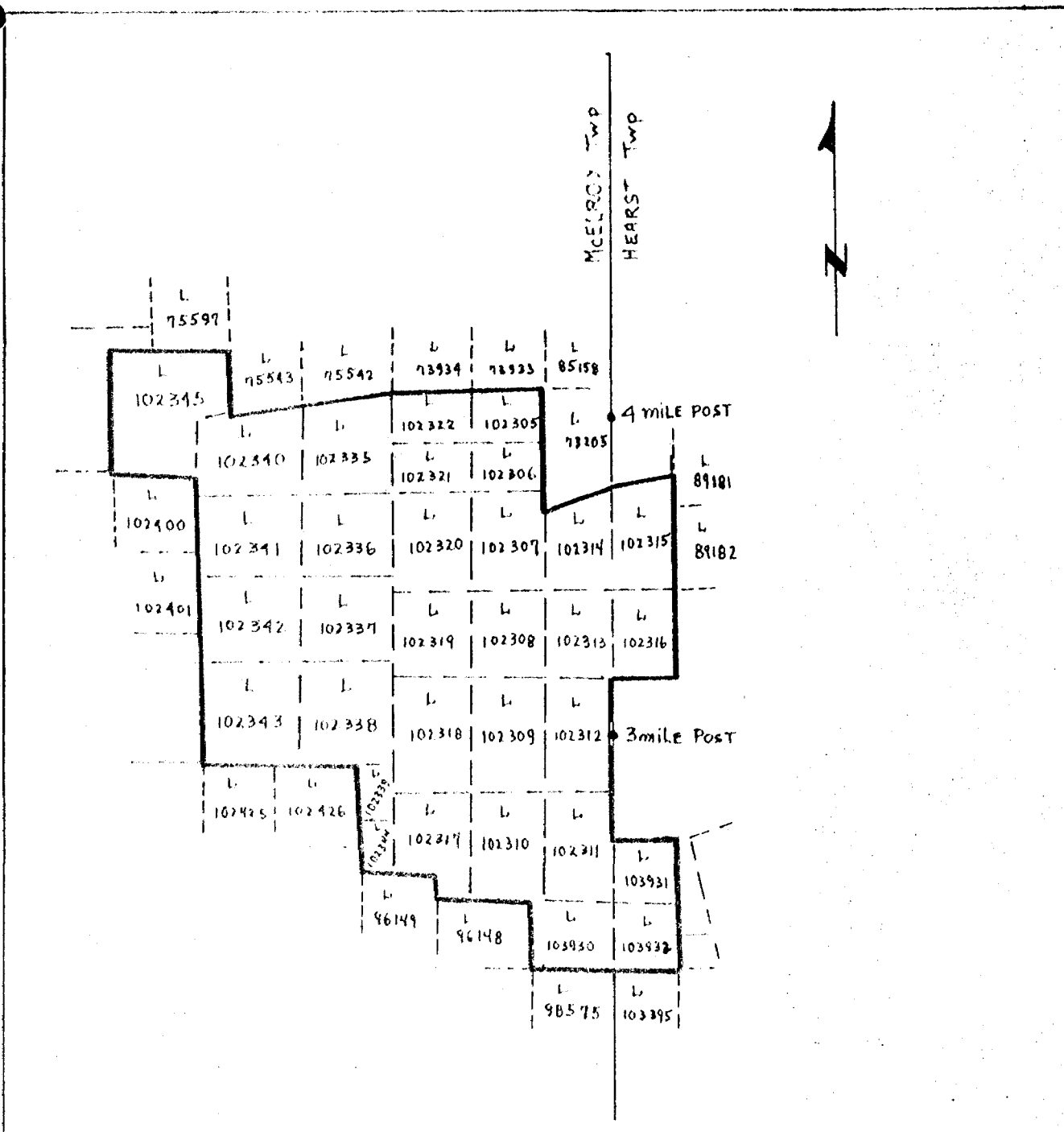
The geological mapping was carried out by the writer on a 400 foot grid. The group of claims was controlled by a base line turned off by a transit from the McElroy-Hearst township with an azimuth of 215°. This base line was tied into the Lowe option group. Picket lines were turned off at right angles with the base line every 400 feet and extended over the limits



LOCATION MAP

SCALE: 1" = 60 MILES

FIGURE 1



PROPERTY POSITION

32. CLAIM

AMAX GROUP 1

McELROY - HEARST TOWNSHIPS

LARDER MINING DISTRICT, ONTARIO

LAKE

To Accompany Report By: J. C. DUMESNIL

SCALE: 1" = 1/2 mile | — FIGURE 2 —

of the property. They were chained and numbered every 100 feet with reference to the base line.

The geology of the area has been plotted on one map sheet located in the back folder of this report. The scale is 1 inch to 400 feet.

### TOPOGRAPHY

Ninety percent of the property is covered by a mantle of glacial drift and patches of muskeg.

Topography is hilly and irregular in the north, northwestern and southeastern sections of the property. The elevations usually do not exceed fifty feet above the surrounding level. The exposures are concentrated in these sections and covered by mixed bush composed of poplar, balsam, and spruce.

Swampy muskeg areas with tamarack bush are located in the central and southern sections of the area. A sand-covered area well forested with jackpine and balsam is interspersed with slightly lower swampy ground in the central-eastern part of the area.

A meandering stream obstructed by a few beaver dams flows southward through the overburdened country.

### REGIONAL GEOLOGY

The description of the geology in Hearst and McElroy townships are found in the O.D.M. reports No. 56<sup>1</sup> and No. 59<sup>2</sup> respectively. These townships are underlain by Precambrian rocks. The volcanics are the oldest rocks and were classified as Keewatin in age. They range in composition from basalt to rhyolite. They are separated by a great unconformity from the Timiskaming sediments which consist mainly of greywacke, arkose, and conglomerate. Volcanics and sediments have been intruded by Haileyburian intrusives and by later Algomian intrusives.

Haileyburian intrusives are composed largely of serpentized peridotite with some pyroxenite and diorite

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<sup>1</sup>O.D.M. Report No. 56, Vol. LXI, part III, 1947,  
map No. 1947-1

<sup>2</sup>O.D.M. Report No. 59, Vol. LIX, part VI, 1950,  
map No. 1950-3

and are mostly located in the southern part of the McElroy township.

The Algonian orogenic period is represented in these areas by Algonian intrusives ranging in composition from ultrabasic to granitic. The largest Algonian intrusive is known as the McElroy syenite stock and occupies the central part of the McElroy township. This intrusive is largely composed of basic syenite with substantial proportions of hornblende and diorite restricted in great part to the southeastern edge of the stock.

#### GEOLOGY ON AMAX GROUP 1

A peridotite intrusive which was formerly mapped as a basic volcanic rock by the Ontario Department of Mines occupies the northern edge of the property. Algonian intrusives varying in composition from syenite to pyroxenite cover the western part and the central-eastern boundary of the area. The northern and central-eastern sections are mostly underlain by a basic Keewatin volcanic rock showing generally a massive texture.

Timiskaming sediments, mainly greywacke and arkose, outcrop in the southeastern part of the property. The sedimentary and volcanic rocks are cut by numerous Algonian intrusive dykes ranging in composition from syenite to gabbro.

The succession and age of the rock-units underlying this property are given in the following table in accordance with O.D.M. reports No. 56 and No. 59.

#### TABLE OF FORMATIONS

##### Quaternary

Pleistocene: clay, sand, gravel, boulders

- Great Unconformity -

##### Precambrian

- Intrusive Contact -

Algonian: syenite, syenite porphyry, diorite, gabbro, pyroxenite

- Intrusive Contact -

Peridotite



TABLE OF FORMATIONS (Cont'd)

- Intrusive Contact -

Timiskaming: greywacke, arkose, quartzite, conglomerate  
- Great Unconformity -

Keewatin: basic volcanic

KEEWATIN VOLCANICS

The volcanics are andesitic to basaltic in composition, fine to medium-grained and greenish-grey coloured on the fresh surface. The outcrops are mostly massive and structureless except near the contact with the Algonian intrusives. In the northwestern part of the area the volcanics have developed a schistose structure striking north-northwest with a vertical to steep dip. The schistosity is more or less parallel to the intrusive contact. In that area the lavas have been subjected to intense shearing and are almost completely recrystallized. Small rusty zones are noted. Very close to the intrusive contact some silicification has taken place. The pillow structures have been reworked to a remarkable degree and almost completely obliterated. In the southeastern part of the property an east-west contact separates the basic volcanics from the sediments.

TIMISKAMING SEDIMENTS

The sedimentary exposures are mostly restricted to the southeastern edge of the property and consist mainly of shaly to quartzitic greywacke with lesser arkose and quartzite and some bands of conglomerate.

The sediments strike northeast in the southern boundary but swing east-west near the sediment-lavas contact. Bedding is either vertical or steeply inclined to the north or south.

A few pegmatitic stringers up to 6 inches in width and some blue to white quartz veins up to 4 feet in width cut the sediments.

A few outcrops located on claim L-102320 are considered to be quartzite and greywacke.

PERIDOTITE INTRUSIVE

Several outcrops of peridotite occur close to the north edge of the property. These constitute the south end of the peridotite intrusive previously described

in the assessment report on the Lowe's property. This rock is slightly magnetic, fine to medium-grained and coloured dark green to black on the fresh surface. The peridotite was probably intruded in early Algonian time into earlier Keewatin basic volcanics.

#### ALGONIAN INTRUSIVES

The intrusive rocks exposed in the western section of the property are chiefly composed of an ultrabasic rock named hornblendite or metapyroxenite with substantial portions of diorite and syenite which appear on the peripheral zone of the ultrabasic mass.

In the central-eastern section the rock is chiefly diorite with some syenite.

These intrusives coincide with the eastern contact of the McElroy syenite stock which occupies the central part of the McElroy township.

The metapyroxenite is a heavy and massive rock, coarse to very coarse-grained and contains more than 80% of dark green lathed minerals (amphibole and pyroxene). The compass is useless in this zone due to the high magnetite content of the rock (about 12%; O.D.M. report, Vol. 56, part 8, 1947, p.16). The diorite contains a fair amount of green ferromagnesian minerals, mainly amphibole, and is coarse-grained in texture. In a few places like on claim L-102316, the rock shows a gneissic texture which was probably developed with the later intrusion of the basic syenite.

Syenite appears in a limited amount on the property but constitutes the main rock type of the McElroy stock. This rock is usually coarse-grained and white or pink coloured on the fresh surface.

The relative age relations between syenite, diorite and metapyroxenite is clearly evident in the field and particularly on claims L-102337 and L-102341. Metapyroxenite is neatly cut by dykes of diorite. On the other hand both metapyroxenite and diorite are invaded by numerous dykes and dyklets of syenite. Syenite itself has been observed cut by dyklets of syenite porphyry.

If positive age relations are readily determined in the field between the different intrusive types, the genetic relations are not so easily understood. The limited

space and particular position occupied by the metapyroxenite in the McElroy stock are in themselves remarkable. It lies concentrated in the southeastern edge of the stock. It has been definitely established that many dykes of diorite traverse the metapyroxenite but there are also small bodies of diorite closely associated with it with indefinite boundaries. It seems logical to see the explanation of the common and inseparable association of these rocks as an early manifestation of a series of Algonian intrusions. Later on, the basic syenite intruded, the syenite porphyry representing a very late stage in the Algonian intrusive cycle.

It appears also evident from the field observation that the metapyroxenite is not related to the peridotite intrusive underlying the northern edge of the property nor to the serpentinite belt in the southern part of the McElroy township.

#### STRUCTURAL GEOLOGY

Doming effect of Algonian intrusives was a major factor in the development of shearing, faulting, and schistosity in the area and favored in a great degree the establishment of structural controls necessary for the emplacement of sulphide mineralization. One assumed fault striking approximately east-west is located at the sediment-lavas contact in the southeastern section of the area.

The geomagnetic map was used to infer the geological contact through the areas of overburden. The mag-map was excellent to outline the ultrabasic rocks and the diorite which are much more magnetic than the surrounding rocks.

#### ECONOMIC GEOLOGY

No promising mineralization was observed on the property. Prospection and drilling work done on the property in the past were confined in the vicinity of the sediment-lavas contact in the southeastern corner of the area and in the volcanics adjacent to the McElroy intrusive stock in the northwestern part of the area. The sulphide mineralization found during the geological survey is mostly located in the old pits and trenches which occur in these areas. All the showings are shown on the present geological map.

The most common assemblage of sulphide minerals although not widespread in the area consists of pyrrhotite and pyrite with a little chalcopyrite. This type of mineralization occurs near or along the volcanic-sediment and volcanic-intrusive contacts.

In the northwestern corner of claim L-102320 small rusty-sheared zones striking slightly east from north have been developed in the basic volcanic rock. On the southern ledge of the outcrop at the location B.L.53R, the rock is highly silicified and resembles a quartzite. Pyrrhotite with lesser pyrite and trace of chalcopyrite appear disseminated in the sheared zones. One location assayed up to 2.45% Zn and 0.52% Cu.

A trench 15' x 4' x 3' sunk on the western edge of the volcanics at the location 42R - 8E has exposed a 6-inch vein of massive sulphides mainly pyrrhotite with patches of chalcopyrite. One sample chipped from the vein assayed Ni trace and 0.30% Cu. The mineralized zone seems to coincide with an assumed sediment-lavas contact and is associated with a marginal dyke of syenite.

The volcanic-intrusive contact has been investigated in that area in 1954 by Wright-Hargreaves Mines, Limited. They put down 8 drill holes to test electrical conductive zones. The holes did not intersect any mineralized zone.

Another trench 10' x 4' x 4' is located in the volcanics near the east-west sediment-lavas contact in the northern corner of claim L-102311. The rock is highly sheared and silicified and mineralized mainly in pyrite with occasional patches of pyrrhotite and chalcopyrite. Pyrite fills fractures and appears also disseminated in a cubic crystalline form in the bedrock. The sheared zone strikes northeasterly, is about 20 feet wide and was traced for 15 feet. Here also the shearing is probably related to the proximity of dioritic Algonian intrusive and the assumed east-west fault at the sediment-lavas contact possibly controlled sulphide occurrences.

Sediments, mainly greywacke with some bands of quartzite, are strongly sheared and rust-stained in the northwestern corner of the same claim. The sheared and locally brecciated zone is well exposed in a pit 12' x 6' x 3' and strikes northeasterly. The gossan zone is chiefly mineralized in pyrite and pyrrhotite which appear as disseminations as well as fracture fillings and with some galena, chalcopyrite and rare sphalerite associated with quartz filled-fractures. It is quite probable that pyrite and pyrrhotite with some chalcopyrite were deposited in a first process of fracturation and mineralization which was widespread in the area. Galena, chalcopyrite and sphalerite associated with quartz filled-fractures were emplaced in a second stage of fracturation much more restricted in the area. Hearst-Larder Mines, Limited drilled in 1951-52 eight holes along the sediment-lavas contact and on the Cu-Pb-Zn showing but failed to show any mineralized zone.

October 25, 1968  
Kirkland Lake, Ontario.

*J. C. Dumesnil*  
.....  
J. C. Dumesnil, Geologist.



INTRODUCTION

The Amax Group 1 in McElroy and Hearst townships consists of 32 contiguous claims. These are as follows:

<u>McElroy Township</u>		<u>Hearst Township</u>	
<u>Claims</u>	<u>No.</u>	<u>Claims</u>	<u>No.</u>
102905 - 102914	10	102915 - 102916	2
102917 - 102922	6	102931 - 102932	2
102935 - 102345	11		
102930	1		
	<u>28</u>		<u>4</u>

The property is located 4 miles southwest of Larder Lake. Index maps, claims maps and full descriptions of the location, accessibility and line cutting are found in the geological section of this report.

HISTORY

The area appears to have had a long history of prospecting as judged by old trenching. However the only record of work is some diamond drilling by Wright Hargreaves in 1954 and Hearst Larder Mines in 1955. No significant results are noted. No previous complete ground magnetic data is available for this area.

PRESENT MAGNETOMETER SURVEY

The survey was performed along about 25.5 miles of lines spaced at 400-foot intervals and readings were taken at least every 100 feet. Some readings were not taken in the southeast corner due to excessive flooding. A total of 1,222 stations were read. Nine magnetic base stations were established on this grid and are shown on the plan. The magnetic survey was carried out by Mr. Alex Mathias, a geophysical operator for Amax Exploration, Inc., in Kirkland Lake. Mr. Mathias has had in excess of ten years experience as a geophysical operator with various mining companies. The survey was conducted during June and July of 1968. The work was supervised by the writer.

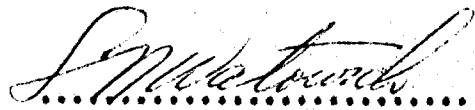
The instrument used was the McPhar Fluxgate magnetometer, serial number 6494 with a rated sensitivity of 20 gammas per scale division on the 1000 gamma range. The readability is a maximum of 5 gammas with a temperature drift of less than 50 gammas under normal field conditions.

The magnetometer survey ties into and correlates with the 42 claim Dave Lowe Option property adjacent and to the north which was submitted in a report by J. C. Dumeauil and S. N. Watowich, dated September, 1968. In addition these surveys tie into and correlate with the magnetic base station in Larder Lake by adding 57350 gammas to all values on the enclosed plan.

Background values of between 400 to 800 gammas represent the base level and generally related to the metasedimentary and metavolcanic formations. A magnetically high intensity formation is defined on the west side of the base line and striking almost parallel to it at N 35°E. This formation which has a core of over 10,000 gammas above base level appears outlined by a contour line 1000 gammas above base level. This unit is due to a coarse-grained amphibolite with a range of from 5 to 15 percent disseminated magnetite accounting for the magnetic susceptibility. This formation is referred to in the geological report. Along line 64 N the high magnetic values define the south edge of a southeast trending ultrabasic mass. The east edge of the claims group contains a well defined magnetically high area caused by intrusion of a diorite stock. The diorite may be related to the amphibolite. Low magnetic susceptibility within the center of the claims group and east of the base line reflect the presence of metavolcanics along the northern limit and metasediments to the south. These formations strike north-west and are consequently intruded by the amphibolite, peridotite and diorite.

This survey will clarify the magnetic structure depicted on the available aeromagnetic plans and corrects and defines the present geological data.

January 24, 1969.  
Kirkland Lake, Ontario.

  
.....  
S. N. Watowich,  
Geologist - In - Charge,  
Amax Exploration, Inc.,  
Kirkland Lake, Ontario.

Duplicate Report

INTRODUCTION

The Amax Group 1 in McElroy and Hearst townships consists of 32 contiguous claims. These are as follows:

<u>McElroy Township</u>		<u>Hearst Township</u>	
<u>Claims</u>	<u>No.</u>	<u>Claims</u>	<u>No.</u>
102305 - 102314	10	102315 - 102316	2
102317 - 102322	6	102931 - 102932	2
102335 - 102345	11		
102930	1		
	28		4

The property is located 4 miles southwest of Larder Lake. Index maps, claims maps and full descriptions of the location, accessibility and line cutting are found in the geological section of this report.

HISTORY

The area appears to have had a long history of prospecting as judged by old trenching. However the only record of work is some diamond drilling by Wright Hargreaves in 1954 and Hearst Larder Mines in 1955. No significant results are noted. No previous complete ground magnetic data is available for this area.

PRESENT MAGNETOMETER SURVEY

The survey was performed along about 25.5 miles of lines spaced at 400-foot intervals and readings were taken at least every 100 feet. Some readings were not taken in the southeast corner due to excessive flooding. A total of 1,222 stations were read. Nine magnetic base stations were established on this grid and are shown on the plan. The magnetic survey was carried out by Mr. Alex Mathias, a geophysical operator for Amax Exploration, Inc., in Kirkland Lake. Mr. Mathias has had in excess of ten years experience as a geophysical operator with various mining companies. The survey was conducted during June and July of 1968. The work was supervised by the writer.

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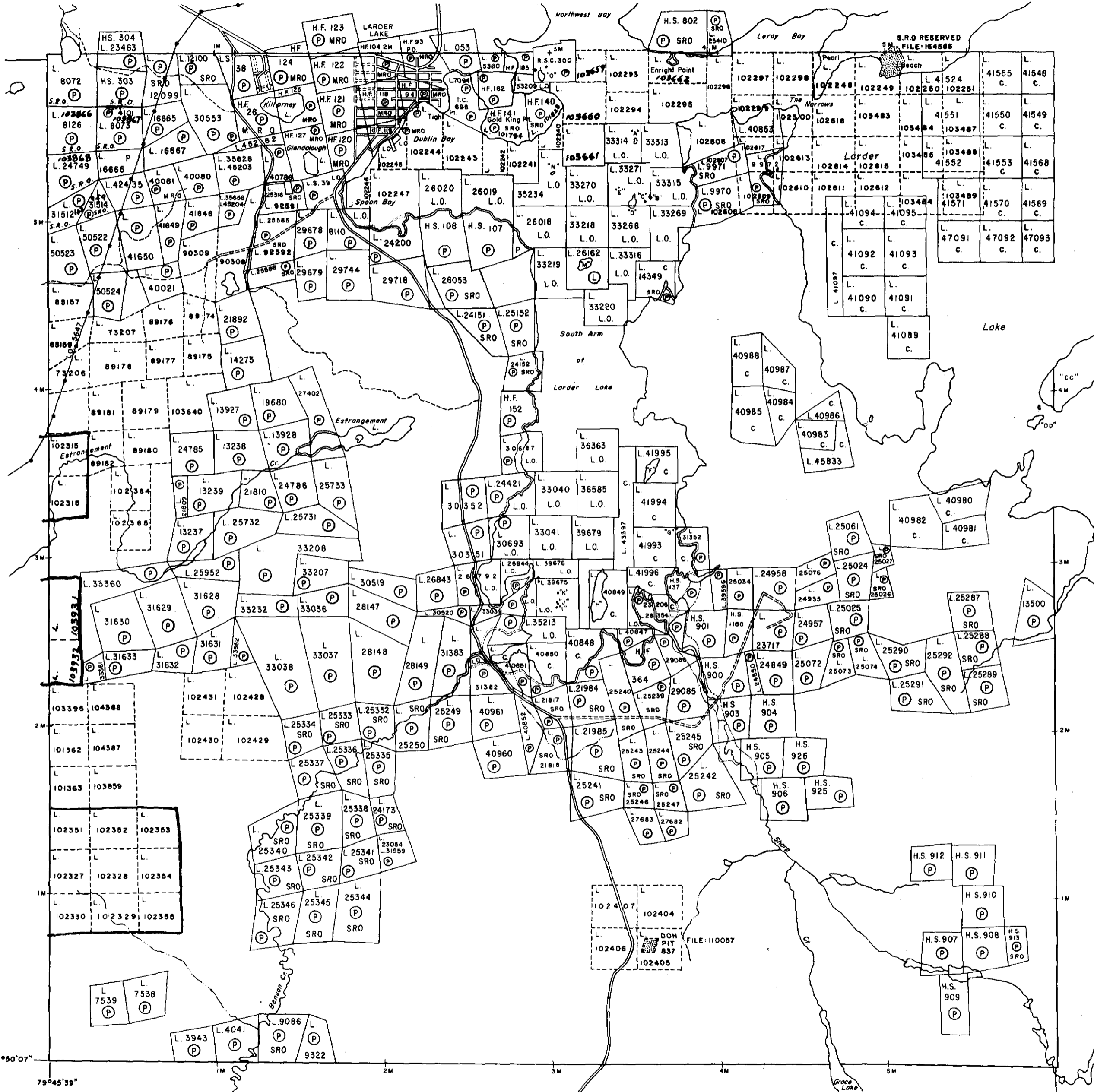
This survey will clarify the magnetic structure depicted on the available aeromagnetic plans and corrects and defines the present geological data.

January 24, 1969.  
Kirkland Lake, Ontario.

*S. H. Watowich*  
.....  
S. H. Watowich,  
Geologist - In - Charge,  
Amax Exploration, Inc.,  
Kirkland Lake, Ontario.



McVITTIE TWP. M-370



THE TOWNSHIP  
OF  
**HEARST**  
DISTRICT OF  
TIMISKAMING  
LARDER LAKE  
MINING DIVISION

SCALE: 1-INCH = 40 CHAINS

**LEGEND**

- PATENTED LAND (P)
- CROWN LAND SALE C.S.
- LEASES (L)
- LOCATED LAND Loc.
- LICENSE OF OCCUPATION L.O.
- MINING RIGHTS ONLY M.R.O.
- SURFACE RIGHTS ONLY S.R.O.
- ROADS (road symbol)
- IMPROVED ROADS (road symbol)
- KING'S HIGHWAYS (road symbol)
- RAILWAYS (railway symbol)
- POWER LINES (power line symbol)
- MARSH OR MUSKEG (marsh symbol)
- MINES (mine symbol)
- CANCELLED (cancel symbol)

**NOTES**

400' Surface Rights reservation around all lakes and rivers.

Township of HEARST lies entirely within THE CORPORATION OF THE TOWNSHIP OF LARDER LAKE created on 31-st DECEMBER 1945. Municipal Board Order P.F. B-4045-6 FILE: 129282.

**DATE OF ISSUE**  
MAR 11 1960  
ONTARIO DEPT. OF MINES

PLAN NO. **M-354**

DEPARTMENT OF MINES

— ONTARIO —

McELROY TWP. M-366

McFADDEN TWP. M-368

SKEAD TWP. M-387



GAUTHIER TWP. M-350
















THE TOWNSHIP OF  
OF  
**Mc ELROY**

DISTRICT OF  
TIMISKAMING

LARDER LAKE  
MINING DIVISION

SCALE: 1-INCH = 40 CHAINS

LEGEND

- PATENTED LAND 
- CROWN LAND SALE 
- LEASES 
- LOCATED LAND 
- LICENSE OF OCCUPATION 
- MINING RIGHTS ONLY 
- SURFACE RIGHTS ONLY 
- ROADS 
- IMPROVED ROADS 
- KING'S HIGHWAYS 
- RAILWAYS 
- POWER LINES 
- BARNS OR SHEDS 
- MINES 
- CANCELLED 

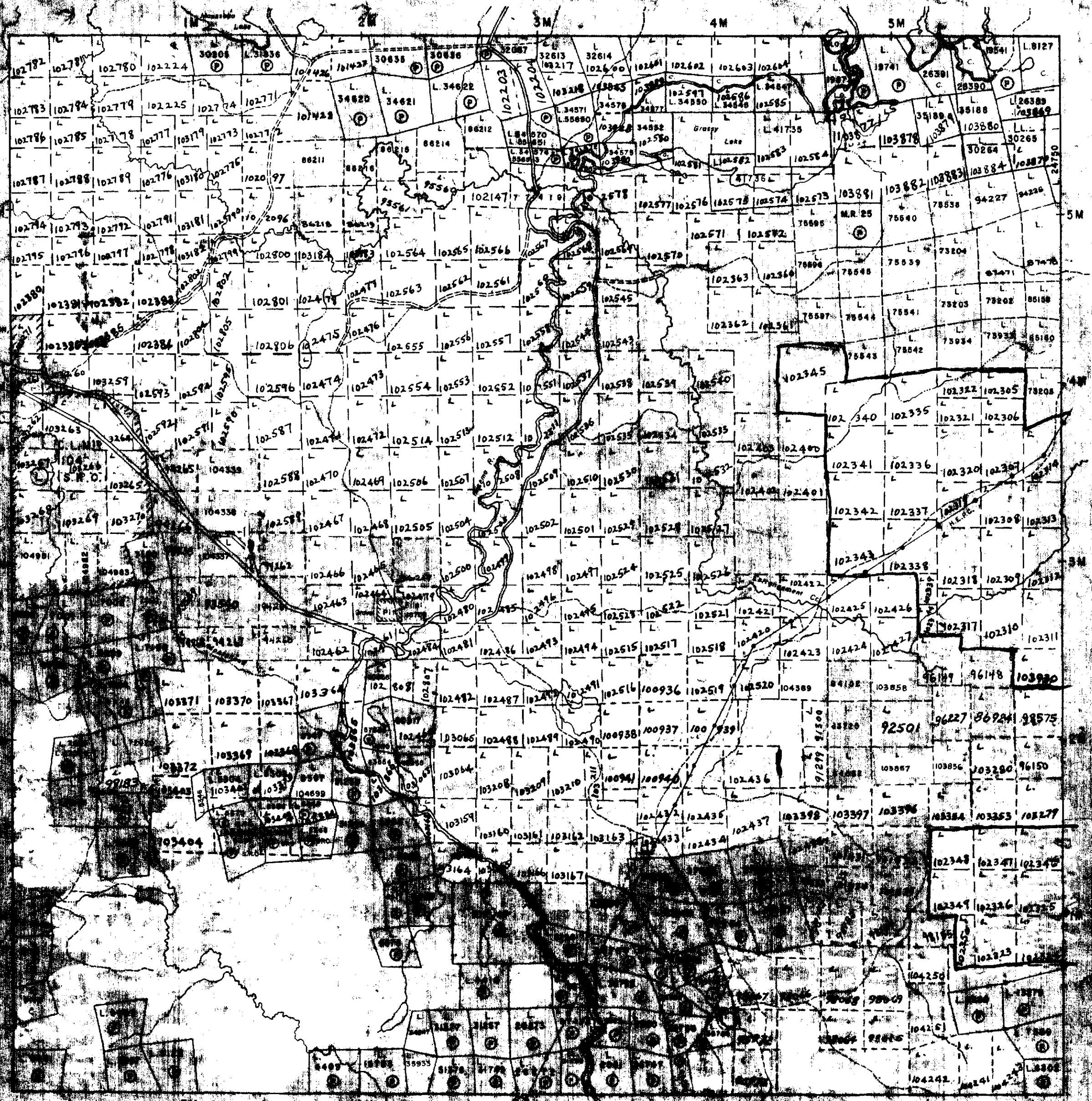
NOTES

ADD Surface rights reservation around all lakes & rivers

DATE OF ISSUE  
MAY 19 1964

PLAN NO. M-366

DEPARTMENT OF MINES  
- ONTARIO -

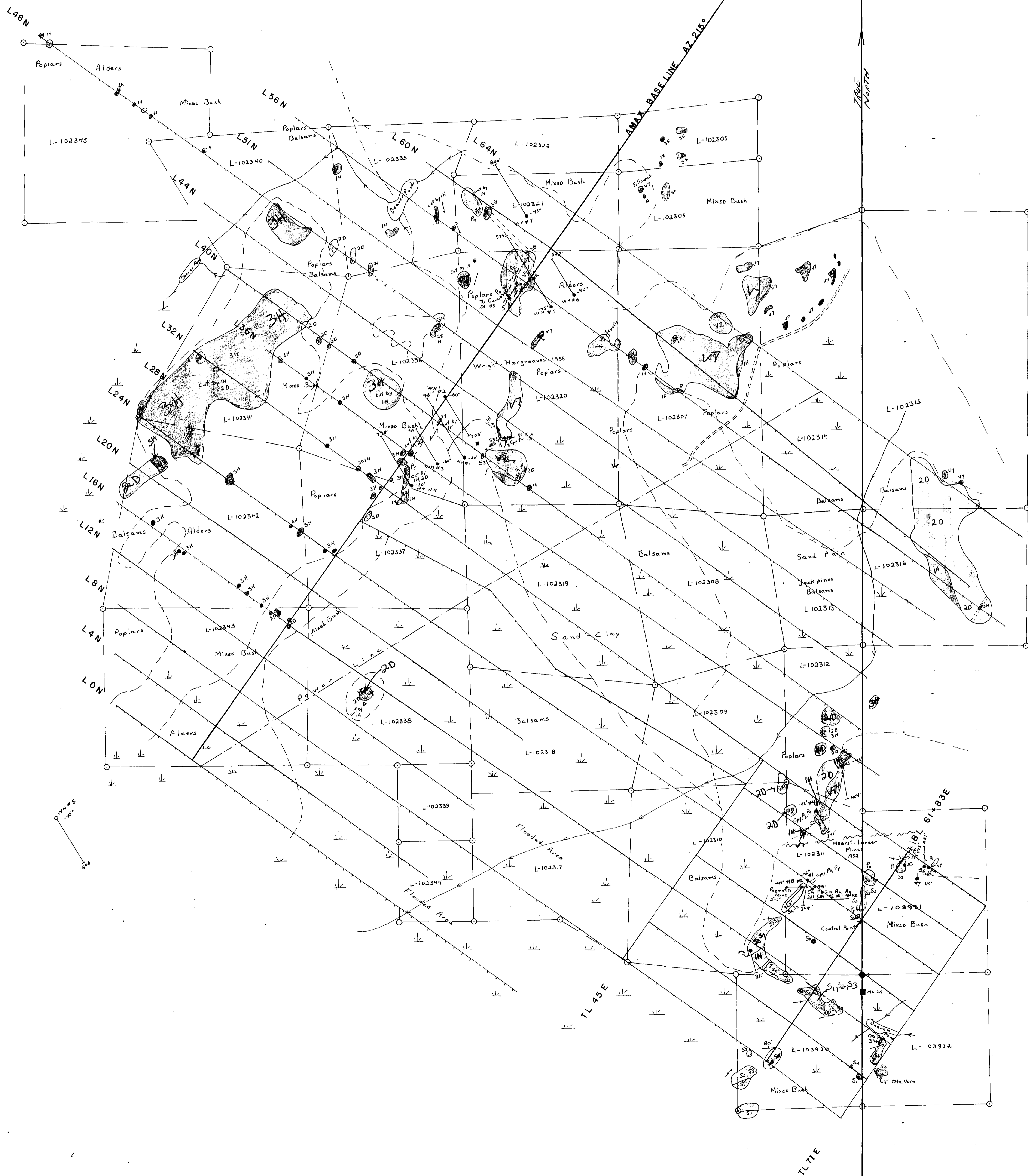


HEARST TWP. M-364



32D04SE0314 63.2430 HEARST

HEARST TWP  
M'ELROY TWP

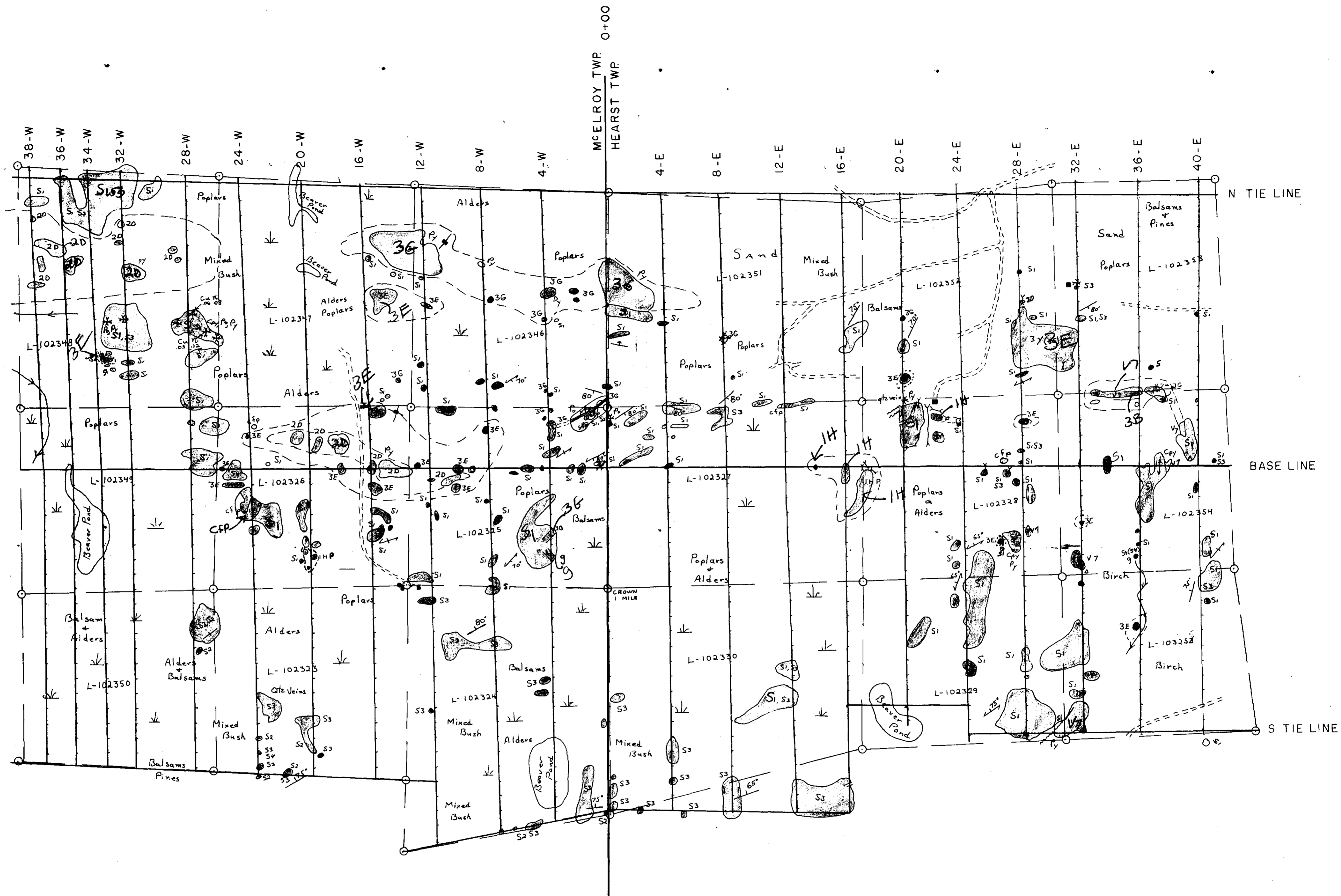


# AMAX EXPLORATION INC.

KIRKLAND LAKE

- |   |   |  |
|---|---|--|
| <p><b>Legend</b></p> <ul style="list-style-type: none"> <li>● 3H Meta. Provenite</li> <li>● 1H syenite</li> <li>● 2D Diorite</li> <li>● S1 S2 S3 Conglomerate, arkose</li> <li>● V7 basalt greywacke</li> <li>● 3G gabbro</li> <li>● 3E peridotite</li> </ul> | <p><b>Symbols</b></p> <ul style="list-style-type: none"> <li>∕ Foliation, vertical dip</li> <li>X bedding with dip</li> <li>∕ shear and/or fault</li> <li>Δ brecciation</li> <li>○ exposure</li> <li>— geological contact</li> <li>— trench</li> <li>⊙ pit</li> <li>⊙ muskeg or wet ground</li> </ul> | <p><b>Other</b></p> <ul style="list-style-type: none"> <li>○ B.M. bearing and dip</li> <li>R rusty oxidation</li> <li>G graphite</li> <li>Py pyrrhotite</li> <li>Py pyrite</li> <li>Pa Pentlandite</li> <li>Ch Chalcopyrite</li> </ul> |
|---|---|--|

<b>AMAX GROUP I</b>		<b>PROJECT 302</b>	
<b>M'ELROY TWP</b>		<b>DATE 16 Oct 68</b>	
<b>INSTRUMENT: Geological Survey</b>		<b>REVISIONS:</b>	
<b>SCALE 1" = 400'</b>		<b>DRWN BY J.C. Demaree</b>	
		<b>REVISOR: Lou Clark, Demaree</b>	



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- |  |   |  |                                   |
|--|---|--|-----------------------------------|
| <p><b>Legend</b></p> <ul style="list-style-type: none"> <li>● 3y peroxenite</li> <li>● 1HP syenite-feldspar porphyry</li> <li>● 2D diorite</li> <li>● S1 S2 S3 conglomerate, or kose</li> <li>● V7 basalt greywacke</li> <li>● 3G gabbro</li> <li>● 3E peridotite</li> <li>● cfp quartz-feldspar porphyry</li> </ul> | <p><b>Symbols</b></p> <ul style="list-style-type: none"> <li>/ foliation, vertical dip</li> <li>/ bedding with dip</li> <li>/ shear and/or fault</li> <li>△ brecciation</li> <li>□ exposure</li> <li>○ geological contact</li> <li>- trench</li> <li>* pit</li> <li>☆ muskeg or wet ground</li> </ul> | <ul style="list-style-type: none"> <li>↖ D.D.H bearing and dip</li> <li>R rusty oxidation</li> <li>g graphite</li> <li>P Pyrrhotite</li> <li>Py Pyrite</li> <li>P Pentlandite</li> <li>cpy chalcopyrite</li> </ul> | <p>⊕ Joints N-S, E-W vertical</p> |
|--|---|--|-----------------------------------|

# AMAX EXPLORATION INC.

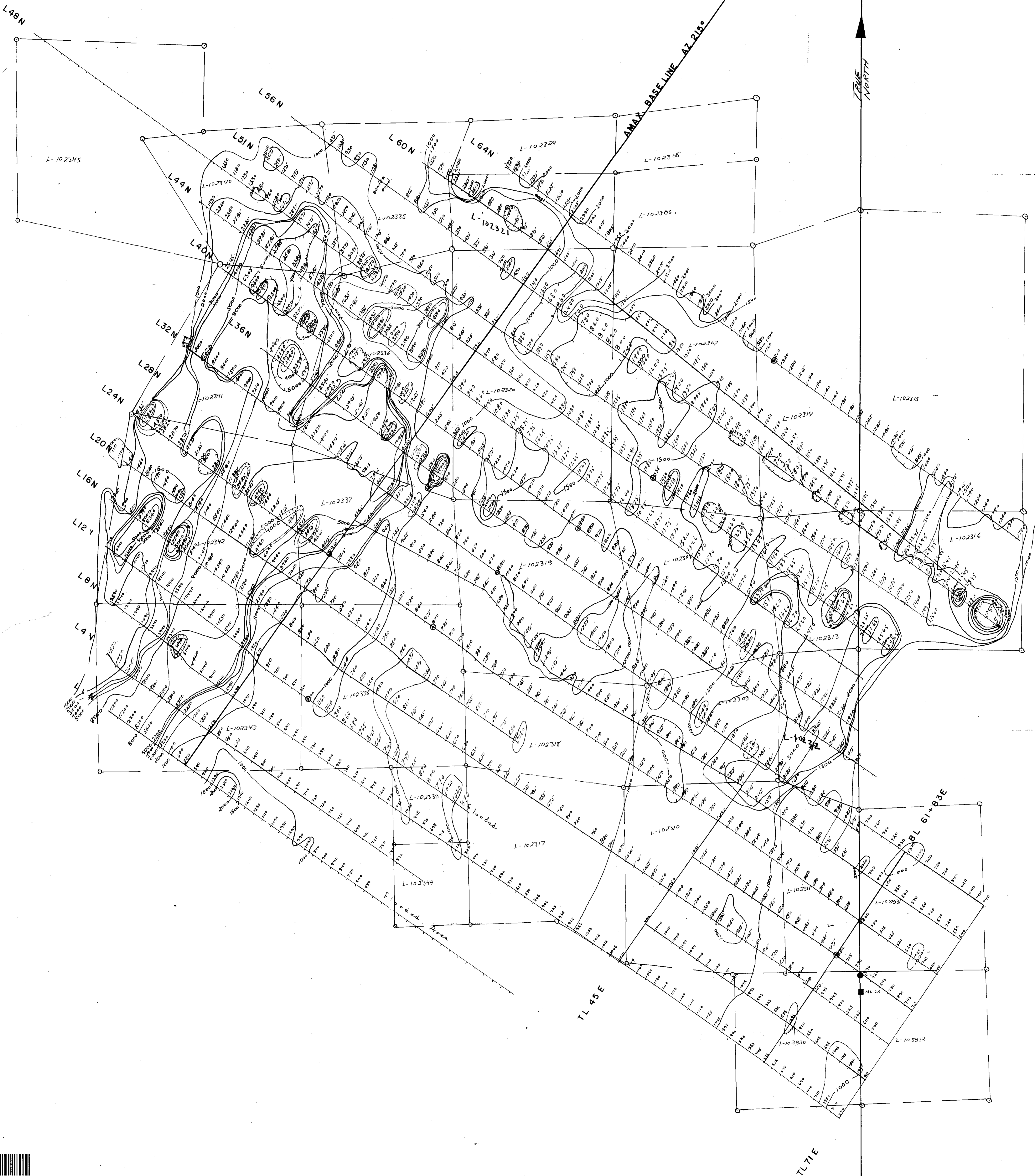
## KIRKLAND LAKE

AMAX GROUP 2

PROJECT 302 McElroy & Hearst twps.

SCALE 1" = 400' Geological Survey

DRAWN BY: <i>J.L. Dumais</i>	
DATE: 16 oct 68	
REVISED BY:	DATE:
<i>Jean Claude Dumais</i>	



240

Isomagnetic Susceptibility Contours  
 less than 0  
 0 - 1000  
 1000 - 1500  
 1500 - 2000  
 2000 - 3000  
 3000 - 4000  
 4000 - 5000  
 5000 - 8000  
 8000 - over  
 Base Stations @

# AMAX EXPLORATION INC.

KIRKLAND LAKE

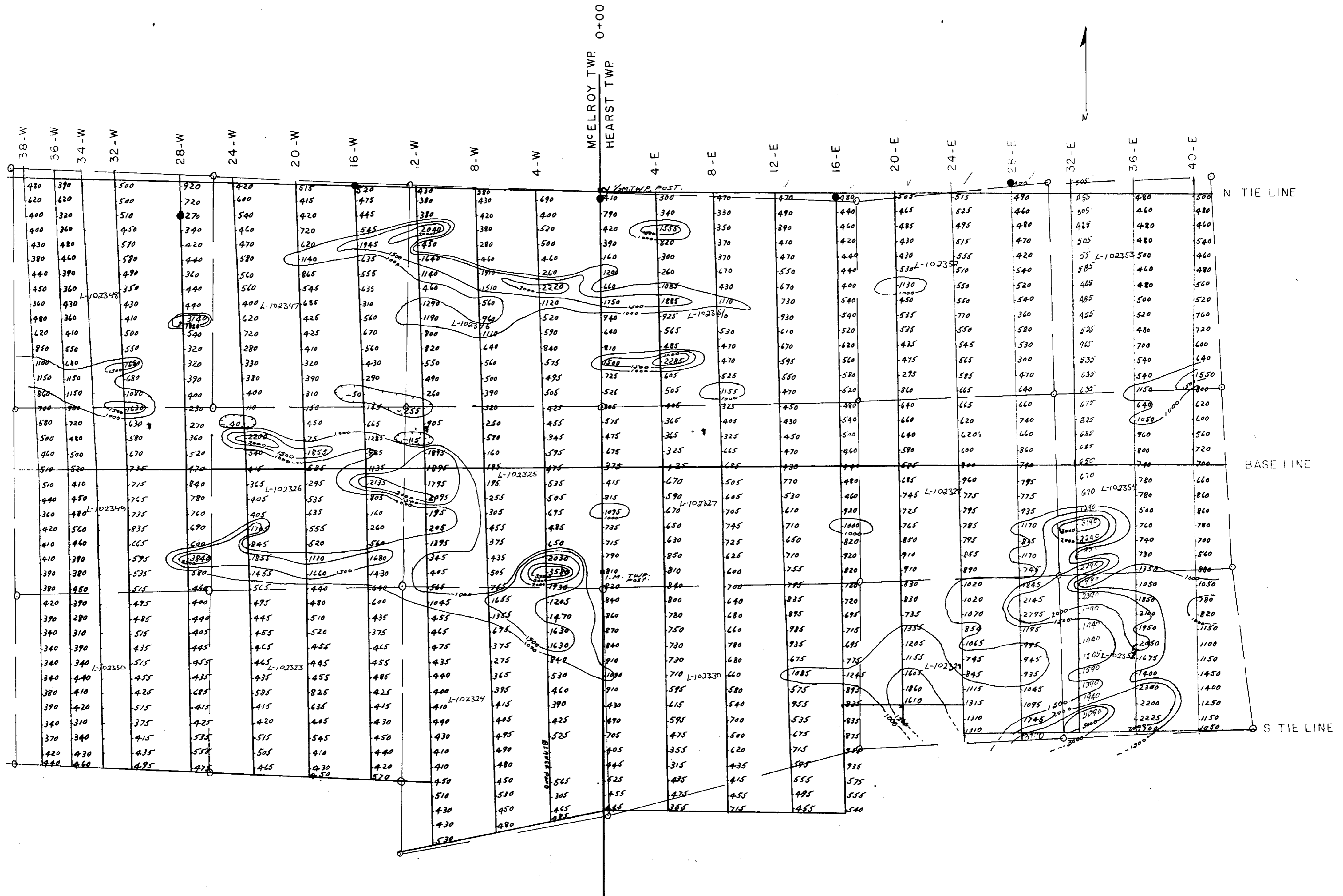
Number of stations Read - 1222  
 Add 57358 to all readings to correlate with Landerlake magnetic station

AMAX GROUP I  
 MCELROY TWP  
 INSTRUMENT: MoPhar Fluxgate Magnetometer  
 Serial No. 6494  
 SCALE 1" = 400'  
 Number of stations Read - 1222

PROJECT 302

DRWN BY Randy Roussain  
 DATE August 1968  
 REVISED BY DATE  
*[Signature]*  
 June 24, 1969

63.2430



Isomagnetic Susceptibility Contours

- less than 0
- 0 - 1000
- 1000 - 1500
- 1500 - 2000
- 2000 - 3000
- 3000 - 5000



32D04SE0314 63, 2438 HEARST

250

# AMAX EXPLORATION INC.

## KIRKLAND LAKE

Add 57350 to all readings to correlate with  
Number of stations Read - 873

Larder Lake magnetic station

AMAX GROUP 2

PROJECT 302 McElroy & Hearst twps.

SCALE 1" = 400' McPhar Fluxgate  
Serial No. 6494

DRAWN BY Len Britt  
DATE September 1968

REVISED BY DATE

*[Signature]*

• Base station.