



31L14SW0005 83.2637 PARKMAN

Report
on

MAGNETOMETER SURVEY

on

31 Mining Claims

of

IRON CITY MINES LTD.

in

Parkman & McAuslan tps.,
Nipissing county, NE. Ont.

by

ALBERT HOPKINS

Consulting Mining Geologist

Introduction

On 26 Sept. 1969 the writer by an agreement letter contracted to perform (among other things) a magnetometer survey over 31 of the latter's mining claims, and to record same as assessment work with the Ontario Department of Mines on or before 18 Nov. 1969. This was done, and this report with attached maps (which are required to be delivered to the Ont. Dept. of Mines within 60 days of the 18 Nov. '69 date) summarizes the survey.

Property

This survey grid covered the land area of the following 31 mining claims:-

T.57052	T.57393	L.104521	L.104529
57053	57394	104522	104530
57054	57396	104523	104531
57055	57268	104524	104532
57056	57269	104525	104533
57057	57272	104526	104534
57058	57273	104527	104535
57059		104528	231690

These 31 claims are part of a contiguous group of some 150 claims (of which 5 are Leased) held directly or indirectly by Iron City Mines Ltd. in Parkman and McAuslan tps., Nipissing county, Larder Lake Mining Division, NE. Ontario.

Location

26 of the claims covered by this survey lie near the south boundary of Parkman tp., while the remaining 5 claims are adjoining in the extreme NE. corner of McAuslan tp. This is 2½ miles due south of McLaren's Bay, Lake Timiskaming at 46°50' N. lat. and 79°17' W. long. in Nat. Topo. Series rectangle No. 31.L.14. (SE.¼, about 40 airmiles NE. of North Bay, Ontario, near the Quebec border.

Access

The area covered by this survey may be reached by motor car from North Bay by driving about 35 miles along paved highway No. 63 NE. to a point two miles short of the hamlet of Eldee, Ont. At this point one drives North on an Ont. Dept. of Lands & Forests gravel road, the "McConnell Lake access road about 26 miles to the survey grid area, which crosses this gravel road about 2 miles short of McLaren's Bay. This survey grid area is also traversed by a diamond drillers' tractor road and several good trails.

Topography

Apart from the two outcrops near D.D.H.#7 and the scarp north of Green lake, the entire area surveyed is covered by Pleistocene fluvio-glacial sand and gravel of considerable thickness. This consists of eskers, moraines, kames, drumlins and kettle holes. Thus the relief is over 200 feet in places, and the sand-gravel thickness varies from zero to perhaps 300 feet.

The surveyed area contains part of Green and Surecatch lakes, and several beaver ponds and small streams. Much of the precipitation and ground water must percolate through the sand and gravel eastward to lake Timiskaming.

The area is well wooded with maple, jackpine, birch, poplar, spruce and balsam, with some oak, ash, beech, cedar and white pine.

General Geology

Apart from the recent preliminary geological whiteprint "Tomiko Sheet" No.P.394 by the Ont. Dept. of Mines late in 1967, this immediate area has never been mapped by federal or provincial geological surveys. Moreover, the area is mainly drift-covered, as mentioned above and therefore very little is known of the bedrock surface. However, fr

A few rock outcrops plus the few successful diamond drill holes bored in the vicinity, the geology seems to be typical Grenville metamorphosed igneous and sedimentary rocks. This property is about 15 miles SE. of the Grenville Front geo-thrust fault.

Local Geology

The rocks found on the property include, besides the Iron Formation, carbonate metasediments (mainly dolomitic marble); migmatitic and non-migmatitic quartzo-felspathic metasediments and ortho-quartzite with intercalated layers of amphibolite and calc-silicate rocks; biotite-quartz-muscovite-plagioclase metasediments locally with intercalated layers of quartzo-felspathic metasediments and amphibolite; massive and gneissic amphibolites of unknown origin (they could include both ortho- and para-amphibolites), in places iron-rich and magnetic; and migmatitic granitic rocks and granitic gneisses containing lens-like bodies and layers of massive granite.

The only known two outcrop areas in this survey area are:-

(a) In the neighbourhood of D.D.H.#7 - granite gneiss, grey to salmon pink, fine-grained, containing much muscovite; and

(b) North of Green Lake - granite gneiss - Muscovite-biotite-granite gneiss, grey, massive, slightly schistose in places, cut by pegmatite granite dykes. In places the gneiss is metamorphosed further into muscovite-biotite schist.

Economic Geology

Known economic minerals of the area include those of gold, cobalt, copper, iron, kyanite, nickel, lead, iron sulphides, talc, marble, marl, and vermiculite. Uranium has been discovered to the east, across lake Timiskaming near Hunter's Point, lake Kipawa, Quebec.

On the Iron City Mines Ltd. property, iron occurs mainly as an oxide (soluble magnetic iron) in highly metamorphosed Grenville metasediments interbedded with ortho- and para-gneisses in a large fold, several miles in length.

The Green lake section appears to represent a steep synclinal basin pitching northward and outcropping under the sand overburden at Green creek. The grades and widths found to date are on the low side for present-day iron ore requirements. However, very few diamond drill holes were successful in even reaching the bedrock, and more drilling is warranted. The excellent location of this iron property as regards its proximity to markets suggests its possible importance for the future.

As mentioned below under "Discussion of the present survey", the two most interesting magnetic anomalies outlined by this present survey may represent pyrrhotite bodies instead of magnetic iron formations. If so, then the possibility of commercial deposits of base and precious metals exists (e.g. Ni, Cu, Co, Au, Ag, Pt, Pd, etc.) in the "Laudenslager" and "Hopkins" anomalies.

Magnetic Instrument Used

The writer used a Sharpe P.M.F.3 fluxgate magnetometer, made on Martin Ross Ave., Downsview, Ont. This is a vertical component "one-man" magnetometer with transistorized circuitry and temperature compensation. It gives direct readings in gamma values, and accurate zero setting at base stations, and is especially useful for iron formation and massive sulphide (pyrrhotite) formations.

The instrument has a maximum sensitivity of 20 gammas (per scale division) on the 1000 gamma range. Its readability is to 5 gammas ($\frac{1}{2}$ a scale division on the 1000 gamma range), and its maximum range is plus or minus 100,000 gammas.

Extent of this Magnetic Survey

The E-W township boundary between Parkman and McAuslan tps. was cut in the 19th century. The land was then logged and later burned, as evidenced by the remains of large, square, white pine stumps, and also later large charred black jagged partially burnt white pine stumps and remnants. Thus the original E-W tp. boundary line has disappeared although it shows on most maps. We attempted to find vestiges of this line, but to no avail. So we attempted to re-establish this tp. line by means of cutting our Baseline No. 1. This Baseline (called 20N or 2000' N.) starts at the wall NE. bay of the Se. bay of Troutbait lake, and continues due E. a point 88E. (8800'E.) From this line normal (N-S) Picket Lines are

400' intervals across the S. part of the property from Line 16E to L.88E., where the strike is assumed to be mainly ENE-WSW.

Due to the 'L' shape of the property and the horizontal folding of the rock formations, the general strike of the rocks of the N. part of the property is believed to be more NW-SE (as well as the Green lake E-W syncline strike). Therefore L.88E was utilized as BaseLine No. 2, with E-W Picket Lines @ 400' intervals normal to it from L.20N to L.124N.

The shape of the property made a third B.L. (No. 3) necessary, so it was out parallel to No. 2. It is L.72E, with E-W P.L.'s at 400' intervals from L.120N to L.14321'N. The B.L.'s and P.L.'s total about 31 miles in length. Magnetometer readings were taken at 100' pickets along these B.L.'s and P.L.'s, as well as on some claim lines. A total of about 1500 mag. readings were taken and recorded in toto.

Aeromagnetic Survey

The present survey grid area was flown in 1959-60 by the Geophysics Division of the G.S.C., Dept. of Mines & Technical Surveys, Ottawa, Canada. It was compiled by Aero Photos Inc., and was published in 1965 as the "Ottertail Creek" sheet, map No. 14800. The flight altitude was 1000' above the average ground level.

The magnetic data on the aeromap were compiled from information recorded along the flight lines shown on their map. The anomalies expressed by the magnetic contours are dependent on the variable magnetic intensities of the underlying rocks, and may be due to conditions near, or at unknown depths below the surface. High magnetic anomalies normally indicate the presence of basic rocks, such as diabase, gabbro, or serpentinite, which have a relatively high iron content; but in special instances they may be due, or partly due, to concentrations of magnetic minerals, such as magnetite or pyrrhotite. By means of the magnetic anomalies, various rock bodies or structural features, such as faults or folds, may be traced into, or across, areas of few or no outcrops. In many instances, however, no interpretation of particular anomalies may be possible without further geological information (such as diamond drilling).

The north Green lake air anomaly is circular, with a maximum intensity of over 6000 gammas. The subsequent ground mag. survey showed an ESE-WNW-striking mag zone, apparently dipping steeply to the NNE, over 1500' long.

The south Green lake air anomaly is also circular, with a maximum intensity over 5500 gammas. The subsequent ground mag. survey showed a somewhat elliptical mag. anomaly about 2500' long E-W by 1250' wide (N-S), with an apparent steep dip to the N. These north and south Green lake anomalies are believed to be the north and south limbs of a syncline.

Previous Ground Mag. Surveys

A mag. ground survey was performed by Mr. R.S. Gray of Asarco Exploration Co. of Toronto in 1965 over the Green lake zone from a B.L. striking 320° diagonally across our present N-S grid area. This survey was extended by the writer in 1966.

Purpose of the present Ground Mag. Survey

The present survey was recommended by the writer in his report of Dec. 1968, to extend the mag. information W. from the previous survey to the end of the Green lake zone, as well as to cover the Hopkins aeromag. zone, and to investigate the unknown area where the Laudenslager anomaly has now been found. The two previous ground surveys had indicated large masses of magnetic iron formation, which were subsequently confirmed by 10 diamond drill holes totalling about 6000' of boreholes. The two limbs of this mag. syncline were still open to the west at that time.

Discussion of the Present Survey (see attached map in 2 sheets)

The instrument was zeroed on the same large outcrop of barren quartz-orthoclase granite on the Diver road as was used for the 1965-6 survey. The instrument was also read over a few dozen stations of the 1965-6 surveys for comparison, and the readings were practically identical with those of the previous years. Therefore the former stations

readings were plotted on the attached maps to show the magnetics on the adjoining ground to this present survey. On these maps the magnetic readings of 5000 gammas and over are contoured and coloured, and are considered to be of interest.

On the North Map Sheet the magnetics are remarkably low and flat, with three exceptions. The areas of low or flat readings are assumed to be granite orthogneisses, high in quartz, orthoclase, muscovite, biotite and hornblende, but low in magnetite

The northernmost or "Laudenslager" anomaly, previously unknown, is heavily overburdened, and has interesting possibilities. It traverses parts of claim Nos. L.104525, 104530, 104531, and 104532, and is still open to the NW. on L.105098. It is over 2800' long, about 200' wide, and rises to a high of over 12,000 gammas. This could be caused by either I.F., pyrrhotite, or a very iron-rich diabase dyke. Where the anomaly reaches the N. boundary of L.104532 it is about $\frac{1}{4}$ mile E. of the known N. Webb Lake Iron Formation (I.F.), and it is possible that the two join up E. of the N. end of N. Webb lake. If this Laudenslager anomaly is caused by magnetic I.F. it would be too narrow and low-grade to be of economic importance. If, however, it is caused by pyrrhotite or other magnetic minerals other than magnetite, then it could be of great value, and it therefore should be investigated.

The centre anomaly on this map sheet is the W. extension of the N. limb of the Green lake I.F. This was partially surveyed in former years, and was intersected by D.D.H.#7. The magnetics rise off-scale over 40,000 gammas. The section seen on the present map area tapers off to insignificance going W., and is probably of no economic importance. It traverses parts of claims Nos. L.104522, 104523, and 104524.

The south anomaly of this map sheet is at Green lake on claim Nos. T. 57272 and 57273. It is the SW. end of the S. limb of the Green lake I.F., surveyed and drilled in previous years. It reaches over 47,000 gammas, but tapers off to insignificance going W. on this map sheet.

On the South Map Sheet the magnetics are again remarkably low and flat, except for the "Hopkins Zone" on claim No. T.57053. Here there is a banana-shaped magnetic high anomaly, about 1800' long, rising to 7,800 gammas above datum. This could represent a zone of magnetite-rich rocks, or a magnetic pyrrhotite sulphide zone, or iron-rich diabase dyke. If the magnetic mineral is only magnetite, the deposit must be too small (only about 100' wide) and low-grade to be of economic interest. In previous magnetic surveys on the Iron City property the main I.F.'s gave high readings more in the order of 30,000 to 70,000 gammas.

Therefore it is felt (and hoped) that this magnetic anomaly is caused by pyrrhotite, which occurs elsewhere in this area, e.g. the Beebee deposit at Half Moon Lake, about 4 miles SE. of the Hopkins Zone, which is reported to carry nickel and copper values. Similar deposits are reported in Poitras tp. near Thorne, Ont., and at lake Beauchene, near S. Timiskaming, Quebec. This heavily-overburdened Hopkins Zone should be investigated.

The flat or low magnetic areas on this map sheet are also assumed to be underlain by granite orthogneisses, high in quartz, orthoclase, muscovite, biotite and hornblende, but low in magnetite.

Summary & Conclusions

1. The present magnetic survey indicates that the 31-claim heavily-overburdened property of Iron City Mines Ltd. to be mainly underlain by granite gneiss.
2. Of the 4 magnetic anomalies obtained, two are the Westerly extensions of the North and South limbs of the Green lake synclinal I.F., and of little commercial importance.
3. The remaining two moderately magnetic highs, however, are of possible importance for base metals. They are called the "Laudenslager Zone" on claim Nos. L.104525, 104530, 104531, and 104532; and the "Hopkins Zone" on claim No. T.57053.
4. These last two anomalies should be further investigated by an E.M. survey and diamond drilling.

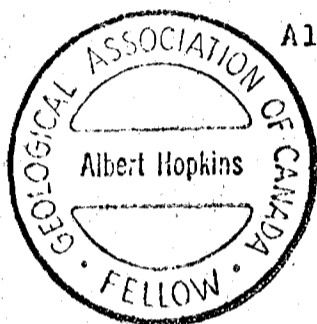
Recommendations

It is recommended by the writer that:-

1. A vertical loop type or Afmag type Electro-Magnetic geophysical survey be performed over the same Picket Line grid where the Hopkins and Laudenslager magnetic anomalies occur.
2. If conductors are indicated coinciding with the magnetic anomalies, then the following diamond drill holes be bored:-

	<u>Laudenslager Zone</u>	<u>Hopkins Zone</u>
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	D.D.H.#	70-1	70-2
Collar	Location North	122	24
	East	59	32
	Hole depth	500'	500'
	Dip	-45°	-45°
	Strike	90°	330°



All of which is respectfully submitted,

Albert Hopkins

Albert Hopkins

B.A.So., F.G.S., F.G.A.C., M.C.I.M.
Consulting Mining Geologist.

References

1. Vert. Air Photo No.58.R.4633.058.29 by Ont. Dept. L.& F., 1/4 m.:1".1958.
2. Forest Inventory Base Map No.467791 by Ont. Dept. L.& F., 1/4 m., 1959.
3. "Ottertail Creek" topo. map. No. 31.L.14.(E.1/4) by R.C.E., Ottawa, 1960, scale 1:50,000.
4. "North Bay" topo. map. No. 31.L by Dept. Mines & Tech. Surveys, Ottawa, scale 1:250,000. 1964.
5. "Ottertail Creek" aeromag. map. No. 14800 by GSC., Ottawa, 1 m. 1965.
6. "Map of mag. Survey & Drilling of Green L. Iron Zones", #65-10 by R.S. Gray & A. Hopkins, 1":200'.Nov.'65.
7. Map #65-16,"Mag. Survey N. of Green L." for Iron City M.L. by A. Hopkins. 1":200'. 30 Dec. 1965.
8. "Prelim. Hypothetical Longitudinal Section thro' Green L. Basin" map #66-6 by A. Hopkins, 1"-60', May 1966.
9. "Tomiko Sheet" prelim. geol. whiteprint No.P.394 by S.B.Lumbers of the O.D.M., 1":2 miles, 1967.
10. Engineer's Report on Iron City M.L. by D.C.MoKechnie, 20 Jan.'68.
11. Mineral Map of Ontario, No. 2148 by ODM., 1":25 miles, 1968.
12. "Iron Deposits of Ontario" by Roman Shklanka, ODM., Mineral Resources Circular No. 11, 1968, pp. 272-3.
13. Parkman tp. whiteprint No. M.563 by O.D.M.
14. Report on Mag. Survey of the Green Lake Zone of Iron City Mines Ltd. by Albert Hopkins, with map, 9 Dec., 1968.

Attached Maps

North and South Sheets of a Magnetometer Survey on 31 claims of Iron City Mines Ltd. @ 200' scale by A. Hopkins, Nov.'69.

Parkman Twp. - M.563

THE TOWNSHIP
OF
CLAIM OF MAP
McAUSLAN

DISTRICT OF
NIPISSING

LARDER LAKE
MINING DIVISION


SCALE: 1-INCH=40 CHAINS

LEGEND

PATENTED LAND	Ⓟ
CROWN LAND SALE	C.S.
LEASES	Ⓛ
LOCATED LAND	Loc.
LICENSE OF OCCUPATION	L.O.
MINING RIGHTS ONLY	M.R.O.
SURFACE RIGHTS ONLY	S.R.O.
ROADS	—
IMPROVED ROADS	—
KING'S HIGHWAYS	—
RAILWAYS	—
POWER LINES	—
MARSH OR MUSKEG	—
MINES	✕
CANCELLED	C.

NOTES

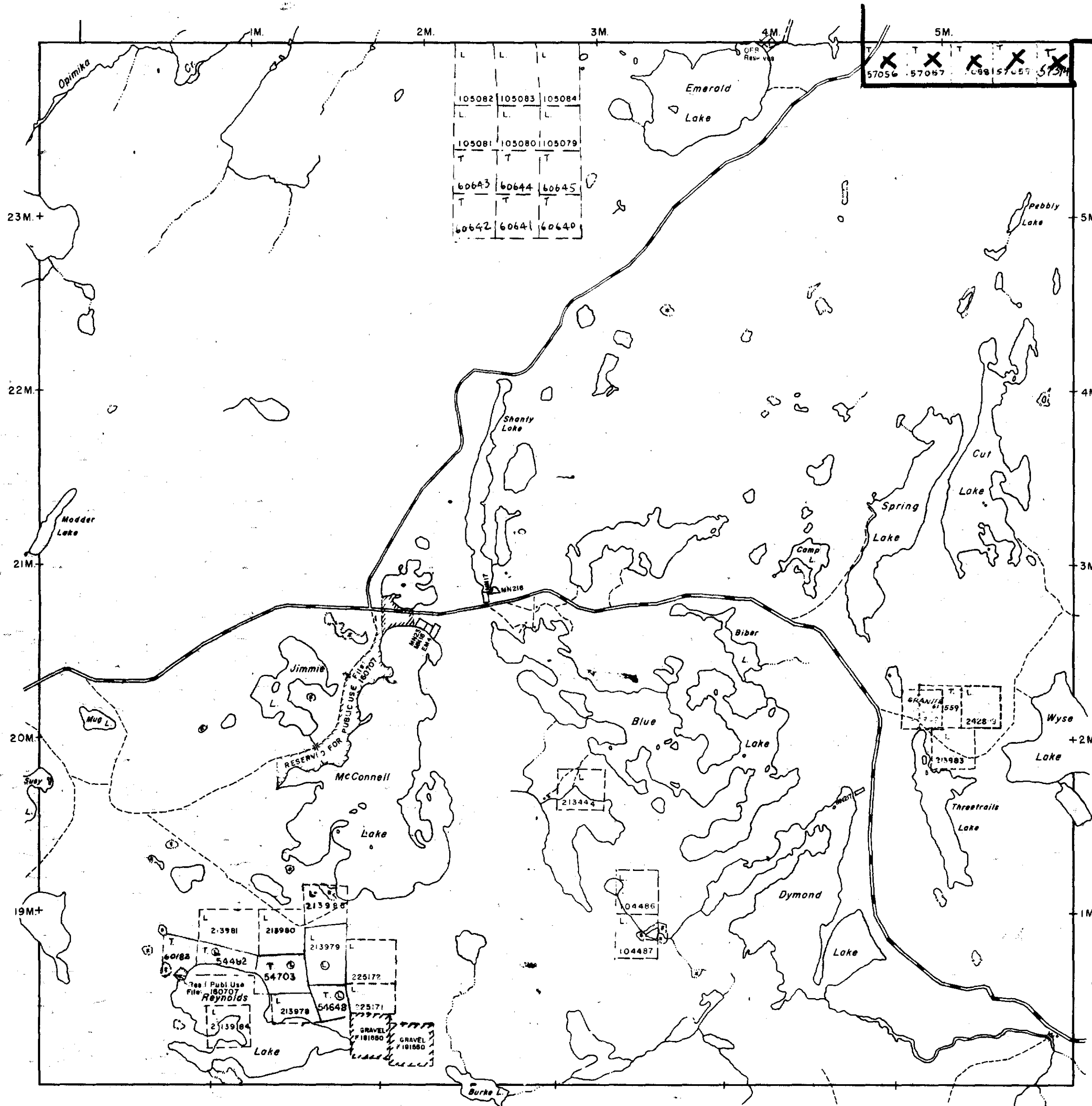
400 surface rights reservation around all lakes and rivers

Surface Rights reserved for Dept. of Lands & Forests under Sec 39 of the Mining Act shown thus  File 160707

PLAN NO. - **M.1003**

DEPARTMENT OF MINES

— ONTARIO —



LaSalle Twp. - M.980

Wyse Twp. - M.1187.

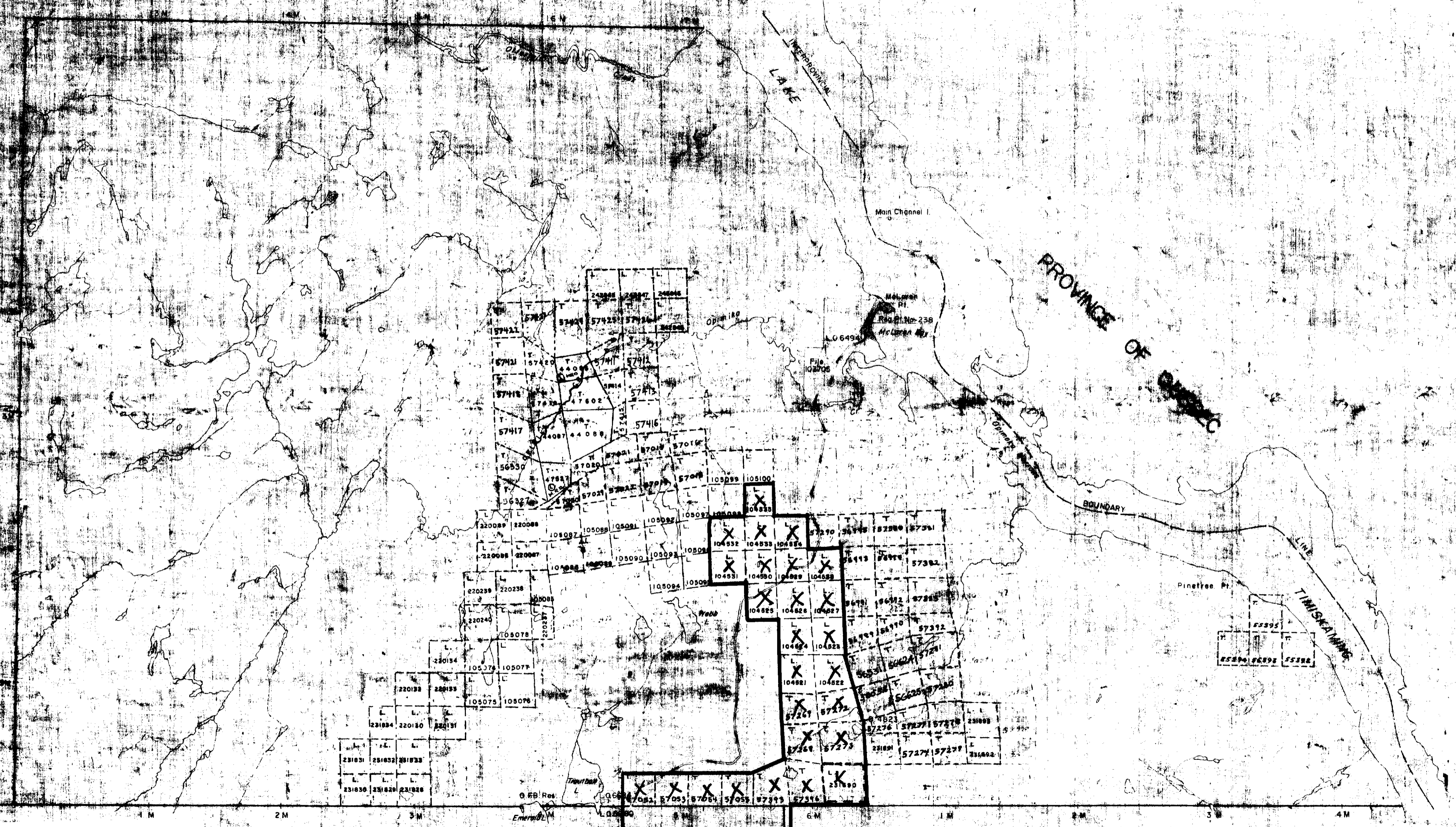
Garrow Twp. - M.830



31L145W0005 63.2637 PARKMAN

Burnaby Twp.

THE TOWNSHIP
CLAIM OF MAP
DISTRICT OF
ARDER LAK



INTENTED LINES
FOR LAND SALE
LAKES
RAILWAYS
ROADS
KINGS HIGHWAYS
RAILWAYS
COURTS
MUSKIE
LAKES

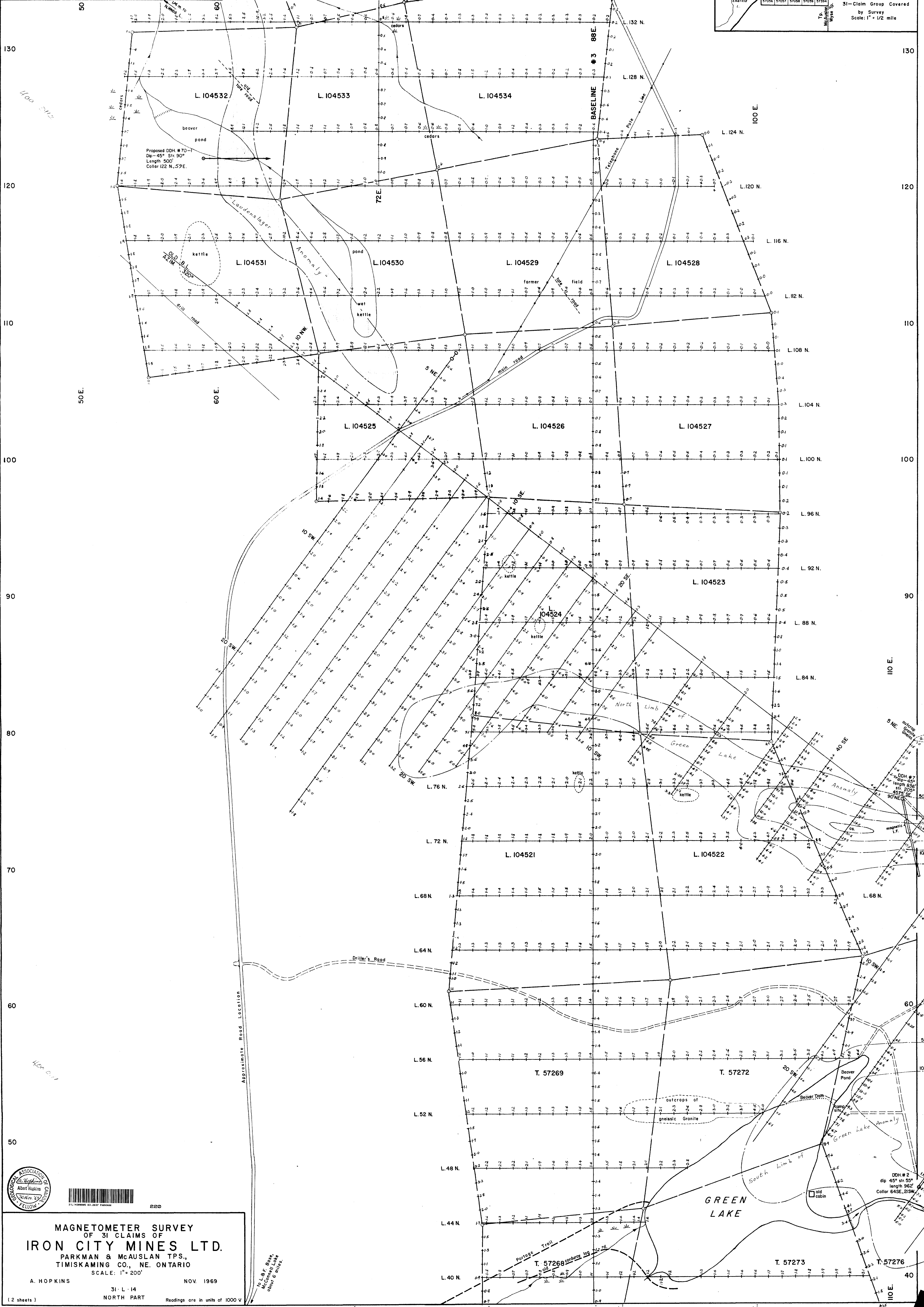
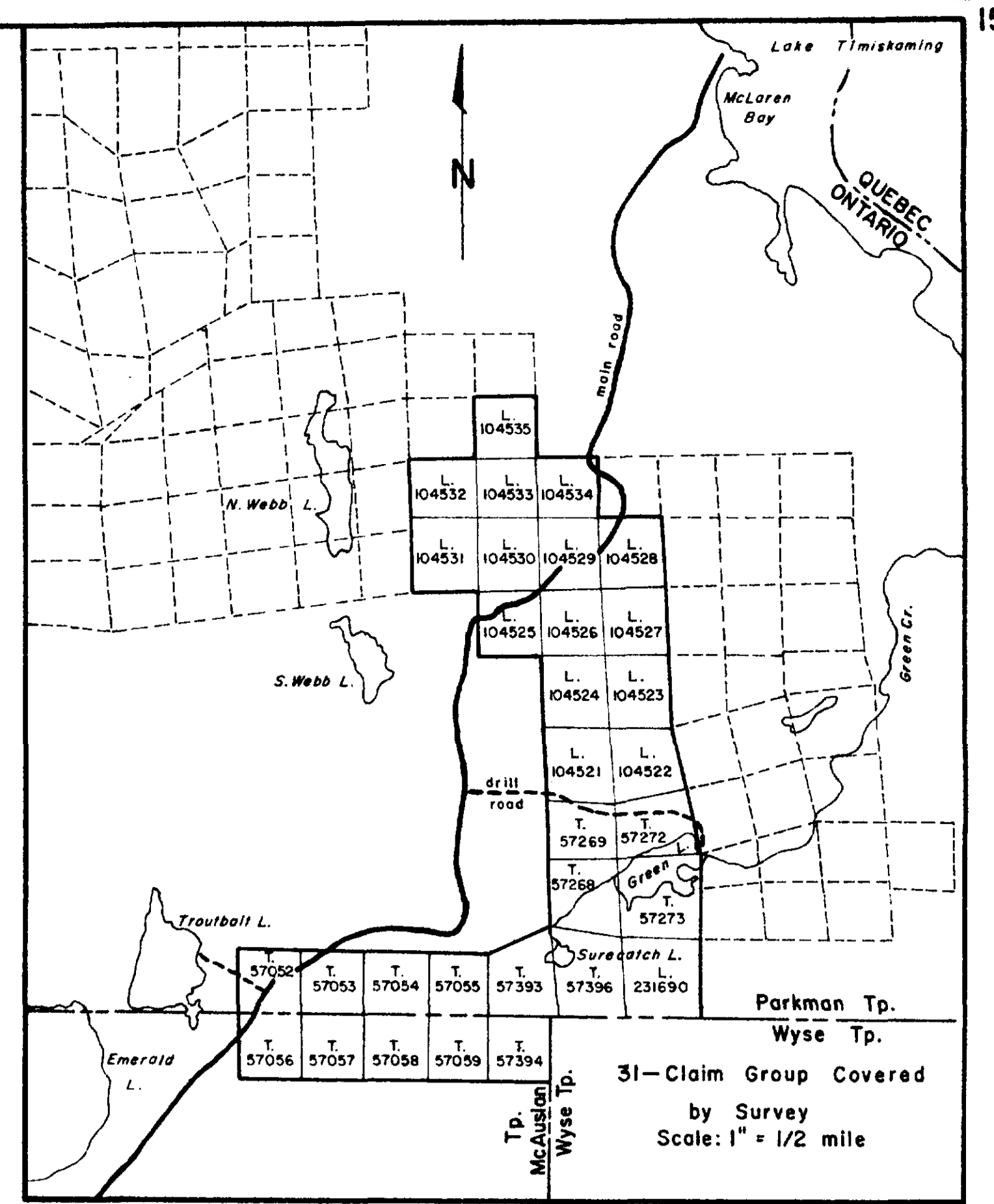
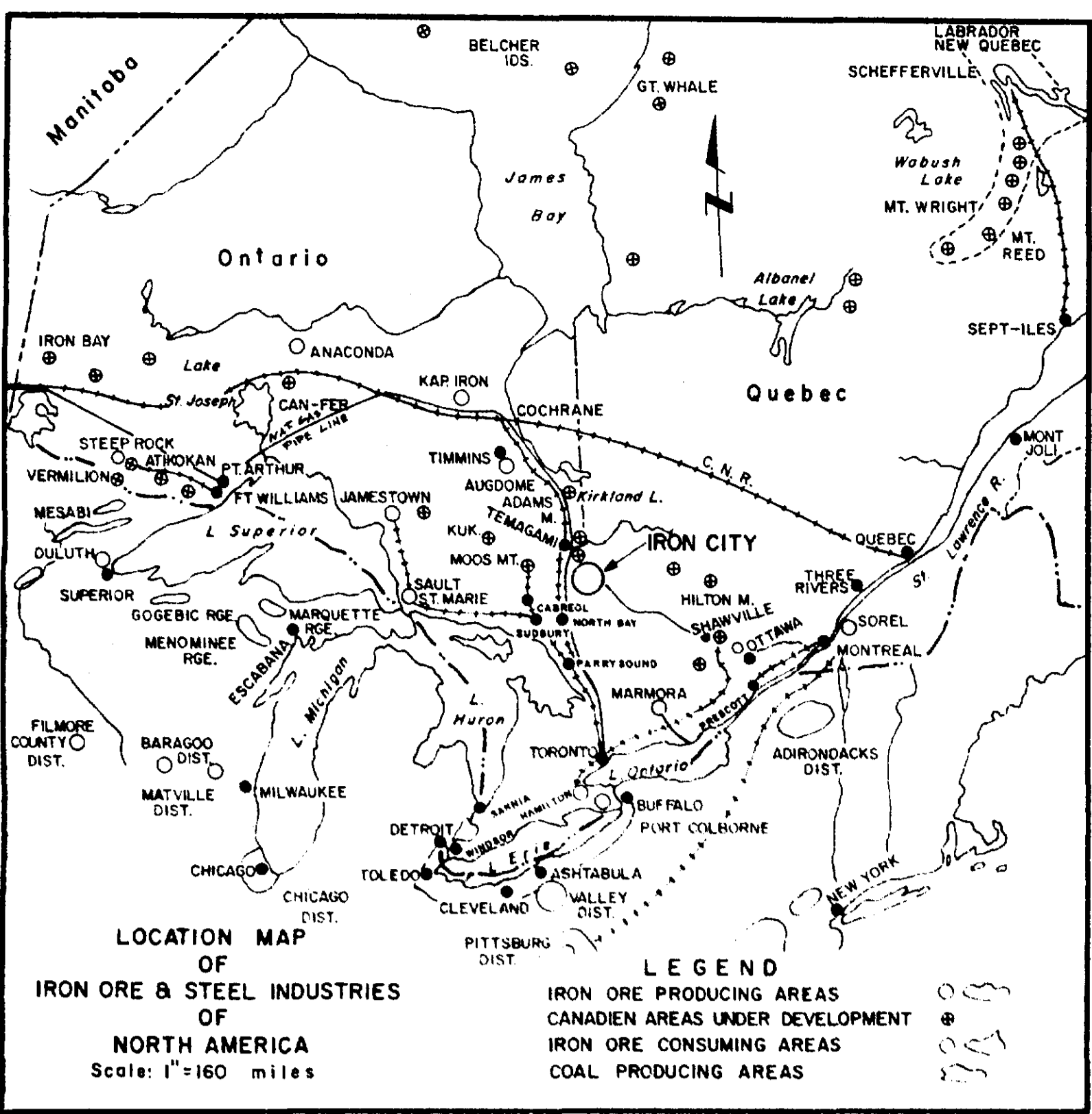
NOTES
400' Surface Rights Reservation around
all Lakes and Rivers.

McAuslan Twp.

Wyse Twp.

PLAN NO.
DEPARTMENT
ONTARIO



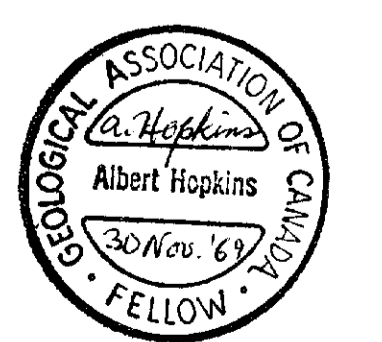


MAGNETOMETER SURVEY
OF 31 CLAIMS OF
IRON CITY MINES LTD.
PARKMAN & MCAUSLAN TPS.,
TIMISKAMING CO., NE. ONTARIO
SCALE: 1" = 200'

A. HOPKINS NOV. 1969

31 - L - 14
NORTH PART

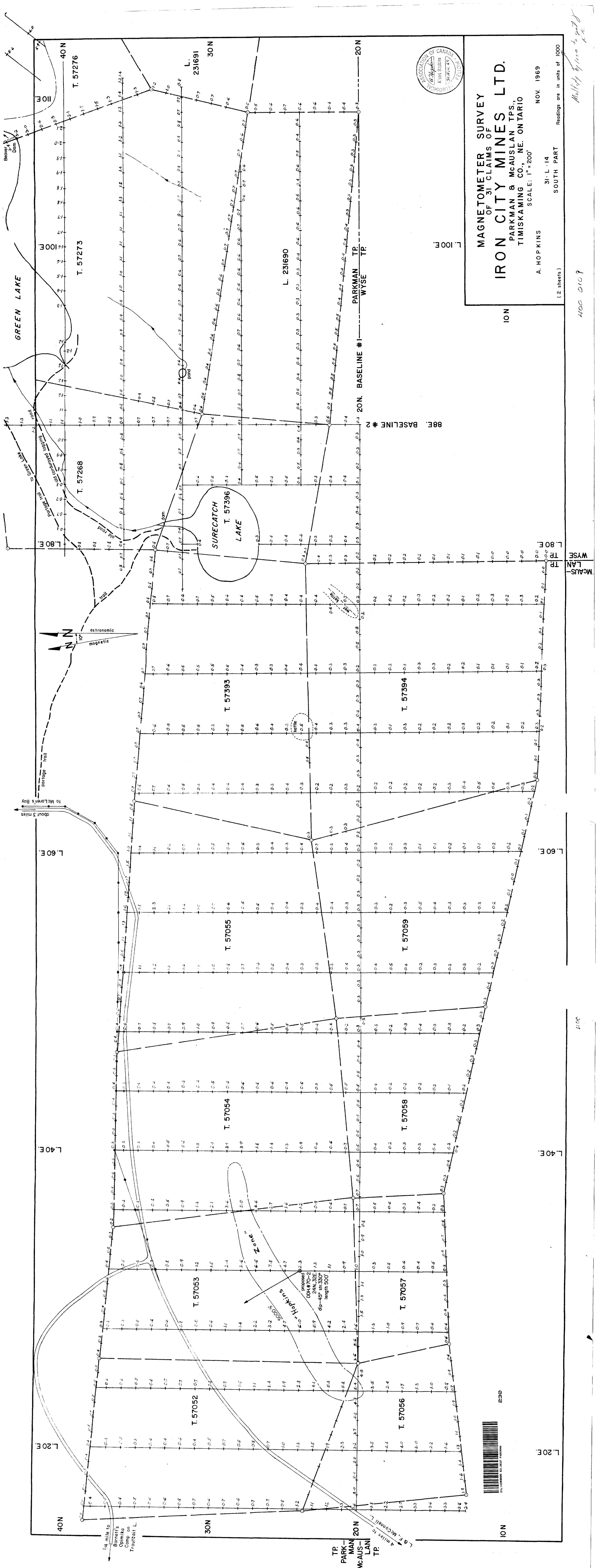
Readings are in units of 1000 γ



220

150N
130
120
110
100
90
80
70
60
50
40

70E
80E
90E
100E
110E



MAGNETOMETER SURVEY
OF 31 CLAIMS OF
IRON CITY MINES LTD.
 PARKMAN & MCAUSLAN TPS.,
 TIMISKAMING CO., NE. ONTARIO

A. HOPKINS
 NOV. 1969

Readings are in units of 1000
 SOUTH PART
 31 L. 14
 (2 sheets)

400 0109

2100



2300

Multiply by 100 to get
 1000