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## REPORT ON

A HELICOPTER-BORNE

MAGNETOMETER SURVEY

SNAKE BAY, ONTARIO

NTS. 52F/7,8

# RECEIVED

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MINING LANDS SECTION

MAY 1984

Doc. #2001

LLOYD M. WILSON

ESSO MINERALS CANADA



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# LIST OF MAPS

# (Scale: 1:5,000)

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1. Total Field Magnetic Contours - Sheets 1 & 2

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#### **1.** INTRODUCTION

On March 13, 1984, a helicopter - borne magnetometer survey was flown by Aerodat Limited, Toronto, on behalf of Esso Minerals Canada. The survey, located near Snake Bay in the Dryden area of northwestern Ontario, covers portions of Wapageisi Lake (M2056), Meggisi Lake (M2553), Kawashegamuk Lake (M2573) and Boyer Lake (M2582) claim sheet areas. (Figures 1 & 2).

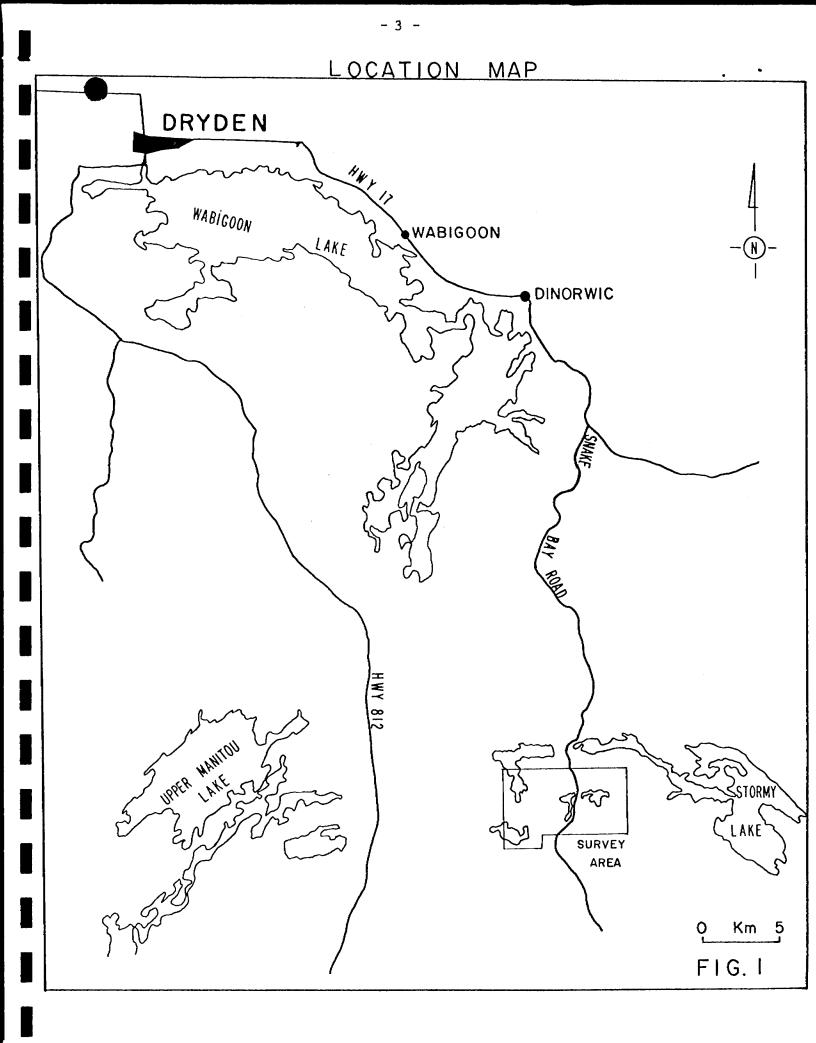
This report is submitted to satisfy the requirements necessary to credit each of the 153 claims listed in Appendix II with 40 days. Thus these claims will be maintained in good standing for one year.

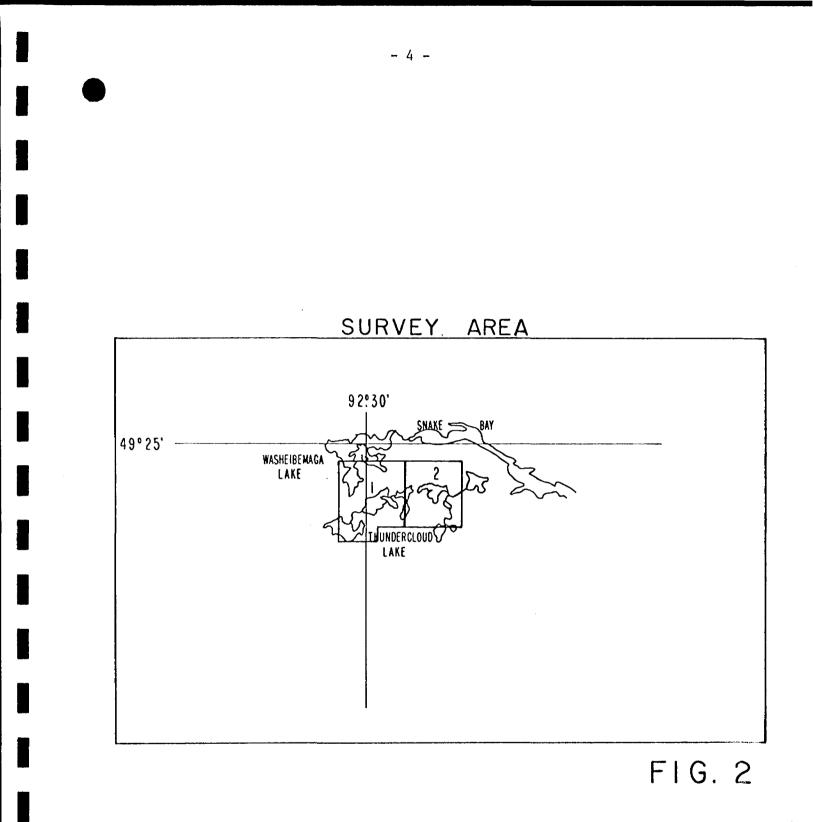
The technical information and survey specifications have been abstracted from information supplied by Aerodat Limited, Toronto. Interpretation of the magnetic survey data was carried out by L. Wilson, Geophysicist, Esso Minerals Canada.

#### 2. LOCATION AND ACCESS

The Snake Bay prospect area is situated 52 km south-east of Dryden, Ontario. The property is adjacent to an all-weather gravel logging road known as the Snake Bay Road which is maintained by Great Lakes Forest Products of Dryden, Ontario. This road leads southward from Highway 17 at a point halfway between the villages of Dinorwic and Borups Corners. (Figure 1).

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### 2. LOCATION AND ACCESS (Cont'd)

Access to the region is gained via Highway 17, or through twice daily jet service to Dryden from Winnipeg or Toronto (via Thunder Bay). The CPR main line runs through Dinorwic and the area is served by Greyhound bus and numerous freight companies.

The area lies within the Kenora Mining Division, and is under the jurisdiction of the Dryden Ministry of Natural Resources office for the purposes of land use and work permits.

#### 3. PREVIOUS WORK IN THE REGION

There has been extremely limited mineral exploration work in this area to date. Ontario Government mapping of most of the area was released in the spring of 1983.

The only published detailed maps of the area are a a scale of 1" to 1 mile by J. Thomson (1934; Map 42C), at 1" to 1/4 mile by Blackburn (1976 a and b) and Kresz, Blackburn and Fraser (1982 a and b); and a compilation by Blackburn (1982) at 1" to 1/2 mile scale. A detailed airborne EM and magnetometer survey was flown for the Ontario Government in 1980. Results are published at a scale of 1:20000 (0.G.S. 1981).

#### 3. PREVIOUS WORK IN THE REGION (Cont'd)

The area was prospected for gold in the late 1800's resulting in the discovery of the Tabor Lake and Sakoose mines, situated immediately south of Borups Corners. Both are narrow, discrete, gold-bearing, quartz veins within weakly altered, country rocks. The Tabor Lake mine produced 36 ounces of gold in 1934-1935. Reserves were estimated to be 50,000 tons grading 0.5 oz Au/ton but recent exploration work by the present holder, Sulpetro Minerals Ltd., has failed to prove this gold content.

The Sakoose mines, presently held by J. Redden, produced 3669 ounces of gold from 8,828 tons of ore (0.41 oz Au/ton) between 1899 and 1947. It is estimated the deposit contains an additional 40,000 tons of ore. Redden is presently attempting to utilize a heap leach process to recover gold from broken rock in the muck pits of the former producer.

Exploration work in the region has been at a limited scale. A complete exploration history of the area is summarized by Kresz et al (1982). The majority of recent exploration work has focused upon the base metal potential of the region, but no base metal occurrences have been located.

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#### REGIONAL GEOLOGY

The survey area is located within the Wabigoon subprovince of the Superior Province. The rocks in the map area are virtually all Archean, with rare Proterozoic diabase dykes. The northern part of the region adjacent to Highway 17 is covered by locally thick lacustrine clays and minor sand deposits. Outcrop is sparse. The southern portion of the region contains abundant outcrop with minor esker and till deposits.

The mapping of Blackburn (1982) in the area immediately to the east provides the basis for understanding regional geology. He has established three stratigraphic groups in the supracrustal rocks; the Boyer Lake Group; the Stormy Lake Group; and the Wapageisi Group. Blackburn has interpreted the stratigraphy as younging from South to North, with the Wapageisi Group being the oldest group, and the Boyer Lake group being the youngest.

The Wapageisi Group is a thick homoclinal sequence of northwestward facing mafic metavolcanic rocks, with numerous gabbro sills, and minor amounts of felsic intrusive and extrusive rocks, and metasedimentary rocks.

The Stormy Lake group consists of a complex sequence of coarse, clastic, sedimentary rocks (conglomerates, wackes, arkoses).

The Boyer Lake group is a sequence of mafic volcanic rocks intruded by numerous gabbro sills. Lesser amounts of felsic pyroclastic rocks and felsic intrusive rocks are also found in this area.

## 5. AIRCRAFT AND EQUIPMENT

## 5.1 AIRCRAFT

The helicopter used for the survey was an Aerospatiale A-Star 350D owned and operated by Maple Leaf Helicopters. Installation of the geophysical and ancillary equipment was carried out by Aerodat. The survey aircraft was flown at a nominal altitude of 60 meters.

## 5.2.1 Magnetometer

The magnetometer is a Geometrics G-803 proton precession type. The sensitivity of the instrument is 1 gamma at a 0.5 second sample rate. The sensor was towed in a bird 12 meters below the helicopter.

## 5.2.2 Magnetic Base Station

An IFG proton precession type magnetometer was operated at the base of operations to record diurnal variations of the earth's magnetic field. The clock of the base station was synchronized with that of the airborne system.

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## 5.2.3 Radar Altimeter

A Hoffman HRA-100 radar altimeter was used to record terrain clearance. The output from the instrument is a linear function of altitude for maximum accuracy.

## 5.2.4 Tracking Camera

A Geocam tracking camera was used to record flight path on 35 mm film. The camera was operated in strip mode and the fiducial numbers for cross reference to the analog and digital data were imprinted on the margin of the film.

## 5.2.5 Analog Recorder

An RMS dot-matrix recorder was used to display the data during the survey. In addition to manual and time fiducials, the following data was recorded:

# 5.2.5 Analog Recorder (Cont'd)

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Channel	Input	Scale
00	Altimeter (500 ft. at	10 ft./mm
	top of chart)	
04	high freq. quadrature	2 ppm/mm
04	high freq. in-phase	2 ppm/mm
03	high freq. in-phase	2 ppm/mm
06	mid freq. quadrature	4 ppm/mm
05	mid freq. in-phase	4 ppm/mm
02	low freq. quadrature	2 ppm/mm
01	low freq. in-phase	2 ppm/mm
15	magnetometer	25 gamma/mm
14	magnetometer	2.5 gamma/mm
07	VLF-EM Total Field	2.5%/mm
08	VLF-EM Quadrature	2.5%/mm

## 5.2.6 <u>Digital Recorder</u>

A Perle DAC/NAV data system recorded the survey data on magnetic tape. Information recorded was as follows:

Equipment	<u>Interval</u>
EM	0.1 second
VLF-EM	0.5 second
magnetometer	0.5 second
altimeter	1.0 second
fiducial (time)	1.0 second
fiducial (manual)	0.2 second
MRS III	0.2 second

## 5.2.7 Radar Positioning System

A Motorola Mini-Ranger (MRS III) radar navigation system was utilized for both navigation and track recovery. Transponders located at fixed known locations were interrogated several times per second and the range from these points to the helicopter measured to several meter accuracy. A navigational computer triangulates the position of the helicopter and provides the pilot with navigation information. The range/range data was recorded on magnetic tape for subsequent flight path determination.

#### 6. DATA PRESENTATON

#### 6.1 Base Map and Flight Path Recovery

The base map is a photomosaic at a scale of 1:5,000.

The flight path was derived from the Mini Ranger radar positioning system. The distance from the helicopter to two established reference locations was measured several times per second, and the position of the helicopter mathematically calculated by triangulation. It is estimated that the flight path is generally accurate to about 10 meters with respect to the topographic detail of the base map. The flight path is presented with fiducials for cross-reference to both the analog and digital data.

#### 6.2 Total Field Magnetic Contours

The aeromagnetic data was corrected for diurnal variations by substraction of the digitally recorded base station magnetic profile. No correction for regional variation was applied.

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## 6.2 Total Field Magnetic Contours (Cont'd)

The corrected profile data was interpolated onto a regular grid using a cubic spline technique. The grid provided the basis for threading the presented contours at a 10 gamma interval.

The aeromagnetic data is presented with flight path and fiducials on the base map (Map 1 - Sheets 1 & 2 - Accompanying this report).

#### 7. INTERPRETATION OF SURVEY RESULTS

Map 1 - Sheets 1 and 2 - shows the total magnetic intensity contours drawn at an interval of 10 gammas.

The Katisha - Seggemak Lakes area, located in the centre of the survey grid, shows two or more strong, NNW trending linears caused by magnetite and ilmenite bearing gabbroic intrusions. These gabbroic rocks occur in a WNW -ESE striking belt which extends from Washeibemaga Lake (NW corner of Sheet 1) to the southeast corner of the survey area (Sheet 2). This belt of gabbroic intrusions is open to the southeast of our claim group.

Magnetite concentrations within these gabbros varies along strike, as indicated by the changes in observed magnetic amplitude. The magnetite may occur in the form of pods as evidenced by the near circular magnetic anomaly observed on Line 1470 on the NE corner of Katisha Lake adjacent to the Snake Bay road.

With the exception of the gabbroic intrusions, the Wapageisi Group of mafic metavolcanic rocks is generally weakly magnetic to non-magnetic. The wedge of intermediate to felsic epiclastic rocks in the Kawijekiwa Lake area (center of Sheet 2) is generally outlined as a magnetic low.

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The E-W linear, magnetic feature north of Seggemak, Katisha and Kawijekiwa Lakes occurs at or near the unconformity between the Wapageisi Group to the south and the overlying Stormy Lake Group to the north. Α variety of sedimentary rocks are observed to lie along the unconformity. Α magnetite iron-formation unit is mapped at the contact north of Katisha Lake. A wide variety of intrusive rocks (e.g. lamprophyre) are also localized along this contact zone. The close spatial relationship between the magnetite iron-formation unit and the intrusions which occur along the unconformity makes it difficult to sort out which gives rise to the magnetic anomaly at various points along this magnetic trend.

The magnetic features located on the north portion of Sheet 1, north of the Stormy Lake - Wapageisi contact, may be caused by gabbroic intrusives. Further mapping is required in this area to confirm this interpretation.

The N-S trending magnetic gradient along the west side of Sheet 1 is caused by the highly magnetic Thundercloud porphyry which is mapped to the west of the survey area. The source of the magnetic linear feature on the south end of Sheet 1 is not known.

Respectfully submitted,

Lloyd M. Wilson

Lloyd M. Wilson Geophysicist

#### APPENDIX I

#### QUALIFICATIONS OF AUTHOR

Lloyd M. Wilson attended Memorial University of Newfoundland between 1966 and 1971, graduating with a B.A. (Honors) degree in Mathematics. From May, 1971 to October, 1973, Mr. Wilson worked full-time in oil and gas exploration for Amoco Canada Petroleum Co. Ltd. in Calgary, Alberta, specializing in gravity, magnetic and seismic methods. Since then he has had nine years of experience as a mineral exploration geophysicist - three with Geoterrex Ltd. (1973-1976) in Ottawa and six with Esso Minerals Canada in Toronto (1978- ). For the past four years he has been involved in project planning, geophysical field activities, report writing and the training and supervision of student personnel for Esso Minerals Canada. He is a member of the Society of Exploration Geophysicists, the Prospectors and Developers Association, CIMM (Toronto Branch) and KEGS.

## APPENDIX II

## TECHNICAL DATA STATEMENT

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Type of Survey Geophysical		Meggisi Lake	
	Lake (M2573), Boyer Lake (M	Wapageisi Lako 258 <mark>2),</mark>	e (M2056)
-	es Canada Limited	MINING CLAIM	MS TRAVERSED merically
Author of Report Lloyd M. Wil	son		₽₽ĸĴŢġŢġŎŎŶŊŊŎŎġŦŢġŎĹĸĬŔŖĿĬĬĬĬĔĊŎŔŔĸŎŶĔŔĸŔĬŔĬĹ
Address c/o Esso Minerals	Canada, Toronto	(prcfix)	(number)
Covering Dates of SurveyMarc		- (1//////)	(
Total Miles of Line cut	(intecuting to office)	See attached	l pages.
SPEGIAL PROVISIONS CREDITS REQUESTED ENTER 40 days (includes line cutting) for first survey. ENTER 20 days for each additional survey using	DAYS per claim - Electromagnetic Magnetometer Radiometric Other Geological		
same grid. AIRBORNE CREDITS (Special prov	Geochemical		
Magnetometer <u>40</u> Electromag (enter DATE: <u>May - 1984</u> SIGN.	netic Radiometric days per claim) ATURE: Lloyd M. Wilso Authof of Report or Agent	~	
·	Qualifications 24488		
	date	-	
	date		
			150
·	date	TOTAL CLAIMS	153

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File\_\_\_\_\_

Show instrument technical data in each space for type of survey submitted or indicate "not applicable"

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# GEOPHYSICAL TECHNICAL DATA

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Coil configuration   Coil separation   Accuracy.   Method:   Fixed transmitter   Shoot back   In line   Parallel line   Frequency   (specify V.L.F. station)   Parameters measured   GRAVITY   Instrument   Scale constant   Corrections made   Base station value and location   Elevation accuracy   INDUCED POLARIZATION RESISTIVITY   Instrument   Time domain   Frequency   Range   Power	GROUND SURVEYS	-		
Line spacing	Number of Stations	Numb	er of Readings_	•
Profile scale or Contour intervals       (specify for each type of surcey)         MAGNETIC         Instrument         Accuracy - Scale constant         Diural correction method         Base station location         ELECTROMAGNETIC         Instrument         Coil configuration         Coil separation         Accuracy         Method:         Fixed transmitter         Shoot back         In line         Parallel line         Prequency         (specify VL.F. station)         Parameters measured         GRAVITY         Instrument         Scale constant         Corrections made         Instrument         Scale constant         Corrections made         Instrument         Scale constant         Corrections made         Instrument         Revation accuracy         INDUCED POLARIZATION - RESISTIVITY         Instrument         Time donain         Frequency         Range         Power         Electrode array         Electrode spacing				
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ELECTRONAGNETIC         Instrument         Coil configuration         Goil separation         Accuracy         Method: <ul> <li>Fixed transmitter</li> <li>Shoot back</li> <li>In line</li> <li>Parallel line</li> <li>Frequency</li> <li>(specify V.L.F. station)</li> <li>Parameters measured</li> <li>GRAVITY</li> <li>Instrument</li> <li>Scale constant</li> <li>Corrections made</li> <li>Base station value and location</li> <li>Elevation accuracy</li> <li>INDUCED POLARIZATION RESISTIVITY</li> <li>Instrument</li> <li>Frequency</li> <li>Range</li> <li>Power</li> <li>Electrode array</li> <li>Electrode spacing</li> <li>Electrode spacing</li></ul>	Base station location			
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Instrument   Time domain   Frequency   Power.   Power.   Electrode array	·			
Time domain       Frequency domain         Frequency       Range         Power.				
Frequency				
Power Electrode array Electrode spacing				
Electrode array		-		
Electrode spacing				
	·			

# SELF POTENTIAL -

Instrument	Range
Survey Method	
Corrections made	

# RADIOMETRIC

Instrument	
Values measured	
Energy windows (levels)	
	Background Count
Size of detector	
Overburden	
	(type, depth — include outcrop map)

# OTHERS (SEISMIC, DRILL WELL LOGGING ETC.)

# AIRBORNE SURVEYS

Type of survey(s)	Helicopter - Borne Magnetic					
Instrument(c)	Geometrics G-803 Proton Precession Mag.					
Accuracy	(specily for each type of survey)					
•	(marify for each type of survey)					
	Aerospatial Astar 350D					
Sensor altitude	45 Meters					
Navigation and fligh	t path recovery method <u>A motorola mini-ranger (MRS III) radar navigation</u>					
system was used	for both navigation and track recovery.					
Aircraft altitude	60 Meters Line Spacing 100 Meters					
Km, 外市書 flown over tot	al arcaOver claims only245 Km.					

#### GEOCHEMICAL SURVEY - PROCEDURE RECORD

Numbers of claims from which samples taken\_\_\_\_\_

Total Number of Samples					
Type of Sample					
(Nature of Material)					
Average Sample Weight					
Method of Collection					
Soil Horizon Sampled					
Horizon Development					
Sample Depth					
Terrain					
Drainage Development					
Estimated Range of Overburden Thickness					

## SAMPLE PREPARATION (Includes drying, screening, crushing, asking)

Mesh size of fraction used for analysis

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# Mining Lands Section

File No 2. 10767

# Control Sheet

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TYPE OF SURVEY	GEOPHYSICAL
	GEOLOGICAL
	GEOCHEMICAL
	EXPENDITURE

## MINING LANDS COMMENTS:

antorne

Signature of Assessor

3/84

Date

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Lloyd M. Wilson, Esso Minerals Canada, P.O., Box 4029 Station "A" Joronto, Ontario, M5W 1K3 1362 (81/9) May 22/84 Wilson, Congruine)

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May 1984

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S. B. MACEACHERN Regional Exploration Manager ESSO MINERALS CANADA 120 ADELAIDE STREET WEST, P.O. BOX 4029, STATION "A"

TORONTO, ONTARIO M5W 1K3

August 3, 1984

2.6767

Mr. S.E. Yundt, Director, Land Development Branch, Whitney Block, Queen's Park, Toronto, Ontario M7A 1W3

Dear Sir:

Re: File: 26767 Airborne Geophysical (Magnetometer) Survey submitted on Mining Claim K695894 et al in the area of Kawashegamuk Lake and Boyer Lake

Enclosed are the maps for the above mentioned survey. The outside boundry of the claim block have been indicated.

Mr. Wilson is presently in Western Canada until the end of the summer. If there are any questions, please contact me at (416) 968-5212.

Yours truly,

Mike Wong

MW/ko

# RECEIVED

AUG - 9 1984

MINING LANDS SECTION

A DIVISION OF ESSO RESOURCES CANADA LIMITED

July 19, 1984

Our File: 2.6767

Esso Resources Canada Ltd P.O. Box 4029, Station "A" Toronto, Ontario M5W 1K3

Attention: Lloyd M. Wilson

Dear Sir:

RE: Airborne Geophysical (Magnetometer) Survey submitted on Mining Claims K 695894 et al in the Areas of Kawashegamuk Lake and Boyer Lake

Enclosed are the plans, in duplicate, for the above-mentioned survey. Please indicate the outside boundary of the claim block on each copy of the maps and return them to this office, quoting file 2.6767.

For further information, please contact Mr. Ray Pichette at (416)965-4888.

Yours sincerely,

S.E. Yundt Director Land Management Branch

Whitney Block, Queen's Park Toronto, Ontario M7A 1W3 Phone: (416)965-4888

D. Isherwood:mc

cc: Mining Recorder Kenora, Ontario

Encl.

#### 1984 06 05

## Your File: 2 Our File: 2.6767

Mrs. Mary Ellen Lemay Acting Mining Recorder Ministry of Natural Resources 808 Robertson Street Box 5080 Kenora, Ontario P9N 3X9

Dear Madam:

We have received reports and maps for an Airborne Geophysical (Magnetometer) Survey submitted on Mining Claims K 728109 et al in the Areas of Kawashegamuk, Boyer, Meggissi and Wapageisi Lakes.

This material will be examined and assessed and a statement of assessment work credits will be issued.

We do not have a copy of the report of work which is normally filed with you prior to the submission of this technical data. Please forward a copy as soon as possible.

Yours sincerely,

S.E. Yundt Director Land Management Branch

Whitney Block, Room 6643 Queen's Park Toronto, Ontario M7A 1W3 Phone: (416) 965-6918

A. Barr:sc

cc: Esso Minerals Canada 120 Adelaide Street West P.O. Box \$029 Station A Toronto, ontgrio M5W 1K3 Attn: James Pirie.

ESSO MINERALS CANADA

120 ADELAIDE STREET WEST, P.O. BOX 4029, STATION "A" TORONTO, ONTARIO M5W 1K3 (416) 965-5200

> May 17th, 1984 File: Doc. #1914

Mining Lands Section Whitney Block 99 Wellesley Toronto, Ontario M7A 1W3

Dear Sir:

Re: Mining Claims:

K728109 - 728118 -K728129 - 728144 -K771615 - 771617 K771783 - 771812 K771822 - 771827 K743805 - 743815 K726960 - 726963 -K726872 - 726873⊬ K695894 - 695896 😪 K726955, 726684, 726875 K718907 😒 K727279 - 727286 K743825 - 743842 V K762801 - 762810 🗸 K706166 - 706173 к719589 - 719599 <sup>-/</sup> к732084 - 732090 🗹 K776952, 776950, 776954

Enclosed please find the technical report for the above claims.

DECLIVED

MAY 18 1984

LIGHTING LANDOS SECTION

Yours truly,

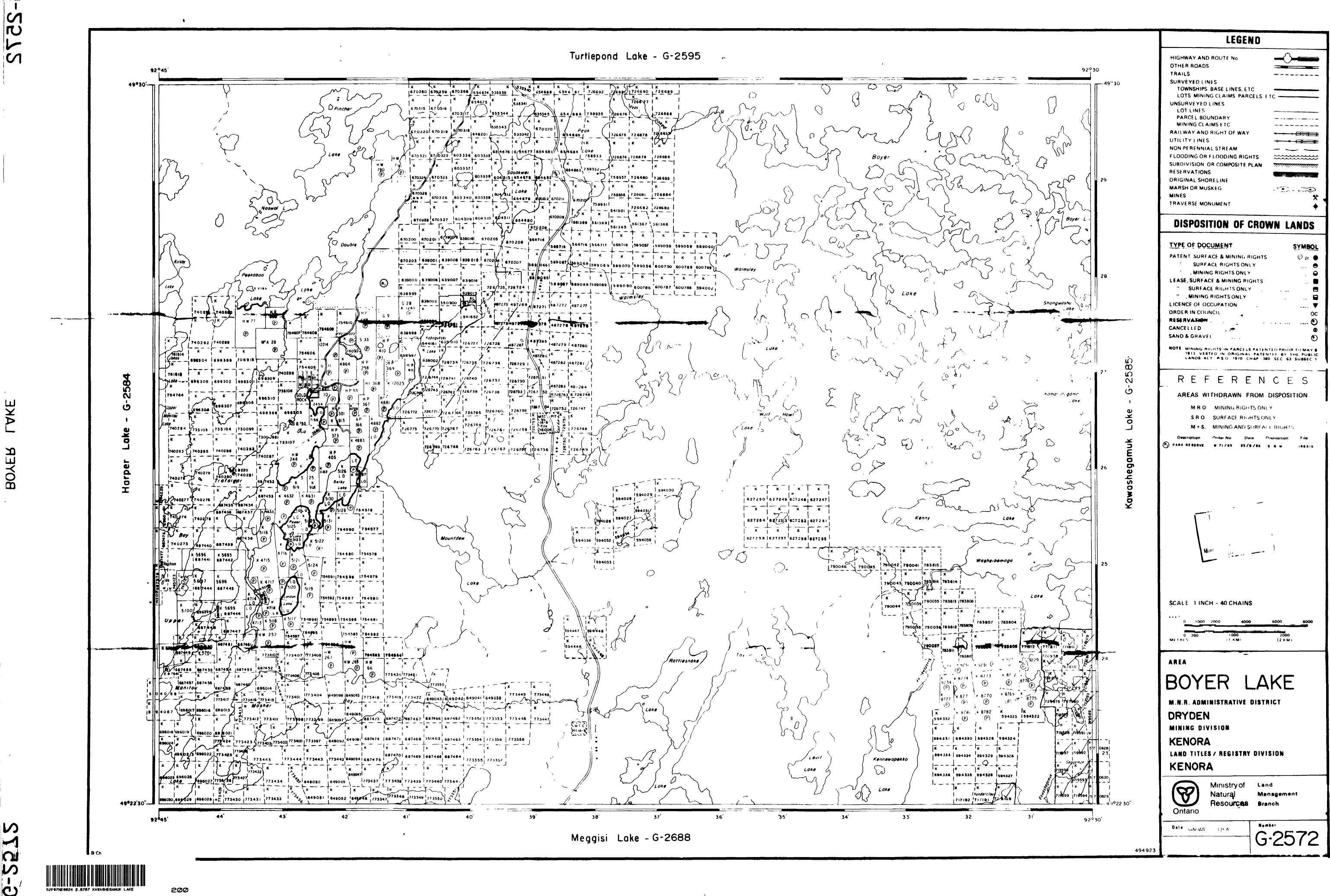
G\_s James Pirie District Geologist Tel. (416) 968-5208

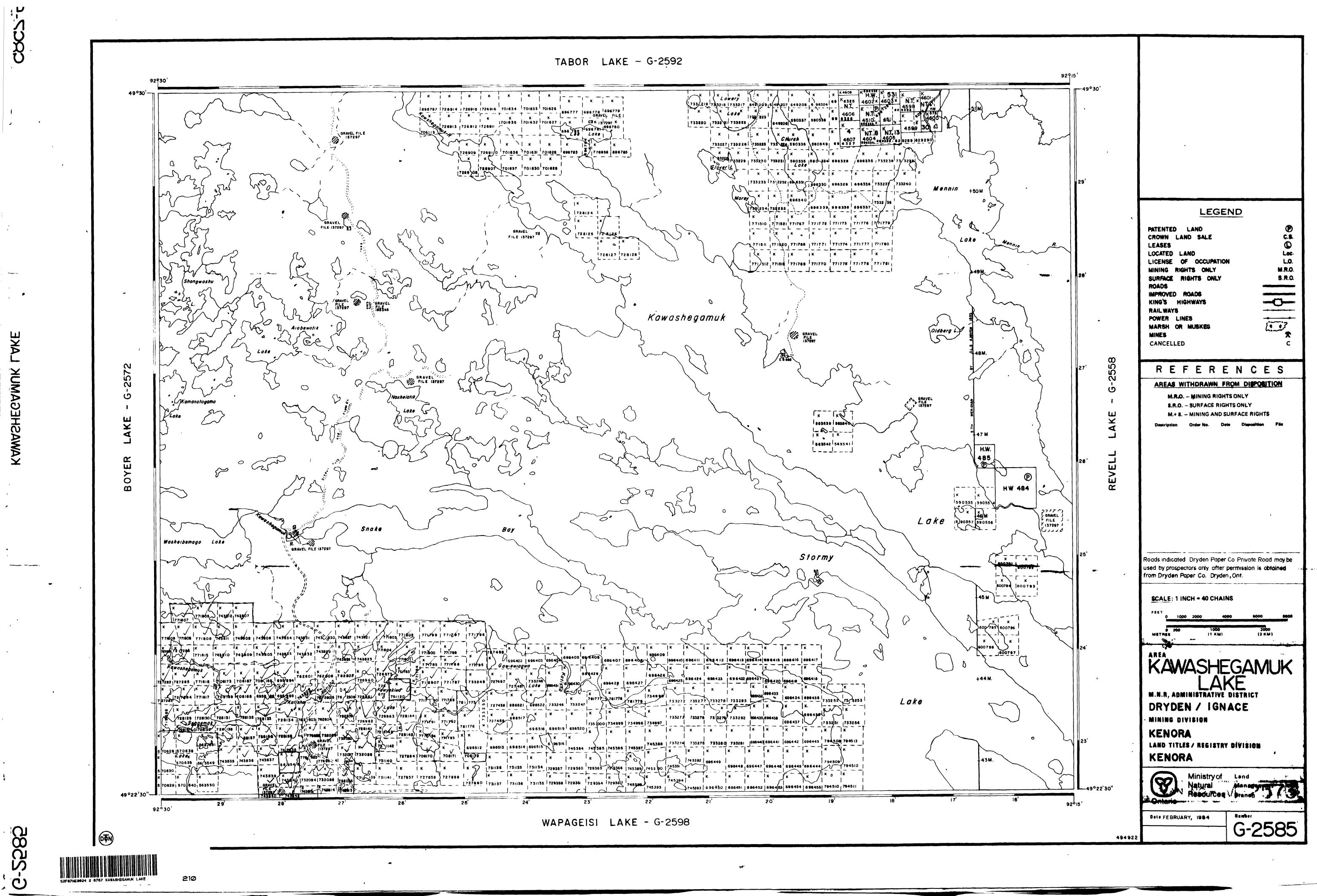
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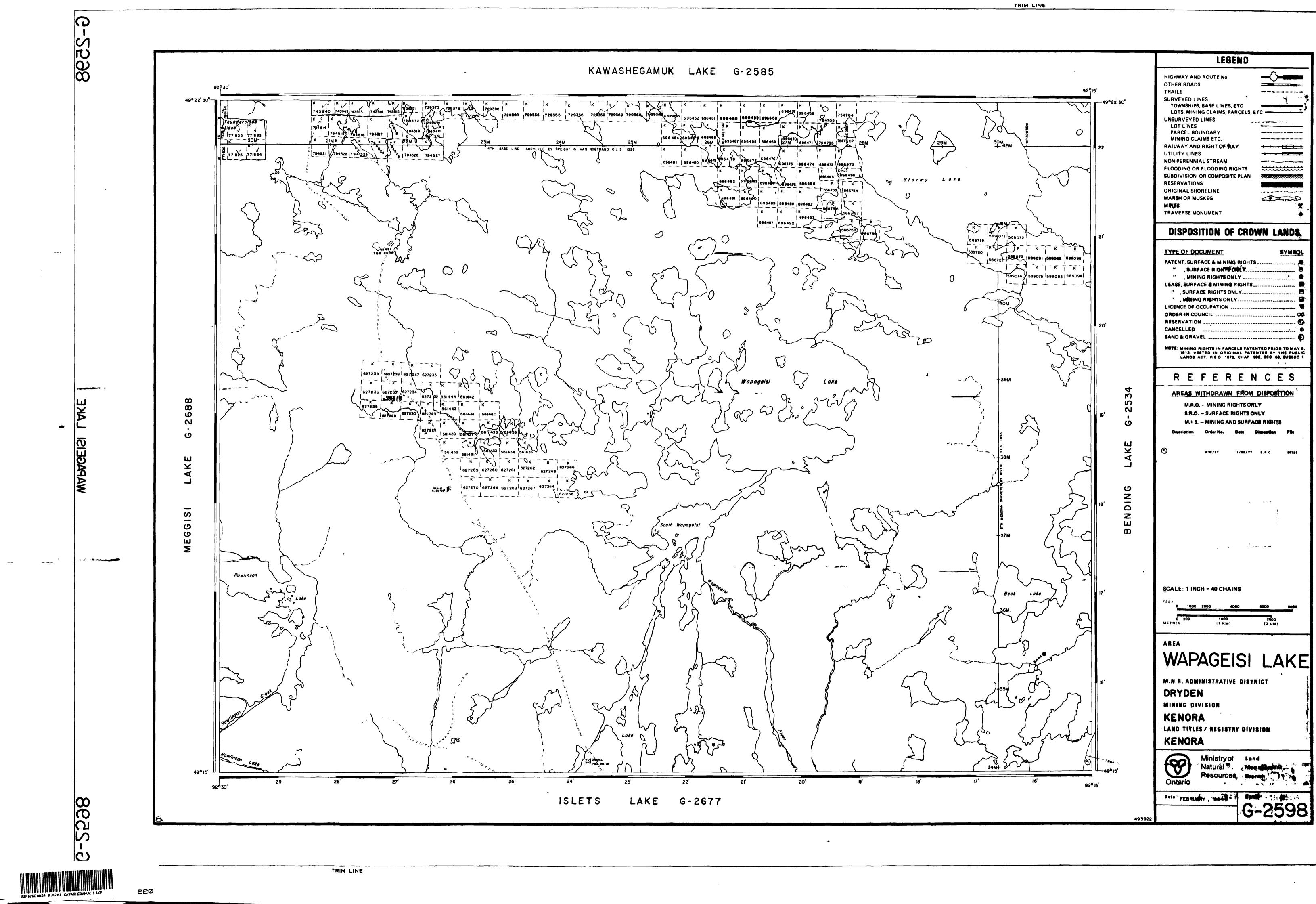


S. B. MACEACHERN Regional Exploration Manager







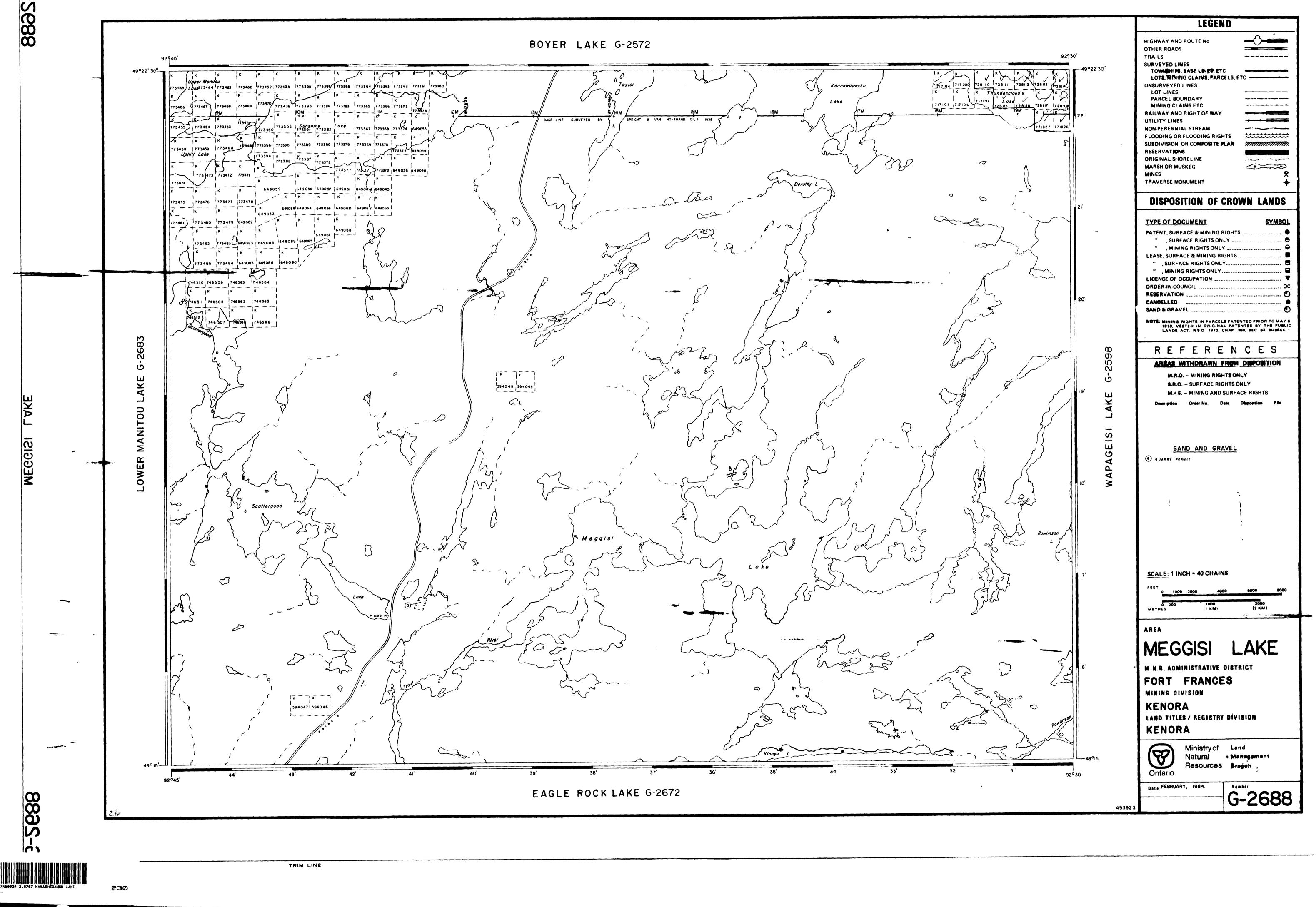


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