



52E14SE9105 2.1572 INDIAN BAY

010

JUL 1 1974

PROJECTS UNIT.

REPORT ON AN  
AIRBORNE GEOPHYSICAL SURVEY  
IN THE  
SHOAL LAKE AREA  
OF ONTARIO  
FOR  
HUDSON'S BAY OIL AND GAS COMPANY LIMITED  
CONDUCTED BY  
GEOTERREX LIMITED  
PROJECT 84-125  
(PART II)

OTTAWA, Ontario  
JULY, 1974

D.M. WAGG, P. ENG.  
R.K. DOWSE, B.A.  
GEOPHYSICISTS

AUTOPOSITIVES FILED SEPERATED

**geotrex**

## I. INTRODUCTION

Between 3 March and 2 April, 1974 Geoterrex Limited carried out an airborne electromagnetic and magnetic geophysical survey in the Shoal Lake Area of Ontario for Hudson's Bay Oil and Gas Company Limited.

An Otter aircraft with Canadian registration CF-AYR was used throughout the project. It was equipped with an In-Phase/Out-of-Phase electromagnetic system operating at 320 Hz, a Geometrics G-803 High Performance proton resonance magnetometer and associated survey equipment. A detailed description of equipment, compilation procedures and method of control is given in Appendix A.

The survey consisted of three overlapping grids, designated as Blocks A, B and C by Hudson's Bay Oil and Gas Company Limited. Specifications were as follows:

<u>Block</u>	<u>Line Direction</u> (approx.)	<u>Spacing</u>	<u>Mileage</u>
A	N-S	1/8 mile	891.1
B	E-W	1/8 mile	397.40
C	NW-SE	1/8 mile	293.00
Total mileage =			<u>1581.50</u> 197.

The purpose of the survey was to detect bedrock conductors which might reflect the presence of base metal sulphides, and to suggest recommendations for a further exploration programme by evaluating prospective conductive zones from a geophysical point of view.

The electromagnetic data is presented on photo transparency maps at a scale of 1 inch = 1320 feet. The intensity of the anomaly is shown as a ratio (In-Phase/Out-of-Phase), along with the flying altitude and any magnetic association.

Anomalies interpreted as originating from a man-made source are designated by a "PL" to indicate probable culture. This includes the pipeline on sheets 1 and 2 and also some isolated man-made conductors scattered randomly around the lakes.

Geological conductors are outlined, both surficial and bedrock, but surficial sources are not numbered nor discussed in the report unless there is some element of doubt as to the origin. In some instances when the source is exceedingly broad and obviously flat lying, the anomalies have been left off the plan map. This applies particularly to the poorly conductive surficial sources within the lakes.

Prospective conductive zones of interest are outlined, numbered and discussed in detail in Section IV.

Unnumbered single line anomalies are considered to be weak, inconclusive type anomalies with either suspect character or very poor potential. Some are most probably only surficial type sources. They would warrant some consideration only if favorable results were obtained in neighbouring zones or if local geology was known to be favorable.

— Magnetic contour maps were not requested.

The only available geology was map no. P. 281, published by the Ontario Dept. of Mines.

II. PERSONNEL

The personnel involved with this survey include:

A. Field Operation

Pilot	A. Bratteng
Navigator	L. Matthews
Operators	J. Burnett
	D. Recoskie
Data Compiler	R. Fortier
Aircraft Engineer	L. Fougere
Geophysicist	J. Mekariski

B. Office Compilation

Data	D. Sarazin
Drafting	M. Dostaler
Geophysics	D. Wagg
	R.K. Dowse

### III. RATING SYSTEM

To assist in the planning of the followup program, all selected zones have been evaluated out of a maximum of 100 points by assigning a predetermined numerical value to relevant geophysical criteria. The rating system is listed in Appendix B and includes such geophysical parameters as intensity, conductivity, magnetic association, relative isolation and strike length. Note that any points given for geology are quite tentative and subject to careful review. In most cases the same 10 points is added to each zone. A final subjective evaluation of  $\pm 15$  points is also included in some cases when anomaly character seems particularly significant. The total rating then determines the placement of each zone into one of the categories listed below.

Rating 65-100	Category A
Rating 40-64	Category B
Rating less than 40	Category C

Category A includes zones recommended for followup on a high priority basis. These indicate probable bedrock sources with good potential for sulphide mineralization. Conductors in Category B have probably fair potential and would be investigated in any relatively complete followup program. The final group, Category C, is comprised of doubtful bedrock zones (probable surficial or probable

cultural sources), or those weaker zones which would not normally merit further consideration unless local geology was favorable. Conductors rated B- are also considered to be rather inconclusive geophysical prospects.

IV. DISCUSSION OF CONDUCTIVE ZONESSHEET 1Zone S-1

Rating 50  
Category B-

Line 8                    Anomaly K  
                          through  
Line 32                   Anomaly M

Zone S-2

Rating 50  
Category B-

Line 41                   Anomaly L  
Line 42                   Anomaly M  
Line 43                   Anomaly N

Zone S-3

Rating 50  
Category B-

Line 5                    Anomaly N  
                          through  
Line 72                   Anomaly J

Zone S-4

Rating 52  
Category B

Line 5                    Anomaly M  
                          through  
Line 79                   Anomaly H

Zone S-4A

Rating 45  
Category B-

Line 56                   Anomalies L, M  
                          through  
Line 60                   Anomaly F



Zone S-5

Rating 48

Category B-

Line 1                      Anomaly P  
                                     through  
 Line 30                     Anomaly L

These zones represent a multiple banded, formational unit trending more or less NW-SE and stretching for several miles all across sheet 1. They map highly conductive sources, quite probably graphites.

The most northern band, mapped as zone S-1, shows several moderately strong anomalies, many with good individual character. These consistently reflect high conductivity and closely relate to a unit which is very active magnetically. To the east in particular the magnetic amplitudes are high, ranging between 1200 and 2300 gammas. Several of the magnetic peaks also suggest a dipping source.

If a check is considered, any one of the stronger anomalies like 15-F or 19-L might be selected, but, in our opinion, this zone represents a relatively poor prospect with EM variability along strike seeming rather limited.

Zone S-2 is regarded as a probable extension of the same source. It is on the same horizon as zone S-1 and shows the same high conductivity. The EM responses have

only weak to moderate amplitude, and they are offset from magnetics which range widely from 300-2700 gammas. Other weak anomalies on the same trend on lines 47, 52 and 61 suggest the formation may well continue sporadically even further to the east.

Zone S-3 shows stronger anomalies, many with dual peaks. These EM peaks seem to be offset from magnetics (100-200  $\gamma$ ) for the most part, and again they consistently reflect very highly conductive material. Some individual responses of interest include the well developed anomalies on lines 30 and 47 and also those on lines 15 and 16. These last two responses show an increase in EM amplitude compared to adjacent lines as well as an increase in the relative intensity of the associated magnetics (1000-2000  $\gamma$ ).

Zone S-4 is directly comparable, very highly conductive with dual and multiple EM anomalies. The conductive material relates to an active magnetic zone where amplitudes range from 300 to 1000 gammas. Possible targets might include one of the strongest anomalies like the one on line 43, or perhaps the section on the south flank on lines 55 through 60 which is designated as zone S-4A. This seems to be a satellite source with strike length of about 3/4 mile. It is highly conductive but generally offset from magnetics.

As for zone S-5, it reflects a lower range of amplitude and also some sections of lower conductivity. Magnetic association is moderate (20-180  $\gamma$ ) and only sporadically direct. The strong anomaly on line 4 is one possible target, since it looks quite enhanced compared to adjacent lines. It is directly coincident with a 360 gamma peak.

Zone S-6

Rating 57

Category B

Line 27	Anomaly K
Line 28	Anomaly E
Line 29	Anomaly J

This conductor occurs on the fringe of the formational system and more or less along the river. It reflects a relatively short source and one with an intermediate conductivity. The best target would be the dual anomaly on line 27 which is well developed and directly correlating with a prominent magnetic high of 360 gammas. On line 28 the magnetic feature drops to a mere 30 gammas and the EM character changes to a broad, irregular shape. The adjacent lines 29 and 24-25 show much weaker anomalies and very poorly conductive ones without magnetic support.

According to the film, the response on line 27 falls in a bush locale.

Zone S-7

Rating 43  
Category B-

Line 55            Anomaly J  
                         through  
Line 65            Anomaly J

Sheet 1 and 2

This long zone probably belongs to the same formational unit as zone S-1 through S-5. Lines 62 and 63 reveal quite well developed EM, but elsewhere anomalies are weaker and generally unimpressive. In some sections the indicated conductivity is high, but generally an intermediate range is more prevalent.

The conductor follows a magnetic feature of 100-500 gammas.

Zone S-8

Rating 35  
Category C

Line 1            Anomaly O  
Line 2            Anomaly E

Zone S-9

Rating 61  
Category B

Line 3            Anomaly J  
Line 4            Anomaly J

Zone S-10

Rating 53

Category B

Line 1           Anomalies L, M, N  
                  through  
Line 11          Anomaly D

The weak EM responses outlined as zone S-8 are of little interest except as a possible extension of zone S-9. They are sharp and poor looking, maybe even possible cultural indicators. They reflect a source with intermediate conductivity and with unknown extent to the west.

The zone correlates with a 100 gamma shoulder on line 1 but is more offset from magnetics on line 2. It locates in bush; according to the film.

The broad anomalies in zone S-9 are more intriguing. They are moderately strong with good conductivity and they relate to a large, prominent magnetic feature of 1000-1800 gammas. Hopefully the source has a short extent and is not merely an extension of one of the nearby conductors.

A check is advised, beginning with the better shaped anomaly on line 4. The broader response on line 3 is more unusual, almost looking as if it could represent some very shallow strike direction or maybe even one lying parallel to the flight line.

Zone S-10 is divided into two parts with the section on lines 1 to 4 showing mostly very weak responses. Conductivity is quite variable, ranging from low to fairly high. The best anomalies are M and N on line 1, both relating to magnetics (700  $\gamma$ ).

The second part of zone S-10 from lines 5 to 11 reveals dual EM responses and a broad banded source. The EM character looks very similar from line to line, moderately strong and highly conductive. The magnetics are more variable, however, with a very sharp peak of 350-400 gammas on lines 7 and 8 attracting particular attention. We note, however, that the whole zone is rather long and appears to be at best a fair prospect for sulphides of interest. Possibly its just another formational environment.

Zone S-11

Rating 39  
Category C

Line 1                      Anomaly K

This is a questionable selection noted only because of the magnetics. There is a prominent 580 gamma peak here and it is directly coincident.

The EM response itself is very weak as well as narrow. It reflects fairly good conductivity but looks shallow and cultural. The film does not confirm man-made construction, but there could easily be some feature here so close to the shore line of the lake.

Even if non-cultural, the anomaly looks too poor to warrant much consideration.

Zone S-12

Rating 30  
Category C

Line 1                      Anomaly H

This conductor may also have a cultural explanation. It occurs close to a road and is surrounded by weak anomalies with cultural character. There is no proof of culture on the film, however, nor does the individual response look definitely cultural. Its width in particular seems better than the cultural type.

The source has high conductivity and falls on the side of a broad magnetic feature of 360 gammas. Full extension to the west is unknown.

Zone S-13

Rating 51  
Category B

Line 168                    Anomaly B  
Line 169                    Anomaly AI

Zone S-14

Rating 48  
Category B-

Line 162                    Anomalies A, B  
Line 163                    Anomaly A

Zone S-15

Rating 30

Category C

Line 154	Anomaly AI
Line 155	Anomaly AI
Line 156	Anomaly A

These anomalies represent incomplete zones at the far end of the E-W flight lines. Total strike length is unknown and even exact location is somewhat tentative.

Zone S-13, for instance, outlines two anomalies mapping a source with open extension to the north. Both responses are very well developed with high conductivity. The one on line 169 in particular has striking character. There is also some magnetic support on both lines, but only the 400 gamma peak is directly coincident.

A smaller anomaly to the west, anomaly A on line 168, also attracts some minor attention. It does not fall on any culture according to the film and has reasonable shape, good conductivity, and a possible 40  $\gamma$  correlation.

Zone S-14 further south appears on two lines but the anomalies have radically different character. On line 163 the EM response is a single peak with moderate amplitude and no direct magnetic association. At line 162, however, the EM is very broad and multiple with a 1240 gamma peak



correlating. This latter response is also exceptionally strong, especially considering the very high flying altitude. There is some coverage on adjacent lines 161 and 160, but there is no sign of the same conductor. We note, however, even further west off the grid on line 162 that there is an even larger EM response. Maybe the main conductor here really strikes more E-W. Certainly the character of the broad anomalies A and B on line 162 could easily reflect a conductor along strike.

As for zone S-15, it shows a nice anomaly at line 154, even though the flying altitude is very high (195'). Location of this response is uncertain, however, since the altimeter trace suggests that the aircraft may be in the process of turning. The anomaly reflects an intermediate conductivity and direct correlation with magnetics (600 Y).

The anomaly on line 155 is primarily surficial in character but it does have some in-phase component. Possibly the bedrock source visible at line 154 does continue into the lake and down to line 156. There is no sign of the conductor by line 157.

Zone S-16

Rating 60

Category B

Line 5           Anomalies E, F, G, H  
                   through  
 Line 8           Anomaly C

Zone S-17

Rating 52

Category B

Line 10          Anomaly EI  
                   through  
 Line 16          Anomaly E

According to the geology map, zone S-16 corresponds with a curved band of rhyolitic material. It is a highly conductive source lying close to a main road. There is no sign of culture directly at the peak positions, nor do the EM responses look like the cultural type. On the contrary they have good bedrock character including strong amplitude and direct magnetic association. They consistently relate to magnetics in the range of 200 to 400 gammas.

Possible targets might include anomaly C on line 7 and also those responses on lines 165 and 166. These are rated as "fair" prospects only, since total strike length is rather long. In fact, zone S-17 to the east looks like a possible extension, in which case the whole zone would indicate a formational type.

Zone S-17 also reveals well developed anomalies and the same high conductivity. It shows up as single EM peaks, except at line 14 where there seems to be a second conductor on the south flank. This line would be the best initial checking point, if some work is considered.

The conductor follows a magnetic trend and is directly on 450-500 gamma peaks on lines 14, 15 and 16.

Zone S-19

Rating 47  
Category B-

Line 1                    Anomaly E  
                          through  
Line 4                    Anomaly F

These anomalies locate close to a powerline or pipeline. According to the film, however, there is no direct correlation with culture.

The source is highly conductive and lying along the flank of a magnetic zone of 160-360 gammas. Individual responses are mainly poorly developed with weak to moderate amplitude. The strongest response and the best target occurs at line 3, but it is a relatively poor prospect in our opinion.

According to the EM plan map, this conductor may be related in some way to zone S-15 lying more or less on the same horizon.

Zone S-20

Rating 55  
Category B

Line 4            Anomaly D  
                  through  
Line 6            Anomaly C

This zone occurs more or less in the vicinity of known mineral occurrences. According to the geology map both copper and gold have been identified.

The source is highly conductive plus quite favorably short. As such, it represents at least a fair prospect. The EM amplitudes are relatively small, but nevertheless reasonably well developed.

There is a broad magnetic feature here as well (250-350  $\gamma$ ), but it looks as if it continues to the east beyond the EM zone.

Zone S-21

Rating 47  
Category B-

Line 1            Anomaly D  
                  through  
Line 8            Anomaly B

Zone S-22

Rating 29  
Category C

Line 1                    Anomaly C  
                          through  
Line 6                    Anomaly A

These conductors were identified only on the N-S lines. They appear to be narrow, sporadically developed sources with rather poor potential. They look unfavorably long and could well continue even further to the west outside the grid.

Zone S-22 in particular is regarded as a poor prospect because of the very weak nature of the EM. Only the response on line 6 has a reasonable amplitude. In addition, the source is generally offset from magnetics and conductivity is only intermediate.

Zone S-21 has better developed anomalies, at least on lines 6, 7 and 8. There is direct magnetic association in that section as well (100-400  $\gamma$ ). Conductivity is also slightly better and closer to the high range.

Zone S-23

Rating 57  
Category B

Line 8                    Anomaly A  
                          through  
Line 11                  Anomaly CI

These anomalies might be just an extension of zone S-22 but on the plan map they look offset enough to suggest a possible short source with strike length of about  $\frac{1}{2}$  mile.

The EM responses are fairly weak to the east but become progressively stronger to the west where they indicate a zone of intermediate conductivity relating to magnetics of 170-360  $\gamma$ . The strongest and best looking anomaly occurs on line 8 but line 9 is also of some interest since it shows two distinct peaks, each with a magnetic correlation.

Followup is recommended.

Zone S-24

Rating 50

Category B-

Line 13

Anomaly C

A visual check will be needed to adequately explain this response. According to the film it plots between two linears or cut-lines, one possibly reflecting a pipeline. The other could be some ancillary culture, maybe a powerline. There is, however, nothing visible like a building which would explain the sudden rise in amplitude which is recorded here.

This response is certainly much stronger than others along the same source. It is also very well shaped with no distinct cultural characteristics. It reflects a highly conductive material, but one which is not directly associated to magnetics. The magnetic profile shows only a well offset peak of 110 gammas.

Zone S-25

Rating 57

Category B

Line 41

Anomaly H

This looks like a rather short source and one which is quite favorably isolated. It plots very close to the shore of a lake where there might be some cultural conductor, but there is no proof of a man-made source on the film, only bush.

The EM response itself is moderately strong on the N-S profile reflecting high conductivity. Conductivity is also fairly good on the E-W line, although amplitude is in a much lower range. The response exhibits a very broad character as well and is definitely not typically cultural in appearance. Magnetic association is also indicated, providing more support for a geological source. It is in the range of 90-180 gammas.



As for the anomalies directly east within the lake, they are all poorly conductive and surficial looking, with the exception of the anomaly on line 42. It could be part of zone S-25 since it also reflects good conductivity.

Zone S-26

Rating 56

Category B

Line 38	Anomaly G
Line 39	Anomaly H
Line 40	Anomaly F

The anomalies on lines 41 to 52 are very weak and very narrow. They look as if they might be cultural, except that they seem to follow a magnetic trend. Even if non-cultural they represent a very poorly developed source and one which is too long to be a good prospect.

The three anomalies shown as zone S-26 are different, however. They have much better character and good width. They indicate a high range of conductivity and an interesting magnetic environment. The 140 gamma peak directly coincident on line 38 becomes a much narrower, sharper peak of 300 gammas at line 39. This 300 gamma feature is not visible on line 40, implying a possible localized magnetic high. Line 40 shows a flat magnetic horizon, but with a hint of a negative component. Such a magnetic contrast could be a pyrrhotite indicator.

The tracking film shows no man-made construction at line 38, but there is some sort of track or road at line 39. The same tracks are also visible on line 40. Obviously a check for a cultural explanation should be carried out here before other work is considered.

Zone S-27

Rating 55

Category B

Line 49            Anomaly E  
                  through  
Line 59            Anomaly G

The main conductor here is a long band coincident with a very linear, straight shore line. It might be controlled by faulting or a shear zone, and probably continues further onto sheet 2 where it shows up only as very weak EM (see Zone S-39).

The EM responses are weak on the extremities but moderately strong from lines 52 through 56. They reflect a highly conductive material throughout and are bedrock in appearance rather than surficial. The related magnetics have amplitudes of 70-180 gammas.

The main conductor is too long to be a good target, but on the south flank there are some shorter looking sources which could be satellites of interest. Anomalies 55-F and 56-H, for instance, may be worth a medium priority check. The former is part of a broad multiple response, but the latter shows up well as a separate peak with high conductivity. It locates on the shore and in dense bush. There is no apparent cultural contribution. The anomaly on line 56 also has good magnetic support, being directly on a 350 gamma peak. This peak drops to 140 gammas at line 55 and is very reduced on line 57 as well.

The other satellite is longer and visible on at least four flight lines. It includes anomalies 53-D through 56-G. The best character is considered to be the response on line 54 (anomaly F) which has a hint of dualness to its character. It also reflects fairly high conductivity, but the associated magnetics are weak (20-70  $\gamma$ ). The film does not reveal coincidence with culture.

As for the single line response on line 56, mapped as anomaly DI, its true character is completely obscured by the neighbouring conductors. It suggests possible high conductivity but lacks magnetic support.

Zone S-30

Rating 51  
Category B

Line 42            Anomaly D  
                  through  
Line 47            Anomaly E

Zone S-31

Rating 30  
Category C

Line 47            Anomaly EI  
                  through  
Line 51            Anomaly C

Zone S-30 represents a dual conductor with moderate EM and high conductivity. It is best developed at line 44

where an increase in EM amplitude coincides with an increase in the magnetic value. The coincident magnetic peak is sharp with relative intensity of 520 gammas.

The zone has fair strike length on its own, but the nearby zone S-31 could easily be a related, less developed extension. It shows very weak EM and a lower range of conductivity. There are no anomalies of apparent interest.

Magnetic support in this section is sporadic as well as weak (20-50  $\gamma$ ).

Zone S-32

Rating 50

Category B

Line 55                    Anomaly C  
                                  through  
Line 61                    Anomaly E

This conductor has a fair strike length of about one mile. It also reflects high conductivity and consistently follows the magnetic trend (30-220  $\gamma$ ). The individual responses are not too impressive, however, showing amplitude in the weak to moderate range. The best EM character is to be found on lines 56 and 58, if some work is considered. There is some faint hint of dual character in these anomalies, but primarily they are single peaks with probable fair potential at best.

Zone S-33

Rating 44  
Category B-

Line 50	Anomaly E
Line 51	Anomaly B
Line 52	Anomaly C

This conductor might be just an extension of one of the longer sources developing to the east. It shows up as low amplitude anomalies reflecting good conductivity and reasonable character. Character is best developed at line 50 where there is an 80 gamma peak only fractionally offset, but this is regarded only as a low priority selection.

There is no visible association to culture.

Zone S-34

Rating 41  
Category B-

Line 55	Anomaly B
	through
Line 61	Anomaly D

The EM here is very weak as well as poor looking and broad. Amplitude is slightly stronger at line 57 but still unimpressive. From a geophysical viewpoint a low rating is warranted.

We note, however, that the conductor follows a magnetic trend of 120 to 530 gammas, and seems to correlate with a metavolcanic band mapped by geology.

Zone S-35

Rating 47

Category B-

Line 53            Anomaly A  
                  through  
Line 60            Anomaly B

The strongest EM in this zone occurs within the lake on lines 58, 59 and 60. These are moderately strong anomalies with good narrow shape, and they do not suggest a surficial origin like conductive lake bottom. They are highly conductive but lacking direct magnetic expression.

The EM to the west on lines 53, 54 and 56 is slightly displaced and certainly much weaker, but seems to relate more to magnetics. The magnetic association is particularly interesting at line 53 where the weak 50-70  $\gamma$  trend suddenly becomes a sharp 350 gamma peak. The correlating EM response on this line remains very poor, however.

Considering this zone as one single source, total strike length is fair, about one mile.

Additional Responses

The following tabulation consists of very questionable anomalies which seem to have little chance of being a bedrock source of interest. Evidence for culture or surficial origin is not conclusive enough to write off these anomalies completely, but they do not seem to warrant being zoned or discussed in much detail.

The tabulations are designed mainly to identify the pertinent information regarding the film check, magnetic association, anomaly character and apparent conductivity.



line	fid.	ratio	conductivity	comments
6S	114.5/.7 (G)	30/10	High	This anomaly looks isolated on the plan map. Film shows only bush but a cultural explanation is suspected because of the anomaly's character. It is very weak and quite narrow. There is a 260 $\gamma$ mag peak correlating.
13 N	149.2/.4 (BI)	50/10	High	This is a very isolated anomaly on the south shore of High Lake but its character is irregular and suspect. There is no mag support.
27N	416.95- 417.21 (FI)	50/10	High	Suspect to some degree because the quadrature component is so slight. The in-phase, however, is reasonably well developed. No direct mag. Might be caused by the aircraft veering suddenly upward.
43S 44N	060.1/.3 080.5/.68 (H) (G)	70/50 90/80	Intermediate To High	Both anomalies occur within a long string of cultural type anomalies. Amplitudes not enhanced but both responses seem to have slightly more width than the usual cultural type. There is some magnetic association as well, with a direct 180 $\gamma$ peak at line 44 and a slightly offset peak at line 43. Visual check might be considered.

line	fid.	ratio	conductivity	comments
49N	115.05/ .30 (A)	50/90	Low to Intermediate	The source of this anomaly appears to be very short and confined to lines 48 and 49. Culture is the suspected cause since the film shows a possible linear or cut-line very close to the peak position. The anomaly character is narrow but not the conclusive cultural type. A sharp 180 $\gamma$ peak is also coincident.
49N	115.35/ .5 (B)	60/130	Low to Intermediate	This anomaly occurs within a long string of EM responses. A cultural source is expected because of the very weak, narrow character of the EM, but the film shows no definite culture at any line. Possibly the zone is really a very poorly developed geological zone. Certainly it seems to follow the magnetic trend very well (100-380 $\gamma$ ). The anomaly pointed out here is the best developed of the group.
53N	177.8/ .91 (B)	40/5	High	This narrow, small source was picked up on both the N-S and E-W profiles. Culture suspected but not confirmed on the tracking film. Small 30 $\gamma$ correlation on E-W line.

line fid. ratio conductivity comments

163E 060.5/ 80/30

High

.8

164W 076.7/ 50/5

High

.9

165E 097.6/ 60/30

High

.75

This is a narrow source, identified only on the E-W profiles. No mag support. Film inconclusive but during the survey the operator noted a possible power-line. The anomaly character is sharp and narrow, quite consistent with a cultural interpretation.

SHEET 2Zone S-36

Rating 45  
Category B-

Line 64          Anomaly R  
                  through  
Line 78          Anomaly K

This long source along the edge of the grid is probably part of the same formational unit as zones S-1 through S-7. It reflects the same consistent high conductivity and relates to a similar active magnetic trend. This trend reflects some very large amplitudes (up to 3300  $\gamma$ ) and some associated magnetite (line 77).

The EM itself is quite well developed from line to line and moderately strong at several locations. What is lacking, however, is any really striking variability to denote a separate source. We note only that some of the strongest anomalies, like 74-K, also happen to coincide with an increase in the magnetics, and this is one possible target, if work is considered. In our opinion, such selections belong in the low priority grouping.

Zone S-37

Rating 55  
Category B

Line 63          Anomaly M  
Line 64          Anomaly P  
Line 65          Anomaly N

This zone has been given a "fair" rating because of its apparent short extent. Certainly it could be a satellite of interest lying on the north flank of zone S-3. In such formational environments, however, there is always the danger of longer sources reappearing sporadically. Possibly this is just an extension of the long zone S-1 seen on sheet 1.

The EM itself has only moderate amplitude but reflects a highly conductive material. Magnetic association is good and direct at lines 63 and 64, but at line 65 the same magnetic shoulder looks more offset. Amplitude of the magnetic feature ranges between 300-500 gammas.

Zone S-38

Rating 46

Category B-

Line 67            Anomaly J

Line 68            Anomaly L

During the survey, the operator in the aircraft thought he recognized a powerline in this vicinity. This could account for the higher conductivity which is reflected at line 68. On the film, however, there is no evidence of culture.

The conductor appears to locate just within or on the edge of a small lake. It is short as well as coincident with magnetics (140-300  $\chi$ ), but the same magnetic trend looks as if it continues eastward and is not as localized as the EM. The EM is weak, even surficial looking at line 67. The response on line 68 has much better apparent character with regard to width and conductivity, but the possibility of culture would have to be eliminated before considering other work.

Zone S-39

Rating 32

Category C

Line 61            Anomaly FI  
                  through  
Line 74            Anomaly G

The width, conductivity and magnetic association (100-150  $\chi$ ) at lines 62 and 63 could possibly reflect bedrock origin. The other responses in this long trend are much weaker and poorer, with a sharpness and narrowness which looks more like culture. They do, however, continue to follow the magnetic trend reasonably well.

If this is not a cultural conductor, then it must be very poorly developed and quite shallow. It is also too long to warrant anything but a low rating, especially considering the possibility that it might be related to the equally long zone S-27.

Zone S-41

Rating 64  
Category B+

Line 82            Anomaly C  
                  through  
Line 86            Anomaly E

**geoterrax**  
LTD

Zone S-42

Rating 64

Category B+

Line 81            Anomaly D  
                   through  
 Line 86            Anomaly D

These zones also look like rather interesting followup prospects. They lie in a broken up, distorted metavolcanic environment described on the geological map as dacitic agglomerate with interbedded metasediments.

The main conductor of zone S-41 extends from line 83 through to line 86 and falls within the lake except for line 83. It shows up as moderately strong EM which is best developed on the west end. Magnetic amplitudes are also strongest in that section (1700-2930  $\gamma$ ). A dual source is anticipated because of the broad character at line 84 and the slight suggestion of double peaking at line 83. Line 153, however, shows only a very strong single peak directly on a 2160 gamma high.

The anomaly C on line 82 may also be a bedrock indicator. Certainly it has narrow, well developed in-phase which could conceivably map some conductor in addition to the conductive lake bottom. It may reflect the end of zone S-41 or maybe even a separate source. Certainly it looks very different magnetically with its small 70 gamma correlation.



East of zone S-41 there is some slight in-phase component within the lake as well, but it is too inconclusive. Conductive lake bottom only may be indicated there.

Zone S-42 has an irregular, arcuate shape and even stronger EM anomalies. The material is very highly conductive and directly associated with magnetics of 300-1600 gammas. Anomaly character is dual for the most part and shows enough variability along strike to suggest a fair prospect. Strike length is also fair. It could be tested at line 148 where a very strong EM peak correlates with 1600 gammas or at line 84 where a 360 gamma correlation is indicated.

Zone S-43

Rating 70

Category A

Line 83          Anomaly D  
                    and  
Line 147         Anomaly C

This is a highly rated, short looking source on the south side of zone S-42. It is a fairly strong anomaly on both the E-W and N-S profile and it reflects high conductivity. Correlation with magnetics is direct and in the range of 1900-2200 gammas.

A check of adjacent lines suggests this may be a localized magnetic high and a top priority prospect.

The tracking film reveals location in dense bush.

Zone S-44

Rating 47

Category B-

Line 92            Anomaly E

Line 93            Anomaly F

The sharpness of these anomalies suggests cultural origin and there is some evidence on the film to support such an interpretation. There is a building on line 92 and it is very close to the EM peak position. That EM anomaly is dual in character, implying two narrow, very closely spaced conductors.

There is no man-made construction visible at line 93. If a visual check confirms no cultural association, then some ground geophysics might be considered because of the magnetics. There is a very prominent 800 gamma peak on line 92. It does continue to adjacent lines but only with a great reduction in amplitude.

Zone S-45Rating 40  
Category B-Line 67            Anomaly D  
                  through  
Line 82            Anomaly AI

This is a very long, narrow conductor composed of many very weak anomalies. It looks like a sporadically developed bedrock feature. Its extension into the lake is somewhat tentative, but certainly the in-phase component is reasonably well developed to suspect a continuation. The lake bottom itself is also conductive, and the surficial component is obvious on several lines.

The best character is seen at lines 74, 75 and 76, and this section also has some magnetic support (40-90  $\gamma$ ). These are nicely developed anomalies with moderate amplitude and high conductivity.

No cultural contribution is visible.

Zone S-46

Rating 55

Category B

Line 79            Anomaly D  
                   through  
 Line 88            Anomaly A

The anomalies on lines 80 and 81 suggest a fairly interesting source. They have good amplitude and dual character with conductivity in the high range at line 80. There is a noticeable drop to low to intermediate conductivity on line 81.

The magnetic feature is also best developed at line 80. This feature seems to be abruptly truncated to the east since it is completely gone by line 81 and it is reduced to the west as well (130 γ). A check is definitely warranted because of this apparent localization. It is tempting even to consider the strong EM anomaly on line 80 as a separate source and to rate it higher.

The remaining anomalies to the east on the same trend look primarily surficial in nature. They generally reflect low conductivity. A few do have some in-phase, however, so there could be a weakly developed bedrock feature as well. Anomalies 88-A and 87-B in particular look like possible bedrock responses. They occur in the proximity of a magnetic zone of 500-800 gammas.

Zone S-47

Rating 34  
Category C

Line 91          Anomaly D  
                  through  
Line 99          Anomaly B

The EM in this zone have weak to moderate amplitude with narrow, poor looking character. They indicate a poor target with a discouragingly long length. The material has variable conductivity and at best relates only indirectly to magnetics. The magnetic trend is well offset and ranges from 400-1300 gammas.

The best character in the zone is undoubtedly the response on line 92. By itself this is a fairly good looking anomaly, dual in character and reflecting high conductivity at one peak. The film shows no culture at this strongest peak but the other falls on a faint straight line feature on the film. It might possibly be some cultural indicator.

Zone S-48

Rating 34  
Category C

Line 63          Anomaly D  
                  through  
Line 68          Anomaly D

These are predominately narrow, weak anomalies and coincident culture would certainly adequate explain the recorded character. Lines 63 and 65 in particular look like narrow sources right at surface.

Shape and width is better at line 66 and conductivity there is also fairly high. There is no direct magnetic association, however, only an offset zone of 30-210 gammas. A poor rating seems to be warranted.

There is no confirmation of culture here on the tracking film.

Zone S-50

Rating 60

Category B

Line 78	Anomaly E
Line 79	Anomaly C
Line 80	Anomaly D

The recorded amplitude is rather small here but nevertheless overall EM character is reasonable. The source has an intermediate conductivity and, above all, looks quite favorably short. It is associated with magnetic

peaks also, and these show considerable variability along strike. The broad magnetic high of 110-240 gammas on lines 79 and 80 becomes a strong, sharp 800 gamma peak at line 78. There is no sign of the same 800 gammas at line 77, indicating an abrupt truncation.

No cultural contribution was identified.

Zone S-51

Rating 60

Category B

Line 83      Anomaly A

This is a single, moderately strong anomaly offset from nearby longer conductors. Hopefully it represents a short source and a non-cultural one. The film shows only bush at the peak position, but on the adjacent line 84, a possible cut-line was noted, leading to this selection. Probably a visual check should precede other work here.

The source has high apparent conductivity and a magnetic expression of 80 gammas.

Zone S-52

Rating 44

Category B-

Line 83      Anomaly B

through

Line 86      Anomaly B



50.

Zone S-53

Rating 42  
Category B-

Line 82          Anomaly A  
                  through  
Line 87          Anomaly A

Zone S-54

Rating 38  
Category C

Line 90          Anomaly A  
                  through  
Line 94          Anomaly D

Zone S-52 outlines low amplitude anomalies, most with dual character. They reflect a source with high conductivity and length of about 1 mile. Anomaly character is not the obvious cultural type but the film shows linears and tracks on three out of four lines. The magnetics is most often offset as well.

Zone S-53 may also be related to culture since tracks are distinctly visible on some lines. Again, however, anomaly character is not really that consistent with a cultural interpretation, especially the broad, dual type seen at line 87.

The source has an intermediate to high conductivity and length is in the range of one mile. Even if non-cultural, it too should probably be regarded as a relatively poor target.

Zone S-54 falls along a river and some of the EM peaks plot right on the edge of the shore. There is obviously some surficial component here, judging by the broad anomaly character at lines 91 and 94, but the other responses suggest a narrower origin. There is weak magnetic association as well, but the recorded conductivity is low to intermediate.

Cultural contribution is also suspected here, at least at line 90, anomaly A. That EM peak falls directly on a clear linear.

line	fid.	ratio	conductivity	comments
62N	295.32/ .48 (E)	40/40	Intermediate	Small amplitude response but well shaped. No mag. Film shows bush and no apparent culture but width of anomaly is rather close to the cultural type.
62N	297.32/ .48 (J)	40/20	High	Small anomaly only slightly offset from formational trend of zone S-4. Probably narrow source and maybe a cultural one. Film suggests possible wide cut-line through bush. Small 40 % correlation.
64N	327.65/ .78 (J)	60/60	Intermediate	Small narrow anomaly slightly offset from long cultural string. Culture is the suspected cause but there is no proof on the film. 110 % correlation. Adjacent line 63, anomaly F looks even more cultural in appearance.
75N	148.29/ .48 (D)	40/10	High	Looks very isolated but very weak and poor looking. Offset 40 %. Narrow, shallow origin.
83N	242.25/ .40 (C)	50/30	High	Rather narrow anomalies with small amplitude but well resolved above background.

line	fid.	ratio	conductivity	comments
84S	252.98/ .16	30/20	High	Suspect culture because of character. Film shows possible road at line 83 and a linear cut through the bush on line 84 which appears to lead straight back to the response on line 83. Magnetic correlation (40-80 %) only evidence which doesn't favour cultural interpretation.
104S	393.3/ .42 (C)	35/20	Intermediate	Looks isolated but very weak anomaly with narrow, cultural type width. Film shows bush with possible clearing. No definite culture visible.
112S	314.3/ .5 (D)	60/40	Intermediate To High	Plots within lake but in-phase component looks too well developed to be just surficial source. Slightly offset 30 %. Long string of anomalies to west along shore plot along road and are thought to be cultural indicators. Offset anomaly E on line 111 falls on junction, according to film.

line	fid.	ratio	conductivity	comments
------	------	-------	--------------	----------

121S	003.0/ .15 (c)	40/30	Intermediate To High	Narrow source noted only because of coincidence with mag of 150 $\gamma$ . Suspect cultural conductor since film reveals cabin just west of flight path.
------	----------------------	-------	-------------------------	--

SHEET 3Zone S-55

Rating 40  
Category B-

Line 61          Anomaly B  
Line 62          Anomaly D  
Line 63          Anomaly CI

These are poor looking anomalies within a small lake. Conductive lake bottom is the most probable explanation, but the responses have better in-phase character than most surficial types. There is some direct magnetic association as well, at least on lines 61 and 62. At line 63 the same magnetic feature is more offset but still looks like it might be related. The recorded conductivity is intermediate. Maybe it is related to zone S-49 on sheet 2.

The zone is regarded as a questionable selection, with followup dependent on available geological support.

Zone S-56

Rating 29  
Category C

Line 112          Anomaly B  
                  through  
Line 121          Anomaly B, BI

This is a long, broad zone with open extent to the east. It falls completely within the lake.

There is obviously an extensive surficial marker here, but some of the anomalies also show a well developed in-phase. Possibly there is a bedrock conductor here as well. There is some magnetic support for such an interpretation on lines 120 and 121, but generally the source is non-magnetic. It is regarded as a very questionable prospect. Even if it does reflect bedrock, it looks unfavorably long.

Zone S-57

Rating 51

Category B

Line 64            Anomaly D  
                  through  
Line 67            Anomaly B

This conductor has reasonably fair length of about 3/4 - 1 mile. The EM is very weak, however, except at line 64. That response has a moderate amplitude and some dualness to its character. It reflects a source with high conductivity lying on a magnetic gradient. There is no direct magnetic expression nor any apparent cultural association.

Zone S-58

Rating 49  
Category B-

Line 62           Anomalies B, C  
                  through  
Line 66           Anomaly B

This broad zone reflects double EM on most of the flight lines. It has an intermediate to high conductivity plus some direct correlation with magnetics on the north band. The strongest EM amplitude is on the south side, however, at 63-B and 64-A. These have no apparent magnetic expression.

The zone itself has length under one mile, but the pattern and density of conductors in the immediate area points to a possible formational environment. Possibly this zone is really just part of a longer, broken conductive trend which would include zone S-60 to the east and maybe zone S-81 on sheet 4 as well.

The small, narrow anomaly 62-B falls directly on a road, but no other culture was sighted here.

Zone S-59

Rating 29  
Category C

Line 70           Anomaly C  
                  through  
Line 81           Anomaly A



Followup of this zone will depend upon the geology. On the basis of the geophysical results, it looks like a very poor prospect, hardly worth considering.

It is a very long conductor (1.5 miles) and a very sporadic, weakly developed one. The individual responses appear to be predominately narrow and poorly conductive. Good magnetic support is also lacking.

Only two responses have reasonable EM character. These are the slightly stronger anomalies on lines 73 and 74 which reflect a better conductivity in the intermediate range.

No cultural features were noted on the film.

Zone S-60

Rating 40

Category B-

Line 72            Anomaly C  
                  through  
Line 80            Anomaly A

The predominant conductive material here has low to intermediate conductivity. Weak anomaly amplitudes are most common, but there is a definite intensity increase at line 74, anomaly C. It is moderately strong, well developed and highly conductive. It has no direct magnetic expression but falls on a gradient or magnetic contact.

The response locates in bush, according to the film, and probably warrants a check. Only low priority is suggested, however, since total strike length here is slightly over one mile. The zone may also be a formational type, considering that it seems to lie on the same trend as the equally long zone S-58.

Zone S-61

Rating 22  
Category C

Line 62                    Anomaly A  
                                  through  
Line 102                  Anomaly A  
                                  Sheets 3 and 4

These exceedingly weak anomalies map a very long trend of low conductivity. Some appear to be only slightly offset from a narrow, dyke-like magnetic high of 100-600 gammas.

The only anomaly with fair character is the one on line 74. It has high apparent conductivity but is still the narrow, low amplitude type. It looks too poor to recommend without geological support.

No definite cultural association was noted but there may be cut-lines in the bush on lines 71, 72 and 73.

Zone S-62Rating 50  
Category B

Line 75            Anomaly A  
                  through  
Line 193          Anomaly B  
                  Sheets 3 and 4

This NE-SW trending conductor continues for more than two miles on sheet 3 and on into the lake on sheet 4 as well. It may belong to a metasediment unit of greywacke and slate.

Much of the formation has low apparent conductivity, but between lines 210 and 215 there are stronger anomalies with higher conductivity. These have some moderate magnetic association, ranging from 40 to 180 gammas, but some other sections show comparable magnetic correlations. These better developed anomalies thus seem to be at best a fair prospect.

The anomalies on sheet 4 on lines 193 through 200 seem to be on the same horizon and are thought to be a continuation of the same conductive material. In that section, anomaly 195-A has the best in-phase character. The out-of-phase response here is very broad with large amplitude, indicating broad extensive surficial material on the lake bottom. Only some of these surficial responses appear on the EM plan map.

Zone S-63

Rating 67

Category A

Line 209

Anomalies E, F, G

There is nothing visible on the film to suggest that these three responses may be of cultural origin. There are no cabins or roads, only bush.

All three anomalies are well developed with good intensity and narrow shape. They seem to imply three separate sources with strike perpendicular to the flight line rather than one single conductor along strike. All three also look important enough to be carefully checked. They appear to be isolated, short in extent plus highly conductive.

The moderately strong response designated as E falls on one flank of a 2500 gamma magnetic high. There is no sign of direct magnetic expression.

Anomaly F looks quite comparable only a little stronger in intensity and directly on the strong mag feature. The adjacent lines show no definite N-S extension of the same very highly conductive material. Directly north there is only a negative in-phase response denoting a small magnetite pocket. As for the 2500 gamma feature itself, it apparently continues for some distance to the south or southwest, but decreases in amplitude rapidly to the north. By line 212 it is only a 500 gamma peak.

62.

As for anomaly G, it has smaller amplitude but is definitely well resolved. It relates directly to a sharp 140 gamma peak which is not visible on the adjacent flight lines 208 and 210. It also looks like a very interesting prospect.

Zone S-64

Rating 65

Category A

Line 193

Anomaly E

This anomaly locates well back from the shore line of the lake and in dense bush. According to the tracking film, there may be some building or construction in the immediate area. If a visual check confirms culture, it would have to be a very strong and very broad conductor to adequately explain the anomaly which is recorded here. This is an unusually large amplitude response with double peaks. It denotes a dual source or else a very broad one with very high apparent conductivity. If non-cultural, it would certainly be a top priority target since it points to a very localized, short conductor.

There is only weak magnetic support, possibly 20-40 gammas.

Zone S-65

Rating 51

Category B

Line 193            Anomaly D  
                    through  
Line 200            Anomaly C  
                    Sheets 3 and 4

This long source continues for about 1.5 miles. Geology suggests a possible contact in this vicinity, as does the magnetic data.

The EM responses are moderate in amplitude with conductivity in the intermediate to high range. Character and intensity is best at lines 198 and 199 and there is some association with a magnetic shoulder there as well (60-400  $\gamma$ ). This section alone may be a fair target.

No contribution from culture was noted.

line	fid.	ratio	conductivity	comments
64N	319.32/ .48 (C)	50/20	High	Rather narrow response with nice 250 $\gamma$ correlation. Could be culture but no proof on film.
64N	319.85- 320.05 (E)	60/50	High	Rather poorly shaped but coincident with 160 $\gamma$ . Film shows possible clearing. Culture beside lake suspected.
64N	322.25/ .40 (F)	50/50	Intermediate	Narrow anomaly with small amplitude. No direct mag. Looks isolated in bush. No apparent culture on film but culture still suspected to slight degree because of character.
76S	159.05/ .22 (G)	50/15	High	Small anomaly but fair character plus 240 gamma correlation. Film shows cleared area in bush.
91N	104.35/ .65 (A)	65/65	Intermediate	The response on line 91 has a very broad in-phase and is flanked on either side by extensive surficial material in the lake. It suggests a source with intermediate conductivity lying close to an area where there are several cultural conductors and cabins. The film shows no direct coincidence
92N	49.10/ .28 (A)	60/90	Intermediate	

fid. ratio conductivity comments

97N 111.32/  
.50  
(A) 50/30

High

with culture. The response on line 92 is narrower and more cultural looking. It too is surrounded by poorly conductive surficial material. Nothing on film to account for narrow in-phase.

Good in-phase suggests source in addition to surficial one. Culture suspected because of location along shore line but not confirmed by film check. Mag correlation of 100 %.

102S 147.95-  
148.20  
(A) 90/50

High

This is a broad, double anomaly occurring very close to a road. Cultural conductor suspected. EM coincides with equally broad mag of 200 %. Very weak EM on adjacent line 103 does not relate to culture on film and falls on same mag feature.

190K 253.02/  
.25  
(B) 60/20

High

Sharpness could be indicative of culture but film shows only bush here. 120 % coincident. Adjacent line 189 also shows irregular, broad anomaly but its character may be distorted by a sudden altitude change. (up to 200 feet). Film shows bush at line 189 as w



line	fid.	ratio	conductivity	comments
191E	277.23/ .40 (C)	70/20	High	Film shows only bush here. Rather narrow source on flank of 760 $\lambda$ . Adjacent very weak anomaly B has small 70 $\lambda$ correlation.
192E	124.7/ .86 (C)	90/70	High	Occurs right beside lake but no cabin or other culture visible on film. Rather interesting anomaly on flank of large mag of 1800 $\lambda$ . Character has some cultural characteristics but evidence is far from conclusive.
219W	231.80- 232.00 (E)	70/15	High	No visible culture on film but character suggests culture to slight degree. Could be some contribution from aircraft fluctuation as well, since accelerometer trace shows shift. No mag. Weak EM on same horizon on adjacent lines look narrower and more cultural.

SHEET 4Zone S-66

Rating 46

Category B-

Line 20            Anomaly CI  
                   through  
 Line 35            Anomaly F

The main constituent in this long zone is a highly conductive material. It continues for about two miles, sporadically following a moderately active magnetic trend (100-200  $\gamma$ ). On the basis of length, it looks like a relatively poor prospect, probably a formational type.

If work is considered, possible targets might include anomaly E on line 25 or maybe the smaller EM response on line 32. The former reflects an increase in amplitude compared to adjacent lines and correlates with a broad mag peak of 100 gammas. This magnetic feature is a mere 30 gammas on line 26. Apparent conductivity is high.

Anomaly G on line 32 is also highly conductive. It correlates with a fairly sharp 200 gamma high.

Zone S-67

Rating 53

Category B

Line 34            Anomaly F  
                   through  
 Line 37            Anomaly C

This source shows up best on the N-S profiles. On the E-W lines it is defined only by a quadrature anomaly reflecting low apparent conductivity. There could be some relationship to the nearby long zone S-68, but on the other hand it could also be a more interesting separate source. A check is suggested, on a medium priority basis.

The zone has fair strike length of about 3/4 mile. The EM responses are also fair in character, becoming progressively stronger and more conductive to the east. Line 37 shows the best developed anomaly, a high conductivity response occurring near the road. A magnetic axis of 50-130 gamma is associated with the conductive material.

No direct cultural association was noted on line 37 nor on the other flight lines.

Zone S-68

Rating 47  
Category B-

Line 16            Anomaly B  
                  through  
Line 30            Anomaly E

To the west this long zone is very sporadic and the EM is generally very weak. At line 25, however, the

conductor begins to improve noticeably and shows high conductivity plus good EM shape. The section on lines 25, 26 and 27 relates to a small mag high of 20-50 gammas while at lines 29 and 30 there is a stronger, sharper magnetic association of 120-140 gammas which might also be worth a low priority check.

Total strike length is two miles.

Zone S-69

Rating 36  
Category C

Line 1            Anomaly B  
                  through  
Line 34           Anomaly E

According to the geology map, this zone may lie on the edge of a band of rhyolitic material. It is a very long source, containing no obvious localized enhancements.

The material is highly conductive and relatively shallow looking on lines 1 to 5. Anomaly B on line 1 shows better amplitude and shape than the others, but is still only a low priority target, in our opinion.

To the east around line 25 the zone has the same high conductivity, but the anomalies look significantly broader. Greater depth could be reflected.

The formation probably continues into the lake as well, since some of the anomalies within the water have quite well developed in-phase components.

Zone S-70

Rating 44

Category B-

Line 10            Anomaly A  
                  through  
Line 17            Anomaly A

A rather low rating has been assigned to this conductor because the indicated conductivity is not very high and because there is no direct magnetic association. It has reasonably fair length, however, just under one mile, and is probably worth at least a low priority check.

The EM is relatively weak and poorly conductive, except at line 13. That response looks quite enhanced, indicating a source with intermediate conductivity lying to one side of a magnetic zone of 90-100 gammas. According to the geology map, it locates on the edge of rhyolites.

Zone S-71

Rating 50

Category B

Line 14            Anomaly B  
                  through  
Line 33            Anomaly C

Zone S-71A

Rating 37

Category C

Line 31            Anomaly C  
                  through  
Line 34            Anomaly D

The conductor mapped as S-71 shows considerable variability along strike, both electromagnetically and magnetically. It occurs within a unit of metavolcanics and in the vicinity of a mapped anticlinal feature.

Good EM character begins on line 18 where the conductor follows a magnetic axis of 200-800 gammas. For the most part, this axis is offset to the north rather than directly coinciding. The EM becomes dual at line 25 where a second magnetic peak appears on the flank of the 700 gamma feature. This magnetic shoulder becomes a better developed separate peak on lines 26A, 27 and 28 and is virtually coincident with the EM. The indicated conductivity is high. Close by on line 24 is a negative response reflecting associated magnetite.

Another response of interest is the one on line 32, anomaly C. It looks very enhanced compared to adjacent lines but falls more on the flank of the magnetic trend (1550  $\gamma$ ).

As for the neighbouring small conductor to the south mapped as zone S-71A, it reflects low conductivity all along strike. It lies on the south side of a strong magnetic high (1000-1300  $\gamma$ ) and parallels the road. Only the response on line 31 shows any in-phase at all.

Zone S-72

Rating 65

Category A

Line 35	Anomaly D
Line 36	Anomaly D
Line 37	Anomaly B

Zone S-73

Rating 55

Category B

Line 38	Anomaly B
	through
Line 44	Anomaly B

A rather high priority might be warranted for zone S-72 since there is some evidence of a localized, short source.

The conductor appears as a single EM peak on lines 35 and 37, but as a stronger dual anomaly on line 36. The dual character plus the increased amplitude plus the sudden appearance of correlating magnetics (140  $\gamma$ ) all point to a fairly interesting prospect at line 36. That magnetic peak

does extend to line 37, but only with decreased amplitude (50 gammas).

The source has high apparent conductivity on all three flight lines.

Zone S-73 most certainly could be related but it looks slightly offset to the north. It is highly conductive like zone S-72 and shows a fair strike length of about one mile. It is more or less coincident with the road at lines 38 and 39 but well offset on the other lines.

This conductor also shows considerable magnetic variability. At lines 38 and 39 amplitudes are strong, in the range of 900 gammas, and there is dual or even multiple peaking. Magnetite is visible in this area as well, just north of the conductive material. By line 41, however, the associated magnetics are much weaker, a mere 100-120 gammas. The larger magnetic zone now lies well off from the EM peaks.

Zone S-74

Rating 60  
Category B+

Line 50                      Anomaly A

Zone S-75

Rating 53  
Category B

Line 55                      Anomaly A  
Line 56                      Anomaly B



Zone S-77

Rating 60  
Category B

Line 31            Anomaly A  
                  through  
Line 37            Anomaly AI

The rating of this zone is based strictly on the two anomalies on the western end. These are much better developed than the others, and hopefully they represent some separate source. Medium priority or better is suggested.

Lines 31 and 32 show two very well shaped EM anomalies, both with a good direct magnetic correlation (160-280  $\gamma$ ). Directly west this magnetic zone is truncated and to the east it is a mere 40 gammas. It looks like a fairly good localization.

As for the conductivity, it is intermediate at line 32, rising to high on line 31.

The rest of the zone from lines 33 to 37 is a very poorly developed source with low apparent conductivity.

Zone S-78

Rating 45

Category B-

Line 33            Anomaly A  
                  through  
Line 48            Anomalies B, C

This conductor continues for about two miles, possibly turning and reaching as far as line 51. According to the geology map, it may coincide with a contact between a granitic zone and basic metavolcanics.

The EM responses are weak or moderate in amplitude and predominately non-magnetic. Variability along strike appears limited.

One area of minor interest could be the section on lines 39 and 40 where the source appears to broaden and increase slightly in amplitude. At line 40 this source is dual, part highly conductive, part with low apparent conductivity. Neither EM peak has a magnetic correlation.

Lines 44 and 45 represent another low priority target. They have at least some weak magnetic association (20-30  $\gamma$ ).

Zone S-79

Rating 47

Category B-

Line 34	Anomaly A
Line 35	Anomaly A
Line 36	Anomaly A

Zone S-80

Rating 45

Category B-

Line 47	Anomaly A
Line 48	Anomaly A

Both of these zones belong in the low priority category. They have rather inconclusive magnetic association and indicate a lower range of conductivity.

Zone S-79, for instance, has very poor character on lines 34 and 35. Amplitudes are weak and so is the conductivity. Line 36 shows a slightly better anomaly and this would be the best place to initiate followup if work is considered. Conductivity improves to fair and there is a direct coincidence with a 200 gamma peak. This same magnetic feature is visible at the other two lines also, but there it is slightly offset.

The anomalies in zone S-80 have stronger amplitude but they reflect the same low conductivity. The source has a direct magnetic correlation also, but only at one line. Other characteristics of interest are its narrowness and good short extent.

Zone S-81

Rating 41

Category B-

Line 58	Anomaly BI
Line 59	Anomaly B

The only anomaly of any interest here is the response on line 59. It has fair amplitude and double peaks, indicating a source with high conductivity. Possibly it reflects an extension of zone S-58, which also outlines a dual conductor. In any case it is a poorly rated conductor because it lacks any direct magnetic correlation.

According to the geological map, it falls in a basic metavolcanic unit.

Zone S-82

Rating 34

Category C

Line 2	Anomaly AI
	through
Line 6	Anomaly AI

This is a very questionable selection, quite likely just a surficial type source. It lies completely within the lake and in a narrow channel.

The zone is pointed out only because it seems to follow along the magnetic trend and because the in-phase character on some lines is reasonably shaped and well resolved. This suggests at least a faint chance for bedrock. We note, however, that the ratios are unimpressive and that the indicated conductivity is low. Furthermore, the magnetic axis is very long, continuing well beyond the mapped EM.

Geological support would definitely be needed before considering work here.

Zone S-83

Rating 49

Category B-

Line 1	Anomaly A
Line 2	Anomaly A
Line 3	Anomaly A

The full extent of this conductor is unknown. It occurs right at the edge of the grid within an area mapped as metavolcanics.

The EM have small amplitude but a well defined shape. They reflect a highly conductive, narrow source directly on a magnetic axis of 140-180 gammas. Line 1 shows the strongest EM and the largest magnetic amplitude.

A check is advised, but only a relatively low priority has been assigned due to the unknown extension to the west.

There is no visible contribution from culture.

Zone S-84

Rating 40  
Category B-

Line 22            Anomaly AI  
                  through  
Line 31            Anomaly AI

Some of the anomalies here have a dominant quadrature and a large surficial component. For the most part, however, the material is conductive enough to be a bedrock indicator. The source closely follows the shoreline for about  $1\frac{1}{4}$  miles and is considered to be worth at least a low priority rating. It has intermediate to high conductivity generally and some individual anomalies of interest.

Line 31 shows a very nice, well shaped response and a moderately strong one. It occurs at the very far end of the flight line, however, where positioning is somewhat uncertain and film coverage is not complete. This anomaly is just fractionally offset from a dipping magnetic high of 200 gammas.

The response on line 26A is also a stronger one. It correlates with a broad 120 gamma magnetic feature and suggests a dual conductor.

The weaker anomalies on the shore to the west (lines 18, 19 and 20) might be a related extension. They follow a magnetic axis of 140-250 gammas and reflect an intermediate conductivity. Line 19 has the best character in that area.

Zone S-85

Rating 55

Category B

Line 18            Anomaly A

This is a single, very well developed anomaly plotting just on the tip of a small island. The film shows no cabin, road or any other cultural feature to account for this good looking response.

The source has high apparent conductivity and a direct magnetic correlation of 170 gammas. There is some surficial component here, but it is relatively minor.

The anomalies immediately west plotting in the water also coincide with magnetics, but the film indicates that these fall right on some sort of bridge.

Zone S-86

Rating 32

Category C

Line 183            Anomaly C  
                          through  
Line 187            Anomaly B

This narrow source has fair length, about 3/4 mile, but it lacks magnetic support and any significant variability along strike. In addition, all the responses are the weak, unimpressive type.

High apparent conductivity is really the only favorable feature.

There is no evidence of cultural association on the film or mosaic.



Zone S-87

Rating 48

Category B-

Line 188            Anomalies C, D  
                          through  
 Line 198            Anomaly B

The north half of this conductor relates to a very strong magnetic feature which has a maximum amplitude of 2800 gammas. The associated magnetite is masking the conductivity to some degree, but nevertheless the indicated range is intermediate to high. The best character seems to be between lines 193 and 197, if intensity is used as a criteria. Another section of interest is at lines 188 and 189 where the conductor becomes dual and shows some relationship to a small magnetic shoulder of 80-140 gammas.

The total length of 1.5 miles is discouraging.

Zone S-88

Rating 44

Category B-

Line 176            Anomaly C  
 Line 177            Anomaly C  
 Line 178            Anomaly D



If sampling is considered, the anomaly F on line 172 is considered to be a slightly better developed type.

line	fid.	ratio	conductivity	comments
14S	178.92/ 179.20	110/230	Low	Occurs in lake amidst conductive lake bottom deposits. In-phase has exceedingly nice shape, however, and looks too good to be just surficial response. No mag support.
176W	076.02/ .20 (B)	90/90	Intermediate	Well developed EM especially at line 176. Direct mag coincidence also
and 177E	83.0/ .15 (B)	80/40	High	(230-260 $\gamma$ ). Character doesn't look cultural but film shows line and road offset from peak position. Could be interesting source if non-cultural. Looks short plus isolated.
189E	239.10/ .35 (B)	35/50	Low to Intermediate	Small zone in lake with fairly well developed in-phase. Conductivity looks too high at line 190 to be just surficial source. No mag support, however.
and 190W	259.72/ .95 (A)	50/60	Intermediate	
196E	104.40/ .55 (A)	50/50	Intermediate	Small anomaly with well developed in-phase sitting in lake. Lake bottom itself poorly conductive. Noted primarily because of small 50 $\gamma$ correlation.

V. CONCLUSIONS AND RECOMMENDATIONS

1. Table I on the following page summarizes the interpretation of the conductive zones in the Shoal Lake Area.

2. Zones S-18, S-40, S-43, S-63, S-64 and S-72 are highly rated prospects. They indicate rather isolated sources with short extent. Most also have good direct magnetic support and high conductivity.

3. There are also a large number of zones with fair EM character which may warrant a medium priority check. A total of 33 are listed. From these, we note in particular zones S-16, S-29, S-41, S-42 and S-74.

4. The remaining conductors identified in this survey are considered to be low priority targets from a geophysical point of view. Many are very long, formational type sources with little apparent variability along strike. Some others could be just surficial sources. Geological considerations, of course, will determine whether these will warrant any further work.

Respectfully submitted,

D.M. Wagg, P. Eng.

*D.M. Wagg*

R.K. Dowse, B.A.

*R.K. Dowse*

Qualifications

63-1136

Nil

TABLE I - Summary of Recommendations and Priorities

<u>High Priority</u>	<u>Medium Priority</u>	<u>Low Priority</u>	<u>Not Recommended</u>
S-18	S-6	S-1	S-8
S-40	S-9	S-2	S-31
S-43	S-10	S-3	S-48
S-63	S-13	S-4	S-56
S-64	S-16	S-4A	S-59
S-72	S-17	S-5	S-61
	S-20	S-7	S-82
	S-23	S-11	
	S-25	S-12	
	S-26	S-14	
	S-27	S-15	
	S-28	S-19	
	S-29	S-21	
	S-30	S-22	
	S-32	S-24	
	S-37	S-33	
	S-41	S-34	
	S-42	S-35	
	S-46	S-36	
	S-49A	S-38	
	S-50	S-39	
	S-51	S-44	
	S-55	S-45	
	S-57	S-47	
	S-62	S-49	
	S-65	S-49B	
	S-67	S-49C	
	S-71	S-52	
	S-73	S-53	
	S-74	S-54	
	S-75	S-58	
	S-76	S-60	
	S-77	S-66	
	S-85	S-68	
		S-69	
		S-70	
		S-71A	
		S-78	
		S-79	
		S-80	

TABLE I - Summary of Recommendations and Priorities cont'd.

<u>High Priority</u>	<u>Medium Priority</u>	<u>Low Priority</u>	<u>Not Recommended</u>
		S-81	
		S-83	
		S-84	
		S-86	
		S-87	
		S-88	
		S-89	

## APPENDIX "A"

Following is a description of equipment and procedures used during this airborne geophysical survey.

### A. EQUIPMENT

#### 1) Aircraft:

The aircraft is a deHavilland Otter DHC-5 with Canadian registration CF-IUZ. This aircraft is a single engine, slow speed, high performance type with a gross weight of 8,000 lbs. The aircraft may be equipped with wheels, skis, or floats, as required.

#### 2) Electromagnetometer:

The electromagnetic unit is a Rio Tinto type, measuring In-Phase and Out-of-Phase components of the secondary field at a frequency of 320 cycles per second. The unit was manufactured by Mullard Co. of England and carries their Serial #1.

A transmitter generates a closely controlled sine wave of 320 cps which is amplified and fed to a transmitting coil mounted on the starboard wing-tip. This coil is iron cored and has vertical windings, with coil axis in the direction of flight. The circulating coil power is some 7500 volt amperes.

A receiving coil is mounted on the port wing, co-planar with, and 62 feet from, the transmitting coil. The voltage developed in the receiver coil due to the transmitted field is some 100 millivolts. In the absence of external conductors, this voltage is cancelled by a reference voltage derived directly from the transmitter voltage.

When the aircraft comes within range of a conductor, the normal (or primary) field is changed by a secondary field and the resultant voltage at the receiver coil is amplified and passed on to the EM receiver in the aircraft. This signal is filtered and split into one component in-phase and one component out-of-phase with reference to the transmitter voltage.



The signals are then passed through phase-sensitive detectors where their amplitudes may be read on meters, or recorded on a chart. A system of calibration is included so that amplitude of responses (anomalies) may be determined in "parts per million" of the primary receiver coil voltage prior to cancellation. Noise level of the system due to movement of the metal aircraft within the EM field is normally 50 parts per million or less. Significant conductors depending on distance and size, will produce anomalies of more than 50 parts per million.

The system is also equipped with a receiver noise channel operation at a frequency of 268 cps. This channel is not susceptible to the electromagnetic response, and is affected only by radiated noise such as power and telephone lines, and atmospheric discharges. It is frequently useful in determining the validity of electromagnetic anomalies.

An accelerometer is also installed and the output recorded on the Edin recorder. This indicates flexure on the aircraft and enables discarding of false anomalies which may result from the aircraft motion.

Calibration marks are shown on the eight-channel chart, and are approximately 8 millimeters for 100 parts per million.

Any anomalies noted are listed in Appendix A of this report, indicating position, (fiducial number on the path recovery camera), amplitudes, aircraft altitude, magnetic relationship if any, relative anomaly rating, and comments which may be of significance.

The anomalies are then plotted on the base map in coded form, according to a legend shown on the base map. Anomaly groups which reflect probable ground conductors are circled and numbered. These are described and discussed in the report in the context of geophysical and where possible, geological significance.

### 3) Magnetometer:

The magnetometer used is a Barringer type AM-101-A Nuclear Precession Magnetometer. The sensing head of this unit comprises three orthogonal coils in kerosene fluid, mounted below the port wing.

The unit is a digital readout total field magnetometer, reading at a 1 second rate for 1 gamma sensitivity or at 0.5 seconds for a 5 gamma sensitivity. The noise level is normally  $\pm 2$  units, or an approximate 5 gamma envelope.

Output from the magnetometer is fed from a D to A converter into one channel of the Edin recorder for direct comparison with electromagnetic results. It is also fed to a rectilinear Moseley Model 680 recorder for detailed study or for subsequent contouring of magnetic data.

The usual sensitivity for mineral work is 1000 gammas full scale. Automatic stepping of 1000 gammas per step is incorporated.

Contouring of results is accomplished as required, usually with a 50 gamma contour interval.

### 4) Spectrometer:

The spectrometer normally used is the Scintrex single channel Model GIS-2, Serial No. 805140. This is an integral type with energy level cut off adjustable so that it may be operated as a total count unit, or set to measure all energy above 1.2 mev, effectively cutting off Potassium 40 radiation.

Scale ranges of 100, 300, 1000 or 3000 are available according to energy levels being measured. The time constant is variable, but normally set at 1 second.

A 5"x4" Thallium activated Sodium Iodide crystal and multipliers is used as the sensing head. This is Scintrex Model ASP-5, Serial No. 807122.

Data from the spectrometer is recorded on the Edin 8 channel chart recorder. If data presentation is required, it is normally presented as plotted anomalies with intensity and aircraft altitude noted, on a base map of the same scale as other presentations.

5) Altimeter:

The radio altimeter is a Bonzer model TRN-70, Serial No. 1228, operating at 1600 mc with an accuracy of  $\pm 10$  feet. The altimeter results are also recorded permanently on one channel of the 8 channel recorder.

6) Camera:

The path recovery camera is an Automax 35 millimeter frame camera, model G-2, Serial No. 1427.

This unit is equipped with special wide angle lens and 400-foot film magazines. Its operation is controlled by the intervalometer, with one frame triggered for each fiducial. Each frame is also numbered according to the master fiducial numbering counter.

7) Intervalometer:

The intervalometer is a Sharpe model IV-1 solid-state unit with variable time interval from 0.5 to 2 seconds. The intervalometer operates the marker pens on the two recorders, the frame camera, and a rotary counter. The repetition rate is set so that the camera frames produce only slight overlap. This is approximately once per second.

8) Edin Recorder:

This unit is an 8 channel ink recorder Type 8001. The galvanometer sensitivities are 8 volts full scale into 1350 ohms. The scale per channel is 4 centimeters in width, and the normal recording speed is 2 millimeters per second. The horizontal scale on the charts is thus roughly 4 inches per mile of traverse.

## B. PROCEDURES

### 1) Photo Laydowns:

Prior to undertaking of the survey, air photos of the area are obtained from which a photo laydown is produced, to an appropriate scale, usually 1"=1320 feet. Proposed lines are drawn on the laydown, in the appropriate direction and line spacing. These "flight-strips" are then used by the air crew for navigating the airplane visually along the proposed lines. This photo laydown is also used to produce the subsequent base maps.

### 2) Aircraft Operation:

The air crew consists of pilot, co-pilot (or navigator) and equipment operator. The aircraft is flown along the proposed lines at an altitude of some 200 feet, using the flight strips for navigation. Altitudes in excess of 300 feet are generally considered too high for effective penetration.

The operator records lines, direction of flight and starting and finishing fiducial numbers on a flight log. Equipment is normally left on during the whole of the survey flight, while the intervalometer is turned on only for the actual survey line. Thus, the appearance of fiducial marks on the charts indicates the extent of the survey line.

### 3) Field Reduction:

Upon completion of the flight, the film is developed and the actual path of the aircraft is plotted on the photo laydown. This is accomplished by comparing film points with the photo. For any given point, the appropriate fiducial number is placed on the photo laydown and the points joined to produce the actual flight path.

When field results are desired, anomalies are chosen and assigned appropriate fiducial numbers. The anomalies are then transferred to their correct position on the photo laydown.

#### 4) Office Reduction:

On completion of the survey, base maps are drawn using the photo laydown as a base. Flight lines and fiducial numbers are shown on this base map.

In the case of EM or radiometric results the anomalies are then plotted on the base map as boxes with symbols representing anomaly grade or amplitude (as noted on the legend accompanying each map). Anomaly "systems" are then outlined as conductive zones at which stage geological comparison and interpretation may be made.

In the case of magnetic results, the values noted on the Moseley chart are transcribed to a work sheet (overlay of the base map) after levelling or correcting for heading error, diurnal, etc. The values are then contoured on the work sheet and then drafted on a copy of the base map.

Since base maps use the photo laydown as a base, all geophysical results portrayed may be compared as overlays, and all features of interest may be identified on the appropriate photo for subsequent ground location.

## APPENDIX "B"

CONDUCTOR RATINGS

			<u>MAX</u>
A - <u>Strength</u>	Mostly 1 <sup>s</sup>	15	15
	Mostly 2 <sup>s</sup>	10	
	Mostly 3 <sup>s</sup>	5	
	Mostly X <sup>s</sup>	0	
B - <u>Conductivity</u>	Ratio $\gg 1$	15	15
	Ratio $\approx 1$	10	
	Ratio .5 to 1	5	
	Ratio $< .5$	0	
C - <u>Variability</u>	EM Yes	10	10
	No	0	
	Mag Yes	5	5
	No	0	
D - <u>Strike Length</u>	$\leq \frac{1}{2}$ mi.	15	15
	$\frac{1}{2}$ to 1 mi.	10	
	1 to 2 mi.	5	
	$> 2$ mi.	0	
E - <u>Mag Correl'n</u>	Direct	15	15
	Sporadic Dir.	10	
	Assoc.	5	
	Nil	0	
F - <u>Geology</u>	Favourable	15	15
	Unknown	10	
	Unfavourable	0	
G - <u>Structure</u>	Fault, Fold	10	10
	Arcuate	5	
	Straight	0	
H - <u>Miscellaneous</u>	Subjective evaluation Ranging from -15 to +15		

TOTAL: 100

# CONDUCTOR RATINGS

AREA .. SHOAL LAKE .....

PROJECT ..84-125B...

ZONE	STRENGTH	CONDUCTIVITY	VARIABILITY		STRIKE LENGTH	MAGNETIC ASSOCIATION	GEOLOGY	STRUCTURE	MSC.	TOTAL	CATEGORY	COMMENTS
			EM	MAG								
S-1	7	15	3	5	-	10	10			50	B-	Part of multiple banded formational system which includes zones S-1 through S-7.
S-2	5	10	1	4	15?	5	10			50	B-	Probable extension of zone S-1.
S-3	10	15	3	2	-	10	10			50	B-	Dual EM mapping very high conductivity.
S-4	12	15	3	2	-	10	10			52	B	Very strong EM & very highly conductive. Like rest of bands, probably maps graphitic horizons.
S-4A	7	12	2	1	8	5	10			45	B-	Satellite on south flank of zone S-4.
S-5	5	15	3	5	-	10	10			48	B-	Formational source.
S-6	5	9	5	3	15?	10	10			57	B	Fairly short source along river. Fair conductivity.

# CONDUCTOR RATINGS

AREA ..... SHOAL LAKE .....

PROJECT 85-125B ...

ZONE	STRENGTH	CONDUCTIVITY	VARIABILITY		STRIKE LENGTH	MAGNETIC ASSOCIATION	GEOLOGY	STRUCTURE	MSC.	TOTAL	CATEGORY	COMMENTS
			EM	MAG								
S-7	5	10	5	5	5	8	10			48	B-	Long source, probably part of same formational unit as zones S-1 to S-5.
S-8	5	10	-	-	?	10	10			35	C	Weak, poor EM.
S-9	7	12	2	-	15?	15	10			61	B	Broad, moderately strong anomalies with mag.
S-10	10	12	8	3	-	10	10			53	B	Broad, multiple zone.
S-11	4	10	-	-	?	15	10			39	C	Very weak EM but nice mag. Culture?
S-12	5	10	-	-	?	5	10			30	C	Possible Culture
S-13	10	15	1	-	?	10	10		+5	51	B	Good looking EM but strike extent unknown
S-14	12	15	2	1	?	10	10		-2	48	B-	Location, strike and strike extent uncertain.



# CONDUCTOR RATINGS

AREA ..... SHOAL LAKE .....

PROJECT 84-125B...

ZONE	STRENGTH	CONDUCTIVITY	VARIABILITY		STRIKE LENGTH	MAGNETIC ASSOCIATION	GEOLOGY	STRUCTURE	MSC.	TOTAL	CATEGORY	COMMENTS
			EM	MAG								
15	8	5	1	1	?	5	10			30	C	Location very uncertain at far end of flight path.
16	10	15	5	-	5?	10	10	5		60	B	Arcuate source with strong EM. High conductivity.
17	7	11	5	1	5?	10	10		+3	52	B	Possible extension of zone S-16.
18	6	12	1	-	15	15	10		+6	65	A	Good prospect. Short, isolated, highly conductive, and magnetic.
19	5	15	2	-	10?	5	10			47	B-	Full extent unknown but highly conductive.
20	5	15	-	-	15	10	10			55	B	Shorter looking source with high conductivity.
21	7	12	3	-	5?	10	10			47	B-	Narrow, long source with high conductivity.

# CONDUCTOR RATINGS

AREA ..... SHOAL LAKE .....

PROJECT .84-125B...

ZONE	STRENGTH	CONDUCTIVITY	VARIABILITY		STRIKE LENGTH	MAGNETIC ASSOCIATION	GEOLOGY	STRUCTURE	MSC.	TOTAL	CATEGORY	COMMENTS
			EM	MAG								
22	2	5	1	1	5?	5	10			29	C	Weak EM zone parallel to zone S-21.
23	7	5	5	-	15	10	10		+5	57	B	Source with intermediate conductivity and mag.
24	10	15	-	-	15?	-	10			50	B-	Intriguing response. Good character but in direct line with long string of cultural type anomalies.
25	10	12	-	-	15	10	10			57	B	Culture along shore line?
26	7	12	1	1	15?	10	10			56	B	Good character but could be long source.
27	8	12	5	5	-	10	10		+5	55	B	Multiple zone with good EM variability.

# CONDUCTOR RATINGS

AREA ..... SHOAL LAKE .....

PROJECT .85-125B...

ZONE	STRENGTH	CONDUCTIVITY	VARIABILITY		STRIKE LENGTH	MAGNETIC ASSOCIATION	GEOLOGY	STRUCTURE	MSC.	TOTAL	CATEGORY	COMMENTS
			EM	MAG								
28	7	12	1	1	5?	15	10	5		56	B	Arcuate zone, highly conductive and magnetic.
29	10	15	2	1	5?	15	10	5		63	B+	Possible extension of zone S-28. Strong EM.
30	7	12	4	3	5?	10	10			51	B	Dual zone with rather long extent
31	4	5	-	1	5?	5	10			30	C	Weak EM, possible extension of zone S-30.
32	6	12	2	1	7	10	10		+2	50	B	Fair EM but 1 mile long.
33	4	10	-	-	15?	5	10			44	B-	Weak EM; Possibly related to one of longer sources to east.
34	5	10	1	-	10?	5	10			41	B-	Weak EM along lake
35	7	10	5	2	8	5	10			47	B-	Fair EM on lines 59-60.



# CONDUCTOR RATINGS

AREA ..... SHOAL LAKE .....

PROJECT 84-125B .....

ZONE	STRENGTH	CONDUCTIVITY	VARIABILITY		STRIKE LENGTH	MAGNETIC ASSOCIATION	GEOLOGY	STRUCTURE	MSC.	TOTAL	CATEGORY	COMMENTS
			EM	MAG								
42	12	10	3	2	10	10	10	5		64	B+	Arcuate zone with very strong EM. Fair strike length.
43	10	15	-	-	15	15	10		+5	70	A	Good prospect. Single line satellite on edge of zone S-42. High conductivity + possible localized mag.
44	5	12	-	5	15	15	-	-	-5	47	B-	Possible culture.
45	5	11	2	2	-	10	10			40	B-	Long source and only fair EM.
46	6	9	10	5	5?	10	10			55	B	Rating based only on lines 80-81. Rest of zone reflects large surficial component.
47	5	6	3	-	5	5	10			34	C	Long zone offset from magnetics. Good character only on line 92.

# CONDUCTOR RATINGS

AREA ..... SHOAL LAKE .....

PROJECT ..... 84-105B .....

ZONE	STRENGTH	CONDUCTIVITY	VARIABILITY		STRIKE LENGTH	MAGNETIC ASSOCIATION	GEOLOGY	STRUCTURE	MSC.	TOTAL	CATEGORY	COMMENTS
			EM	MAG								
48	5	8	1	-	5	5	10			34	C	Fair character at line 66 but generally poor, weak EM.
49	1	8	-	-	10?	5	10			34	C	Narrow, weak EM.
49A	5	10	-	1	10?	15	10			51	B	Well developed EM but could be part of longer source which would include S-49, S-49A, S-49B and S-49C.
49B	3	7	-	-	10?	10	10			40	B-	Low amplitude.
49C	4	7	-	-	10?	10	10			41	B-	Broad anomaly.
50	5	10	-	5	15	15	10			60	B	Small source on edge of lake with good mag.
51	8	12	-	-	15	15	10			60	B	Single anomaly offset from longer source. Highly conductive.

# CONDUCTOR RATINGS

AREA . . . . . SHOAL LAKE . . . . .

PROJECT . . . . . 84-165B . . . . .

ZONE	STRENGTH	CONDUCTIVITY	VARIABILITY		STRIKE LENGTH	MAGNETIC ASSOCIATION	GEOLOGY	STRUCTURE	MSC.	TOTAL	CATEGORY	COMMENTS
			EM	MAG								
52	5	10	1	1	10	5	10			44	B-	Culture suspected.
53	5	10	1	1	10	5	10			42	B-	Tracks on film suggest potential cultural source.
54	5	6	2	-	10	5	10			38	C	Lower conductivity along river.
55	5	5	-	-	15	10	10		-5	40	B-	Surficial plus?
56	5	6	2	1	-	5	10?			29	C	Surficial plus?
57	6	10	5	-	10	5	10	5?		51	B	Well developed only at line 64.
58	6	10	2	1	10	10	10			49	B-	Fair length on its own but maybe part of formational trend.
59	4	8	1	1	-	5	10			29	C	Long source with weak, sporadic EM.
60	5	8	3	1	8?	5	10			40	B-	Weak, long source. Best EM at line 74.

# CONDUCTOR RATINGS

AREA ..... SHOAL LAKE .....

PROJECT 84-1250 .....

ZONE	STRENGTH	CONDUCTIVITY	VARIABILITY		STRIKE LENGTH	MAGNETIC ASSOCIATION	GEOLOGY	STRUCTURE	MSC.	TOTAL	CATEGORY	COMMENTS
			EM	MAG								
61	3	3	1	-	-	5	10			22	C	Exceedingly weak EM forming very long trend.
62	8	12	5	1	-	10	10		+4	50	B	Long formation best developed at line 212.
63	10	15	5	2	15	10	10			67	A	3 separate anomalies, all worth high priority check.
64	15	15	2	-	15	5	10		+3	65	A	Isolated source. Very strong, dual anomaly.
65	6	10	5	5	5	10	10			51	B	Rather long but fair variability.
66	8	12	5	1	-	10	10			46	B-	Highly conductive and dual in some sections. Length = 2 miles.
67	7	8	4	1	10	13	10			53	B	Fair prospect; reasonably short conductor.



# CONDUCTOR RATINGS

AREA ..... SHOAL LAKE .....

PROJECT ..... 84-125B .....

ZONE	STRENGTH	CONDUCTIVITY	VARIABILITY		STRIKE LENGTH	MAGNETIC ASSOCIATION	GEOLOGY	STRUCTURE	MSC.	TOTAL	CATEGORY	COMMENTS
			EM	MAG								
68	6	15	4	2	-	10	10			47	B-	Rather long but fair EM on lines 25-30 with mag support.
69	4	10	2	-	-	10	10			36	C	Very long, sporadic conductive trend. Weak EM and weak mag.
70	6	8	4	1	10	5	10			44	B-	Rather long but fair EM at line 13.
71	6	8	8	5	-	10	10	+3		50	B	Variable conductivity.
71A	4	-	3	-	15	5	10			37	C	Low conductivity only.
72	6	12	8	2	15?	12	10			65	A	Fairly good prospect. Variable EM with mag and possible short length.
73	7	10	3	5	10	10	10			55	B	Slightly offset from zone S-72 but could be related source.



# CONDUCTOR RATINGS

AREA ... SHOAL LAKE .....

PROJECT .84-12...

ZONE	STRENGTH	CONDUCTIVITY	VARIABILITY		STRIKE LENGTH	MAGNETIC ASSOCIATION	GEOLOGY	STRUCTURE	MSC.	TOTAL	CATEGORY	COMMENTS
			EM	MAG								
81	5	10	1	-	15?	-	10			41	B-	Non-magnetic conductor. Could be short source but might be just continuation of zone S-58 on sheet 3.
82	6	6	1	1	10	15			-5	34	C	Possible surficial noted only because of mag coincidence.
83	5	15	1	3	?	15	10			49	B-	Highly conductive source will full strike length unknown.
84	6	8	3	3	5	5	10			40	B-	Fair EM in lake along shore, but rather long source.
85	10	10	-	-	15	10	10			55	B	Well developed EM coincident with small island. No culture visible.



HBOG MINING LIMITED  
CLAIM STATUS SUMMARY SHEET

<u>GROUP</u>	<u>No. of Claims</u>	<u>Recording Date</u>	<u>Map Number</u>
<u>BAY BAY</u>			
K 365210-211 ✓	2	March 27/74	M 2339
K 365464-466	3	April 11/74	M 2704 & M2339
<u>CAMERON IS.</u>			
K 365469-474	6	"	M 2704
<u>CASH ISLAND</u>			
K 365429-434	6	"	M 1975
K 365490-500	11	"	M 2704
<u>CEDARSKIRT LAKE</u>			
K 365284-287	4	April 3/74	M 1949
<u>CHEBUCTO LAKE</u>			
K 365413-428	16	April 9 & 10/74	M 1949
K 365448-463	16	"	M 1949
<u>CLYTIE BAY</u>			
K 365435-447	13	April 13 & 14/74	M 1949 & M1975
K 365467-468	2	April 12/74	M 1949
K 365475-476	2	"	M 1949
K 365501-507	7	April 13 & 14/74	M 1949 & 1975
K 365647-649	3	June 1/74	M 1949
K 365477	1	"	M 1975
<u>CROWDUCK LAKE</u>			
K 365650-655	6	April 23/74	M 1975
<u>EARNGEY LAKE</u>			
K 365528-531	4	April 8/74	M 1975
K 392407	1	June 7/74	M 1975

CLAIM STATUS SUMMARY  
SHEET

<u>GROUP</u>	<u>No. of Claims</u>	<u>Recording Date</u>	<u>Map Number</u>
<u>ECHO BAY</u>			
K 365539-543	5 April 11/74	16 Apr. 74	M 1949
K 365552-558	7 April 11+12/74	16 Apr. 74	M 1949
K 416618-624	7 August 25/74	28 Aug. 74	M 1949
<u>GOLD ISLAND</u>			
K 365090	1 March 26/74	28 Mar. 74	M 1949
K 365192-196	5 " "	28 Mar. 74	M 1949
<u>HEETZ LAKE</u>			
K 365588-600	13 April 13,14+15/74	16 Apr. 74	M 1949
K 365608-617	10 April 13+14/74	16 Apr. 74	M 1949
<u>HELLDIVER BAY</u>			
K 365198-203	6 March 27/74	29 Mar. 74	M 2339
<u>LAKE OF TWO MOUNTAINS</u>			
K 365278-281	4 April 3/74	4 Apr. 74	M 1949
<u>MACKINNON ISLAND</u>			
K 365486-489	4 April 11/74	16 Apr. 74	M 2704
<u>MOSS CREEK</u>			
K 365408-412	5 April 8/74	16 Apr. 74	M 1975
<u>MOSS L. EAST</u>			
K 365544-547	4 April 9/74	16 Apr. 74	M 1949
<u>MOSS L. WEST</u>			
K 365532-535	4 " "	16 Apr. 74	M 1949
<u>MOTH LAKE</u>			
K 365064-067	4 March 28/74	29 Mar. 74	M 1975



NOTES

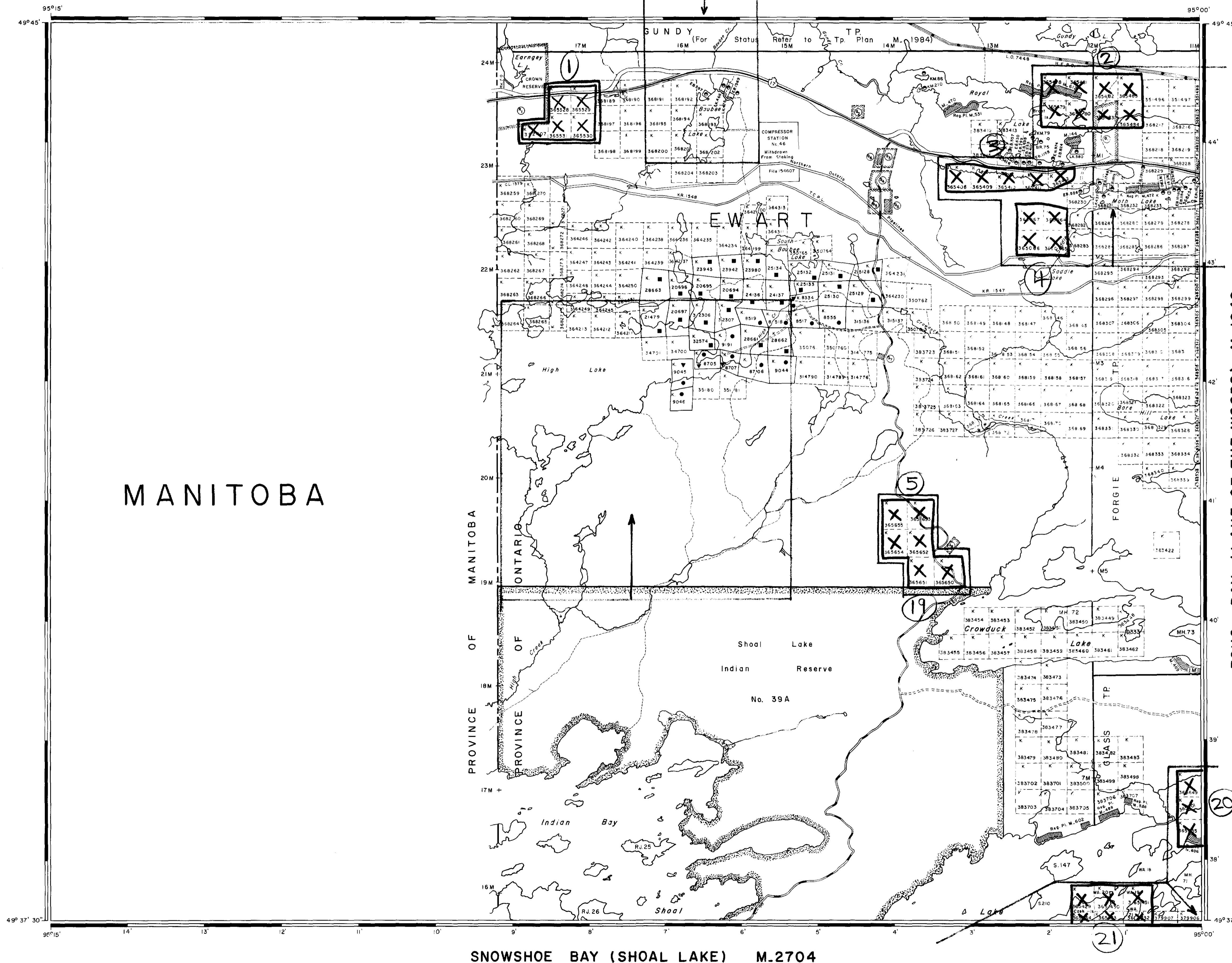
AWR surface rights reservation along the shores of all lakes and rivers.

AREAS WITHDRAWN FROM STAKING

See Section 11960 Crown Res. S.R.O. File 163473 vol 2

SAND & GRAVEL

TYPE	PIT	FILE
M.T.C.	471	99852
M.N.N.		150251
M.N.N.	287	
M.N.N.	288	00M 528 AV
M.T.C.	269	
Gravel		150251
M.T.C.	1400	
M.T.C.	1029	



MANITOBA

MINING LANDS  
DATE OF ISSUE  
SEP 18 1974  
MINISTRY OF NATURAL RESOURCES

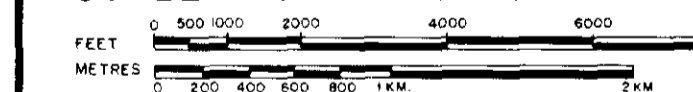
LEGEND

- HIGHWAY AND ROUTE No.
- OTHER ROADS
- TRAILS
- SURVEYED LINES
- SECTIONAL BASE LINES, ETC.
- LOTS, MINING CLAIMS, PARCELS, ETC.
- UNSURVEYED LINES
- LOT LINES
- PARCEL BOUNDARY
- MINING CLAIMS ETC.
- RAILWAY AND RIGHT OF WAY
- STREET LINES
- NON-PERMANENT STREAM
- FLOODING OR FLOODING RIGHTS
- SUBDIVISION
- ORIGINAL SHORELINE
- MARSH OR MUSKEG
- MINES

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	●
SURFACE RIGHTS ONLY	○
MINING RIGHTS ONLY	◐
LEASE, SURFACE & MINING RIGHTS	◑
SURFACE RIGHTS ONLY	◒
MINING RIGHTS ONLY	◓
LICENCE OF OCCUPATION	◔
CROWN LAND SALE	CS
ORDER-IN-COUNCIL	OC
RESERVATION	⊙
CANCELLED	⊖
SAND & GRAVEL	⊗

SCALE: 1 INCH = 40 CHAINS



ACRES	HECTARES
40	16

AREA  
**EWART TP. AND INDIAN BAY**  
DISTRICT  
KENORA  
MINING DIVISION 2.1572  
KENORA

Ministry of Natural Resources  
Ontario Surveys and Mapping Branch  
Date 4th SEPT. 1973 Plan No.  
National Topographical Series 52E II **M.1975**



NOTES

400' surface rights reservation along the shores of all lakes and rivers.

Reserve flooding rights to 1064' above mean sea level on all lands bordering on Lake of the Woods

SAND and GRAVEL

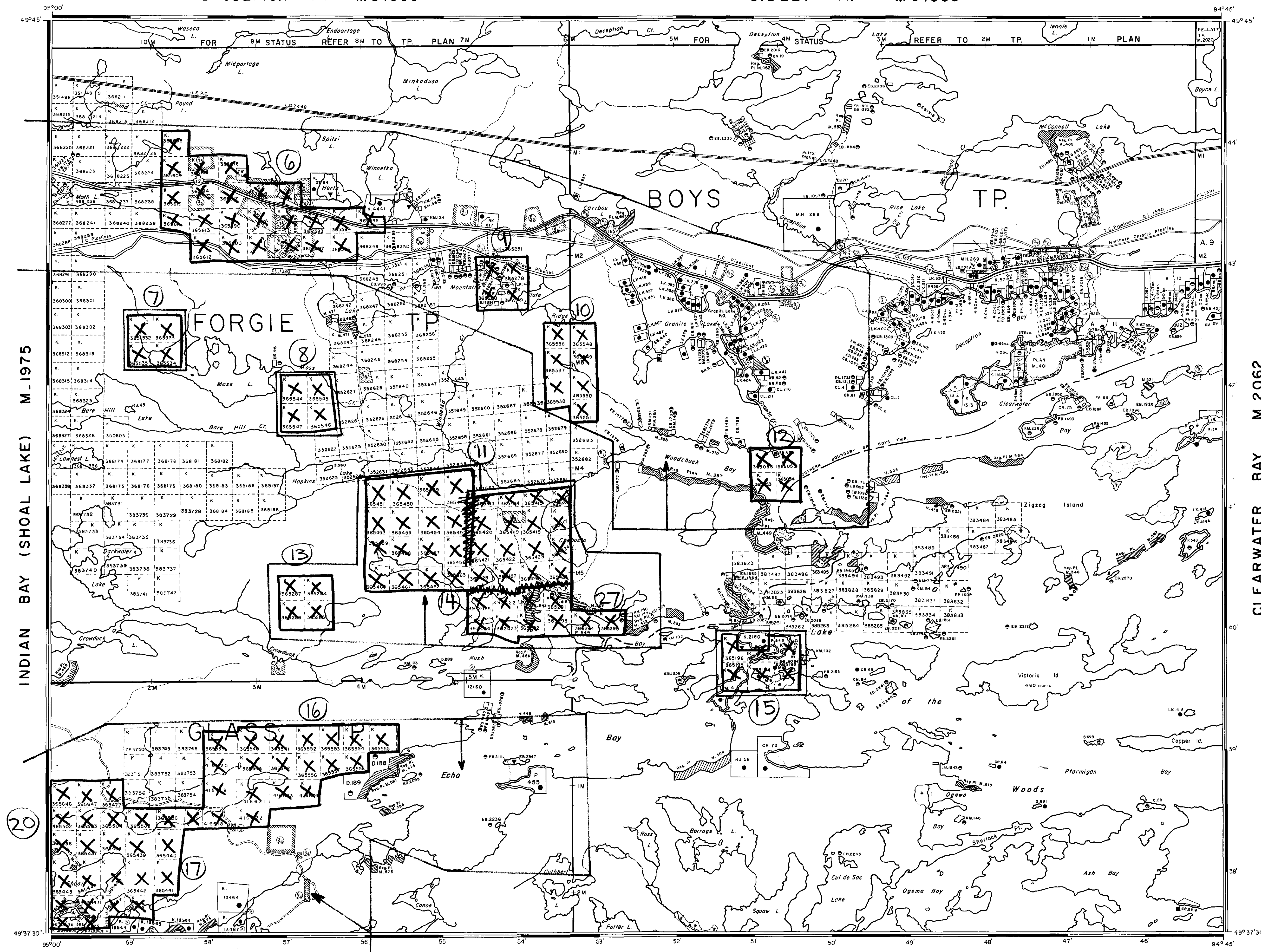
TYPE	FILE	DATE
1	M.T.C.	33 163688
2	Gravel	163688
3	M.T.C.	438 163688
4	M.T.C.	1012 163688
5	M.T.C.	437 163688
6	M.N.R.	83811
7	M.T.C.	439 163688
8	M.T.C.	440 163688
9	M.T.C.	441 163688
10	M.T.C.	533
11	M.N.R.	35 122650
12	M.T.C.	442 163688
13	Gravel	120802
14	M.T.C.	424 99852
15	Gravel	99852
16	M.T.C.	1158
17	M.T.C.	423 99852
18	M.T.C.	1397
19	M.T.C.	1398
20	M.T.C.	422
21	M.T.C.	421 99852
22	M.T.C.	420 99852
23	M.T.C.	99852
24	Gravel	169181
25	M.N.R.	88 99852

RESERVES

1	M.N.R.	77094 Vol 5
2	Crown Reserve(S.R.O.)	163473
3	M.T.C.	83811
4	Crown Reserve	163473
5	Public Reserve	122182
6	Crown Reserve	77094 Vol 6
7	Crown Reserve	163473 Vol 1
8	Crown Reserve	
9	Public Use Reserve	163473 Vol 2
10	Tower Reserve	99852

BRODERICK TP M.1953

GIDLEY TP M.1980



MINING LANDS & DATE OF ISSUE  
SEP 18 1974  
MINISTRY OF NATURAL RESOURCES

LEGEND

- HIGHWAY AND ROUTE No.
- OTHER ROADS
- TRAILS
- SURVEYED LINES
- TOWNSHIPS, BASE LINES, ETC
- LOTS, MINING CLAIMS, PARCELS, ETC.
- UNSURVEYED LINES
- LOT LINES
- PARCEL BOUNDARY
- MINING CLAIMS ETC
- RAILWAY AND RIGHT OF WAY
- UTILITY LINES
- NON-PERENNIAL STREAM
- FLOODING or FLOODING RIGHTS
- SUBDIVISION
- ORIGINAL SHORELINE
- MARSH or MUSKEG
- MINES

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	●
" SURFACE RIGHTS ONLY	○
" MINING RIGHTS ONLY	◐
LEASE, SURFACE & MINING RIGHTS	■
" SURFACE RIGHTS ONLY	◼
" MINING RIGHTS ONLY	◻
LICENCE OF OCCUPATION	▼
CROWN LAND SALE	CS
ORDER-IN-COUNCIL	OC
RESERVATION	⊙
CANCELLED	⊖
SAND & GRAVEL	⊗

SCALE: 1 INCH = 40 CHAINS

ACRES	HECTARES
40	16

AREA  
**ECHO BAY & BOYS TP.**  
DISTRICT 2.1572  
KENORA  
MINING DIVISION  
KENORA

ONTARIO  
MINISTRY OF NATURAL RESOURCES  
SURVEYS AND MAPPING BRANCH

DATE 6th SEPTEMBER 1973 PLAN No.  
NATIONAL TOPOGRAPHIC SERIES 52 E 10 **M.1949**

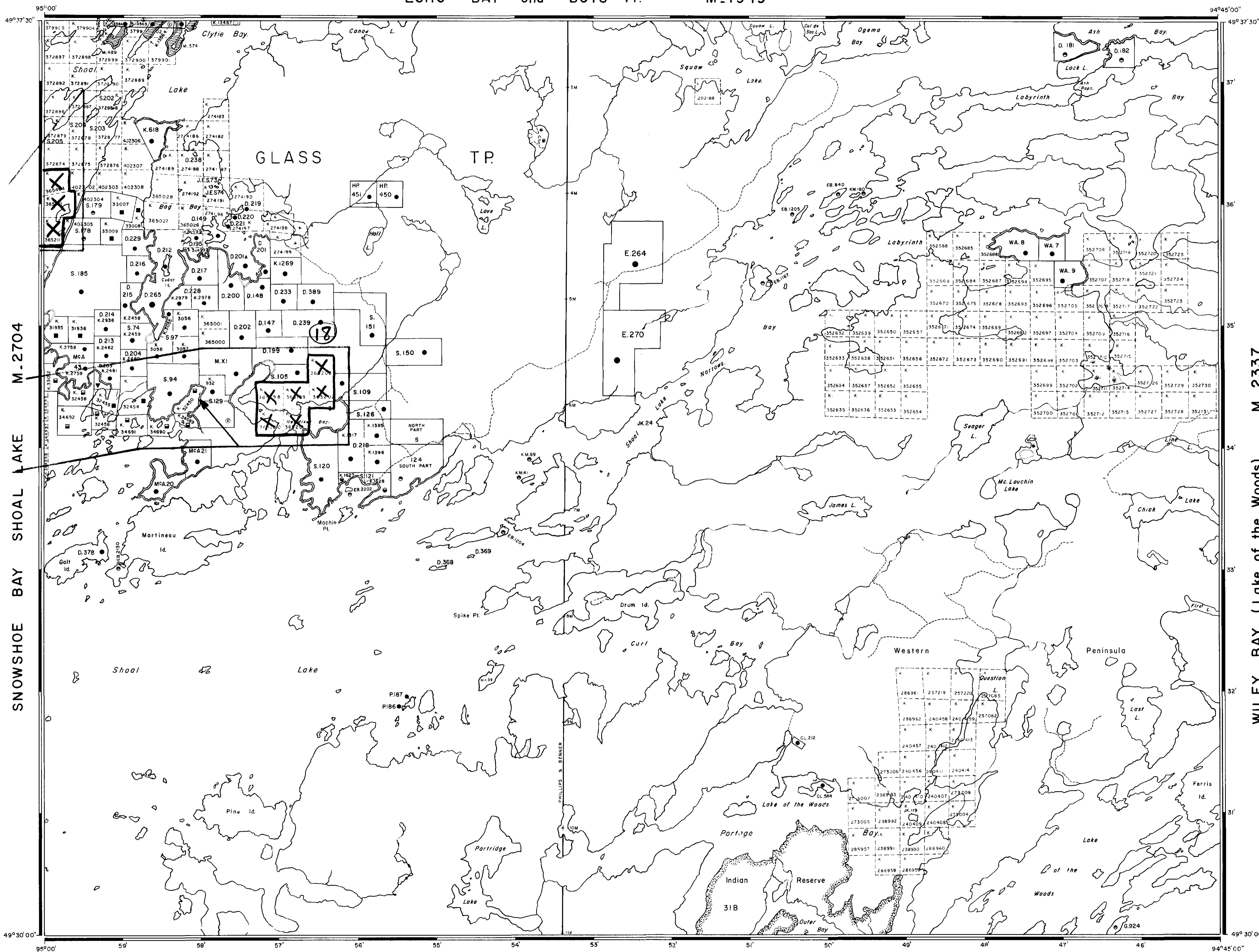
NOTES

400' surface rights reservation along the shores of all lakes and rivers.

Flooding Rights reserved to 1064' mean sea level.

Islands in Shoal Lake and inlets thereto do not form part of Glass Township

ECHO BAY and BOYS TP. M.1949



SNOWSHOE BAY SHOAL LAKE M.2704

WILEY BAY (Lake of the Woods) M.2337

MONUMENT BAY (Lake of the Woods) M.2682

MINING LANDS + DATE OF ISSUE  
SEP 18 1974  
MINISTRY OF NATURAL RESOURCES

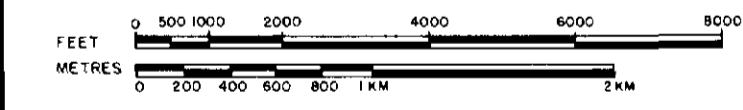
LEGEND

- HIGHWAY AND ROUTE No.
- OTHER ROADS
- TRAILS
- SURVEYED LINES: TOWNSHIPS, BASE LINES, ETC.
- LOTS, MINING CLAIMS, PARCELS, ETC.
- UNSURVEYED LINES: LOT LINES
- PARCEL BOUNDARY
- MINING CLAIMS ETC.
- RAILWAY AND RIGHT OF WAY
- UTILITY LINES
- NON-PERENNIAL STREAM
- FLOODING OR FLOODING RIGHTS
- SUBDIVISION
- ORIGINAL SHORELINE
- MARSH OR MUSKOG
- MINES

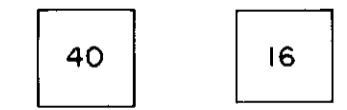
DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	
" SURFACE RIGHTS ONLY	
" MINING RIGHTS ONLY	
LEASE, SURFACE & MINING RIGHTS	
" SURFACE RIGHTS ONLY	
" MINING RIGHTS ONLY	
LICENCE OF OCCUPATION	
CROWN LAND SALE	CS
ORDER-IN-COUNCIL	OC
RESERVATION	
CANCELLED	
SAND & GRAVEL	

SCALE: 1 INCH = 40 CHAINS



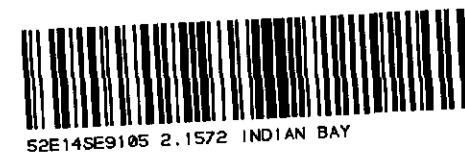
ACRES HECTARES



AREA  
**SHOAL LAKE**  
DISTRICT  
KENORA 2,1572  
MINING DIVISION  
KENORA

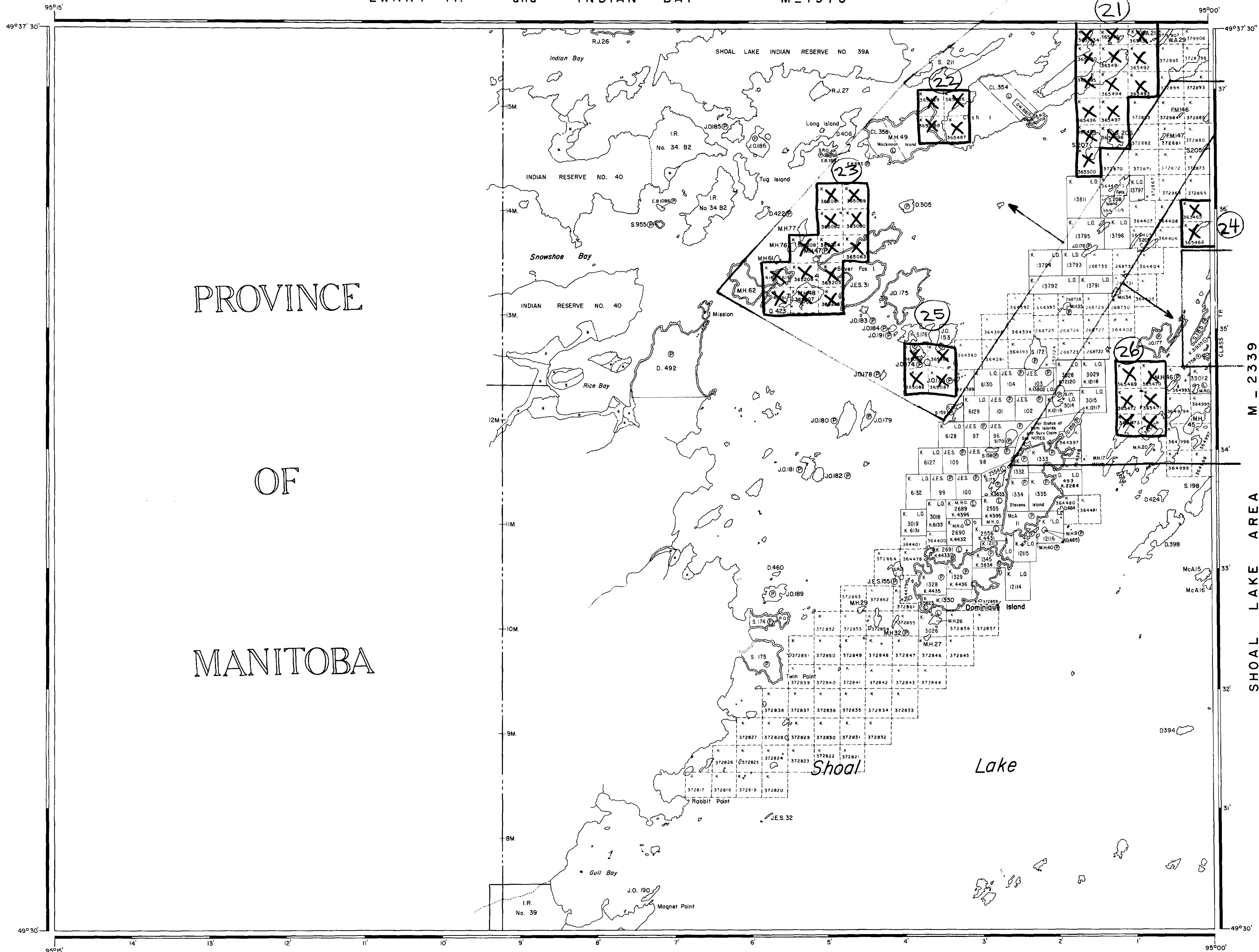
ONTARIO  
MINISTRY OF NATURAL RESOURCES  
SURVEYS AND MAPPING BRANCH

DATE 10th. SEPTEMBER / 73 PLAN No.  
NATIONAL TOPOGRAPHIC SERIES 52E 10 **M.2339**





EWART TP. and INDIAN BAY M-1975



PROVINCE  
OF  
MANITOBA

AREA OF  
**SNOWSHOE BAY**  
SHOAL LAKE  
  
DISTRICT OF  
KENORA  
2.1572  
  
KENORA  
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 along the shores of all lakes and rivers.

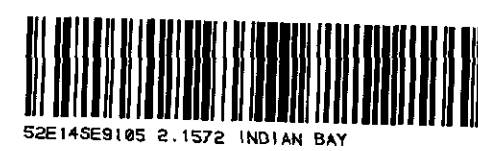
Flooding rights reserved up to 1064' above sea level.

Scale: 1 INCH = 20 CHAINS.

MINING LANDS &  
DATE OF ISSUE  
SEP 18 1974  
MINISTRY  
OF NATURAL RESOURCES

ONTARIO  
MINISTRY OF NATURAL RESOURCES  
SURVEYS AND MAPPING BRANCH

Date 17th JAN. 1974  
National Topographic Series 52 E-11  
Plan No. **M-2704**



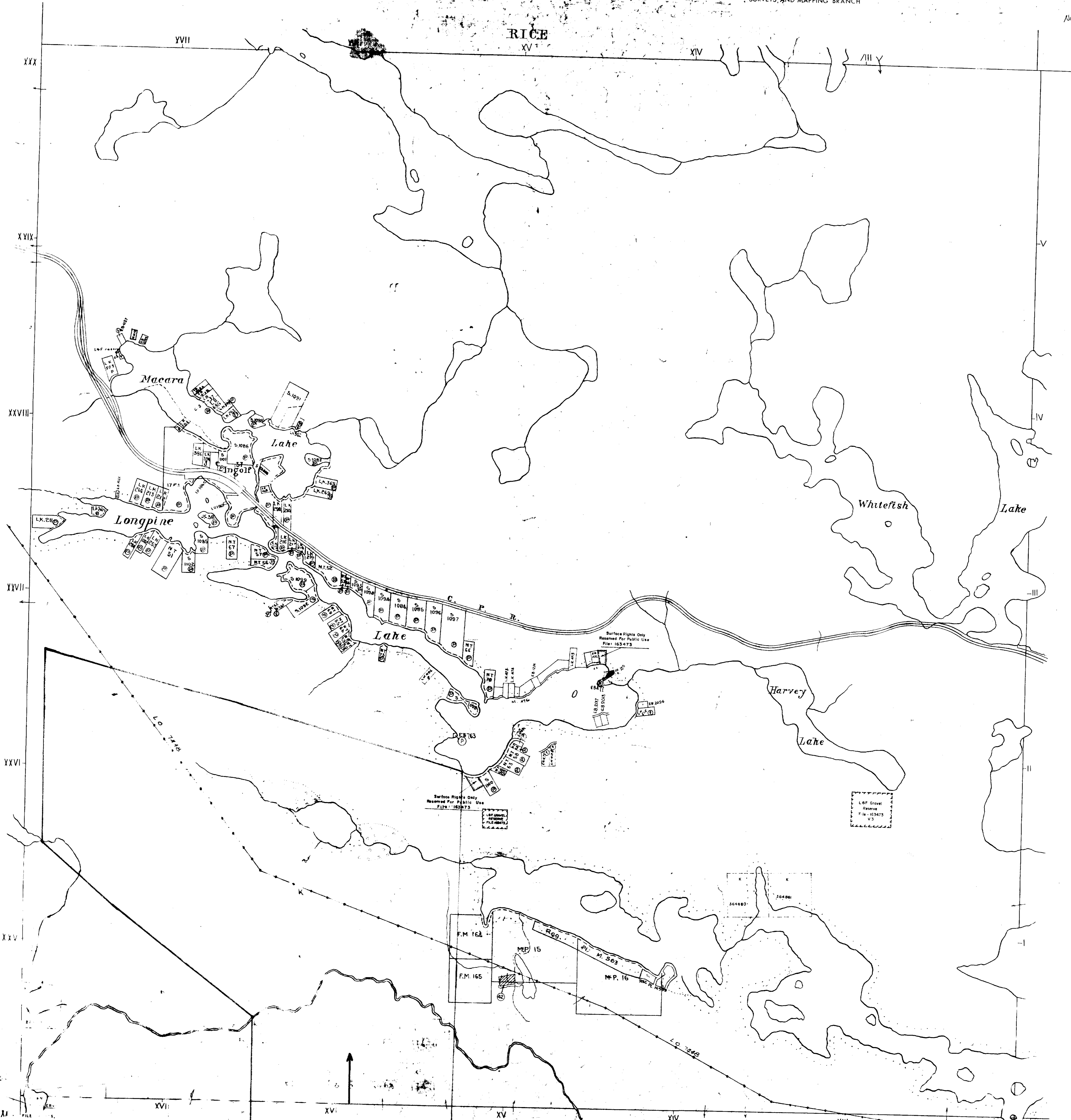
DATA SHEET  
NOV. 20 1974  
MINISTRY  
OF NATURAL RESOURCES

MINISTRY OF NATURAL RESOURCES  
SURVEYS AND MAPPING BRANCH

No anomalies  
within  
2-15-72  
or there

PROVINCE OF MANITOBA

BRODERICK



SURFACE RIGHTS  
RESERVED UNDER  
SECTION 42 OF  
THE MINING ACT



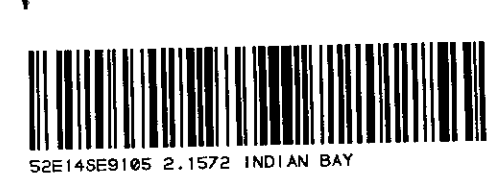
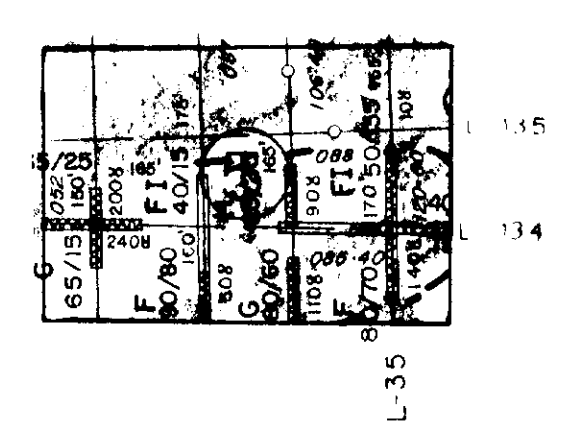
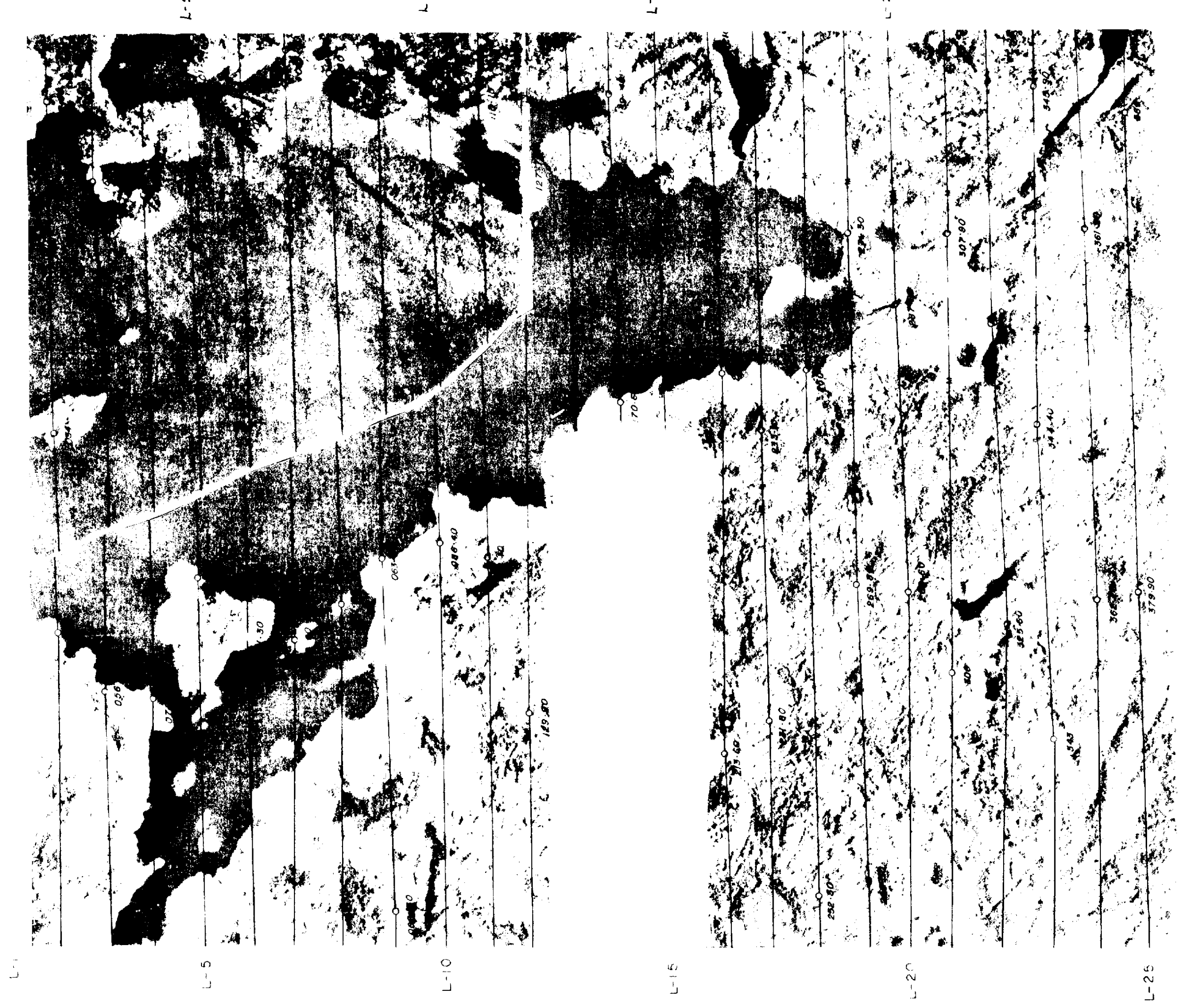
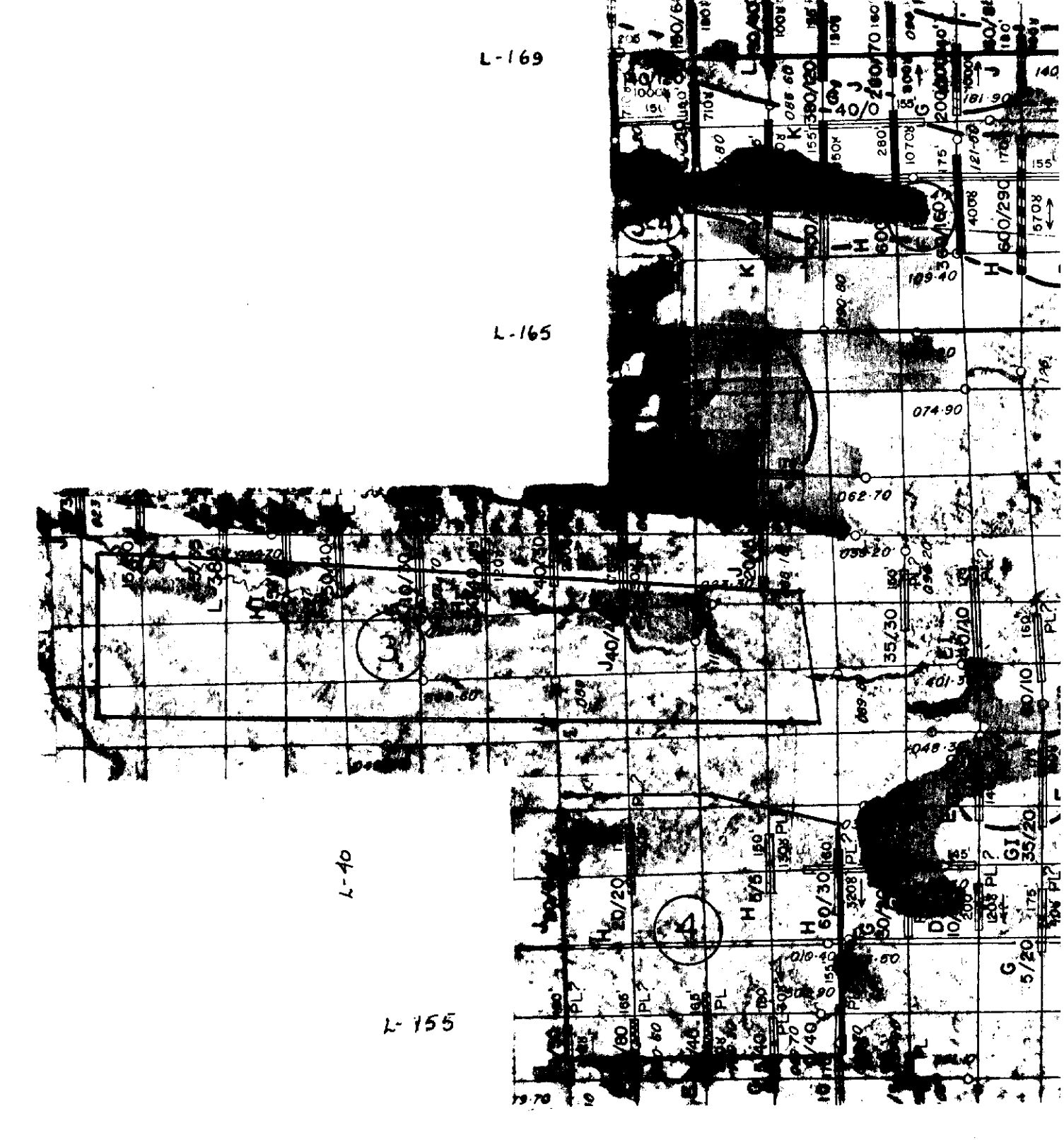
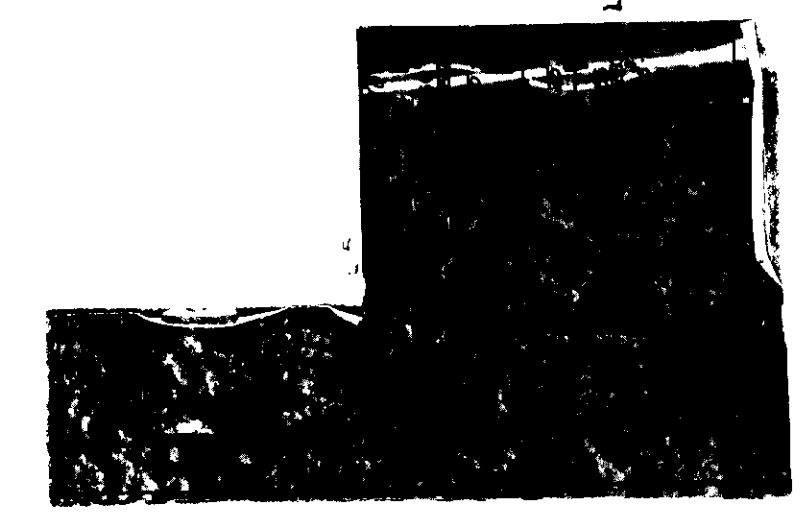
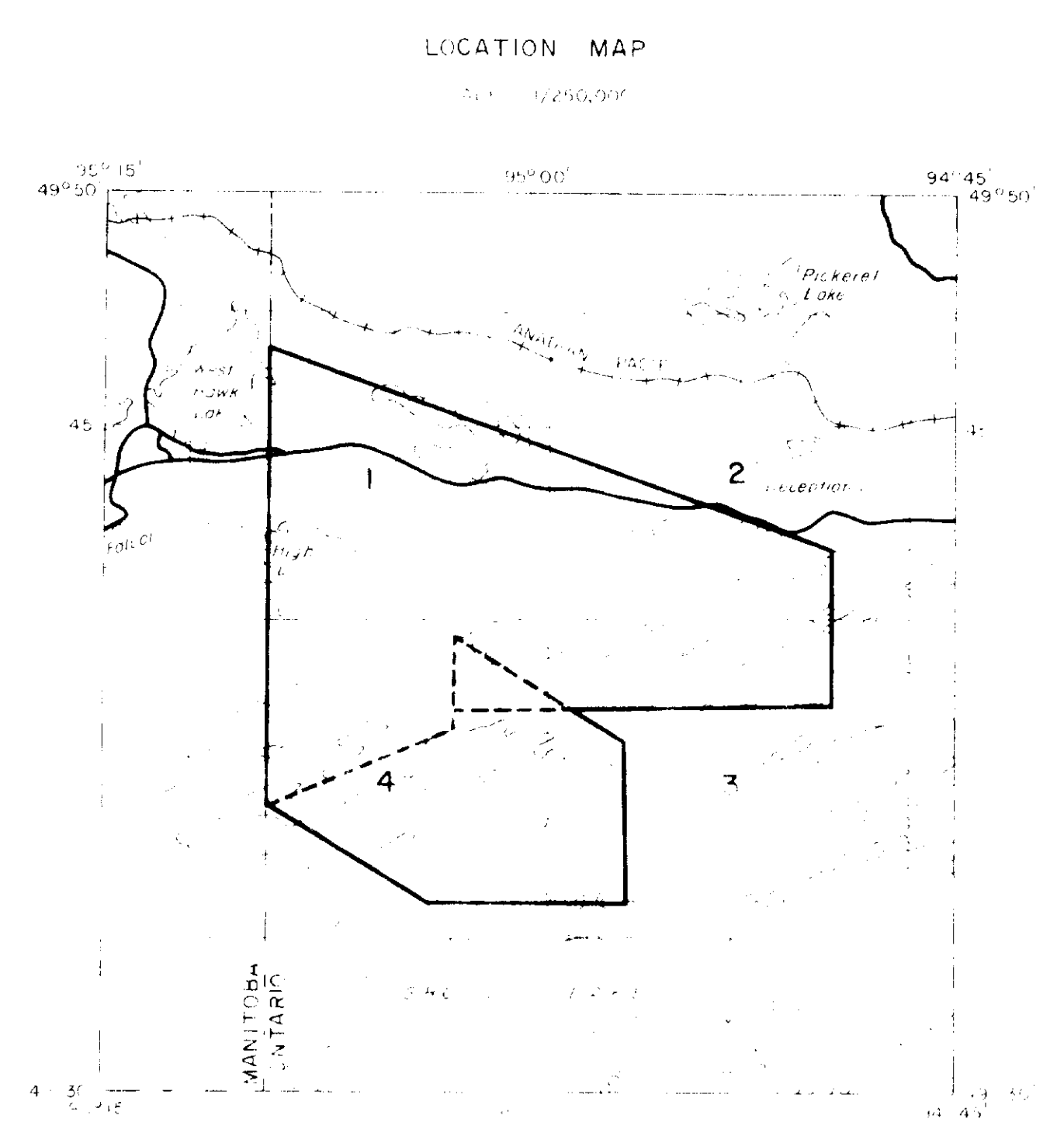
240

EMARD

400 Reserves  
Shown Thus:

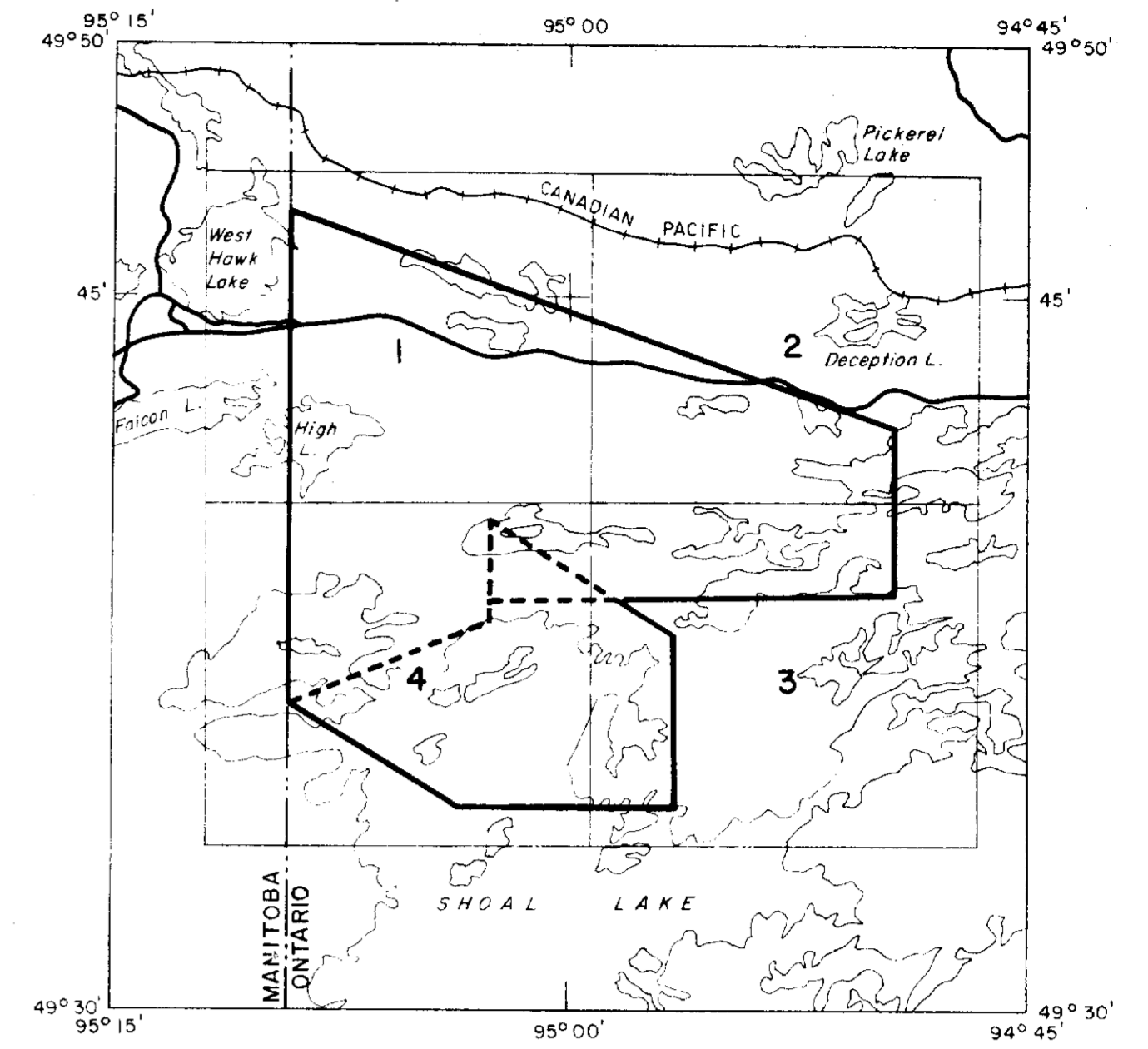
Withdrawn from staking under Section  
42 of the Mining Act.





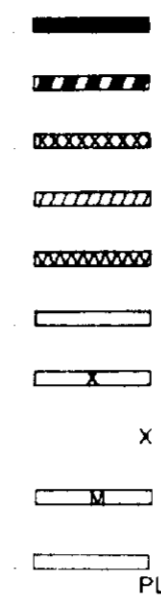


LOCATION MAP  
SCALE 1/250,000

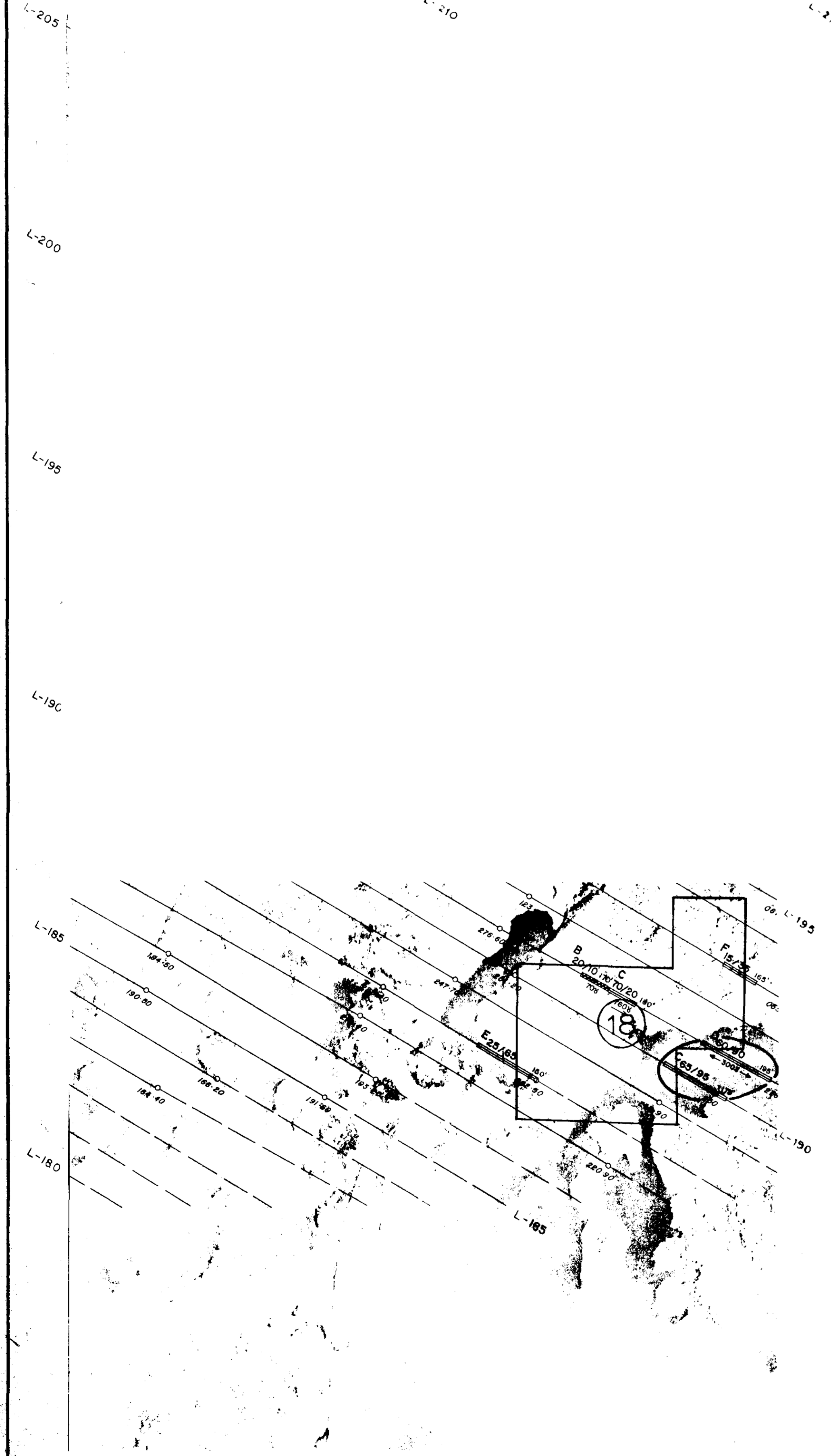
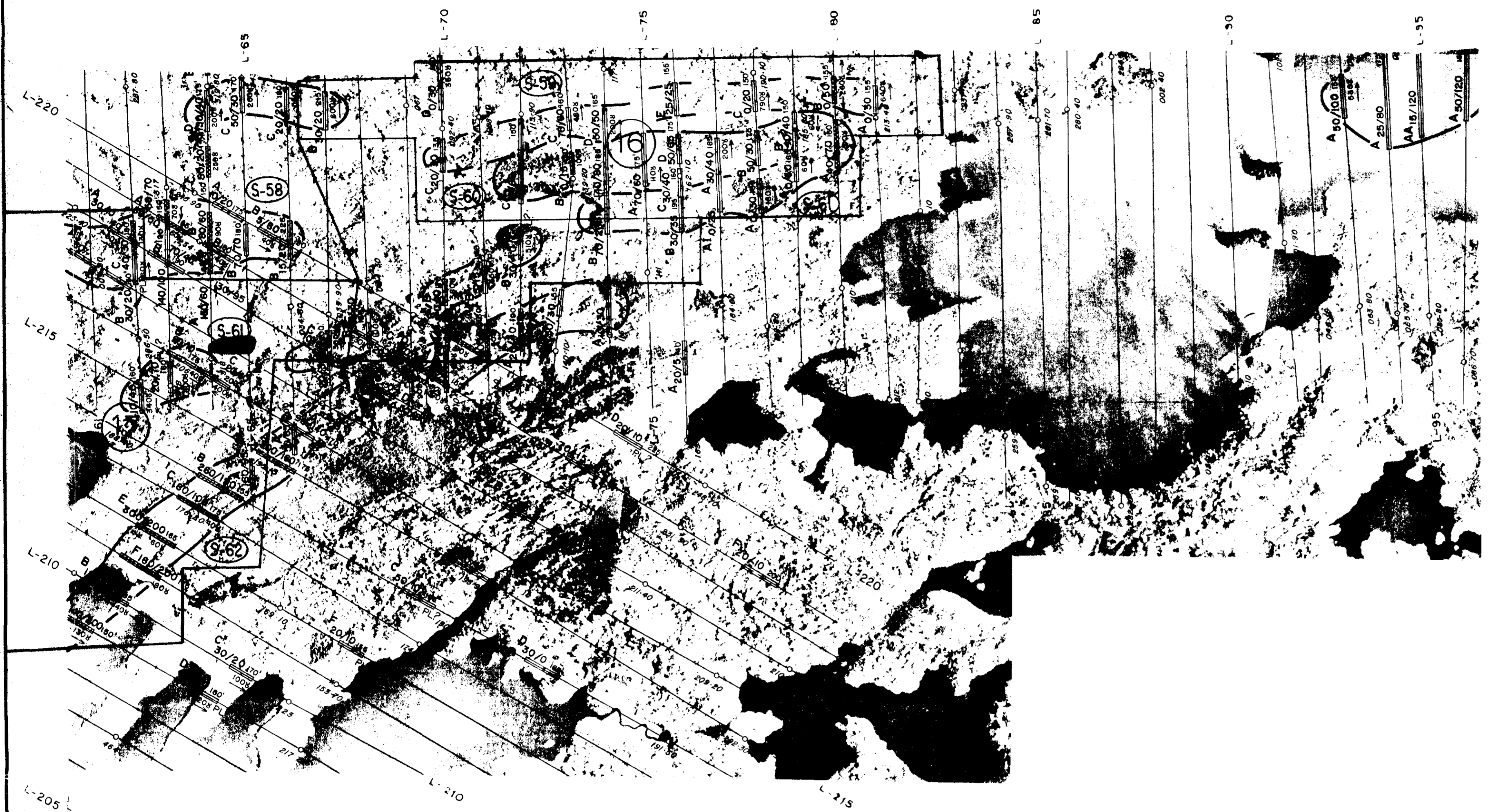
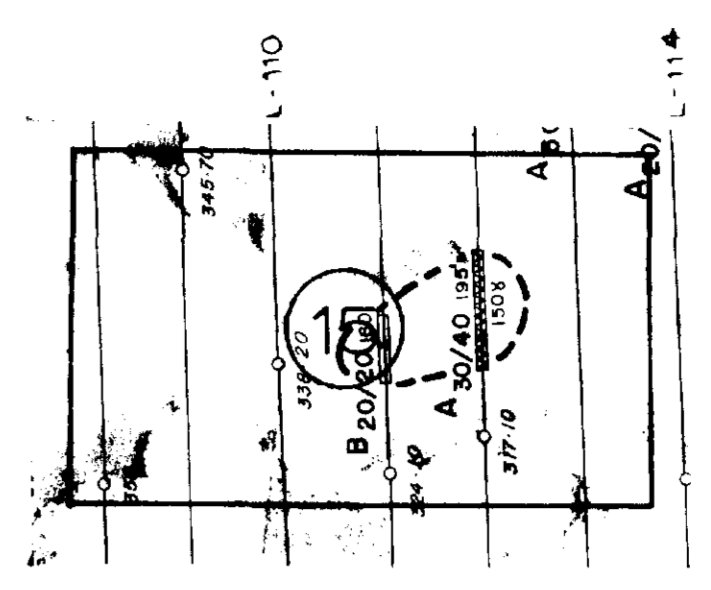
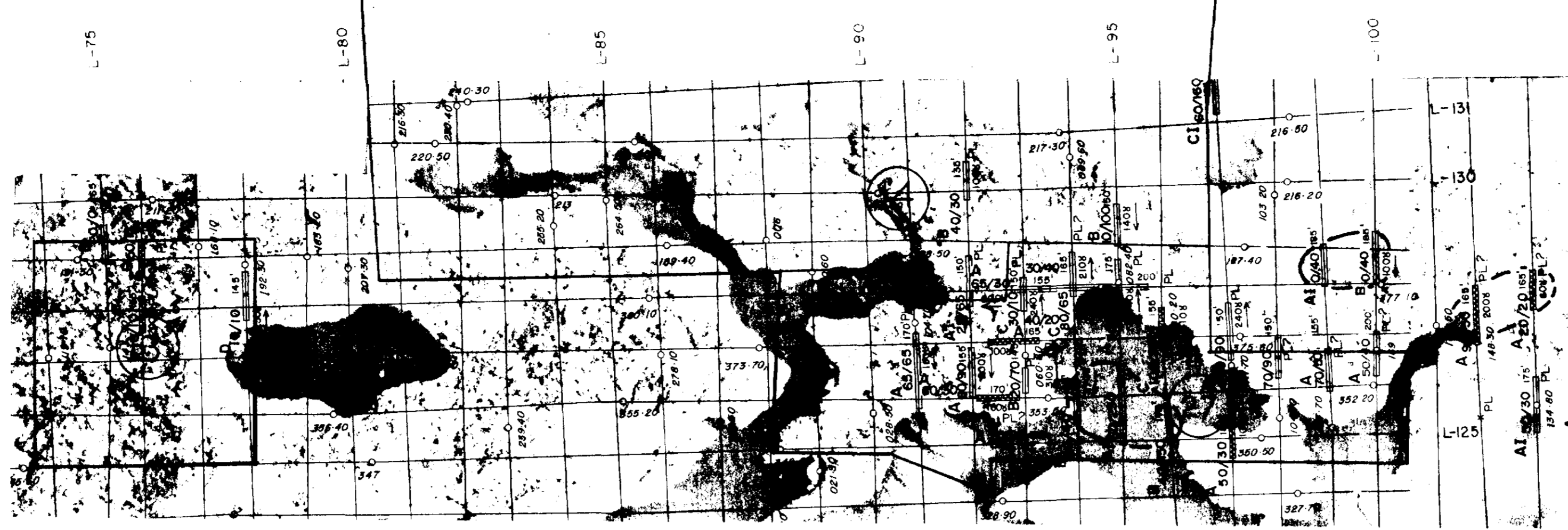


EM LEGEND

- 1-A GRADE ANOMALY
- 1-B GRADE ANOMALY
- 2-A GRADE ANOMALY
- 2-B GRADE ANOMALY
- 3-A GRADE ANOMALY
- 3-B GRADE ANOMALY
- "X" TYPE ANOMALY
- POSSIBLE ANOMALY INDICATION
- MAGNETITE TYPE RESPONSE
- PROBABLE CULTURE



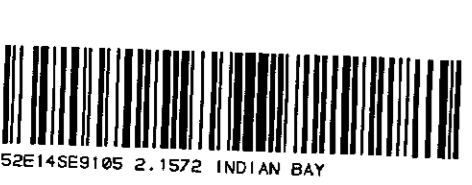
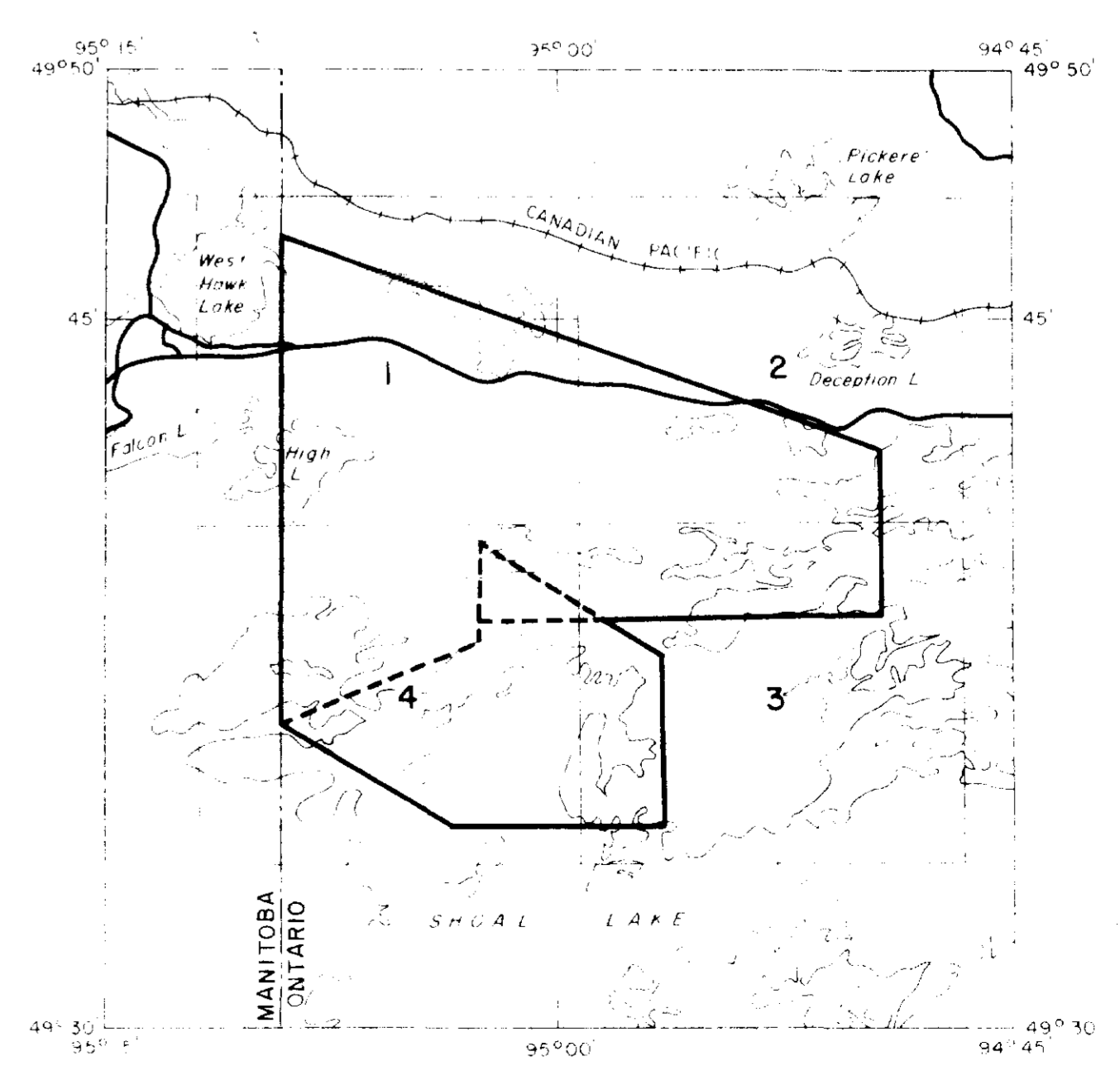




**EM LEGEND**

1-A GRADE ANOMALY	▬
1-B GRADE ANOMALY	▬▬▬▬
2-A GRADE ANOMALY	▬▬▬▬▬▬
2-B GRADE ANOMALY	▬▬▬▬▬▬▬▬
3-A GRADE ANOMALY	▬▬▬▬▬▬▬▬▬▬
3-B GRADE ANOMALY	▬▬▬▬▬▬▬▬▬▬▬▬
X TYPE ANOMALY	X
POSSIBLE ANOMALY INDICATION	X
VALLEY TYPE RESPONSE	▬
PROBABLE TYPE	▬▬

**LOCATION MAP**





L-1 L-5 L-10 L-15 L-20 L-25 L-30 L-35 L-40 L-45



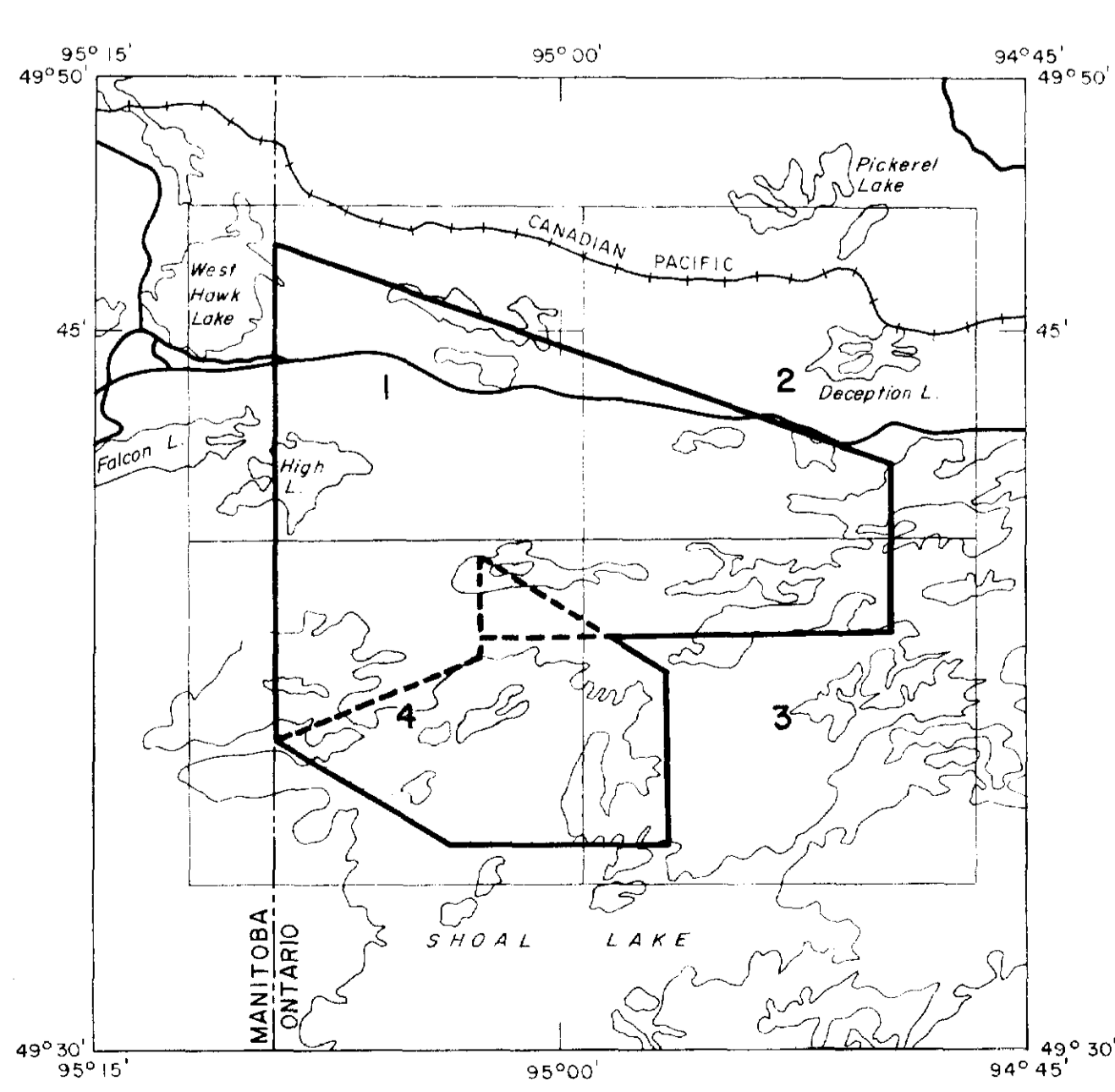
**EM LEGEND**

- 1-A GRADE ANOMALY
- 1-B GRADE ANOMALY
- 2-A GRADE ANOMALY
- 2-B GRADE ANOMALY
- 3-A GRADE ANOMALY
- 3-B GRADE ANOMALY
- "X" TYPE ANOMALY
- POSSIBLE ANOMALY INDICATION
- MAGNETIC TYPE RESPONSE
- PROBABLE CULTURE

**LEGEND OF ISLAND GROUPS**

Area #	Island Group Name	No. of Islands	Chain Numbers
1	Barney's Bay Group	5	36528-511, 36529
2	Bay Islands Group	4	36523-493, 36524
3	Beaumont Group	3	36540-42
4	Beaumont Bay Group	4	36504-07
5	Crowfoot Bay Group	6	36500-05
6	Beaumont Bay Group	23	36588-609, 36589
7	Beaumont Bay Group	4	36502-05
8	Beaumont Bay Group	4	36504-07
9	Lake of Two Islands Group	3	36506-08, 36507
10	Beaumont Bay Group	7	36508-14, 36509
11	Beaumont Bay Group	12	36515-28, 36516
12	Waukegan Bay Group	4	36507-10
13	Georgian Bay Group	4	36526-29
14	Georgian Bay Group	6	36509-12, 36510
15	Echo Bay Group	15	36552-66, 36553-64, 36561-74
16	Clayton Bay Group	28	36547-75, 36551-57, 36558-60, 36567-77, 36583-87
17	Belvidere Bay Group	6	36518-23
18	Cash Island Group	17	36520-36, 36529-44
19	MacKinnon Islands Group	1	36548-49
20	Silver Fox Island Group	17	36509-63, 365104-09
21	Haw Bay Group	3	36546-48, 36511-11
22	Michael Island Group	4	36509-13
23	Cameron Island Group	6	36549-54
24	Bush Bay Group	10	36524-31, 36529-35, 36529-31

**LOCATION MAP**  
SCALE 1/250,000



**AIRBORNE GEOPHYSICAL SURVEY**  
**ELECTROMAGNETIC**  
 FOR  
**HUDSON'S BAY OIL AND GAS COMPANY LIMITED**  
 IN  
**SHOAL LAKE AREA**  
**ONTARIO**  
 SHEET 4

SCALE 1:1000 1:5000 1:10000

*Don M. Wagg*



GEOPHYSICAL PROJECT No. 84-125





AIRBORNE GEOPHYSICAL SURVEY  
ELECTROMAGNETIC

FOR

HUDSON'S BAY OIL AND GAS COMPANY LIMITED

IN

SHOAL LAKE AREA  
ONTARIO

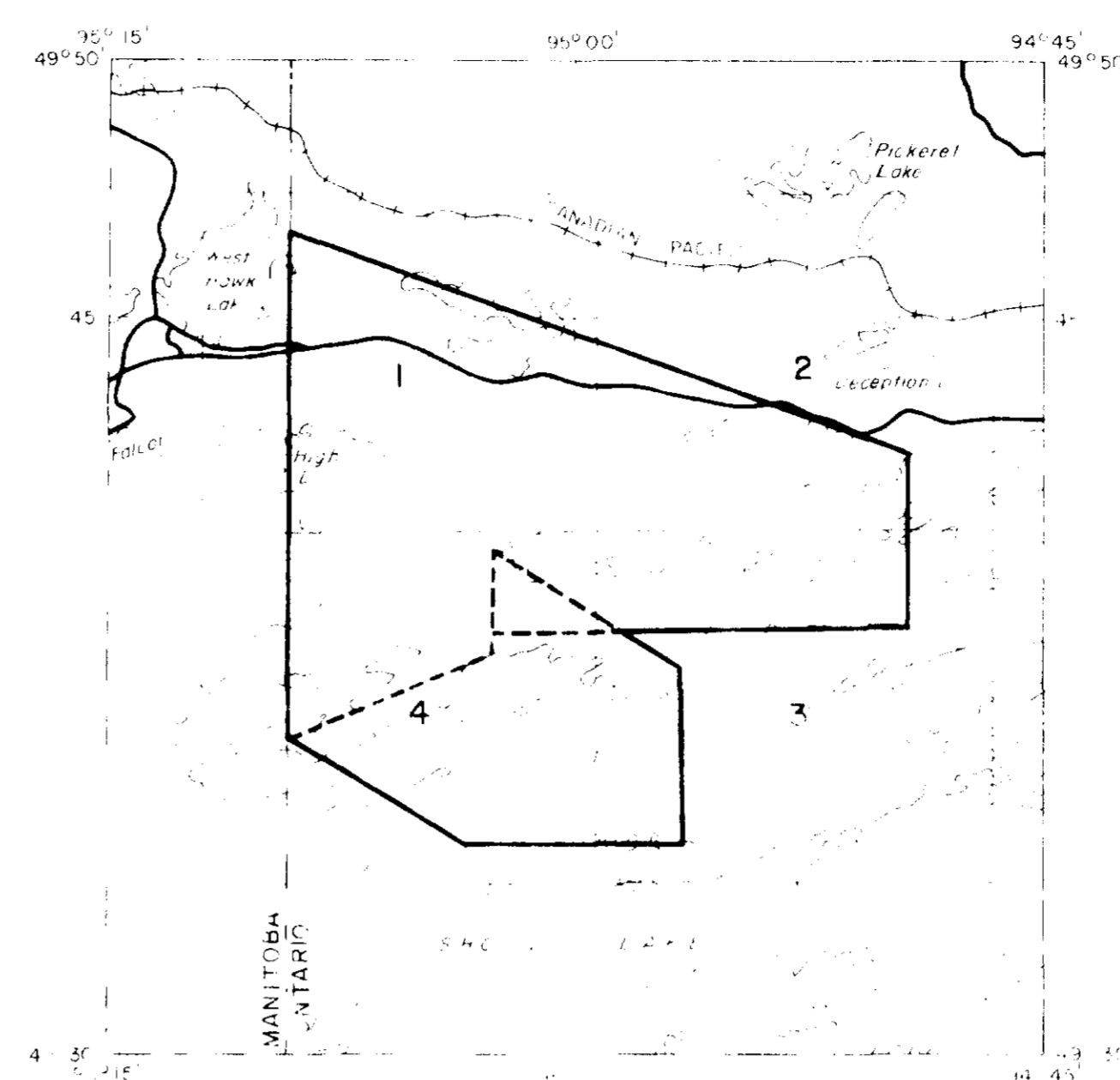
*Don McElroy*

SHEET 1

SCALE 1:50,000  
1/4 MILE



LOCATION MAP



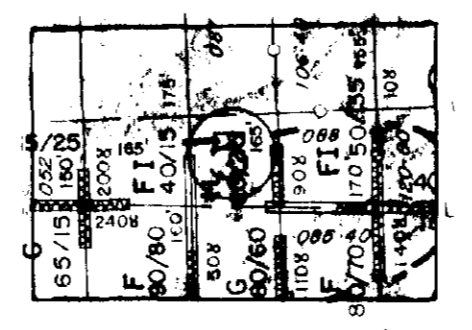
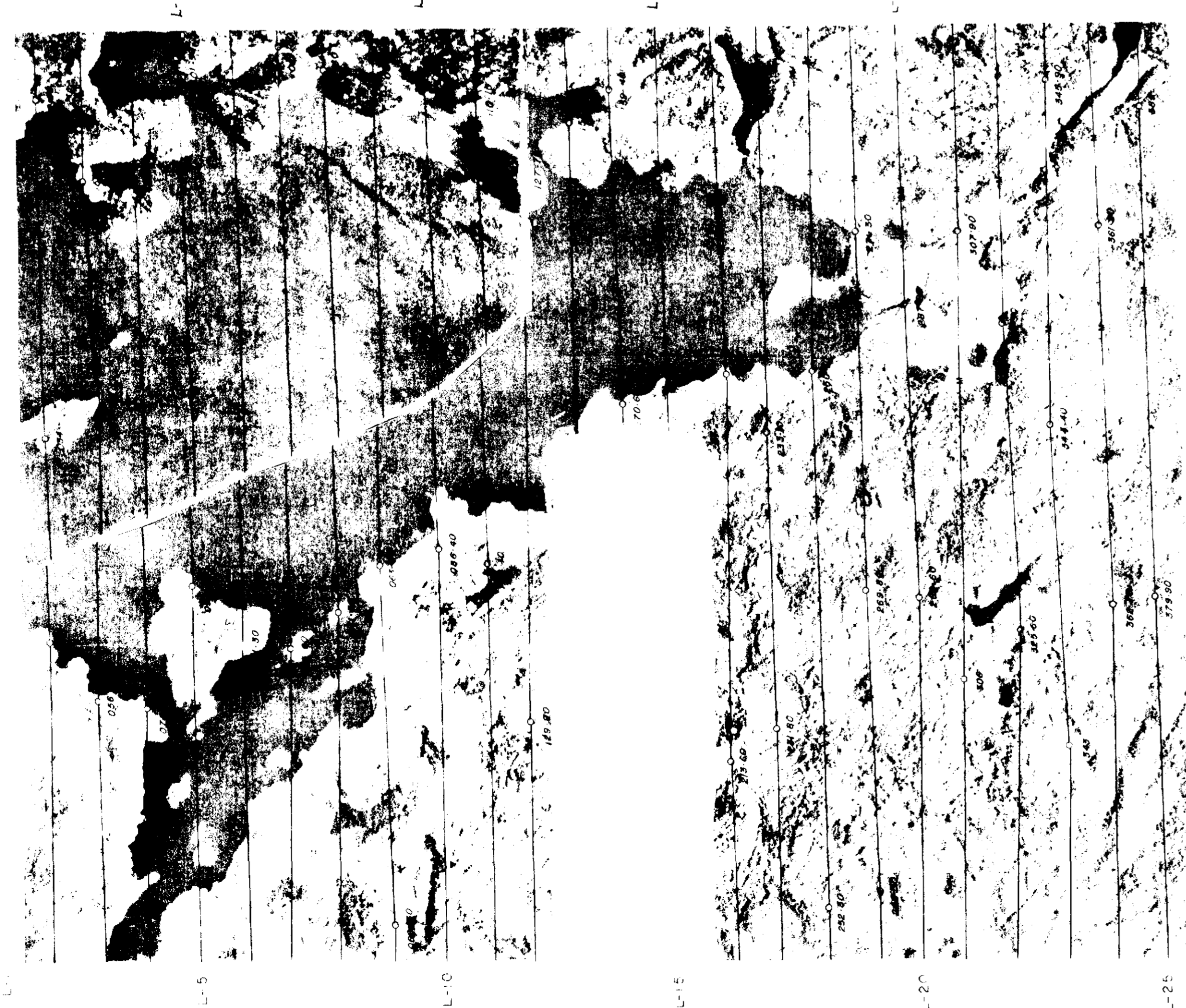
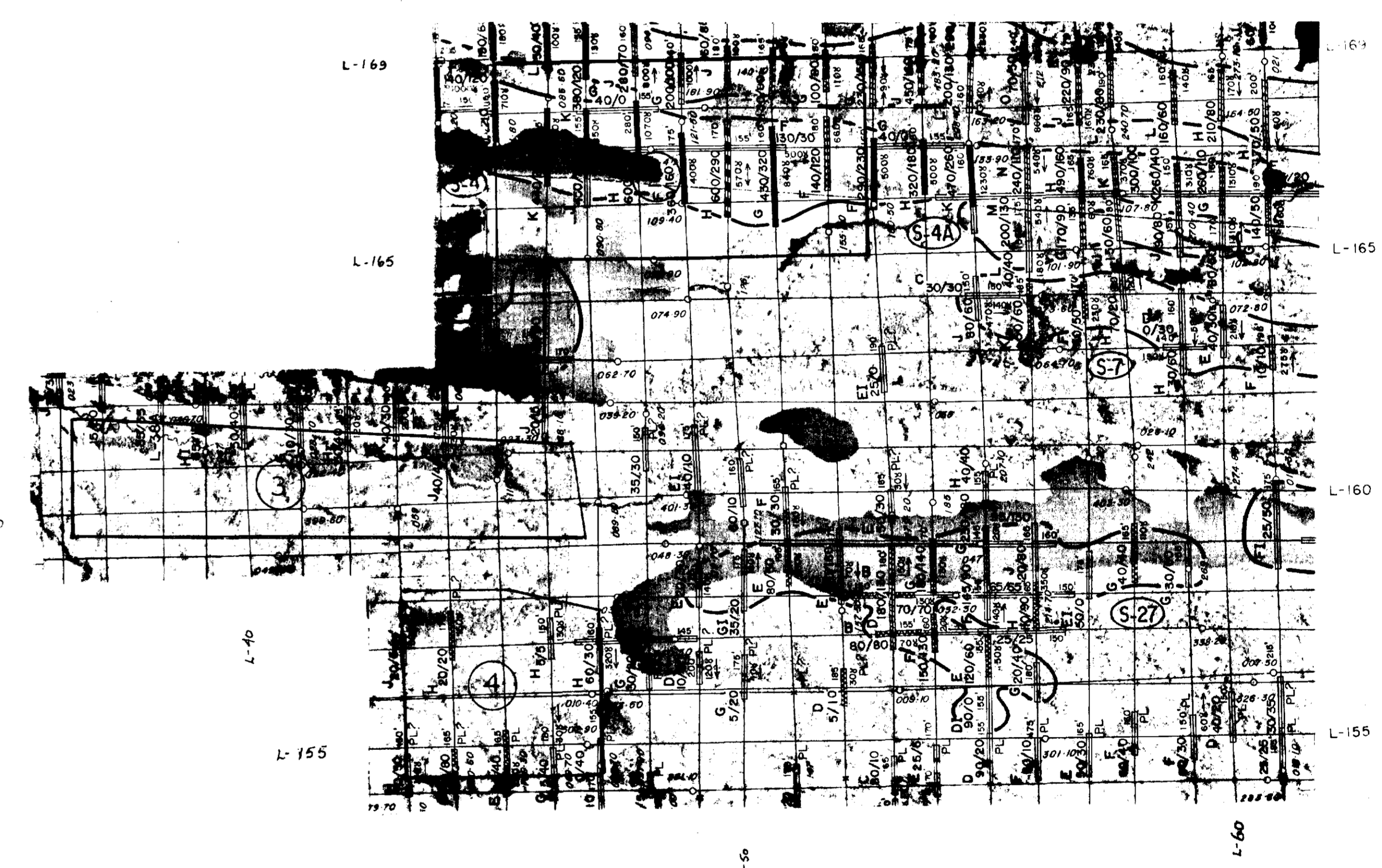
EM ESEN

- A. GRADE ANOMALY
- B. GRADE ANOMALY
- A. GRA. E. NOM. Y.
- B. GRA. DE. AN. M. Y.
- A. GRA. ANOMALY
- B. GRA. ANOMALY
- X. TYP. NOM. Y.
- Y. TYP. ANOMALY INDICATE
- Z. TYP. ANOMALY INDICATE
- W. TYP. ANOMALY INDICATE
- V. TYP. ANOMALY INDICATE
- U. TYP. ANOMALY INDICATE
- T. TYP. ANOMALY INDICATE
- S. TYP. ANOMALY INDICATE
- R. TYP. ANOMALY INDICATE
- Q. TYP. ANOMALY INDICATE
- P. TYP. ANOMALY INDICATE
- O. TYP. ANOMALY INDICATE
- N. TYP. ANOMALY INDICATE
- M. TYP. ANOMALY INDICATE
- L. TYP. ANOMALY INDICATE
- K. TYP. ANOMALY INDICATE
- J. TYP. ANOMALY INDICATE
- I. TYP. ANOMALY INDICATE
- H. TYP. ANOMALY INDICATE
- G. TYP. ANOMALY INDICATE
- F. TYP. ANOMALY INDICATE
- E. TYP. ANOMALY INDICATE
- D. TYP. ANOMALY INDICATE
- C. TYP. ANOMALY INDICATE
- B. TYP. ANOMALY INDICATE
- A. TYP. ANOMALY INDICATE



LEGEND OF CLAIM BLOCKS

Claim Group Name	No. of claims	Claim Numbers
Gainey Lake Group	5	36528-31, 392407
Royal Lake Group	6	365478-381, 365482-85
Wess Creek Group	5	365488-12
Wuth Lake Group	4	36564-67
Woodchuck Lake Group	6	365650-55
Wentz Lake Group	23	365588-600, 365608-17
Wess Lake West Group	4	36532-35
Wess Lake East Group	4	36544-47
Lake of Two Mountains Gp.	4	365278-31
Wess Lake Group	7	36558-36, 36548-51
Chetekto Lake Group	13	365413-28, 365441-61
Woodchuck Bay Group	4	365053-56
Chadwick Lake Group	4	365218-21
Gold Island Group	6	365090-92 & 95
Wess Bay Group	13	365552-58, 36551-4, 418218-24
Wess Bay Group	28	365647-49, 365591-97 36546-88, 365473-77 36543-47
Holiver Bay Group	6	365138-203
Wess Island Group	17	365430-508, 365429-34
McKinnon Island Group	3	365488-90
Silver Fox Island Group	3	365059-61, 365204-02
Red Bay Group	3	365494-96, 365210-11
Nickel Island Group	1	365388-89
Cameron Island Group	4	365469-74
Hush Bay Group	10	392422-27, 365294-95 365290-93





AIRBORNE GEOPHYSICAL SURVEY  
ELECTROMAGNETIC

FOR

HUDSON'S BAY OIL AND GAS COMPANY LIMITED

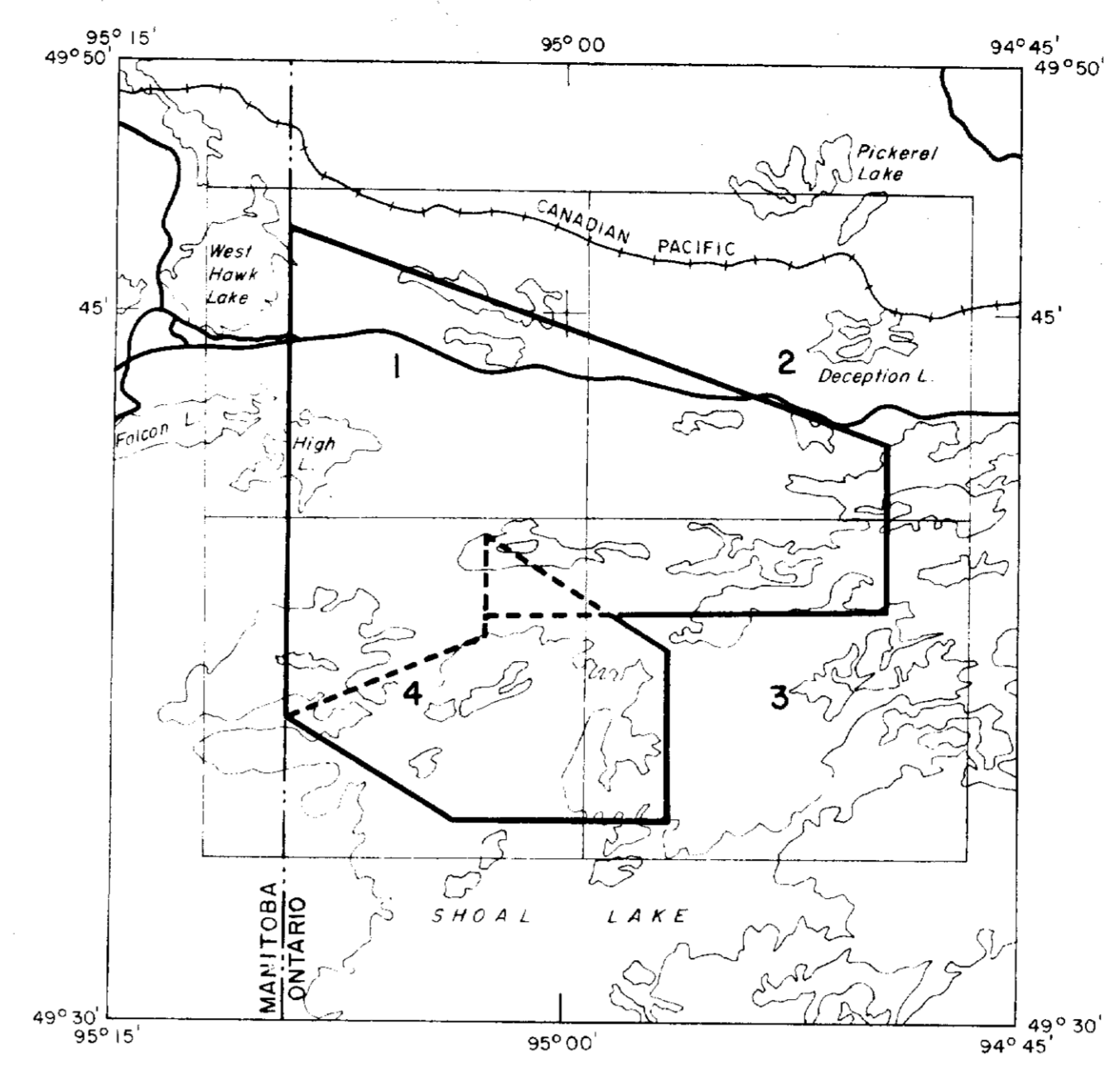
IN

SHOAL LAKE AREA  
ONTARIO

*Don McLaughlin*

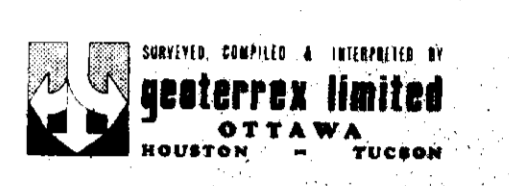
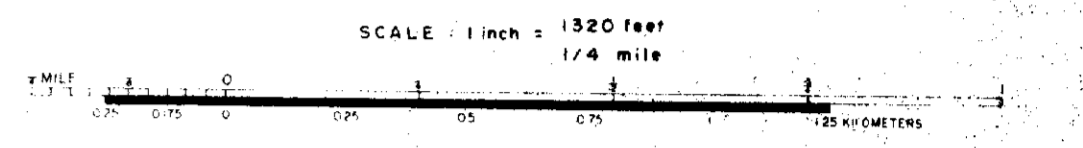
SHEET 2

LOCATION MAP  
SCALE 1/250,000



EM LEGEND

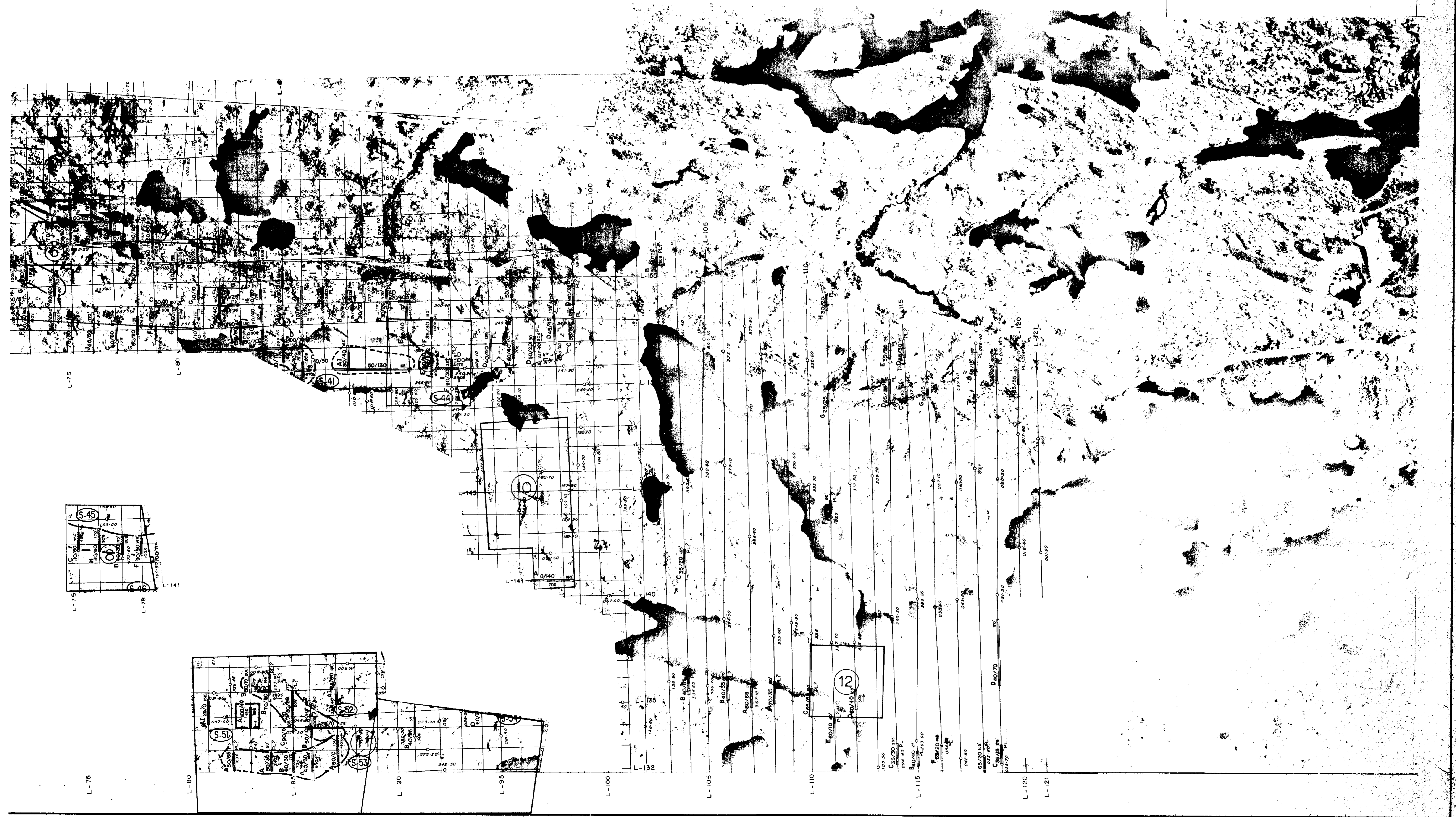
- 1-A GRADE ANOMALY
- 1-B GRADE ANOMALY
- 2-A GRADE ANOMALY
- 2-B GRADE ANOMALY
- 3-A GRADE ANOMALY
- 3-B GRADE ANOMALY
- "X" TYPE ANOMALY
- POSSIBLE ANOMALY INDICATION
- MAGNETITE TYPE RESPONSE
- PROBABLE CULTURE



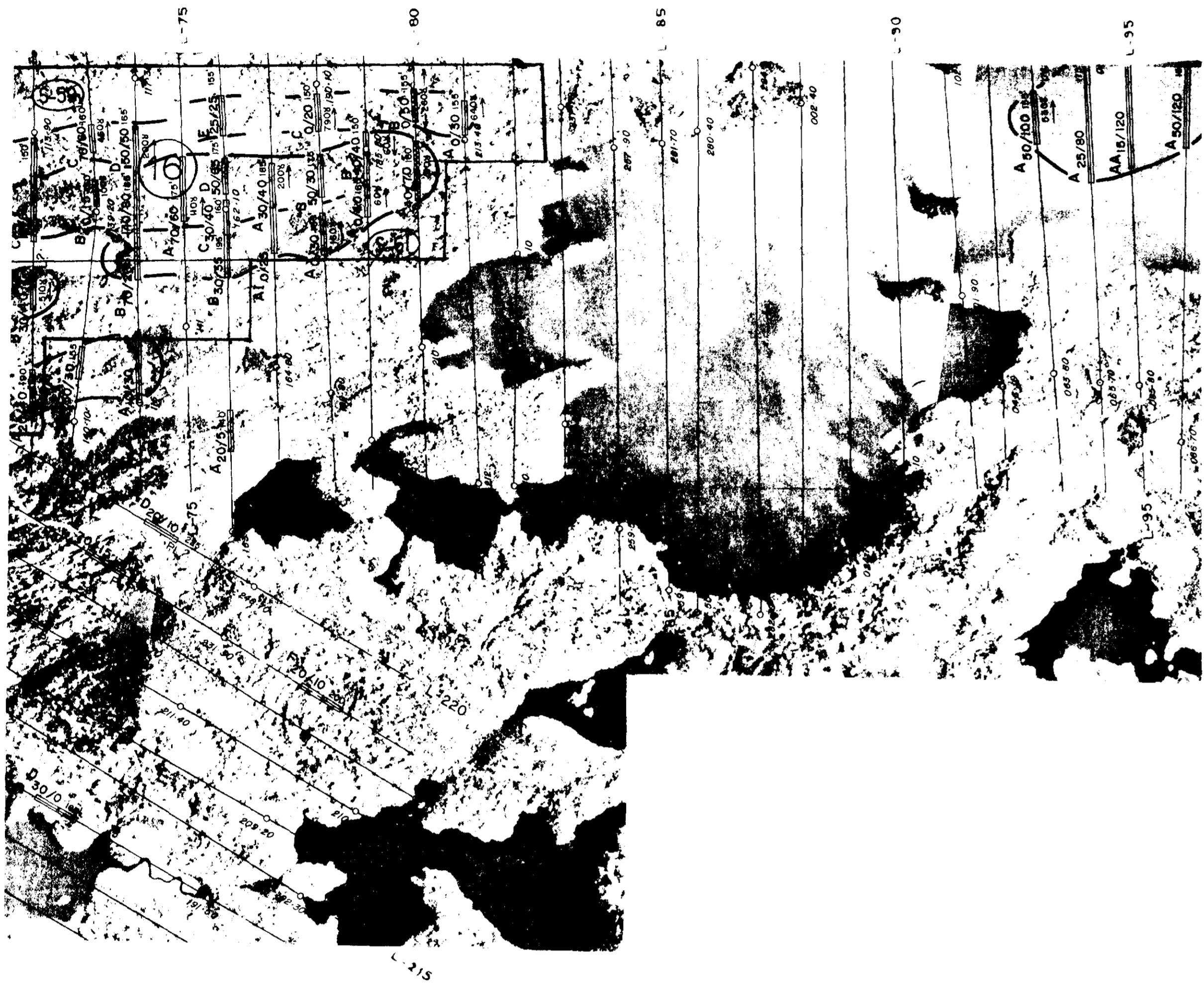
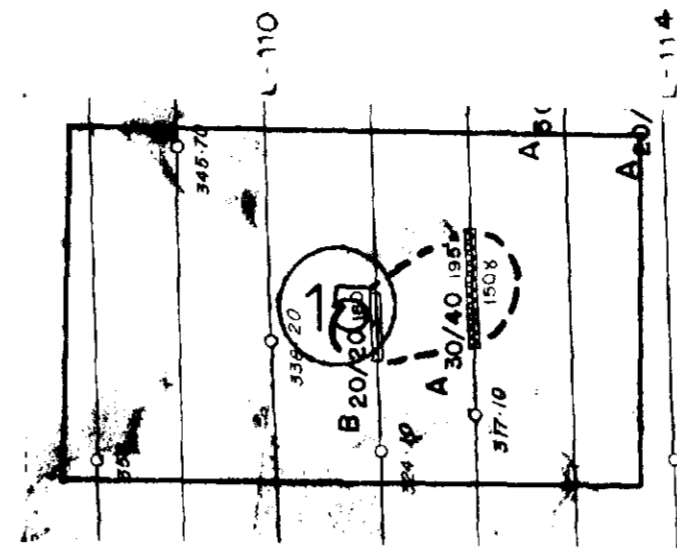
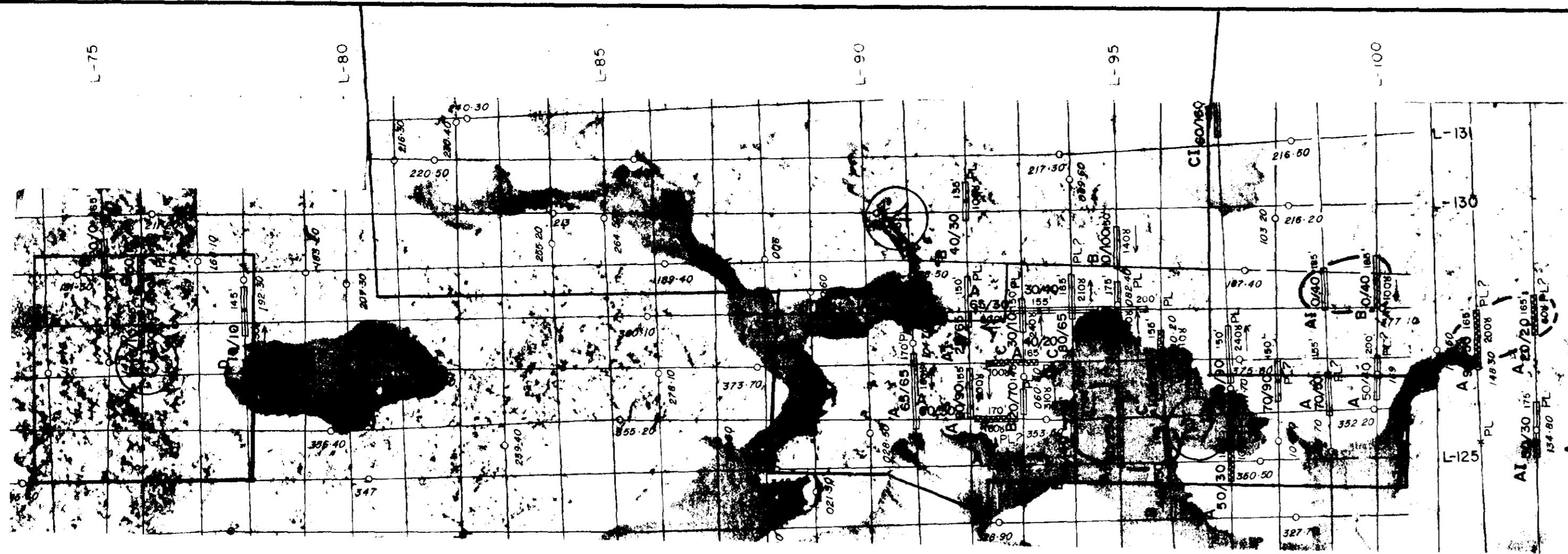
FLOWN IN MARCH, 1974  
GEO-TRAX PROJECT No. 64-125

LEGEND OF CLAIM BLOCKS

Area #	Claim Group Name	No. of claims	Claim Numbers
1	Earnsey Lake Group	5	365528-531, 392407
2	Royal Lake Group	8	365478-481, 365482-85
3	Moss Creek Group	5	365408-12
4	Hoch Lake Group	4	365064-67
5	Crowhuck Lake Group	6	365080-85
6	Heetz Lake Group	23	36552-35
7	Moss Lake West Group	4	365528-31
8	Moss Lake East Group	4	365544-47
9	Lake of Two Mountains Gp.	4	365276-81
10	Ridge Lake Group	7	365536-38, 365548-51
11	Chequamegon Lake Group	32	365413-28, 365448-63
12	Woodchuck Bay Group	4	365053-56
13	Cedarskirt Lake Group	4	365284-87
14	Gold Island Group	6	365090-92 & 96
15	Nico Bay Group	19	365552-58, 365539-43, 41, 42, 44-48
16	Clytie Bay Group	28	365047-48, 365501-07, 365467-68, 365475-77, 365435-47
17	Heldiver Bay Group	6	365198-203
18	Cash Island Group	17	365490-508, 365429-34
19	Mackinnon Island Group	4	365486-89
20	Silver Fox Island Group	13	365059-63, 365204-09, 41, 42, 44-47
21	Bag Bay Group	5	365464-66, 365210-11
22	Nickel Island Group	4	365086-89
23	Cameron Island Group	6	365469-74
24	Hush Bay Group	10	392422-25, 365294-95, 365290-93

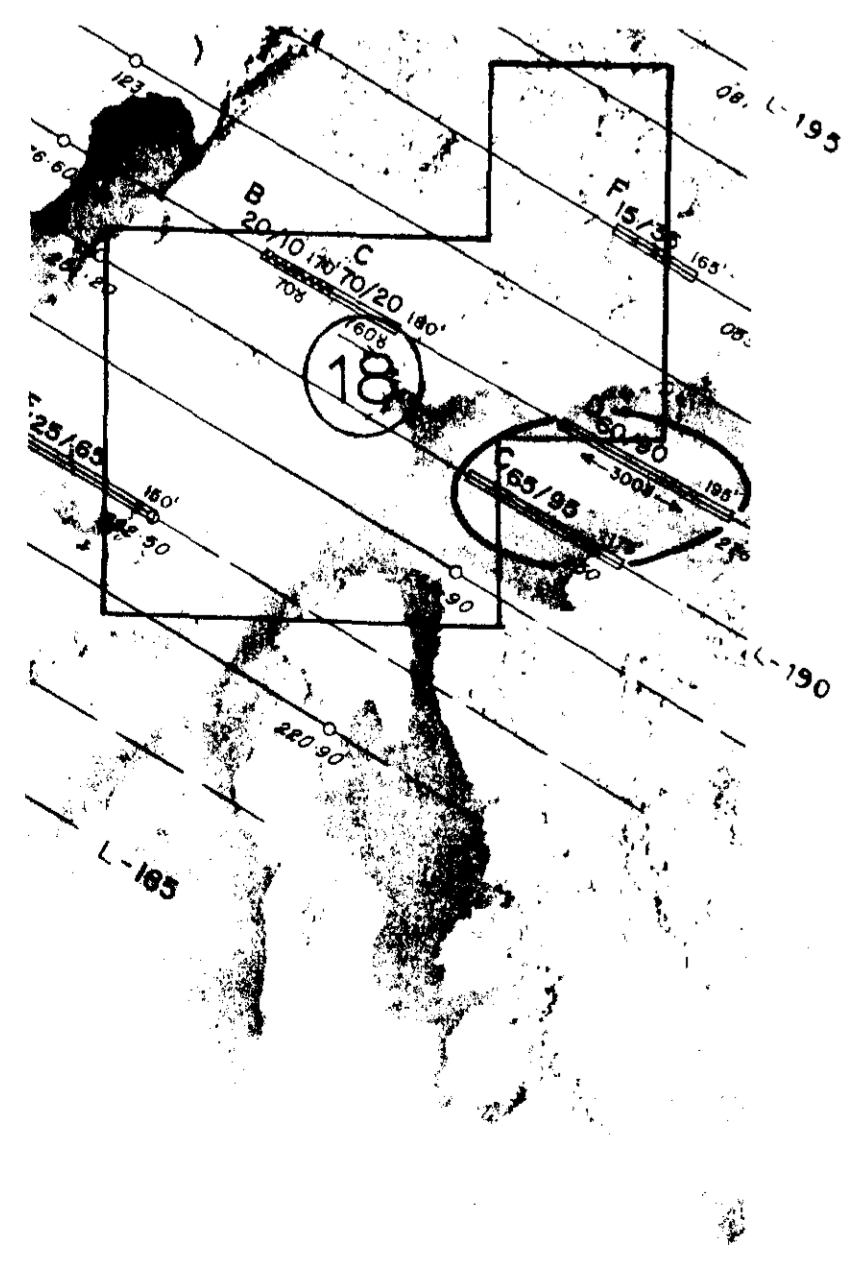






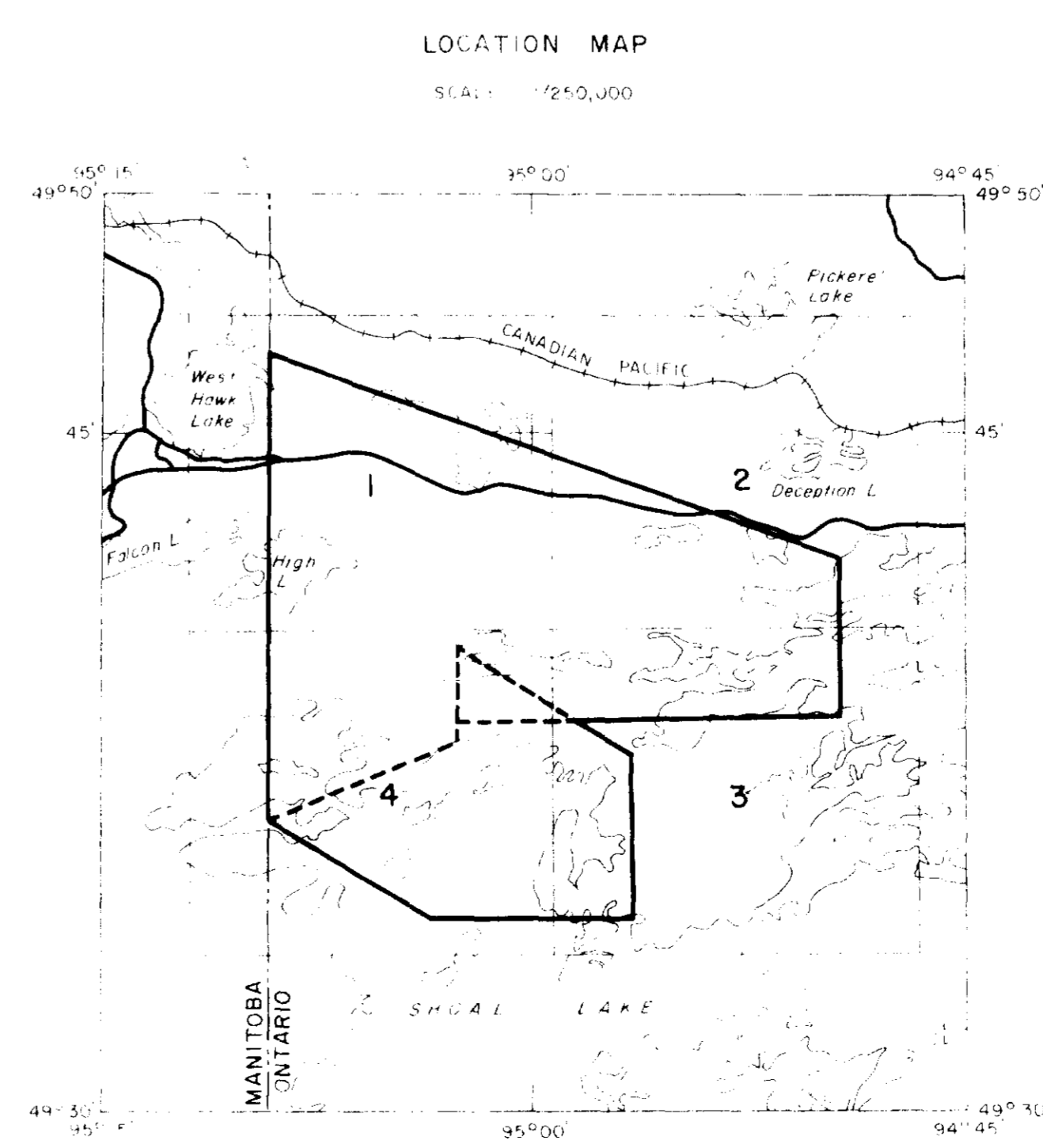
**LEGEND OF CLAIM BLOCKS**

Area #	Claim Group Name	No. of claims	Claim Numbers
1	Earney Lake Group	5	365520-531, 392407
2	Royal Lake Group	8	365478-481, 365482-85
3	Moss Creek Group	5	365408-12
4	Moth Lake Group	4	365064-67
5	Crowduck Lake Group	6	365650-55
6	Hetz Lake Group	23	365588-600, 365608-17
7	Moss Lake West Group	4	365532-35
8	Moss Lake East Group	4	365544-47
9	Lake of Two Mountains Gp.	4	365270-81
10	Ridge Lake Group	7	365536-38, 365548-51
11	Chebucto Lake Group	32	365413-28, 365448-63
12	Woodchuck Bay Group	4	365053-56
13	Coderkirk Lake Group	4	365284-87
14	Gold Island Group	6	365090-92 & 96
15	Echo Bay Group	13	365552-58, 365559-65, 416618-21
16	Clytie Bay Group	28	365447-49, 365501-07, 365467-68, 365475-77, 365435-47
17	Helldiver Bay Group	6	365198-203
18	Cash Island Group	17	365490-500, 365429-34
19	Mackinon Island Group	4	365486-89
20	Silver Fox Island Group	13	365059-63, 365204-05, 416616-17
21	Ben Bay Group	5	365464-66, 365210-11
22	Nickel Island Group	4	365086-89
23	Cameron Island Group	6	365469-74
24	Rush Bay Group	10	392422-25, 365294-95, 365290-93



**EM LEGEND**

1-A GRADE ANOMALY	—————
1-B GRADE ANOMALY	—————
2-A GRADE ANOMALY	—————
2-B GRADE ANOMALY	—————
3-A GRADE ANOMALY	—————
3-B GRADE ANOMALY	—————
"X" TYPE ANOMALY	—————
POSSIBLE ANOMALY INDICATION	X
MAGN. FIVE T-ME. RESPONSE	—————
PROBABLE 1:1 THRE	—————



AIRBORNE GEOPHYSICAL SURVEY  
**ELECTROMAGNETIC**

FOR

**HUDSON'S BAY OIL AND GAS COMPANY LIMITED**

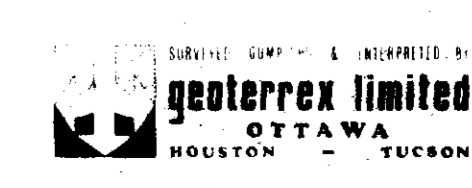
IN

SHOAL LAKE AREA  
ONTARIO

SHEET 3

SCALE: 1"=1320 FEET  
1"=8 MILES

*Don McWigg*

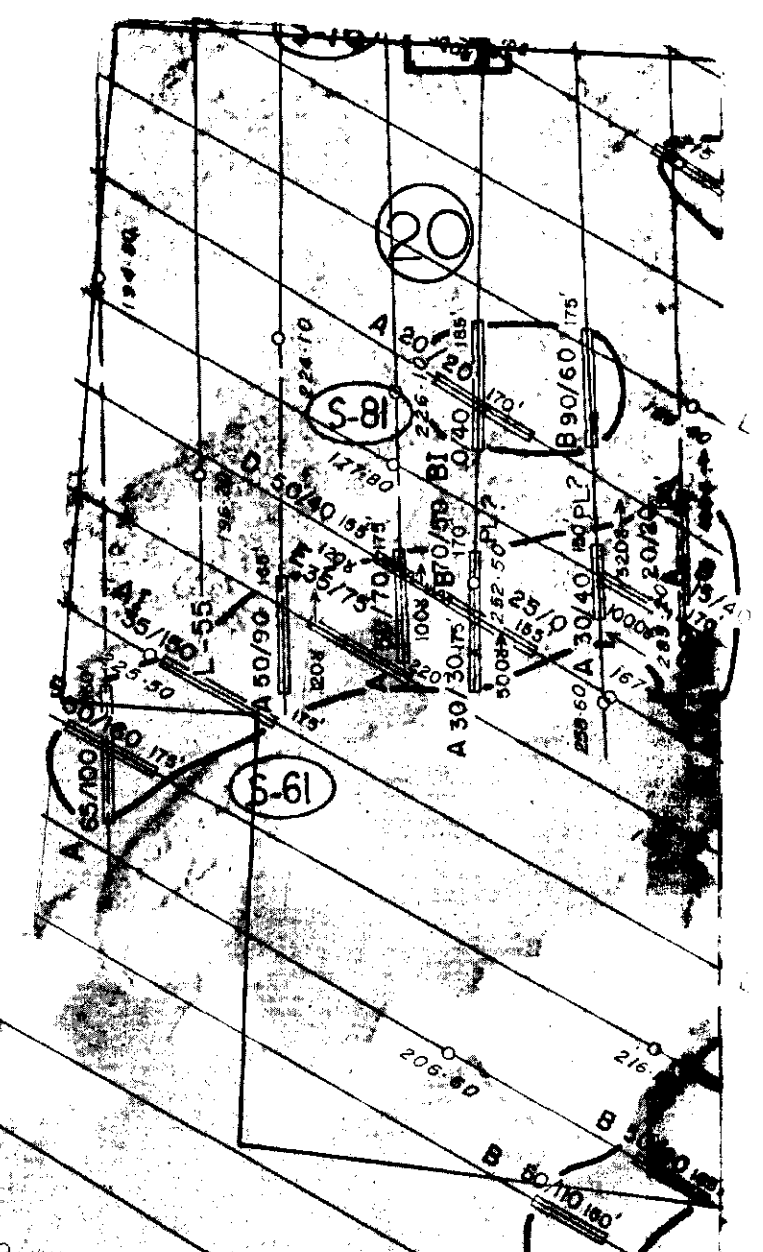
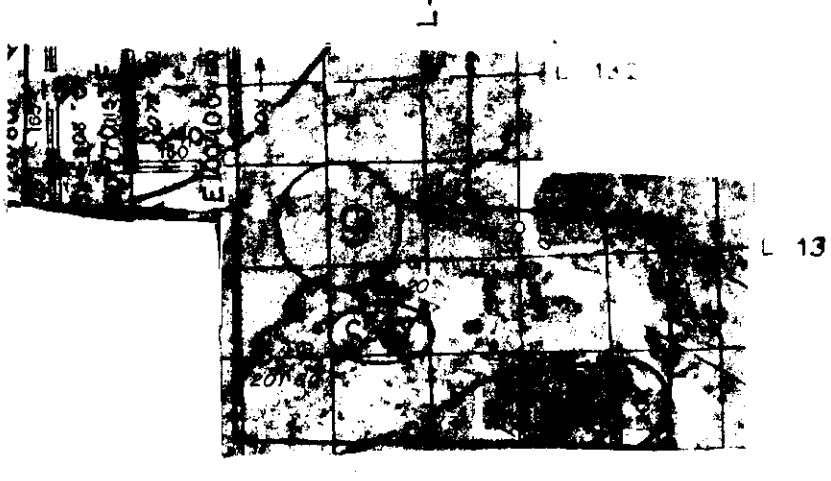
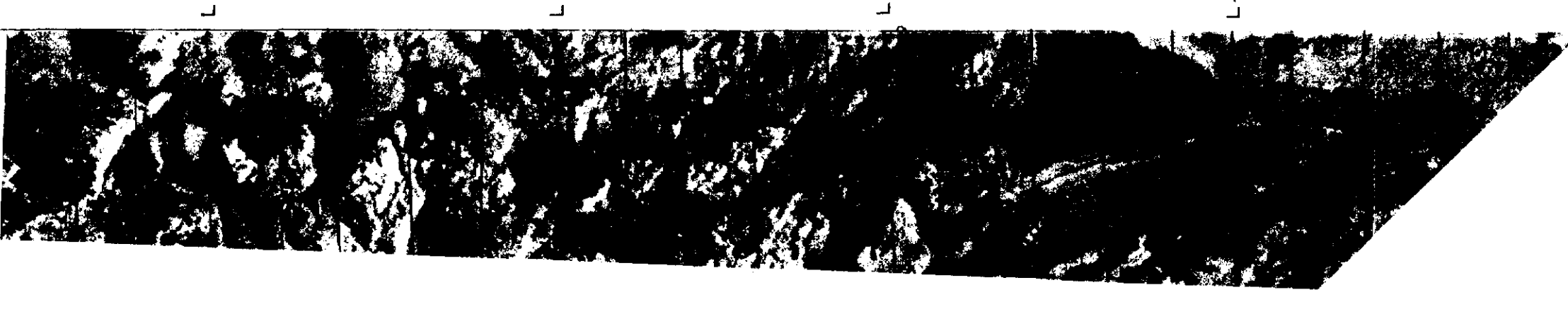
  
 geotrex limited  
 OTTAWA  
 HOUSTON    YUKON

FLYING IN MARCH, 1974      GEOTREX PROJECT NO. 84-128



L-1 L-5 L-10 L-15 L-20 L-25 L-30 L-35 L-40 L-45 L-50 L-55 L-60

L-132  
L-130  
L-125  
L-122

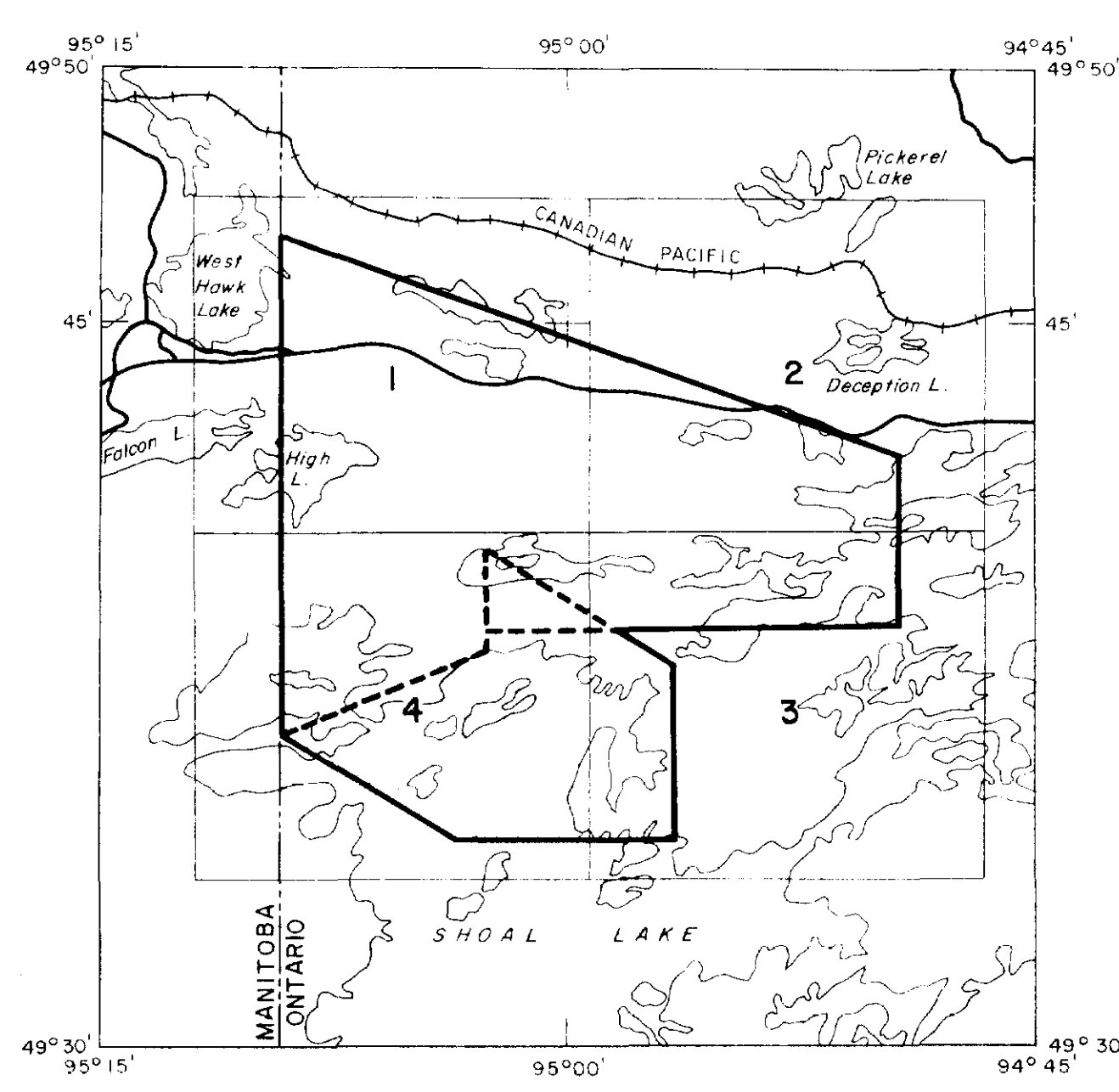


L-220  
L-216  
L-210  
L-205

**LEGEND OF CLAIM GROUPS**

Area	Claim Group Name	North Point	Claim Number
1	Lamprey Bay Group	86520-011, 86520-012	
2	Moss Creek Group	86520-013, 86520-014	
3	Moth Lake Group	86520-015, 86520-016	
4	Strombeck Lake Group	86520-017, 86520-018	
5	Beetz Lake Group	86520-019, 86520-020	
6	Moss Lake West Group	86520-021, 86520-022	
7	Moss Lake East Group	86520-023, 86520-024	
8	Lake of Two Mountains Group	86520-025, 86520-026	
9	Ship Lake Group	86520-027, 86520-028	
10	Chelton Lake Group	86520-029, 86520-030	
11	Waukegan Bay Group	86520-031, 86520-032	
12	Deer Lake Group	86520-033, 86520-034	
13	Gold Island Group	86520-035, 86520-036	
14	Edna Bay Group	86520-037, 86520-038	
15	Clyde Bay Group	86520-039, 86520-040	
16	Heldiver Bay Group	86520-041, 86520-042	
17	Cash Island Group	86520-043, 86520-044	
18	Mackinac Island Group	86520-045, 86520-046	
19	Silver Fox Island Group	86520-047, 86520-048	
20	Bay Bay Group	86520-049, 86520-050	
21	Nicol Island Group	86520-051, 86520-052	
22	Cameron Island Group	86520-053, 86520-054	
23	Rush Bay Group	86520-055, 86520-056	

**LOCATION MAP**  
SCALE 1/250,000



L-200  
L-195  
L-190

L-185  
L-180

ED