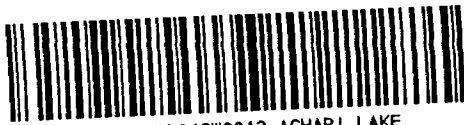


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52P04NE0029 52P04SW0013 ACHAPI LAKE

010

52 P/4 NE

STURDY MINES LIMITED

ELECTROMAGNETIC AND MAGNETOMETRIC SURVEYS

WOODILEE LAKE PROPERTY

ATIKOKIWAM, ACHAPI, LOWRY AND AUGUST LAKE AREAS

PATRICIA MINING DIVISION

PROVINCE OF ONTARIO

By: C.F. DESSON

September 4, 1969



52P04NE0029 52P04SW0013 ACHAPI LAKE

010C

- 1 -

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CERTIFICATE OF QUALIFICATIONS

I, Carmen F. Desson, of the town of Timmins in the Province of Ontario do hereby certify that:

1. I am employed as the Exploration Manager for Sturdy Mines Limited with offices in Toronto, Ontario.
2. I am an honours graduate of the Provincial Institute of Mining, Haileybury, Ontario and have been practising my profession for over 20 years with extensive experiences in many types of Geophysical Surveys mostly in a senior capacity.
3. I have an intimate knowledge of the area surveyed and covered by this report being directly responsible for all of the work performed.

Dated at Toronto, Ontario this 3rd day of August, 1969.

C.F. DESSON
Exploration Manager

PROPERTY EXTENT

The property consists of 80 contiguous mining claims of approximately 40 acres each and are numbered as follows:

PA 44154 - 44157 (incl.)	-	4 claims
PA 44342 - 44397 (incl.)	-	56 claims
PA 44522 - 44541 (incl.)	-	20 claims

TOTAL		80 claims
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Total Acreage - 3,200 (approx.)

LOCATION AND ACCESSIBILITY

The property is located in the Patricia Mining Division of Ontario, and is situated about 35 miles south-east of Pickle Crow or 60 miles north of Armstrong on the C.N.R.

Best means of access is via float plane presently using Hooker Air Service with a seaplane base on Pickle Lake.

GENERAL GEOLOGY

The area is underlain by Keewatin sediments including paragneisses and schists and volcanic lavas with associated intrusives of gabbro and diabase over most of the claim group and Algomian granites and granite gneisses to the north of the Keewatins in the north-west portion of the claim group. Rock attitudes are approximately N 75°E to E-W in strike and vertical to steeply south in dip.

There occurs interbedded with the undefined volcanics sediments complex, bands of Iron Formation with varying widths as indicated on the aeromagnetic survey map (G.S.C. Geophysics Paper 932 G) and confirmed partially on the ground.

An occurrence of copper-nickel mineralization in sulphides was discovered by company employees on claim PA 44387. The showing is in gabbro close to the north contact of intrusive with sediments to the north. Some test pitting was done and shallow hole prospecting drilling or a preliminary test but further work on this is held in abeyance in favour of examining the iron formation.

SUMMARY OF THE ELECTROMAGNETIC SURVEY

The property was gridded with chained and picketed cross lines striking north-south at 400 foot intervals with a more detailed area with 200 foot line spacings with lines striking N 23°W in the area of what proved to be a complex anomalous area.

Two base lines were put in to establish the cross lines control - Base Line "A" for the main north-south property grid and Base Line OO for the NW detail grid as indicated on the map.

Instrument used was a Crone JEM dual frequency 480 c.p.s. and 1800 c.p.s., battery powered unit using the in-line method with 200 foot separation between transmitter and receiver. (See Appendix "A" The Electromagnetic Method for instrument and method.)

A total of fifteen (15) conductive zones were defined and designated on the map, as Anomalies "A" to "O" inclusive, and commented on as follows:

ANOMALY "A"

Has approximate dimensions of 500' x 3200', trends E-W and is open to the east, off the property limits. The anomaly is weak to strong being strongest over its eastern half. The anomaly lies over a zone of magnetic high relief. (Mag. Area No. 1 on the mag. map). The conductivity is probably caused by thin bands of conductive magnetite in the iron formation.

ANOMALY "B"

Approximately 300' x 3600', trends east-west and is weakly to strongly conductive and lies in an area of little magnetic relief. Area to be examined initially for rock outcrops to try and determine the cause of the anomaly.

ANOMALY "C"

Approximately 300' x 2000', trends east-west over Magnetic Anomalous Area No. 2, is weakly conductive and is believed to be caused by thin conductive bands of magnetite in the iron formation.

ANOMALY "D"

This anomaly covers a large complex area of conductivity fairly coincident with Magnetic Area 3 and is weakly to strongly conductive, possibly due to varying amounts of thin layers of conductive magnetite in iron formation.

ANOMALY "E"

Approximately 1000' x 5600', is a moderately conductive area coincident with a portion of Mag. Area 4 and is probably caused by the magnetite bands in iron formation.

ANOMALY "F"

Approximately 300' x 1100', is weakly conductive and is coincident with part of the complex Mag. Area 4.

ANOMALY "G"

Approximately 300' x 1400', is weakly to moderately conductive and it too is coincident with part of Mag. Area 4 and probably also caused by the magnetite bands in the iron formation.

ANOMALY "H"

Approximately 200' x 2000', is weakly to moderately strong conductive. The anomaly lies in an area of little magnetic relief and requires further work starting with outcrops examination to try and determine the conductive source.

ANOMALY "I"

Is a small, weak, one line conductor and is coincident with a section of Mag. Area 4 and is probably caused by thin bands of magnetite in the iron formation.

ANOMALY "J"

Is a weak one line conductor in an area of little magnetic relief. Reason for conductor unknown. Search for outcrops in area required.

ANOMALY "K"

Is a weak one line conductor in an area of little magnetic relief. Reason for conductor unknown. Search for outcrops in area required.

ANOMALY "L"

Is a weak two line conductor coincident with the farthest easterly finger of the complex Mag. Area No. 3 and is probably caused by thin bands of magnetite in iron formation.

ANOMALY "M"

Is a weak one line conductor similar to Anomaly "L" and is in the same setting.

ANOMALY "N"

Is a small, weak conductor which lies off the west end of Anomaly "C" and is coincident with the same Mag. Area No. 2, and probably caused by the same source magnetite bands in the iron formation.

ANOMALY "O"

Is a one line conductor of weak to moderate strength in an area of little magnetic relief. Reason for conductor unknown. Ground check for outcrops required.

SUMMARY OF THE MAGNETOMETRIC SURVEY

The survey was conducted over the same line grid as the electromagnetic survey using a McPhar Fluxgate Model M700 magnetometer with a maximum sensitivity of 20 gammas per scale division.

Base Control Stations were established at workable distances within the grid and all corrected to a main control station for accurate control of all subsequent readings taken during the course of the survey. (See Appendix "B" for technical details of the instrument as supplied by the manufacturer.)

A total of 4 major areas of magnetically high anomalies are defined on the map area keeping in mind that the major reason for the survey was to search for iron. Other minor magnetic highs require a separate study and plotting with tighter contouring intervals on a better workable scale for better appraisal. The contouring on the Mag. Map has a minimum value of 5000 gammas chosen as the arbitrary cut-off for possible economic iron grade in the iron formation but quite likely defines larger areas than economically feasible at this time.

The magnetically high areas are described as follows:

MAGNETIC AREA "1"

The anomaly covers an area approximately 200' x 2800' trending east-west and open to the east off the property limits and lies in the same stratigraphic horizon as Mag. Area "2" which lies about 2500 feet west and on line.

The anomaly is caused by iron formation as seen in rock outcrops.

MAGNETIC AREA "2"

Approximately 200' x 5000' with a smaller outlier 100' x 900' off the west end of the main anomaly and in the same stratigraphic horizon. It is probably caused by bands of magnetite in the iron formation although gabbro was observed in the area in prospecting prior to line cutting and geophysics.

MAGNETIC AREA "3"

This is a large complex magnetically high area with dimensions of 3600 feet maximum width and over 10,000 feet in total length with variable high and low readings caused by erratic dispersal of magnetite bands in the iron formation and possibly to a lesser extent polarity of the beds. Variable depth of overburden may be partially responsible for the complex pattern of readings but this should be negligible. Smaller local highly magnetic areas in the general area are probably due to higher magnetite content in weaker sections of the sedimentary iron formation. There are exposures of the iron formation within the anomalous areas and the anomaly is probably caused almost entirely of iron formation, although again, basic rocks were seen in this area before the geophysical work was performed. Small magnetic outliers occur further west in the same stratigraphic horizon and probably are due to the same source as Area 3.

MAGNETIC AREA "4"

Approximately 1600' x 6400' in dimension with a three finger split in the west end. Anomaly probably caused by the iron formation as seen in the area.

RESPECTFULLY SUBMITTED,

C.F. Desson

C.F. DESSON
Exploration Manager
Sturdy Mines Limited.

THE ELECTROMAGNETIC METHOD

The method involves the transmission of an alternating electromagnetic wave of a given frequency, which penetrates the ground in the vicinity of a transmitting coil. This wave or field induces an electric current in any conductor on which it is incident. The flow of an alternating current in a conductor sets up on its own, or secondary, radiating electromagnetic field. These two fields form a resultant whose configuration depends on the following characteristics of the sub-surface conductors: (i) size, (ii) shape, (iii) electrical conductivity, and (iv) magnetic permeability, and (v) frequency of the transmitted wave. To a lesser extent, the resultant is also dependent on material adjacent to the conductor, topography and surface conductivity. The direction of the resultant vector is measured by a small receiving coil timed to the frequency of the transmitted wave.

The electromagnetic survey over this group of claims employed the Crone dual frequency (1800/480 cps) junior unit. This is a two-man operated unit; and each man has a transmitting and receiving unit. The men are usually spaced 200 feet apart. Each man transmits and receives; and the dip angles are added together algebraically. Readings greater than 3 are considered significant, unless working along the extension of a conductor, in which case lower readings may be of value.

If a conductor is present, both positive and negative dip angles are obtained. When both men are on one side of the conductor, the reading is minus; when they straddle the conductor, the reading is plus. The coil giving the angle is the coil nearest the conductor. The distance between the cross-overs should equal, approximately, the interval between the two men (200 feet). Positive angles are important as they frequently indicate vertical conductors close to surface.

The purpose of the "shoot-back" method is to eliminate elevation effects. The main advantages of the method:

1. The men traverse perpendicular to the strike.
2. It is sensitive to both vertical and horizontal conductors.
3. It has good penetration.

The magnitude of the angles depends on the conductivity of the body. The shape of the curve depends upon the shape of the conductor. Note that as the conductor becomes wider and deeper, the positive angles decrease or become non-existent. With banded, multiple conductors, the negative readings from one conductor may interfere with the positive readings from another, making accurate interpretation difficult.

Noisy readings are most frequent over broad, clay conductors (e.g. on lake bottom). However, they may occur, in certain locations, with the best of sulphide conductors.

APPENDIX "A"

McPHAR M.700 MAGNETOMETER

The McPhar M.700 Magnetometer is a vertical field flux-gate magnetometer. The self-levelling feature of this electronic magnetometer eliminates the need for bulky tripods and time consuming fine levelling procedures. Further, the instrument is relatively insensitive to orientation. Since the instrument can be adjusted electronically to cancel vertical magnetic fields from plus 100,000 gammas to minus 100,000 gammas there is no need for auxiliary magnets or complicated latitude adjustments.

The operation of the M.700 Magnetometer is very simple. The reading on the meter is set to zero at the chosen base station. This can be done to an accuracy of 5 gammas. As successive stations are occupied, the instrument is held roughly level, and the increase or decrease in the vertical component of the earth's magnetic field is read directly from the meter. Five ranges are available and on the most sensitive range the accuracy is ± 5 gammas.

APPENDIX "B"

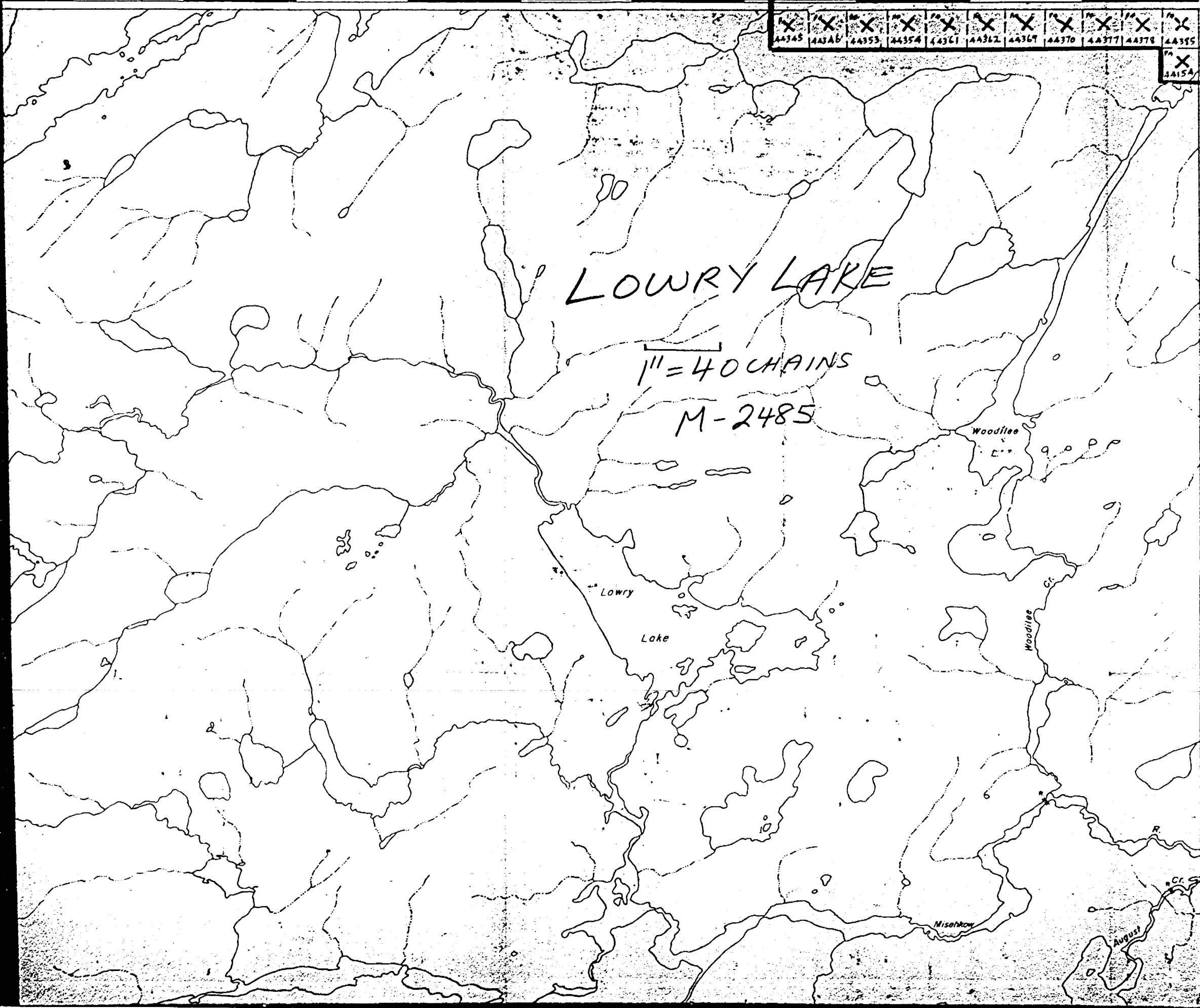
89°45' 51°07'30"

X 44345	X 44346	X 44353	X 44354	X 44361	X 44362	X 44369	X 44370	X 44377	X 44378	X 44385
										X 44154

LOWRY LAKE

1" = 40 CHAINS

M-2485



Lowry

Lake

Woodilee

Woodilee Cr.

Misishnow

August

89°45'

50°07'30"

PA 4476	PA 4477	PA 4478	PA 4479	PA 4480	PA 4481	PA 4482	PA 4483	PA 4484	PA 4485	PA 4486	PA 4487	PA 4488	PA 4489	PA 4490	PA 4491	PA 4492	PA 4493	PA 4494	PA 4495	PA 4496	PA 4497	PA 4498	PA 4499	PA 4500	
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
44155	44156	44157	44158	44159	44160	44161	44162	44163	44164	44165	44166	44167	44168	44169	44170	44171	44172	44173	44174	44175	44176	44177	44178	44179	44180

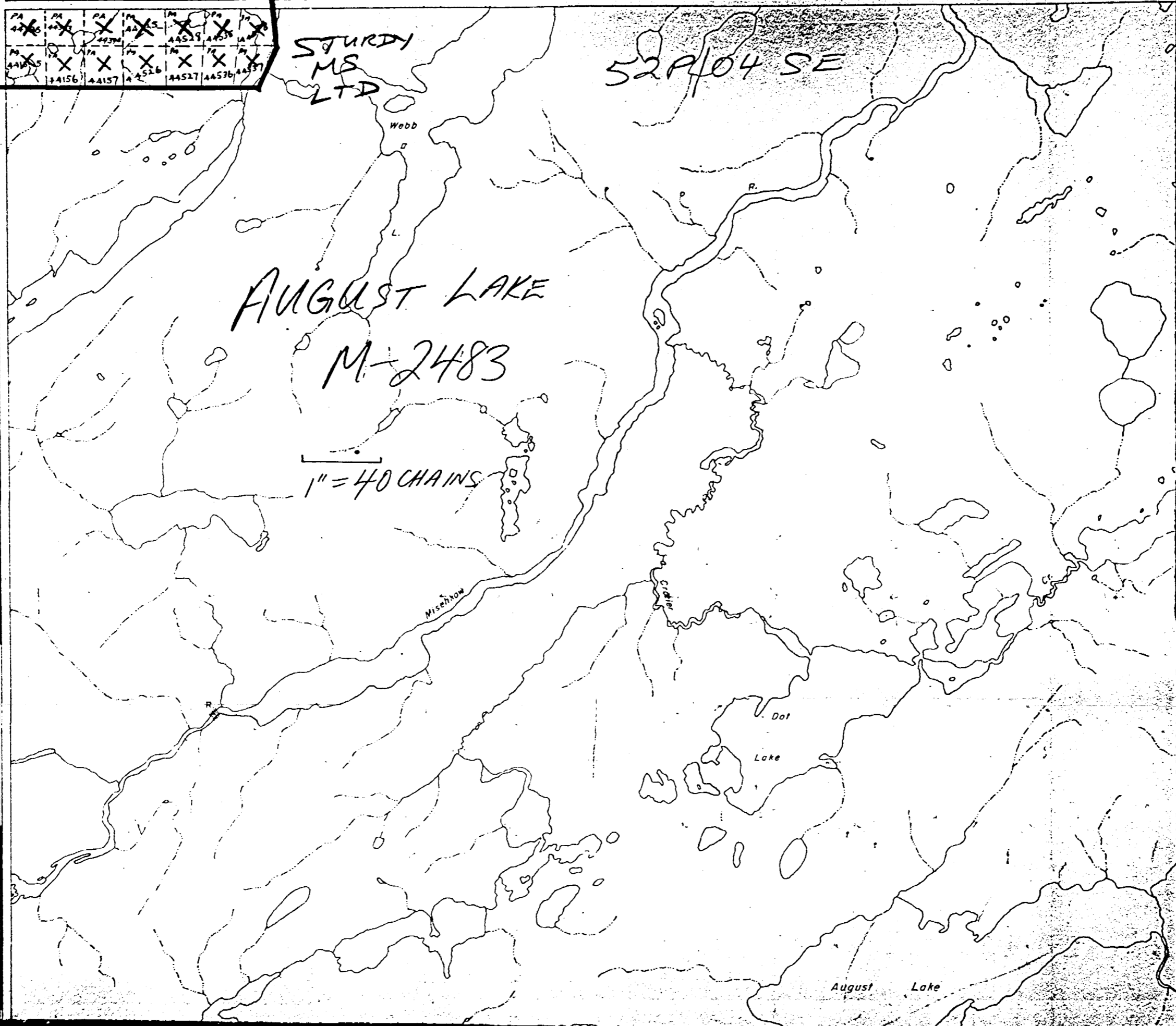
STURDY
MS
LTD

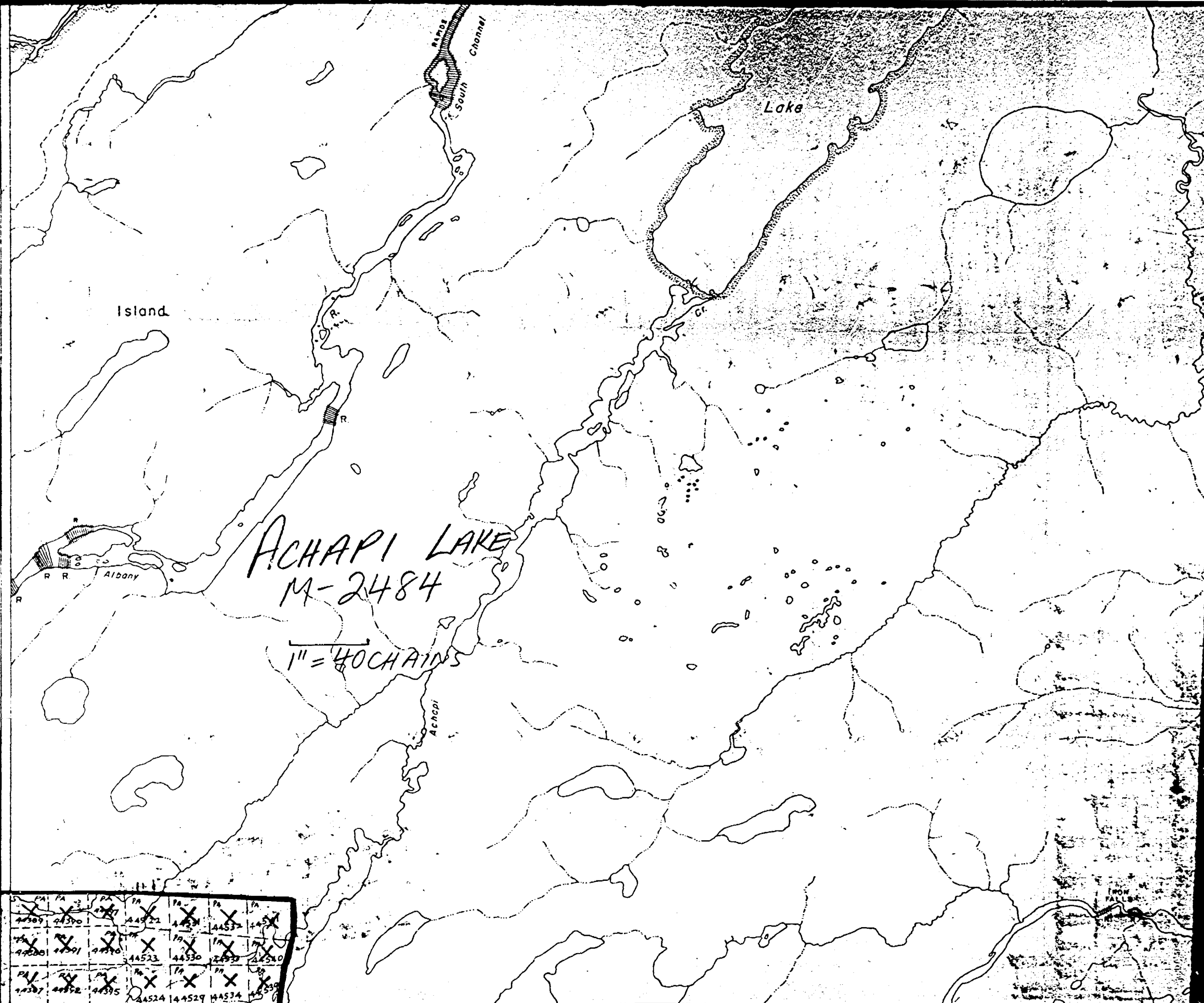
52P/04 SE

AUGUST LAKE

M-2483

1" = 40 CHAINS

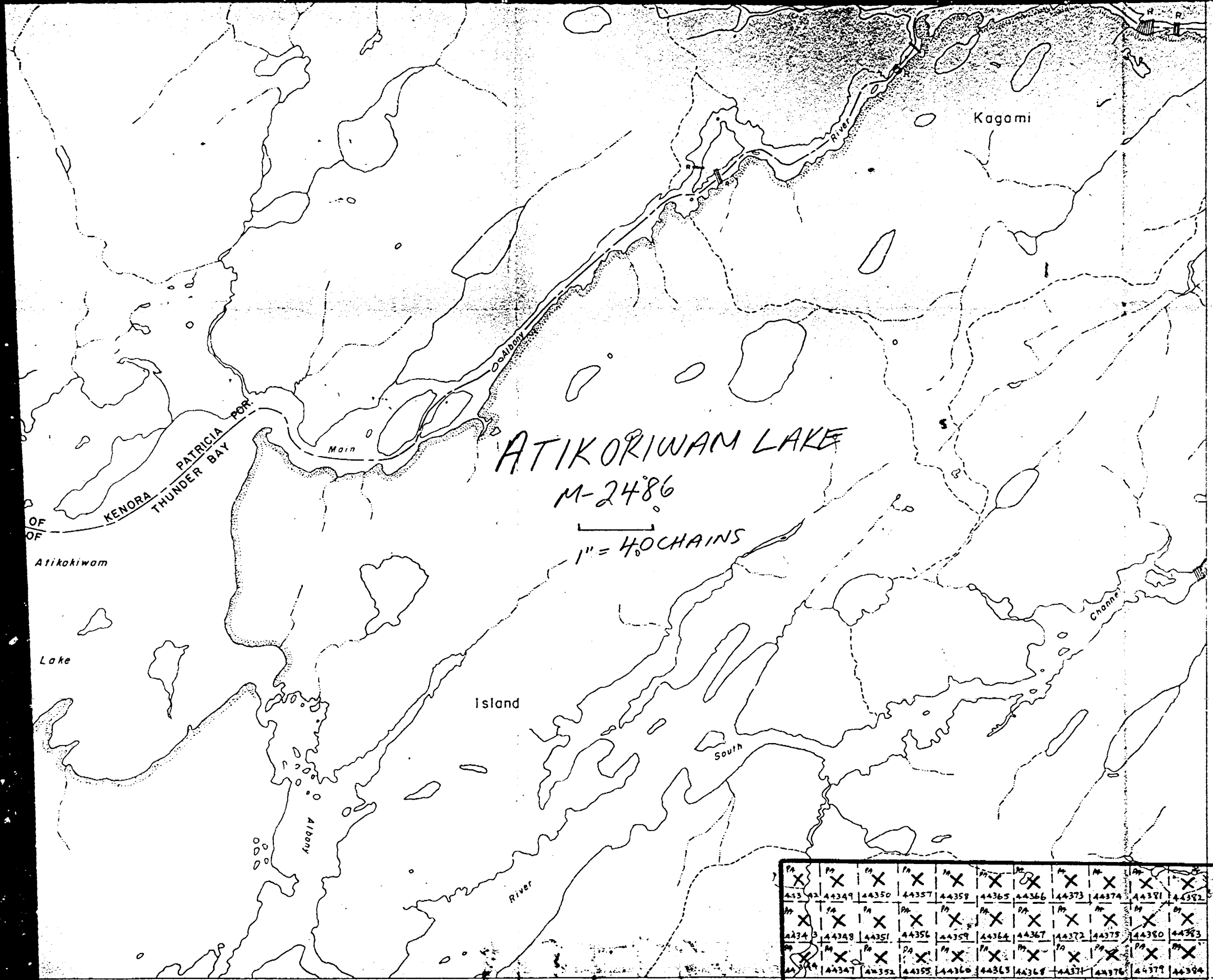




44520	44521	44522	44523	44524	44525	44526	44527	44528	44529	44530	44531	44532	44533	44534	44535	44536	44537	44538	44539	44540
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51° 07' 30"

89° 45' 44' 43' 42' 41' 40' 39' 38' 37' 36' 35'

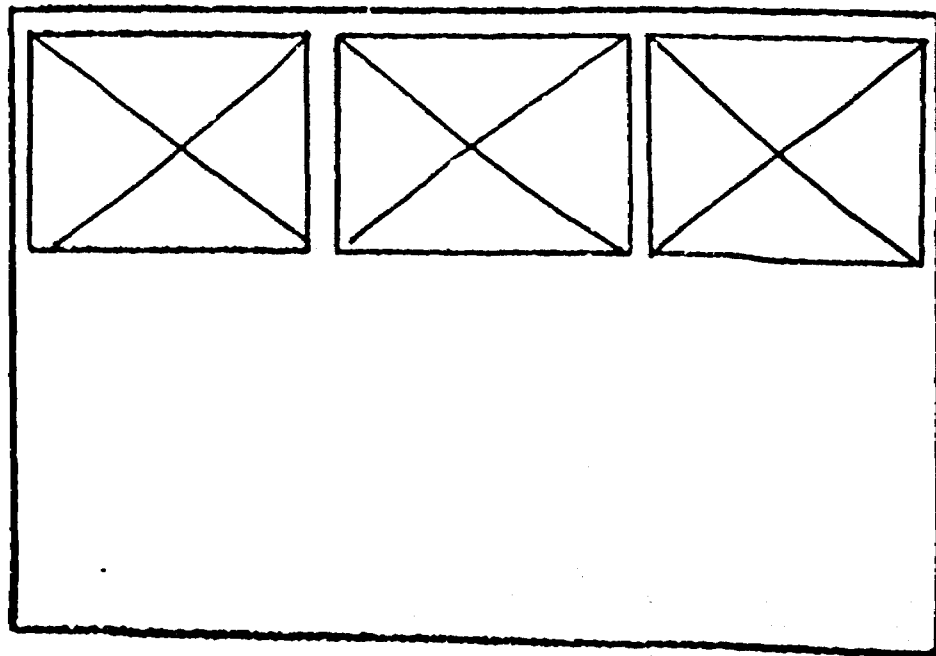


44342	44349	44350	44357	44358	44365	44366	44373	44374	44381	44382
44374	44379	44381	44386	44389	44394	44397	44372	44375	44380	44383
44344	44347	44352	44355	44360	44363	44368	44371	44376	44379	44384

55' 54' 53' 52' 51' 50' 49' 48' 47' 46' 51°07'30" 89°45'

SEE ACCOMPANYING
MAP(S) IDENTIFIED AS
52 P/04 SW-0013 #1, #2

LOCATED IN THE MAP
CHANNEL IN THE FOLLOWING
SEQUENCE (X)



FOR ADDITIONAL
INFORMATION

SEE MAPS:

52P/04SW-0013 #2

