

2.1263

RECEIVED

JUL 19 1973

N.T.S. 42 A-10 PROJECTS
SECTION



42A10NW8829 2.1263 CLERGUE

010

GEOLOGICAL ASSESSMENT REPORT

DUNDONALD-CLERGUE GROUP

LARDER LAKE MINING DISTRICT

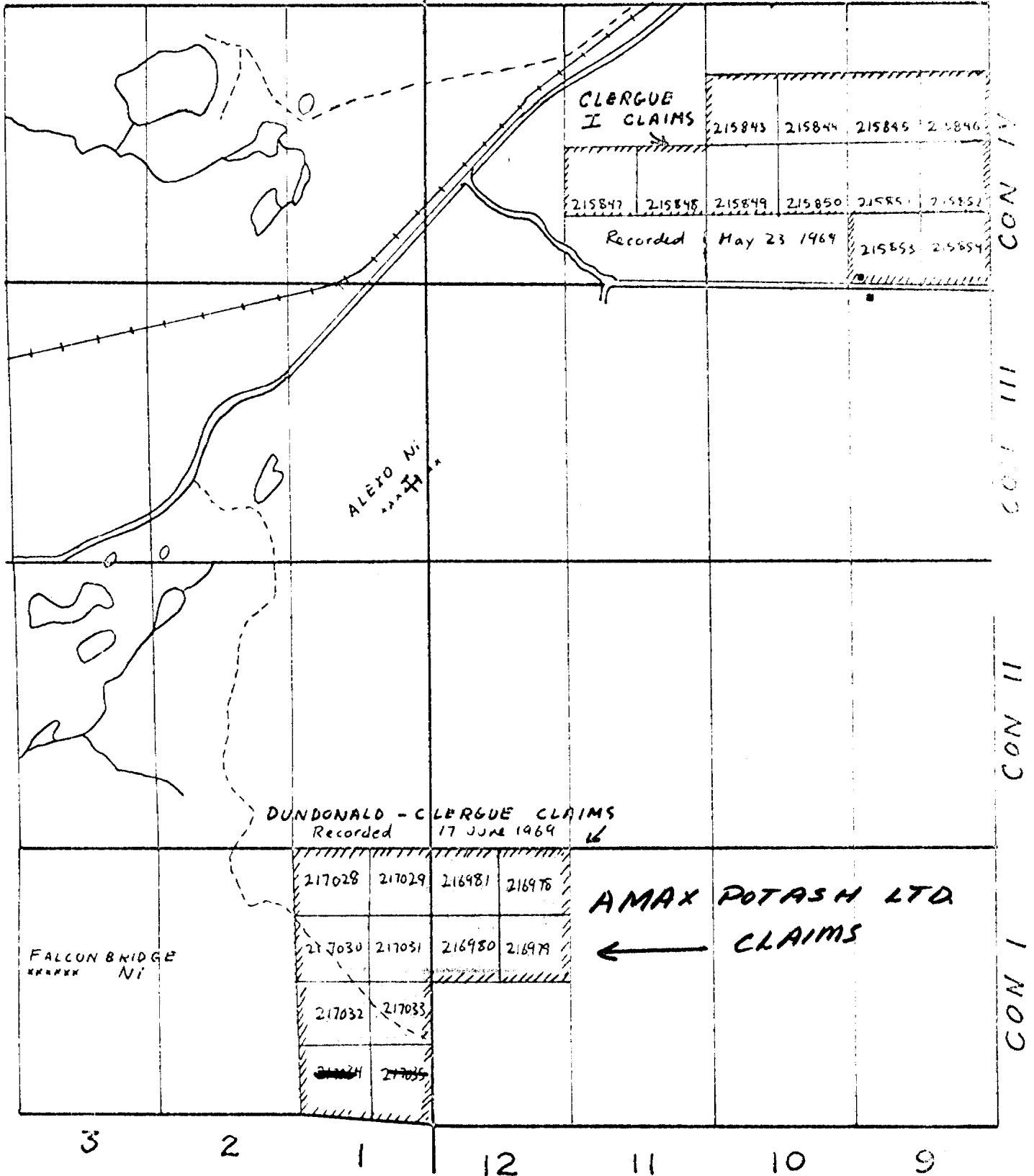
July 11, 1973
Timmins, Ontario

S.N. Watowich
Amax Potash Limited

AMAX CLAIMS

Dundonald - Clergue Twps.
June 1969

DUNDONALD TWP. CLERGUE TWP.



SUMMARY

Amax Potash Limited of 7 King Street East, Toronto, holds 10 contiguous claims in the Larder Lake Mining District. These claims are numbered as follows and located in the townships of Dundonald and Clergue.

<u>Claim Number</u>	<u>No. of Claims</u>	<u>Township</u>
L 217028-033 incl.	6	Dundonald
L 216978-981 incl.	4	Clergue
	<u>10</u>	

The property was recorded on the 10th of June 1969 for the purpose of exploring a strong airborne magnetic anomaly through the region known to be caused by basic and ultrabasic intrusives. This knowledge is available from exploration records of Dominion Gulf Company (1956) and Hollinger Consolidated Gold Mines (1968). In addition, preliminary maps of the Ontario government, numbers P307 and P308, provided geological information.

Amax Potash Limited conducted Ronka EM-16 V.E.M., magnetometer and geological surveys in 1969. In 1973 additional V.E.M. surveys were performed. The purpose of the geological survey was to allow an interpretation of the magnetometer survey data and assess the structural conditions. Although exposures are limited to the west side of the property, a sufficient rock section is available to correlate geology with the magnetic expression. This is adequate to substantiate the purpose of the exploration program, which was to define the presence of ultrabasic formations in the area and assess the potential of any conductive sulphide deposition which could include nickel bearing sulphides such as at the Alexonickel deposit, 1 1/4 mile to the north, and the Falconbridge Nickel Mines Ltd. nickel deposit, 1 mile to the west. On the basis of the geological survey data which coordinated the electromagnetic survey and magnetometer survey data, one hole was drilled to test a section of the ultramafic complex. The geological mapping survey, the location of exposures and conversely the mapping of the Pleistocene cover are purposes that were all usefully served.

INTRODUCTION

During a period in July and August of 1969 the claims were mapped by Jean-Claude Dumesnil and supervised by the writer who spent considerable time examining the outcrop areas. Mr. Dumesnil is a geologist, with a M.Sc. 1968 from Ecole Polytechnique in Quebec and has previously submitted numerous technical reports to the Department.

The property is in the southeastern portion of Dundonald Township and the southwestern portion of Clergue Township. Access is readily available by highway number 67 which connects highway 101 from Timmins and highway 11 to Cochrane. About 2 1/4 miles northward along highway 67 from the former rail station of McIntosh Springs in Dundonald Township a 4-wheel drive route which requires periodic culvert repairs is available to the south and reaches the claim group in about 2 miles.

MAPPING PROCEDURES

The geological survey was controlled by a 400-foot grid in a north-south direction. The east-west base is located through the middle of the property. Pickets were located by chain every 100 feet on the grid lines and acted as reference points. All lines were traversed in search of exposure, the topography, foliage, and ground conditions are noted on the enclosed map in the folder. The map is presented at a scale of 1 inch to 200 feet.

GEOLOGY

The general geology of the region lies within the Superior Structural Province of the Canadian Precambrian Shield. The immediate area is extensively covered by the Lake Ojibway sandy clays and by earlier till materials of sands, gravels and boulders. The bedrock topography appears to be rugged with hummocks of outcroppings falling off into glacial filled valleys, 100 feet deep. The rock exposures are confined to the northwest corner of the group and consist of knolls of gabbroic and ultramafic rocks. In general these rock types form the prominent exposures in the southwest corner of Dundonald Township.

As interpreted from the magnetometer survey data ultramafic formations underlie the northern half of the property. The southern portion of the group is geophysically interpreted to be underlain by gabbro and basic volcanics.

ROCK TYPES

Gabbro forms the most prominent exposure on the group. It is characterized by a brown rusty weathering, some of which is due to the ubiquitous 1 to 2 percent pyrrhotite content. The texture is generally subophitic, and medium to coarse grained. Composition and grain size varies greatly within certain limits. Essentially the gabbro is a 50:50 composition between feldspar and mafic crystals. The green schist facies of metamorphism probably has left the original crystal composition partly unaltered. Twinning on the plagioclase laths is common. The mafic crystals appear to have formed earlier as pyroxenes and show edge alteration to amphibole and chlorite. Magnetite is generally present in small amounts but does shown a tendency to concentration in certain horizons. These are subparallel to the structure as evidenced by the magnetic data on Line 14E - 6+00N. This suggests a segregation and layering of the iron oxide phase in perhaps a late stage of crystallization.

Pyroxenite is the next most common exposure on the group. The weathered surface is less rusty brown, generally smoother in appearance due to its finer grained texture than is the gabbro. Magnetite is scarce, one percent or less and this is manifested by the magnetic response in contrast to the gabbroic rocks. The pyroxenite is composed mainly of easily distinguishable pyroxene crystals. Some plagioclase may occur. Certain pyroxene crystals show a greater tendency to tremolite, chlorite and serpentine alteration. These may represent two pyroxene systems.

Rhyolite is relegated to one small exposure. This consists of a white to creamy weathering low, smooth exposure. The fresh surface is aphanitic, and dark grey. The rock is distinctly siliceous. Narrow orientated streaky laminae suggest flow textures which are suitable for structural measurements.

To the west of the property, felsic volcanic exposures are common. These vary within short distances from fine fragmental units to coarse agglomerates and feldspar porphyries.

TABLE OF FORMATIONS

QUATERNARY

Pleistocene: Unconsolidated Sediments
 clay, sand, gravel, boulders

 - Great Unconformity -

PRECAMBRIAN

Archean: Basic Intrusives
 gabbro, pyroxenite, peridotite

 - Intrusive Contact -

 Felsic Volcanics
 rhyolite

STRUCTURAL GEOLOGY

The magnetic survey amplifies the northwesterly fabric of the ultramafic-gabbroic sill. However the limited exposure indicates this northwest trend in a well defined contact between gabbro and pyroxenite. The contact is sharp with no chilling in evidence suggesting a differentiated layering.

By contrast the small exposure of rhyolite and gabbro indicates a chilled gabbro contact, but limited exposure and subsequent alteration at this point makes this a hazy conclusion.

In general with the aid of the magnetic survey the gabbro-pyroxene mass would appear to represent a differentiated sill.

Utilizing the data from the Amax drill hole TX-64-70 which indicates an interlayering of pyroxenite and peridotite it may be stated that a gabbro sill some 800 feet thick is underlain by an ultramafic complex of a similar thickness. These are tightly folded around a pivoted core of felsic volcanic rocks on a synclinal axis which plunges southwesterly.

Certain stresses appear to have imposed along the contacts of the serpentinite or within the serpentinite layers. This occurs within the south and north link as is traced by a V.E.M. survey which indicates electromagnetic conductivity along these shears. This fact is noted in the "Assessment Report of E.M. Survey, June 18, 1973 by R.J. Roussain for Amax Potash Limited" submitted to the Ministry of Natural Resources. These shears strike north-easterly and would appear to form a "nose" structure of the syncline in the northeast corner of the property in claim L216978.

ECONOMIC GEOLOGY

The ultramafic environment in this area hosts the nickel deposit of Alexo mine about 1-1/4 mile to the north of the group and Falconbridge Nickel Mines nickel deposit about one mile to the west of the group. The mineralization which predominantly consists of pyrrhotite, pentlandite and minor amounts of chalcopyrite occurs at or near the contact of serpentinitized peridotite. This group as a consequence has economic interest. However no significant nickel values were encountered in the pyrrhotite bearing gabbros or in the pyroxenite. No sulphides were encountered in the Amax Potash drilling to indicate nickel bearing sulphide enrichment.

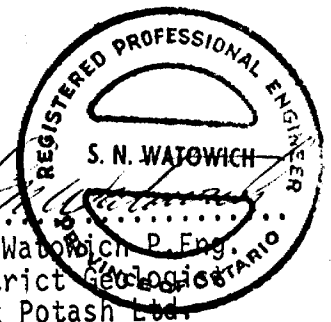
CONCLUSION

The survey in general aids in the interpretation of the geophysical data and adds to the knowledge of the area.

July 11, 1973
Timmins, Ontario

Respectfully submitted by

S. N. Watowich
S. N. Watowich, P. Eng.
District Geologist
Amax Potash Ltd.





GEOPHYSICAL - GEOL
TECHNICAL DATA STATEMENT

900

TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT
FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

Type of Survey GEOLOGICAL
Township or Area DUNDONALD & CLERGUE TOWNSHIPS
Claim holder(s) AMAX POTASH LTD.
7 KING STREET EAST, TORONTO, ONTARIO
Author of Report S.N. WATOWICH
Address 102 RAE AVE., SOUTH PORCUPINE, ONTARIO
Covering Dates of Survey JUNE 1 - AUGUST 31, 1970, JULY 1-15/73
(linecutting to office)
Total Miles of Line cut 11 MILES

<u>SPECIAL PROVISIONS</u> <u>CREDITS REQUESTED</u>	Geophysical	DAYS per claim
ENTER 40 days (includes line cutting) for first survey.	--Electromagnetic _____	
ENTER 20 days for each additional survey using same grid.	--Magnetometer _____	
	--Radiometric _____	
	--Other _____	
	Geological <u>20</u>	
	Geochemical _____	

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)
Magnetometer _____ Electromagnetic _____
(enter days per claim) Radiometric _____

DATE: JULY 11, 1973 SIGNATURE: [Signature]
Author of Report or Agent

PROJECTS SECTION
Res. Geol. _____ Qualifications 63.2340
Previous Surveys L.D. See attached sheet

Checked by _____ date _____

GEOLOGICAL BRANCH _____

Approved by _____ date _____

GEOLOGICAL BRANCH _____

Approved by _____ date _____

MINING CLAIMS TRAVERSED	
List numerically	
L (prefix)	216978 (number)
L	216979
L	216980
L	216981
L	217028
L	217029
L	217030
L	217031
L	217032
L	217033
TOTAL CLAIMS <u>10</u>	

OFFICE USE ONLY

If space insufficient, attach list

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

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS

Number of Stations _____ Number of Readings _____

Station interval _____

Line spacing _____

Profile scale or Contour intervals _____

(specify for each type of survey)

MAGNETIC

Instrument _____

Accuracy - Scale constant _____

Diurnal correction method _____

Base station location _____

ELECTROMAGNETIC

Instrument _____

Coil configuration _____

Coil separation _____

Accuracy _____

Method: Fixed transmitter Shoot back In line Parallel line

Frequency _____

(specify V.L.F. station)

Parameters measured _____

GRAVITY

Instrument _____

Scale constant _____

Corrections made _____

Base station value and location _____

Elevation accuracy _____

INDUCED POLARIZATION - RESISTIVITY

Instrument _____

Time domain _____ Frequency domain _____

Frequency _____ Range _____

Power _____

Electrode array _____

Electrode spacing _____

Type of electrode _____

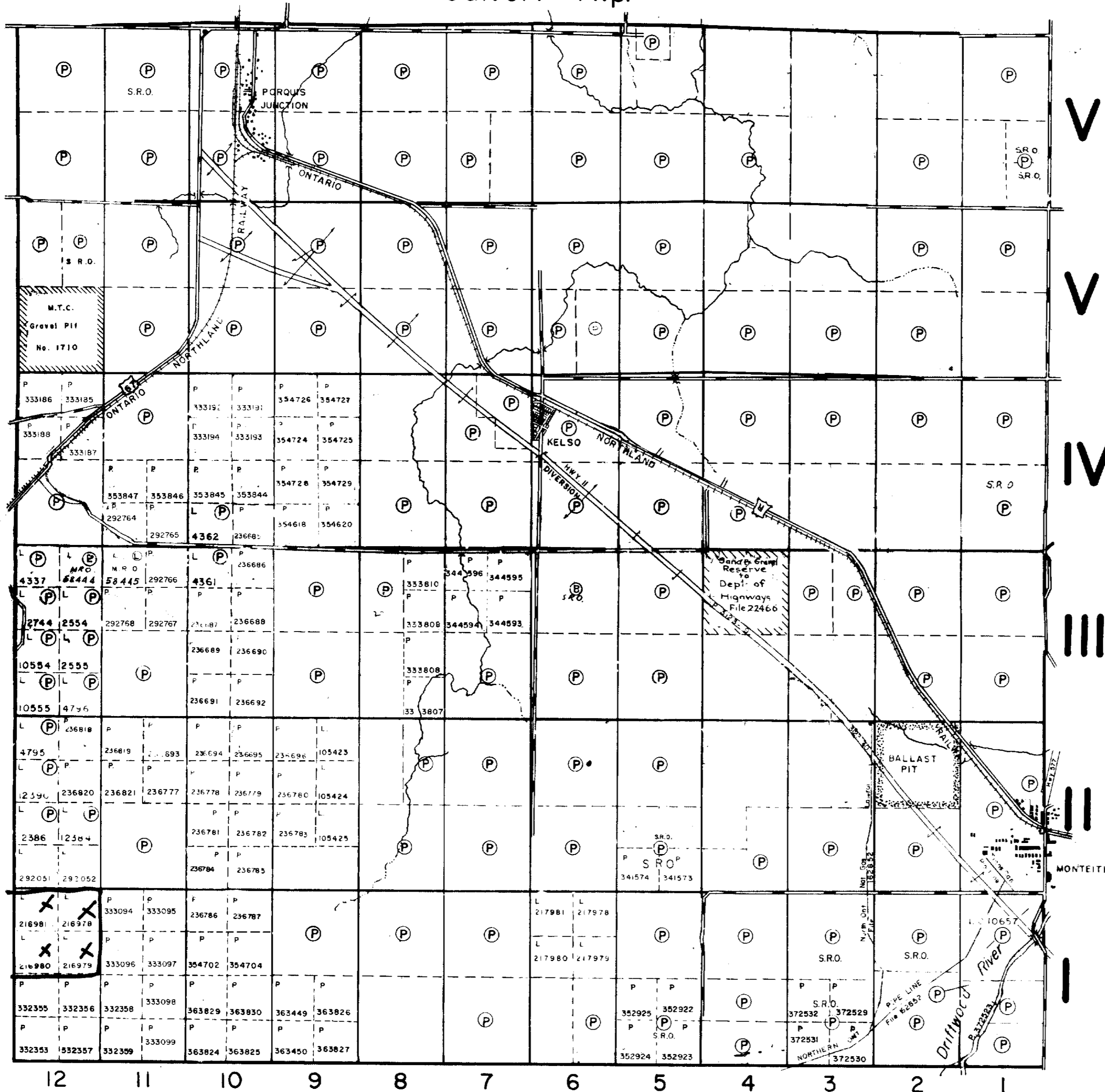
W-337-M

CLERGUE TWP

Dundonald Twp.

W-337-M

Calvert Twp.



THE TOWNSHIP OF
OF
CLERGUE

DISTRICT OF
COCHRANE

PORCUPINE
MINING DIVISION

SCALE: 1-INCH=40 CHAINS

LEGEND

- PATENTED LAND (P)
- CROWN LAND SALE LEASES (S) or (CS)
- LOCATED LAND (L)
- LICENSE OF OCCUPATION (L.O.)
- MINING RIGHTS ONLY (M.R.O.)
- SURFACE RIGHTS ONLY (S.R.O.)
- ROADS [Symbol]
- IMPROVED ROADS [Symbol]
- KING'S HIGHWAYS [Symbol]
- RAILWAYS [Symbol]
- POWER LINES [Symbol]
- MARSH OR MUSKEG [Symbol]
- MINES [Symbol]

NOTES

400' Surface rights reservation around all lakes and rivers.

MINING LANDS
 DATE OF ISSUE
 JUL 20 1973
 MINISTRY
 OF NATURAL RESOURCES

PLAN NO.- M.337

ONTARIO
MINISTRY OF NATURAL RESOURCES
SURVEYS AND MAPPING BRANCH

W-337-M

CLERGUE TWP

W-337-M



E.P.C.M.

E.P.C.M.

TRIM LINE

DUNDONALD TWP - M.343

DUNDONALD TWP - M.343

EVELYN TWP - M.277

CLERGUE TWP - M.337

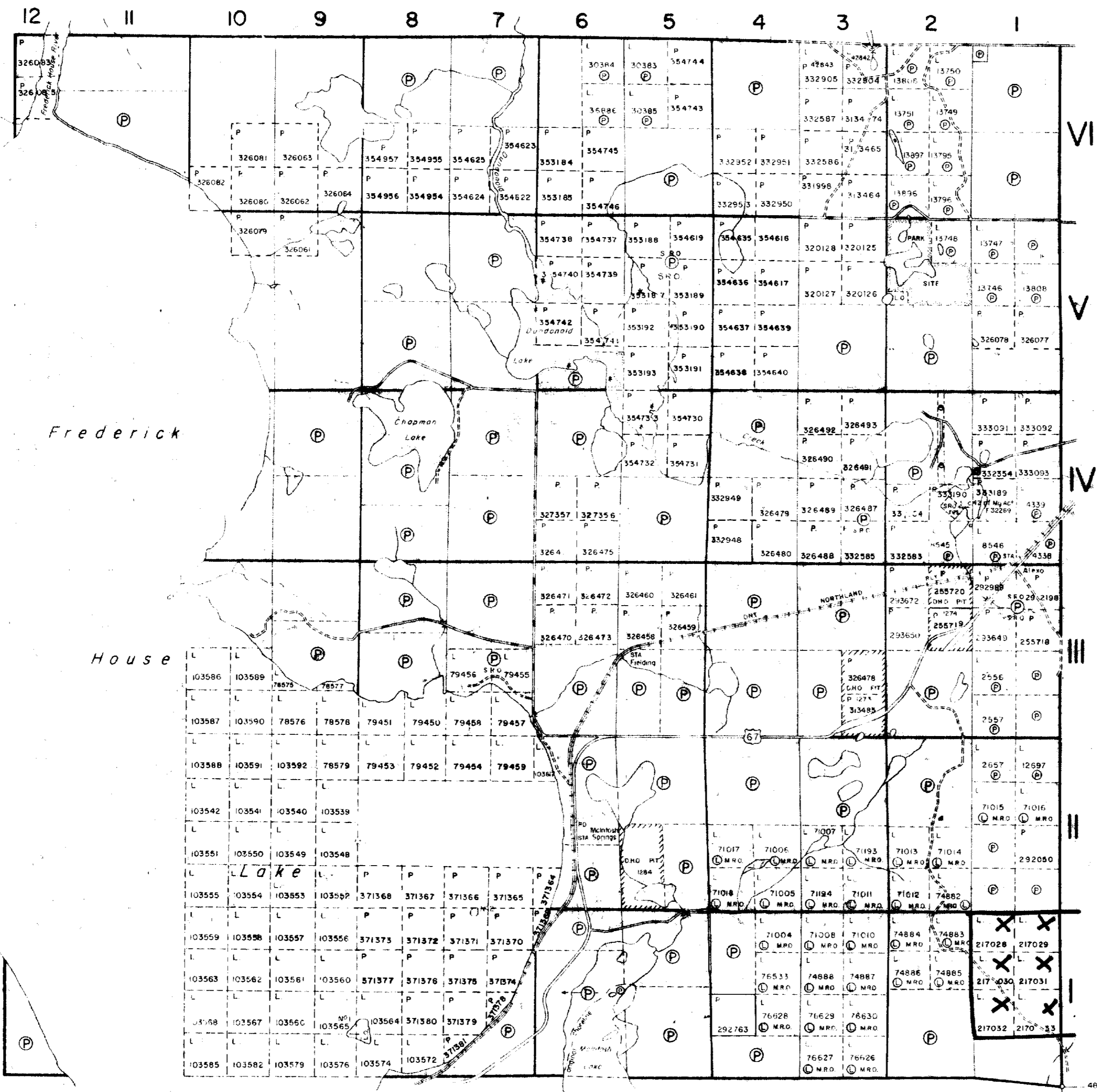
McCART TWP - M.545

THE TOWNSHIP OF DUNDONALD

DISTRICT OF COCHRANE

PORCUPINE MINING DIVISION

SCALE: 1-INCH = 40 CHAINS



LEGEND

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

NOTES

WITNESS POSTS FOR CLAIMS STAKED OUT COVERING LANDS UNDER WATERS OF FREDERICK HOUSE LAKE IN DUNDONALD TWP SHOULD NOT BE ERRECTED OR PLANTED IN EVELYN TWP.

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

L.O.7128 - Flooding rights on Frederick House Lake reserved to HEPC to contour elev. 903' File 64518, vol.2

Area marked thus [X] S.R.O reserved for Park Site. Files 39684, 51994

MINING LANDS - DATE OF ISSUE
 JUL 20 1973
 MINISTRY OF NATURAL RESOURCES

PLAN NO. M.343

ONTARIO MINISTRY OF NATURAL RESOURCES SURVEYS AND MAPPING BRANCH

GERMAN TWP - M.283

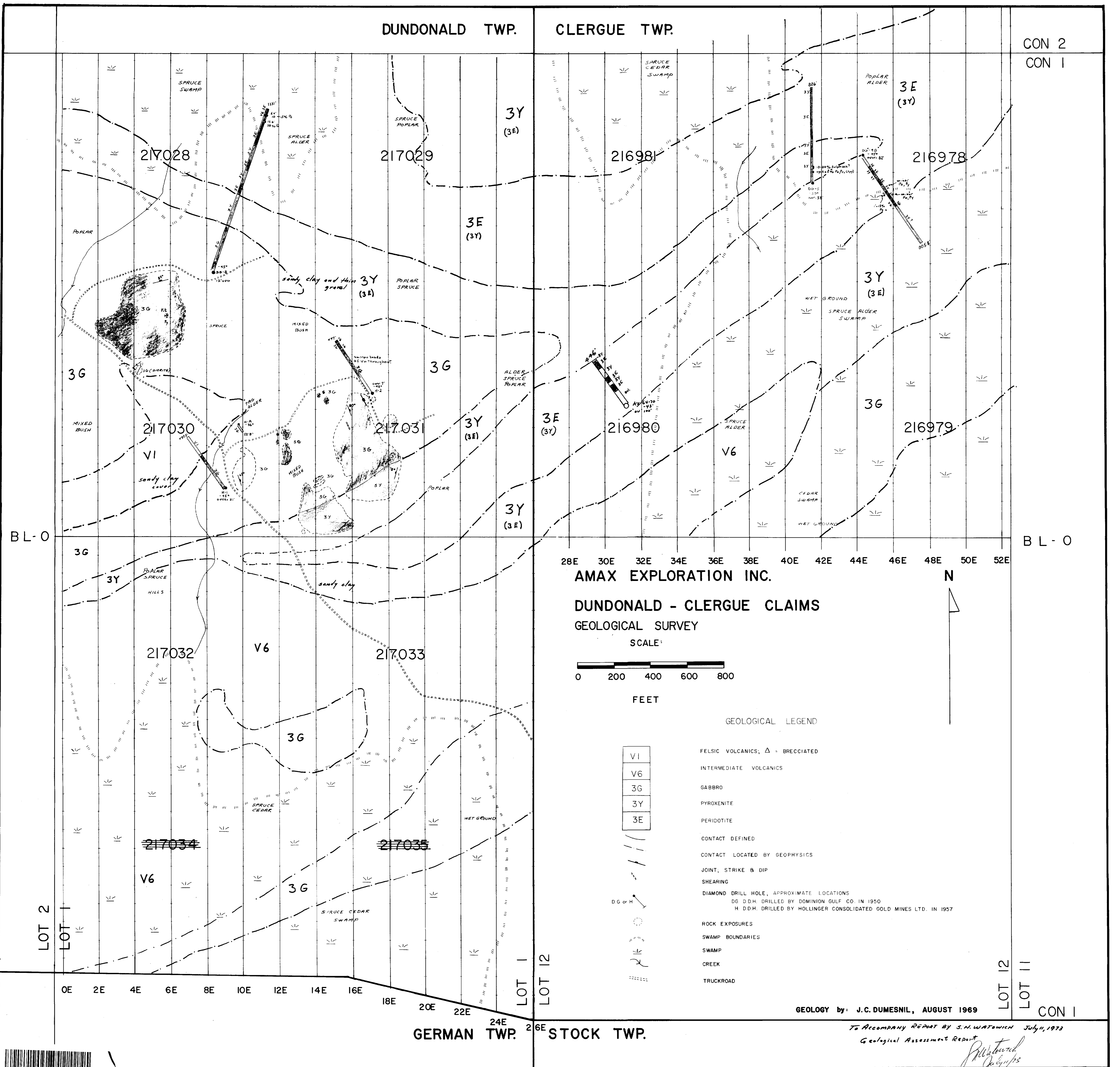


E.P.C.M.

DUNDONALD TWP.

CLERGUE TWP.

CON 2
CON 1



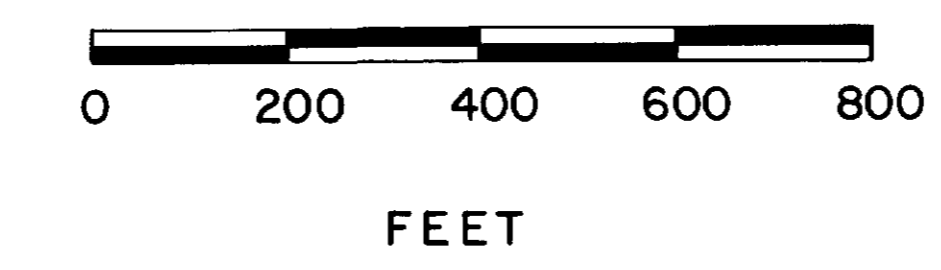
BL-0

BL-0

28E 30E 32E 34E 36E 38E 40E 42E 44E 46E 48E 50E 52E
AMAX EXPLORATION INC.

DUNDONALD - CLERGUE CLAIMS
GEOLOGICAL SURVEY

SCALE:



GEOLOGICAL LEGEND

- VI FELSIC VOLCANICS, Δ = BRECCIATED
- V6 INTERMEDIATE VOLCANICS
- 3G GABBRO
- 3Y PYROXENITE
- 3E PERIDOTITE
- CONTACT DEFINED
- CONTACT LOCATED BY GEOPHYSICS
- JOINT, STRIKE & DIP
- SHEARING
- DIAMOND DRILL HOLE, APPROXIMATE LOCATIONS
DG D.D.H. DRILLED BY DOMINION GULF CO. IN 1950
H D.D.H. DRILLED BY HOLLINGER CONSOLIDATED GOLD MINES LTD. IN 1957
- ROCK EXPOSURES
- SWAMP BOUNDARIES
- SWAMP
- CREEK
- TRUCKROAD

LOT 2

LOT 1

LOT 1

LOT 12

LOT 12

LOT 11

0E 2E 4E 6E 8E 10E 12E 14E 16E 18E 20E 22E

24E 26E
GERMAN TWP. STOCK TWP.

GEOLOGY by: J.C. DUMESNIL, AUGUST 1969

CON 1

To Accompany Report by S.M. WATOWICH July 11, 1973
Geological Assessment Report

[Handwritten Signature]
July 11, 1973

