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REPORT ON GEOLOGICAL AND RADIOMETRIC SURVEYS
OF
THE HUNTER LAKE GROUP, MAGPIE EXPLORATIONS LIMITED
PORTER TOWNSHIP, ONTARIO

SUMMARY

Geological and radiometric surveys of the Hunter Lake group have indicated a zone of anomalous radioactivity some 3,000 feet long and up to 200 feet wide. This occurs along the course of a rusty shear zone at the contact of quartzite and conglomerate.

Grab samples of the rusted rock returned low values in uranium oxide.

In view of the length of the structure, the known presence of uranium and the possibility that leaching may account for the low surface values it has been recommended that the zone be tested at depth by a few short diamond drill holes.

INTRODUCTION

Uranium was first discovered in pyritized pebble conglomerate beds in the Missisquoi quartzite of the Blind River area of Ontario in 1948. At that time the true significance of this discovery was not fully appreciated as the uranium content in surface samples was low.

In 1955 however, the discovery on the Pronto claims was drilled and a considerable improvement in uranium values was found at depth and two commercial ore-bodies have been outlined by drilling in the area. Since then thousands of claims have been staked covering the areas underlain by the Bruce Series sediments in the Blind River area and extending westward to Bruce Mines and eastward to and beyond the Sudbury basin.

As yet there is no agreement on the origin of the uranium occurrences. Some consider them as consolidated placers but the weight of evidence seems rather to point to a hydrothermal origin. Pitchblende and uraninite although heavy, are brittle, friable minerals soluble in acid solution and neither has yet been found in significant amounts in modern placers. On the other hand the uranium minerals are found in association with iron sulphides in areas where the rocks were deformed by folding and faulting.

The most important deposit, the Pronto, occurs a short distance north of the Murray fault, a major structure which, according to Collins* has been traced for some 115 miles eastward from Echo River in Bruce Mines area to lot 5, concession II, Hyman Township.

*Collins, W. B., North Shore of Lake Huron, Geol. Surv. Can.
Mem. 143, 1929

As there is a large area of Bruce Series rocks in Porter township, several blocks of claims were staked here to cover areas of folding and faulting as shown on Geol. Surv. Can. map 291A "Kapanola Sheet" which lie north of the presumed trend of the Hurray fault.

PROPERTY, LOCATION, ACCESS

The Hunter Lake Group consists of 25 claims:

870660, 70661
870688 to 70695 inclusive
871201 to 71205 inclusive
871206 to 71216 inclusive
871575
874480, 74481

These are located north and northeast of Hunter Lake in concessions I and II, lots 6 to 10, Porter Township and lie about 8 miles due north of the village of Kapanola on the Canadian Pacific Railway and Highway No. 17 and about 45 miles west of Sudbury.

The property may be reached directly by air from Sudbury where Austin Airways provide Sorensen, Beaver or Cassano service. The water route from Agnew Lake, which is accessible by road, involves a portage of 50 chains into the west end of Hunter Lake.

A good-sized cabin is situated on the north side of the narrows in Hunter Lake (may be rented from _____ of Moxerrow Station).

SURVEY PROCEDURE

Control for the surveys was established by cutting north-south lines every 500 feet on which chainage stations were made at 100-foot intervals.

Radiometric observations were made every 50 feet with an Electronic Associates model EA 155 with continuous headphone observations between stations. Readings are shown in counts per minute.

GEOLOGY

Except for occasional sills or dikes of quartz diabase the strata are underlain entirely by sediments of the Bruce Series.

Table of Formations

Recent and Pleistocene:

Swamp, sand and boulders

Late Precambrian:

Killarney:

Quartz diabase

Bruce Series:

Serpent quartzite (B5)
Keppela recrystallized calcareous silt, magnesian limestone (B4, B5)
Bruce conglomerate (B2)
Mississagi quartzite (B1)

The greater part of the group is underlain by quartzites belonging to the Mississagi or Serpent formations. These may be differentiated only by stratigraphy as they are generally both recrystallized white feldspathic quartzites. Locally the Mississagi particularly is stained pink or red by slight amounts of hematite or rarely may have a greenish cast. Occasionally the Serpent quartzite appears as a slightly metamorphosed sandstone.

The Bruce conglomerate is best developed in the eastern portion of the group where it appears as a rusty-weathering greywacke containing rounded fragments from small pebbles of quartz up to

THIS CONTENT

large boulders 2 or 3 feet in diameter of gray granite or syenite. In several places outcrops of greywacke, identical with the matrix of the conglomerate, occur without visible fragments. These have been mapped together with the conglomerate.

Minor amounts of fine-grained, dark grey recrystallized calcareous silt with occasional narrow beds of buff-weathering magnesian limestone occur northeast and south of Hunter Lake.

STRUCTURE

In general the bedding of sediments strikes in a northeasterly direction and dips steeply from 75° to the south to vertically. Locally southeasterly strikes may be found which, with drag-folding observed in calcareous silts, indicate the presence of minor folds.

According to mapping by Collins and Quirke (Geol. Surv. Can. map 291A) the Hunter Lake group covers the west end of a syncline some 3 miles in length. The southeasterly limb of this syncline has been partly truncated by a northeasterly trending strike fault. The trace of this fault is indicated in S74481 by a strong zone of shearing lying between conglomerate and Serpent quartzite.

In the western portion of the claim group a second shear zone trends slightly north of east across S71212 indicating a probable fault contact between conglomerate to the south and Mississagi quartzite.

RADIO-METRIC SURVEY AND URANIUM POSSIBILITIES

As shown on the accompanying map rate-meter readings indicate a background count of about 200 per minute.

In claims S71215, 71215, 71212 and 71211, however, counts range

from 400 up to 550 per minute along a zone some 3,500 feet in length and up to 200 feet in width.

This anomaly coincides with the faulted contact mentioned above and is characterized by much rust, both in the conglomerate and the quartzite, which extends to 100 feet on either side of the fault. In the quartzite also are numerous rusty quartz veins some containing hematite indicating that there has been considerable fracturing in the neighbourhood of the fault. The shear zone may be observed between lines 45x and 48x where the zone appears to be about 10 to 15 feet wide. The central portion of the shear is covered by a shallow depth of soil. Further east the shear enters a shallow drift-filled valley but it is indicated on line 42x by a rusty shatter zone in conglomerate on the south side of the valley. To the west it trends toward a swamp. The high readings on the west boundary of 871215 on lines 60 and 63W may indicate the extension of the radioactive zone. Near line 48x the shear dips 75° to the south.

Three grab-samples were taken from this zone as indicated on the accompanying map. Chemical analyses by Bell Laboratories gave the following returns:

Sample No. 143 - .009% U_3O_8

439 - .018% U_3O_8

440 - .016% U_3O_8

These values are low but they indicate that the radioactive element is uranium and not thorium and as they occur near a structure of considerable extent they may be significant. As mentioned in the introduction surface samples from the Pronto returned only low values. This condition is considered as due to leaching by acid solutions formed by oxidation of iron sulphides which occur with the uranium minerals. The same

condition may occur here as it was found in another part of the area that finely-disseminated pyrite was responsible for the rust.

The Hunter Lake occurrence is quite unlike the Blind River deposits as the radioactivity is in sheared boulder conglomerate or quartzite at the presumed top of the Mississagi formation not in quartz-pebble conglomerate near the bottom of this formation as at Blind River. As noted earlier however, the writer considers the Blind River deposits to be of hydrothermal origin. If that is so, then there is no reason why the quartz-pebble beds should be the only host-structures for uranium mineralization.

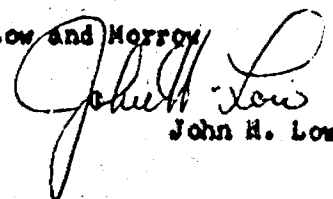
CONCLUSIONS AND RECOMMENDATIONS

It is considered that the radioactive zone in S71212 warrants further investigation. As there is no way of knowing to what extent or to what depth leaching may have occurred in a structure of this type diamond drilling would appear to be the best method of determining conditions at depth. It is recommended therefore that several short holes be drilled from south to north across this zone. With an angle of -45° these holes should be about 300 feet long. If encouragement is obtained from this drilling then the whole anomaly zone from line 33 $\frac{1}{2}$ to 63 $\frac{1}{2}$ should be tested with closely spaced holes.

In claim S74421, at the extreme eastern end of the property, shearing and rust occur. This zone is somewhat similar to that discussed above but no abnormal radioactivity was observed. It is suggested however that this area be more closely examined.

Respectfully submitted,

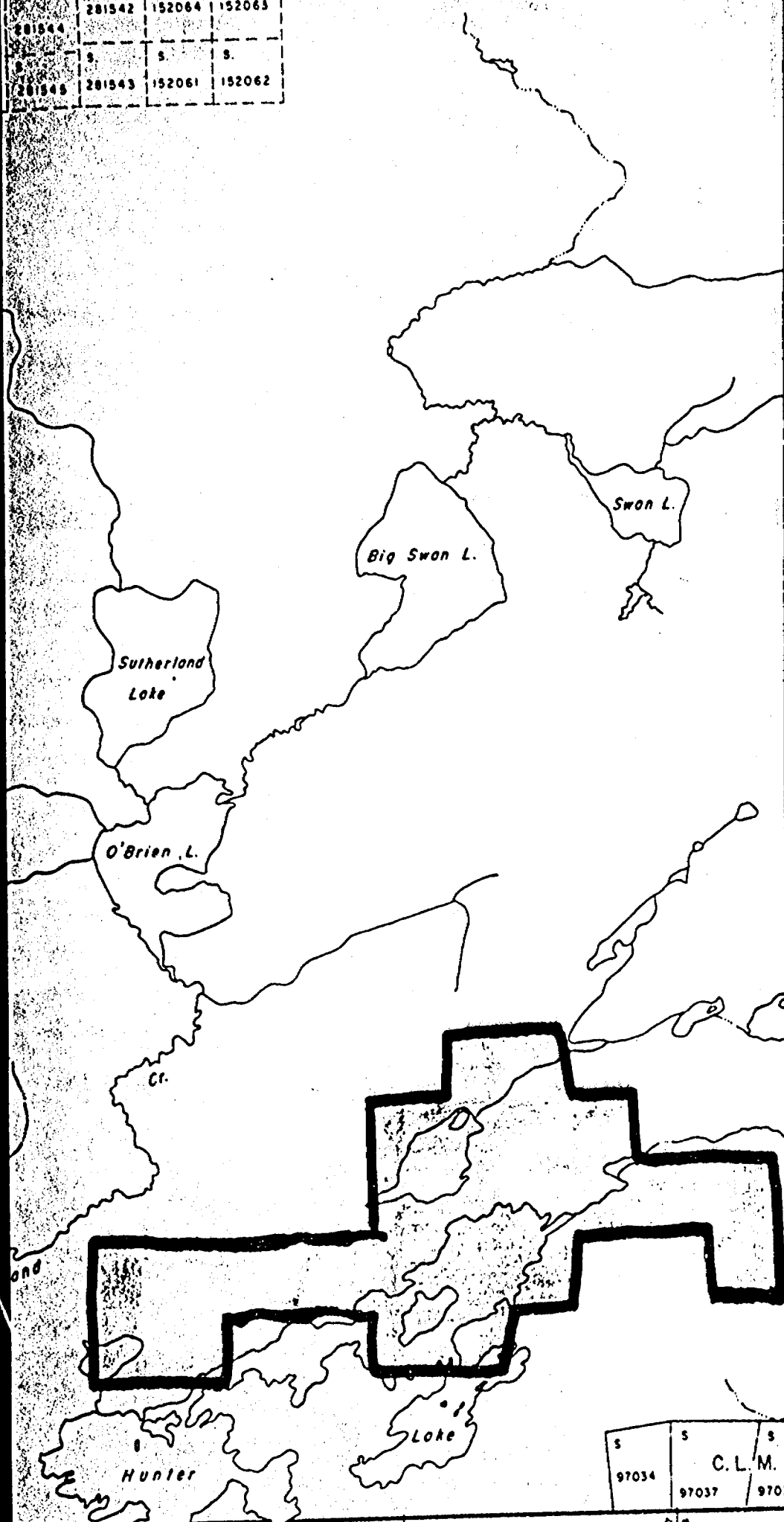
Gardiner, Low and Morrow


John H. Low

Toronto, Ontario
August 16, 1954

L.A. 69 for Surface Rights Only

S	S	S	S
281544	281542	152064	152063
S	S	S	S
281545	281543	152061	152062



see File E 4pl. 11d.

LEGEND

- RESERVED LAND FOR SURFACE RIGHTS ONLY
- LAND OF OCCUPATION
- LAND SALES
- RESERVED LAND
- RESERVED
- RIGHTS ONLY
- RESERVED RIGHTS ONLY
- ROADWAY & ROUTE NO.
- BOUNDARIES
- BOUNDARY LINES
- BOUNDARY FOR MUSKEG



only with summer resort locations or when space

TOWNSHIP OF
PORTER

DISTRICT OF
 SUDBURY
 SUDBURY
 MINING DIVISION

SCALE : 1 INCH = 40 CHAINS (1/2 MIL)

V.T. JUNE/72 PLAN NO. **M.I.C**

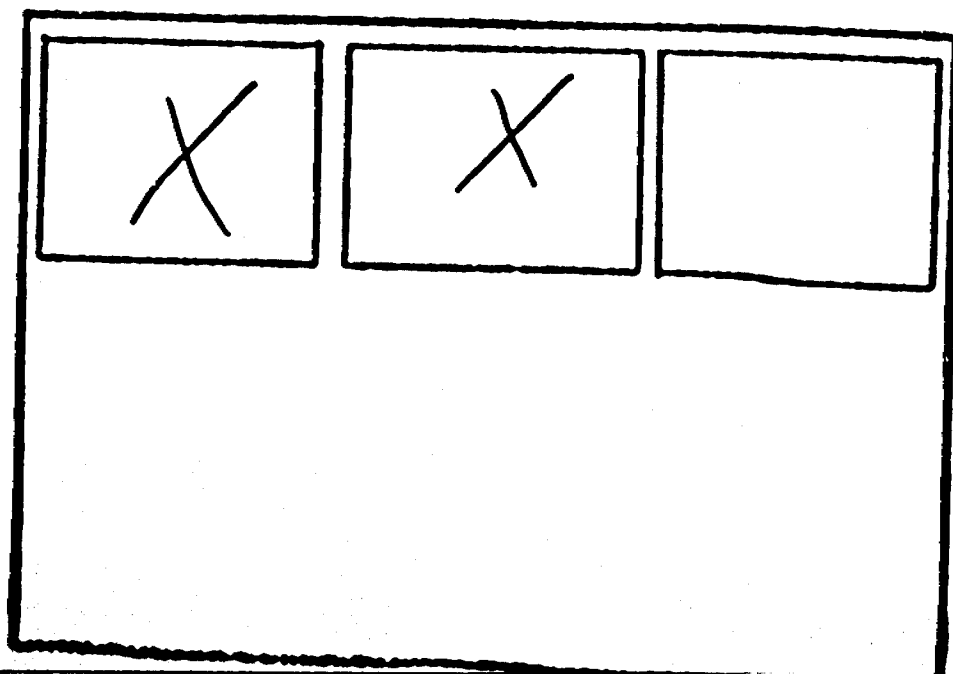
BALDWIN TR.

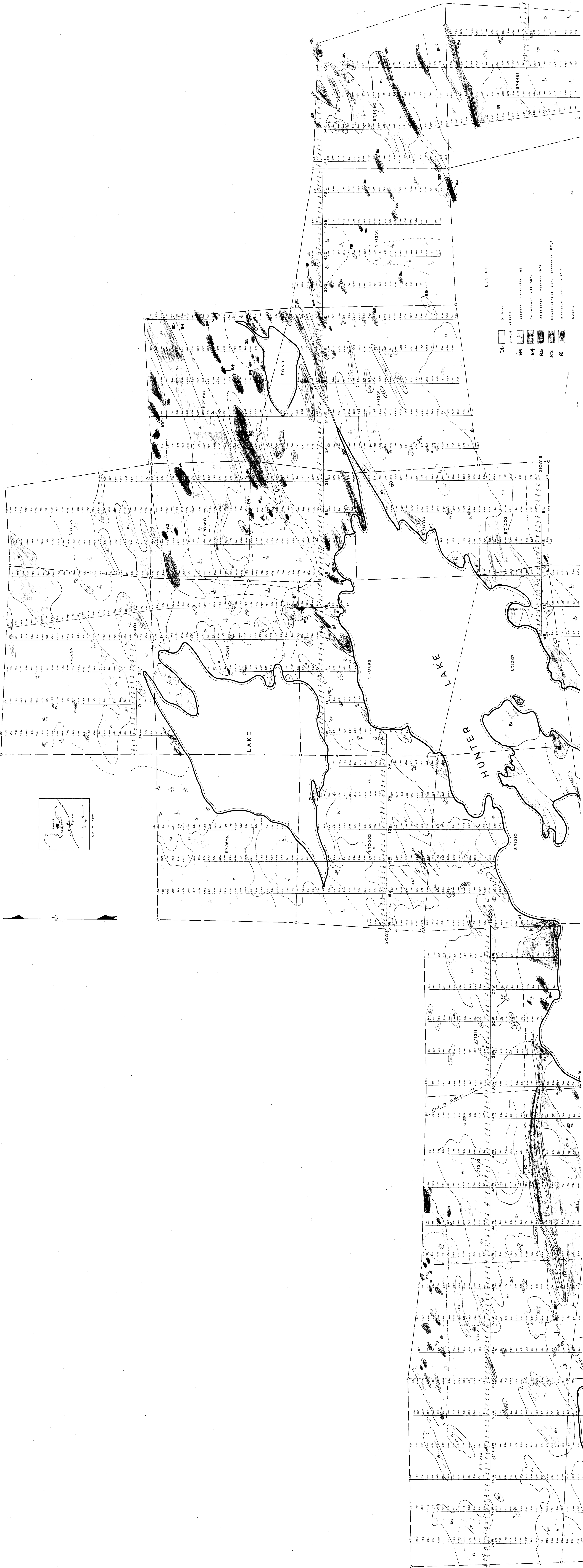
ONTARIO
 MINISTRY OF NATURAL RESOURCES
 SURVEYS AND MAPPING BRANCH

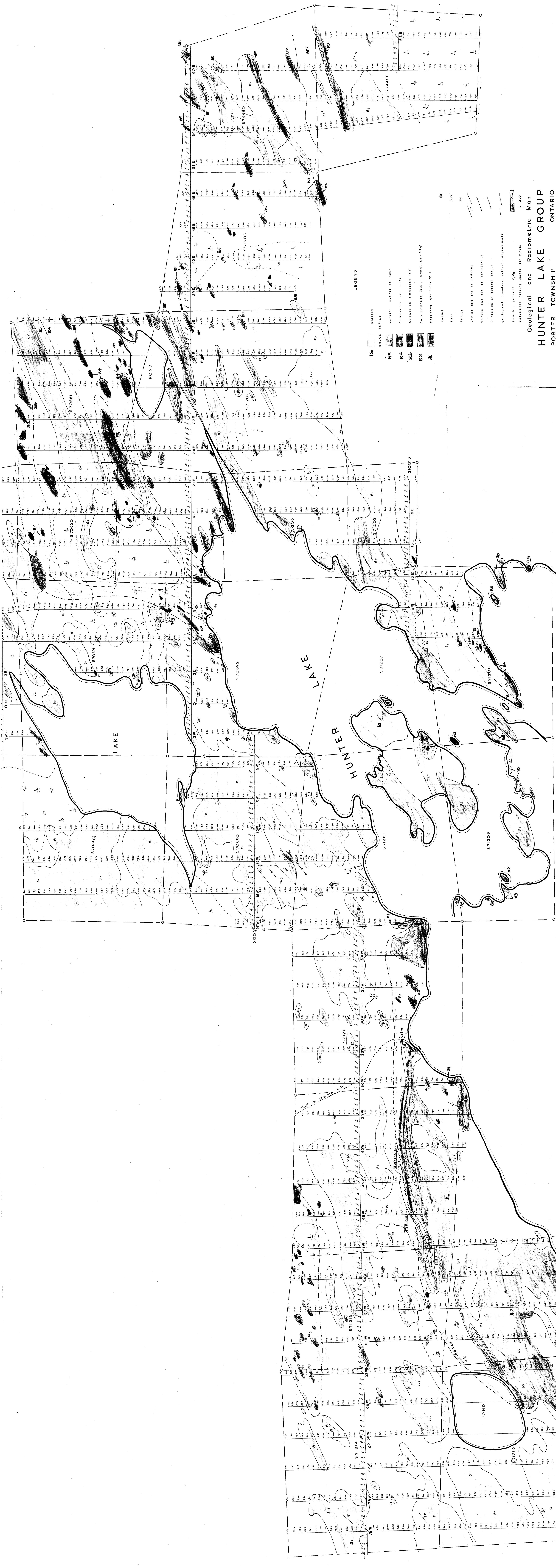
SEE ACCOMPANYING
MAP(S) IDENTIFIED AS

PORTER-0025 #1 (2 FRAMES)

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







LEGEND

- D₅ BRUCE SERIES
- B5 SEVERN GRANITE (B5)
- B4 CHOCOMAQUAN (B4)
- B2 MONTGOMERY LIMESTONE (B2)
- B1 CANTON-VERMILION (B1), GUYANASIS (B1A)
- SWAMP
- RAIL
- PROFILE
- STRIKE AND DIP OF BEDDING
- STRIKE AND DIP OF UNCONFORMITY
- DIRECTION OF GROUND WATER
- GEOLOGICAL BOUNDARY, SETTING APPROXIMATE
- SWAMP, APPROX. U.S.
- EXTENT OF GROUND WATER, PER. MINIMUM

Geological and Radiometric Map
HUNTER LAKE GROUP
 PORTER TOWNSHIP
 ONTARIO

Scale: 1 inch = 200 feet

GARDINER, LOW & MORROW
 TORONTO