G E O L O G I C A L   R E P O R T

BORDER GROUP

STOUGHTON TOWNSHIP

ONTARIO

NUFORT RESOURCES INC.

17 June 1981

W. G. Wahl Limited

W. G. WAHL LIMITED
CONSULTANTS: GEOLOGY - GEOPHYSICS
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17 June 1981

Mr. J. A. Harquail
President
Nufort Resources Inc.
Suite 1107
330 Bay Street
Toronto, Ontario
M5H 2S8

RECEIVED
JUN 26 1981
MINING LANDS SECTION

Dear Mr. Harquail:

Submitted herewith is our report entitled:

GEOLOGICAL REPORT
BORDER GROUP
STOUGHTON TOWNSHIP
ONTARIO

NUFORT RESOURCES INC.

The geology of the Border Group consists of a complex sequence of interbedded intermediate to basic metavolcanics and cherty metasedimentary rocks all of which are Precambrian in age and have been intensely sheared.

The gold occurrences previously reported by Miller, 1907 were located and sampled during the course of the geological survey. These occurrences were found to be associated with pyritic-graphitic shear zones trending south-easterly and which outcrop at several locations on the property along the south shore of Lake Abitibi. It is thought that these occurrences are the mappable expression of geophysical anomalies C-13 and C-9 (W. G. Wahl Limited report dated 11 May 1981) which may be faulted extensions of each other. By extension it is felt that similar previously reported electromagnetic VLF anomalies represent similar pyritic-graphitic shear zones and as such should be further defined by diamond drilling.

It is also recommended that in order to further define the known occurrences, trenching should be undertaken on some of the zones as weathering tends to decrease metal content of exposed rock. This can be achieved by cleaning out existing trenches, which are water or mud filled, and blasting others. The full potential of the area can then be realized by more complete geochemical studies, both conventional assays and whole rock analysis. The advantage of lithogeochemical methods is being able to unravel and separate various rock units and then pay attention only to those of utmost interest.

INTRODUCTION

Geological mapping of the project area, located in Stoughton Township was undertaken for Nufort Resources Incorporated by W. G. Wahl Limited during the period May 22-29, 1981. All field work was carried out by B. J. McKay, B. Sc., assisted by D. Laudrum and R. Glass.

LOCATION AND ACCESS

The project area is located in the east-central section of Stoughton Township. Stoughton Township is located on the boundary between Ontario and Quebec on the south shore of Lake Abitibi, approximately 40 miles east of Matheson, Ontario.

The property is accessible via concession road in Roquemaure Township on the Quebec side of the border, which passes through the village of Roquemaure. Roquemaure is approximately 12 miles south and 5 miles west of La Sarre. From the end of this road which ends a few yards from the border, there is a trail leading north to Lake Abitibi along which a canoe can be readily transported.

Jensen, 1972, reports that "a gravel road extends north from Highway 101 near the western boundary of Marriot Township (immediately south of Stoughton). This road leads to Lake Abitibi and provides access to the western part of Stoughton Township."

PHYSIOGRAPHY

The property is covered extensively by birch and tag alder, 10-12 feet in height, which grew following logging operations. Near the shore, black spruce, poplar, birch and pine in excess of 30 feet in height can be found. Elsewhere, throughout the property a number of beaver ponds, gullies, streams and associated bogs and swamps occur.

PREVIOUS WORK

During the exploration seasons of 1905 and 1906 several showings of gold and minor chalcopyrite were found along the south shore and on several of the islands of Lake Abitibi. Several trenches were put down on gold-bearing quartz-calcite veins and pyritic feldspar porphyry dikes (Miller, 1907).

Two of these trenches were found and sampled during the 1981 survey.

In 1971, the Patino Mining Corporation conducted an airborne survey, electromagnetic and magnetic, over Stoughton Township as part of a much larger survey. The only follow-up work involved ground magnetic, electromagnetic surveys and diamond drilling on one anomaly located on a tributary of the Mattawasaga River, about 5 miles south of the project area.

GEOLOGY

Introduction:

All the bedrock in the project area is Precambrian in age and consists of intermediate and felsic volcanics intercalated with thin units of cherty rhyolite and graphite. All units have undergone lower green schist facies of metamorphism (Jensen, 1976). A few feldspar-porphyry dikes intrude the volcanic rocks. Metamorphic effects at the contacts are higher grade than the volcanics (Jensen, 1976).

The rocks in the project area are located on the northern limb of an east-west trending, west plunging syncline, the axis of which passes through the southern part of Stoughton Township, 4 miles from the property. Overall, the project area is located in the lower section of a stratigraphic sequence some 70,000 feet thick. This lower section is called the Stoughton-Roquemaure Group, and is overlain by the Kenojevis and Blake River Groups (Jensen, 1976). Local structure consists of one set of shear zones, trending southeasterly, associated subparallel fractures and a second fracture pattern approximately perpendicular to the former. The main shear zones are confined to cherty horizons. The fracture sets may or may not be filled with quartz and carbonate.

Jointing, evenly spaced at approximately one centimetre was found in one cherty horizon on an island near the western end of the property, the altitude being 277° with a dip of 73°N.

Lithogeochemical investigations by Jensen have classified the units as tholeiitic and komatiitic volcanics which, due to alteration, are commonly classified in the field as "dacites" and "andesites".

Thirty-seven rock samples were taken during the course of the survey as were twelve channel samples for assay. Location of rock samples are shown on Figure 1 and assay locations are shown on Map 1. Those marked with an asterisk (*) indicate samples analyzed by total burn in order to correctly identify the respective rock unit.

Precambrian:

i) Intermediate Volcanic Rocks

The intermediate volcanic rocks, designated by rock unit 2 are light blue-grey and green to dark green, fine to medium grained dacites and andesites.

They occur as tuff, volcanic breccia and pillows with pillowed lava being the most abundant. Thickness of pillowed units vary from 6 feet to tens of feet. Individual pillows range in size from 6 inches to 6 feet in diameter with a large proportion of largest pillows being distorted into hour-glass and mattress shapes.

The most variation occurs in the dacitic units, while andesite units have more uniform pillows, averaging 3-5 feet in diameter.

On wave washed glaciated outcrop, the pillows are dark green and have fine grained moderately to deeply weathered interpillow contact zones. On weathered surfaces alteration is brownish green and varies in thickness up to 1 inch. Locally, pillow intersections are filled with quartz and carbonate. In one locality on the western end of the property, a combination of weathering and ice movement have removed individual pillows from the outcrop.

The pillowed unit occurs interlayered with units of tuffaceous lava, which has the same colours as the pillows. Contacts are gradational where present and are hard to distinguish because of limited outcrop.

Capping the massive and pillowed units are units of volcanic breccia. This unit consists of irregular shaped pyritic dacitic pillow fragments less than 15 inches in diameter in a fine grained chloritic andesite matrix which is locally impregnated with carbonate. Because of its poorly consolidated nature, the matrix is readily weathered, resulting in a very jagged appearance of the outcrops. The pillow fragments protrude from the outcrops as much as 6 to 8 inches.

Pyrite occurs as fresh and tarnished cubes, minute clusters and small veinlets throughout these units. Specks of chalcopyrite are also present. Total sulphide content is less than 2%.

ii) Felsic Volcanic Rocks

Felsic volcanics, designated by rock unit 3, consist of a few small exposures of rhyodacitic to dacitic volcanic breccia (pillows?) on the eastern edge of the property and a few beds of cherty rhyolite interlayered with the intermediate unit discussed above.

The volcanic member weathers light green to white and on a fresh surface blue green to white. Texturally it is very fine to medium grained. The pillows range in size from 3 inches to 6 feet in diameter with some flattening occurring in the largest. Rims are strongly chloritized and at intersections quartz and cabonate occur. Locally, quartz and carbonate filled fractures, some with epidote alteration in the host rock, can be found.

Scattered throughout the unit are transparent and milky quartz eyes 1/8 - 1/4 inch in diameter. Pyrite occurs as cubes, and rarely exceeds 1% except along some fractures where concentrations may reach 3-5%. In these cases the pyrite occurs as enriched, elongated clusters up to 2"x1". The host to these clusters is a very fine grained, brownish grey, siliceous dacite.

The latter member within this unit consists of intercalated beds of finely laminated cherty rhyolite, graphite and minor argillite. Individual cherty beds, bluish grey and very fine grained, rarely exceed 3-4" in thickness, while graphite and associated argillite occur as very narrow (< 1/8") discontinuous beds. The overall thickness of these units range from a few inches to 6 feet.

Some of these units are relatively undisturbed while others are severely fractured and altered. Alteration in several of these zones is so intense that all original texture and minerology has been changed. Present material consists of rusted zones of sericite, graphite, argillite, pyrite and reworked (possibly secondary) coarse-grained quartz. Pyrite, which is hosted by graphite-argillite beds, occurs as clusters 1-2" long and ½-1½" wide, while pyrite, hosted by 2-5" thick quartz veins, occurs as narrow (1/16") rusted veinlets and scattered specks.

It is in these severely rusted zones that trenches were found and subsequently sampled.

iii) Felsic Intrusive Rocks

A few exposures of felsic intrusives, designated as rock unit 5 occur in the central and western sections of the project area.

The feldspar porphyritic rock which occurs as dikes 3 to 40 feet wide, weathers white to grey and on fresh surface varies from white to pink. The plagioclase phenocrysts range in size from 1/16 to 1/4" and are completely to partially altered to saussaurite. Locally, milky white to blue quartz eyes, 1/16 to 1/8 inch, occur. The phenocrysts form 5 to 45% of the rock and are set in a very fine grained quartz-feldspar matrix.

A few scattered specks of pyrite are present throughout the unit.

The dikes are mainly vertical and appear to be subparallel to enclosing volcanic rocks. Some of the dikes appear in shear zones and are apparently later as there are no effects of shearing on the dikes.

It is believed the dikes are associated with the granitic batholith on the north shore of Lake Abitibi (Jensen, 1976).

Cenozoic:

Pleistocene and Recent

Pleistocene and Recent deposits consist of boulders (up to 8 feet across), gravel, sand and varved clays deposited during advance and retreat of latest periods of glaciation. The boulders range in composition from felsic to mafic. Active erosion along the shore has exposed 30-35' banks of brown and grey varved clay, sand and gravel.

Glacial striae indicate ice movement 5 to 10 degrees east and west of due north.

ECONOMIC GEOLOGY

Previously trenched and several un-trenched shear zones were channel sampled and analysed for gold, silver and copper. Locations are shown on Map 1. Samples are labelled H-1 to H-10 inclusive, except for H-5 which consists of three samples: A, B and C.

A brief description of each is tabulated in Table I. Gold, silver and copper assay results are shown in Table II.

CONCLUSIONS

The trend of outcropping pyritic shear zones, with minor graphite, corresponds to the northern flank of southeasterly trending VLF conductors (W. G. Wahl report, 11 May 1981). Similar anomalies to the south are believed to be caused by pyritic-graphitic shear zones.

The assay results show that channel sampling does not confirm the results from previously assayed grab samples. Factors contributing to this discrepancy are the badly deteriorated nature of the shear zones and being unable to locate exact position of previous samples.

In summary, the following factors can be said of the geology of the Border Group:

1) Gold-bearing veins occur within or near porphyry bodies;
2) Quartz-feldspar porphyry occur within a narrow stratigraphic

TABLE I

SAMPLE #	LOCATION (approx.)	STRIKE	WIDTH (inches)	DESCRIPTION
H-1	L44W - 3+00S	320°	18	island west edge of property; pyrite shear zone.
H-2	L40W - 8+00S	320°	42	trenched, shear zone at base of pillow sequence
H-3	L32W -16+00N	310°	36	3 narrow shear zones separated by tuff at north contact of 3' porphyritic dike.
H-4	L28W -16+00N	315°	15	rusted shear zone
H-5A	L 4W -12+00N	284°	58	northern section of 100" wide pyritic shear zone
H-5B	"	290°	42	southern section
H-5C	"	290°	48	narrow zone, 15' S of sample H-5B
H-6	L 4W -13+00N	284°	21	at north contact of 21' porphyry dike
H-7	L 2W -12+00N	290°	23	pyritic shear zone
H-8	L 0 -12+00N	310°	13	trenched, pyritic shear zone
H-9	L20E -15+00N	33°	8	pyritic shear zone
H-10	L18W -18+00N	332°	12	on island, pyritic shear

TABLE II

ASSAY RESULTS*

SAMPLE	Au (oz/ton)	Cu (%)	Ag (oz/ton)
H-1	0.001	0.02	Trace
H-2	0.003	0.01	Trace
H-3	Trace	Trace	Trace
H-4	NIL	0.01	Trace
H-5A	Trace	0.01	NIL
H-5B	NIL	0.01	NIL
H-5C	0.005	0.01	NIL
H-6	0.025	0.01	NIL
H-7	Trace	0.09	NIL
H-8	NIL	0.02	NIL
H-9	0.002	0.02	Trace
H-10	NIL	0.02	Trace

*Certificate of Analysis appended.

interval;

3) Multi-phase deformation; and
4) Conformable sedimentary chert-carbonate (?) beds.

All of the above factors have been considered by Karvinen, 1979, in his proposed model for gold deposits of the Timmins area.

RECOMMENDATIONS

It is recommended that trenching be undertaken on some of the shear zones as weathering tends to decrease metal content of exposed rock. This can be done by cleaning out present trenches and blasting others. The full potential of the area can then be realized by more complete geochemical studies, both conventional assays and whole rock analysis. The advantage of lithogeochemical methods is being able to unravel and separate various rock units and then pay attention only to those showing potential.

Also, the lack of exposure on the southern geophysical anomalies should be checked by diamond drilling, as the geophysical anomalies on the shore line can be readily explained.

All of which is respectfully submitted.

Sincerely yours,
W. G. WAHL LIMITED

B. J. McKay, B.Sc.
Project Geologist

BJM/pl

D. G. Wahl, P.Eng.
Consulting Engineer

X-RAY ASSAY LABORATORIES LIMITED

1885 LESLIE STREET, DON MILLS, ONTARIO M3B 3J4

PHONE 416-445-5755 TELEX 06-986947

CERTIFICATE OF ANALYSIS

TO: W.G. WAHL LIMITED
ATTN: B.J. MCKAY,
350 BAY ST., 10TH FLOOR,
TORONTO, ONT.
M5H 2S6

CUSTOMER NO. 601

DATE SUBMITTED
9-JUN-81

REPORT 11511

REF. FILE 7414-B3

12 ROCKS

WERE ANALYSED AS FOLLOWS:

	UNITS	METHOD	DETECTION LIMIT
AU	OZ/TON	FA	0.001
CU	%	XRF	0.010
AG	OZ/TON	FA	0.100

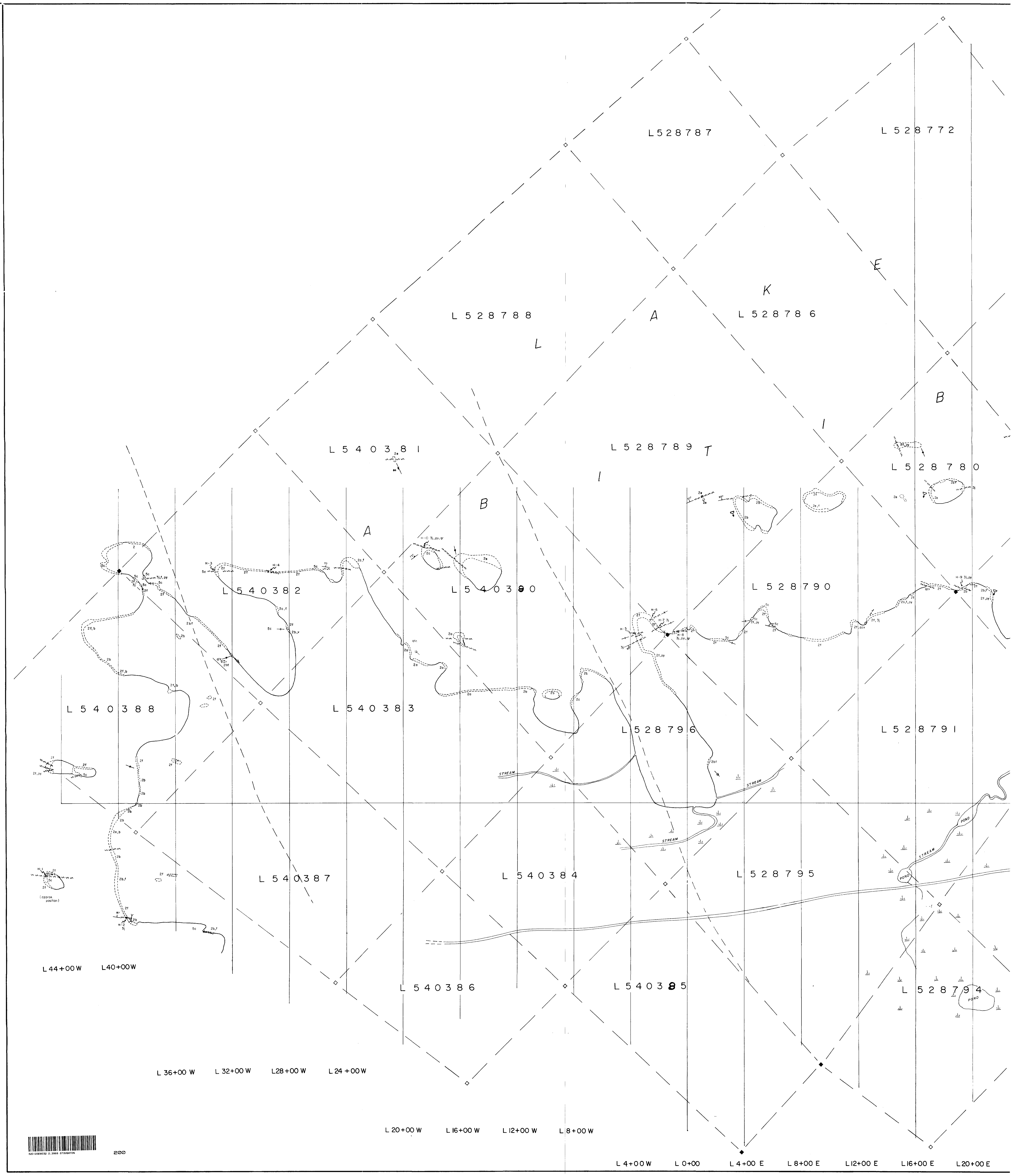
DATE 15-JUN-81

X-RAY ASSAY LABORATORIES LIMITED

CERTIFIED BY ....

X-RAY ASSAY LABORATORIES 15-JUN-81 REPORT 11511 REF. FILE 7414-P3 PAGE 1

SAMPLE	AU OZ/TON	CU %	AG OZ/TON
H-1	0.001	0.02	TRACE
H-2	0.003	0.01	TRACE
H-3	TRACE	TRACE	TRACE
H-4	NIL	0.01	TRACE
H-5A	TRACE	0.01	NIL
H-5B	NIL	0.01	NIL
H-5C	0.005	0.01	NIL
H-6	0.025	0.01	NIL
H-7	TRACE	0.09	NIL
H-8A	NIL	0.02	NIL
H-9	0.002	0.02	TRACE
H-10	NIL	0.02	TRACE



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L 12+00 E
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L 20+00 E

200

LEGEND[a]

CENOZOIC
QUATERNARY
PLEISTOCENE AND RECENT
sand, gravel, and clay — Unconformity

PRECAMBRIAN
EARLY PRECAMBRIAN (ARCHEAN)

FELSIC INTRUSIVE ROCKS [5]
- 5 Unsubdivided
- 5c Feldspar porphyry dikes
- 5d Hornblende-feldspar porphyry dikes
- 5f Lamprophyre

Intrusive Contact

MAFIC AND INTERMEDIATE INTRUSIVE ROCKS [4]
- 4a Gabbro and quartz gabbro
- 4b Diorite

Intrusive Contact

METAVOLCANICS

FELSIC VOLCANIC ROCKS [3]
- 3 Unsubdivided
- 3a Massive rhyodacite and rhyolite
- 3e Rhyodacite and rhyolite breccia
- 3f Rhyodacite and rhyolite tuff
- 3i Rhyodacite and rhyolite with quartz phenocrysts
- 3j Cherty bedded rhyodacite and rhyolite
- 3n Rhyodacite and rhyolite dikes

INTERMEDIATE VOLCANIC ROCKS [2]
- 2 Unsubdivided
- 2a Massive andesite and dacite
- 2b Pillowed andesite and dacite
- 2c Flow-top breccia and pillow breccia
- 2d Granular andesite (includes some diorite)
- 2e Andesite and dacite tuff-breccia
- 2f Andesite and dacite tuff
- 2g Andesite and dacite palogonitic (aquagene) tuff
- 2h Andesite and dacite with feldspar phenocrysts
- 2j Argillite and graphitic sedimentary rocks
- 2l Amygdaloidal andesite and dacite
- 2n Andesite and dacite feeder dikes
- 2v Variolitic and spherulitic andesite and dacite

MAFIC VOLCANIC ROCKS [1]
- 1 Unsubdivided
- 1a Massive basalt and andesite
- 1b Pillowed basalt and andesite
- 1c Flow-top breccia and pillow breccia
- 1d Diabasic basalt and andesite (includes some gabbro)
- 1e Basalt and andesite breccia
- 1g Basalt and andesite palogonitic (aquagene) tuff
- 1h Basalt and andesite feldspar porphyry
- 1n Basalt and andesite feeder dikes
- 1v Variolitic basalt and andesite

[c c c] Carbonatized rock

[a] This is basically a Field legend and may be changed as a result of subsequent laboratory investigations.

GEOLOGICAL AND MINING SYMBOLS

- Glacial striae.
- Small bedrock outcrop.
- Area of bedrock outcrop.
- Shear zone, strike and dip
- Fracture, dipping, vertical
- Lava flow; top (arrow) from pillows shape and packing. Side arrow is plunge.
- Jointing, dipping, vertical
- Trench
- Geological boundary, observed.
- Geological boundary, position interpreted.
- Geological boundary, deduced from geophysics.
- Fault; (assumed).
- Vein. Width in feet.
- Other road.
- Trail, portage, winter road.

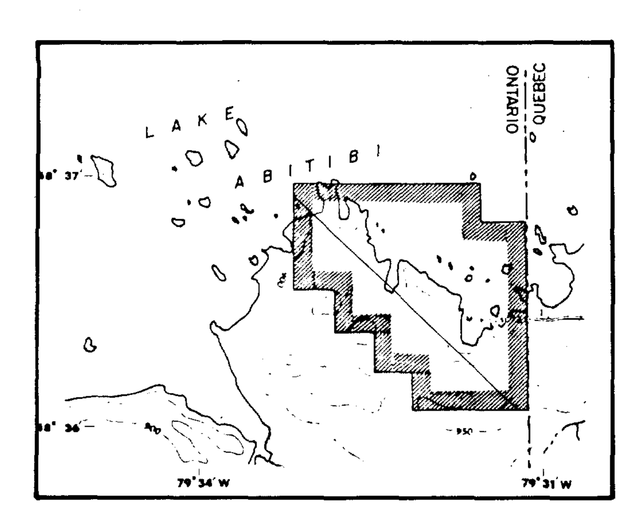
METAL AND MINERAL REFERENCE

Au	Gold	IF	Iron Formation
cp	Chalcopyrite	py	Pyrite
cv	Calcite veins	qcv	Quarts-carbonate vein
epv	Epidote veins	qv	Quartz vein
gr	Graphite		

X H-7 — Assay sample location and number

■ OBSERVED CLAIM POST

□ ASSUMED CLAIM POST



INDEX MAP
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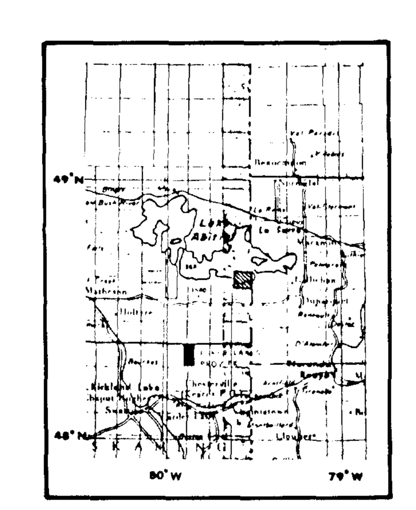

LOCATION MAP
1:2,000,000

NUFORT RESOURCES INCORPORATED		
BORDER GROUP	DRAWN BY: B.M.	DATE: MAY 1981
	TRACED BY: M.E.L.	DATE: JUNE 1981
GEOLOGY	N.T.S. 32-D-12	APPROVED
W.G. WAHL LTD. SCALE: 1" = 200'	DWG. No: 1	