NUFORT RESOURCES INC.

A Geophysical Interpretation of the "Border Group" Surveys Stoughton Township, Ontario

by John H. Ratcliffe, P.Eng.

Ground magnetometer, V.L.F.-E.M., horizontal loop-E.M. and geological surveys have been carried out over the Nufort Resources Inc. "Border Group" by W. G. Wahl Limited in 1981. While the results are somewhat inconclusive, several geophysical targets are present and should be tested by diamond drilling.

Details concerning the property location, claim numbers, dates of surveys, etc., are given in the three reports by W. G. Wahl Limited. This report is meant to provide an overview of the Wahl reports and suggest targets for future exploration.

The ground magnetometer and V.L.F.-E.M. surveys were carried out during the latter part of February and early March, 1981. Based on the strength of the V.L.F. anomalies, it was thought that a horizontal loop-E.M. survey would produce better definition of the land-based anomalies and aid in the selection of drill targets. This survey, done in May 1981, proved to be disappointing in that no viable conductors could be recognized through the surficial "noise". The geological mapping done at the same time revealed outcrop along the shore line of Lake Abitibi, and on the islands within the lake, with only a few exposures being noted inland.

The property apparently is underlain by intermediate to felsic volcanics with minor interbands of cherty (iron formation?), rhyolite and tuff, and narrow felsic dykes. Jensen (O.G.S. Report 173) reports

that the intermediate volcanics should more properly be described as basaltic to ultramafic in composition, with some of the flows being iron rich and others magnesium rich.

On this basis, it might be presumed that the iron rich flows would be distinguished by higher than average magnetic response such as that seen in the southern part of the property. The most continuous magnetic zone trends south-easterly from 5+00S, Line 36W to 20+00N, Line 48E. A third belt parallels the second belt, but is more broken up, and lies just offshore in Lake Abitibi.

One would assume that the V.L.F. anomalies would follow the same trend as the magnetics and would therefore represent interflow contacts or perhaps the individual horizons themselves, but such is not the case. The V.L.F. anomalies appear to cross the magnetic formations at acute angles. In this regard it should be noted that, almost without exception, a V.L.F. anomaly arises whenever a coastline is crossed. Thus many of the V.L.F. anomalies may simply represent undulating bedrock topography rather than formational contacts or structures. On the other hand, it is possible that the undulating bedrock topography could be caused by changes in bedrock composition and selective erosion.

In at least three instances, there is a direct correlation between known shear zones and V.L.F. anomalies, so it is possible that the stronger V.L.F. anomalies inland may represent shear zones cutting across the volcanic flows. The intersection of such a shear zone with an interflow contact could provide a dilation zone which might be of interest.

It should be noted that Jensen (O.G.S. Report 173, page 58) states that "The most favourable area for gold mineralization is located in the northern part of Stoughton Township". Minor gold values were obtained by Wahl's crew in 8 out of 12 samples sent for assay. It is therefore fair to assume that gold is present within the claim group.

A major north-easterly trending fault mapped by Jensen and by Wahl along the east side of a prominent bay of Lake Abitibi (claims 528778-779) is not defined by either the magnetics or the V.L.F. -- anomalies of both types cross the fault without interruption. A similar strong shear zone along the west side of a bay in the north-western corner of the claim group does terminate one magnetic anomaly, but a throughgoing magnetic zone further to the south is not affected.

There are several anomalous situations which require testing. The first is located on the south-west shore of a small island located at 11+50N on Line 16W where a negative magnetic anomaly of -4013 gamma - by far the lowest on the whole survey - is coincident with a V.L.F. anomaly. While it is true that the V.L.F. anomaly may be caused by the island alone, there is shearing present and the strength of the negative magnetic anomaly is suggestive of pyrrhotite. What is not known is whether the magnetic anomaly could be caused by culture such as the casing of an old diamond drill hole. It is believed that such a condition is unlikely, but prior to testing by drilling a search for cultural debris should be made.(Proposed Hole B-4)

A second anomaly combination which deserves consideration is located at 19+00N, Line 20E. Here a strong, sharp V.L.F. anomaly is directly coincident with a positive local magnetic anomaly within a regional high. This would normally be considered as representative of an island or reef, but no island is shown on Wahl's geophysical or geological maps. However, Jensen's map does indicate a tiny island in this general area. The rocks on this island, and the adjacent islands, are classified as pillowed basaltic Komatiites, but the adjacent islands are relatively non-magnetic. If the V.L.F. anomaly is associated with an island, then the combination loses some of its allure, but the fact remains that there is a different magnetic signature in this location as compared to the island with the same rock types located some 200 feet to the north.(Proposed Hole B-6)

A similar V.L.F. - magnetic anomaly combination is found at 35+00N, Line 8W. Here, there are V.L.F. anomalies on either side of a local magnetic high. No islands are indicated on Wahl's maps, but again Jensen reports a tiny island in the general area. The rocks are basaltic Komatiites.

From the three foregoing examples, and the invariable association of V.L.F. anomalies with islands and shorelines, it may be assumed that the unexplained V.L.F. anomalies in Lake Abitibi are all related to islands and reefs. But then in the extreme north-eastern corner of the claim block (claim 528772) a shear zone is reported by Jensen on an island, and this shear zone appears to be directly associated with a V.L.F. anomaly extending from 51+00N, Line 20E to 49+00N, Line 12E. This shear zone is in a black to dark green iron-rich tholeiitic basalt, but there is no particular

magnetic expression associated with it. There is a magnetic anomaly about 200 feet south of the shear zone near the top of the particular volcanic flow. The visible part of this shear zone is on an island which lies on the Quebec side of the Inter-provincial Boundary and is therefore off the Nufort property. As a result, it was not visited by Wahl's crew. This same island provides the major evidence for Jensen's south-westerly trending fault. The shear zone, of which the V.L.F. anomaly may be an expression, is normal to the fault, and the junction of the two shears, although a short distance off the property, should probably be examined for possible mineralization. If such an examination disclosed evidence of mineralization, a drill hole to test the V.L.F. anomaly would be in order. (Proposed Hole B-5)

The land-based V.L.F. anomalies are more difficult to categorize. Wahl's conductor C-7a, when subjected to Fraser Filter analysis, breaks down into two branches on Line 36W and Line 32W. Each of these branches, if extended along strike to the north-west (from claim 540387), is coincident with a shear zone, at least one of which may be traced geologically for about 4000 feet, as determined from Jensen's mapping. A shear zone of this length is quite a long structure and could continue for some distance. It is therefore quite possible that the conductive zones, called C-7a, C-7b, C-7c and C-8, which form a continuous chain across the entire claim group, could represent a major shear zone. The strongest magnetic anomaly (2215 gamma) on the property is found at 11+50W on the Base Line, and this coincides with the V.L.F. anomaly which may represent the major shear zone. This target would appear to be quite shallow (less than 20 feet deep) and should probably be drill tested. (Proposed Hole B-1)

Between Line 32E and Line 36E, conductor C-8 intersects with the major south-westerly trending "Jensen" fault zone near the location of a quartz carbonate zone containing gold as reported by Jensen. A drill hole designed to cut beneath 11+00N, 34+00E would test this interesting area. (Proposed Hole B-2)

Perhaps the most interesting conductor on the entire property is Wahl's conductor C-6. This conductor is remarkably uniform, strong, and linear over a distance of 3000 feet. It crosses Jensen's fault zone without any deviation whatsoever even though there is a change in magnetic character at this point. Conductor C-6, when extended to the north-west, disappears on Line 12E and then may reappear as conductors C-1a and C-1b. It appears to terminate about 400 feet west of the eastern boundary of the property. It is believed that the zone of primary interest for this conductor lies in the vicinity of Jensen's south-westerly trending fault. Thus the target area would lie beneath 37+50E on the Base Line. A strong (797 gamma), local magnetic anomaly is located at 38+50E on the Base Line so a hole designed to test all those features is suggested. (Proposed Hole B-3)

There are other interesting conductors within the claim group but it is suggested that the initial drilling programme based on the above anomalies will provide a measuring stick on which to proceed in the future.

From Jensen's map the volcanics apparently dip steeply to the south-west. All holes will therefore be drilled from south to north, and azimuth angles will be referred to the existing grid.

The following holes are recommended unequivocally:

D.D.H.	Collar N or S	Collar E or W	Azimuth Grid	Dip	Length	Target
B-1 (land)	2+00S	10+80W	N20°W	50°	400'	2215 gamma mag. and V.L.F. Anomaly C-7b
B-2 (ice) See B-2A (land location)	9+50N	32+80E	N35°E	50°	400'	V.L.F. C-8, minor mag. Jensen's Fault Mineralized Zone
B-3 (land)	1+50S	37+50E	N30°E	50°	500'	797 gamma mag. Jensen Fault, and C-6

- - - - - - -

The remaining holes are recommended providing the noted contingencies are met:

D.D.H.	Collar N or S	Collar E or W	Azimuth Grid	Dip	Length	Target and Contingencies
B-4 (ice) See B-4a (land location)	9+50N	16+00W	North	50°	400'	-4013 gamma mag. and V.L.F. Anomaly. Test for cultural features to explain mag. at 11+00N
B-5 (ice) (Check location of island shown 200' east of proposed collar to determine its true location)	49+50N	20+00E	North	50°	400'	V.L.F. anomaly over shear zone. Check shear zone and fault zone for mineralization.
B-6 (ice) See B-6a on island at 21+00N and drilled south.	17+50N	20+00E	North	50°	400'	V.L.F. and mag. anomaly. Check to see if on island or reef; if so, of lesser interest.

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This drilling programme will then consist of a total of 2500 feet, of which 1300 feet may be considered to be a firm commitment.

Respectfully submitted

(Sgd.) J. H. Ratcliffe / J.H.R.

John H. Ratcliffe, P.Eng.

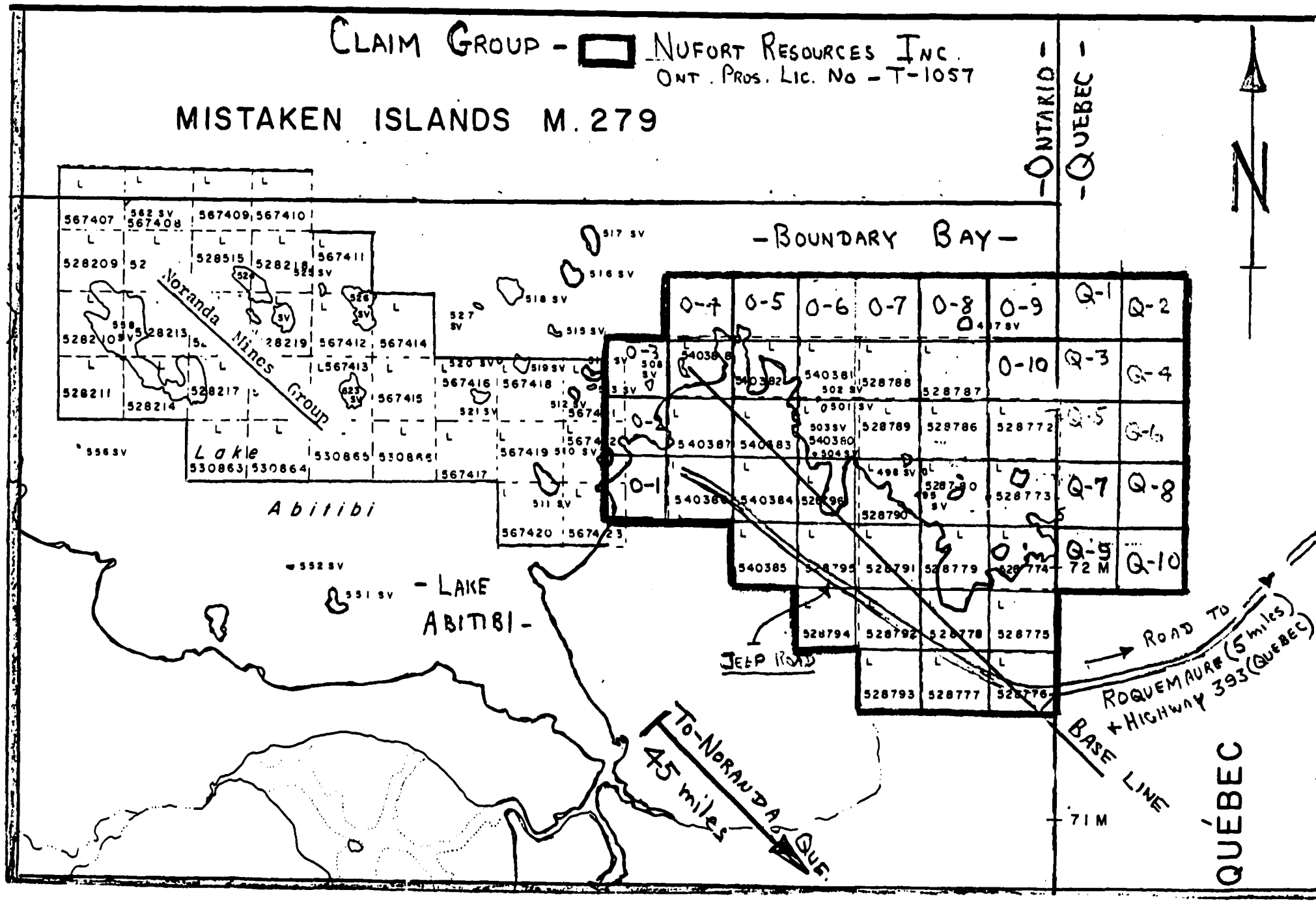
September 30, 1981

NOTE: Mr. Ratcliffe, in discussions with J. A. Harquail, Consulting Engineer, agreed to show alternate land locations for holes to be drilled from ice in the event ice conditions are unfavourable. These alternate locations are shown on the geophysical plan accompanying this report.

Maps Accompanying Ratcliffe Report

Map No. N-1 - Composite Plan showing Magnetic and V.L.F. Anomalies on Grid - Border Group - North Half - Scale 1 inch=200 Feet.

Map No. N-2 - Composite Plan showing Magnetic and V.L.F. Anomalies on Grid - Border Group - South Half - Scale 1 inch=200 Feet.



SCALE : 1 INCH - 40 CHAINS

FEET 0 500 1000 2000 4000 6000 8000

METRES 0 200 400 600 800 1 KM 2 KM

ACRES	HECTARES
40	16

— NOV. 20, 1981 —

TOWNSHIP

STOUGHTON

DISTRICT

COCHRANE

MINING DIVISION

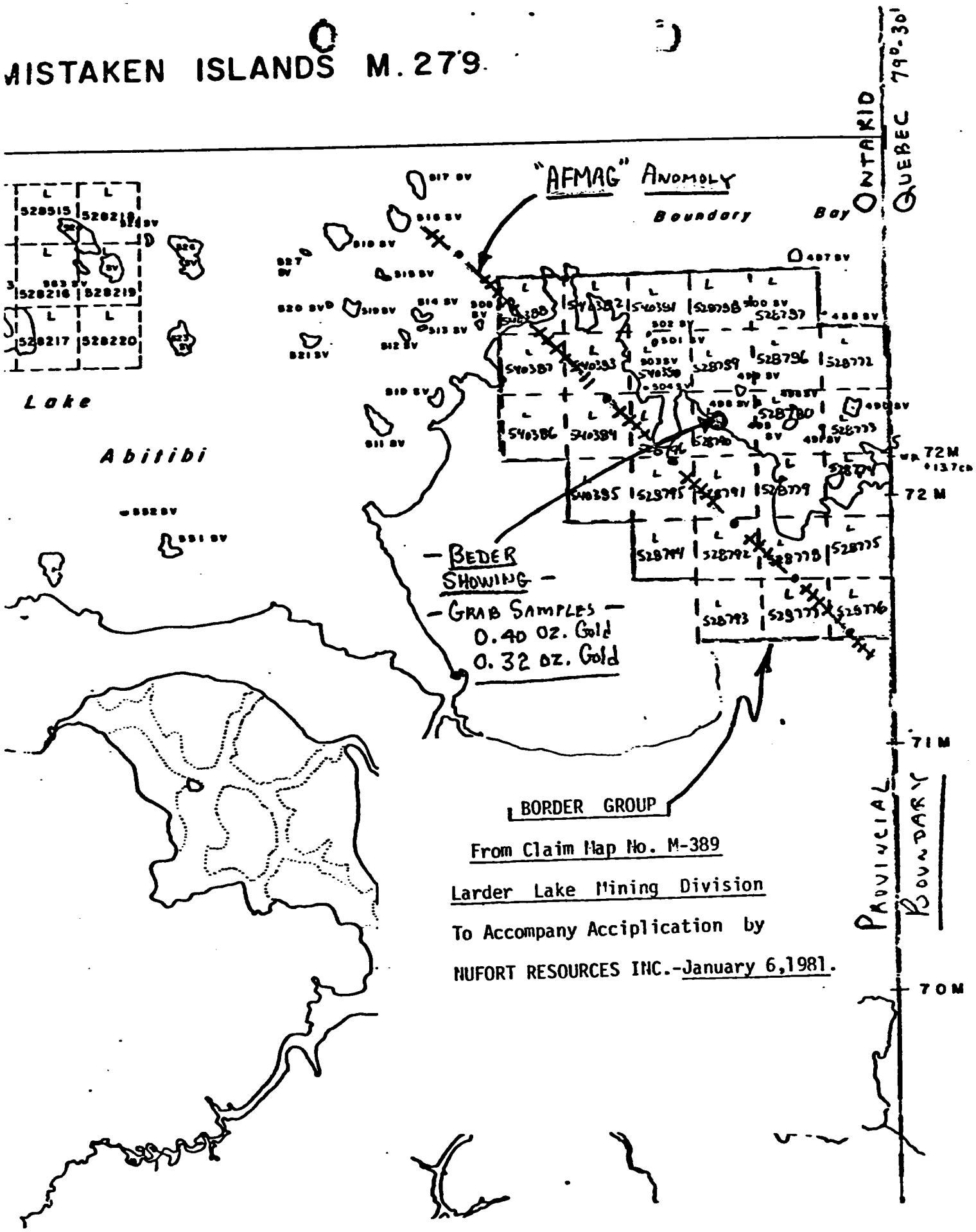
LARDER LAKE

Ministry of Natural Resources

Ontario Surveys and Mapping Branch

Date 12·74	Plan No.
Whitney Block Queen's Park, Toronto	M.389

ORDER-IN-COUNCIL



OM 48 - PE44-C-81

MEMO TO: J. A. Harquail DATE: March 18, 1982

FROM: W. MacRae

RE: Drilling results on the Nufort Resources Inc. Border Group

This report will discuss the additional information gained by drilling. Magnetometer and E.M. surveys were carried out by W. G. Wahl Limited from February to May, 1981. A comprehensive geological report was completed by W. G. Wahl Ltd. (B. J. McKay) in May, 1981 (Appendix I). The geological report covers all the background information relevent to this report.

Diamond Drilling

The diamond drilling was carried out by Hosking Diamond Drilling Co. Ltd. of Rouyn, Quebec from December 2, 1981 to January 22, 1982. A total of six holes were completed with a total footage of 2813.0 feet. A tabulation of the holes is in Table 1.

Table 1

Tabulation of Drill Holes

Hole No.	Location	Azimuth	Dip	Depth
1	37+50E/1+50S	96°	-52°	500.0
2	L0/11+50N	46°	-46°	459.0
3	10+80W/2+00S	46°	-52°	422.0
4	16+15W/9+50N	70°	-46°	400.0
5	L20E/17+30N	67°	-46°	467.0
6	32+60E/9+50N	95°	-48°	565.0

The logs are included as Appendix II and sections for each hole as Appendix III. A plan showing the drill hole locations and vertically projected geology is shown on Map 1 (in pocket).

Drilling Results

The drilling was carried out to test several EM and coincident magnetometer anomalies as well as a gold rich area outlined by sampling in the geological report.

No economic grade gold mineralization was encountered in the drilling but sub-economic values were obtained in holes B-81-2 and B-81-4. The two holes show very similar geological environments and may represent nearly the same stratigraphic units. Hole B-82-2 contains three narrow sub-economic sections; 0.04/3.4' at 25.6'; 0.015/3.3' at 170.0'; and 0.015/4.3' at 306.2'. Hole B-82-4 contains three narrow sub-economic sections; 0.03/2.1' at 108.5'; 0.01/4.9' at 178.9'; and 0.045/3.0' at 259.0'. For the most part the mineralization occurs in interflow sediments (chert and greywacke/tuff) in ultramafic and basaltic komatiite flows. Hole B-82-5 appears to intersect the stratigraphy below (north of) the mineralized units intersected in holes 2 and 4. Hole B-82-6 intersects the appropriate stratigraphy and contains a 0.014/3.5' at 317.2' and a 0.015/4.3' at 92.0' but there is an absence of interflow sediments.

Conclusions

Drilling has penetrated a geological environment containing sub-economic gold mineralization over a distance of 4800 feet. This environment is a gold rich interflow sequence containing chert and greywacke/tuff within ultramafic and basaltic komatiite flows. The potential for the existence of economic zones within this stratigraphy is high.

Recommendations

It is recommended that during the next field season prospecting and detailed geological mapping be carried out over selected portions of the property. This may be followed by additional geophysical surveys (such as IP) during the following winter with the possibility of outlining additional drill targets.

63.3951

32D12SE0028 63.3951 STOUGHTON

900

OM48-PE44-C-81

THIS SUBMITTAL CONSISTED OF VARIOUS REPORTS, SOME OF WHICH HAVE BEEN CULLED FROM THIS FILE. THE CULLED MATERIAL HAD BEEN PREVIOUSLY SUBMITTED UNDER THE FOLLOWING RECORD SERIES (THE DOCUMENTS CAN BE VIEWED IN THESE SERIES):

2.3968 → GEOLOGICAL REPORT ; JUNE 17, 1981

2.4013 → MAXMIN II - HORIZONTAL LOOP ELECTROMAGNETIC SURVEY JULY 14, 1981

2.4936
STOUGHTON TWP, D.D.R. #13
(REPORT OF WORK #229-82)

DRILL HOLES B-81-1
" -2
" -3
" -4
B-82-5
B-82-6

Ministry of
Natural
Resources

Ontario

Your file:

Our file:

APPENDIX I

THE GEOLOGICAL REPORT FOR THE BORDER GROUP BY W. G. WAHL LTD. CAN BE VIEWED IN A.F.R.O. RECORD SERIES 2.3968.

Ministry of
Natural
Resources

Ontario

Your file:

Our file:

APPENDIX II

THE DRILL LOGS FOR HOLES 1 TO 6 CAN BE VIEWED IN A.F.R.O. RECORD SERIES:

1) STOUGHTON TWP. DRILL REPORT # 13

2) 2.4936

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Resources

Ontario

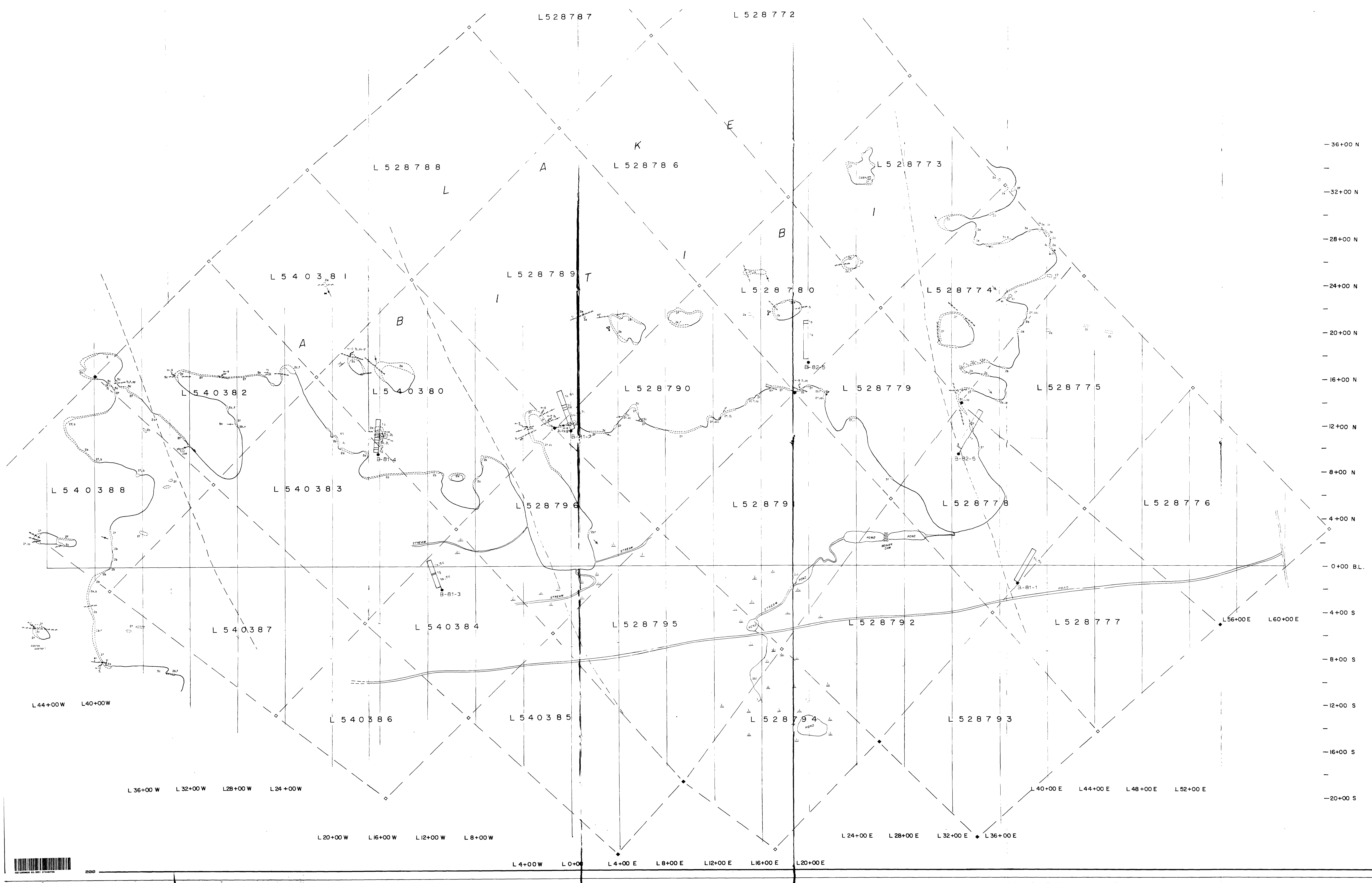
Your file:

Our file:

APPENDIX III

DRILL HOLE SECTIONS CAN BE VIEWED IN A.F.R.O. RECORD SERIES:

STOUGHTON TWP. DRILL REPORT # 13.



LEGEND

CENOZOIC
QUATERNARY
PLEISTOCENE AND RECENT
sand gravel and clay

PRECAMBRIAN
EARLY PRECAMBRIAN (ARCHEAN)
FELSIC INTRUSIVE ROCKS
5 Unsubdivided
5c Feldspar porphyry dikes
5d Hornblende-feldspar porphyry dikes
5f Lamprophyre

Intrusive Contact

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

Intrusive Contact

METAVOLCANICS
FELSIC VOLCANIC ROCKS
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 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 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

Carbonatized rock

*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.

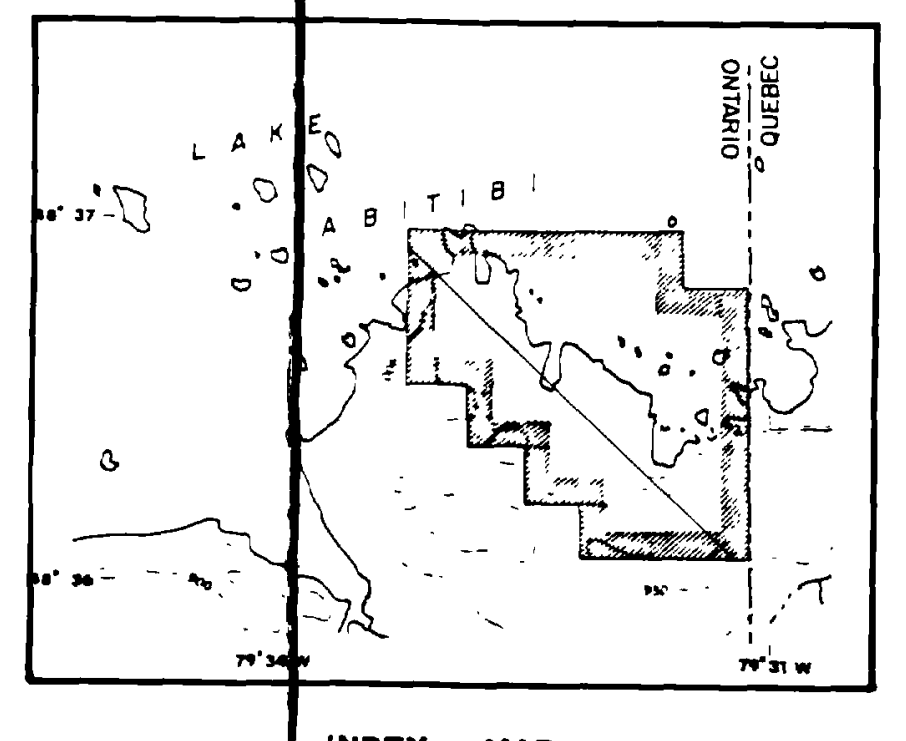
METAL AND MINERAL REFERENCE

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

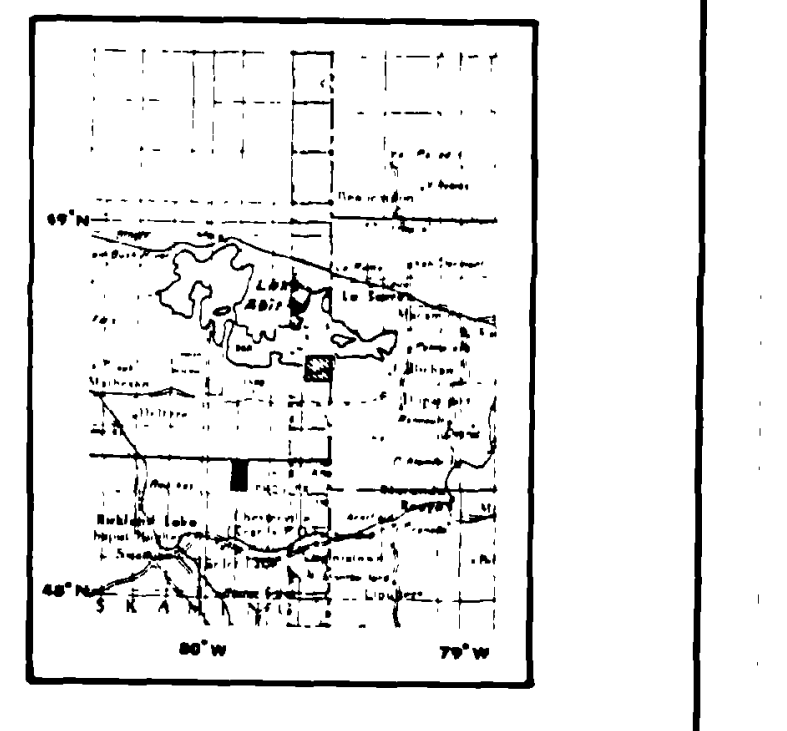
Assay sample location and number

■ OBSERVED CLAIM POST

□ ASSUMED CLAIM POST



INDEX MAP
1:50,000



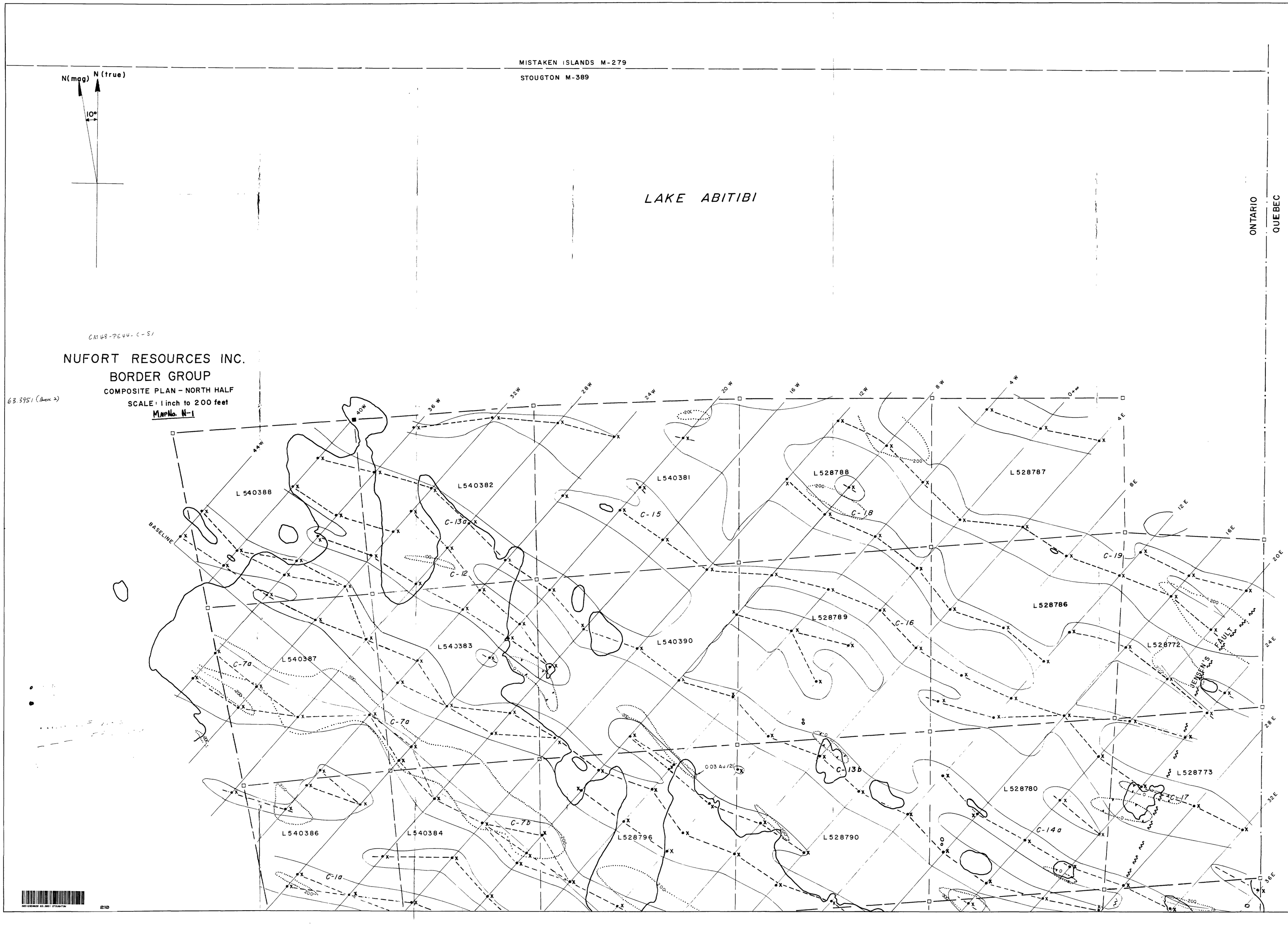
LOCATION MAP
1:2,000,000

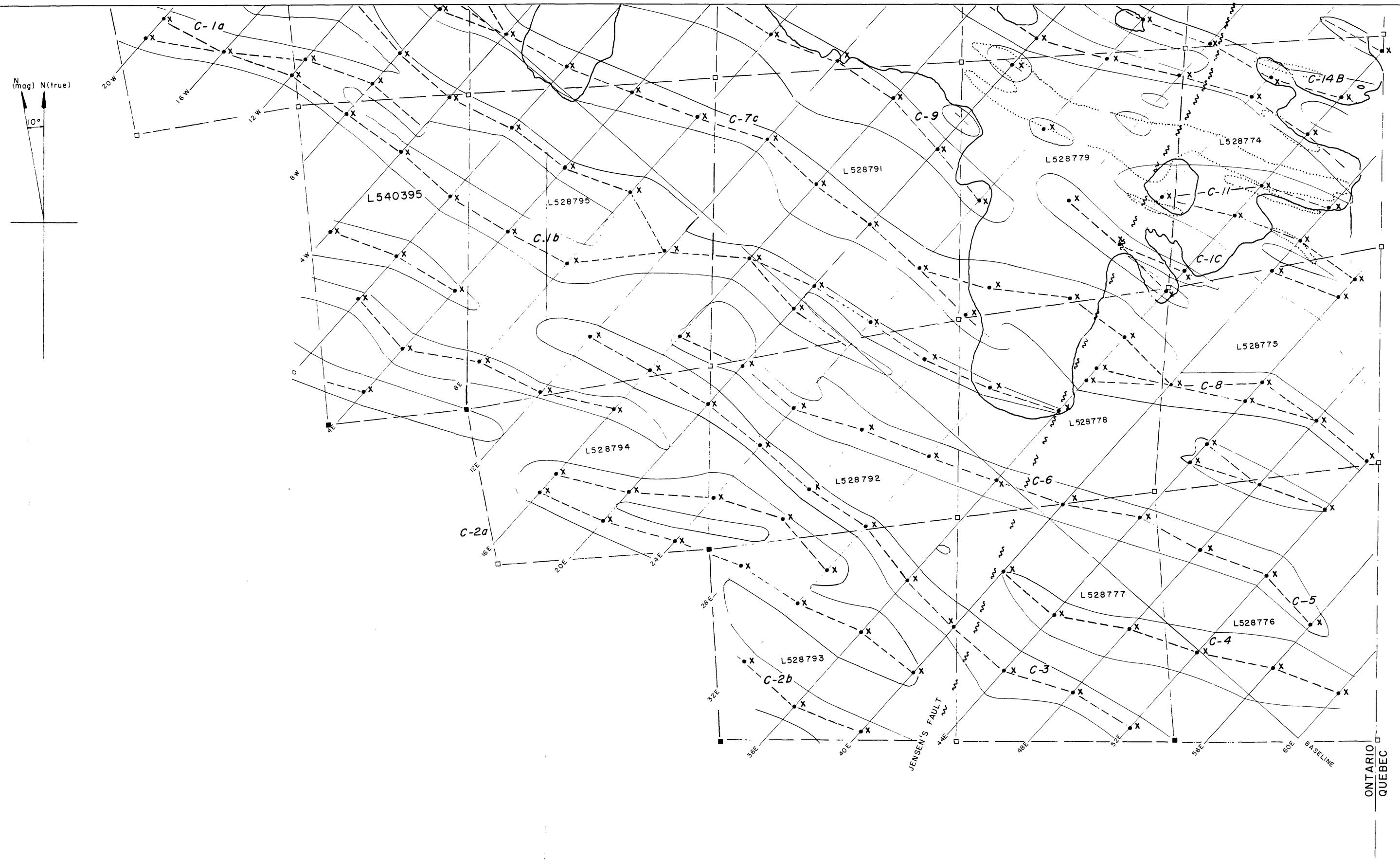
B-81-1
Drill Hole Location

W MacRae

63.3951 (Book 1)

NUFORT RESOURCES INCORPORATED			
BORDER GROUP		DRAWN BY: B·M	DATE: MAY 1981
GEOLOGY		TRACED BY: M·E L	DATE: JUNE 1981
		N.T.S. 32-D-12	APPROVED BY:
		REVISED MARCH,1982	REVISED BY: W.MACRAE
W.G. WAHL LTD.	SCALE: 1" = 200'	DWG. No: 1	


MISTAKEN ISLANDS M-279
STOUGTON M-389
N(mag)
N (true)
10°
LAKE ABITIBI
ONTARIO
QUEBEC
CM48-PE44-C-51
NUFORT RESOURCES INC.
BORDER GROUP
COMPOSITE PLAN - NORTH HALF
SCALE: 1 inch to 200 feet
Map No. N-1
63.3951 (Block 2)
BASELINE
44W
40W
36W
32W
28W
24W
20W
16W
12W
8W
4W
0
4E
8E
12E
16E
20E
24E
28E
32E
36E
L540388
L540382
L540381
L528788
L528787
L528786
L540387
L540383
L540390
L528789
L528772
L528773
L528780
L540386
L540384
L528796
L528790
C-13a
C-15
C-18
C-19
C-12
C-16
C-7a
C-13b
C-17
C-14a
C-7b
C-1a
0.03 Au/2t
JENSEN'S FAULT
200
100



NUFORT RESOURCES INC.
· BORDER GROUP ·
PLAN - SOUTH HALF
SCALE 1 inch = 200 feet
MAP No. N-2

63.3951 (Book 2)

5N43-7E00-C-81

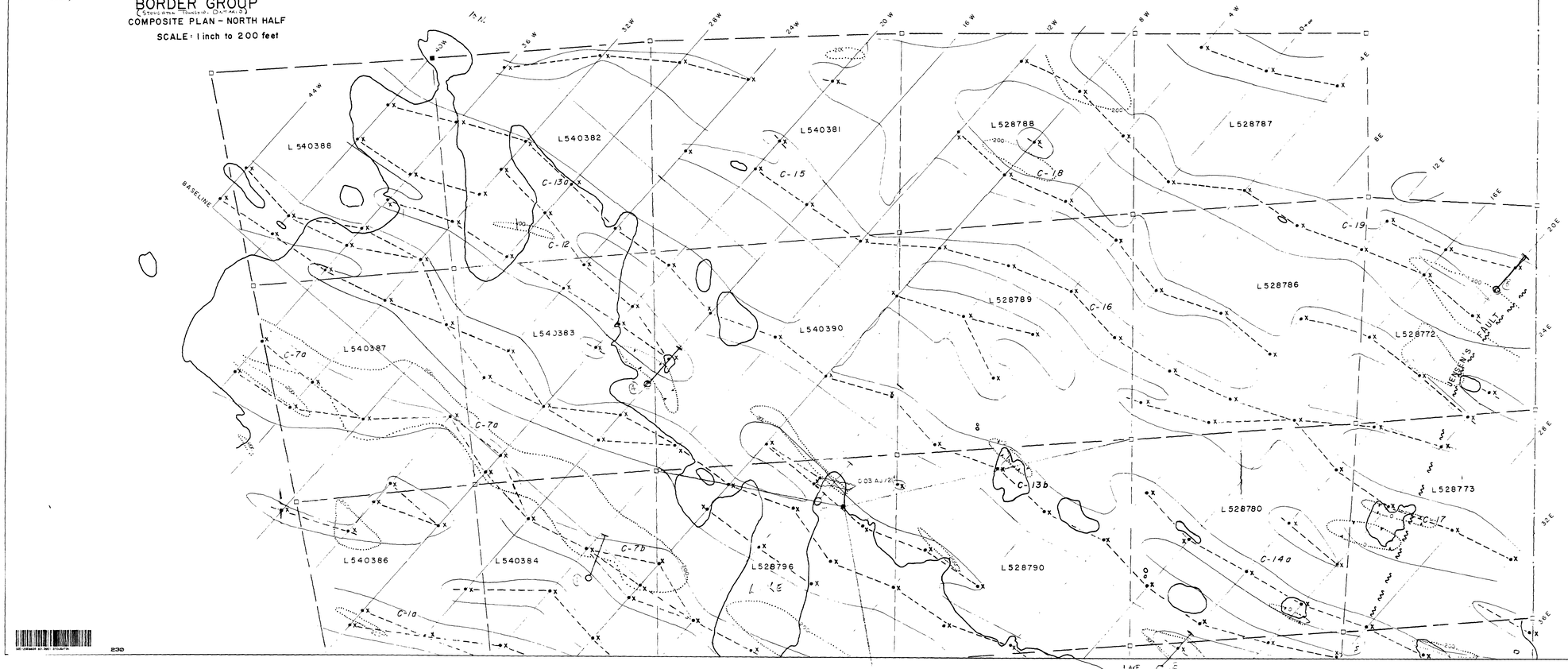
NUFORT RESOURCES INC.

BORDER GROUP

(STRUCTURE PROFILE - DATUM 2)

COMPOSITE PLAN - NORTH HALF

SCALE: 1 inch to 200 feet



-NUFORT RESOURCES INC.-

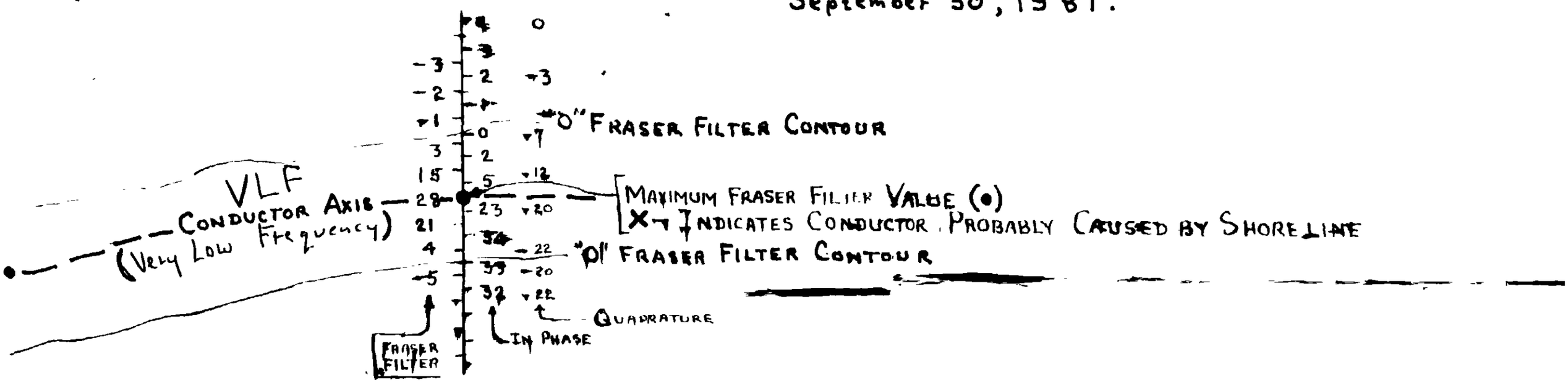
•SOUTH HALF — BORDER GROUP•

=STOUGHTON TWP.- ONT.=

•SCALE 1 inch = 200 feet•

•COMPILATION OF GEOPHYSICAL SURVEYS•

TO ACCOMPANY REPORT BY J.H. RATCLIFFE, P.ENG.
September 30, 1981.



500 -MAGNETIC ANOMALY (500 GAMMAS)

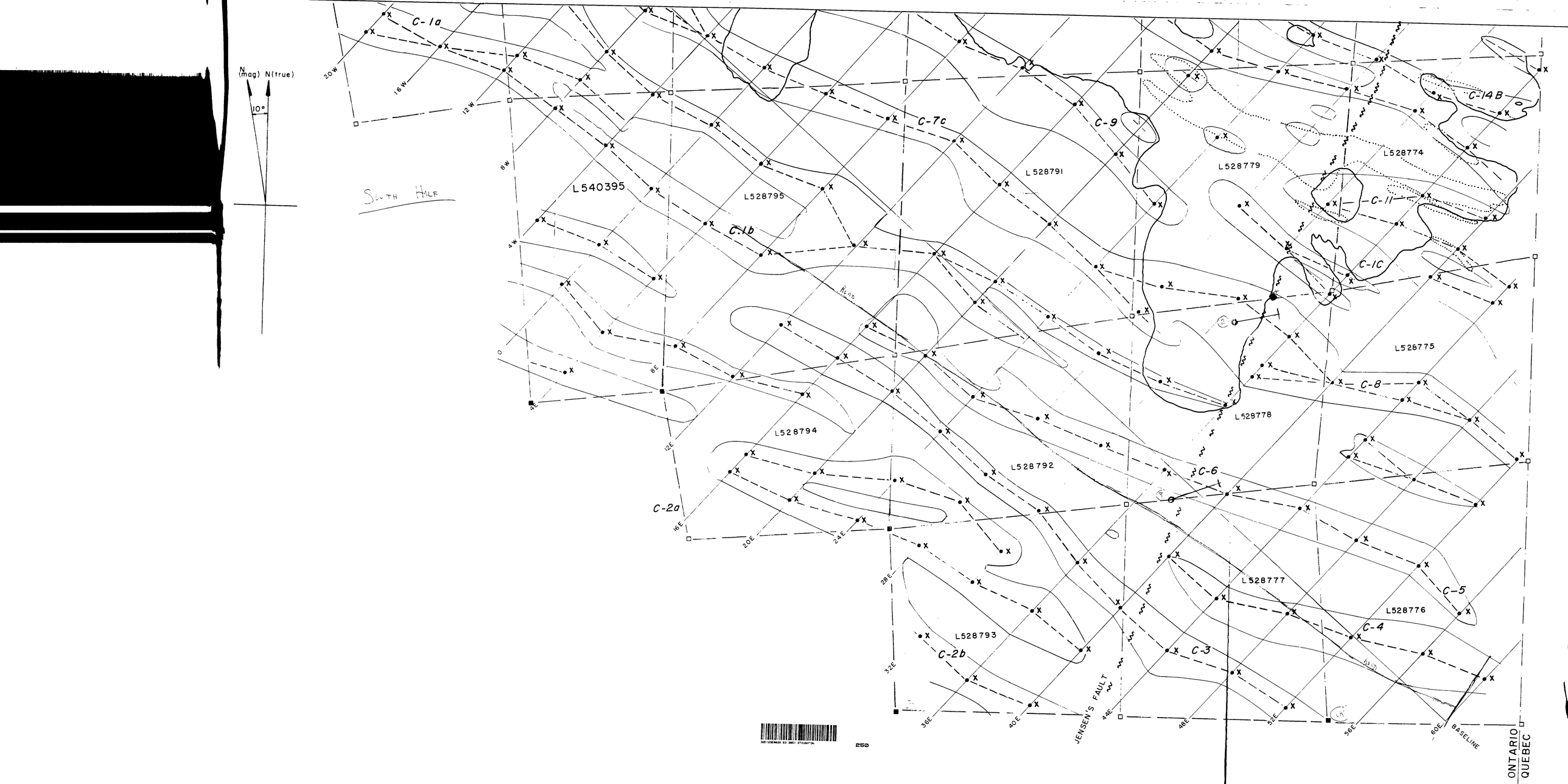
-MAGNETIC LOW

3 --DRILL HOLE LOCATIONS (BY RATCLIFFE)

3-A --ALTERNATE HOLE LOCATION

■ -CLAIM POSTS LOCATED

□ -ASSUMED CLAIM POST LOCATIONS


N (mag) N(true)
10°
SOUTH HALF
C-1a
C-1b
C-2a
C-2b
C-3
C-4
C-5
C-6
C-7c
C-8
C-9
C-11
C-14B
C-1C
L540395
L528795
L528794
L528793
L528792
L528791
L528779
L528774
L528775
L528778
L528777
L528776
ROAD
JENSEN'S FAULT
BASELINE
20W
16W
12W
8W
4W
0
4E
8E
12E
16E
20E
24E
28E
32E
36E
40E
44E
48E
52E
56E
60E
ONTARIO
QUEBEC

250