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MINING LANDS SECTION

REPORT

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MAXMIN II ELECTROMAGNETIC AND MAGNETOMETER SURVEYS

LITTLE A -9, 10

LITTLE TOWNSHIP

PORCUPINE MINING DIVISION TIMMINS AREA, ONTARIO

for

NORCEN ENERGY RESOURCES LIMITED

Toronto, Ontario, Canada W. E. Brereton, P.Eng. May, 1980

M P H CONSULTING LIMITED

This report outlines the results of ground geophysical surveys carried out on grid A-9, 10, Little township during the period February to April 1980 on behalf of Norcen Energy Resources Limited.

Technical Data Statements pertaining to this work are presented in Appendix II.

2. LOCATION

The property consists of 13 contiguous unpatented mining claims in west-central Little township approximately 35 km northeast of Timmins. The claims are numbered P515736 to 737, 515739 to 741, 515750 to 752, 521881, 517240 to 243 and occupy the W 1/2 of N 1/2, Lot 9, Con. 3, all of Lot 10, Con. 3 except SE 1/4 of S 1/2 and S 1/2 Lot 11, Con. 3 except SE 1/4 of S 1/2 and S 1/2 Lot 11, Con. 3 (see Index Map - geophysical sheets).

3. ACCESS

The road known locally as the Ice Chest Road transects the west portion of the claim group approximately 5 miles south-



west of the Fredrickhouse River Dam. Easiest access to the Ice Chest Road is off highway 610 approximately half way between Hoyle and Connaught.

4. LINECUTTING

Two east-west baselines were established, one extending 1.6 km east from post 4, claim P517242 and a second extending 1.2 km east from post 4, claim P515751. North-south crosslines were cut at 125m intervals. Additional east-west lines were cut parallel to the baselines at 1000N, 700N, 600N, 475N, 350N. Baselines and all crosslines were chained and picketed at 25m intervals. A total of approximately 29km of line was cut, chained and picketed.

5. TOPOGRAPHY

The property is essentially a low swampy plain traversed by two low, rounded north-south sandy ridges, one along the east side of the property and the other along the Ice Chest Road in the west. The ridges support stands of mature, open jackpine and represent eskers which have been worn down by wave action of glacial lake Barlow-Ojibway. Several small kettles were noted during the field work.



There is no appreciable relief in general although up to 5m or more of abrupt relief may be encountered along creeks and associated with the west esker.

6. GEOPHYSICAL SURVEYS

Electromagnetic Survey

Electromagnetic surveying was carried out with a MaxMin II EM unit. A 200m cable was used for routine coverage at operating frequencies of 444 Hz and 1777 Hz. Technical and operational aspects of the MaxMin II are presented in Appendix I.

The results of the EM surveying are shown on the prints accompanying this report. Map 1 presents the low frequency data and Map 2 the high frequency results.

Four conductors were located by the surveying - 'A', 'B', 'C' and 'D'.

'A' has a strike length of less than 125m and is centred at 50N on line 125E. The conductor dips north at 70[°] and is indicated to be covered by at best 60m of glacial overburden. There is a distinct 20 gamma magnetic correlation with the conductor on line 125E. Inphase to quadrature ratios at 444 Hz indicates low conductivity.

Conductor 'B' strikes east-west and is approximately 375m long and is located near the north ends of lines 375E to 625E. Dip is approximately vertical with 70m to 80m of overburden cover. Conductivitiy is moderate. There is no direct magnetic correlation.

'C' strikes north-south in the region of line 500E and is detectable on cross lines 350N through to 1000N for a strike length of at least 650m. A steep east dip is indicated in the area of line 600N with depths to conductor axis of approximately 50m. Conductivity is low. There is no direct magnetic correlation.

Conductor 'D' is a very weak feature extending from lines 250E to 1000E south of the south baseline.

Magnetic Survey

A Geometrics G-816 proton precession magnetometer was employed for the magnetic surveying. Correction for diurnal variations were made using a Barringer Research BM-123 base station recorder. Details of the magnetic method and technical specifications of the instruments employed are presented in Appendix I.

There is no appreciable magnetic relief on the property.

In accord with EM results, magnetically-inferred bedrock



strikes appear to swing from east-west in the west portion of the grid to more north-south over the east portion. (See Map 3).

7. CONCLUSIONS AND RECOMMENDATIONS

The short strike length and weak but definite magnetic correlation suggest that conductor 'A' may be reflective of a sulphide concentration.

Conductors 'B', and 'D' are probably representative of graphitic units with the shorter strike length of 'B' making this feature somewhat more interesting.

The possibility remains that 'C' is a conductive zone of shearing which is cross-cutting stratigraphy. If strati-form, 'C' is undoubtedly a graphitic unit.

The grid area is inferred to be underlain predominantly by felsic metavolcanics and sediments considering the magnetic data.

None of the conductors located appears to have been drill tested in the past. Conductor 'A', 'B' and 'C' are recommended for drill tests as follows:

Conductor	Collar	Dip	Azimuth	Length
А	87.5N, 125E	-60	180 ⁰	150m
В	225 N, 500E	-60	360 ⁰	170m
С	600 N, 1537.5E	-60	270 ⁰	150m

Further work will be contingent on the results of the above.

Respectfully submitted,

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W. E. Brereton, P.Eng.



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JUN-5000 REPORT

MINING LANDS SECTION ON

MAXMIN II ELECTROMAGNETIC AND MAGNETOMETER SURVEYS

LITTLE A-14

LITTLE TOWNSHIP

PORCUPINE MINING DIVISION TIMMINS AREA, ONTARIO

for

NORCEN ENERGY RESOURCES LIMITED

Toronto, Ontario, Canada W. E. Brereton, P.Eng. Mav. 1980 M P H CONSULTING LIMITED



1. INTRODUCTION

This report outlines results of ground geophysical surveys carried on grid A-14, Little township, in the period February to April, 1980 on behalf of Norcen Energy Resources Ltd. Technical Data Statements pertaining to this work are presented in Appendix II.

2. LOCATION

The property consists of 13 contiguous unpatented mining claims in the northeast portion of Little township, approximately 44 km northeast of Timmins. The claims are numbered P521829, 832 to 836 incl., 845 to 850 incl., 869 and occupy the E 1/2 of S 1/2 Lot 5, Con. 6, S 1/2, Lot 4, Con. 6 and N 1/2 of N 1/2 Lot 4, Con. 5 and S 1/2 and SW 1/4 of N 1/2, Lot 3 Con. 6. (see Index Map - geophysical sheets).

3. ACCESS

Easiest access to northeast Little is afforded via bush roads which extend off the west end of the Dam Road from the settlement of Nellie Lake on highway 11 northeast of Timmins.



A bush road which turns north on crossing the Little-McCart boundary leads to the southeast end of the baseline.

4. LINECUTTING

A 1.375 km baseline was established at a bearing azimuth of 130° extending northwest from the southeast corner of Lot 2, Con. 6. A 0.625 km sub baseline was cut parallel to the main baseline extending northwest from 675S on line 1375E. Cross-lines were cut at 125m intervals. The baselines and all crosslines were chained at 25 m intervals. A total of appro-ximately 23 km of line was cut, chained and picketed.

5. TOPOGRAPHY

The property is covered mainly by low, swampy ground. There is no appreciable relief.

6. GEOPHYSICAL SURVEYS

Electromagnetic Survey

Electromagnetic surveying was carried out with a MaxMin II

EM unit. A 150m cable was used for routine coverage at operating frequencies of 444 Hz and 1777 Hz. Technical and operational details of the MaxMin II are presented in Appendix I.

The results of the EM surveying are shown in the prints accompaying this report. Map 1 presents the low frequency data and Map 2 the high frequency results.

Four conductors were located numbered 'A', 'B' 'C' and 'D'.

'A' extends from line 125W to line 1250W and is open at both ends. The conductor consists of two segments - a moderately to highly conductivity east portion with dips of $45^{\circ}N$ to $60^{\circ}N$ and a weaker, more steeply dipping west portion. Depths to conductor top are approximately 30 m over the east portion and somewhat greater to the west. There is no notable magnetic correlation.

Conductor 'B' occurs 150m south of the baseline on lines 1125W to 1375W for an indicated strike length of 375m. 'B' exhibits low conductivity being predominantly a quadrature feature at 444 Hz. A steep north dip is indicated. There is approximately 50m of glacial overburden cover. No coincident magnetic anomaly was found.

Conductor 'C' occurs between lines 1375W to 1625W for a strike length of approximately 375m. The conductor is slightly arcuate occurring at 625S to 650S. 'C' exhibits very low

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conductivity and has a steep south dip. The conductor coincides approximately with a 40 gamma magnetic low on line 1500W.

Conductor 'D' is a weakly conductive predominantly quadrature effect parallel to and approximately 150m north of 'A'. A north dip is indicated by detail work with a 100m cable on line 375W. The conductor flanks a distinct magnetic anomaly between lines 500W to 750W and occurs approximately 25 m south of the 550 gamma magnetic maximum on line 500W.

Magnetic Survey

A Geometrics G-816 proton precession magnetometer was employed for the magnetic surveying. Correction for diurnal variation was made using a Barringer Research BM-123 base station recorder. Details of the magnetic method and technical specifications of the instruments employed are presented in Appendix I.

The most striking magnetic feature (Anomaly A) is located immediately north of the baseline between lines 375W and 750W. Maximum relief is approximately 2000 gammas. Magnetic profiles indicate a moderate north dip to the magnetic body. The anomaly terminates abruptly to the east suggesting that the causative body may be truncated by a fault in this area.

Another magnetic feature of possible economic significance is Anomaly 'B'. This anomaly shows as a 120 gamma high centred at 250S on line 375W.

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Magnetic values show a 'regional' increase from northeast to southwest across the property. There is a relatively rapid climb in the northeast followed by a low relief plateau in the central portion of the property with values increasing again in the southwest.

Northwest-striking contours along the south portion of line 1375W are probably indicative of a diabase dyke.

7. CONCLUSIONS AND RECOMMENDATIONS

The grid area is inferred to cover a portion at the top of a felsic dome the main centre for which is located to the north in Mann township. Magnetically, the central portion of the grid is interpreted to be underlain predominantly by felsic volcanics. The increased magnetic activity in the south portion of the grid may relate to more basic volcanics, such that a major mafic-felsic contact may cross the grid in the area of EM conductor 'C'.

Conductor 'A' was investigated previously by Amax (1971) in a single hole drilled in the area of present line 625W. The conductor was shown to be a 4m thick, graphitic unit with associated pyrite. No further drill testing is recommended at this time.



Conductors 'B' and 'C' are probably not reflective of large concentrations of conductive sulphides considering the geophysical responses. The short strike length and inferred geological setting are of interest however and drill tests are warranted.

Conductor 'D' is formational in nature and is probably due to a weakly graphitic unit analogous to 'A'. The close spacial association of conductor 'D' with magnetic anomaly 'A' in the vicinity of line 500W is of interest however and a drill test is recommended.

Neither of magnetic anomalies 'A' or 'B' are due to substantial pyrrhotite concentration considering the EM results. Magnetite-bearing mafic or ultramafic intrusive bodies are the most probable source of the higher magnetic intensities although 'A' may represent a faulted block of magnetite iron formation.

Conductors 'B' 'C' and 'D' should be drill tested as follows:

Conductor	Collar	Dip	Azimuth	Length
В	1250W, 100S	-600	grid S	140 m
С	1500W, 687.5S	-60 ⁰	grid N	140 m
D	500W, 200N	-60 ⁰	grid S	140 m

Further work will be contingent on the results of the above.

Respectfully submitted,

W. E. Brereton, P.Eng.

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Township or Area LITTLE TO Claim Holder(s) NORCEN EN	AND ELECTROMAGNETIC WNSHIP ERGY RESOURCES LTD. Ve. S.W., Calgary,			IS TRAVERSED nerically
Survey Company <u>M P H CON</u> Author of Report <u>W. E. Bre</u> Address of Author <u>706-141</u> A	reton, P.Eng.		(prefix)	(number)
Covering Dates of Survey Feb. 2			P P	515736 515737
Total Miles of Line Cut <u>17.4</u>	·····		P .	515739
SPECIAL PROVISIONS CREDITS REQUESTED	DA' Der d		P	515740
· ·	Geophysical per ci -Electromagnetic		P	515741
ENTER 40 days (includes line cutting) for first	–Magnetometer4	0	P	515750
survey. ENTER 20 days for each	-Other		Р Р	515751
additional survey using same grid.	Geological Geochemical		P	521881
AIRBORNE CREDITS (Special provi		urveys)	Р	517240 -
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GEOPHYSICAL TECHNICAL DATA

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G	ROUND SURVEYS - If more than one survey, s	pecify data for each type of survey
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N	umber of Stations	Number of Readings <u>1200-Mag; 1100-EM</u>
Š		Line spacing 125m
		= 20% (1777 Hz)
	ontour interval	
	·	
	Instrument Geometrics G-816 pr	roton magnetometer
MAGNETIC		
NE:	Diurnal correction methodbase station	n recorder
AG	Diurnal correction method N/A	
2	Base Station check-in interval (nours)	
	Base Station location and value N/A	
	Deven Devenetwige Mo	-Min TT
S	Instrument Apex Parametrics Max	
NEJ	Coil configuration Horizontal Loop	
AG	Coil separation200m	
MO	Accuracy 0.5% Inphase and g	uadrature
ELECTROMAGNETIC	Method:	🗆 Shoot back 🙀 In line 🔅 🗖 Parallel line
EC	Frequency 444 Hz, 1777 Hz	(specify V.L.F. station)
EI	, inphase and qu	adrature components of secondary EM field
	Parameters measured	
	Instrument	
\geq		
GRAVITY	Corrections made	
KA	-	
ତା	Base station value and location	
	Elevation accuracy	
	Instrument	· · · · · · · · · · · · · · · · · · ·
;	Method 🔲 Time Domain	Frequency Domain
		Frequency
		Range
E	– Delay time	
	-	
RESISTIVITY	- Integration time	-
RE	Power	
	Electrode spacing	
	Type of electrode	

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INDUCED POLARIZATION

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Ministry of Natural Resources

GEOPHYSICAL – GEOLOGICAL – GEOCHEMICAL TECHNICAL DATA STATEMENT

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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.

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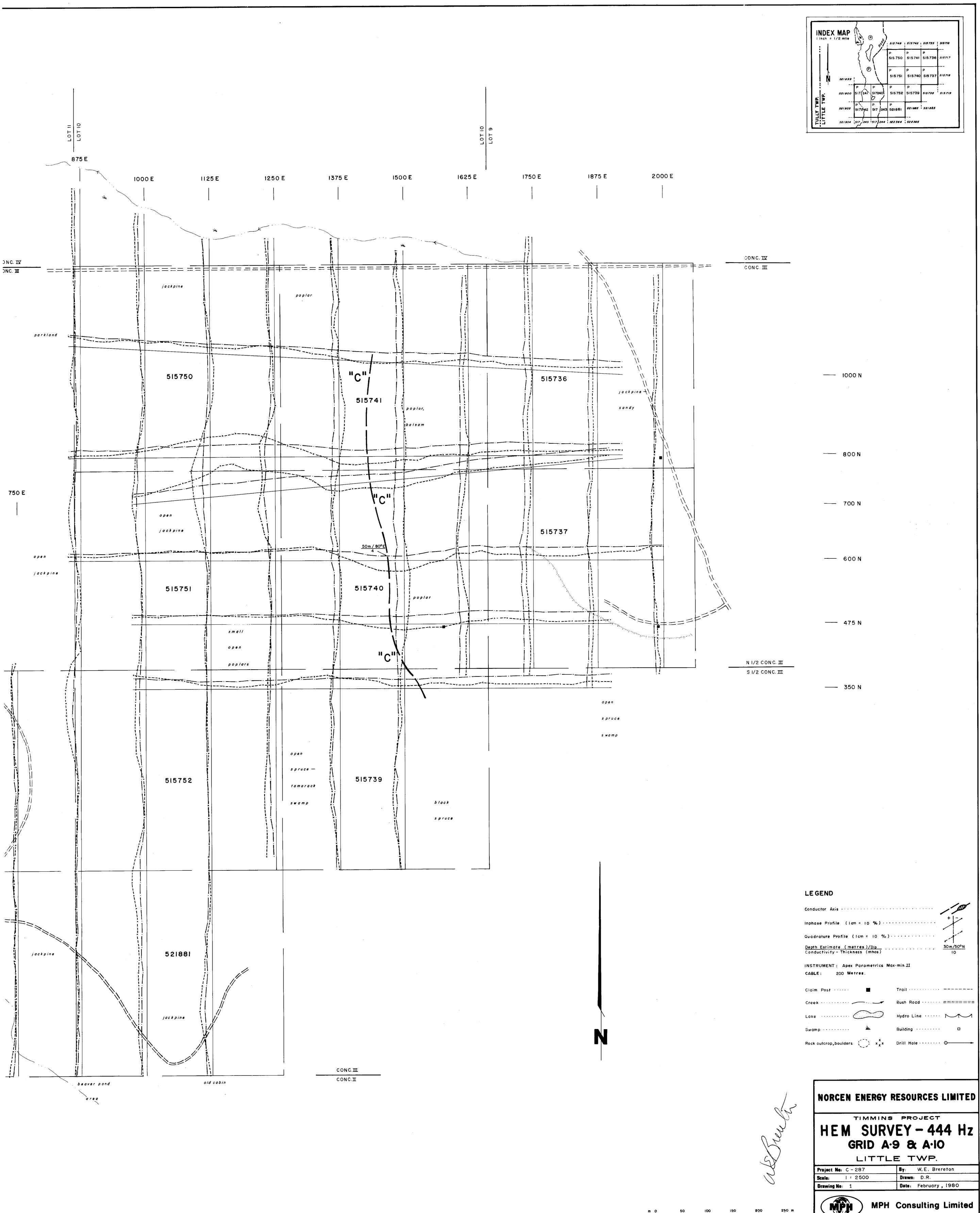
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GEOPHYSICAL JUCHNICAL DATA

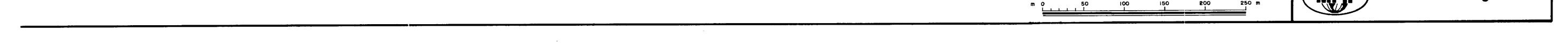
	GEOPHYSICAL	NICAL DATA	
G	GROUND SURVEYS - If more than one survey, specify data	for each type of survey	
<u>0</u>			Ć
	915	_Number of Readings	800 - EM
		_Line spacing <u>125m</u>	1000 - Mag
-	1 cm - 10% (444 Hz): $1 cm = 20%$	Line spacing 8 (1777 Hz)	
	Contour interval <u>10 - 100 gammas</u>	•	
C.	Contour interval <u>10 - 100 Galillias</u>		
	Instrument Geometrics G-816 proton mag	atomatar	
g	Instrument <u>Geometrics G-818 proton magn</u>	lecometer	
EL	Accuracy – Scale constant <u>l gamma</u>	Jor	
MAGNETIC	Diurnal correction method <u>base station record</u>	<u>161</u>	
¥	Base Station check-in interval (hours) N/A		
	Base Station location and value N/A		
	North Deventering Mouthin TT		
<u>ric</u>	Instrument <u>Apex Parametrics MaxMin II</u>		
NE	Coil configuration <u>Horizontal Loop</u>		
IAG	Coil separation 100m	~~~	
NOX	Accuracy 0.5% Inphase and quadratu		Parallel line
CTB			Tatanet inte
ELECTROMAGNETIC	Frequency(specify V.	L.F. station)	
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		v	
	Instrument		
5.1	Scale constant		
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z.	Method	Frequency Doma	
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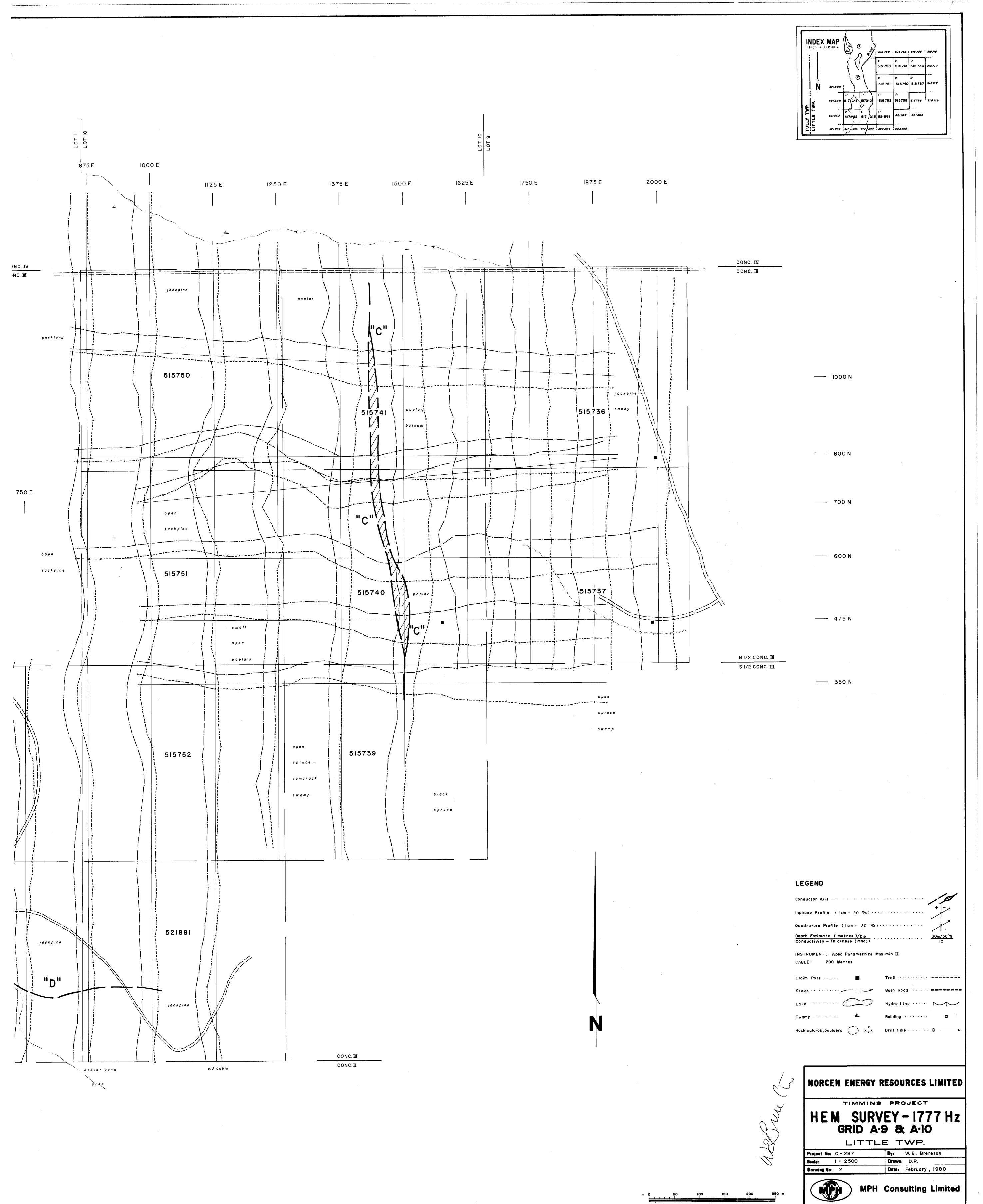
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250 m

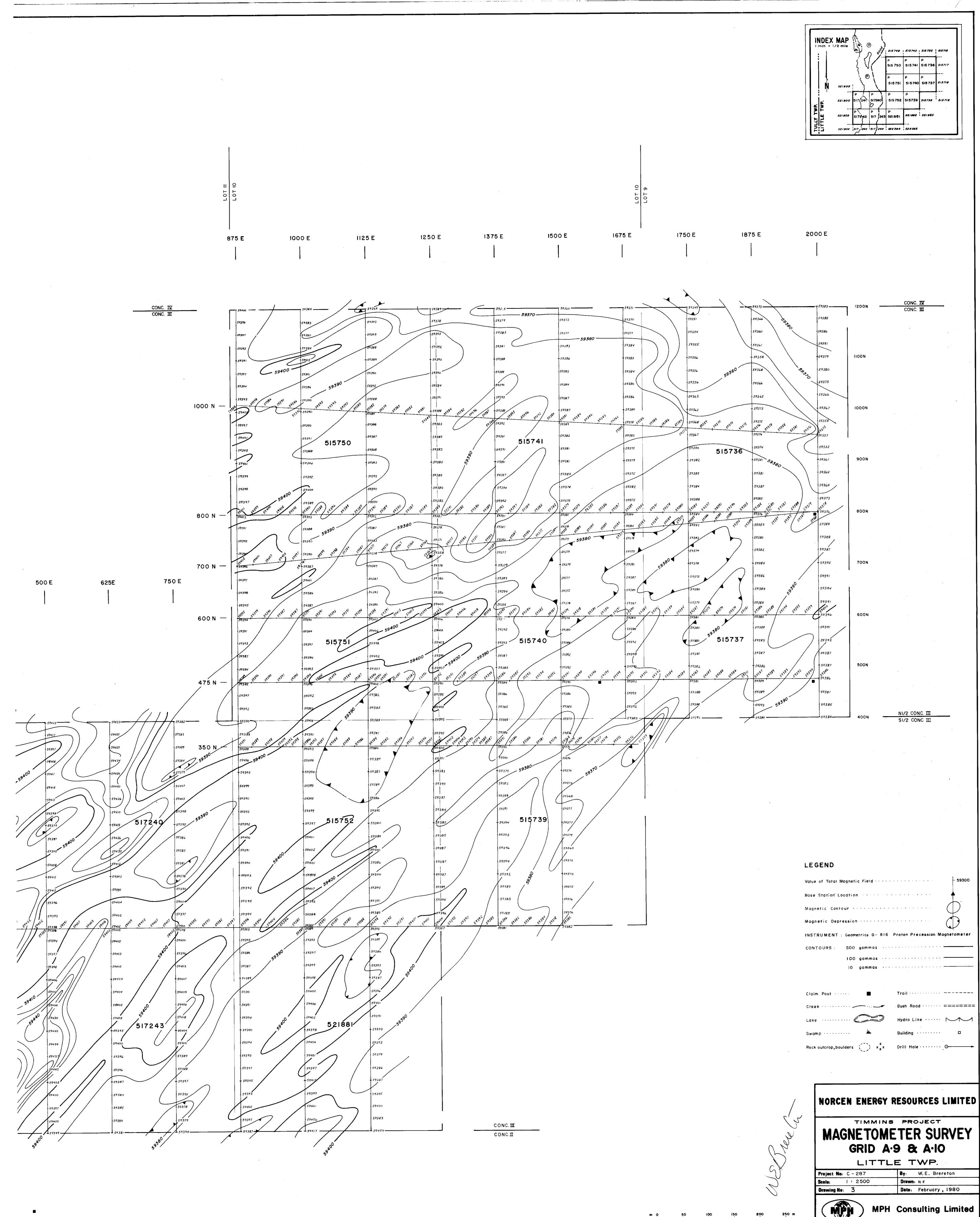


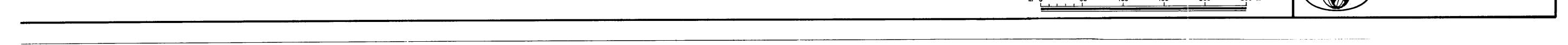


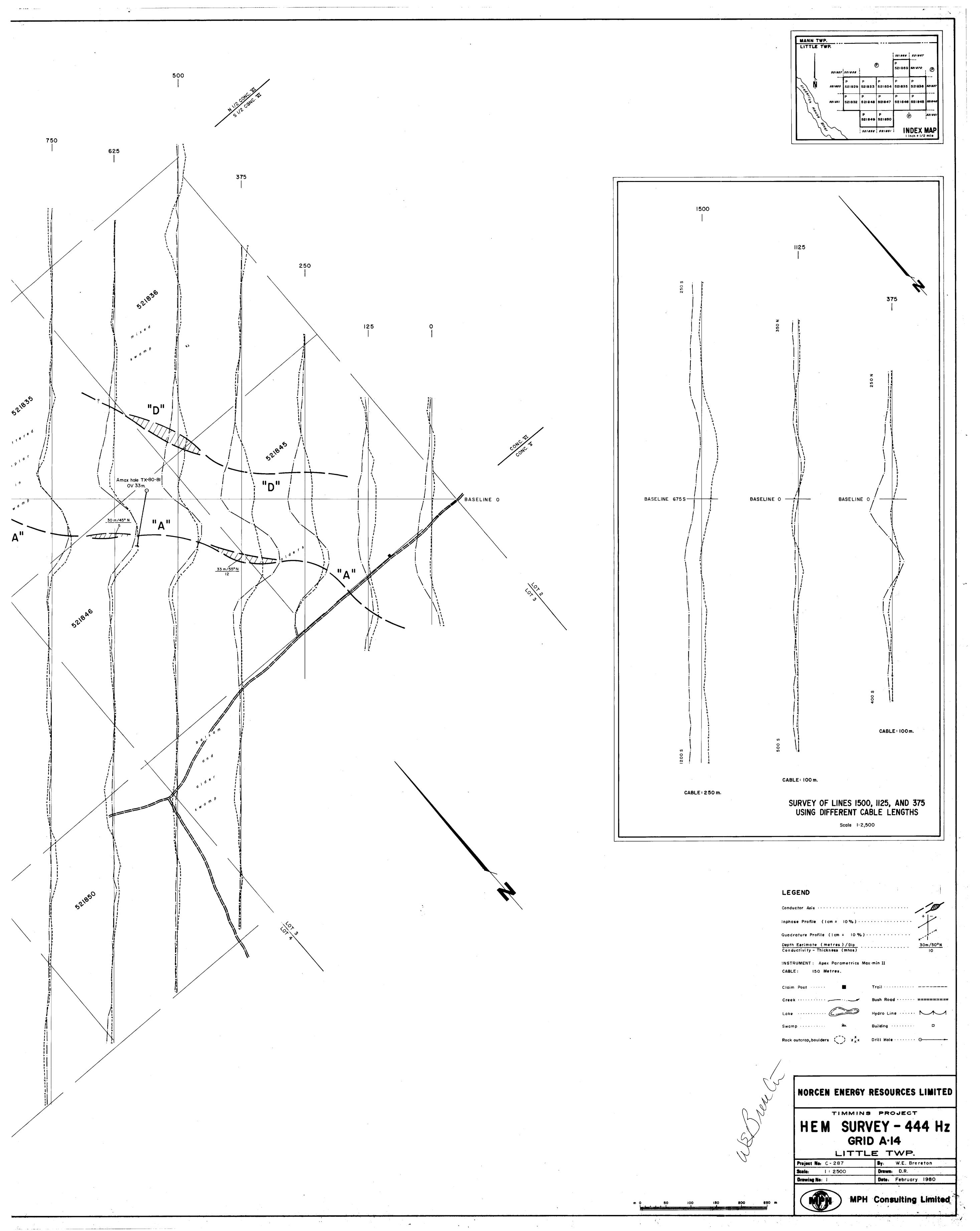


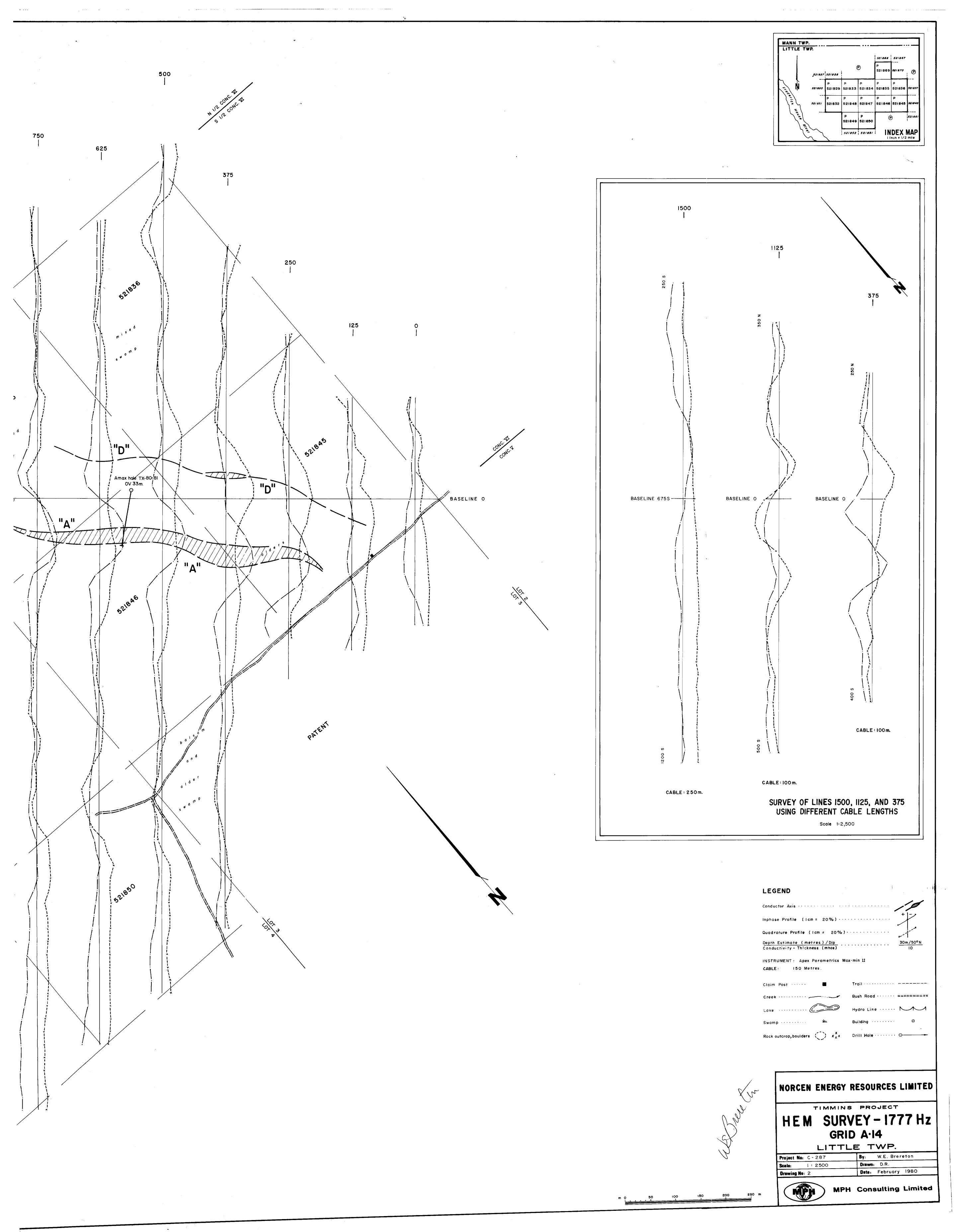
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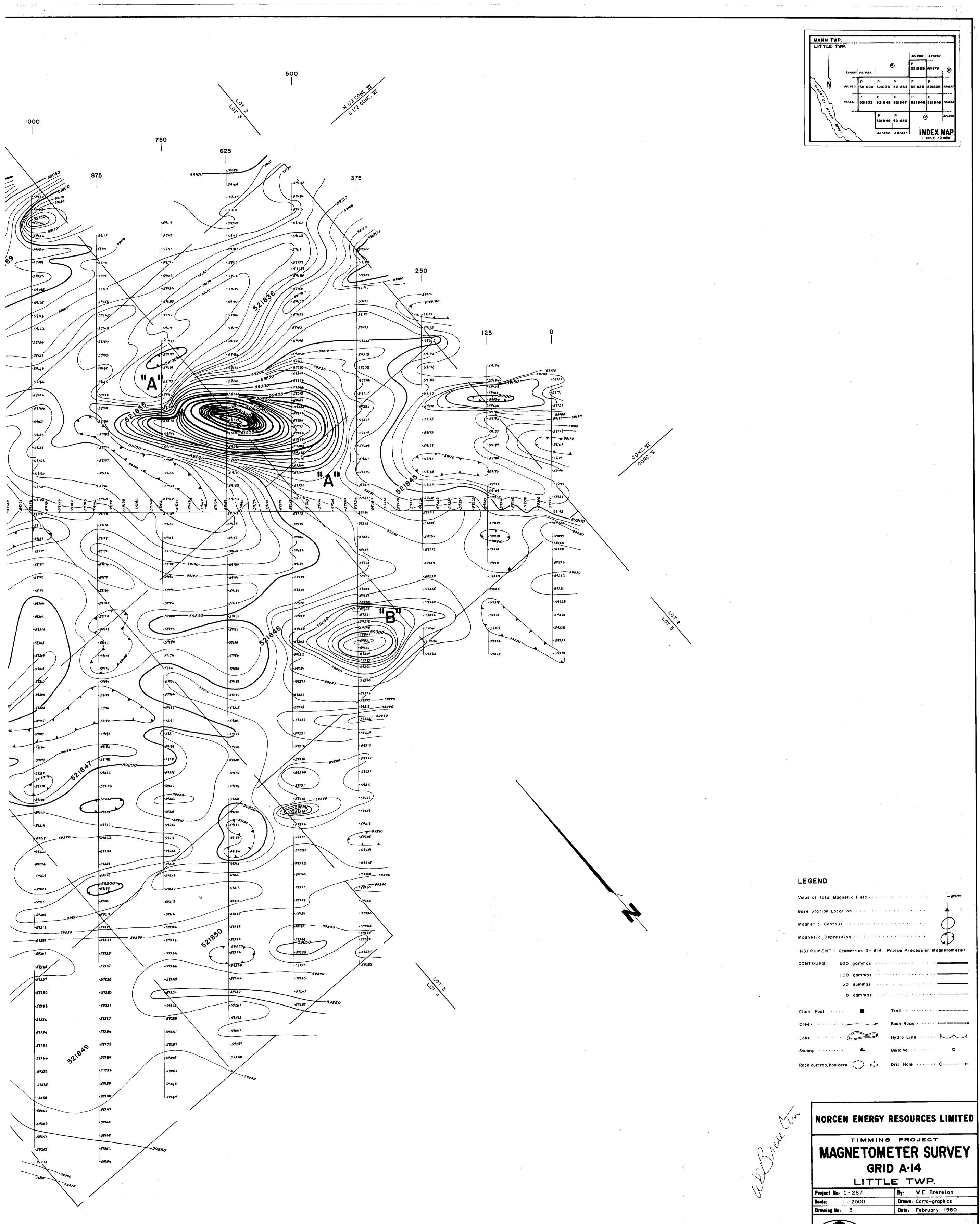


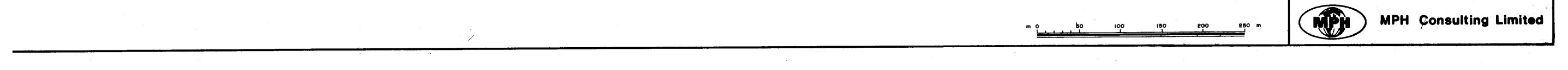


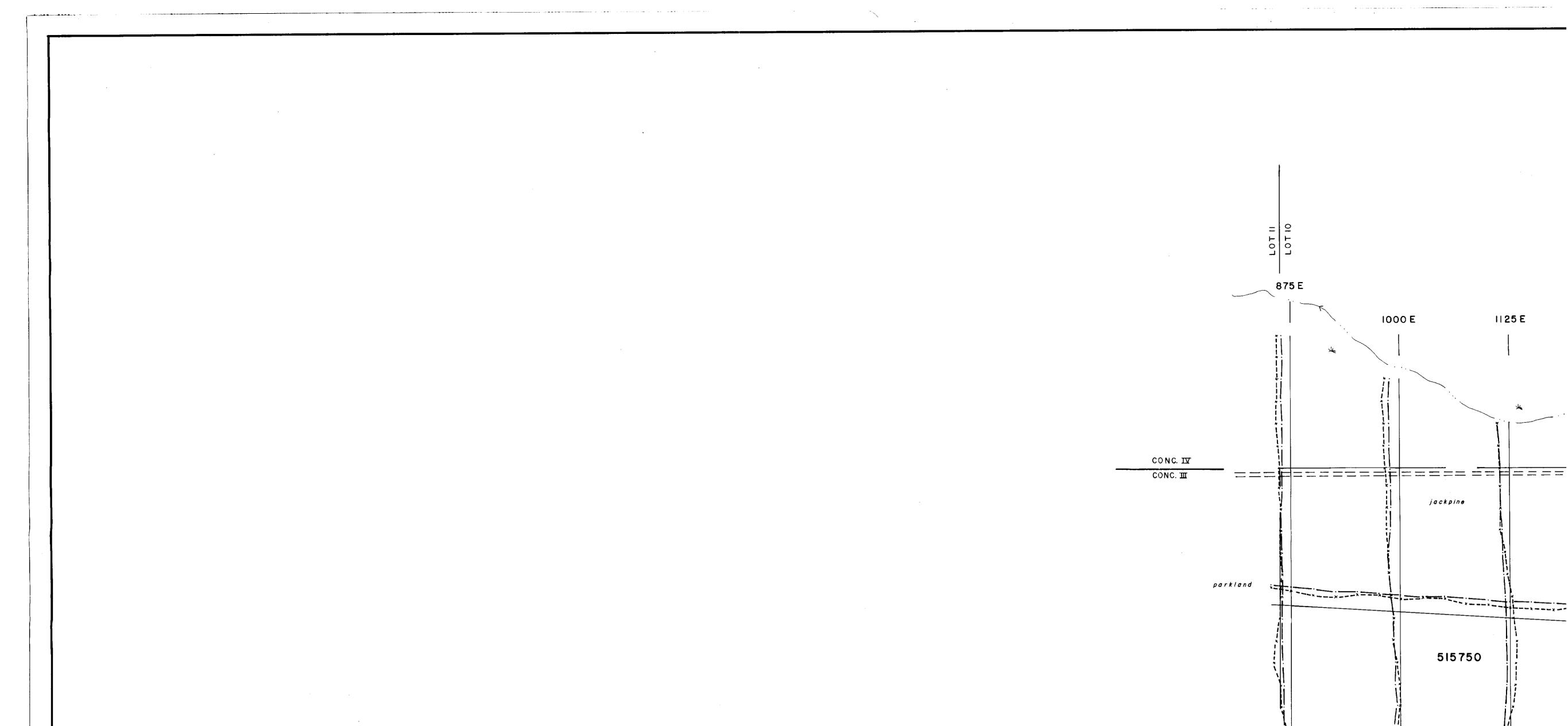








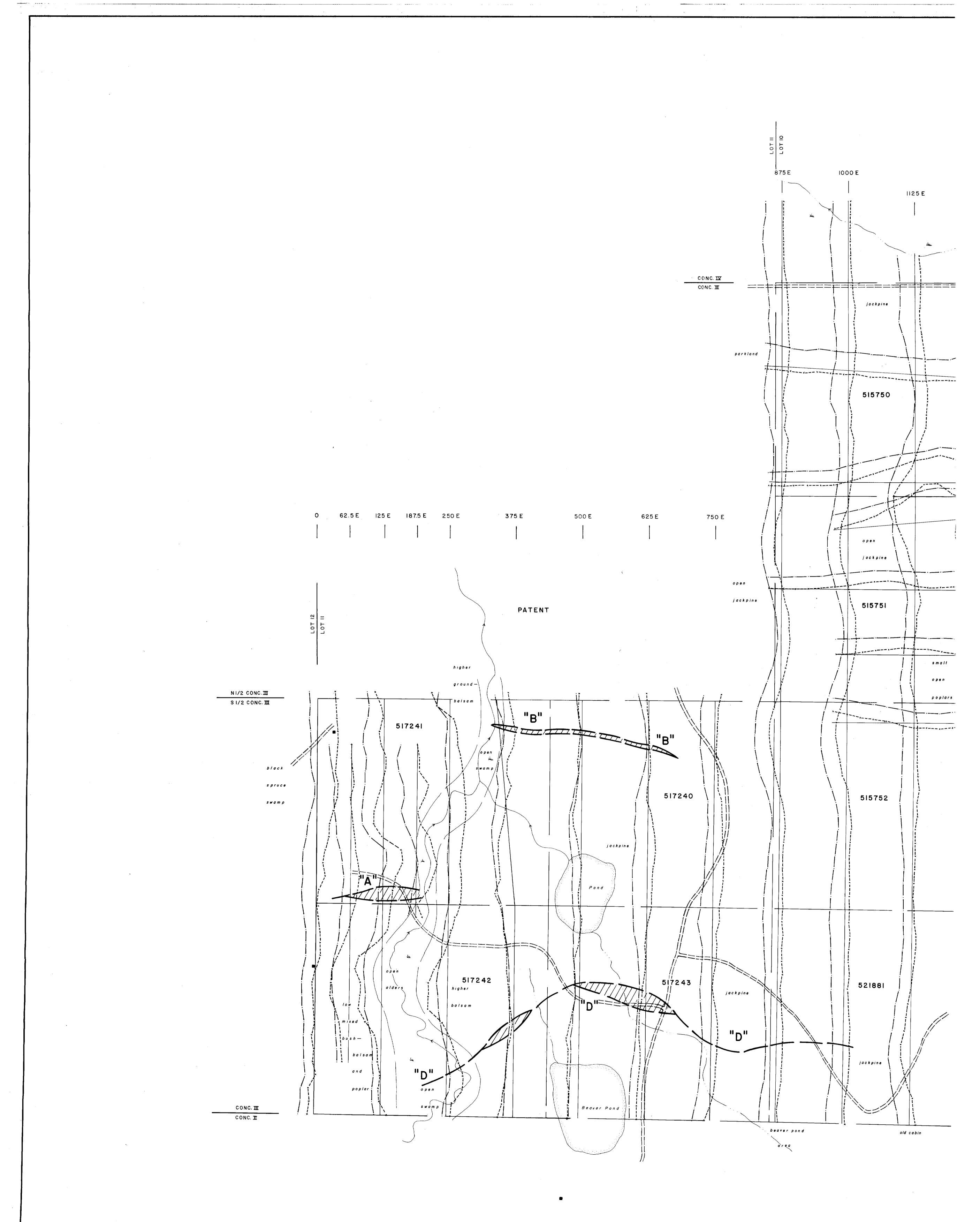








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