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REPORT
ON
ELECTROMAGNETIC SURVEYS
ON PROPERTIES OF
BRONSON MINES LTD.

BLACK & BENOIT TWPS., ONT.

RECEIVED

JUL - 7 1980

MINING LANDS SECTION

by

PROSPECTING GEOPHYSICS LTD.

Montreal, Que.

June 30, 1980.

REPORT
ON
ELECTROMAGNETIC SURVEYS
ON PROPERTIES OF
BRONSON MINES LTD.
BLACK & BENOIT TWPS., ONT.

INTRODUCTION

Bronson Mines Ltd. holds on its own behalf or under option a total of 94 contiguous unpatented claims in Black and Benoit townships. The claims are primarily held for their potential as gold prospects but some zinc-lead mineralization has been found on adjacent ground.

Since the gold is generally found in shear zones in the area, V.L.F. (Very low frequency) electromagnetic surveys have been conducted over all of the claims. The following report and accompanying maps describe the results of the surveys.

PROPERTIES

The claims covered by the electromagnetic surveys are contiguous as shown on the Index claim map on Sheet 1. They include a group of 85 unpatented claims in Black and Benoit townships which are covered on Sheets 1 and 2 and a group of nine unpatented claims in Black township covered on Sheet 3, all of which are contiguous. The nine claim group is known as the D. McKinnon property.

The claims are registered as follows:

- 2 -

Black Township

L 525047 to L 525090

L 525092 to L 525097

L 525180 to L 525181

L 525200 to L 525218

L 525221 and L 525222

L 525225 to L 525227

L 522317 to L 522319

L 479368 to L 479373)

L 494773)

D. McKinnon Property

L 494776 and L 494777)

Benoit Township

L 525219 to L 525220

L 525223 to L 525224

L 522320 to L 522321

The claim block is readily accessible by road from Kirkland Lake which is about 20 miles to the southeast. Numerous trails and roads provide access to various parts of the claim group.

GEOLOGY

The geology of the area is described by H.L. Lovell, 1971 in Geological Report 92 for the Ontario Department of Northern Affairs. The rocks in the area of the properties are predominantly volcanic with mafic and

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ultramafic intrusives. Thin beds of fine grained sediments and tuff are interbedded with the volcanic assemblage. There are a few outcrops of Cobalt sediments, mainly conglomerate, which overlie all other rocks.

The major fold in the property area is a syncline, the axis of which plunges from the northern part of Black township southeastward across Benoit township. The volcanics have been tightly folded along the synclinal axis and the regional trend of the volcanic assemblage follows the northwest strike of the axis. The rocks dip vertical or steeply to the northeast.

Several gold occurrences are present on and near the Bronson holdings. These are generally found in grey and white quartz, quartz-carbonate veins, and shear zones. Zinc-lead mineralization has also been found close to the Bronson property in Black township.

The D. McKinnon claim group covered on Sheet 3 has had stripping trenching and a small amount of drilling carried out along a mineralized shear. Channel samples in various pits along a strike length of 1200 feet are reported to have given values in gold ranging from trace to 0.92 oz. per ton for widths up to 28 feet. Values in the drilling are reported from 0.28 oz. per ton over 1 foot to 0.242 oz. over 24.25 feet.

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SURVEY METHODS AND INSTRUMENT DATA

The V.L.F. (Very low frequency) electromagnetic survey was chosen for all of the Bronson holdings as it was necessary to use a method that would detect relatively weak conductors that could represent shear zones or zinc mineralization, both of which are only weakly conductive. The survey was conducted over previously cut lines at 400 foot intervals with the exception of the D. McKinnon group where the lines are at 200 foot intervals. On this property, some lines were cut at 50 foot intervals over the known gold-bearing zone. The equipment used was the Geonics EM-16 system.

The V.L.F. method uses the radiation from powerful military radio transmitters at low frequencies as primary signals as opposed to portable transmitters in the conventional E.M. methods. The transmitter station used in the present survey is located at Cutler, Maine. The instrument has two receiving coils and the parameters measured are:

- (1) The vertical in-phase component.
- (2) The vertical out-of-phase component.
(quadrature component)

The interpretation of the results uses the relative measurements of these two parameters and it is

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possible to outline such poor conductors as sheared contacts, breccia zones, faults, and alteration zones, as well as the good sulphide conductors. Because V.L.F. anomalies are produced by a wide range of geological affects, profiles sometimes tend to show a complex "cluttered" pattern and additional assistance is required to distinguish trends. By the use of the Fraser method of filtering tilt angle profiles, the readings are converted into contourable data. On Sheets 1 and 2, the Fraser method was used and the data has been contoured. On Sheet 3, the tilt angle profiles have been plotted as the lines are relatively short and it is not practical to use the Fraser calculations.

RESULTS OF THE ELECTROMAGNETIC SURVEYS

The results of the surveys are shown on three separate sheets numbered 1, 2 and 3 that accompany this report. Sheets 1 and 2 cover the 85 claim group in Black and Benoit townships on a scale of 400 feet to the inch whereas Sheet 3 covers the D. McKinnon property to the south. This latter sheet is plotted at 200 feet to the inch and as mentioned earlier, readings have been plotted as profiles. A brief discussion of the results follows:

Sheet 1

This sheet covers the southeast portion of the 85 claim group as indicated on the Index claim map. The

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survey shows a number of northwest trending conductors, several of which are quite continuous. The strike of the conductors conforms with the regional trend and the more continuous ones indicated appear to follow a major northwest structure which continues on to Sheet 2 where it follows close to base line 2600 N. There appears to be some faulting or folding particularly to the northwest. These conductors could represent shear zones containing possible mineralization.

Sheet 2

Sheet 2 shows numerous northwest trending conductive zones which generally show greater conductivity than those on sheet 1. There are a number of parallel zones close to base line 2600 N that appear to be on the same structural trend as those on sheet 1.

There are some parallel stronger conductive zones in the southwest corner of the claim group but some of the conductivity may be due to muskeg and wet ground. However, these could represent the extension of known gold-bearing shear zones just south of the Bronson holdings.

There are also some relatively stronger zones indicated in the north part of the claim group, any of which could possibly represent a gold-bearing shear zone.

Sheet 3

This sheet covers the 9 claim McKinnon property on which there is a mineralized shear zone. The electromagnetic survey outlined four main conductors lettered A, B, C and D for reference purposes.

"A" Zone is the most significant as a portion of it is very close to the known gold occurrence and probably represents the shear zone. The conductor itself, continues northwest with minor discontinuities across the entire property. The strongest portions would appear to be between lines 2 S and 6 S where the diamond drilling was carried out. It then continues weakly northwest with a minor displacement or fold, but the conductivity increases further northwest on lines 10 N and 12 N. There are trenches on line 12 N suggesting that there may have been some gold values here. It seems likely that this conductor represents a shear zone with gold-bearing mineralization at least in some sections. A report on the property dated Nov. 30, 1979 by D. R. Bell states that the gold appears to be associated with fine grains of pyrite in magnetic siliceous tuffs.

"B" Zone is situated south and parallel to "A" zone. It has a length of about 1200 feet. It has about the same conductivity as "A" zone with the strongest part of the zone extending from lines 4 S to 8 S. There are

- 8 -

some trenches at the northwest end of the conductor again suggesting possible mineralization.

"C" Zone is a relatively stronger conductor near the west boundary of the property just south of "A" zone. It appears to be on the same structural trend as "B" zone and could represent the extension of this structure to the northwest.

"D" Zone is a fairly continuous northwest striking conductor situated some 1,000 feet north of "A" zone. It is quite similar to "A" zone with slightly higher conductivity. The significance of this zone will depend on the investigation of "A" zone.

CONCLUSIONS AND RECOMMENDATIONS

The electromagnetic surveys carried out on the extensive holdings of Bronson Mines Ltd. outlined a great many northwest striking conductive zones. These conductors conform to the major northwest synclinal axis in the area and some are quite continuous.

The presence of a known gold-bearing shear zone on the McKinnon property (Sheet 3) and also the presence of other gold occurrences in the immediate vicinity of the surveyed area, suggests the possibility that some of these conductors may represent gold-bearing shear zones.

It is therefore recommended that a further

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programme of exploration be carried out to investigate the major conductive zones outlined. Since the known gold occurrence on the McKinnon property is weakly magnetic, this physical property can be used to help determine which of the many conductive zones outlined, warrant investigation by diamond drilling. A close correlation of the trenches and geological data in the vicinity of the conductors will also be of assistance. The following specific recommendations are made.

1. A magnetic survey be carried out over all of the conductive zones outlined in the present survey.
2. Prospecting and geological mapping in the vicinity of the conductors.
3. Diamond drilling to investigate the major conductive zones, with priorities based on the results of items (1) and (2).

The estimated costs of the above programme is as follows:

1. Magnetic survey - 40 miles at \$110.00	4,400.00
2. Prospecting & geological mapping	5,000.00
3. Diamond drilling - 5,000 feet at \$25.00	125,000.00
Contingencies	<u>13,600.00</u>
Total	<u><u>\$148,000.00</u></u>

Respectfully submitted,

PROSPECTING GEOPHYSICS LTD.


H. J. Bergmann, P. Eng.

Montreal, Que.
June 30, 1980.

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS

Number of Stations _____ Number of Readings _____
Station interval 100'
Line spacing 400'
Profile scale or Contour intervals 10
(specify for each type of survey)

MAGNETIC

Instrument _____
Accuracy - Scale constant _____
Diurnal correction method _____
Base station location _____

ELECTROMAGNETIC

Instrument Geonics EM-16
Coil configuration -
Coil separation -
Accuracy ±1%
Method: Fixed transmitter Shoot back In line Parallel line
Frequency Cutler, Maine
(specify V.L.F. station)
Parameters measured In-phase and quadrature

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 _____

LIST OF CLAIMS

L 525047	L525078	L525210
L 525048	L525079	L525211
L 525049	L525080	L525212
L 525050	L525081	L525213
L 525051	L525082	L525214
L 525052	L525083	L525215
L 525053	L525084	L525216
L 525054	L525085	L525217
L 525055	L525086	L525218
L 525056	L525087	L525219
L 525057	L525088	L525220
L 525058	L525089	L525221
L 525059	L525090	L525222
L 525060	L525092	L525223
L 525061	L525093	L525224
L 525062	L525094	L525225
L 525063	L525095	L525226
L 525064	L525096	L525227
L 525065	L525097	L522317
L 525066	L525180	L522318
L 525067	L525181	L522319
L 525068	L525200	L522320
L 525069	L525201	L522321
L 525070	L525202	
L525071	L525203	23
L 525072	L525204	
L 525073	L525205	
L 525074	L525206	
L 525075	L525207	
L 525076	L525208	
L 525077	L525209	

31

31

31
23
85

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS

Number of Stations 920 Number of Readings 908
Station interval 100'
Line spacing 200'
Profile scale or Contour intervals 40%
(specify for each type of survey)

MAGNETIC

Instrument _____
Accuracy - Scale constant _____
Diurnal correction method _____
Base station location _____

ELECTROMAGNETIC

Instrument Geonics EM-16
Coil configuration -
Coil separation -
Accuracy ± 1%
Method: Fixed transmitter Shoot back In line Parallel line
Frequency Cutler, Maine
(specify V.L.F. station)

Parameters measured In-phase and quadrature

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 _____

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Cook Twp.

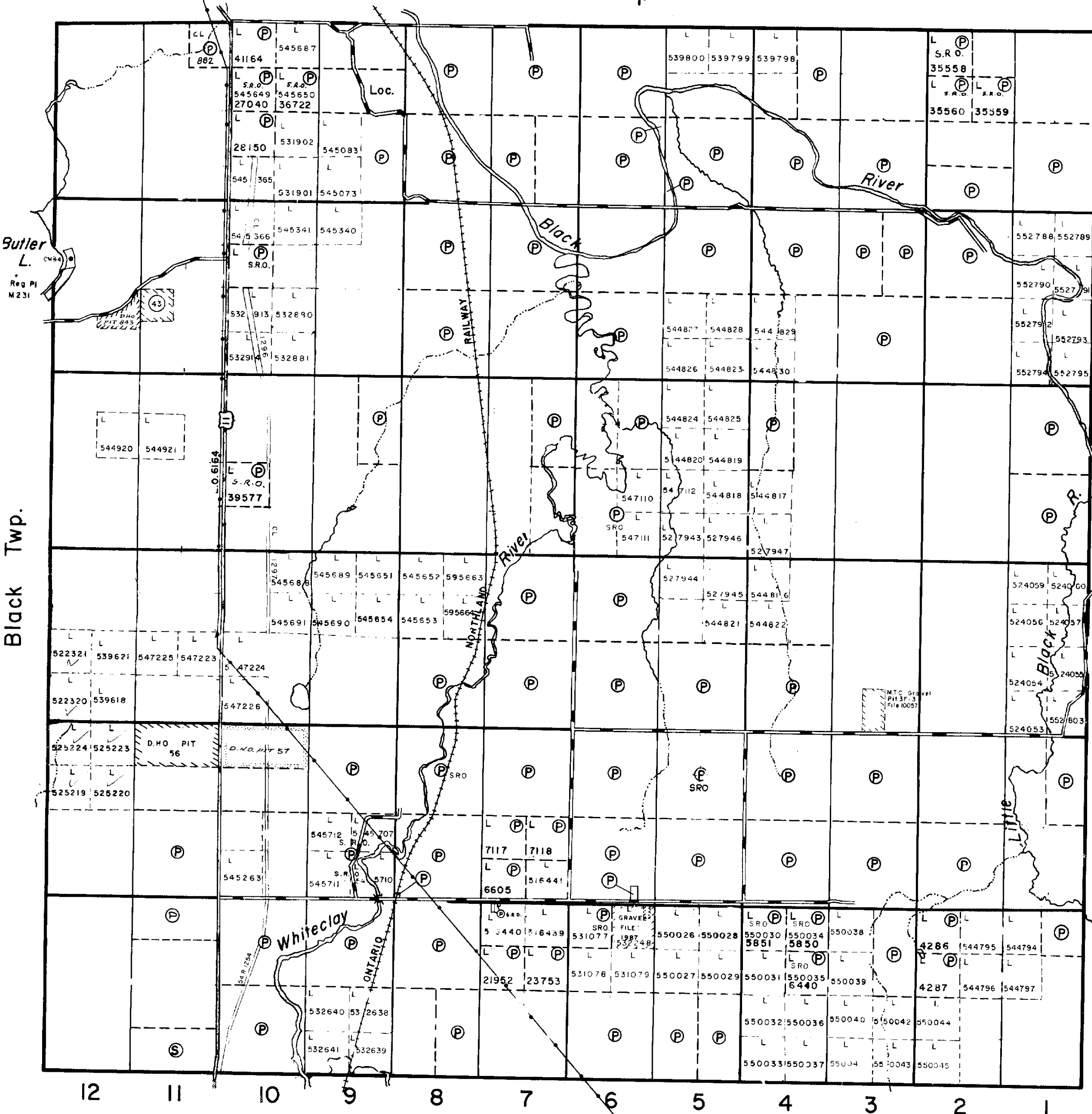
2.3371 THE TOWNSHIP OF

BENOIT

DISTRICT OF COCHRANE

LARDER LAKE MINING DIVISION

SCALE: 1-INCH=40 CHAINS



VI
V
IV
III
II
I

LEGEND

- PATENTED LAND ● or (P)
- CROWN LAND SALE (S) or 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
- PATENTED S.R.O.
- CANCELLED

NOTES

400' Surface rights reservation around all lakes & rivers.

Gravel Reserve Shown Thus: [Symbol]

400' frontage on Butler Lake withdrawn from disposition for proposed summer resort development. File 164586

Areas withdrawn from staking under Section 43 of the Mining Act (R.S.O. 1970)

Order No.	File	Date	Disposition
(43) W.33/74	98838	12/6/74	S.R.O.

DATE OF ISSUE
JUL 10 1980
SURVEYS AND MAPPING
DRAWN

PLAN NO.- M.326

ONTARIO
MINISTRY OF NATURAL RESOURCES
SURVEYS AND MAPPING BRANCH



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Maisonville Twp.

Playfair Twp.-M.381

2.3371
THE TOWNSHIP OF
BLACK

DISTRICT OF COCHRANE

LARDER LAKE 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 for S.R.O.

NOTES

400' Surface Rights Reservation along the shores of all lakes and rivers.

400' frontage on Butler Lake withdrawn from disposition for proposed summer resort development File 164586

DATE OF ISSUE
JUL 10 1980
SURVEYS AND MAPPING
BRANCH

PLAN NO. **M.329**

ONTARIO
MINISTRY OF NATURAL RESOURCES
SURVEYS AND MAPPING BRANCH

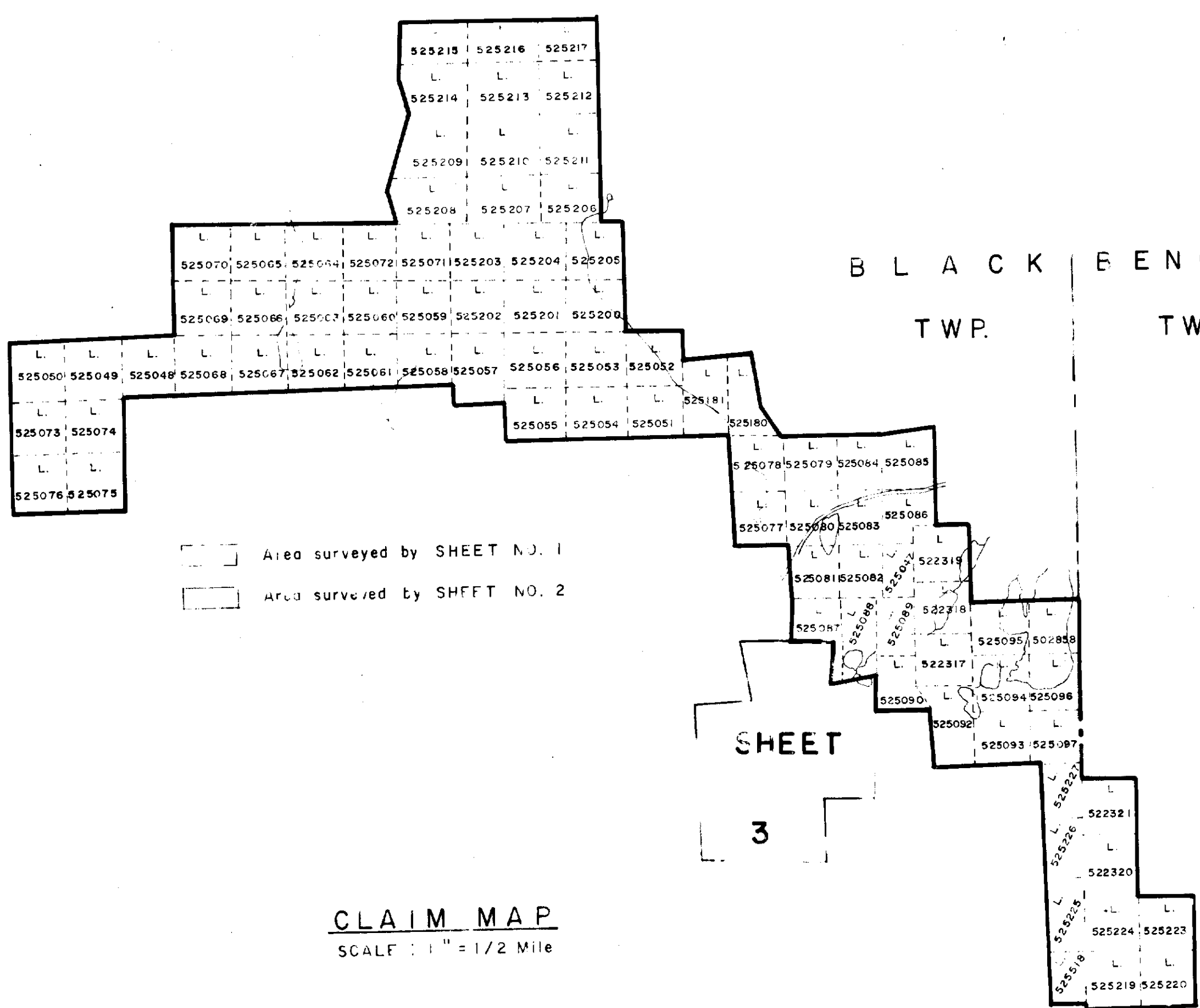
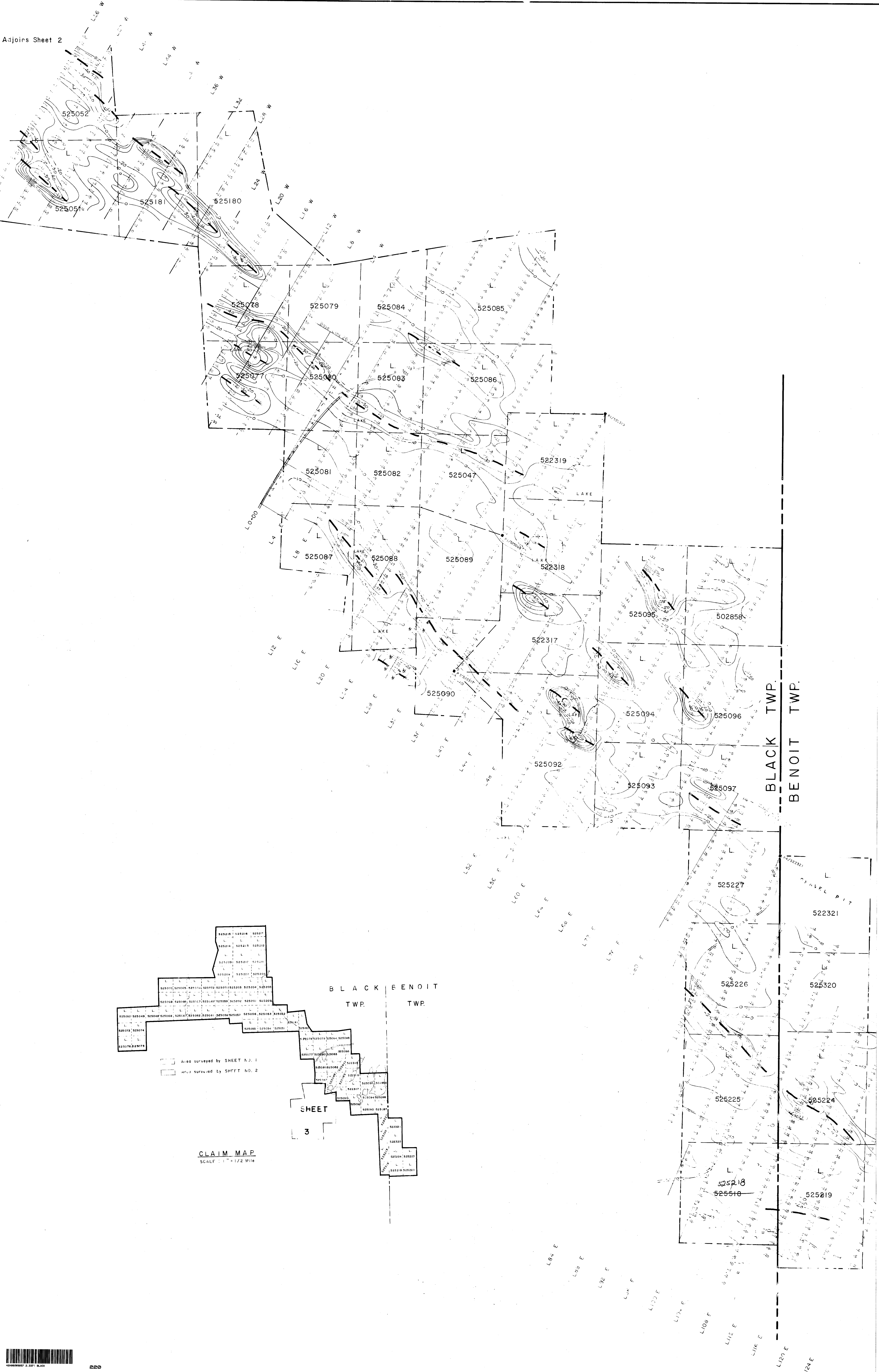
Tolstoi Twp.-M.395

Benoit Twp.-M.326

Lee Twp.-M.360



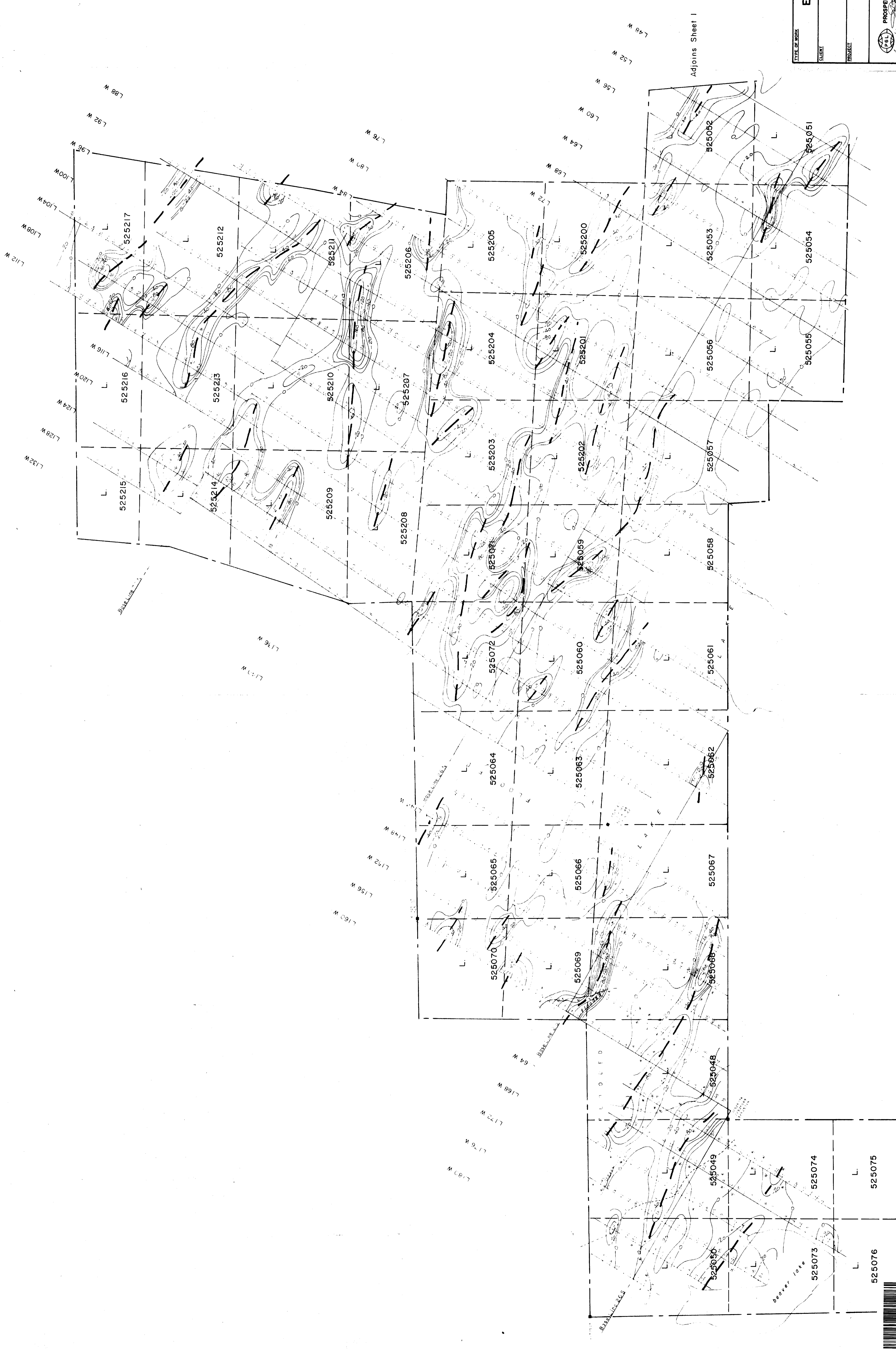
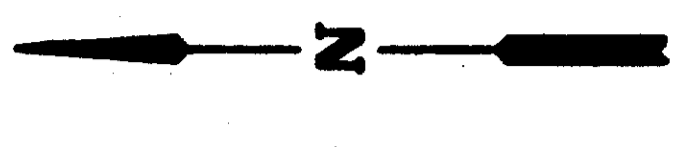
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Area surveyed by SHEET NO. 1
 Area surveyed by SHEET NO. 2

CLAIM MAP
 SCALE: 1" = 1/2 Mile



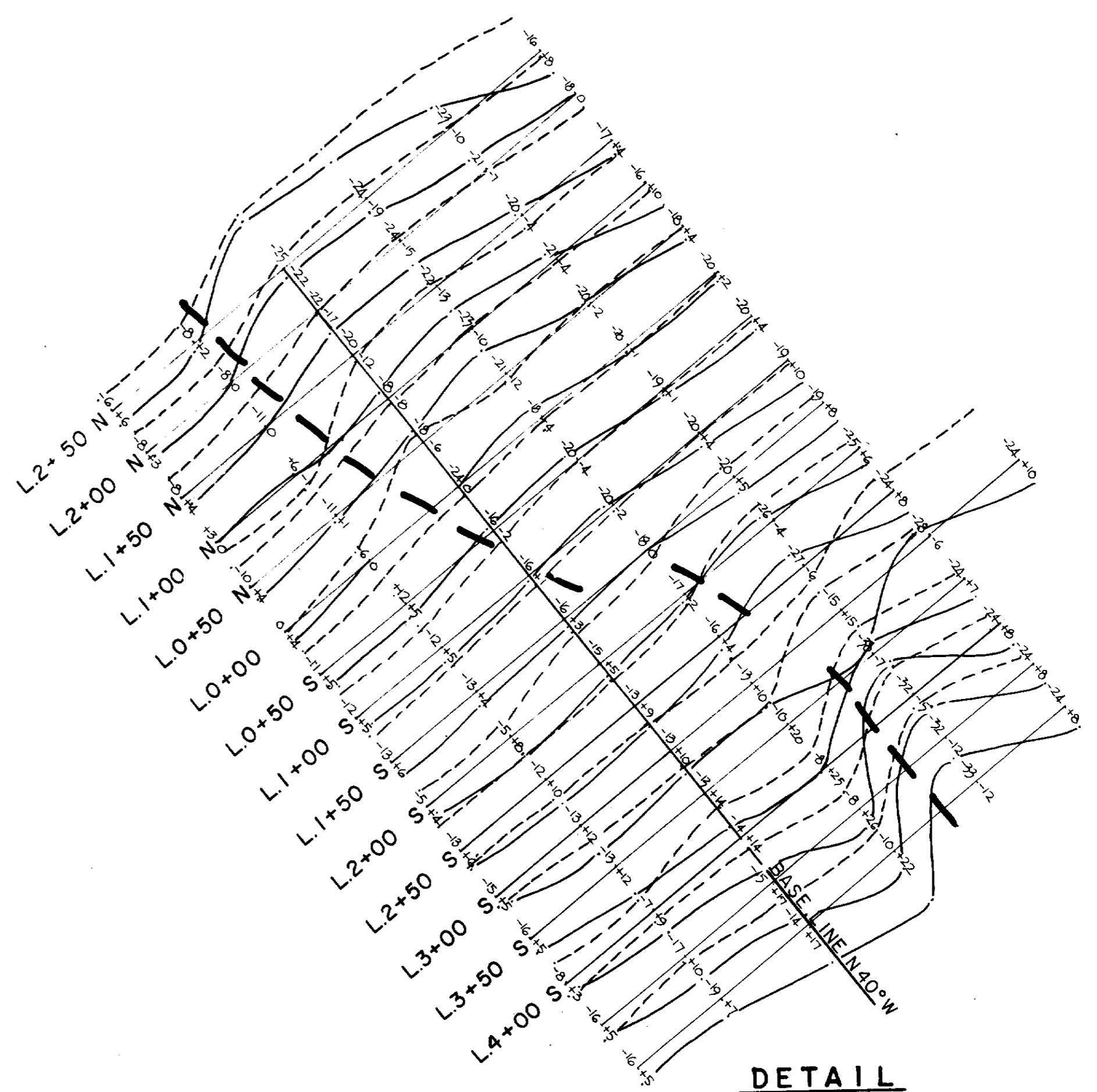
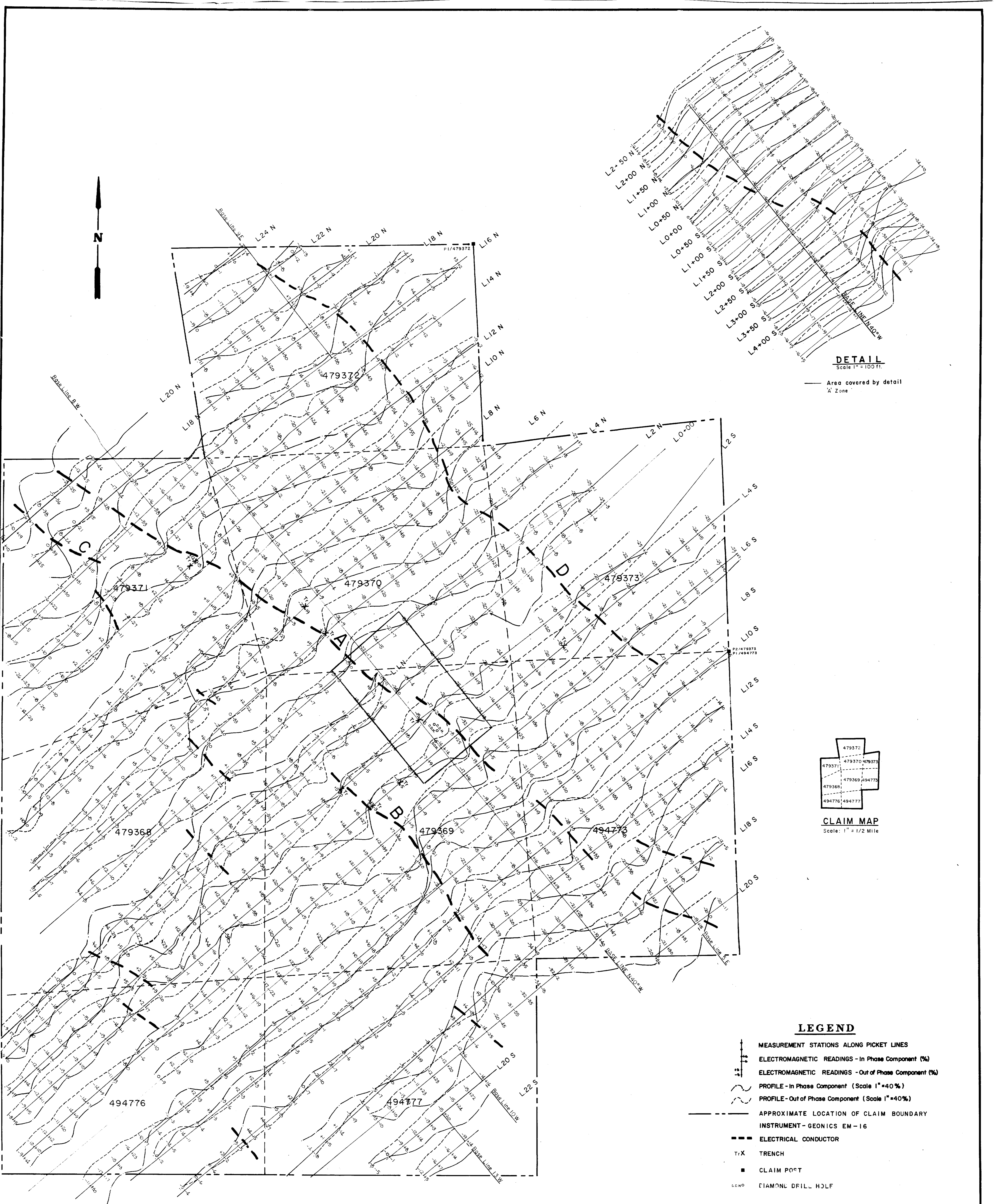
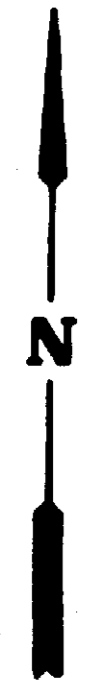


LEGEND

- MEASUREMENT STATIONS ALONG PICKET LINES
 - FRASER REDUCTION METHOD USED
 - ELECTRICAL CONDUCTOR
 - CONTIGUOUS INTERVAL
 - INSTRUMENT USED: GEONICS EM - 16
 - CLAIM POST * SWAMP
 - PROPERTY LINE
- Adjoins Sheet 1
- 0 TO -20
- 20 TO -60
- OVER -60

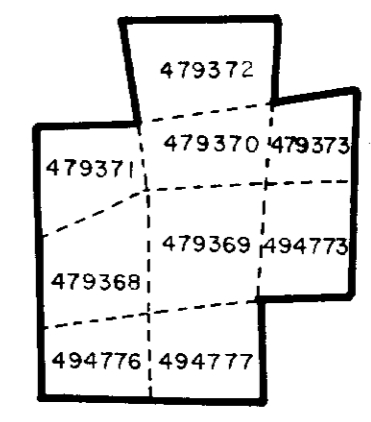
ELECTROMAGNETIC SURVEY	
CLIENT	GOLIATH MINES LTD.
PROJECT	BLACK & BENOIT TWP. QUE.
DATE	MAY, 1980
SCALE	1" = 400 FEET
MAP SHEET NO.	2 of 3





DETAIL
Scale 1" = 100 ft.

— Area covered by detail
"A" Zone



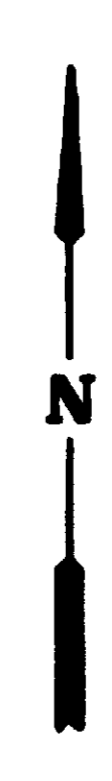
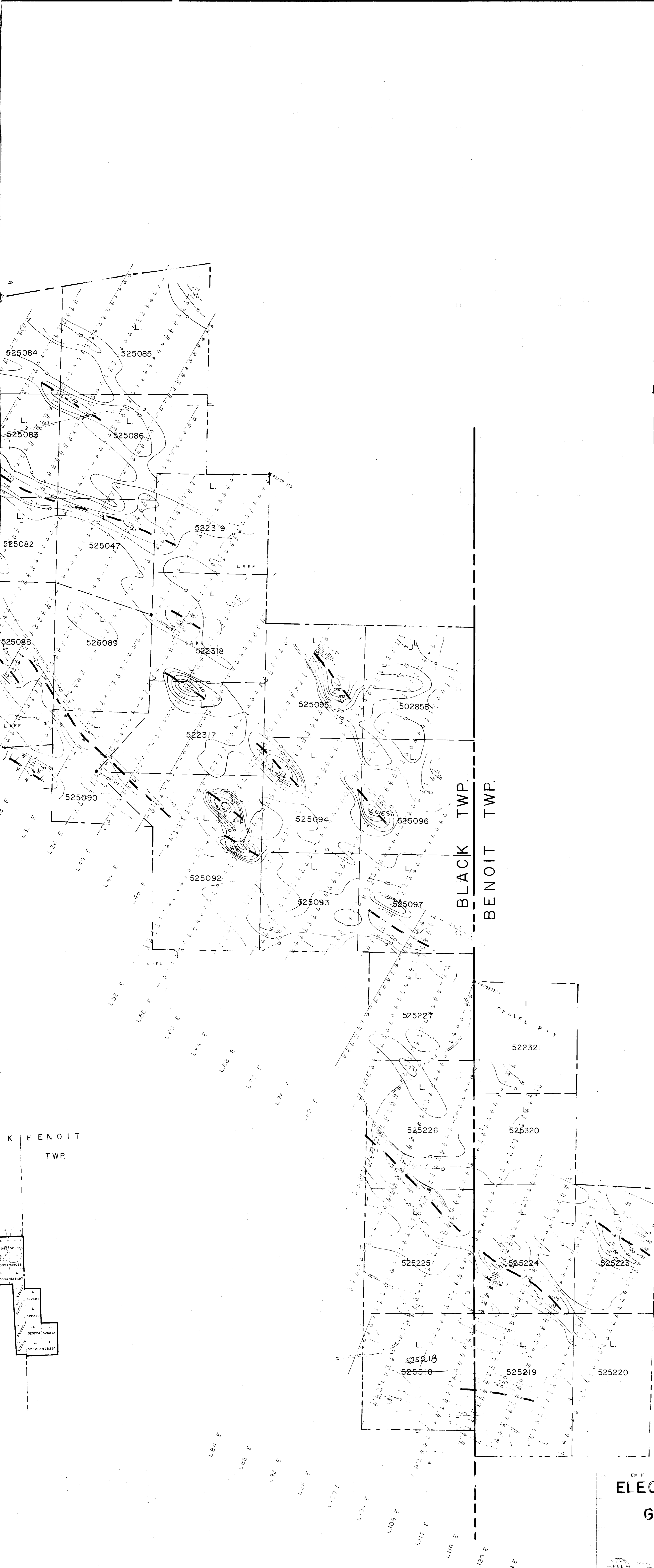
CLAIM MAP
Scale: 1" = 1/2 Mile

LEGEND

- MEASUREMENT STATIONS ALONG PICKET LINES
- ELECTROMAGNETIC READINGS - In Phase Component (%)
- ELECTROMAGNETIC READINGS - Out of Phase Component (%)
- PROFILE - In Phase Component (Scale 1" = 40%)
- PROFILE - Out of Phase Component (Scale 1" = 40%)
- APPROXIMATE LOCATION OF CLAIM BOUNDARY
- INSTRUMENT - GEONICS EM-16
- ELECTRICAL CONDUCTOR
- TRENCH
- CLAIM POST
- DIAMOND DRILL HOLE

TYPE OF WORK: EM-16		ELECTROMAGNETIC SURVEY	
CLIENT:		GOLIATH MINES LTD.	
PROJECT:	AREA:	BLACK TWP. ONT.	
SCALE:	DATE:	SCALE: 1" = 200 ft.	DATE: MAY, 1980
DRAWN BY:	MAP OR SHEET NO.:	3 of 3	





- LEGEND**
- 19 MEASUREMENT STATIONS (LINE) (CIR) (DOT)
 - 20 PROPERTY LINE (DASHED) (SOLID)
 - 21 ELECTRICAL CONDUCTION
 - 22 CONT. INT. INTERVAL: 1
 - 23 INSTRUMENT USED: GEONICS EA-15
 - 24 0 TO -20
 - 25 -20 TO -60
 - 26 OVER -60
 - 27 CLAIM POST
 - 28 SWAY
 - 29 PROPERTY LINE

ELECTROMAGNETIC SURVEY
GOLIATH MINES LTD.

BLACK & BENOIT TWPS., ONT.

1" = 400 FT.	DATE: MAY, 1980
3	1 of 3

PGL
GOLIATH MINES LTD.
MAY 1980
1 of 3
33316