



41P15NE8313 2.12134 CAIRO

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Comstate Resources Ltd
Geological Report
Cairo Property
Matachewan Area
Larder Lake Mining Division

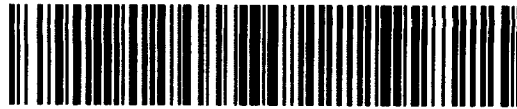
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FEB 1 1989

MINING LANDS SECTION

January, 1989

D. R. Pyke, Ph.D.



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Comstate Resources Ltd

Geological Report

Cairo Property

Introduction

This report covers the general geology of 10 claims in Cairo Township, Larder Lake Mining Division, District of Timiskaming. In addition, 5 thin sections of the volcanic rocks from the property were examined, and 14 grab samples were analysed for gold.

The property includes the following claims:

L997490 and L997491

L1027188 - L1027195 inclusive

Access

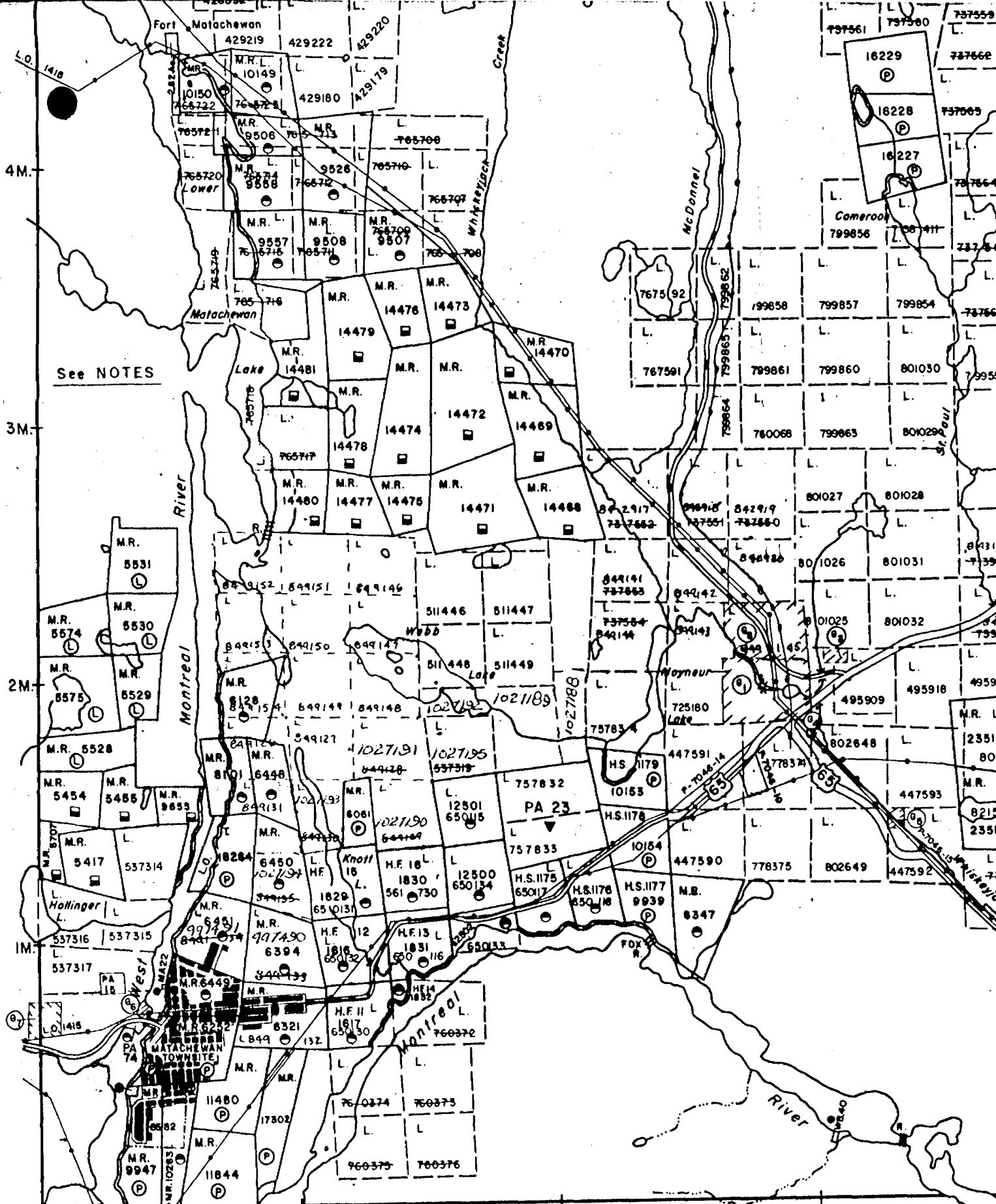
Access to the property is excellent. The SW portion of the claim group extends into the north part of the village of Matachewan. The eastern part of the claim group is traversed by a bush road extending north from Highway 66.

Previous Work

Following the discovery of gold in Matachewan in 1916, the Matachewan area was mapped by Burrows (1918, 1920), Cooke (1919), Dyer (1935) and subsequently by Lovell (1967).

There are virtually no assessment records available for the current property concerning the nature or extent of any exploration work previously undertaken on this property. Presumably much of the original

TOWNSHIP



See NOTES

MATACHEWAN TOWNSITE
 REG. PLANS M 108
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Kimberley Twp.

exploration was prior to a formalized system of recording and/or retaining assessment records. Nevertheless, signs of old trenching are evident throughout much of the property.

In 1985-86, Asarco Exploration Co undertook a trenching program on part of a property consisting of 19 contiguous claims east of the Montreal River; five of the claims covered the western portion of the current property. Both till and bedrock samples were taken. Although a few weakly anomalous samples were detected in the tills, no further work was undertaken. The main trenching was near the west boundary of what is now claim L1027193.

Regional Geology

The Matachewan area borders the NW margin of the Round Lake batholith, and is on the south limb of a major synclinalorium, the axis of which trends westerly approximately 7 miles north of the area (Pyke et al, 1973). A large pluton of syenite, the Cairo stock, underlies the NE portion of Cairo Township. Volcanic rocks of komatiitic, tholeiitic and calc-alkalic affinities trend westward across Cairo and Powell Townships, but have not as yet been mapped in sufficient detail to be accurately delineated. Intercalated with the volcanic rocks are thick sequences of sedimentary rocks. It is the contact zones of the more southerly sedimentary sequence with the underlying volcanics, in association with syenitic intrusions, which has formed the focal point for the known gold mines in the area.

The north trending Matachewan diabase dike swarm intrudes the Early Precambrian (Archean) rocks, and has been dated at 2485 million years (Fahrig and Wanless, 1963)

Flat lying Proterzoic sediments of the Cobalt Group unconformably overlie the Archean rocks.

Present Survey

The present geological survey was done intermittently by D. Pyke, K. Cunnison and B. Raine during the period August 13- November 11, 1988. Claims 1027188-192 inclusive and 1027195 and 997490, were systematically traversed; this included the N-S claim lines and pace and compass traverses at approximately 400 foot intervals between the claim lines. For control, base lines were established along the north and south boundaries of the above claims. Only minor outcrop was examined on the remaining 3 claims - 1027193, 1027194 and 997491. Thin sections of five samples of basalt were examined from claims 1027193, 1027194 and 14 samples of bedrock were analyzed for gold (ppb).

Property Geology

Outcrop on the property is largely confined to the area west of Knott Lake. This portion of the claim group, which is underlain by Archean metavolcanic rocks (Lovell, 1967), will require detailed mapping. Outcrop on the remaining portion of the property is sparse and consists of Proterozoic sediments of the Cobalt Group. Archean metasediments are confined to the area near the east shore of Knott Lake, as shown by Lovell (1967), and were not examined during the present survey.

The Archean - Proterzoic contact trends NE across the property. This contact zone is interpreted to represent a major fault structure (see accompanying map), whereby the linear distribution of the Cobalt sediments reflects a regressive weathering fault zone. This is supported by intense shearing of the volcanic rocks adjacent to the cobalt-volcanic

contact on claims L1027194 and L997491.

The Colbalt Group is largely a polymictic conglomerate with lesser arkose and greywacke. The conglomerate is very poorly sorted and dominated by 5-15 percent subrounded granitic clasts varying from 8 feet to < 1 inch in maximum dimension. Other boulders and pebbles include minor argillite and lesser vein quartz. The matrix is mainly a gritty greywacke or rarely a more quartzose feldspathic arkose. No bedding or other primary sedimentary structures were observed; a strong cleavage is locally developed.

Archean metavolcanic rocks outcrop west of Knott Lake, and are of a basaltic composition. The basalts are medium green weathering, medium to dark green fresh, and vary from being massive - moderately foliated to extremely sheared. Although shearing is most evident in those outcrops proximal to the Proterozoic - Archean contact, intense shearing has occurred at some distance from the contact, as near the NW corner of claim L1027193.

× Three thin sections (P1-3) of sheared, chloritized and carbonatized basalt from the east boundary of claim L1027194 were examined. These consist of an extremely fine recrystallized groundmass of quartz and plagioclase (0.01-0.02mm) with 15% chlorite-rich bands and lenses from 0.2 to 2mm wide imparting a foliation and/or axial planar cleavage to the rock. Carbonate forms 10-35% of the rock as pockets and lenses subparallel to the chlorite fabric. The rocks are highly crenulated with typical wavelengths and amplitudes of 1mm and 0.5mm respectively. One of the slides contains 20% twinned, subhedral albitic metacrysts 0.15-2mm in size and averaging 0.5mm. The metacrysts largely postdate the main fabric of the rock and probably represent a late stage albitization. Opaque minerals form 2-3% of the rock, consisting largely of

pyrite with minor magnetite. Two thin sections of foliated to massive basalt on the west side of claim L 1027193 contain 40-55% plagioclase, occurring both as saussuritized grains to 0.5mm and as a fine (0.02mm) recrystallized mosaic with minor associated chlorite. Minor shreddy actinolitic hornblende is largely altered to chlorite and in part carbonate. The finely recrystallized feldspar and associated chlorite impart a weak shear fabric to the basalt.

Diabase dikes are common within the Archean metavolcanics and are massive, orange brown weathering, dark green and locally porphyritic.

Geochemistry

Fourteen samples of bedrock were analysed geochemically for gold (ppb). This included 5 samples of volcanics and 9 samples of the Cobalt sediments. All returned extremely low values.

Conclusions and Recommendations

Because of the proximity of the claim group to the former producing mines in the area (1.5-2.0 miles to the west) and the apparent comparable volcanic and sedimentary stratigraphy (Lovell, 1967), the property is considered to have an excellent gold potential. The possibility of a major fault zone beneath the Cobalt Group near the south margin of the claims is considered to greatly enhance this prospect. Detailed mapping of that part of the property underlain by Archean stratigraphy is recommended as well as a ground magnetic survey of the entire property to help better delineate structural elements.



References

Burrows, A. G.

1918: The Matachewan gold area; Ont, Bureau of Mines, Vol 27,
pt.,1, p. 215-240

1920: Matachewan gold area; Ont. Dept. of Mines, Vol. 29 pt. 3,
p.53-64.

Dyer, W. S.

1935: Geology and ore deposits of the Matachewan-Kenogami area;
Ont. Dept. of Mines, Vol. 44, pt.2, p.1-55.

Fahrig, W, R., and Wanless, R. K.

1963: Age and significance of diabase dike swarms of the
Canadian Shield; Canadian Jour. of Earth Sciences,
Vol.2, No.4, p.278-298.

Lovell, H. L.

1967: Geology of the Matachewan area; Ont. Dept of Mines, GR. 51,
61p.

Pyke, D. R., Ayres, L. D., and Innes, D. G.

1973: Timmins-Kirkland Lake sheet; Ont. Div. of Mines,
Geological Compilation Map 2205, Scale 1 inch to 4 miles.



Ministry of
Natural
Resources

Report of Work
(Geophysical, Geological,
Geochemical and Expenditures)

DOCUM

W8808-

557



41P15NE8313 2.12134 CAIRO

900

R. Management The

Type of Survey(s) GEOLOGICAL	Township or Area CAIRO
Claim Holder(s) B. RAINE & D. PYKE	Prospector's Licence No. M21026 K19126
Address P.O. 390 Schumacher ONT PONICO ; 31 DELAIR CRES THORNHILL	
Survey Company COMSTATE Resources Ltd	Date of Survey (from & to) Day Mo. Yr. Day Mo. Yr. 13 08 88 11 11 88
Name and Address of Author (of Geo-Technical report) D. PYKE 31 DELAIR CRES THORNHILL ONT L3T2M3	

Credits Requested per Each Claim in Columns at right

Mining Claims Traversed (List in numerical sequence)

Special Provisions	Geophysical	Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	- Electromagnetic	
	- Magnetometer	
For each additional survey: Enter 20 days (for each)	- Radiometric	
	- Other	
DEC 8 1988	Geological	20
	Geochemical	

Mining Claim			Mining Claim		
Prefix	Number	Expend. Days Cr.	Prefix	Number	Expend. Days Cr.
L	997490				
	1027188				
	1027189				
	1027190				
	1027191				
	1027192				
	1027195				

MINING LANDS SECTION

Complete reverse side and enter in columns at right

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NOV 30 1988
S. J. Sam
65

Expenditures (excludes power stripping)

Type of Work Performed

Performed on Claim(s)

Calculation of Expenditure Days Credits

Total Expenditures \$ ÷ 15 = Total Days Credits

Total number of mining claims covered by this report of work. **7**

Instructions
Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

For Office Use Only

Total Days Cr. Recorded 140	Date Recorded Nov. 30/88	Mining Recorder <i>J. Bostwick</i>
Z.P.	Date Approved as Recorded <i>See revised statement</i>	Branch Director <i>AKB</i>

Date **Nov 28/88** Recorder Holder or Agent (Signature) *D. Pyke*

Certification Verifying Report of Work
I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report is true.

Name and Postal Address of Person Certifying
D. R. PYKE, 31 DELAIR CRES THORNHILL ONT L3T2M3

Date Certified **NOV 28/88** Certified by (Signature) *D. Pyke*

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS - If more than one survey, specify data for each type of survey

Number of Stations _____ Number of Readings _____
Station interval _____ Line spacing _____
Profile scale _____
Contour interval _____

MAGNETIC

Instrument _____
Accuracy - Scale constant _____
Diurnal correction method _____
Base Station check-in interval (hours) _____
Base Station location and value _____

ELECTROMAGNETIC

Instrument _____
Coil configuration _____
Coil separation _____
Accuracy _____
Method: Fixed transmitter Shoot back In line Parallel line
Frequency _____
(specify V.L.F. station)
Parameters measured _____

GRAVITY

Instrument _____
Scale constant _____
Corrections made _____
Base station value and location _____
Elevation accuracy _____

INDUCED POLARIZATION
RESISTIVITY

Instrument _____
Method Time Domain Frequency Domain
Parameters - On time _____ Frequency _____
- Off time _____ Range _____
- Delay time _____
- Integration time _____
Power _____
Electrode array _____
Electrode spacing _____
Type of electrode _____

SELF POTENTIAL

Instrument _____ Range _____

Survey Method _____

Corrections made _____

RADIOMETRIC

Instrument _____

Values measured _____

Energy windows (levels) _____

Height of instrument _____ Background Count _____

Size of detector _____

Overburden _____

(type, depth – include outcrop map)

OTHERS (SEISMIC, DRILL WELL LOGGING ETC.)

Type of survey _____

Instrument _____

Accuracy _____

Parameters measured _____

Additional information (for understanding results) _____

AIRBORNE SURVEYS

Type of survey(s) _____

Instrument(s) _____

(specify for each type of survey)

Accuracy _____

(specify for each type of survey)

Aircraft used _____

Sensor altitude _____

Navigation and flight path recovery method _____

Aircraft altitude _____ Line Spacing _____

Miles flown over total area _____ Over claims only _____

GEOCHEMICAL SURVEY - PROCEDURE RECORD



Numbers of claims from which samples taken _____

Total Number of Samples _____

Type of Sample _____
(Nature of Material)

Average Sample Weight _____

Method of Collection _____

Soil Horizon Sampled _____

Horizon Development _____

Sample Depth _____

Terrain _____

Drainage Development _____

Estimated Range of Overburden Thickness _____

SAMPLE PREPARATION

(Includes drying, screening, crushing, ashing)

Mesh size of fraction used for analysis _____

General _____

ANALYTICAL METHODS

Values expressed in: per cent
 p. p. m.
 p. p. b.

Cu, Pb, Zn, Ni, Co, Ag, Mo, As, -(circle)

Others _____

Field Analysis (_____ tests)

Extraction Method _____

Analytical Method _____

Reagents Used _____

Field Laboratory Analysis

No. (_____ tests)

Extraction Method _____

Analytical Method _____

Reagents Used _____

Commercial Laboratory (_____ tests)

Name of Laboratory _____

Extraction Method _____

Analytical Method _____

Reagents Used _____

General _____

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS - If more than one survey, specify data for each type of survey

Number of Stations _____ Number of Readings _____
Station interval _____ Line spacing _____
Profile scale _____
Contour interval _____

MAGNETIC

Instrument _____
Accuracy -- Scale constant _____
Diurnal correction method _____
Base Station check-in interval (hours) _____
Base Station location and value _____

ELECTROMAGNETIC

Instrument _____
Coil configuration _____
Coil separation _____
Accuracy _____
Method: Fixed transmitter Shoot back In line Parallel line
Frequency _____
(specify V.L.F. station)
Parameters measured _____

GRAVITY

Instrument _____
Scale constant _____
Corrections made _____

Base station value and location _____

Elevation accuracy _____

INDUCED POLARIZATION
RESISTIVITY

Instrument _____
Method Time Domain Frequency Domain
Parameters -- On time _____ Frequency _____
-- Off time _____ Range _____
-- Delay time _____
-- Integration time _____
Power _____
Electrode array _____
Electrode spacing _____
Type of electrode _____

SELF POTENTIAL

Instrument _____ Range _____

Survey Method _____

Corrections made _____

RADIOMETRIC

Instrument _____

Values measured _____

Energy windows (levels) _____

Height of instrument _____ Background Count _____

Size of detector _____

Overburden _____
(type, depth -- include outcrop map)

OTHERS (SEISMIC, DRILL WELL LOGGING ETC.)

Type of survey _____

Instrument _____

Accuracy _____

Parameters measured _____

Additional information (for understanding results) _____

AIRBORNE SURVEYS

Type of survey(s) _____

Instrument(s) _____
(specify for each type of survey)

Accuracy _____
(specify for each type of survey)

Aircraft used _____

Sensor altitude _____

Navigation and flight path recovery method _____

Aircraft altitude _____ Line Spacing _____

Miles flown over total area _____ Over claims only _____

GEOCHEMICAL SURVEY - PROCEDURE RECORD

Numbers of claims from which samples taken L1027189 L1027190, L1027193,
L1027194

Total Number of Samples 19

Type of Sample Rock sample
(Nature of Material)

Average Sample Weight 1-3 lbs.

Method of Collection Sledge hammers.

Soil Horizon Sampled _____

Horizon Development _____

Sample Depth _____

Terrain _____

Drainage Development _____

Estimated Range of Overburden Thickness _____

SAMPLE PREPARATION

(Includes drying, screening, crushing, ashing)

Mesh size of fraction used for analysis _____

General 14 of the samples were
submitted for geochemical
analysis for gold (ppb).

5 of the samples thin
sections were prepared of
& were examined
microscopically.

ANALYTICAL METHODS

Values expressed in: per cent
p. p. m.
p. p. b.

Cu, Pb, Zn, Ni, Co, Ag, Mo, As, (circle)

Others Au

Field Analysis (_____ tests)

Extraction Method _____

Analytical Method _____

Reagents Used _____

Field Laboratory Analysis

No. (_____ tests)

Extraction Method _____

Analytical Method _____

Reagents Used _____

Commercial Laboratory (MIN - EN tests)

Name of Laboratory _____

Extraction Method _____

Analytical Method _____

Reagents Used _____

General FIRE ASSAY &
Atomic Absorption.



Recorded Holder
B. Raine and D. Pyke

Township or Area
Cairo Township

Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
Geophysical Electromagnetic _____ days Magnetometer _____ days Radiometric _____ days Induced polarization _____ days Other _____ days Section 77 (19) See "Mining Claims Assessed" column Geological <u>4.6</u> days Geochemical _____ days Man days <input checked="" type="checkbox"/> Airborne <input type="checkbox"/> Special provision <input type="checkbox"/> Ground <input checked="" type="checkbox"/> <input type="checkbox"/> Credits have been reduced because of partial coverage of claims. <input type="checkbox"/> Credits have been reduced because of corrections to work dates and figures of applicant.	L 997491 1027193-94

Special credits under section 77 (16) for the following mining claims

No credits have been allowed for the following mining claims

not sufficiently covered by the survey insufficient technical data filed

The Mining Recorder may reduce the above credits if necessary in order that the total number of approved assessment days recorded on each claim does not exceed the maximum allowed as follows: Geophysical - 80; Geological - 40; Geochemical - 40; Section 77(19) - 60.



Recorded Holder B. Raine & D. Pyke
Township or Area Cairo

Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
Geophysical Electromagnetic _____ days Magnetometer _____ days Radiometric _____ days Induced polarization _____ days Other _____ days Section 77 (19) See "Mining Claims Assessed" column Geological <u>20</u> days Geochemical _____ days Man days <input type="checkbox"/> Airborne <input type="checkbox"/> Special provision <input checked="" type="checkbox"/> Ground <input checked="" type="checkbox"/> <input type="checkbox"/> Credits have been reduced because of partial coverage of claims. <input type="checkbox"/> Credits have been reduced because of corrections to work dates and figures of applicant.	L 997490 1027188 to 91 inclusive 1027195

Special credits under section 77 (16) for the following mining claims

<u>10 days</u> L 1027192

No credits have been allowed for the following mining claims

<input type="checkbox"/> not sufficiently covered by the survey	<input type="checkbox"/> insufficient technical data filed
---	--

The Mining Recorder may reduce the above credits if necessary in order that the total number of approved assessment days recorded on each claim does not exceed the maximum allowed as follows: Geophysical - 80; Geological - 40; Geochemical - 40; Section 77(19) - 60.



Ontario

Ministry of
Northern Development
and Mines

Ministère du
Développement du Nord
et des Mines

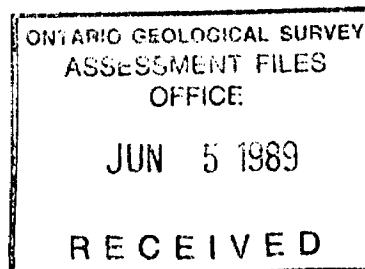
May 29, 1989

Mining Recorder
Ministry of Northern Development and Mines
4 Government Road East
Kirkland Lake, Ontario
P2N 1A2

Mining Lands Section
3rd Floor, 880 Bay Street
Toronto, Ontario
M5S 1Z8

Telephone: (416) 965-4888

Your file: W8908-055,
W8908-557,558
Our file: 2.12134



Dear Sir:

Re: Notice of Intent dated April 27, 1989 Geological Survey and
Assaying submitted on Mining Claims L 997491 et al in the
Township of Cairo.

The assessment work credits, as listed with the above-mentioned Notice of Intent,
have been approved as of the above date.

Please inform the recorded holder of these mining claims and so indicate on your
records.

Yours sincerely,

W.R. Cowan
Provincial Manager, Mining Lands
Mines & Minerals Division

DK:eb
Enclosure

cc: Mr. G.H. Ferguson
Mining and Lands Commissioner
Toronto, Ontario

Resident Geologist
Kirkland Lake, Ontario

D.R. Pyke
Thornhill, Ontario

B. Raine
Schumacher, Ontario

REFERENCES

AREAS WITHDRAWN FROM DISPOSITION

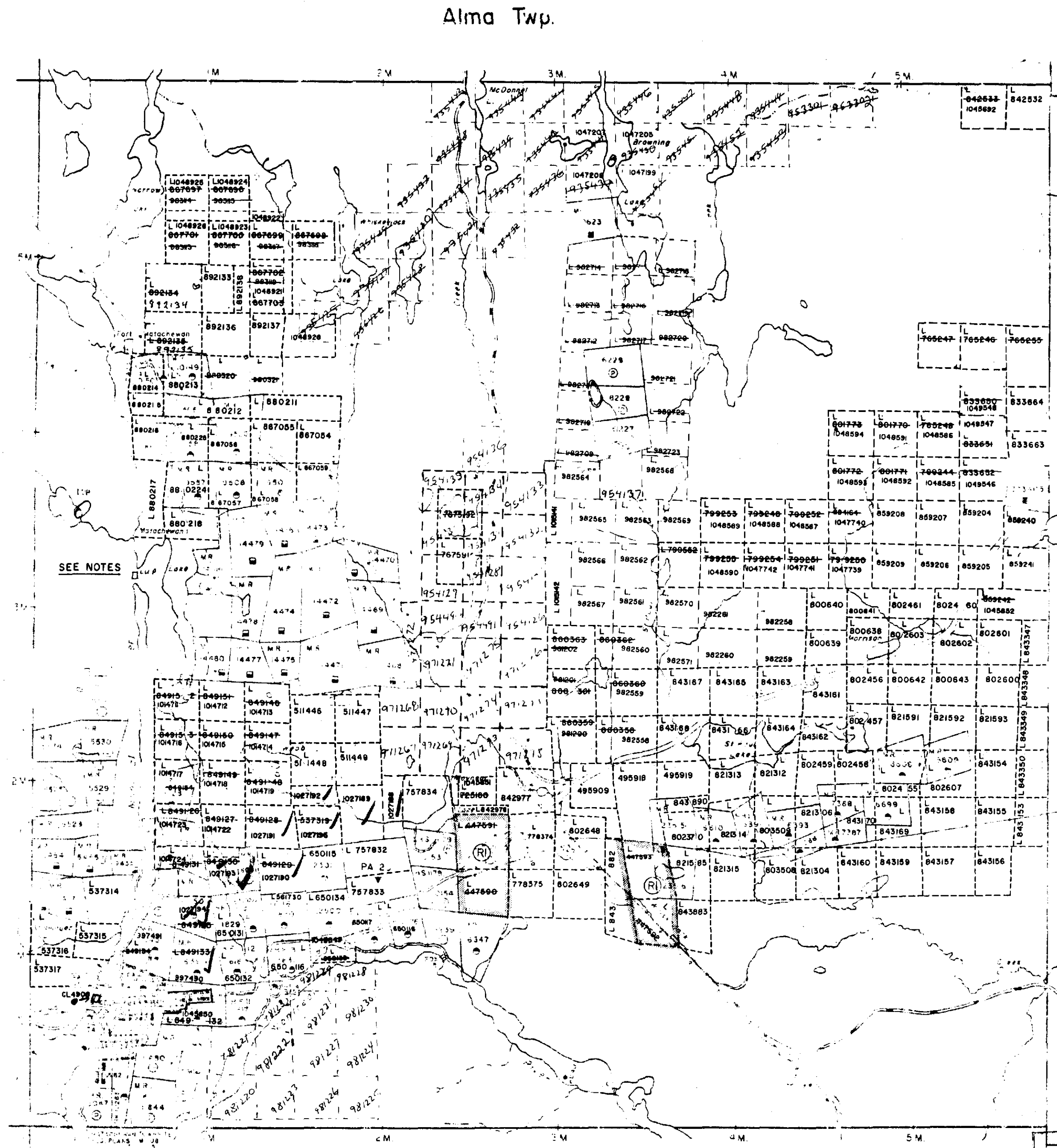
- M.R.O. - MINING RIGHTS ONLY
- S.R.O. - SURFACE RIGHTS ONLY
- M.+S. - MINING AND SURFACE RIGHTS

Description Order No. Date Disposition File

(R) MINING AND SURFACE RIGHTS NOT OPEN TO STAKING, APPLICATION UNDER SECTION 3(b) JUNE 12, 1987.

CL 4908 - PENDING APPLICATION UNDER PUBLIC LANDS ACT

LAND USE PERMIT



SEE NOTES

NOTES

AREA WEST OF WEST MONTREAL RIVER CLOSED TO STAKING SUBJECT TO SEC. 30(1) OF THE MINING ACT, 20 SEPT. 1978.



200

NOTICE OF FORESTRY ACTIVITY

THIS TOWNSHIP / AREA FALLS WITHIN THE PLONSKI FOREST MANAGEMENT UNIT AND MAY BE SUBJECT TO FORESTRY OPERATIONS. THE MNR UNIT FORESTER FOR THIS AREA CAN BE CONTACTED AT: P.O. BOX 129 SWASTIKA, ONT. POK ITO 705-642-3222

Alma Twp.

Kimberley Twp.

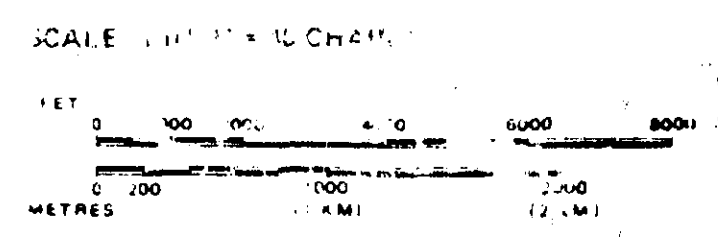
LEGEND

HIGHWAY AND ROUTE No.	
OTHER ROADS	
TRAILS	
SURVEYED LINES:	
TOWNSHIPS, BASE LINES, ETC.	
LOTS, MINING CLAIMS, PARCELS ETC.	
INSURVEYED LINES:	
LOT LINES	
PARCEL BOUNDARY	
MINING CLAIMS ETC.	
RAILWAY AND RIGHT OF WAY	
UTILIT. LINES	
NON-PERENNIAL STREAM	
FLOODING OR FLOODING RIGHTS	
DIVISION OR COMPOSITE PLAN	
RESERVATIONS	
ORIGINAL SHORELINE	
MARSH OR MUSKOG	
MINES	
TRAVERSE MONUMENT	

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	
SURFACE RIGHTS ONLY	
MINING RIGHTS ONLY	
LEASE, SURFACE & MINING RIGHTS	
SURFACE RIGHTS ONLY	
MINING RIGHTS ONLY	
LICENCE OF OCCUPATION	
ORDER-IN-COUNCIL	
RESERVATION	
CANCELLED	
SAND & GRAVEL	

NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 1 1913, VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 380, SEC. 43, SUBSEC.

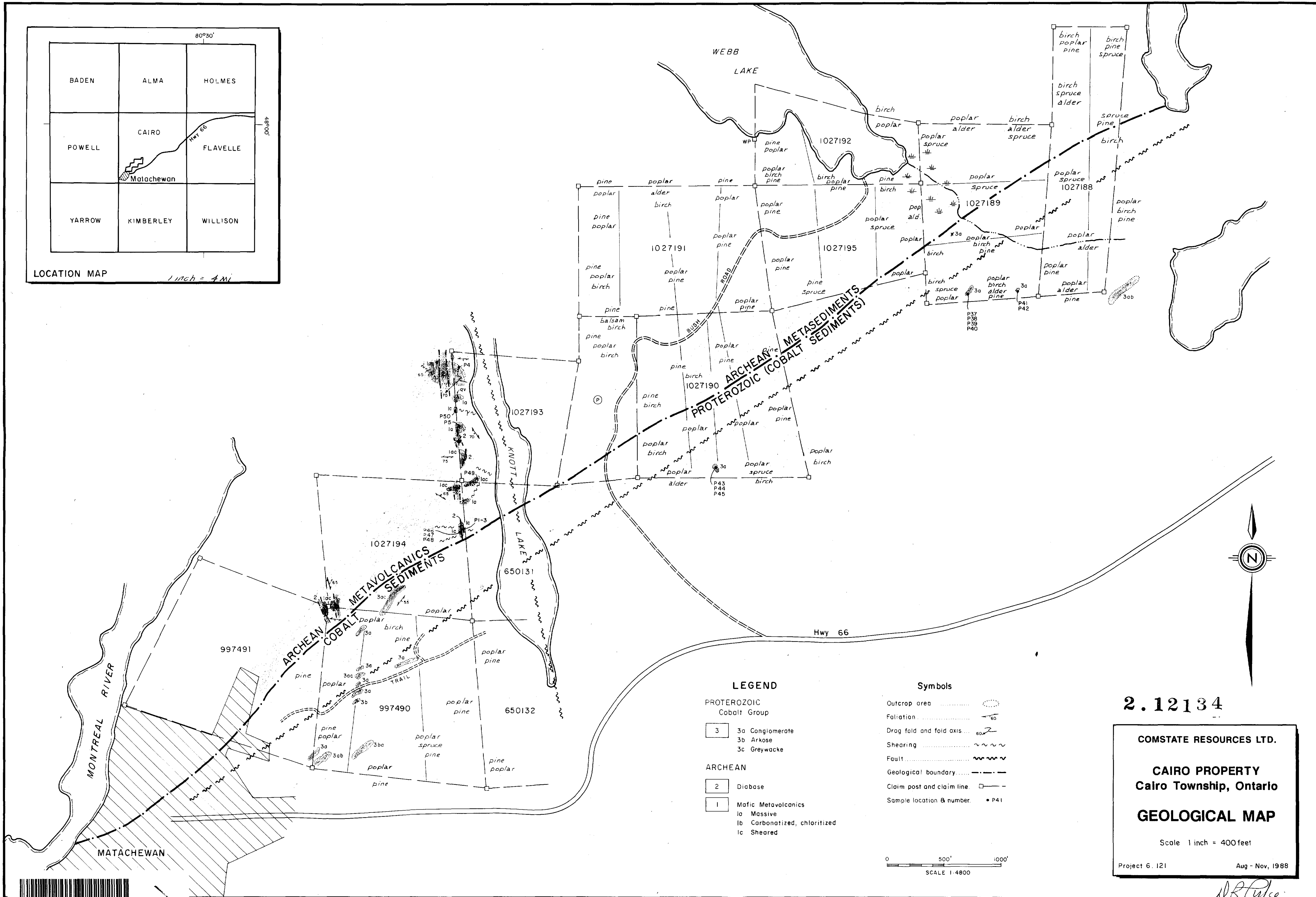
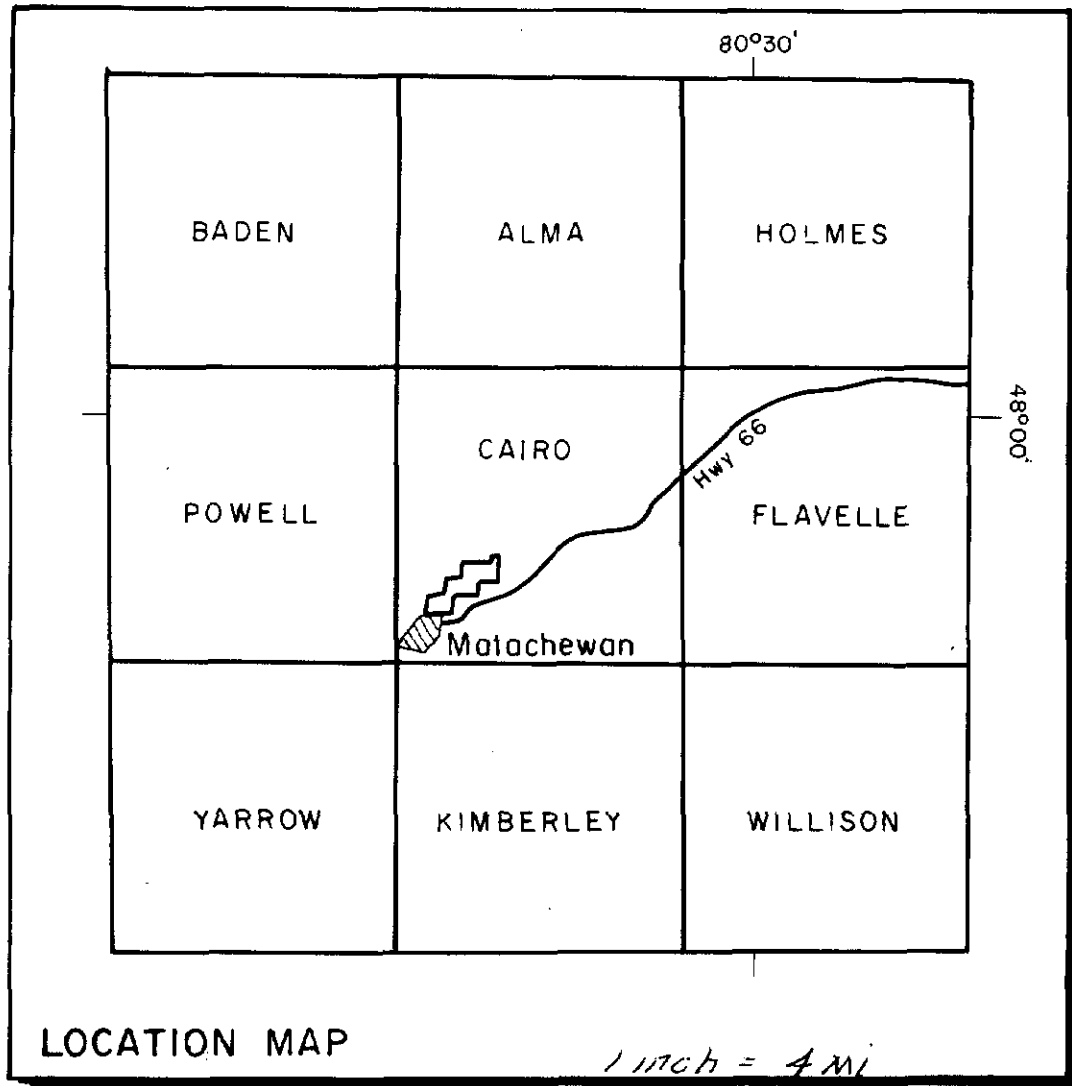


TOWNSHIP
CAIRO
M.N.R. ADMINISTRATIVE DISTRICT
KIRKLAND LAKE
MINING DIVISION
LARDER LAKE
LAND TITLES / REGISTRY DIVISION
TIMISKAMING

Ministry of Natural Resources Ontario
Ministry of Northern Development and Mines

DATE OF...
JAN 28 1988
MINING RECORDS

Date JULY 1986
Number G-3209



LEGEND		Symbols	
PROTEROZOIC		Outcrop area	
Cobalt Group		Foliation	
	3a Conglomerate	Drag fold and fold axis	
	3b Arkose	Shearing	
	3c Greywacke	Fault	
ARCHEAN		Geological boundary	
	2 Diabase	Claim post and claim line	
	1 Mafic Metavolcanics	Sample location & number	P41
	1a Massive		
	1b Carbonatized, chloritized		
	1c Sheared		

2.12134

COMSTATE RESOURCES LTD.

CAIRO PROPERTY
Cairo Township, Ontario

GEOLOGICAL MAP

Scale 1 inch = 400 feet

Project 6. 121 Aug - Nov, 1988



A.R. Pyke