GEOLOGY OF GRID A CLAIMS

McVITTIE TOWNSHIP

LARDER LAKE MINING DIVISION

Covering CLaims
L 767405 - L 767409, L 767415 - L 767419,
L 767425 - L 767429, L 767435 - L 767439,
L 767443 - L 767447, L 767460 - L 767466,
L 802384

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LAC Minerals Exploration
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INTRODUCTION

This report describes the results of geological mapping carried out between 1985 and 1988 by geologists G. MacMillan, M. Byron, J.Kovala, and D. Adamson, in a group of 38 contiguous unpatented mining claims in west central McVittie Township (Figure 1). The area of claims is underlain by Fe and Mg tholeiitic flows of the Kinojevis Group which overlie felsic, calc-alkaline tuffs and agglomerates of the Gauthier Group. These groups are folded around a large, upright fold structure (the Spectacle Lake anticline) and a smaller synformal structure to the south (the Moosehead lake Syncline). The sequence has been intruded by small Algoman feldspar porphyries.

The grid lies immediately to the south and east of patented claims of the Upper Beaver Mine. This deposit was apparently largely stratiform, with associated gold-enriched quartz veins, and contained both Cu and Au. During the period 1965-1972, the mine produced 389,000 tons of ore grading 1.28%Cu and 0.25 oz/ton Au. Ore was developed within distinctive rocks (basaltic conglomerate and magnetic conglomerate) occurring close to the Kinojevis/Gauthier contact. Thus, the Grid A claims occupy an important position and may have potential for Au mineralisation of the Upper Beaver type.

LOCATION AND ACCESS

The property is crossed by the Fork Lake bush road which runs north from highway 66 approximately 3km west of the town of Larder Lake. Numerous other bush roads and trails occur within the area of the grid, and access to all parts is good. North-South grid lines have been cut at a general spacing of 400'. In the northeastern part of the grid, lines are cut at 200'spacings.

PHYSIOGRAPHY AND VEGETATION

Outcrop constitutes approximately 15% of the Grid.The remainder is covered by deposits of clay, till and sand. Marshy ground is confined to the south western part of the grid. Mature conifer forest occurs in the region south of Beaverhouse Lake, deciduous trees are more prevelent in the south part of the grid, particularly in the vicinity of sand plains.

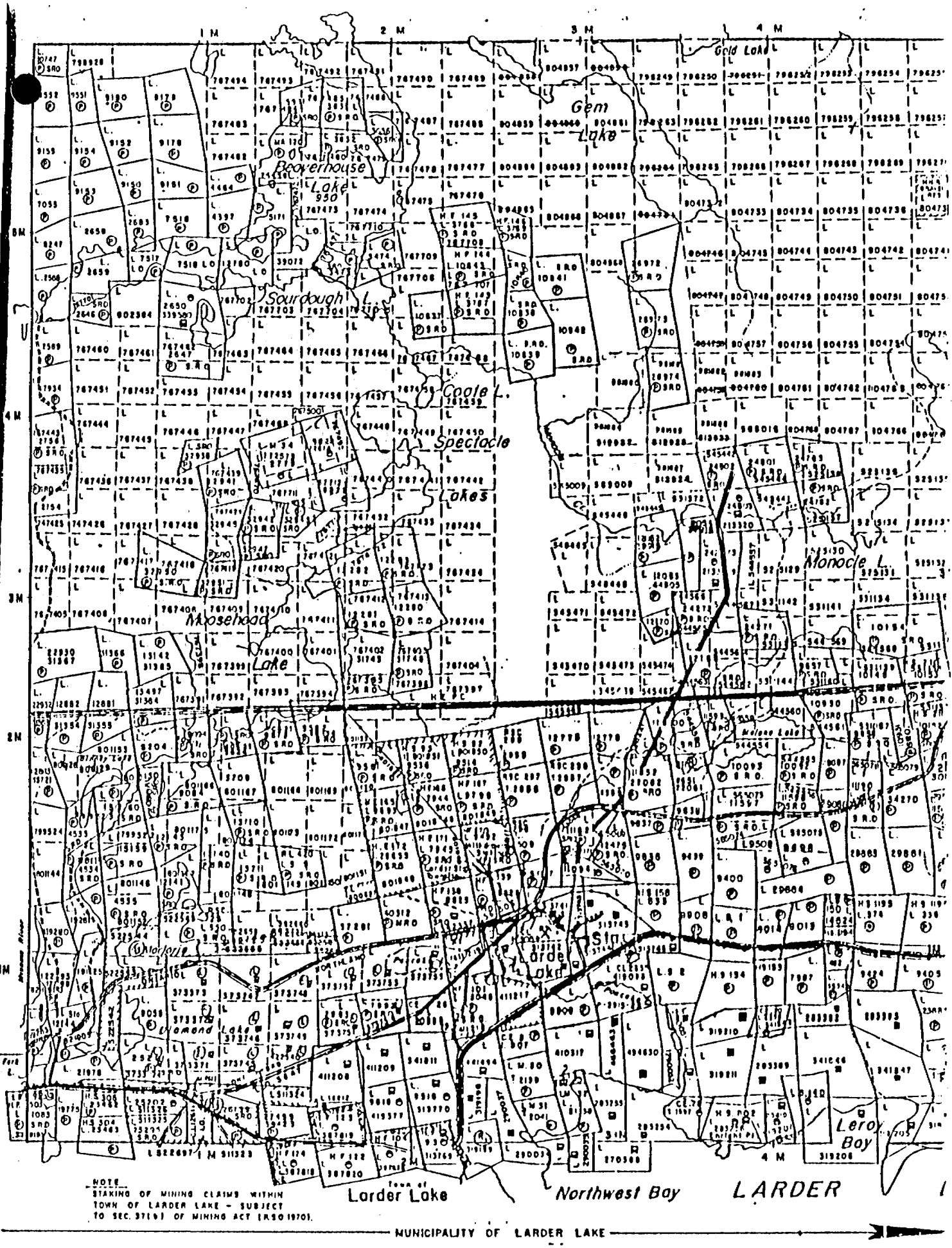


Figure 1 GRID A CLAIMS (2)

Claim Map

REGIONAL GEOLOGY

The Kirkland-Larder Lake area is located within the Abitbi greenstone belt, which is part of the Archean Superior structural province. In general, rocks in the area have undergone lower greenschist facies metamorphism, and are composed of metavolcanic, metasedimentary and plutonic rocks. Archean rocks are overlain by sedimentary rocks of Proterozoic age.

The Kirkland-Larder Lake belt forms part of the south limb of a large synclinorium, and consists of two major volcanic cycles. Each volcanic cycle consists of basal komatiitic rocks which are progressively overlain by tholeiitic, calc-alkaline and alkaline rocks (Figure 2). The oldest cycle in the Kirkland Lake area is the Wabewewa Group komatiites and Mg tholeiites which are overlain by the Catherine Group Mg-Fe tholeiites followed by the Skead Group calc-alkaline group (2709my).

The youngest cycle in the Kirkland Lake area has the Larder Lake Group komatiites (500m) disconformably overlying the Skead Group. Conformably overlying the Larder Lake group is the Kinojevis Group (10,000m) Mg-Fe tholeiites. The Kinojevis group is conformably overlain by the calc-alkaline Blake River Group (10,000m, 2703my).

Overlying the above sequence is the alkaline rift-related Timiskaming Group (300m, 2690my). The contact between the Timskaming Group and underlying rocks is conformable in some localities wheras in others, it is clearly unconformable.

The Gauthier Group is a thin sequence of potassic calc-alkaline rocks which underlies Kinojevis and Temiskaming Group rocks. The origin of these rocks, and their true status as a separate stratigraphic group, has not been resolved. Jensen (1983) suggests that the Gauthier Group forms part of the Blake River Group because of its calc-alkaline chemical affiliation.

Most of the world class gold deposits in the belt occur in rocks of the Temiskaming Group. The major exception is the Kerr Addison deposit, located in the Larder Lake Group. Another exception is the Upper Beaver Mine located at the eastern boundary of Gauthier township.

PREVIOUS WORK

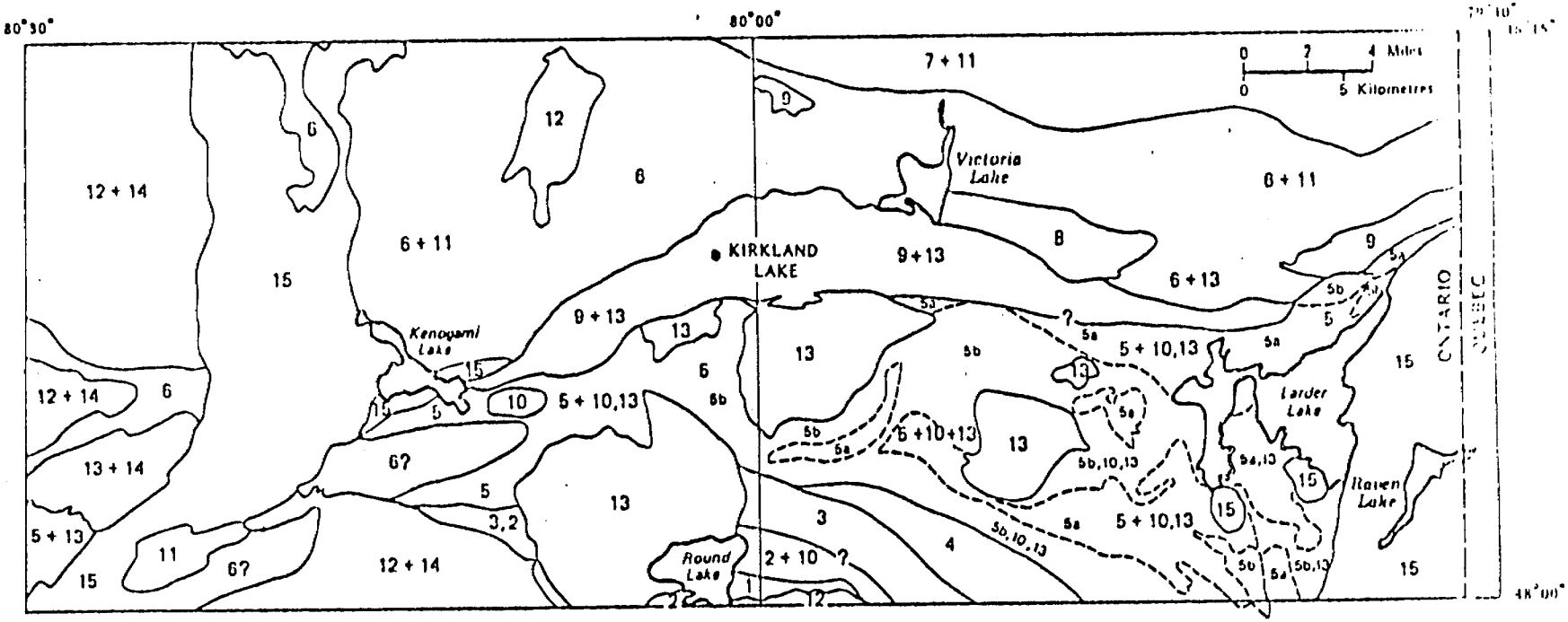
1942- R. MacPhail reported assay values of 0.12 oz/ton Au from garb samples taken from trenches at the south of claims 32944 and 32945, and values of 0.06 and 0.05 oz/ton from trenches near to the #3 post of claim 32941.

1944- Sylvanite Mines Ltd. failed to reproduce the values claimed by MacPhail.

1946-Gold values reported from a volcanic/porphyry contact in claims of the Biltmore Group (to the east of the Grid A claims). Values ranged from $0.70 to $162.40 (Au at $35.00). Further drilling was recommended, but no further details are known.

1950-Quennada Mines Ltd described a mineralised quartz vein at the north end of Moosehead Lake. No further details are known.

1960- Brennan, Joy and Harris identified a NE-SW trending Turam anomaly in the northwestern part of grid.



Stratigraphic units in the Kirkland Lake-Larder Lake area.
Layered assemblages - 1) Pacaude Group, 2) Wabewawa Group, 3) Catharine Group, 4) Skead Group, 5) Unnamed group (5a Sedimentary rocks, 5b Volcanic rocks), 6) Kinojevis Group, 7) Blake River Group, 8) Gauthier Group, 9) Timiskaming Group, 15) Coleman member of the Gowganda Formation
Intrusive Assemblages - 10) Ultramafic to mafic, 11) Malic to intermediate, 12) Felsic, 13) Ultramafic to felsic alkalic, 14) Diabase. 15) Huronian Cover

Jensen (1975)

Figure 2

1960- Joy (W.C.) drilled 6 drill holes in the northwestern part of the grid, to the east of the patented Upper Beaver Mine claims. Drill hole #5 contained Au at 0.01 oz/ton between 0'-5' and 60'-70', reportedly in syenite. A 1.6' section running 0.35 oz/ton was reported in drill hole #4, in andesite. No other mineralisation was found.

1966- Lenmac Mines Ltd. conducted magnetometer, em and geological surveys in 26 claims to the east of Spectacle Lakes.

1980- Queenston Mines Ltd conducted 19 miles of em and magnatometer surveys in 52 claims of the MacIntosh property. Diamond drilling of anomalies was carried out in the MacIntosh and Spectacle Lake properties (approximately encompassing the present Grid A claims). The holes mainly tested anomalies and/or surface mineralisation occurring close to the Kinojevis/Gauthier contact. No assay data are available.

PROPERTY GEOLOGY

The mapped area has been divided into two main groups: Kinojevis Group Mg-Fe tholeiites and Gauthier group calc-alkaline rocks (Map 1). These two groups have been folded about a large, upright anticlinal structure, the Spectacle Lakes anticline, and a smaller synclinal structure to the south, termed here the Mooshead Lake syncline. This large scale folding pattern becomes more complicated in the northwestern portion of the grid, where repeated units may indicate the presence of a complex folding pattern. The exact contact between the two groups has not been identified, but is thought to occur in close proximity to basal basaltic conglomerates and magnetic conglomerates of the Kinojevis Group. It is suspected that these lithologies form relatively discontinuous, proximal deposits, and that elsewhere across the Grid, Kinojevis group rocks are underlain by felsic pyroclastic rocks of the Gauthier Group. This contact has been mapped out in the southern part if the grid around the Moosehead Lake syncline (Map 1), and has been extrapolated from known geology in the northern part of the grid. Elswhere, the contact has a clear magnetic signature whereby magnetic Kinojevis rocks are sharply juxtaposed against rocks of the Gauthier Group, characterised by magnetic lows. Recognised rocktypes are described in more detail below, and have been delineated on the accompanying geological map (Map 1).

KINOJEVIS GROUP

1. Volcanic Rocks

Magnesium and iron tholeiites are separated on the basis of their colour, texture and magnetic propeties.

a) Magnesium Tholeiites

Magnesium tholeiites are grey green in colour and consistently non-magnetic. They generally weather to a grey colour. Other characteristics of the Mg-tholeiites include their unaltered nature, hardness and general absence of sulphide minerals. They occur primarily as pillowed flows and as massive and amydaloidal

varieties.
Pillowed units contain pillows of up to 2m in length which may contain radial fractures. Pillow selvedges commonly contain quartz segregations and chlorite stringers.
Amygdaloidal units contain 5%-30% quartz, calcite and chlorite filled amygdules in a fine grained matrix. These units mark the tops of flow cycles.
Massive flows are generally medium grained and are often associated with the amygdaloidal units. They are devoid of flow textures and are occasionally so coarse grained that they have a dioritic or gabbroic appearance.
Flow breccia units are generally less than 5m in width, and comprise sub-angular to sub-rounded fragments in a fine grained matrix.
Pillow breccias contain brecciated matrices or remnant pillow selvedges.

b) Iron Tholeiites
Iron Tholeiites occur as thick, fine to coarse grained massive flows. They are generally magnetic, although where altered they may be non-magnetic. They weather a brown to orange brown colour, and when fresh are dark green to black in colour. Alteration typically comprises epidotisation, saussuritisation and sericitisation. These rocks contain no visible flow textures and coarse-grained varieties resemble gabbroic or dirotic rocks. It is not clear whether these coarse grained variants represent true flows or subvolcanic feeder sills.
Pillowed flows account for less than 20% of the Fe-tholeiites and are only variably magnetic.
Amygdaloidal flows are similar to those described in the Mg-tholeiites.

2. Sedimentary rocks

Two distinctive rocktypes, termed here basaltic conglomerate and magnetic conglomerate (following the terminology established at the Upper Beaver Mine) have been recognised in the northwestern part of the grid. The former consists of 80% sub-angular, light-grey basaltic fragments in a fine grained matrix of similar composition. The fragments are generally 1cm-3cm accross. The magnetic conglomerate consists of 70%-80% fragments of which approximately 20% are subangular magnetite clasts, the remainder are fine grained basalt. The matrix to the fragments is fine-grained and magnetite-bearing.
Clearly, on the basis of the above descriptions, the two rocktypes would be better termed breccias rather than conglomerates. They are interpreted as proximal debris flow deposits of limited lateral extent.

GAUTHIER GROUP
The Gauthier group consists of a thick sequence of interbedded lapilli tuffs and tuff agglomerates. These weather to a white/grey colour and commonly show rusty brown patches of carbonate/sericite alteration.
Lapilli tuffs are thinly bedded and highly schistose. Deformation has obliterated any primary structures which may have been originally present.

Tuff agglomerates contain rounded to sub-rounded felsic clasts in a fine-grained siliceous matrix.
Generally it is not possible to trace individual units along strike. This is a function of the paucity of outcrop, and the suspected presence of primary lateral and vertical facies variations.

STRUCTURE

The structure of the area is dominated by the large anticlinal and synclinal folds described above. No small scale parasitic folds have been recognised. Gauthier group rocks have developed a strong planar fabric which is axial planar to the larger folds, and thus trends E-W. Kinojevis Group rocks have behaved more competantly during deformation and still preserve primary layering. Way-up structures indicate consistent facing directions. Contacts, where observed, have steep dips; thus the axial planes to the fold structures have almost vertical plunges.
No major faults were identified in the area. The claim block lies to the east of a major north-south trending fault, the Misema River fault. Johnson (1941) mapped the whole of McVittie township, and indicated a large NNE-SSW trending fault in the north-eastern part of Grid A, cutting both Kinojevis and Gauthier Group rocks. Evidence for the existence of this fault is equivocal. Geological and geophysical observations, particularly the recognition of the Mooshead Lake syncline, suggest that this fault either does not exist, or does not represent a major structural feature.

ECONOMIC GEOLOGY
Sulphide mineralisation was noted at a number of localities, these are summarised below:

1. In a pit at 30W 27N near the north-eastern margin of the feldspar porphyry. A 2' wide zone of up to 70% pyrite occurs within siliceous and weakly mineralised wall rocks. The pit is largely flooded, thus making determination of the structure of the mineralisation difficult. It appears, however, to have a subvertical dip, and an approximate trend of 203'. The mineralisation consists of 90% pyritic breccia fragments in a quartz-rich matrix.

2. In pits at the northern margin of the Felspar Porphyry in the northwestern part of the grid. Mineralisation consists of up to 3% chalcopyrite plus pyrite with associated trace specularite within massive, white quartz veins. One large (12" wide) vein in the granite trends 070°.

3. At 16W 34+50S, up to 10% disseminated pyrite occurs in E-W trending sheared and altered felsic fragmental rocks.

4. At 6W 24S treches occur in altered felsic volcanics. Possible fuchsite was identified in one hand specimen.

In addition to the localities noted above, minor sulphide mineralisation was noted at numerous localities, particularly in altered Fe-tholeiites which contain 1%-3% pyrite+pyrrhotite and

occasionally trace amounts of chalcopyrite.

GEOCHEMICAL SAMPLING

A total of 131 hand specimens were collected from the property. Descriptions of the hand specimens, with localities, are listed in Appendix A. Locations of samples are also shown on the accompanying geological map.

CONCLUSIONS

Geological mapping has led to the delineation of the Gauthier/Kinojevis Group contact which represents the most favourable exploration target for mineralisation of the Upper Beaver Mine type.

APPENDIX A HAND SPECIMEN DESCRIPTIONS

Samples collected by D. Adamson

Sample Number	Locality	Description
100	6+00N,40+50W	Flow top breccia. Schistose Fine-medium grained Plagioclase and hornblende present carbonate alteration
101	6+00N,40+50W	Epidotised Fe-tholeiite Probable boulder sample 1% Pyrite
102	25+50N,36+00W	Mineralised quartz-vein From pit at north edge of granite White/grey Inclusions of epidotised rock and minor iron carbonate Trace chalcopyrite
103	25+50N,36+00W	Quartz-veined feldspar porphyry 5mm plagioclase hornblende-KSpar matrix minor specularite in quartz vein
104	24+50N,36+00W	Syenite Pink, fine-grained, K-Spar-rich 1-3mm hornblende phenocrysts Carbonate alteration with Trace chalcopyrite
105	26+00N,31+00W	Mg-tholeiite Fine-grained, light grey hornblende+plagioclase
106	26+00N,32+00W	Mineralised quartz-vein Grey/white Minor syenite inclusions 0.5% chalcopyrite Trace specularite
107	26+00N,31+75W	Mafic syenite Hornblende+biotite+plag Pink/grey, fine-grained Minor pyrite+chalcopyrite on- fracture planes
108	26+00N,31+70W	Altered syenite pink, fine-grained carbonate-quartz alteration. Trace chalcopyrite+pyrite Trace specularite

Sample No.	Location	Description
109	27+00N,32+60W	Fresh syenite Green/pink Sub-rounded feldspar phenocrysts Fine-grained plag-rich matrix Sugary texture 5% quartz in matrix
110	21+00N,41+75W	Mineralised quartz vein grey quartz 2% chalcopyrite wall rock selvedges
111	3+75N,4+00W	Porphyritic Mg-tholeiite Hornblende-phyric Plag-rich matrix Trace silver coloured mineral
112	3+75N,4+00W	As above epidotised, silver mineral absent
113	25+00N,0+00W	Dioritic Fe-tholeiite hornblende+plag Trace pyrite
114	25+00N,1+80W	Dioritic Fe-tholeiite sheared, epidotised 0-1% pyrite
115	25+80N,0+25W	Mg-tholeiite Fine-grained
116	30+00N,0+75W	Gabbroic dyke? 80% hornblende, 20% plag
117	26+00N,7+00W	Chert-breccia 90% angular to subangular fragments of chert in a fine-grained matrix. Fragment supported Matrix also cherty Trace pyrite
118	26+25N,4+00W	Hornblende diorite dyke rock?
119	24+50N,4+50W	As 117 Clasts may be fine grained basalt
120	24+00N,2+00W	Gabbro Plag(50%),Biotite(50%) Lamprophyre?
121	24+60N,1+75W	Amydaloidal basalt

Sample No.	Location	Description
122	27+00N,33+50W	Altered syenite/chert?
123	27+00N,33+50W	As above +5% carbonate stringers
124-128	25+80N,30+00W	Mineralised cherts Tan coloured, siliceous 1-5% pyrite # 127 70% pyrite in quartz matrix
129	25+00N,30+50W	Epitodised mafic volcanic-float?
131		Quartz-eye tuff Siliceous matrix, purple colour
132, 132A		Silicified Feldspar crystal tuff 20% Plag phenocrysts, buff matrix cross cutting Pyrite-Qtz-carb vein
133		Silicified porphyry Pink, ghosts of quartz eyes Tuff?
134		Altered, sheared felsic tuff
135		As above
136		Fine-grained tholeiite
137		Qtz-eye tuff Heavy chloritisation+shearing Trace pyrite
138		Felsic tuff Altered plag phenocrysts Fine-grained grey matrix Chloritic fragments
139		Altered tuff Pyrite stringers
140		Fine-grained tholeiite
141		Fine-grained tuff Felsic to intermediate Hard, light grey Chlortie inclusions 0.5% Pyrite segregations
142		Tholeiite Hornblende-phyric Deccusate texture Altered chloritic matrix
143		Altered porphyry

Sample No.	Locality	Description
144		Altered massive flow
145		Basalt Feldspar phyric sericitised, dark green Fe-thoeliite
146		Massive felsic tuff Medium grey, fine-grained Qtz-calcite veins + tr. pyrite
147		Pillow selvedge Plus black interflow sediment
148		Balsaltic Lapilli tuff 70% basaltric fragments Chloritic matrix
149		Altered felsic fragmental 5cm clasts in dk. grey matrix Matrix highly schistose
150		Heavily altered tuff yellow/green limonite stain
151		Felsic agglomerate 1->10cm siliceous clasts Blue/grey siliceous matrix
152		Sheared felsic fragmental
153		Fine-grained thoeliite
154		As above
155a 155b		Altered felsic tuff chloritised and silicified 0.5% Pyrite
157		Mineralised quartz vein 10% Pyrite in white quartz
159		Felsic tuff/chert Grey/siliceous Cross-cutting quartz+pyrite veinlet
160		Altered siliceous tuff
161		Altered Mg tholeiite Silicified, minor pyrite
162		Silicified felsic tuff/chert

Sample No.	Location	Description
163		Silicified felsic porphyry 20% silicified fragments Fine-grained matrix
164		Carbonatised basalt
165		Fe tholeiite massive flow Epidote veinlets
166		Pillow rim/flow top
167		Quartz-eye plag crystal tuff sericitised
168		Chert Black, trace pyrite
169		Basaltic tuff 1mm plag crystals (50%) 20% chloritc fragments Fine-grained gree/black matrix
170		Fine grained Mg tholeiite
171		Altered Mg tholeiite
173		Fragmental felsic volcanics 5cm fragments in sheared matrix
174		Altered feldspar phyric tholeiite
177		Felsic agglomerate >10cm felsic fragments sub rounded fragments matrix similar compostion Fragment supported.

Samples collected by J.Kovala (1984).

Location	Description
0+00E,16+35N	Felsic tuff
8+40E,13+00N	Chert
16+75E,13+50N	Fe-tholeiite
17+00E,15+00N	Fe-tholeiite
18+45E,16+35N	Mg-tholeiite, long amphibole crystals
18+80E,18+00N	Mg-tholeiite, coarse texture
18+00E, 21+00N	Porphyry

Location	Description
19+00E,17+00N	Fe-tholeiite, long amphibole crystals
26+00E,18+00N	Mg-tholeiite, medium garined
25+95E,17+10N	Feldspar Porphyry
26+00E,16+40N	Mg-tholeiite, very coarse grained
26+00E,16+10N	Mg-tholeiite + qtz vein
26+15E,16+25N	Mg-tholeiite, medium-coarse texture
24+70E,10+50N	Mg-tholeiite?, dioritic texture
24+00E,9+00N	Fe-tholeiite, magnetic
27+30E,21+60N	Chert, interflow
26+00E,17+60N	Mg-tholeiite, coarse texture
31+75E,20+00N	Agglomerate?, Fragmental?
30+15E,20+60N	Agglomerate
24+00E,9+00N	Fragmental
30+00E,21+70N	Fe-tholeiite, fine-grained, magnetic
25+00E,17+00N	Mg-tholeiite, diroitic
27+00E,19+80N	Mg-tholeiite
17+00E,17+00N	Fe-tholeiite, dioritic
32+00E,26+90N	Fe-tholeiite, fine-grained
33+65E,26+00N	Amygdaloidal fe-tholeiite?
33+80E,25+20N	fe-tholeiite
34+50E,28+90N	Variolitic Mg-tholeiite
0+40E,4+00S	Sheared lapilli tuff
0+00E,16+40S	Mafic Tuff?, dark green
19+25E,19+00N	Mg-tholeiite
26+00E,27+00N	Fe-tholeiite, dioritic
24+50E,25+00N	Fe-tholeiite, medium texture, magnetic, dark
24+00E,24+70N	Amydaloidal Fe-tholeiite, dark green/black
20+25E/19+90N	Mg fragmental

Location	Description
26+20E,25+90N	Mg-tholeiite, grey
26+00E,26+20N	Mg-tholeiite + Qtz +Pyrite

SAMPLE NUMBER	LOCATION LINE	LOCATION NORTHING	DESCRIPTION	HAND	ASSAY AU
MV87-2	L5670W	1660S	ALTERED MAFIC TUFF, OR AGGLOMERATE - weathered surface greenish blue with patches of brown. - fresh surface mottled dark green and light brown. - quartz, chlorite, carbonate, saussurite, sericite. - foliation present around possible fragments; a few* anhedral quartz grains present; orange-brown saussurite alteration visible, along with some possible sericite; sample strongly chloritized.	X	
MV86-60-1	L60W	35+00S (?)	ALTERED INTERMEDIATE AGGLOMERATE - weathered surface light brown with patches of darker orangish brown. - fresh surface light turquoise with light brown patches. - chlorite, quartz, carbonate, sericite, saussurite. - foliated and somewhat schistose; few quartz-carbonate veinlets, lots of carbonate in groundmass; possible fragments look to be completely sericitized with minor chlorite veinlets cutting them; fragment sizes range from <1/10" to 3/4"; fragments aligned along foliation plane. - this sample is similar to MV87-2.	X	

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ROCK SAMPLES

SAMPLE NUMBER	LOCATION LINE	LOCATION NORTHING	DESCRIPTION	HAND	ASSAY AU
MV87-3	L52-180W	1500S	ALTERED MAFIC LAPILLI TUFF - weathered surface light brown with patches of dark brown. - fresh surface light brownish green. - chlorite, quartz, carbonate, saussurite, and sericite. - sample foliated (mildly); carbonate present in groundmass and as anhedral blebs <1/10" to 1/2"; chlorite major groundmass mineral and also present as small crosscutting veinlets; lapilli size fragments look to be completely sericitized and chloritized; sample is quite siliceous.	X	
MV86-60-3	L59+90W	14+00S	ALTERED MAFIC LAPILLI TUFF - weathered surface dull bluish green. - fresh surface dark bluish green. - chlorite, quartz, carbonate, saussurite. - weakly foliated; anhedral carbonate blebs present <1/10" to 1"; chlorite major groundmass mineral, also occurs as minor veinlets; lapilli fragments difficult to differentiate and are probably completely altered.	X	

SAMPLE NUMBER	LOCATION LINE	LOCATION NORTHING	DESCRIPTION	HAND	ASSAY AU
MV86-56-1 (cont'd)			- weakly foliated, intensely sericitized; minor quartz and chlorite veinlets present; sulphides spatially associated with secondary quartz anhedral masses and chlorite veinlets; possible fragments masked by alteration.		
MV87-1	L58W	70+00N	QUARTZ-CARBONATE VEINING IN MAFIC TUFF - quartz, carbonate, chlorite, saussurite. - massive quartz veining dominates sample; minor carbonate present with veining; chlorite present in groundmass as dark greenish black veins; saussurite spotted throughout sample.	X	
MV86-60-4	L60	5+00S	MASSIVE QUARTZ VEIN MATERIAL - carbonate present approximately 15%.	X	
MV86-60-2	L60+ 60W	17+00S	ALTERED INTERMEDIATE AGGLOMERATE - weathered surface greenish brown. - fresh surface dark grey. - fine grained, ferromagnesium minerals (FM), alkali feldspar, carbonate, sericite, quartz, saussurite. - the clasts are altered and elongated along the foliation plane; clasts shaped like flattened ellipsis; clasts are felsic, rich in feldspar and quartz; groundmass rich in FM minerals (possibly chlorite) and minor carbonate.	X	

SAMPLE NUMBER	LOCATION LINE	LOCATION NORTHING	DESCRIPTION	HAND	ASSAY AU
MV87-7	L48+ 70W	2+00S	ALTERED INTERMEDIATE AGGLOMERATE - weathered surface brownish green. - fresh surface greenish. - alkali feldspar, fine grained FM mineral (chlorite?), carbonate sericite, saussurite, quartz. - weakly foliated; feldspar rich subangular and rounded fragments; sericite alteration of feldspar, FM minerals dominate groundmass; saussurite alteration of FM minerals; minor carbonate in groundmass.	X	
MV87-8	L14+ 82W*	14+95S	ALTERED INTERMEDIATE LAPILLI TUFF - weathered surface dark reddish brown. - fresh surface greenish blue. - alkalic feldspar, fine grained FM minerals, sericite, quartz, carbonate, saussurite. - 85% of sample is feldspar rich fragments; fragments are subangular + rounded; mildly foliated; sericite alteration of feldspar; minor saussurite and carbonate in ground-mass; few crosscutting quartz veinlets.	X	
MV87-10	az. 33 d. to 100 ft. from L12+00W, 16+00S		ALTERED FELSIC LAPILLI TUFF - weathered surface light brown. - fresh surface light greyish green. - alkalic feldspar, carbonate, quartz, sericite, FM minerals.	X	

SAMPLE NUMBER	LOCATION LINE	LOCATION NORTHING	DESCRIPTION	HAND	ASSAY AU
MV87-10 (cont'd.)			- very weakly foliated; some sericitization of feldspar rich fragments present; some minor quartz fragments + small cross-cutting veinlets; lots of brown carbonate weathering product.		
MV87-5	L48+ 36W	15+75S	ALTERED AGGLOMERATE - weathered surface light bluish green. - fresh surface light green. - chlorite, quartz, alkalic feldspar, saussurite, carbonate. - felsic clasts with a more mafic groundmass; clasts of differing composition (ie. felsic + mafic); some minor carbonate veinlets; some clasts contain quartz amygdules.	X	
MV87-13	L12- 20W	7+00S	FELDSPAR PORPHYRY - weathered surface reddish brown. - fresh surface pink. - alkali feldspar, sericite, pyrite (<1%). - feldspar porphyroblasts: anhedral and subhedral, approximately 1 mm to 15 mm in diameter. N.B. (This sample may not be representative of true outcrop. It could be part of an erratic*.)	X	
MV87-11	az. 58 d. to 70 ft. from L 12+00W, 14+00S		CARBONATIZED FELSIC AGGLOMERATE - weathered surface brown. - fresh surface light brown with darker spots. - alkali feldspar, carbonate, fine grained FM minerals, quartz.	X	

SAMPLE NUMBER	LOCATION LINE	LOCATION NORTHING	DESCRIPTION	HAND	ASSAY AU
MV87-11 (cont'd.)			- the fragments are intensely altered; massive carbonate throughout rock; brownish weathering product of carbonate mineral disseminated within sample.		
MV87-14	az. 68 d. and 50 ft. from L4W, 14+00S		ALTERED FELSIC TUFF - weathered surface light orangish brown with darker brown patches. - fresh surface light greyish green with streaks of light brown. - alkali feldspar, carbonate, fine grained FM minerals, sericite. - fine grained sample; alkali feldspar dominant minerals; some minor carbonate and FM minerals in the groundmass; weakly foliated.	X	
MV87-15	L4 + 85W	17+65S	CARBONATIZED TUFF INTERMIXED WITH FINE GRAINED SEDIMENT - weathered surface brown. - fresh surface light grey with darker grey marbling. - fine grained carbonate, sample too fine grained to identify other minerals. - sample probably represents mixing of materials from two different sources. The fine grained darker material looks like greywacke and the somewhat coarser material - tuff. More carbonate is located within the tuff. There is a marbling *affect of the greywacke within the tuff.	X	

SAMPLE NUMBER	LOCATION LINE	LOCATION NORTHING	DESCRIPTION	HAND	ASSAY AU
MV87-16	L4+ 50W	17+15S	FELSIC TO INTERMEDIATE TUFF - weathered surface brown. - fresh surface grey. - alkali feldspar quartz, carbonate, fine grained FM minerals, pyrite. - slightly carbonatized; euhedral and subhedral pyrite present (approximately 1%); carbonate in groundmass.	X	

CERTIFICATION of QUALIFICATIONS

I, *David William Adamson*, of *29 Government Road East, Kirkland Lake, Ontario* do hereby certify that:

I have received a PhD in Economic Geology from the University of Birmingham, U.K.

I have received an MSc in Economic Geology from the University of Regina, Saskatchewan.

I have received a BSc (Hons) degree in Geology from the University of Southampton, U.K.

I have been employed as a geologist by LAC Minerals Exploration Ltd. since August, 1988.

I conducted the mapping survey detailed in this report.

D. Adams

David William Adamson Ph.D., MSc.

GEOLOGY OF GRID B CLAIMS

McVITTIE TOWNSHIP

LARDER LAKE MINING DIVISION

Covering Claims
L 801133-L 801135, L 801168-L 801173 inclusive

D. Adamson
LAC Minerals Exploration
May 1989

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INTRODUCTION

This report describes the results of geological mapping carried out in an area of 9 contiguous unpatented mining claims in south western McVittie township.Gold and/or base metal deposits similar to those of the Upper Canada Mine were the primary exploration target. The survey area comprises mafic volcanics of the Kinojevis Group which are overlain by immature sediments and trachytic volcanics of the Temiskaming Group. Temiskaming sediments are intruded by the Ross Wall syenite.

LOCATION AND ACCESS

The Western part of the property (herein referred to as Grid B) is accessed via the Fork Lake road, which runs north of Highway 66, 0.5km east of the Misema River bridge. Just past the intersection of the road with the Ontario Hydro Commision power line, a bush road is taken which can be followed to the north edge of Binney Lake. From there, access is by foot or ATV. The Hydro Commision power line forms the northern boundary of the grid which extends eastwards 4400' from a point 500m east of the north edge of Binney Lake(Figure 1). Access to the eastern part of the grid is limited from the power line due to the presence of N-S and E-W streams which traverse the area. Access to the eastern part is achieved by taking the bush road which runs northwest from a point approximately 2km along the Larder Station road. The Larder Station road runs north from Highway 66 about 1km east of the town of Larder Lake.

PHYSIOGRAPHY AND VEGETATION

Bedrock in the grid is mostly covered by deposits of basal till and clay. The areas of most extensive overburden run E-W accross the northern and central parts of the grid. The most extensive areas of outcrop occur between lines 8S to 17S, and 25S to 30S. Vegetation in the area comprises 60% mature spruce and pine, 30% poplar and 10% alder.

METHODOLOGY

Mapping was carried out between August 22 and September 30 1988 at a general scale of 1:20,000. Traverses were carried out along grid lines which are cut at 400' intervals, and between grid lines in areas of outcrop.
A total of 68 hand specimens were collected from the grid (see Appendix A for sample locations and descriptions). A subgroup of samples will be submitted for geochemical assay, and/or whole rock analysis.

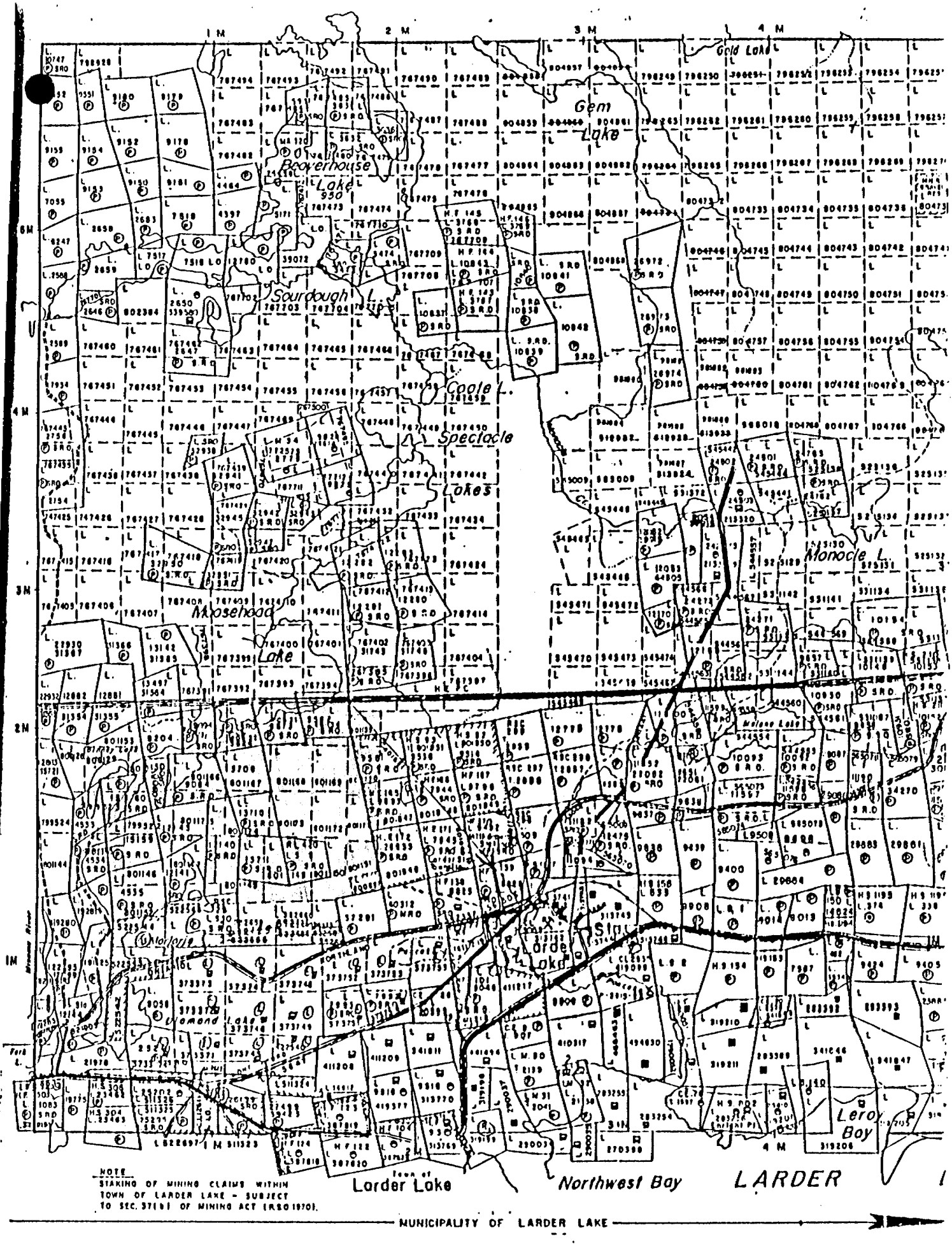

Figure 1

Claim Map

GRID B CLAIMS

(2)

PREVIOUS WORK

Information currently available indicates that relatively little exploration work has been carried out in the area of the grid. In 1938, Kohinoor Mines Ltd. reported mineralised quartz veins, carrying chalcopyrite and pyrite mineralisation, at the southern end of Binney Lake, just to the west of the present area of interest. The veins assayed nil for gold. In 1950, Mary Ann Mines Ltd. conducted geophysical and drilling work in a group of claims located to the west of Binney Lake. Precise location data for the diamond drill holes is not available. Fockler in a 1950 report to Queenston Mines Ltd. reccomended trenching and drilling of mineralised quartz veins outcropping at the northern end of Binney Lake, approximately 0.5km to the west of the area of grid B. The veins carried chalcopyrite and pyrite, but grab samples assayed nil gold. In the same report, Fockler referred to a drill hole put down by Mary Ann Mines Ltd. to the west of Binney Lake in which a 6'-wide graphitic zone was reported at the contact between Kinojevis and Temiskaming Group rocks. In 1980, Queenston Mines Ltd. reported the results of e.m. surveys accross three claims covering the known exposures of the Ross Wall Syenite. The survey identified two anomalies which were recommended as suitable drill targets.

Thompson (1941) has mapped McVittie and Gauthier townships at a scale of 1" to 400'. His work comprises the only known geological map covering the area of Grid B.

GENERAL GEOLOGY

The Grid contains an east-west trending belt of volcanic and sedimentary rocks which are broadly grouped as follows:

(1) Massive andesitic volcanic flows of the Kinojevis Group, outcropping north of about line 1000S.

(2) Immature sediments (conglomerate and greywacke) of the Temiskaming Group, outcroppong between 1000S and 2000S.

(3) Agglomerates and Tuffs of the Temiskaming Group outcropping between 2000S and 3700S

(4) Phyllites and greywackes of the Temiskaming Group, outcropping south of 3700S.

(5) Granitoid rocks of the Ross Wall Syenite which intrude Temiskaming Group sediments in the north-eastern part of the grid.

The above rocktypes comprise a homoclinal, southwards-dipping sequence forming the northern limb of a large, east-west trending synform (Johnson, 1941).

Biotite and chorite are stable phases in pelitic rocks in the area, suggesting a metamorphic grade equivalent to that of the lower greenschist facies.

The main groups outlined above are described in more detail below.

DETAILED GEOLOGY

(1) KINOJEVIS GROUP

1.1 Andesites
Massive, light green, non-magnetic, fine-grained andesites are present in outcrops north of line 10S. They are the most mafic rocktypes encountered in the area of the grid. Outcrops are massive and structureless, and display no obvious pillow structures. They are thus thought to represent thick, massive flow units. Pyroclastic or sedimentary rock units were not recognised from Kinojevis group rocks.

(2) TEMISKAMING GROUP

2.1 Sheared conglomerate (unit 2b)
The northernmost exposures of Temiskaming sedimentary rocks comprise a roughly contiguous belt of sheared conglomerates. The contact bewteen the Kinojevis Group and the Temiskaming Group is not exposed within the area of the grid. The intense shearing observed within Temiskaming Group conglomerates, and the presence of a marked cliff-like feature which runs parallel to, and north of the sheared rocks, is interpreted to indicate that the two group are in faulted contact. Shearing, which is assumed to have taken place parallel to primary bedding, trends 060° and dips 60°-70°S.In some outcrops, shearing is so intense that the primary rocktype is very difficult to identify. The rock comprises 30%-80% pebbles and cobbles in a coarse-grained greywacke matrix. The following pebble types have been recognised:

white to grey porphyritic felsic volcanic
white granite
light grey quartz
black sub-angular mudstone
pale yellow sediments
greenstone

The latter three clast types occur only in minor proportions, and in general the rock is dominated by felsic pebbles. This may be taken to undicate that the unit is derived from the unroofing of a felsic-rich terrain, rather than the mafic terrain against which it is now juxtaposed. Jasper and green fuchsitic clasts are only rarely encountered in this unit, in contrast to conglomerates occurring further to the south (detailed below).

2.2 Greywacke with pebble-beds and intercalated shale (units 3b,3c,3d)
These occur as thin (approximately 50') units which overlie sheared conglomerate. They form a roughly contiguous belt interbedded with conglomerate (unit 2a) from about 40E to 12E, and are developed as discontinuous lenses within overlying

conglomerates. Unit 3b is a coarse-grained greywacke containing <5%, 5'-wide pebble bands. Pebble types are predominantly felsic, although monolithic varieties containing black carbonaceous mudstone clasts have been identified (unit 3c). Shale (unit 3d) occurs interbedded with greywacke, and in the north-eastern part of the grid is well developed enough to be mapped as a separate unit.
It is stressed that the units 3b, 3c and 3d likely represent local facies variations of the conglomerates into which they grade, however, when viewed as a whole, the sequence from the Kinojevis/Temiskaming contact to the thin shale units (3b) is one of general fining-upwards. This is interpreted to represent a single lower sedimentary cyle, deposited over a short period of time in a rapidly emergent area within a braided-stream environment.

2.3 Conglomerate(unit 2a)
Rocks of the lower sedimentary cycle are overlain by a belt of massive, less deformed conglomerates which mark the beginning of an upper sedimentary cycle. The conglomerate is generally framework supported, and contains 50%-80% pebble and cobble size clasts in a greywacke matrix. Compositionally, the clasts are similar to those described above from unit 2b, however, greenstone clasts are more abundant (5%) and bright green fuchsitic pebbles (1%) are consistently developed indicating derivation from sources of slightly different composition.

2.4 Coarse-grained greywacke (unit 3a)
These occur as a massive, generally pebble-free unit overlying conglomerates of unit 2a. They are medium grey in colour, coarse-grained (1-3mm) and comprise quartz, biotite, plagioclase and lithic fragments in roughly equal proportions. The unit defines the upper part of the upper sedimentary cycle and is conformably overlain by rocks of the Trachytic Volcanic Complex.

(3) TRACHYTIC VOLCANIC COMPLEX

Rocks of the complex comprise a heterogeneous group which, for descriptive purposes, are divided into three main groups: agglomerates, flow rocks and tuffs. These groups are described in more detail below:

3.1 Agglomerates
Outcrops of trachytic agglomerate occupy the south-central portions of the grid (Map 1). They are of three main types:

3.1.1 Red Fragmental agglomerates
Red, Kspar-rich angular fragments and megacrysts comprise up to 90% of the rock, and are set in a green matrix containing hornblende phenocrysts (20%) and fine-grained plagioclase. Grab samples are generally non-magnetic, however, some contain up to 1.3% magnetite.Fragment size is extremely variable, generally fragments range from 1cm to 1m across, however, some outcrops

apparently composed solely of Kspar rich rocks may actually represent large volcanic bombs tens of metres across. These rocks are interpreted as proximal deposits formed at, or close to, the site of an ancient volcanic vent.

3.1.2 Green fragmental agglomerate
Lensoid, non-magnetic, hornblende and plagioclase phyric bombs up to 50cm across are set in a fine grained matrix of similar composition. Both are of similar composition to the matrix material of the red fragmental agglomerates. They may grade into red fragmental agglomerates over a few metres. These rocks are similarly interpreted as proximal agglomerates.

3.1.3 Trachytic agglomerates (units 4c,4d,4e,4f)
These rocks essentially are mixtures of the two end-member types described above, and contain varying proportions of angular red and green fragment types.

A fourth variety of agglomerate, heterolithic agglomerate, has been recognised in drill core and some outcrops. It contains 5% granitoid and felsic clasts in addition to the red and green fragment types described above.
All of the above fragmental rocks are considered to be intimately related and to have formed contemporaneously. The present, roughly circular, area of outcrop may correspond to the site of an ancient volcanic vent.

3.2 Flow rocks (unit 4a)
These occur to the east of the Trachytic agglomerates and occupy the south-eastern part of the grid. They are generally porphyritic, and contain 20% 1mm-3mm hornblende and 10% Kspar phenocrysts phenocrysts in a dark green plagioclase and hornblende-rich matrix. The exact chemical affinity of these rocks is unknown, and the term mafic trachyte (Johnson, 1941) is retained here until chemical data are available.

3.3 Tuffs (4b)
Both agglomerates and flow rocks are overlain by a series of coarse-grained quartzo-feldspathic tuffs which have undergone extensive shearing and carbonatisation. Some hand specimens of this rock type closely resemble those of the Ross Wall syenite, from which it is suggested that they represent a thin, sill-like extension of the granite, or felsic tuffs of similar composition. The southern extremity of the grid contains a belt of micaceous phyllites and interbedded greywackes, which have also undergone extensive carbonatisation.

(4) ROSS WALL SYENITE

The Ross Wall Syenite outcrops as two lobes in the eastern part of the grid. These form the western margins of a larger body which extends to the east (Johnson, 1941). The rock is pink to green in colour and contains 40% plagiclase, 20% Kspar and 10% biotite (after hornblende?) phenocysts in a pink to green plagioclase-rich matrix. In all examined outcrops, the rock has been heavily carbonatised, and the original mineralogy largely destroyed. Quartz-eyes are sporadically developed in some

outcrops suggesting that the intrusive may be bimodal. It has not been possible to map in the two compositional types. The contacts with Temiskaming sediments are marked by a zone of silicification and alteration which makes the identification of primary rocktypes very difficult.

STRUCTURE

Folding

For the most part, the sequence is homoclinal and forms the northern limb of a large east-west trending synform. Mesoscopic folds have not been identified over most of the grid. The lithological variations within Temiskaming sediments are interpreted in terms of facies variations rather than isoclinal folding. In the extreme southern part of the grid, mesoscopic folds occur in phyllites. Here, the folds have east-west trending axes, and probably represent small structures parasitic to the larger east-west trending synform.
Temiskaming sedimentary rocks adjacent to the Ross Wall Syenite have variable strikes and dips, indicating that intrusion of the syenite has affected the regional east-west trending structure.

Faults

No major faults were identified in the field, although a number can be inferred from geophysical data. As discussed above, it is suggested that the boundary between Kinijevis and Temiskaming Group rocks is represented by an east-west trending fault zone. Another east-west trending fault may be inferred in the southern part of the grid, marked by the presence of an persistent e.m. anomaly (anomaly #2 on Map 2).This fault has a marked topographic expression whereby Temiskaming Group trachytes form a prominent east-west trending ridge some 50'-100' high. The north-south running creek in the eastern part of the grid may mark, at least in part, the position of a dip fault. Other dip faults are thought unlikely to occur over much of the grid due to the presence of generally good lateral lithological correlations amongst Temiskaming sedimentary rocks.
Two sets of later fracture cleavages with associated quartz veining have been identified. These form a conjugate set trending 130-160° and 50-60° respectively.

ECONOMIC GEOLOGY

Surface mineralisation was noted in five localities:

(1) In trenches close to the contact between the Ross Wall Syenite and Temiskaming greywackes at 38E,11S, trace to 1% chalcopyrite and pyrite occur within quartz veins and silicified country rocks.

(2) In trenches within greywackes at 17E,10S a 12" wide quartz vein trends 054° and carries trace to 1% chalcopyrite with minor sphalerite plus pyrite.

(3) In silicified greywackes at 28E,16S, trace amounts of pyrite and an unidentified grey mineral (chalcocite?) occur within minor

mm-wide carbonate veins.

(4) At one locality within the Ross Wall Syenite (44E,25S) disseminated pyrite (1%) occurs within altered, silicified and quartz-veined syenite.

Thus, the geological survey has failed to indicate the presence of economically interesting mineralisation.
By analogy with other areas of the Kirkland Lake gold belts, the parts of grid B with the most potential for mineralisation are thought to be those closely associated with the surface and subsurface expression of the Ross Wall Syenite, and possibly within the syenite itself.

SUMMARY
Geological mapping of Grid B claims has identified the presence of a thick sequence of immature sedimentary rocks of the Temiskaming Group which are in probable structural contact wtih underlying Kinojevis andesites. The sedimentary rocks were probably formed within a rapidly emergent, fault-controlled braided stream environment. They are overlain by a trachytic volcanic complex which probably formed at, or close to, the position of a former volcanic vent.
The mapping has failed to identify the presence of significant mineralisation.

APPENDIX A - SAMPLE LOCATIONS AND HAND SPECIMEN DESCRIPTIONS
Map 2 (in pocket) shows the locations of hand specimens collected from the grid.

Sample number	Location	Description
001	11E,2S	massive, fine-grained andesite.
002	11E,2+10S	massive fine-grained andesite. 5% hornblende in a light green matrix.
003	65'E of 40E, 10S	'mafic trachyte'. Medium grey/green. Aligned Hbl crystals in fine-grained plag-rich matrix.
004	70'W of 40E,1550S	vitreous white/light grey quartz with greywacke inclusions. No sulphides.
005	75'S of 44E,14S	granitised greywacke. granular texture,light green. Unmineralised.
006	75'S of 44E,14S	close to granite contact, vein 0-1%Cp and Py.
007	As above	quartz-veined syenite. light green, qtz-rich <5% feldspar.
008	25'S of 44E,15S	small sample of altered syenite. Granular texture qtz-rich, minor biotite
009	30'S of 44E,29S	Porphyritic trachyte. 30% hbl phenocrysts, 1-3mm long. Fine-grained feldspar-rich matrix. Probable flow.
010	70' along 240 from 44E,36S	small sample from low outcrop of pink rock, 50% plag, 50%Hbl; rock is faintly banded, probable tuff.
011	130' along 240 from 44E,36S	80%qtz,20% biotite, granular texture, fine-grained. Minor qtz+py vein. Tuff?
012	135'N,50'E of 40E,37S	Fine-grained massive rock 60%plag,40%biotite. Mafic trachyte.

Sample No.	Location	Description
013	150W of 40E,12S	v. fine grained quartzite med. grey, poorly developed fracture cleavage.
014	60'E of 38E,13S	well foliated med-grained greywacke.40%qtz,40%bio, 20% plag.
015	55'S of 40E,11S	sheared and carbonatised syenite. 40% altered plag 40% qtz, 20% altered mafics. green.
016	40E,13S	Altered syenite. 40% qtz, 30%plag, 20%biotite+ hornblende, 10% carbonate alteration. granite?
017	50'N of 38E 13S	white qtz veins in altered greywacke. Original textures gone. trace chalcopyrite.
018	as above	heavily altered syenite, 30%plag,qtz and Kspar,10% biotite+carbonate.
019	70' along 088 and 55'N of 38e,13S	Conglomerate, pebbles <1cm-5cm. types:felsic volcs, qtz, mudstone, minor green fuchsitic. coarse graywacke matrix.
020+021	35'E of 38E,12S	float samples weakly mineralised Py+Po in dioritic flow rock.
022	50'N and 25'W of 38E,14S	fine-grained light green massive rock. greywacke? minor qtz+carb+py alteration
023	55'E of 38E,11S	foliated biotite-rich graywacke. 0.5%Cp along irregular fractures.
024	42E,21+50S	altered syenite (as above descriptions)
025	43E,26S	mafic trachyte as per 003
026	44E,35+60S	1-3mm hbl in Kspar-rich (pink) matrix. Porhyritic trachyte

Sample No.	Location	Descrption
027	60'W of 44E,36S	Porhyritic trachyte as described above.
028	42E,32S	Porphyritic trachyte (as above)
029	45'E,50'N of 42E,37S	Qtz-plag biotite bedded tuff. alternating layers show texture on weathered surface.
030	28E,15+90S	light grey fine-grained quartzite. Minor qtz, carb veins + trace silver coloured mineral, possibly chalcocite.
031	28E,15+15S	coarse-grained greywacke
032	28E,12+50S	as above with greyish qtz-vein @90 to foliation
033	28E,11+80S	1% pyrite in dioritic sample. Float.
034	20E,15+75S	pink trachyte agglomerate 30% KSpar segregations in a green hbl-rich matrix
035	20E,18+50S	10% hbl phenocrysts in a fine-grained pink, Kspar-rich matrix. Probable large bomb.
036	24E,21S	Epiclastic sediment. Round grey fragments in a shale matrix- mud balls?
037+038	40'N and 115'E of 16E,9S	Qtz-vein matrial from trench in well foliated greywacke. Trace Cp+Sph.
039	16E,16+60S	Fine-grained dark grey plag-rich rock, scattered py cubes. mafic trachyte.
040A	40' along 246 from 16E,16+60S	20% hbl crystals in a pink Kspar-rich matrix. trace chalcopyrite.
040B	350' along 220 from 28E,22+85S	As 039, minor scattered py.

Sample No.	Location	Description
041	30E,29+45S	30% hbl (1-5mm) in fine-grained pnk natrix. porphyritic trachyte flow
042	50' along 240 from 12E,17+65S	as per 041
043	20'N of sample 042	weathered surface showing agglomerate texture.
044	10'E of 043	matrix material to aggl. fragments. mafic trachyte
045	12E,17+65S	Mineralised greywacke. minor py cubes.
046	120'E of 12E 24+65S	weathered sample of trachtic aggl.30-40% fragments in mafic trachyte matrix.
047	12E,33+90S	massive quartz-feldspar rock, probable tuff.
048	12E,37S	similar to 047 but heavily carbonatised. Bio+qtz+plag+ Kspar porphyroblasts. coarse-grained tuff/granite?
049	230'S of 12E,2S	massive, fine-grained light green andesite.
050	8E,30+30S	5% pink hbl-porphyritic fragments have imprecise margins with mafic trachyte matrix.
051	5E,29+60S	grey-green hard rock with mafic fragments up to 0.5cm. Matrix green/pink green fragmental aggl.
052	6E,29+60S	25% lensoid to round hbl(50%) porphyritic fragments in similar matrix. welded texture?
053	4E,33+50S	altered qtz-plag-biotite schist. probable tuff.
054A	4E 34+40S	coarse grained massive qtz-plag-biotite tuff.

Sample No.	Location	Description
054B	4E, 36+20S	pink plag+kspar rock. heavily altered. coarse tuff?
055	4E,36+40S	as 054B
056	4E,39S	small fold in biotite-rich phyllite. Carb alteration widespread.
057	0E,32+10S	Fresh agglomerate. Pink granitic bombs <1cm->10cm in grey/blue plag-rich matrix.
058	1+20E,32S	Altered grey,qtz-plag-biotite tuff.
059	4+50E,36S	as sample 058
060	185' along 080 from 8E,14S	coarse greywacke with 5% 4cm-long mudstone clasts.
061	28E,21+35S	mafic trachyte
062	28+20E,21+85S	mafic trachyte
063	28+25E,22S	mafic trachyte
064	lost sample	
065	44E,24+85S	coarse-grained, sheared and altered syenite with Plag, Kspar phenocrysts. Minor qtz. altered bio.
066	44E,23+75S	as 065
067	44E,23+20S	as 065
068	44E,22+80S	as 065
069	44E,21+50S	as 065

CERTIFICATION of QUALIFICATIONS

I, *David William Adamson*, of *29 Government Road East, Kirkland Lake, Ontario* do hereby certify that:

I have received a PhD in Economic Geology from the University of Birmingham, U.K.

I have received an MSc in Economic Geology from the University of Regina, Saskatchewan.

I have received a BSc (Hons) degree in Geology from the University of Southampton, U.K.

I have been employed as a geologist by LAC Minerals Exploration Ltd. since August, 1988.

I conducted the mapping survey detailed in this report.

David William Adamson Ph.D., MSc.

Ministry of Northern Development and Mines

Ontario

W 9908.155

Report of Work

(Geophysical, Geological, Geochemical and Expenditu

32D04NE0074 2.12462 MCVITTIE

900

Mining Lands

Type of Survey(s)

Geological 2.12462 McVittie

Claim Holder(s)

LAC Minerals Ltd.

Prospector's Licence No.

T-664

Address

6 Al Wende Avenue, P.O. Box 670, KIRKLAND LAKE, Ontario P2N 3K1

Survey Company

LAC Minerals Ltd. Exploration Division

Date of Survey (from & to)

Day	Mo.	Yr.	Day	Mo.	Yr.
12	08	88	05	12	88

Total Miles of line Cut

46.4

Name and Address of Author (of Geo-Technical report)

David W. Adamson, 6 Al Wende Avenue, P.O. Box 670, KIRKLAND LAKE, Ontario

Credits Requested per Each Claim in Columns at right

Special Provisions		Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	Geophysical	
	· Electromagnetic	
	· Magnetometer	
For each additional survey: using the same grid: Enter 20 days (for each)	· Radiometric	
	· Other	
	Geological	40
	Geochemical	

Man Days		Days per Claim
Complete reverse side and enter total(s) here	Geophysical	
	· Electromagnetic	
	· Magnetometer	
	· Radiometric	
	· Other	
	Geological	
	Geochemical	

Airborne Credits		Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys.	Electromagnetic	
	Magnetometer	
	Radiometric	

RECEIVED
JUN - 1 1989
MINING LANDS SECTION

CARDIFF LAKE MINING DIV. RECEIVED MAY 05 1989 AM 11 15 PM

Expenditures (exclude power stripping)

Type of Work Performed

Performed on Claim(s) 1 8 9 10 11 12 1 2 3 4 5

Calculation of Expenditure Days Credits

Total Expenditures $ ÷ 15 = Total Days Credits

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.

Mining Claims Traversed (List in numerical sequence)

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	767406	
	767407	
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	767416	
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	767418	
	767419	
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Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.
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	767466	
	801133	
	801134	
	801135	
	801168	
	801169	
	801170	
	801171	
	801172	
	801173	

Total number of mining claims covered by this report of work: 48

For Office Use Only

Total Days Cr. Recorded: 1920

Date Recorded: May 5/89

Mining Recorder: M. C. Gourmen

Date Approved as Recorded: JUN 6 1989

Branch Supervisor: [illegible]

ONTARIO GEOLOGICAL SURVEY ASSESSMENT FILES OFFICE

RECEIVED JUN 6 1989

Date: May 3rd, 1989

Recorded Holder or Agent (Signature): [signature]

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

David Adamson, 6 Al Wende Avenue, P.O. Box 670,

KIRKLAND LAKE, Ontario P2N 3K1

Date Certified: May 3rd, 1989

Certified By (Signature): [signature]

1362 (85/12)

6 Al Wende Avenue
P.O. Box 670
Kirkland Lake, Ontario
P2N 3K1
(705) 567-5656

LAC

LAC Minerals Ltd.
Exploration Division

May 5th, 1989

Ministry of Northern Development & Mines
Mineral Development and Lands
Mining Lands Section
880 Bay Street, Third Floor
TORONTO, Ontario
M5J 1Z8

RE: REPORT OF WORK - Geological Mapping

Dear Sir:

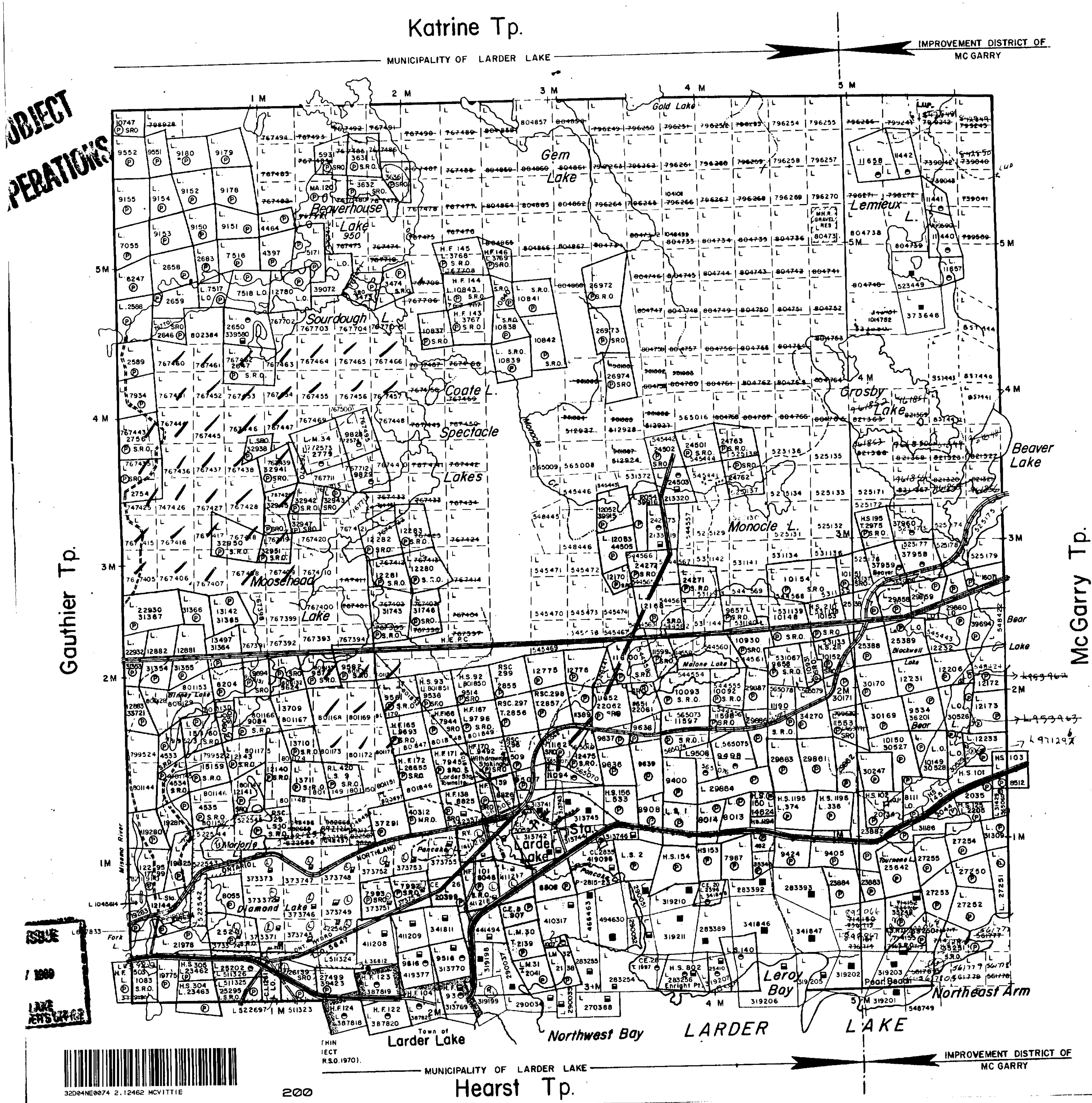
Please find enclosed a Report of Work for Geological Mapping carried out in the Township of McVittie, Larder Lake Mining Division.

We are applying for 40 days credits per claim for a total of 48 claims.

Yours Sincerely,

David Adamson, Ph.D.
LAC Minerals Explorations
Project Geologist

DA/mlw
cc:files
Enclosed in Duplicate:
1 Report of Work
1 Geological Report (Grid A Claims)
1 Geological Report (Grid B Claims)



LEGEND

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

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	Ⓟ or ●
" , SURFACE RIGHTS ONLY	Ⓟ S.R.O. or ◐
" , MINING RIGHTS ONLY	◒
LEASE, SURFACE & MINING RIGHTS	Ⓛ or ■
" , SURFACE RIGHTS ONLY	◧
" , MINING RIGHTS ONLY	◨
LICENCE OF OCCUPATION	L.O. or ▼
ORDER-IN-COUNCIL	OC
RESERVATION	Ⓡ
CANCELLED	⊗
SAND & GRAVEL	Ⓢ

NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 6, 1913, VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 380, SEC. 63, SUBSEC 1.

SCALE: 1 INCH = 40 CHAINS

FEET 0 1000 2000 4000 6000 8000
METRES 0 200 1000 (1 KM) 2000 (2 KM)

(R1) Sec 36/80 NRW 64/84 01/03/84 mRSR
(R2) Sec 36/... NRW 23/85 ... OPENS NRW 25/85 11/27/85 mRSR
(R3) Sec 36/... W.9/86 ... mrs
(R4) W-22/86 4/3/86 Sec 36/86 mrs
0-02/88L OPENS W-22/86

TOWNSHIP

McVITTIE

M.N.R. ADMINISTRATIVE DISTRICT

KIRKLAND LAKE

MINING DIVISION

LARDER LAKE

LAND TITLES / REGISTRY DIVISION

TIMISKAMING

Ministry of Natural Resources — Land Management Branch
Ontario

Date SEPTEMBER 1984

Number G-3163

2.12462

LEGEND

KINOJEVIS GROUP

1	massive andesite

TEMISKAMING GROUP

2a	conglomerate
2b	sheared conglomerate
3a	coarse greywacke
3b	greywacke with pebbles (5%)
3c	greywacke with mudstone clasts
3d	shale
3e	quartzite
3f	sheared greywacke
4a	porphyritic mafic trachyte
4b	felsic tuff
4c	trachytic agglomerate
4d	red fragmental agglomerate
4e	green fragmental agglomerate
4f	heterolithic agglomerate
4g	epiclastic sediments

INTRUSIVES

5a	altered syenite porphyry

q	abundant quartz veins
py	pyrite
cp	chalcopyrite
sph	sphalerite
cc	chalcocite

- dip and strike of beds
- trend and dip of fold axis
- outcrop
- geological contact (observed, assumed)
- fault (assumed)
- trench
- drill hole collar
- claim post
- bush road
- drainage
- higher ground
- swamp

0' 100' 200' 300' 400'

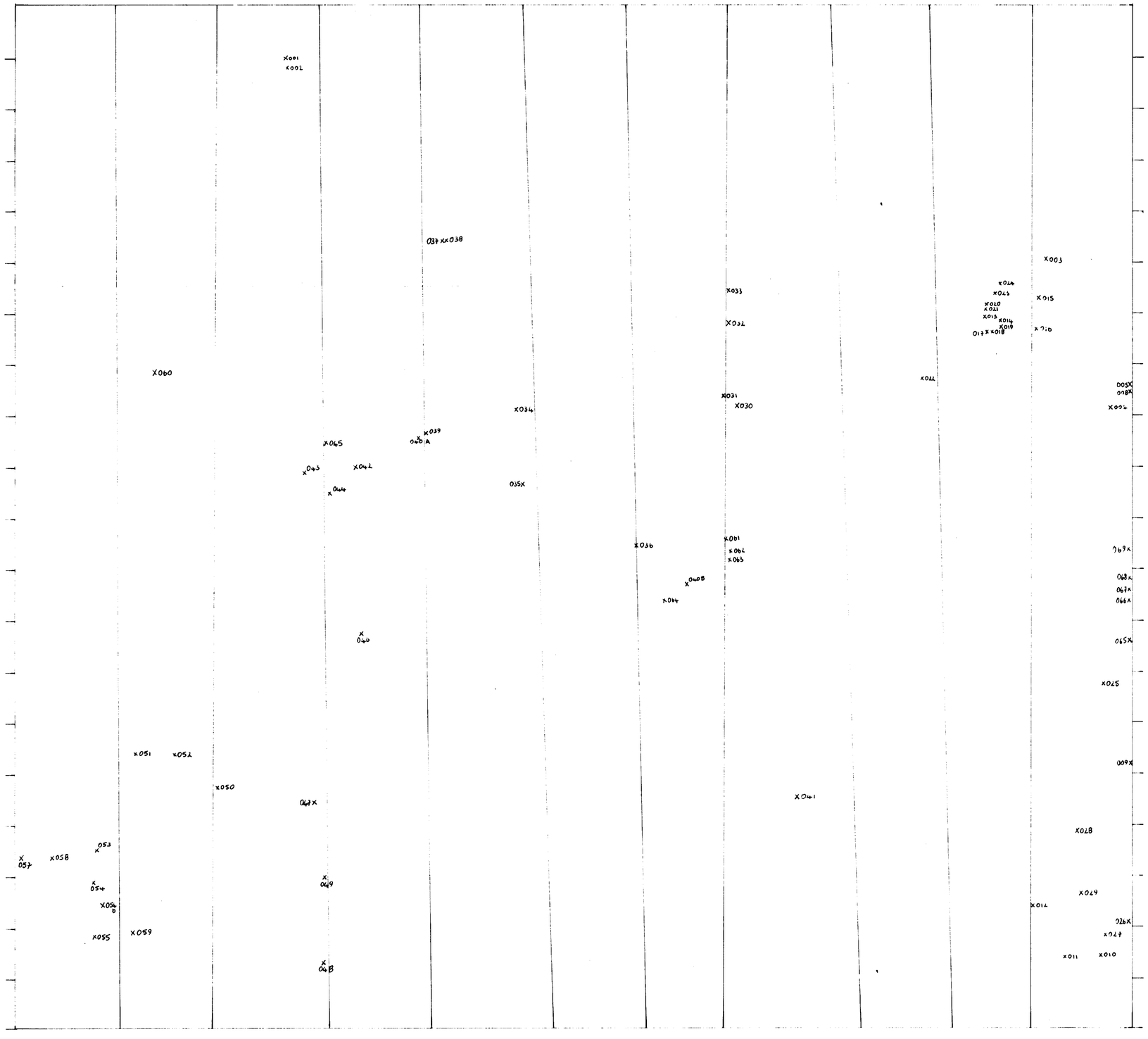
1" = 200'

D. Adams

0E 4 8 12 16 20 24 28 32 36 40 44E

2S 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40S

Alder Swamp
Steep ridge
Fir, Spruce, Poplar, Alder
Poplar, Alder
Alder Swamp
Alder
Alder Swamp
Poplar, Birch, Alder
Poplar, Birch, Alder
Fir, Spruce, Poplar
Alder Swamp



LAC MINERALS LTD.

Drawing GRID B Sample location map.

Dwn. By D.Adamson Ph.D	Scale 1" = 200'
Date 14/11/88	Dwng. No.

LAC