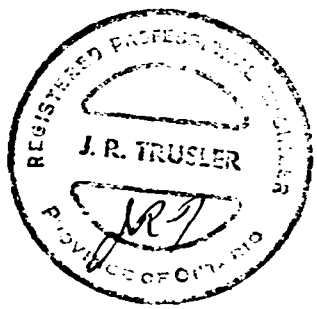
A GEOLOGICAL SURVEY OF THE DIMENSION STONE RESOURCES ON THE BLACK LAKE PROPERTY THE PARRY SOUND DISTRICT OF ONTARIO

by

JAMES R. TRUSLER

LONG.: 80°10'08"W - 80°10'41"W
LAT.: 45°38'06"N - 45°38'40"N
NTS: 41H/9

DATE: December 29, 1993



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SUMMARY

The Parry Sound area of Ontario is underlain by complex gneisses and migmatites of Middle to Late Proterozoic age which are part of the Ontario segment of the Central Gneiss Belt of the Grenville Structural Province. A working model of thrust plates (called domains and sub-domains) which are separated by ductile thrust faults and moved in a northwesterly direction upon each other has been postulated by Davidson et al (1982). Easton (1992) has improved this model in his synopsis using a hierarchy of terranes and domains wherein the terranes include domains of similar age which are autochthonous with respect to each other. Age dating has indicated that four of these large scale terranes or plates are stacked on each other with the base being near Sudbury at the Grenville Front and the top being near Kingston.

Despite the recent wealth of scholarly publications a comprehensive geological map has not yet been made available for the area. However, the limited information available has enabled the clear identification of potentially favourable conditions for both flagstone and dimension stone. Several flagstone occurrences cluster along Davidson's thrusts and several potential dimension stone prospects have been identified within the interior of particular domains.

Although one may ordinarily not expect to find dimension stone within tectonite terranes, it is evident that the autochthonous nature of some of the domains combined with annealing effect of later superimposed amphibolite facies metamorphism preserved large competent blocks of migmatites and gneisses.

As a result of mapping dimension stone potential, and sawing and polishing specimens from many prospects. Seven sites in the Britt domain, and one in each of the Rosseau and Moon River domains have been staked and mapped by the writer resulting in the definition of a large number of potential quarry sites. The two claim unit Black Lake property is one of these.

The property is underlain by the Bolger pluton which is a circum 1450 Ma megacrystic granite intrusion. A highly strained megacrystic unit trends northeasterly across the southern portion of the property bounded on the south by derived complex migmatites and on the north by tonalite gneiss, porphyritic tonalite and coronitic metagabbro. The migmatite in the southeast corner of the property warrants a detailed site plan and the metagabbro should be mapped in detail and sampled to see if the favourable joint separations are continuous and unweathered material is available.

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INTRODUCTION

In 1991, the writer commenced a project to evaluate the flagstone and dimension stone resources of the Parry Sound area. At the same time efforts by former Ministry of Northern Development and Mines geologists, principally Chris Marmont and Dave Villard, were being made to outline the substantial potential for these stone resources and make the public aware of the opportunity. In 1992, the regional investigation of flagstone resources by the writer proved discouraging. It was decided late in the field season to focus solely on the dimension stone potential.

By the end of 1992, many prospective dimension stone sites had been identified by either government publications or by the writer's prospecting. Nine of these dimension stone properties have now been staked by the writer, and an initial evaluation of each property involving geological mapping of the outcrops at a scale of 1:5,000 has been completed. The work provides an initial evaluation of potential quarry sites on each property. The project has been supported by the Ontario Prospector's Assistance Program in both 1992 and 1993.

In October, 1992, the Black Lake property was staked for its dimension stone potential. Geological mapping was carried out in 1993, and the map in the back pocket was prepared and is being submitted with the final report for the OPAP grant in 1993.

The format of the geological report is formulated in compliance with assessment submission requirements.

LOCATION AND ACCESS

The property is located in Burton Township, Parry Sound District, Southern Ontario Mining District, and Sudbury District Regional Geologist's area approximately 165 miles (264 km) north of Toronto (Figure 1). The property is bounded by longitudes 80°10'41"W on the west and 80°10'08"W on the east and latitudes 45°38'06"N on the south and 45°38'40"N on the north. The corresponding UTM co-ordinates in metres are 564,031 on the west, 564,403 on the east, 5,053,309 on the south and 5,054,342 on the north. The property is within National Topographic System area 41H/9 and is recorded on claim map G3884.

The Black Lake property is in Burton Township, and can be accessed by a hydro access road which leads one some seven kilometres west of the town of Ardbeg. Ardbeg is at the western terminus of Highway 520 which can be reached by exiting Highway 124 at Waubamik, 11 kilometres northeast of Parry Sound and following a secondary road for twenty five kilometres to the north.

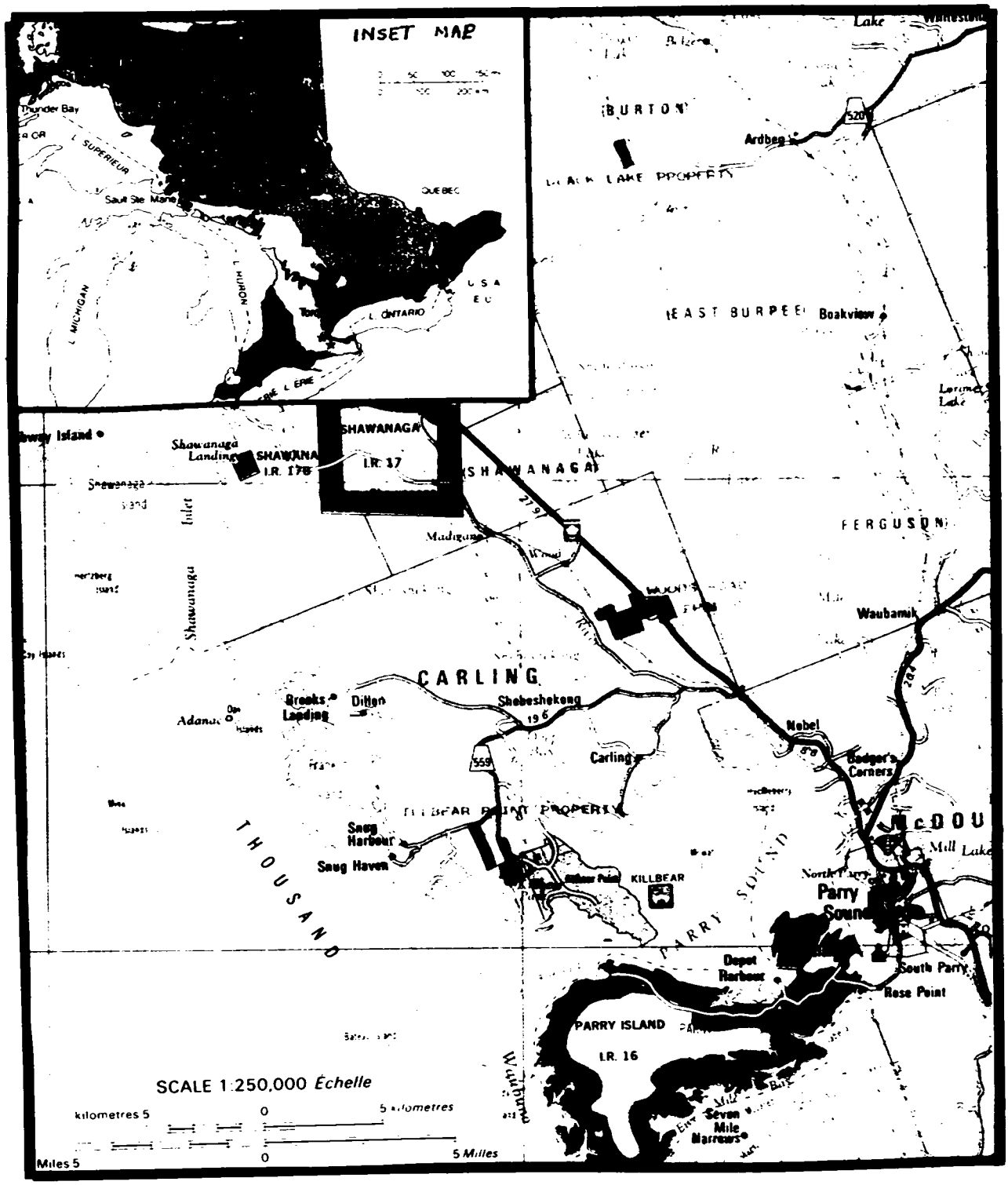


Figure 1: Location Map

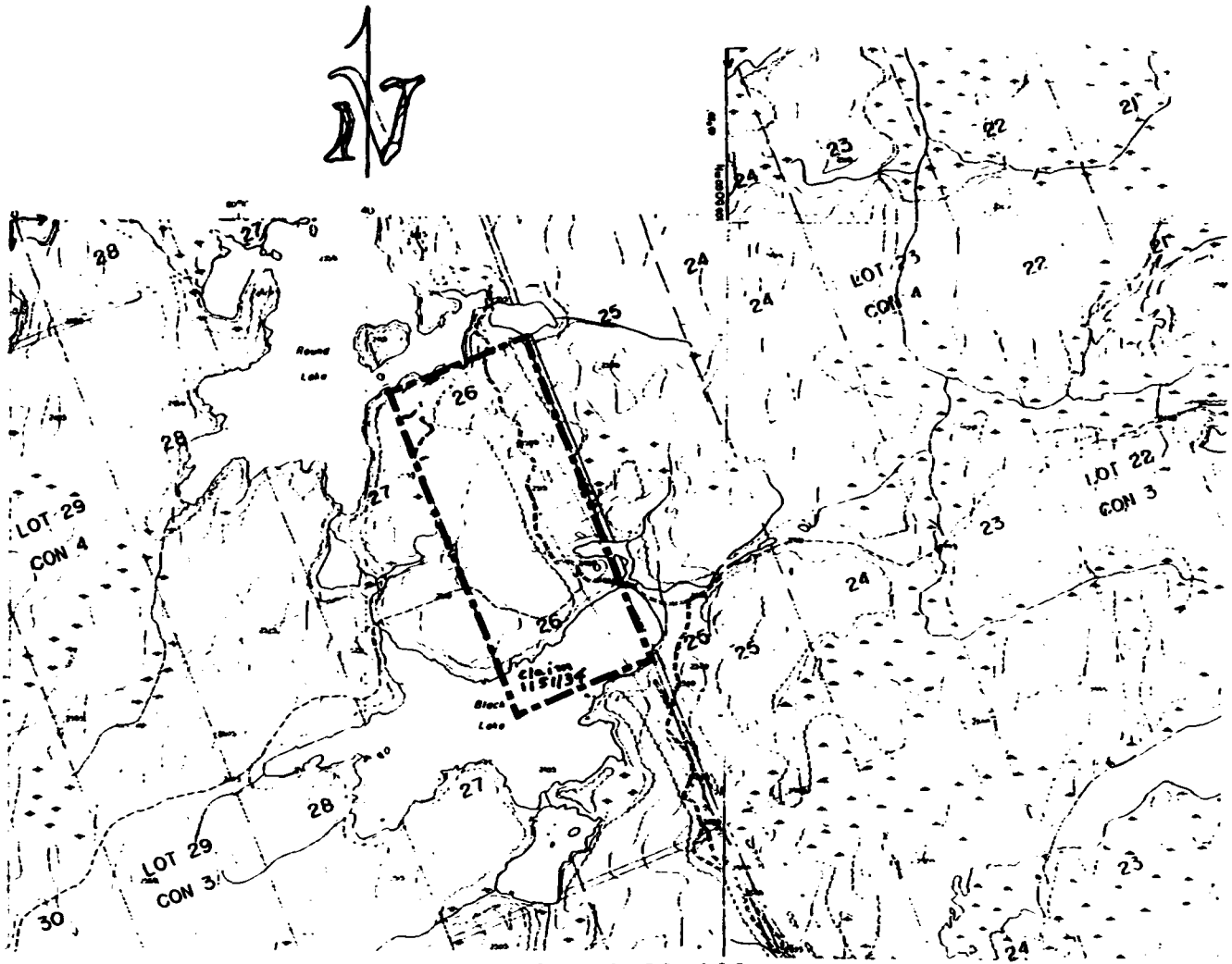
PROPERTY

The Black Lake property comprises approximately 100 acres and is more particularly described in TABLE 1 (Figure 2).

Assessment will be filed for the current work on the claims, and it is anticipated, as a result, that sufficient credits should be available to keep the entire claim group in good standing for some five years from the date of submission.

TABLE 1: BLACK LAKE PROPERTY

Claim No	Township	Lot	Conc.	Area	Recording Date
1151134	Burton	S/2 26	IV		
		N/2 26	III	100 ac	Oct. 8, 1992



Scale: 1:20,000
Figure 2: Property Map

DATES WORKED METHODS USED ON CURRENT PROJECT

Preparation work on the project commenced in March, 1993, the field work commenced on September 1, 1993 and the map drafting and report writing was completed on December 29, 1993. Actual work days for assessment purposes break down as follows:

Black Lake Property: Claims SO1151134

Preparation: July 22, 29, 1993 (2 days)
Field:Sept. 1,9, 1993 (2 days)
Drafting: Sept. 29,30, Oct. 1, 4-7,22, Nov. 26-29, Dec. 7,8, 1993 (6½days)
Reporting:Sept. 20-24,27, Nov. 1, Dec. 16-24,26-29, 1993 (2 days)

Preparation for field work involved production of 1:5,000 blow ups of data from Ontario Base Maps and 1:30,000 air photographs. A grid was overlain on the maps, and stations for recording observations at approximately 100 metre centres were plotted and coded. Due to the high percentage of outcrop, visual control was feasible in almost all cases, but traversing by pace and compass from known sites was sometimes supplemented by the use of a rangefinder. The magnetic declination used in the field work is 10°-15′W.

At each station rock types with variations were noted generally with a visual description of colour and textures. Foliations were described and measured where possible. The main emphasis was in measurement of joints and their separations. In this respect at each station joints were observed within a 50 to 100 foot radius of the station. The attitude of each joint was recorded with the minimum and maximum spacing observed and the average spacing estimated.

Observations were directly recorded on a dictaphone in the field. The verbal record was later transcribed to paper notes. Drafting of the data onto maps was later done from the paper notes.

PREVIOUS GEOLOGICAL WORK

A traverse of the shore of Georgian Bay was made by Alexander Murray in 1848, and he gives a brief account of the geology of the shoreline (Murray 1848, p.45,46). The shoreline of Georgian Bay was again examined by Robert Bell in 1876 (Bell 1876, p.198-207). The Huntsville -Bracebridge area was investigated by W.A. Parks (1900, p.121-126), and brief notes on the geology are given. Further field work was done in the area in 1905 by T.L. Walker (1905, p. 84-86). The International Geological Congress had a field excursion in Parry Sound area in 1913. Some local geological features are described by T.L. Walker (1913, p. 98-100).

The first comprehensive reconnaissance mapping in the area was done by Satterly (1942) who visited all the local known mineral deposits. Satterly (1955) also mapped Lount Twp. in detail showing for the first time the existence of mappable units in the Parry Sound area. Hewitt (1967) was able to accurately identify the complexity of petrographic units and correlate some of these in a reconnaissance mapping program.

Greater interest in resolving the geological complexity of the area was kindled by Lumbers who was progressively mapping Grenville terranes in Ontario from the Grenville Front to the south Lumbers (1975) and by Wynne-Edwards (1972). Wynne-Edwards suggested the first interpretive framework for the Central Gneiss Belt of the Grenville Structural Province. The controversy which arose from Wynne-Edwards "Sea of Gneisses" lead a profusion of other researchers into the area who have conducted specific detailed and reconnaissance mapping and synoptic studies. Since 1972 M. W. Schwerdtner and students have concentrated on resolving many of the structural geology problems of the area contributing a great amount to the understanding of the geology of the Central Gneiss Belt.

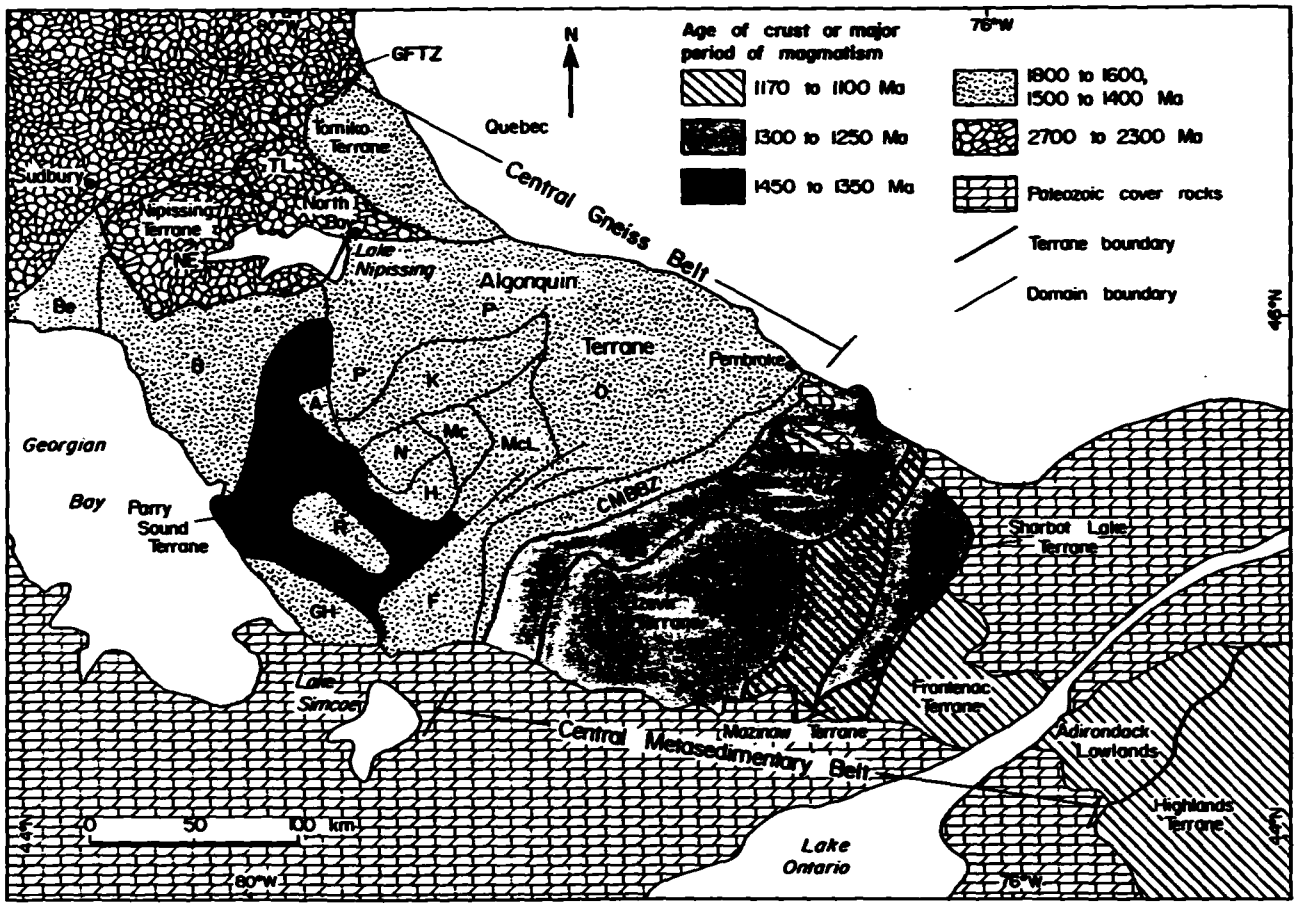
The framework for all current work in the area was provided by Davidson et al. (1982). This has been modified subsequently by Davidson and other workers, and Easton (1992) has synthesized this work eloquently. The tectonic terranes and domains separated by shear zones have become imbedded in the literature.

REGIONAL GEOLOGY

The Muskoka-Parry Sound region is part of the Ontario segment of the Central Gneiss Belt in the Grenville Structural Province (Wynne-Edwards 1972). No detailed geological map of the whole region, which was included in a recent major project on the Ontario Gneiss Segment by the Geological Survey of Canada, has been published to date.

Recent mapping by Davidson et al. (1982) has led to a tectonic model in which the thickening of Proterozoic crust is accomplished by deep-level thrusting and associated reverse ductile

shearing (Davidson 1984a, 1984b). According to this model, major crustal slices (called domains and sub-domains, see Fig.3) have been translated over large distances toward the margin of the Superior Structural Province.



Abbreviations

A	Ahmic Domain	GH	Go Home Domain	NE	Nepewassi Domain
B	Britt Domain	H	Huntsville Domain	O	Opeongo Domain
Be	Beaverstone Domain	K	Kiosk Domain	P	Powassan Domain
CMBBZ	Central Metasedimentary Belt Boundary Zone	Mc	McCraney Domain	PS	Parry Sound Domain
		McL	McClintock Domain	R	Rosseau Domain
F	Fishog Domain	MR	Moon River Domain	S	Seguin Domain
GFTZ	Grenville Front Tectonic Zone	N	Novar Domain	TL	Tilden Lake Domain

Figure 3: Lithotectonic terranes,domains Central Gneiss Belt (Easton, 1992)

This view has been further modified by some more local studies by Hanmer (1988) and Schwerdtner (1987). According to Hanmer the southeast to northwest thrusting was initiated at approximately 1160 Ma and continued for 100 Ma. However he claims that subordinate northeastward thrusting was coeval and that late synmetamorphic extensional shears cut these major thrusts and thrust sheets but are in turn cut by late movement on the thrusts. He further alludes to the comparison to the structural style of the

Central Gneiss Belt and the Himalayas suggesting that the Grenville exposes the architecture and processes presently active in the roots of younger mountain belts. Schwerdtner's observations agree with Hanmer's respecting a northeasterly component to deformation which he invokes to explain north-south buckle folds. However, Schwerdtner observed that not all foliations can be explained by the thrust model and that three sets of folding are superimposed and cross the domain boundaries. He claims that all the structural facts can be explained without large differential translations of crustal slices and most discordances in the regional gneissocity could have been created by décollement and repeated buckling.

Easton (1992) synthesized all previous studies stating that, "Recorded within the Grenville Province is the tectonic evolution of the southeast margin of Laurentia during the Mesoproterozoic. The Grenville Orogeny has overprinted the structural trends and metamorphic effects of the Archean and Paleoproterozoic geological province of Laurentia. It is now generally accepted that this orogenic event or events involved northwest directed thrusting and imbrication of the entire crust, presumably as a result of a terminal collision at about 1100 Ma. with a continental landmass somewhere to the southeast.

The Central Gneiss Belt consists mainly of upper amphibolite and local granulite facies, quartzo-feldspathic gneisses, chiefly of igneous origin with subordinate paragneiss. Distinctive lithotectonic terranes, some further subdivided into domains, have been identified within the Central Gneiss Belt. The terranes and domains are distinguished by differences in rock types, internal structure, metamorphic grade, geological history, and geophysical signature and are bounded by zones of intensely deformed rocks traceable for tens of kilometres."

The Algonquin terrane consists of 1800 to 1600 Ma gneisses intruded by 1500 to 1400 Ma granitic and monzonitic plutons that may represent an extension of the Eastern Granite-Rhyolite Province. Although imbricated by later thrusting the Algonquin terrane is probably parautochthonous. The Britt and Rosseau domains are part of the Algonquin terrane.

The Britt Domain (Figure 4) comprises a complexly deformed and metamorphosed series of rocks. Although some of the rocks are metasedimentary in origin the preponderance of the rocks were originally plutonic, but have been changed by dynamic and thermal metamorphism. The final stages of this metamorphism appear to have annealed the rock into a compact and durable material having some relict textures and many overlapping and lively features. Dips of these rocks are generally flat to 10°to the southeast. Some units are entirely composed of isoclinal sheath folds whereas other units are evidently deformed megacrystic granitic plutons.

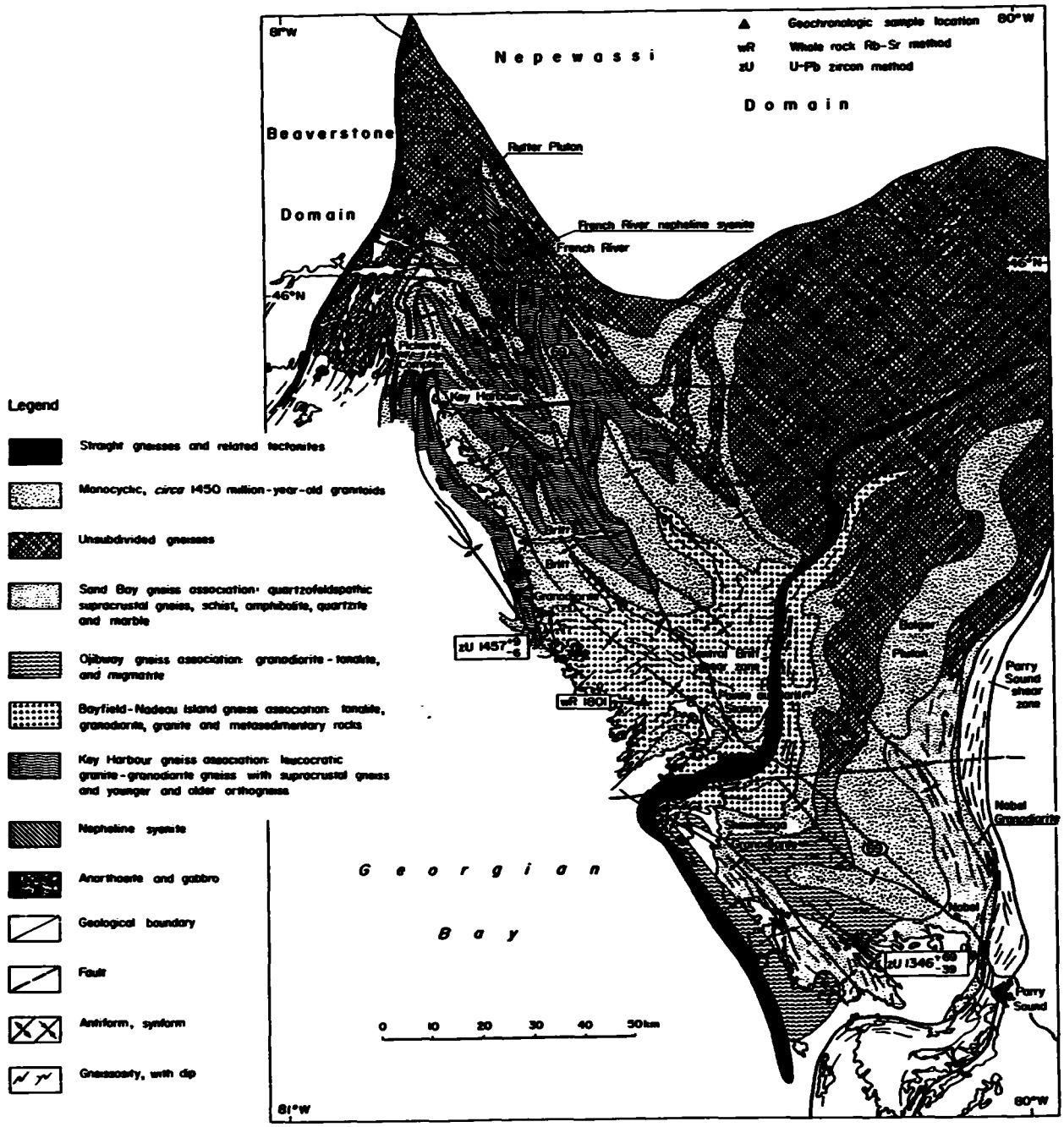


Figure 4: Geology of the Britt Domain (Easton (1992))

The Parry Sound and Moon River domains consist chiefly of juvenile crust 1450 to 1350 Ma in age and are parallochthonous. The Parry Sound domain rocks comprise dense high metamorphic facies rocks (amphibolite and granulite facies) which are emergent on the other domains. The rocks in the Parry Sound domain are dominantly amphibolite and pyroxenite gneisses which strike to the north east and dip 20°-60°to the southeast (at a much steeper angle than the postulated shear couple accompanying thrusting). The bedrock

largely comprises veined, banded and homogeneous pink and grey migmatitic gneisses produced by injection and granitization of metamorphic gneisses of various types. The rocks are mainly of upper amphibolite and granulite metamorphic facies. Hypersthene-bearing charnokitic gneisses are present in the area. The origin of much of the amphibolite gneiss is obscure. Some which is associated with bands of marble is thought to be paragneiss whereas some is proximal to large bodies of gabbro and anorthosite and thought to be orthogneiss. Trusler and Villard (1980) found evidence that some of the mafic and felsic rocks are of volcanic origin. The high metamorphic grade of the rocks is attributed to a deep seated origin possibly involving underplating at an early stage.

The Bolger pluton in the Britt domain is dated at circa 1450 Ma and underlies the Black Lake, Woods Road and Shebeshekong Lake properties (Figure 4). The Dillon Road property is underlain by both the Bolger pluton and the Ojibway gneiss association. The Killbear Point and Jacknife Harbour properties are underlain by the Sand Bay gneiss association. The Grundy Lake property is underlain by an unnamed V-shaped pluton believed to be circa 1450 Ma.

Comparable regional maps do not cover areas about the Turtle Lake property and the Burnt Lake property which are situated in the Rosseau and the Moon River domains respectively.

DESCRIPTION OF ROCK UNITS

Since no comprehensive, detailed geological maps have been produced for the Parry Sound area, none of the previous workers have made an attempt to construct a table of rock units. None of the rock units have been correlated across domain boundaries. Trusler and Villard made an attempt to derive a Table of Rock units for the Parry Sound -Sans Souci area in 1980 and some of that information is used here to produce Table 2. These Formation names are not used in the mapping since these have been inadequately defined for inclusion in the literature. However, the area mapped by Trusler and Villard covers parts of the Britt, Parry Sound and Moon River domains and the lithologic variety is well represented.

The Sans Souci-Killbear Point Group correlates well with the Sand Bay gneiss association of Figure 4 which underlies the Killbear Point and Jacknife Harbour properties. Similar rocks which are younger underlie the Burnt Lake property. The Ojibway gneiss association which underlies part of the Dillon Road property correlates with the tonalite in Table 2. The remaining sites are megacrystic granites or migmatitic derivatives of megacrystic granites classified under quartz monzonite in Table 2.

The rocks on the property have been subdivided into mappable units as follows: biotite-hornblende migmatite,

megacrystic granite, gabbro, and tonalite.

The biotite-hornblende migmatite is represented by quartzo-feldspathic rock ranging from less than 5% to greater than 40% mafic minerals and containing syntectonic and late tectonic pegmatitic material in varying proportions and thicknesses. The grain size ranges from fine to coarse with the more neosome phases generally being coarser. In any one area and especially in individual layers the mineralogy and textures are uniform. The mafic mineral tends to be biotite dominant although hornblende dominant sections are present and frequently alternate layers switch dominance of the mafics. The gneissic fabric is very thinly laminated in some areas but ranges to thickly layered in other areas and is typically variegated pink and various shades of grey. A prominent mineral foliation is frequently superimposed on the gneissic fabric. Hematite staining frequently contributes a dark red fleck to the rock.

The megacrystic granite is a highly strained to gneissic pink and grey rock containing relict pink orthoclase phenocrysts from 2 to 5 cm in original diameter which have been stretched to form a prominent lineation. Rarely this lineation is also folded. The orthoclase comprises 20-50% of the rock. Biotite or hornblende at between 10 and 20%, quartz at 10-20% and plagioclase are also present. The granite grades into the migmatite, and in reality the granite forms the paleosome constituent or progenitor of the migmatite.

The tonalite comprises two varieties: a gneissic to slightly layered rock containing 2-3 cm pink orthoclase phenocrysts and a gneissic, medium to coarse grained, thinly to thickly layered rock. The latter is variegated light grey and greyish black and contains 20 to 40% mafic minerals overall with amphibole being the dominant mafic mineral. In the gneissic variety, usually approximately 10%, but occasionally up to 50% of the rock unit comprises introduced or anatectic, syntectonic quartzo-feldspathic material. Pinch and swell characteristics are common especially in neosome portions of the gneissic rock.

The gabbro is represented by a very coarse grained, greyish black, coronitic metagabbro which has an ophitic and oikocrystic texture. The joints where seen on this particular outcrop are three metres apart.

TABLE 2: TABLE OF ROCK UNITS FOR THE PARRY SOUND AREA

PHANEROZOIC

CENOZOIC
Quaternary
Recent
swamp, lake, and stream deposits

Pleistocene
bouldery, cobbly and silty sand till, silt, sand, pebble gravel, and cobble gravel
_____Unconformity (possible regolith)_____

PALAEOZOIC

Cambro - Ordovician
Calcareous fracture fillings
_____Unconformity_____

PRECAMBRIAN

Late Precambrian
Late Breccias- thin mylonites; quartz veined dilatant breccias of unknown origin

Late Pegmatite
massive granite pegmatite dikes
_____Intrusive Contact_____
High Rank Regional Metamorphism

Middle to Late Precambrian

Tectonites
Mylonite: very fine grained massive to thinly to thickly laminated rock frequently exhibiting compositional and graded layering and containing rotated porphyroclasts; generally marginal to schistose and gneissic rocks; matrix minerals generally are siliceous and comprise quartz, microperthite, biotite and/or amphibole and/or pyroxene

Tectonic Breccia: brecciated rock comprising lithic clasts within a fine to coarse grained schistose to gneissic cataclastic matrix with quartz, perthitic microcline, biotite and/or amphibole and/or pyroxene
_____Sheared Contact_____

Syenite and Monzonite Suite Intrusive Rocks
pink to grey and green, massive to porphyritic to lineated and gneissic biotite, hornblende-biotite and hornblende syenite and monzonite, charnokite and mangerite.
_____Intrusive Contact_____

Anorthosite Suite Intrusive Rocks

Anorthosite- massive to gneissic labradorite anorthosite, andesine anorthosite with up to 10% pyroxene, and gabbroic anorthosite

_____Intrusive Contact_____

Gabbro- massive to gneissic fine to coarse grained, black pyroxenite, anorthositic gabbro and gabbro

_____Intrusive Contact_____

Tonalite- massive to strongly lineated and gneissic light to dark grey pyroxene tonalite and diorite with minor gabbro

_____Intrusive Contact_____

Quartz Monzonite - Syenite Suite Intrusive Rocks

massive to gneissic medium to coarse grained biotite quartz monzonite, pyroxene quartz monzonite and foliated granite pegmatite, pyroxene syenite and foliated syenite pegmatite; megacrystic granite and derivatives.

_____Intrusive Contact_____

Parry Sound Group Metavolcanic Rocks[1]

Spider Lake Formation[1]: intermediate to felsic rocks, medium to coarse grained generally porphyritic, massive to gneissic rocks containing quartz, feldspar, almandite, amphibole and pyroxene; some fragmental units present.

Parry Sound Formation[1]: mafic, medium to coarse grained, schistose to gneissic, pyroxene-feldspar and amphibole-feldspar bearing massive and fragmental rock

Sans Souci - Killbear Point Group Metasedimentary Rocks[1]

Unsubdivided: thinly laminated to extremely thickly layered; interlayered medium to coarse grained schists and gneisses; lower amphibolite to granulite facies; intercalated with metavolcanics above

Killbear Point Formation[1]: thinly to extremely thickly layered, schistose and gneissic medium to coarse grained biotite, quartz, feldspar rocks

Bateau Island Formation[1]: very thickly layered, medium to coarse grained felsic gneiss with mafic biotite and amphibole rich parting planes; variously interpreted as an arkose or granite; cataclastic textures.

[1] The formation names have not been accepted and criteria for introduction of these names into the literature have not been fulfilled. Identification as to origin is tentative

PROPERTY GEOLOGY

The property principally is underlain by felsic rocks of unusual character of Middle to Late Precambrian age. The property is underlain by the Bolger pluton, and relict portions of megacrystic granite, tonalite and gabbro give evidence to this. However, polyphase metamorphism and tectonic deformation are evident in migmatites generated from the megacrystic granites.

The individual rock units were described under the heading DESCRIPTION OF ROCK UNITS on Page 9 of this report. The megacystic granite exhibits cataclastic textures in all outcrops. In the areas of greater preservation the orthoclase phenocrysts are elongated exhibiting uniaxial strain and recrystallized to a sugary grained aggregate of pink crystals. The stretching ratios vary from five to one to twenty five to one. Where the cataclasis becomes more pronounced, a gneissic foliation is induced both by the apparent banding from stretched phenocrysts and also by differential cataclasis yielding layers having different grain sizes.

The megacrystic granite is still recognizable within the migmatite although the stretched phenocrysts are not preserved or recognizable. In the migmatite the biotite composition of the paleosome constituent is enhanced to approximately 20% (10% overall) and forms a prominent foliation frequently with minor aligned red hematite spots which is at an acute angle to the gneissic foliation imparted from interlayering of the neosome constituent with the paleosome material. The neosome constituent is relatively uniform in composition, pink to red, fine to rarely medium grained, and a hypidiomorphic granular quartzo-feldspathic aggregate. This material is extremely attractive, and the textures are uniform over a large area despite the fact that at least two and possibly more phases are involved in the genesis of the rock. This is the principal target material on the property.

Neither variety of tonalite exhibits consistency in texture over a large area. The gneissic to slightly layered tonalite containing 2-3 cm pink orthoclase phenocrysts is very restricted in extent although the rock is potentially quite presentable and the joint spacings are sufficiently large to enable some quarrying. The gneissic tonalite is a medium to coarse grained, thinly to thickly layered rock contains significant variation in texture and composition of the syntectonic and late tectonic pegmatitic material. Some portions of the unit contain rich biotite segregations which weather low although amphibole is the main mafic mineral. The gneissic variety comprises usually approximately 10%, but occasionally up to 50% introduced or anatectic, syntectonic quartzo-feldspathic material. Pinch and swell characteristics are common especially in neosome portions of the gneissic rock.

The gabbro is represented by a very coarse grained, greyish black, coronitic metagabbro which has an ophitic and oikocrystic texture. The joints where seen on this particular outcrop are three metres apart. The coronas are produced from partial amphibole replacement of clinopyroxenes. This also is a candidate rock unit for quarrying as a dimension stone.

Gneissic foliations were measured at each station where possible. Despite some exceptions, the general pattern displayed is of a relatively structurally uniform sequence. The gneissic foliation is prominent on all parts of the property and generally strikes northeast and dips to the south. However substantial dip variation occurs and it is suspected that a large recumbent fold is situated on the property. The lineation where measured trends to the south or southeast at a 10-20°plunge.

In general the joint spacing in the rocks throughout the property is widespread. The vertical joints have an average separation, based on 59 data, of four metres and the average sub-horizontal joint separation, based on 9 data, is 2.5 metres. Twenty-four per cent of the vertical joint data, based on 66 data, are clustered about 155° and 37% of the data are clustered about 60°.

POTENTIAL DIMENSION STONE SITES

A potential dimension stone site is located to the west of the hydro line road in the north half of lot 26, Concession 3, Burton Twp. A picture of the outcrop and polished specimen are depicted in pictures 1 and 2. The polished specimen is described in Table 3. The area is bounded by Black Lake, is 300 metres X 130 metres and rises up to 10 metres above the lake level. The site has 50% outcrop, and the remainder of the area is covered by brush and low trees. A site plan with detailed mapping will be needed to orient the next phase of work.

An outcrop of coronitic metagabbro was located near the northwest corner of the claim. Before this is considered as a potential test site, more prospecting is required and a large sample should be taken for polishing.

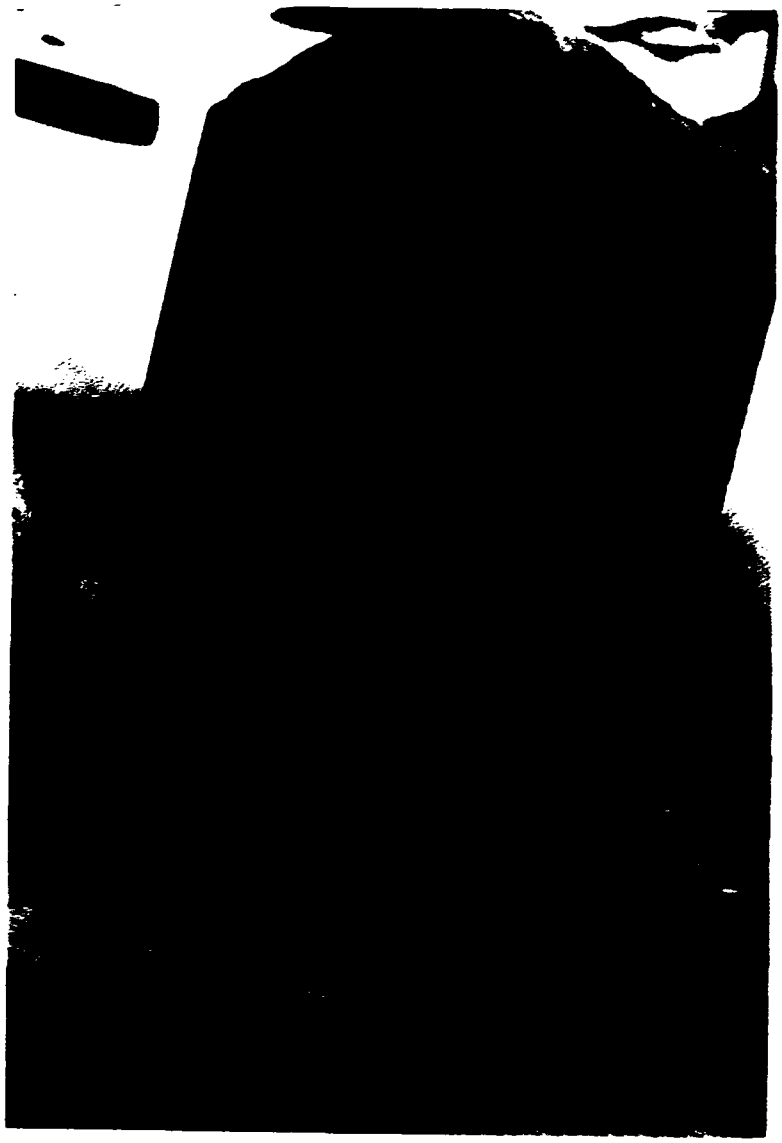


Photo 1 Migmatite Outcrop(above) and Photo 2 Polished Migmatite (below) Black Lake depicting the pink-mauve and buff and grey variegated, veined migmatite in outcrop and polished slab respectively. The rock takes a very attractive polish. The intense red is caused by extremely fine hematite staining. The basic colours are amazingly similar to those existing on the other properties which are 20 miles to the south.

TABLE 3: RESULTS OF SAMPLE POLISHING

Sample No.	Type of Sample	Rock Type	Test Results
Sample 7 Black Lake, Burton Twp. Claim 1151134	50 kg block	Originally a megacrystic quartz monzonite injected by an equigranular, medium grained granitic phase and subsequently deformed.	Granitic phase is folded and its attitude is at acute angle to the megacryst extension direction; late foliation in the biotite crosses these other planar elements; the granitic phase comprises about 35% hematite spots which are quite fine; the rock takes a superb polish with only slight plucking of accessory magnetite.

CONCLUSIONS

The Britt domain comprises a complexly deformed and metamorphosed series of rocks. Although some of the rocks are metasedimentary in origin the preponderance of the rocks were originally plutonic, but have been changed by dynamic and thermal metamorphism. The final stages of this metamorphism appear to have annealed the rock into a compact and durable material having some relict textures and many overlapping and lively features.

Nine dimension stone prospects were staked in the Parry Sound area, and all have been mapped geologically. Many of the rocks underlying these properties are migmatitic derivatives of granitic intrusions and present a great variety of textures. In some cases it is evident that the paleosome constituent was megacrystic and subsequent neosome phases have distinct compositions and fabrics. The sites were chosen for their attractiveness and the apparent availability of accessible large blocks.

Two sites on the Black Lake property warrant further attention. One site, underlain by a variegated migmatitic derivative of megacrystic granite, covers an area 100 metres X 1000 metres and might supply up to 10,000 30-tonne blocks. Site planning, detailed mapping, and a quarry test are required on this site. The other site is underlain by a coronitic metagabbro which appears to have very large joint spacings. Prospecting and the recovery of a large sample are required to further define this prospect.

RECOMMENDATIONS

1. It is recommended that the site underlain by migmatite on lot 26, Concession 3, Burton Twp. be mapped in detail and that a site plan be prepared which would enable licensing of a quarry site.

2. Further prospecting of the coronitic metagabbro on lot 26, concession 4 should be conducted to better define the extent of good quality material. A large sample should be taken for testing.

REFERENCES

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AUTHOR'S CERTIFICATE

a. This report was prepared by:

James R. Trusler P.Eng.

Principal,
J R Trusler and Associates
143 Temperance St.
Aurora, Ontario L4G 2R5
(416) 727-5084

GEOLOGICAL ENGINEER.

b. Qualifications:

B A Sc - Geological Engineering, University of Toronto, 1967
M S - Geology, Michigan Technological University, 1972
Professional Engineer - Ontario
Fellow - Geological Association of Canada
Member - Canadian Institute of Mining, Metallurgy and Petroleum

c. This report is based on a review of all available relevant data; historical, and geological, on personal involvement as Regional Geologist, Algonquin Region, Ministry of Natural Resources from 1974 to 1980, and on a program of field mapping conducted within the area of this report in 1993. I have personally examined the properties and the surrounding area in the field.

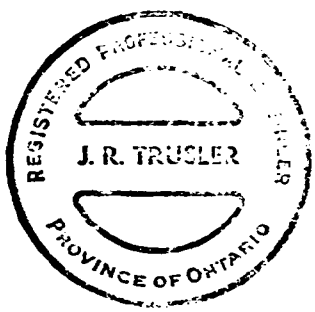
d. I have used my experience gained in geological mapping, the exploration for minerals, visits to most dimension stone quarries in North America, the definition of mineral deposits and the evaluation of properties (over 30 years) in preparation of this report.

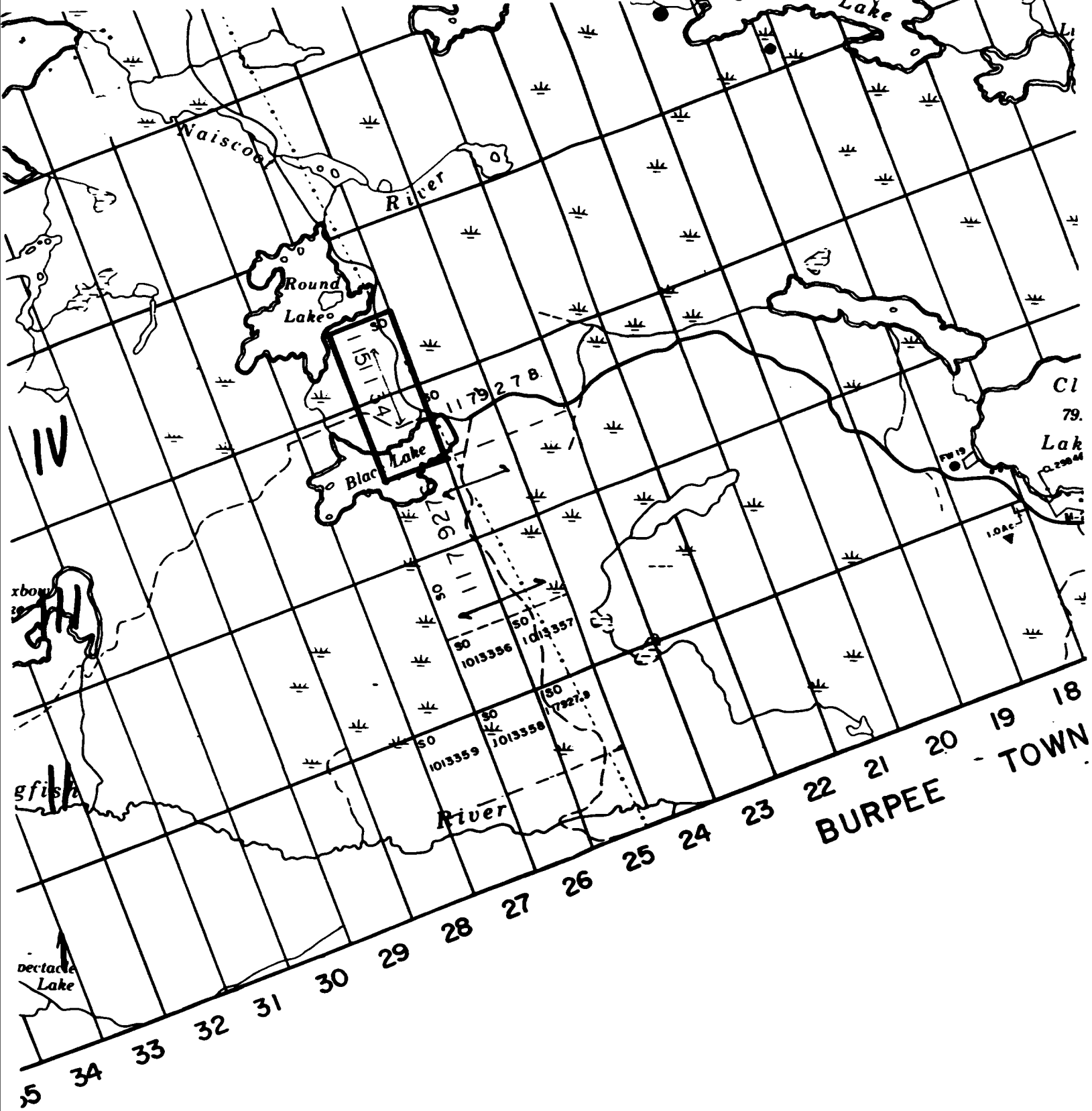
e. I hold an undivided 100% interest in the claims mentioned in this report, but do not expect to receive any remuneration for the report or as a result of statements made in this report.

Signed

James R. Trusler M.S., P.Eng.

Dated: December 29, 1993





BURTON TWP.

G-3884

Ministry of Northern Development and Mines
Ontario

Report of Work Conducted After Recording Claim

Mining Act

Transaction Number: W9490.00008

Personal information collected on this form is obtained under the authority of the Mining collection should be directed to the Provincial Manager, Mining Lands, Ministry bury, Ontario, P3E 6A5, telephone (705) 670-7264.

41H09NE0001 2.15285 BURTON

900

Instructions:
- Please type or print and submit in duplicate.
- Refer to the Mining Act and Regulations for requirements of filing assessment work or contact the Mining Recorder.
- A separate copy of this form must be completed for each Work Group.
- Technical reports and maps must accompany this form in duplicate.
- A sketch, showing the claims the work is assigned to, must accompany this form.

Recorded Holder(s)		Client No.
James R. Trusler		203403
Address		Telephone No.
143 Temperance St. Aurora, Ont L4G2R5		905-727-5084
Mining Division	Township/Area	M or G Plan No.
Southern Ontario	Burton	G3884
Claim Work Performed From:	July 22, 1993 To:	Sept 9, 1993

Work Performed (Check One Work Group Only)

Work Group	Type
Geotechnical Survey	Geological Survey
Physical Work, Including Drilling	
Rehabilitation	
Other Authorized Work	
Assays	
Assignment from Reserve	

L17/2.

RECEIVED
JAN 27 1994
MINING LANDS BRANCH

Total Assessment Work Claimed on the Attached Statement of Costs $ 4,159.~~23~~

Note: The Minister may reject for assessment work credit all or part of the assessment work submitted if the recorded holder cannot verify expenditures claimed in the statement of costs within 30 days of a request for verification.

Persons and Survey Company Who Performed the Work (Give Name and Address of Author of Report)

Name	Address
James R Trusler	143 Temperance St., Aurora, Ont L4G 2R5

(Attach a schedule if necessary)

Certification of Beneficial Interest * See Note No. 1 on reverse side

I certify that at the time the work was performed, the claims covered in this work report were recorded in the current holder's name or held under a beneficial interest by the current recorded holder.	Date	Recorded Holder or Agent (Signature)
	Jan. 11, 1994	James R Trusler

Certification of Work Report

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

Name and Address of Person Certifying

James R. Trusler, 143 Temperance St., Aurora, Ont. L4G 2R5

Telephone No.	Date	Certified By (Signature)
(905) 727-5084	Jan 11, 1994	James R Trusler

For Office Use Only

Total Value Cr. Recorded	Date Recorded	Mining Recorder	Received Stamp
4,159	Jan 11/94		SOUTHERN ONTARIO MINING DIVISION RECEIVED JAN 11 1994 AM 7,8,9,10,11,12,1,2,3,4,5,6 PM
	Deemed Approval Date: April 11/94	Date Approved	
	Date Notice for Amendments Sent		

1 (03/91)

Work Report Number for Applying Reserve	Claim Number (see Note 2)	Number of Claim Units	Value of Assessment Work Done on this Claim	Value Applied to this Claim	Value Assigned from this Claim	Reserve: Work to be Claimed at a Future Date
	1151134	2	4159	1285		2874
	1		4159	1285		2874
	Total Number of Claims		Total Value Work Done	Total Value Work Applied	Total Assigned From	Total Reserve

Credits you are claiming in this report may be cut back. In order to minimize the adverse effects of such deletions, please indicate from which claims you wish to prioritize the deletion of credits. Please mark (✓) one of the following:

1. ☑ **Credits are to be cut back starting with the claim listed last, working backwards.**
2. ☐ **Credits are to be cut back equally over all claims contained in this report of work.**
3. ☐ **Credits are to be cut back as prioritized on the attached appendix.**

In the event that you have not specified your choice of priority, option one will be implemented.

Note 1: Examples of beneficial interest are unrecorded transfers, option agreements, memorandum of agreements, etc., with respect to the mining claims.

Note 2: If work has been performed on patented or leased land, please complete the following:

I certify that the recorded holder had a beneficial interest in the patented or leased land at the time the work was performed.	Signature: Frank Fowler	Date: Jan 14, 1994

Ministry of Northern Development and Mines

Ontario

Ministère du Développement du Nord et des mines

Black Lake

Statement of Costs for Assessment Credit

État des coûts aux fins du crédit d'évaluation

Mining Act/Loi sur les mines

Transaction No./N° de transaction
W9490.00008

2.1528

Personal information collected on this form is obtained under the authority of the Mining Act. This information will be used to maintain a record and ongoing status of the mining claim(s). Questions about this collection should be directed to the Provincial Manager, Minings Lands, Ministry of Northern Development and Mines, 4th Floor, 159 Cedar Street, Sudbury, Ontario P3E 6A5, telephone (705) 670-7264.

Les renseignements personnels contenus dans la présente formule sont recueillis en vertu de la Loi sur les mines et serviront à tenir à jour un registre des concessions minières. Adresser toute question sur la collecte de ces renseignements au chef provincial des terrains miniers, ministère du Développement du Nord et des Mines, 159, rue Cedar, 4e étage, Sudbury (Ontario) P3E 6A5, téléphone (705) 670-7264.

1. Direct Costs/Coûts directs

Type	Description	Amount Montant	Totals Total global
Wages Salaires	Labour Main-d'oeuvre		
	Field Supervision Supervision sur le terrain		
Contractor's and Consultant's Fees Droits de l'entrepreneur et de l'expert-conseil	Type Geological Mapping & Preparation 4 days @ $400/day	$ 1600.00	
	Drafting 6.5 days @ $150/day	$ 975.00	
	Report writing 2 days @ $400./day	$ 800.00	3375.00
Supplies Used Fournitures utilisées	Type Field Consumables	7.31	
	Maps and photos	327.96	
	Film and batteries	40.97	
	Stationery & Misc	61.58	437.82
Equipment Rental Location de matériel	Type		
	Total Direct Costs Total des coûts directs		3,812.82

2. Indirect Costs/Coûts indirects

** Note: When claiming Rehabilitation work indirect costs are not allowable as assessment work.
Pour le remboursement des travaux de réhabilitation, les coûts indirects ne sont pas admissibles en tant que travaux d'évaluation.

Type	Description	Amount Montant	Totals Total global
Transportation Transport	Type Personal Car @ 36¢/km	29.40	
	parking	1.88	
			211.28
Food and Lodging Nourriture et hébergement	Motel and meals		135.13
Mobilization and Demobilization Mobilisation et démobilisation			
	Sub Total of Indirect Costs Total partiel des coûts indirects		346.41
Amount Allowable (not greater than 20% of Direct Costs) Montant admissible (n'excédant pas 20 % des coûts directs)			346.41
Total Value of Assessment Credit (Total of Direct and Allowable Indirect costs) / Valeur totale du crédit d'évaluation (Total des coûts directs et indirects admissibles)			4159.23

Note: The recorded holder will be required to verify expenditures claimed in this statement of costs within 30 days of a request for verification. If verification is not made, the Minister may reject for assessment work all or part of the assessment work submitted.

Note : Le titulaire enregistré sera tenu de vérifier les dépenses demandées dans le présent état des coûts dans les 30 jours suivant une demande à cet effet. Si la vérification n'est pas effectuée, le ministre peut rejeter tout ou une partie des travaux d'évaluation présentés.

Filing Discounts

1. Work filed within two years of completion is claimed at 100% of the above Total Value of Assessment Credit.
2. Work filed three, four or five years after completion is claimed at 50% of the above Total Value of Assessment Credit. See calculations below:

Total Value of Assessment Credit	Total Assessment Claimed
× 0.50 =	

Remises pour dépôt

1. Les travaux déposés dans les deux ans suivant leur achèvement sont remboursés à 100 % de la valeur totale susmentionnée du crédit d'évaluation.
2. Les travaux déposés trois, quatre ou cinq ans après leur achèvement sont remboursés à 50 % de la valeur totale du crédit d'évaluation susmentionné. Voir les calculs ci-dessous.

Valeur totale du crédit d'évaluation	Évaluation totale demandée
× 0,50 =	

Certification Verifying Statement of Costs

I hereby certify:
that the amounts shown are as accurate as possible and these costs were incurred while conducting assessment work on the lands shown on the accompanying Report of Work form.

that as Recorded Holder I am authorized
(Recorded Holder, Agent, Position in Company)

to make this certification

Attestation de l'état des coûts

J'atteste par la présente :
que les montants indiqués sont le plus exact possible et que ces dépenses ont été engagées pour effectuer les travaux d'évaluation sur les terrains indiqués dans la formule de rapport de travail ci-joint.

Et qu'à titre de _____ je suis autorisé
(titulaire enregistré, représentant, poste occupé dans la compagnie)

à faire cette attestation.

Signature	Date
James R. Lamb	Jan 11, 1994

0212 (04/91)

Nota : Dans cette formule, lorsqu'il désigne des personnes, le masculin est utilisé au sens neutre.

Ontario

Ministry of Northern Development and Mines

Ministère du Développement du Nord et des Mines

Geoscience Approvals Office
933 Ramsey Lake Rd., 6th Flr
Sudbury, Ontario
P3E 6B5

Telephone: (705) 670-5853
Fax: (705) 670-5863

Our File: 2.15285
Transaction #: W9490.00008

June 21, 1994

Mining Recorder
Ministry of Northern Development
and Mines
Sudbury

Dear Mr. Denomme:

RE: Approval of Notice of Reduction issued for assessment work reported on mining claim 1151134 in Burton Township.

The assessment work credits as outlined in the Notice of Reduction dated April 11, 1994 have been approved as of May 26, 1994. Please see the attached assessment work credit form.

If you require additional information please contact Dale Messenger at 670-5858.

Yours sincerely,

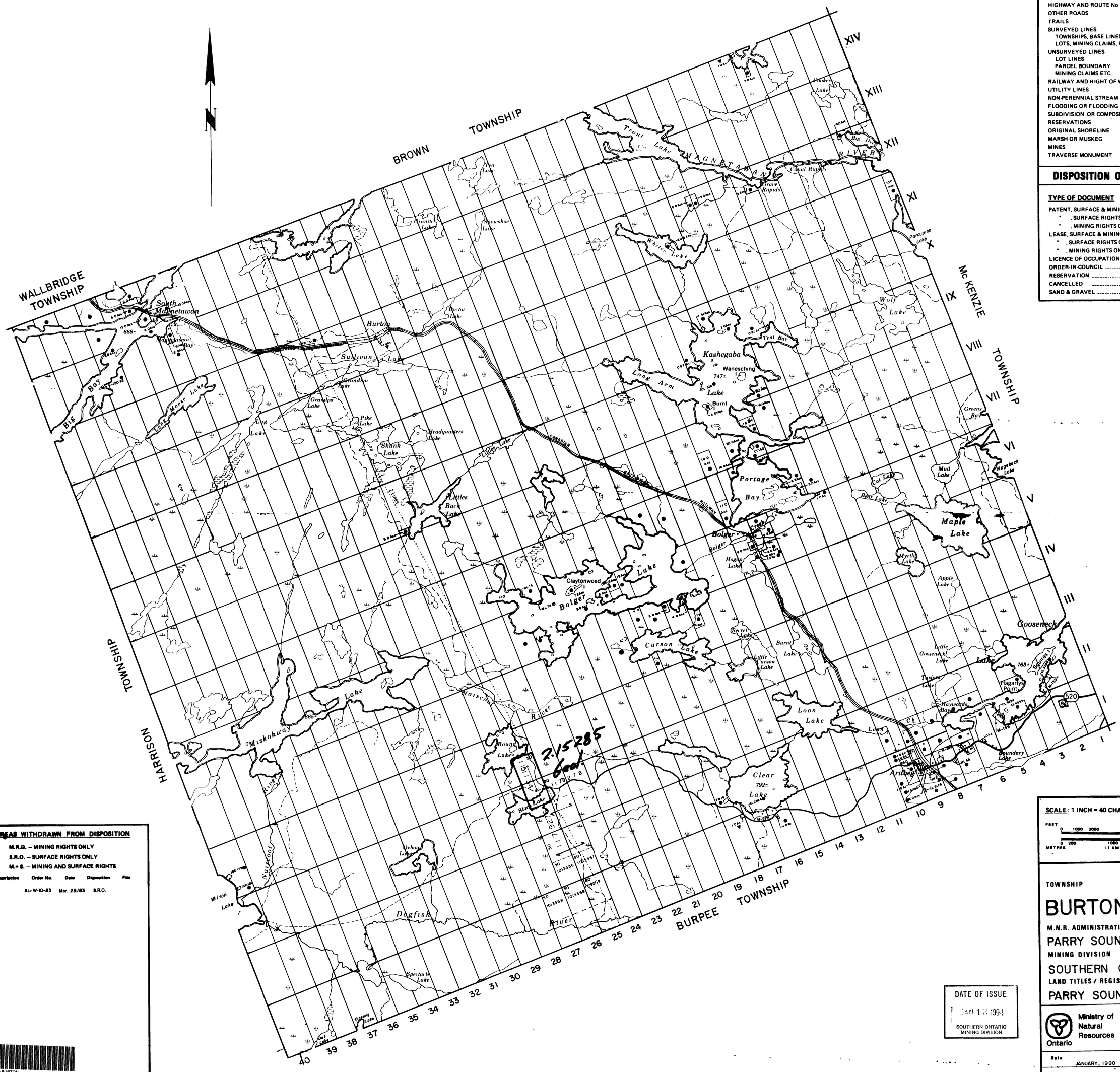
Ron Gashinski

Ron C. Gashinski
Senior Manager, Mining Lands Section
Mining and Land Management Branch
Mines and Minerals Division

DEM/vni

cc Assessment Files Office
Sudbury

cc Res Geo
Sudbury



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	●
" , SURFACE RIGHTS ONLY	◓
" , MINING RIGHTS ONLY	◒
LEASE, SURFACE & MINING RIGHTS	■
" , SURFACE RIGHTS ONLY	▣
" , MINING RIGHTS ONLY	▤
LICENCE OF OCCUPATION	▼
ORDER-IN-COUNCIL	OC
RESERVATION	⊕
CANCELLED	⊗
SAND & GRAVEL	◔

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)	AL-W-10-83	Mar. 28/83	S.R.O.	

SCALE: 1 INCH = 40 CHAINS

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

DATE OF ISSUE
Jan 12 1990
SOUTHERN ONTARIO MINING DIVISION

TOWNSHIP

BURTON

M.N.R. ADMINISTRATIVE DISTRICT
PARRY SOUND
MINING DIVISION
SOUTHERN ONTARIO
LAND TITLES / REGISTRY DIVISION
PARRY SOUND 2.15285.

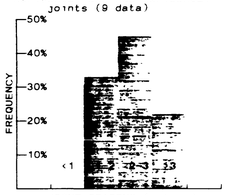
Ontario
Ministry of Natural Resources
Ministry of Northern Development and Mines

Date JANUARY, 1990
Number G-3884

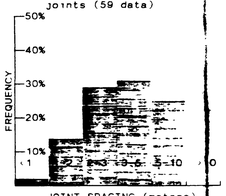
41H09NE0001 2 15285 BURTON
200

JOINT SPACING HISTOGRAMS

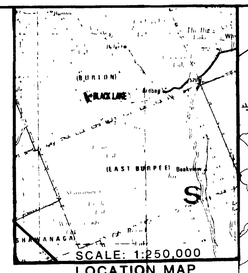
Horizontal and sub-horizontal joints (9 data)



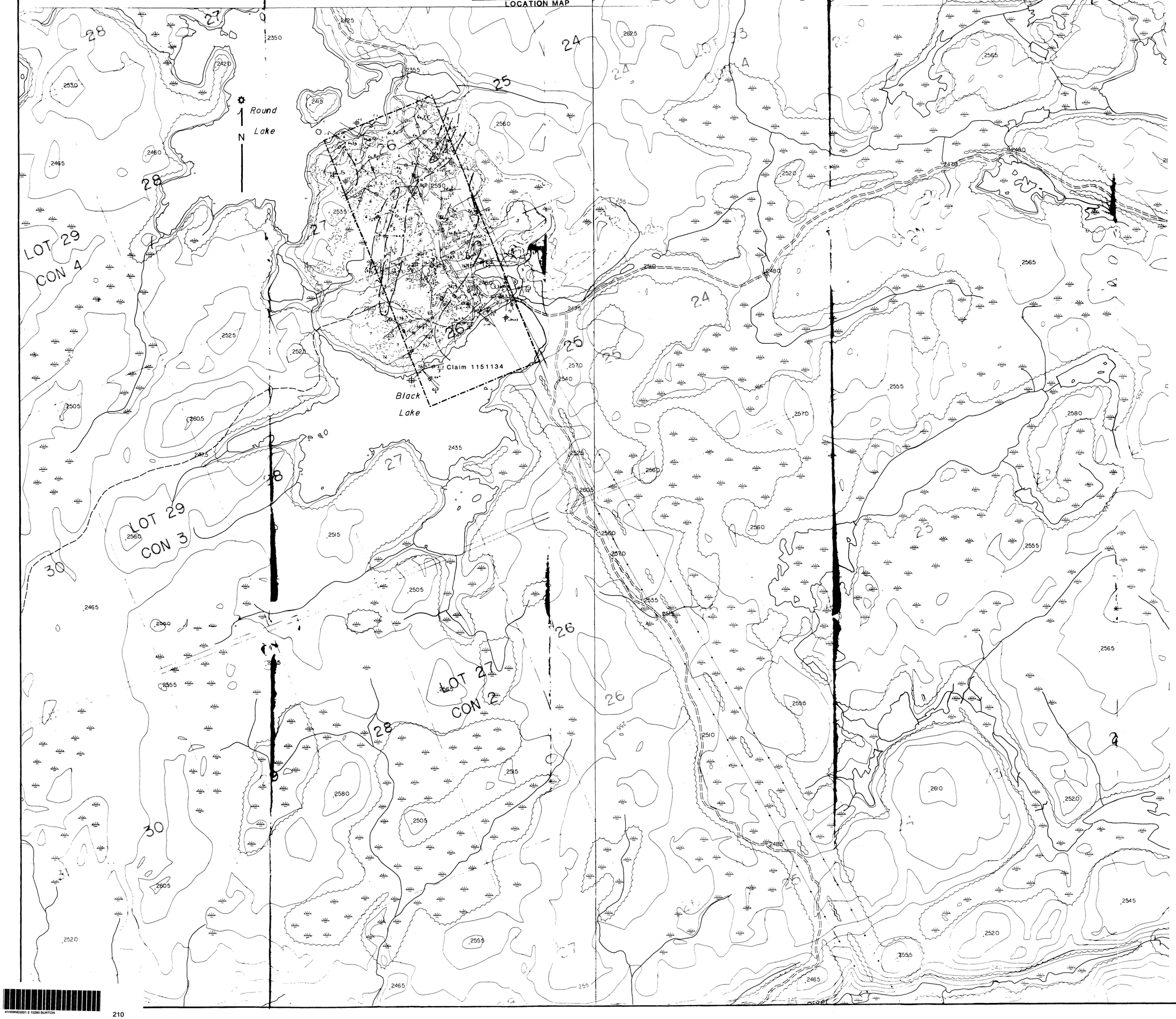
Vertical and near vertical joints (59 data)



STRIKE FREQUENCY DIAGRAM OF JOINTS
66 data



LOCATION MAP



LEGEND

1 **FELSIC GNEISS**[1] – layered to massive rock mainly composed of quartz, plagioclase and microcline with minor matrix biotite and variable accessory magnetite, hematite and almandine:
a) coarse grained equigranular rock, very weakly layered;
b) unit **1a** with coarse reddish-mauve speckles of hematite;
c) strongly layered fine to coarse grained cataclastic rock;
d) unit **1a** containing very large breccia fragments of pegmatite which show no internal strain;
e) fine to medium grained massive pink to rose coloured rock with thin biotite-rich partings;
f) unit **1e** more thinly layered and containing mauve hematite-bearing laminae

2 **AMPHIBOLITE GNEISS** – layered to massive fine to coarse grained, greyish black to black rock generally comprising 40 to 70% amphiboles with plagioclase in its unaltered state:
a) fine to coarse grained, thinly to thickly layered uniform gneiss occasionally with some biotite rich partings;
b) 1st par 1st migmatite comprising unit **2a** the paleosome constituent and parallel bands of late tectonic pegmatite;
c) migmatite breccia comprising clasts of late tectonic pegmatite within unit **2a**

3 **BIOTITE HORNBLENDE MIGMATITE** – a fine to coarse grained, highly variable rock of multicomponent origin generally 1st par 1st layered and frequently comprising similar intrafolial folds, the paleosome constituent comprises biotite, hornblende, feldspar and quartz and frequently has a relict foliated or thinly laminated texture; the neosome constituent is generally coarser and comprises a syntectonic, cataclastic originally pegmatitic aggregate of quartz, feldspar and minor hornblende and/or biotite:
a) variegated pale and dark grey with mafic content >20%
b) variegated pale and medium grey with mafic content 10% ≤20%
c) variegated pink and medium grey with mafic content 10% ≤20%
d) variegated pale and light grey, with biotite content <10%
e) variegated pink and light grey, with biotite content ≤10%
f) intense pink schlieren with biotite content ≤5%;
g) minor purple hematite spotting
h) late tectonic pegmatite ≥10%
i) late tectonic pegmatite ≤10%
j) hornblende dominant mafic minerals
k) biotite dominant mafic minerals

4 **PURPLE AND PINK MIGMATITE** – variegated rock with lamellae of medium to coarse grained unit **1a** or **3f** and a fine to medium grained reddish mauve layer comprising quartz, feldspar, biotite, almandine and hematite often a milky to buff late tectonic granulated quartz-feldspathic pegmatitic material forms conformable layers which generally exhibit pinch and swell textures:
a) thinly laminated or layered pink and mauve or pink, mauve and buff rock;
b) **4a** with brecciated mauve fragments in pink or buff layers or crenulations of mauve layers in the pink or buff layers;
c) **4a** or **4b** with ≤5% biotite or pyroxene/hornblende mafic layers

5 **GABBRO** – coarse grained mafic to ultramafic rock
a) Coronitic **metagabbro** having relict outlines of original pyroxene phenocrysts or phenocrysts and a massive to slightly foliated texture;
b) **amphibolite** gneiss – foliated and generally layered rock with ≥40% amphiboles

6 **TONALITE** – coarse grained intermediate rock with ≥20% ≤60% mafic minerals generally with some relict plagioclase phenocrysts and a strained to uniform gneissic fabric:
a) variegated medium to dark grey and pale grey, regularly layered rock generally medium to coarse grained usually having patches of relict phenocrysts;
b) porphyritic rock with elongated pink feldspar phenocrysts within a foliated to gneissic medium to coarse grained matrix of amphibole, feldspar and quartz

7 **MEGACRYSTIC GRANITE** – Porphyritic rock with relict, strained, orthoclase phenocrysts within a medium to coarse grained matrix of quartz, plagioclase, orthoclase and biotite and/or hornblende:
a) pink phenocrysts with prestrained diameters of ≥ 2cm;
b) pink phenocrysts with prestrained diameters of ≥ 5cm;
c) ≥ 5% ≤ 20% pink, fine to medium grained, syntectonic pegmatite;
d) folding, stretching, rolling and nodding of preexisting phenocrysts and pegmatite stringers

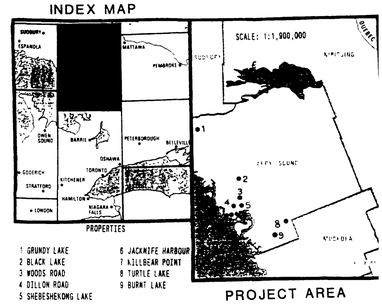
8 **GRANITE PEGMATITE** – fine to coarse grained quartz, microcline, plagioclase, and biotite-bearing rock varying in texture in response to its tectonic history:
a) very coarsely crystalline, unstrained, post-tectonic rock,
b) very coarse crystalline tectonic breccia;
c) medium to coarse grained cataclastic rock with occasional large clasts; identical to unit **1d** in appearance

[1] No origin is inferred by this name
[2] No relative ages are inferred by this order of the legend

SYMBOL LIST

- Gneissic foliation: with dip, vertical, horizontal
- Joints: horizontal; vertical with average spacing; with dip, minimum and maximum spacing and average separation
- Schistocity or foliation
- Lineation; with plunge
- Property boundary
- Highway, road
- Secondary road
- Abandoned road or trail
- Road allowance
- Railroad
- Concession line
- Lot line
- Electric power line
- Topographic contour (5 metre interval ASL)
- Swamp
- Clearing
- Outcrop
- Quarry
- Buildings
- Geological contact inferred

INDEX MAP



1 GRUNDY LAKE
2 BLACK LAKE
3 WOODS ROAD
4 DILLON ROAD
5 SHEBESHEKONG LAKE
6 JACKMIFE HARBOUR
7 KILLBEAR POINT
8 TURTLE LAKE
9 BURNT LAKE

PROJECT AREA

REGISTERED PROFESSIONAL ENGINEER
J. R. TRUSLER

SCALE
1:5,000
feet
metres

2.1528.5

JR TRUSLER & ASSOCIATES
MINERAL CONSULTANTS

BLACK LAKE PROPERTY

GEOLOGICAL MAP

DATE Oct 14, 1993 | SCALE 1 5,000 | DRAWN BY JR TRUSLER