Ministry of
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Ontario Geological Survey
Open File Report 5890

Dimension Stone Occurrences and Deposits in Northwestern Ontario

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ONTARIO GEOLOGICAL SURVEY

Open File Report 5890

Dimension Stone Occurrences and Deposits in Northwestern Ontario

By

P. Hinz, R.M. Landry and M.C. Gerow

1994

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Ontario Geological Survey

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Sioux Lookout, Box 3000, Queen and Fourth, Sioux Lookout P8T 1C6
Thunder Bay, Suite B002, 435 James St. S., Thunder Bay P7E 6E3

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ABSTRACT:

Building stone is defined as "a general, nongeneric term for any massive, dense rock suitable for use in construction". Whether igneous, metamorphic, or sedimentary, a building stone is chosen for its properties of durability, attractiveness, and economy." (American Geological Institute 1972).

In northwestern Ontario, dimension stone occurrences of granite, sandstone, marble, limestone and slate are found. Of these five, granite has the highest potential for discovery and development. The commercial term "granite" refers to all intrusive igneous rocks including gneisses, regardless of composition. "Black granites" include rock types such as diabase, gabbro and anorthosite. "Sandstones" are granular sedimentary rocks composed of primarily quartz and feldspar. In the stone industry, the term "marble" includes any carbonate rock which is capable of taking a polish. Serpentinite, travertine and onyx are all included in this group. "Limestone" refers to carbonate rocks which cannot be polished. The commercial term for "slate" and "schist" refer to true slates and foliated rocks of different lithologies and metamorphic grade which are capable of being split into thin slabs for use as flagstone.

This report documents many granite, sandstone and marble occurrences and deposits which have potential for development as dimension stone sources for both the construction and monument industries. Many of the occurrences described in this report warrant further examination to determine their economic potential. It should be noted that this report contains only a fraction of the reported occurrences in northwestern Ontario. Information on many more is available from the Industrial Minerals Geologist's files housed in the Resident Geologist's Office in Thunder Bay.

ACKNOWLEDGEMENTS:

The author wishes to acknowledge the efforts of Ken G. Fenwick for his dedication and support to the Industrial Minerals Project. From its beginning in 1984, as the Building Stone Inventory, to its final days Mr. Fenwick was its most ardent supporter. His recognition of northwestern Ontario's industrial mineral and dimension stone potential is greatly appreciated.

The Resident and Staff Geologists in all the northwestern Ontario offices provided essential support for this project and acted as liaisons with the local prospecting fraternity. Their assistance was greatly appreciated. Specifically M.C. Smyk (Schreiber-Hemlo District) provided assistance on numerous property visits in the Schreiber-Hemlo District. C.C. Storey (Kenora District) provided invaluable assistance and information on numerous properties in the Kenora District.

The assistance of the staff of the Mineral Development Office in Kenora, D. Beard and S. Schelske, is greatly appreciated.

C. Komar reviewed this report. A.R. Dowton and S.E. Warren provided professional and efficient secretarial support throughout the project.

Assistance in the field and office was provided by R.M. Landry and R.T. Lucas, whose efforts are gratefully appreciated. Numerous company representatives, prospectors and M.N.D.M. staff provided invaluable information and field assistance on occurrences in northwestern Ontario.

Special thanks to M.C. Gerow in whose footsteps I followed and for setting an example of client service and promotion of the industrial mineral potential in northwestern Ontario which I tried to continue.

And finally to my wife and family for their support throughout this project.

P. Hinz

DIMENSION STONE OCCURRENCES

AND DEPOSITS IN

NORTHWESTERN ONTARIO

BY: P. HINZ, R.M. LANDRY AND M.C. GEROW

INTRODUCTION:

The "Industrial Minerals" project was initiated in March 1991 to monitor and stimulate exploration, development and production of industrial minerals in northwestern Ontario. This project was jointly funded by the four-year CANADA-ONTARIO 1991 Northern Ontario Development Agreement, a subsidiary agreement to the Economic Regional Development Agreement (ERDA) signed by the governments of Canada and Ontario.

The primary objectives of the project were: to document and investigate new and previously known industrial mineral occurrences; to provide client services via property visits, sample analyses and information exchange; introduce public education through prospector classes, oral presentations and poster displays; and increase awareness of northwestern Ontario industrial minerals at technical seminars, workshops and conferences.

This report documents the high potential dimensional and monument stone sites visited by the author since 1991. Along with sites visited and described by the author are some descriptions written by M.C. Gerow. Ms. Gerow worked on a similar program from 1985 to 1990, however, no report on the dimension stone side of her project was written. Her project was jointly funded by the five-year CANADA-ONTARIO 1985 Mineral Development Agreement (COMDA), also a subsidiary agreement to the Economic and Regional Development Agreement (ERDA). This agreement was the precursor to the current Mineral Development Agreement.

The area covered in this report is comprised of the six Resident Geologist Districts in northwestern Ontario (Figure 1). The districts include Kenora, Red Lake, Sioux Lookout, Thunder Bay, Beardmore-Geraldton and Schreiber-Hemlo.

BACKGROUND:

The dimension and monument stone industry in northwestern Ontario has a long history and is linked to the development and prosperity of the region. One of the earliest commercial operations was located on Vert Island in Nipigon Bay of Lake Superior. The Mesoproterozoic Sibley Group yielded an attractive red sandstone which was extracted by the Chicago-Verte Island Sandstone Company. The stone was shipped to Chicago, Winnipeg, southern Ontario and other U.S. cities for construction uses. Development of some of the earliest quarries in the Marathon and Nipigon areas was directly related to the construction of the Canadian Pacific Railway in the late 1880s. Syenites surrounding Marathon and sandstones south of Nipigon were used in the construction of railway trestles to span the Black, Pic, Little Pic, Steel and Nipigon rivers. Today these trestles show very little wear and are a testament to the long-standing durability of the stones.

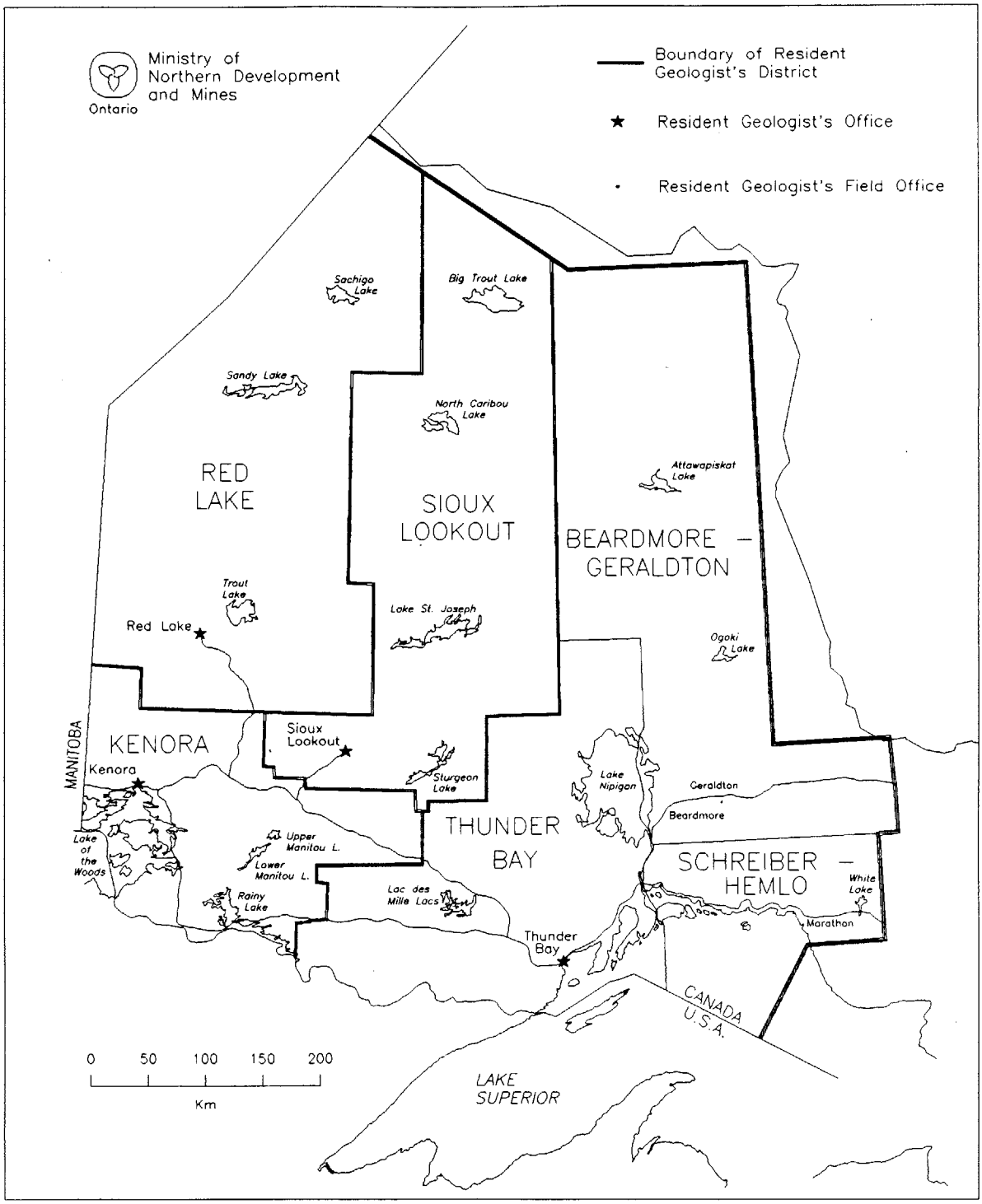

Figure 1: Northwestern Ontario Resident Geologist Districts

Although markets for dimension stone decreased in the early 1900s, production continued at the Simpson Island sandstone quarry (1900-1910) and at the Bannerman and Horne quarry (1912-1915) near Ignace.

The next period of quarry development took place during the late 1920s to early 1930s. Five small scale quarries operated northwest of Marathon along the Canadian Pacific Railway. Black and brown granites were extracted and shipped to customers in Toronto, Buffalo, Chicago and Detroit. In 1932, the last of these quarries closed due to the loss of a market.

In 1948, the Vermilion Pink Granite Company opened a quarry approximately 12 km southwest of the town of Vermilion Bay. This highly popular pink granite began production in 1954 and continued sporadically under various names until 1991 when the quarry, now named Granite Quarriers (GQI) Inc., closed. In 1981, Nelson Granite Limited of Sussex, New Brunswick began producing an identical granite from a quarry immediately south of the highway from the Granite Quarriers Inc. site. This quarry has operated year round since that time and is still in production. In 1990, over 5500 m^3 (185 000 cubic feet) were produced (Zielinski 1991).

In 1992, a new producer, Palin Granite Canada Inc. (a division of Palin Granit Oy, Finland), began production at their Pine Green Granite quarry, located approximately 65 km northeast of Kenora. Two stones are being produced at the site: a yellow granite which appears to be restricted to depths of 6 m; and a lower green granite. Production for 1993 was reported to be 1025 m^3 (36 197 cubic feet).

The historical significance and current production of dimension stone represent only a fraction of the stone in northwestern Ontario with the potential to be quarried. New quarrying techniques and fabrication equipment are helping to decrease production costs and subsequently increase the potential for many sites to be exploited profitably.

REGIONAL GEOLOGY:

The geology of northwestern Ontario is both varied and complex. The area is underlain by rocks of the Superior and Southern Provinces. The Superior Province, its nine subprovinces (Figure 2) and the Proterozoic geology of the Lake Superior area (Southern Province) are all described in detail in the Ontario Geological Survey's Geology of Ontario, Special Volume 4, Parts 1 (Thurston et al. ed. 1991). The reader who wishes greater detail in the geological descriptions is encouraged to examine the Geology of Ontario volume.

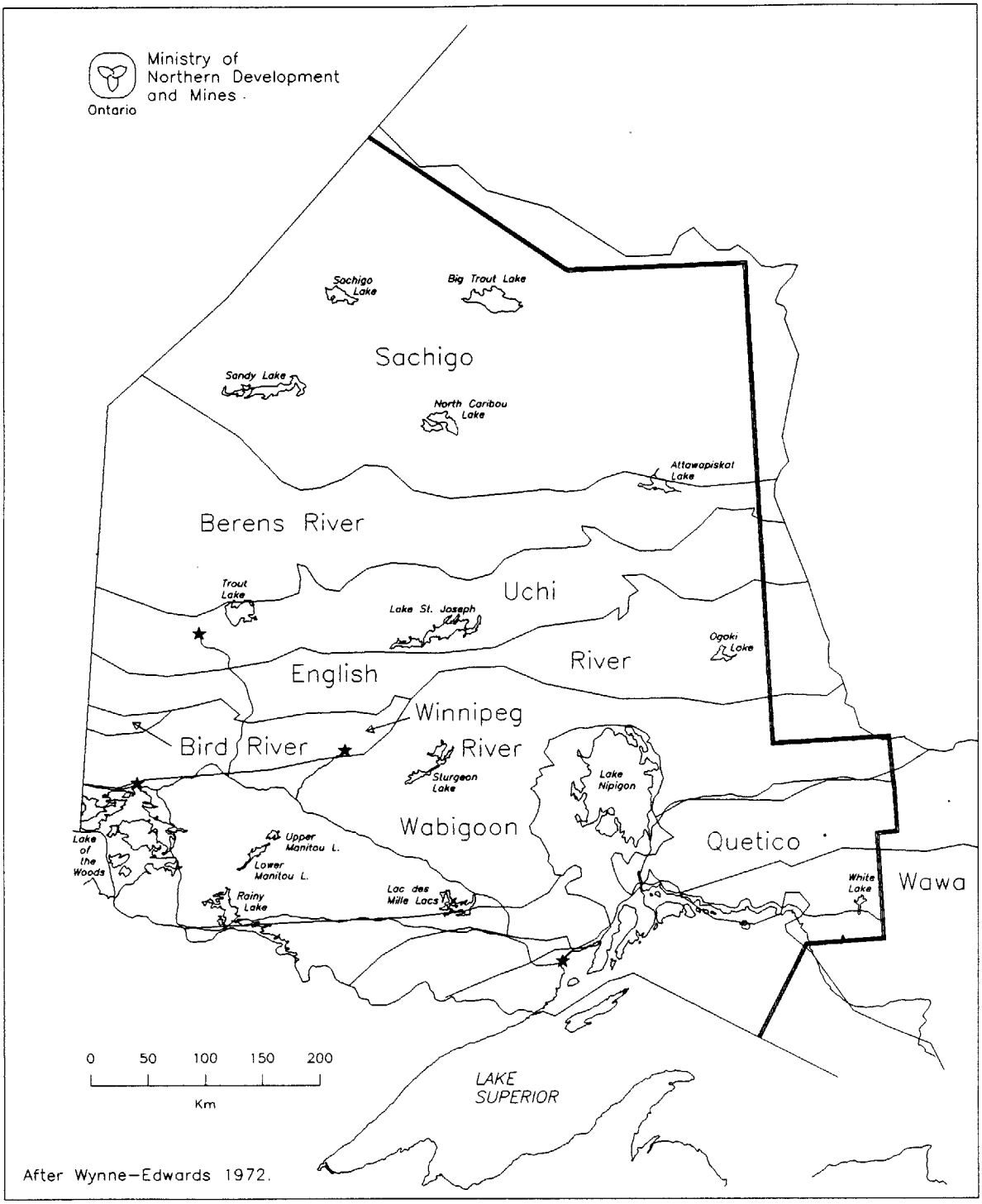

Figure 2: Geological Subprovince Boundaries in northwestern Ontario

CURRENT PROJECT:

The current project consisted of:

A) Visiting all producing quarries in northwestern Ontario.

B) Visiting and sampling all past producing quarries.

C) Conducting reconnaissance mapping of high potential sites and to locate new sites. If warranted, a sample block was retrieved to produce sample tiles for inclusion in the Ontario Stone Display.

D) Conducting property visits to prospectors to provide advice on: the potential of their site; work required to develop the site; and contacts in the stone industry.

The purpose of these activities was to: accurately document as many producers, deposits, occurrences and prospects as possible; promote the potential for quarriable stone in the area; educate prospectors, explorationists and the public on dimension stone in northwestern Ontario.

The vastness of the area covered, the relatively short field season and the fact that this was only a portion of the overall Industrial Minerals Program prevented the author from visiting all the potential sites in the northwest.

CONCLUSIONS:

The deposits, occurrences and showings in this report examined by the author and M.C. Gerow are all described in an objective manner. The author has put forth the technical information from which stone industry representatives and prospectors can derive information which could aid them in determining which sites are worthy of further investigation.

The most significant fact which has come to light from this study is that the potential for stone development in northwestern Ontario is both staggering and relatively untested. Exploration for stone has been restricted to three small areas: the Kenora district, specifically the Lount Lake batholith and Ignace area; and the area to the north and west of the town of Marathon. Other than these three areas, exploration for stone has been virtually non-existent, except for historical work conducted prior to the 1940s.

RECOMMENDATIONS:

Prospecting for potential granite dimension stone deposits has been made easier with the release of the Bedrock Geology of Ontario map series (OGS 2541-44) in 1991. Map Units 14 (massive granodiorite to granite) and 15 (diorite-monzonite -granodiorite) have been recognized as having the potential to host quarriable granites. These Neoarchean to Mesoarchean intrusive rocks are abundant within the Superior Province. Quarriers, stone industry representatives, explorationists and prospectors should examine these maps and target these units for examination.

It is becoming increasingly apparent that numerous areas throughout northwestern Ontario have the potential to host quarriable stone. Areas which hold the promise include: the Lount Lake batholith in the Winnipeg River subprovince, north of Kenora; the Ear Falls area which hosts 6 high-potential stone sites within the English River and Winnipeg River subprovinces; and the Mesoproterozoic Port Coldwell alkalic complex near Marathon which hosts 5 past producing quarries. The Lount Lake Batholith, with one currently operating granite quarry, and several undeveloped deposits, may be the most significant commercial granite target in northwestern Ontario.

Evaluation of dimension stone sites includes the following criteria: fracture and jointing frequency; marketability of colour and texture; deleterious minerals; size of the deposit; and ready access to transportation. Storey (1986) described all of these criteria in detail and also discussed granite exploration models for: grey and coloured granite; variegated granite; and black granite.

KENORA DISTRICT

1) **PROPERTY NAME**: Butler Quarry

DATE(S) VISITED:
September 1992
June 1993

2) **ALTERNATE NAME(S)**: Wm. Horne Granite Company
Horne Quarry

3) **COMMODITY**: **Main**: Grey Granite

4) **DEVELOPMENT HISTORY AND OWNERSHIP**:

PAST:

1888	The C.P.R. opened a quarry 1.5 miles west of Ignace.
1892	The C.P.R. quarry shipped 4 to 5 car loads of stone per day.
1898	The C.P.R. had a number of quarries operating by this time. Eighty-five car loads of stone was being shipped daily to Calgary for construction of the Bow River Bridge.
1912	Messrs. Bannerman and Horne opened a quarry in Ignace to supply two million yards of crushed stone for railway ballast. Almost one hundred men were hired from Wisconsin to work the quarry. A large ballast quarry also operated at Bonheur in Burk Township.
1913	Operations ceased due to recession.
1914	Operations resumed with a reduced work force, 20 to 60 men. The stone was used in the construction of the Port Arthur Armoury.
1915	William Horne purchased Mr. Bannerman's shares in the quarry. The quarry opened and was operated by William Horne and subsequently his son Cecil. Paving stone and building stone were produced with the majority being sold in Winnipeg, Manitoba. The steps for the Manitoba Legislature building were produced from this quarry. The City of Winnipeg used blocks to make a bed

for its street car tracks. Stone from this quarry was also used for railway ballast (around 1935) when it was shipped to a crushing plant at Hawk Lake.

1915 A gang of 6 to 12 men were employed to extract the stone from mid-May to the end of October. Buildings erected at the quarry included a blacksmith shop, a bunkhouse, a stone shed, and a cabin.

1943 Operations ceased due to the Second World War when Cecil Horne served in the Canadian Armed Forces.

1946 Operations resumed.

1952 Operations ceased due to a lack of market and capital required to modernize the operations.

1987 Cecil Horne transferred ownership to his stepdaughter, Eileen Hepp (Moroni) and James Hepp.

1988 Nelson Granite retained as quarry operator to re-open quarry.

1989 Nelson deal dissolved, Universal Granite of St. Cloud, Minnesota given licence to operate quarry. Nelson Granite given contract to quarry stone. Approximately 13000 cu. ft. removed for various building and paving projects including the Ontario Government building in Thunder Bay.

CURRENT: 1994 The quarry is currently owned by Jim and Eileen Hepp, stepdaughter of Cecil Horne, of Duluth, Minnesota. Universal Granite has been conducting a marketing and prefeasibility study to evaluate the possibility of reopening the Butler Quarry.

5) LOCATION AND ACCESS:

N.T.S.	52 G/5NW		
Latitude:	49· 27' 40"	**Northing:**	5479172
Longitude:	91· 48' 59"	**Easting:**	0585772

GENERAL LOCATION:

The quarry is located in Bradshaw Township, District of Kenora. It is 7.7 km west of the town of Ignace on the north side of Highway 17, adjacent to the C.P.R. right of way (Figure 3).

ACCESS:

The quarry is accessible by a short road extending north from Highway 17 at a point 7.7 km west of Ignace.

MAP REFERENCES:

Claim Map G-1304, Bradshaw Twp., Kenora Mining Division

REFERENCES:

Barr and Dyck (1979)
Carr (1955)
Hewitt (1964)
Industrial Minerals Geologist's Files, Thunder Bay
Kennedy & Sherlock (1988)
Resident Geologist's Files, Kenora District, Kenora
Storey (1986)
Tanton (1938)

6) GENERAL GEOLOGY AND STRUCTURE:

Storey (1986) described the geology of the property:

> The rock is massive, light grey to white, biotite granite (approximately 5% biotite). There are local variations in grain size and resultant colour variations. There are a few minor patch pegmatites. A very weak foliation trends north-northwest.
>
> There are no obvious knots or inclusions in the granite but there are occasional rusty weathering spots on the weathered surface. Some of the waste blocks have a 2 to 5 mm rind of rusty coloured material. The rusty colour is associated with the biotite. The rock polishes well with no plucking of the biotite.

7) STONE DESCRIPTION:

MINERALOGY:

By point count analysis the rock is identified as a quartz monzonite. Mineral components include: 40% plagioclase (3% of which is myrmekitic); 29% quartz; 28% potassium feldspar (microcline and orthoclase); 3% biotite; trace magnetite and rare epidote and chlorite.

JOINTING:

The predominant joint set in the granite is oriented 110· with lesser sets at 045· and 070·. The former are wide spaced (5 m or more) while the latter are 1 to 2 m apart.

COLOUR:

There are two shades of grey present in the quarry (see Photo 1, Appendix A).

TEXTURE:

Massive equigranular.

OTHER FEATURES:

8) PHYSICAL PROPERTIES:

Compressive Strength:	26,125 psi (180.1 MPa)
Absorption:	0.28%
Bulk Specific Gravity:	2.61
Density:	163 lbs/ft^3 (2607.4 kg/m^3)
Abrasive Hardness:	58

Testing conducted by Geoscience Laboratories, Ontario Geological Survey, Toronto

9) CHEMICAL ANALYSIS:

SiO_2	Al_2O_3	Fe_2O_3	FeO	MnO	MgO	CaO	Na_2O	K_2O	TiO_2	P_2O_5
73.30	14.50	0.77	0.00	0.02	0.00	1.17	4.08	4.52	0.06	0.00

Analyses by Geoscience Laboratory, Ontario Geological Survey, Toronto

10) COMMENTS/RECOMMENDATIONS:

At the end of 1993 Boundary Stone Inc., the former Universal Granite Systems Ltd. completed a Norfund pre-feasibility study. The study was conducted to evaluate the possibility of reopening the Butler Granite quarry and constructing a fabrication plant in northwest Ontario. The study reported that modest sales would allow the facility to break-even. Although Ignace was the first choice for locating the fabrication plant, other communities such as Atikokan, Kenora and Thunder Bay were considered. As of May 1994, the project was still being evaluated.

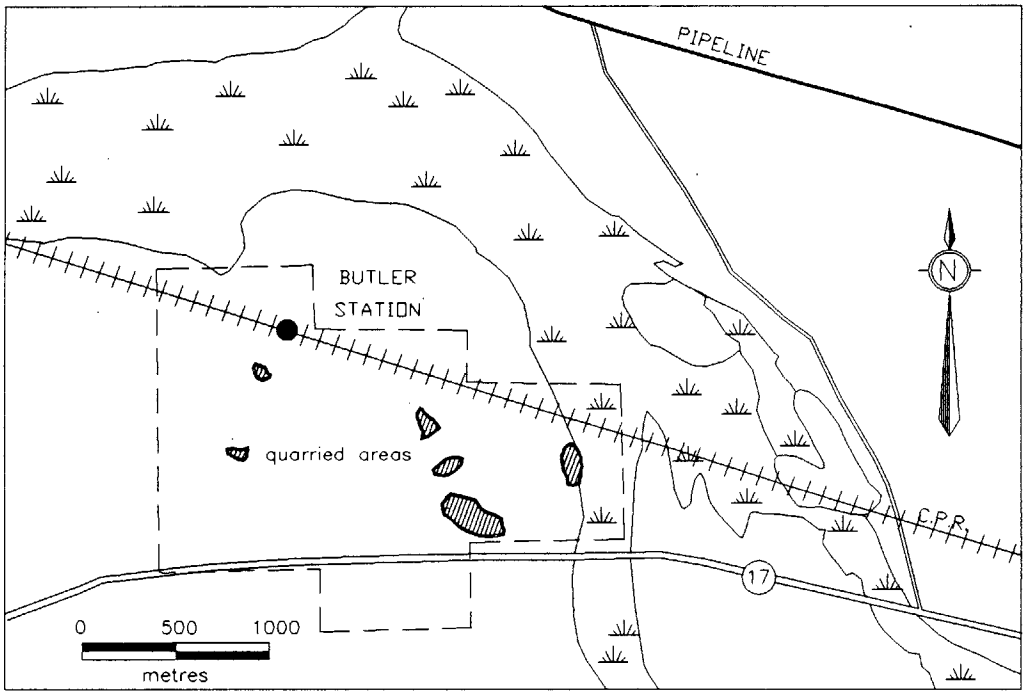

Figure 3: Butler Quarry, location map

1) **PROPERTY NAME:** CN Trax -3 **DATE(S) VISITED:** July 1993

2) **ALTERNATE NAME(S):**

3) **COMMODITY:** **Main:** Brown granite

4) **DEVELOPMENT HISTORY AND OWNERSHIP:**

PAST: The area has undergone little exploration or prospecting for granite dimension stone.

CURRENT: 1994 Portions of this occurrence are currently held by Nelson Granite and the Economic Development Office of Ear Falls.

5) **LOCATION AND ACCESS:**

N.T.S.	52 K/07SW		
Latitude:	50· 15' 50"	**Northing:**	5567754
Longitude:	92· 57' 12"	**Easting:**	0503327

GENERAL LOCATION:

This site is located 16 km east of Highway 105 on the CN Trax Road, which is located 32 km south of Ear Falls.

ACCESS:

The site is accessible from Ear Falls by a gravel road.

MAP REFERENCES:

Claim Map G-2051 Glider Lake Area, Kenora Mining Division
Map P.1201, Operation Kenora-Ear Falls, Perrault Lake Sheet (Breaks et al. 1975)

REFERENCES:

Hinz and Lucas (1992)
Industrial Minerals Geologist Files, Thunder Bay
Raoul (1992)

6) **GENERAL GEOLOGY AND STRUCTURE:**

Hinz and Lucas (1992) described the general geology:

> The area is underlain by rocks of the Winnipeg River (to the south), the English River (the centre) and Uchi Lake (to the north) subprovinces. The Winnipeg River Subprovince is composed of granitic intrusives and gneissic domes. The English River Subprovince consists of primarily metasedimentary migmatitic rocks. The Uchi Subprovince contains metasedimentary and metavolcanic belts with gneissic-intrusive complexes between the belts.

7) STONE DESCRIPTION:

MINERALOGY:

Raoul (1992) provided a petrographic description of the stone:

> The rock is a fine brown granite. It is very uniform in texture with rare orthoclase phenocrysts (2 cm). A reddish stain (hematite) is concentrated along fractures, but this may be a surface feature. There is a minor mica (biotite) and some chlorite-biotite xenoliths in outcrop. The mineral composition is: orthoclase (35%), plagioclase (27%), quartz (35%), and biotite (3%).

JOINTING:

Jointing observed during mapping was widespread and of variable orientation (Figure 4). Some large sections (>100 m) were mapped and found to be free of joints. Sheet jointing was noted at numerous locations and was between 0.7 and 5.0 m wide.

COLOUR:

The rock is a brown granite (see Photo 2, Appendix A).

TEXTURE:

The stone is fine grained in texture.

OTHER FEATURES:

8) PHYSICAL PROPERTIES:

9) CHEMICAL ANALYSIS:

10) COMMENTS/RECOMMENDATIONS:

This occurrence appeared to have a good chance of hosting a quarriable stone deposit. Mapping revealed large areas of massive unfractured stone. With sheeting in places of greater than 5 m, it seems to be a prime target. The property would be best evaluated by stripping the more massive sections and removing a number of test blocks to evaluate the consistency of colour and texture. To the north of this site is the CN Trax -3a occurrence, another very massive and large exposure of similar colour and texture. The authors did not have time to map the site, however, from what was seen, it is well worth investigating.

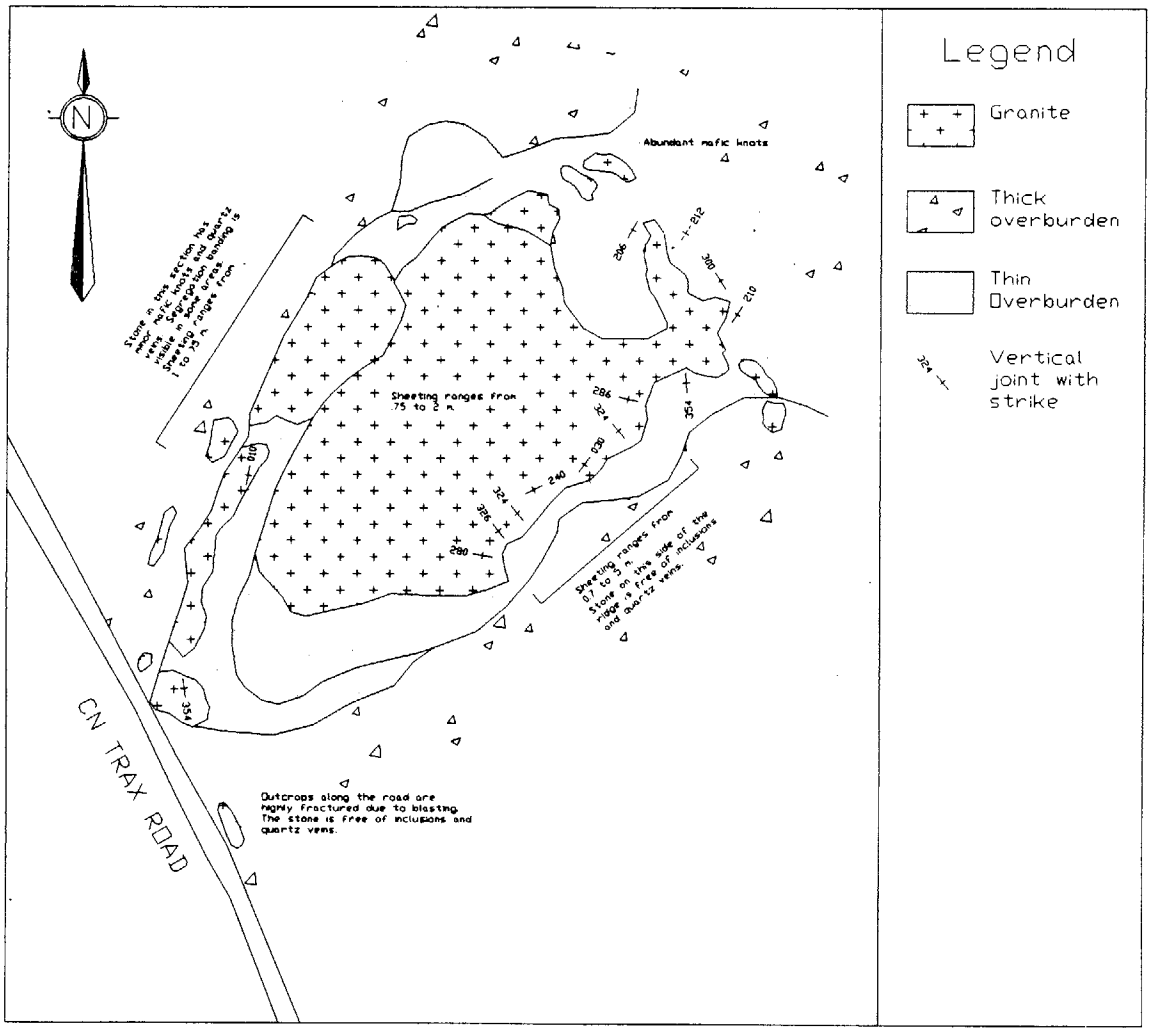

Figure 4: CN Trax -3 Occurrence, geology and structure

1) **PROPERTY NAME:** CN Trax -4 **DATE(S) VISITED:** July 1993

2) **ALTERNATE NAME(S):**

3) **COMMODITY:** **Main:** Pink granite

4) **DEVELOPMENT HISTORY AND OWNERSHIP:**

PAST: The area has undergone little exploration or prospecting for granite dimension stone.

CURRENT: 1994 This occurrence is currently held by the Economic Development Office of Ear Falls.

5) **LOCATION AND ACCESS:**

N.T.S.	52 K/07SW		
Latitude:	50· 15' 46"	**Northing:**	5567633
Longitude:	92· 54' 49"	**Easting:**	0506158

GENERAL LOCATION:

This site is located 20 km east of Highway 105 on the CN Trax Road, which is located 32 km south of Ear Falls.

ACCESS:

The site is accessible from Ear Falls by driving south on Highway 105 for 32 km. Turn left onto the CN Trax Road and travel approximately 20 km south to Devlin Road, turn east and drive 2.0 km. The road crosses the occurrence at this point.

MAP REFERENCES:

Claim Map G-2051 Glider Lake Area, Kenora Mining Division
Map P.1201, Operation Kenora-Ear Falls, Perrault Lake Sheet (Breaks et al. 1975)

REFERENCES:

Hinz and Lucas (1992)
Industrial Minerals Geologist Files, Thunder Bay
Raoul (1992)

6) **GENERAL GEOLOGY AND STRUCTURE:**

Hinz and Lucas (1992) described the general geology:

> The area is underlain by rocks of the Winnipeg River (to the south), the English River (the centre) and Uchi Lake (to the north) subprovinces. The Winnipeg River Subprovince is composed of granitic intrusives and gneissic domes. The English River Subprovince consists of primarily metasedimentary migmatitic rocks. The Uchi Subprovince contains metasedimentary and metavolcanic belts with gneissic-intrusive complexes between the belts.

7) STONE DESCRIPTION:

MINERALOGY:

Raoul (1992) provided a petrographic description of the stone:

> The rock is a medium-grained, pink granite with a uniform colour and texture. The colour gradually gets a little lighter to the south. There is some biotite and minor leucoxene (a titanium oxide which forms from the alteration of ilmenite). The leucoxene is deleterious due to the fact it is soft and weathers easily. The mineral constituents are: orthoclase (40%), plagioclase (30%), quartz (25%), and biotite (5%).

JOINTING:

The outcrop has very few vertical fractures, only three persistent joints were observed (Figure 5). However, considerable sheeting is observed and ranges in thickness from 0.2 m to 1.25 m in the western portion of the site.

COLOUR:

The rock is a pink granite.

TEXTURE:

The stone is medium grained.

OTHER FEATURES:

The outcrop is a very large dome-like hill, dipping gently to the north, with little vegetation. The part of the outcrop examined is 600 m long by 600 m wide. The surface slopes 3 to 5· to the north with a 3 m drop-off on the north face.

8) **PHYSICAL PROPERTIES:**

9) **CHEMICAL ANALYSIS:**

10) **COMMENTS/RECOMMENDATIONS:**

In appearance, this occurrence looks to have a high potential to host quarriable stone. The authors feel that the main concern is the sheeting observed at various locations on the occurrence, it reached a maximum thickness of 1.25 m. It is hoped that with depth the sheeting would decrease in frequency.

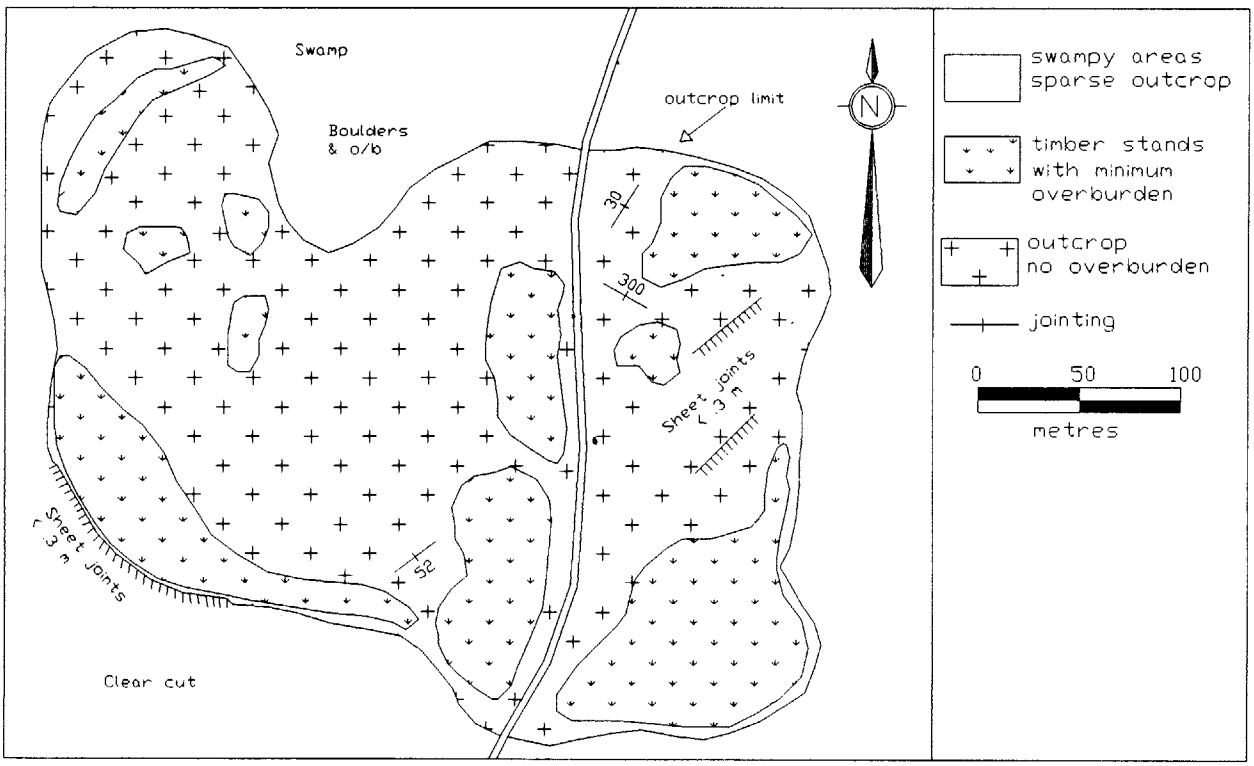

Figure 5: CN Trax -4 Occurrence, geology and structure

1) **PROPERTY NAME:** Forgotten Lake **DATE(S) VISITED:**

2) **ALTERNATE NAME(S):**

3) **COMMODITY:** **Main:** Beige/yellow granite

4) **DEVELOPMENT HISTORY AND OWNERSHIP:**

PAST:		Prior to 1985 no exploration was conducted in the area.
	1985	L.P. Nault staked the area and transferred the claims the P. Nault.
	1986	P. Nault conducted diamond drilling on the property.
	1987	C.B. Nelson staked a series of claims to the east of the Nault claim block.
	1988	Nelson conducted a geological evaluation, power stripping and test block removal. The blocks were cut and finished to conduct market studies. Beneficiation tests on the granite included the use of water-jet cutting to evaluate the potential for using this technology to produce a new finish on the stone.
CURRENT:	1994	C.B. Nelson still holds claims in the area.

5) **LOCATION AND ACCESS:**

N.T.S.	52 L/1SW		
Latitude:	50· 04' 00"	**Northing:**	5546697
Longitude:	94· 21' 00"	**Easting:**	0403382

GENERAL LOCATION:

This occurrence is located 35 km north of Kenora and 10 km north of Redditt.

ACCESS:

From Kenora take Highway 658 to Redditt. Take the English River Road for 11 km north. The site is to the east of the English River Road on both the east and west shores of Forgotten Lake (Figure 8).

MAP REFERENCES:

Claim Map G-2618, Forgotten Lake Area, Kenora Mining Division
Map 39g, Minaki to Sydney Lake (Derry 1930)
Map 2443, Kenora-Fort Frances Sheet (Blackburn 1979)
Map P.1030, Kenora-Minaki Sheet, Operation Kenora-Sydney Lake (Breaks et al. 1975)

REFERENCES:

Assessment Files, Kenora
Industrial Minerals Geologist's Files, Thunder Bay
Kennedy and Sherlock (1989)
Resident Geologist's Files, Kenora District, Kenora
Storey (1986)
Beakhouse (1991)

6) **GENERAL GEOLOGY AND STRUCTURE:**

Beakhouse (1991) describes the geology of the area:

> The Winnipeg River Subprovince is a dominantly granitoid domain within the central part of the western Superior Province. The Subprovince is flanked to the south by a granite-greenstone domain (western Wabigoon Subprovince) and to the north by a metasedimentary migmatite domain (English River Subprovince) and a greenstone domain (Bird River Subprovince).
>
> Granodioritic to granitic plutons, the granitic suite, and minor dioritic to granodioritic plutons, the mafic suite, were emplaced between 2.66 and 2.71 Ga. The granitic suite is interpreted to have originated by the partial melting of the older metatonalites in tectonically thickened crust.

Beakhouse (1991) goes on to describe the Lount Lake Batholith:

> The various phases of the Lount Lake batholith are typical of the granitic suite. The most abundant rock type is medium-grained granodiorite commonly characterized by large (less than 10 cm in diameter; usually approximately 1 to 3 cm in their longest dimension), subhedral to euhedral, perthitic microcline megacrysts. On the basis of their textures, composition and phase equilibria considerations, these megacrysts have been interpreted to be late magmatic megacrysts rather than true phenocrysts or porphyroblasts (Beakhouse 1983). Biotite is the ubiquitous and dominant mafic phase.

> Subordinate hornblende occurs very locally in close proximity to amphibolitic enclaves and is interpreted to be xenocrystic. Common primary accessory phases include magnetite, epidote, sphene, zircon and apatite. Secondary alteration products include white mica, epidote and carbonate (after plagioclase), and chlorite and magnetite (after biotite).

7) STONE DESCRIPTION:

MINERALOGY:

Kennedy and Sherlock (1989) described the mineralogy:

> The stone is a medium- to coarse-grained, porphyritic "granite" composed of yellow, potassic feldspar phenocrysts in a matrix of plagioclase, potassic feldspar, quartz and biotite.

JOINTING:

Storey (1986) described the jointing on the property:

> There are two predominant joint directions 030· and 130·; both are vertical. The joints are spaced 2 to 3 m. Sheeting is 1 to 2 m at the surface and apparently thickens with depth.

COLOUR:

The stone is a yellow or beige granite although Storey (1986) reported that portions of the site have a purple-coloured stone (see Photo 3, Appendix A).

TEXTURE:

See MINERALOGY above.

OTHER FEATURES:

8) PHYSICAL PROPERTIES:

9) CHEMICAL ANALYSIS:

Sample No.	SiO_2	Al_2O_3	Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	TiO_2	P_2O_5
87MCK-0001	73.31	14.90	3.48	0.05	0.44	1.87	3.27	4.90	0.63	0.28
87MCK-0001D	70.30	14.75	3.41	0.05	0.51	1.85	3.43	4.93	0.62	0.26

Analyses by Geoscience Laboratories, Ontario Geological Survey, Toronto

10) COMMENTS/RECOMMENDATIONS:

1) **PROPERTY NAME:** Granite Quarriers (GQI) Inc. **DATE(S) VISITED:** September 1992

2) **ALTERNATE NAME(S):** Vermilion Pink Granite Company
Scotstown Granite Company
Universal Granite Centre (1976) Ltd.

3) **COMMODITY:** **Main:** Pink granite

4) **DEVELOPMENT HISTORY AND OWNERSHIP:**

PAST:	1948	The quarry was opened by the Vermilion Pink Granite Company.
	1954 to 1960	It was re-opened in 1954 by the Scotstown Granite Company and operated until 1960.
	1971	The quarry was purchased by the Universal Granite Company.
	1976	Major production began and the company was re-named Universal Granite Centre (1976) Ltd.
	1984	The quarry was sold to a group of Quebec granite companies known as Granite Quarriers (GQI) Inc.
	1991	Operations ceased, head office for Granite Quarriers (GQI) Inc. were closed.
CURRENT:	1994	Granite Quarriers (GQI) Inc. still hold the property. Operations ceased in 1991, Granite Quarriers offices in Beebe, Quebec were closed in late 1991.

5) **LOCATION AND ACCESS:**

N.T.S.	52 F/13SE		
Latitude:	49· 49' 58"	**Northing:**	5519942
Longitude:	93· 30' 16"	**Easting:**	0463721

GENERAL LOCATION:

The quarry is located in Docker Township, District of Kenora. It is approximately 12 km west-southwest of the town of Vermilion Bay and is located on the north side of Highway 17 between the Trans Canada Pipeline and Aaron Lake (Figure 7).

ACCESS:

A short road departs north of Highway 17, approximately 12 km west-southwest of Vermilion Bay, and connects the quarry with the highway.

MAP REFERENCES:

Claim Map G-818, Docker Township
Map P.242, Manitou Lakes Sheet (Davies 1963)
Map 2443, Kenora-Fort Frances Sheet (Blackburn 1979)
Breaks et al. (1975f)
Davies (1964)

REFERENCES:

Assessment Files, Kenora
Blackburn et al. (1991)
Carr (1955)
Guillet (in Hewitt 1964, p.44-47)
Industrial Minerals Geologist Files, Thunder Bay
Pryslak (1969, 1976)
Resident Geologist Files, Kenora District
Storey (1986)
Vos et al. (1982)

6) GENERAL GEOLOGY AND STRUCTURE:

The quarry is hosted within the potassic suite of granites of the synvolcanic Dryberry Batholith in the Wabigoon Subprovince (Blackburn et al. 1991).

Storey (1986) described the previous work dealing with the quarry:

> The area was mapped by Pryslak (1969, 1976) and included in a reconnaissance scale map by Breaks et al. (1975f, 1978). The quarry was described by Carr (1955), Guillet (in Hewitt 1964); Pryslak (1976) repeated Guillet's description. The deposit is mentioned in Vos et al. (1982).

The rock is homogeneous, massive, medium grained pink granite. The body is egg shaped in plan, 2.8 by 1.8 km. This is the same deposit that the Nelson Granite quarry is located in and the rock is identical. The rock is very uniform in colour. A few minor quartz veins up to 2 cm wide are present.

7) STONE DESCRIPTION:

MINERALOGY:

Storey (1986) described the mineralogy of the granite:

The rock was classified as quartz monzonite by Mattison (1952) and granite by Pryslak (1976). A modal analysis from Mattison (1952) plots as granite in the Streckeisen (1976) classification.

There is a slight layering parallel to the sheeting. This is evidenced by a slight lightening of the pink colour of the feldspar. Biotite is roughly aligned parallel to these layers. This effect is present in several places in the deposit. When present the layering forms lines 2 cm apart on the surface. Microcline crystals up to 1 cm form dark pink phenocryst-like forms although the texture is not porphyritic.

The granites are characterized by the abundant coarse-grained microcline in irregular anhedral crystals up to 5 mm in size. Plagioclase feldspar (albite) is found in granules of similar size. It is usually slightly altered and does not always show its sharp multiple twinning. It also carries micrographic inclusions of quartz at some if its contacts with potash feldspar producing a textural feature called myrmekite. Although the latter is not a mineral, its ubiquity in the rock is worthy of note in the table.

Quartz occurs interstitial to the feldspar. It is somewhat smaller in grain size, sometimes showing strain. In places, it is found as small inclusions in the large crystals of feldspar as well as in the myrmekite noted above.

Biotite mica is the sole ferromagnesium mineral in the granites. It is disseminated through the rock in small clusters of two to four flakes in a uniform manner. In a few places, it has been replaced by chlorite. Generally, the mica is fresh and unaltered.

No sulphide minerals are evident in either granite.

Vermilion Pink Granite

Mineral	#82-17 (stained) %	#P-154 %
quartz	26	32
pink feldspar	39	32
white feldspar	30	28
ferromagnesia	4	6
myrmekite	1	2

Minor and accessory minerals in both granite samples:

minor	accessory
chlorite (after mica)	apatite
-	zircon
-	magnetite

Sample #82-17 collected by C. Storey (1986)
Sample #P-154 collected by A. Pryslak (1976)

Petrographic description by Geoscience Laboratory, Ontario Geological Survey, Toronto

JOINTING:

Guillet (in Hewitt 1964) described the jointing:

> Sheeting in the granite is parallel to the gneissosity and is frequently marked by a pegmatitic layer, 1 to 2 inches thick, of quartz and feldspar....The thickness of the sheets in the quarry area measured from top to bottom are 2, 2, 3, 4, 2, 12, 10 and 4 feet. The two thick sheets form the major producing zone. Jointing is poorly developed in one direction - N.45·E., and the interval is wide. The jointing is usually tight, almost healed, and is often marked by a 1/4-inch bleached zone.

The stone is relatively unfractured and allows for the removal of virtually any size block. Sheeting observed by the author ranged from 2 to 4 m and dipped shallowly to the north.

COLOUR:

The rock is pink in colour.

TEXTURE:

The stone is fine to medium grained.

OTHER FEATURES:

8) PHYSICAL PROPERTIES:

Vermilion Pink Granite	
Compressive Strength:	19,370 psi (133.6 MPa)
Modulus of Rupture:	1,850 psi (12.8 MPa)
Absorption:	0.25%
Bulk Specific Gravity:	2.62
Abrasive Hardness:	81

Testing conducted by Geoscience Laboratories, Ontario Geological Survey, Toronto

9) CHEMICAL ANALYSIS:

SiO_2	Al_2O_3	Fe_2O_3	FeO	MgO	MnO	CaO	Na_2O	K_2O	TiO_2	P_2O_5
73.70	13.90	0.81	0.72	0.36	0.04	1.29	2.94	4.85	0.19	0.05

Analyses by Geoscience Laboratory, Ontario Geological Survey, Toronto

10) COMMENTS/RECOMMENDATIONS:

The current ownership of this property is currently unknown. During 1993 negotiations were held between Granite Quarriers and Nelson Granite concerning the possible purchase of the property. Apparently an agreement was made that Nelson would maintain the site and provide remediation to the waste pile and quarry. In August of 1993 the authors visited the site and found the derrick dismantled, an inquiry revealed that Nelson Granite was responsible.

1) **PROPERTY NAME:** McKenzie -1 Occurrence **DATE(S) VISITED:** July 1993

2) **ALTERNATE NAME(S):**

3) **COMMODITY:** **Main:** Grey granite

4) **DEVELOPMENT HISTORY AND OWNERSHIP:**

PAST: The area has undergone little exploration or prospecting.

CURRENT: 1994 This occurrence is currently held by the Economic Development Office of Ear Falls.

5) **LOCATION AND ACCESS:**

N.T.S.	52 K/10SE		
Latitude:	50° 33' 18"	**Northing:**	5600176
Longitude:	92° 39' 53"	**Easting:**	0523752

GENERAL LOCATION:

This site is located 46 km southeast of Ear Falls on the McKenzie Bay Road.

ACCESS:

The site is accessible from Ear Falls by an all-weather logging road.

MAP REFERENCES:

Claim Map G-2116, Maskerine Lake Area, Red Lake Mining Division
Map P.1200, Operation Kenora-Ear Falls, Papaonga-Wapesi Lake Sheet (Breaks et al. 1975)

REFERENCES:

Hinz and Lucas (1992)
Industrial Minerals Geologist Files, Thunder Bay
Raoul (1992)

6) **GENERAL GEOLOGY AND STRUCTURE:**

Hinz and Lucas (1992) described the general geology:

The area is underlain by rocks of the Winnipeg River (to the south), the English River (the centre) and Uchi Lake (to the north) subprovinces. The Winnipeg River Subprovince is composed of granitic intrusives and gneissic domes. The English River Subprovince consists of primarily metasedimentary migmatitic rocks. The Uchi Subprovince contains metasedimentary and metavolcanic belts with gneissic-intrusive complexes between the belts.

7) **STONE DESCRIPTION:**

MINERALOGY:

The mineral constituents are orthoclase (35%), plagioclase (35%), quartz (30%), biotite (3%) with minor muscovite (1%).

JOINTING:

Jointing observed during mapping was widespaced and had the following orientations: 008°; 022 to 036°; 080 to 090°; and 131°. Over a two kilometre section, only eleven joints were recorded (Figure 6). Sheet jointing was noted at three locations. The sheets are between 0.5 to 1.5 m wide.

COLOUR:

Outcrops display a light grey colour. When polished the stone is a light grey (see Photo 4, Appendix A).

TEXTURE:

The stone is medium to coarse grained in texture.

OTHER FEATURES:

8) **PHYSICAL PROPERTIES:**

9) **CHEMICAL ANALYSIS:**

10) **COMMENTS/RECOMMENDATIONS:**

Sample tiles of this occurrence have been likened to the Stanstead Grey, produced in ????. Although the stone is attractive, mapping of the site only covered 2 km of road. To better evaluate the site some mapping further away from the road (up to 1 km) should be conducted to located more exposure. What was seen on the road was favourable and suggests that further work is warranted.

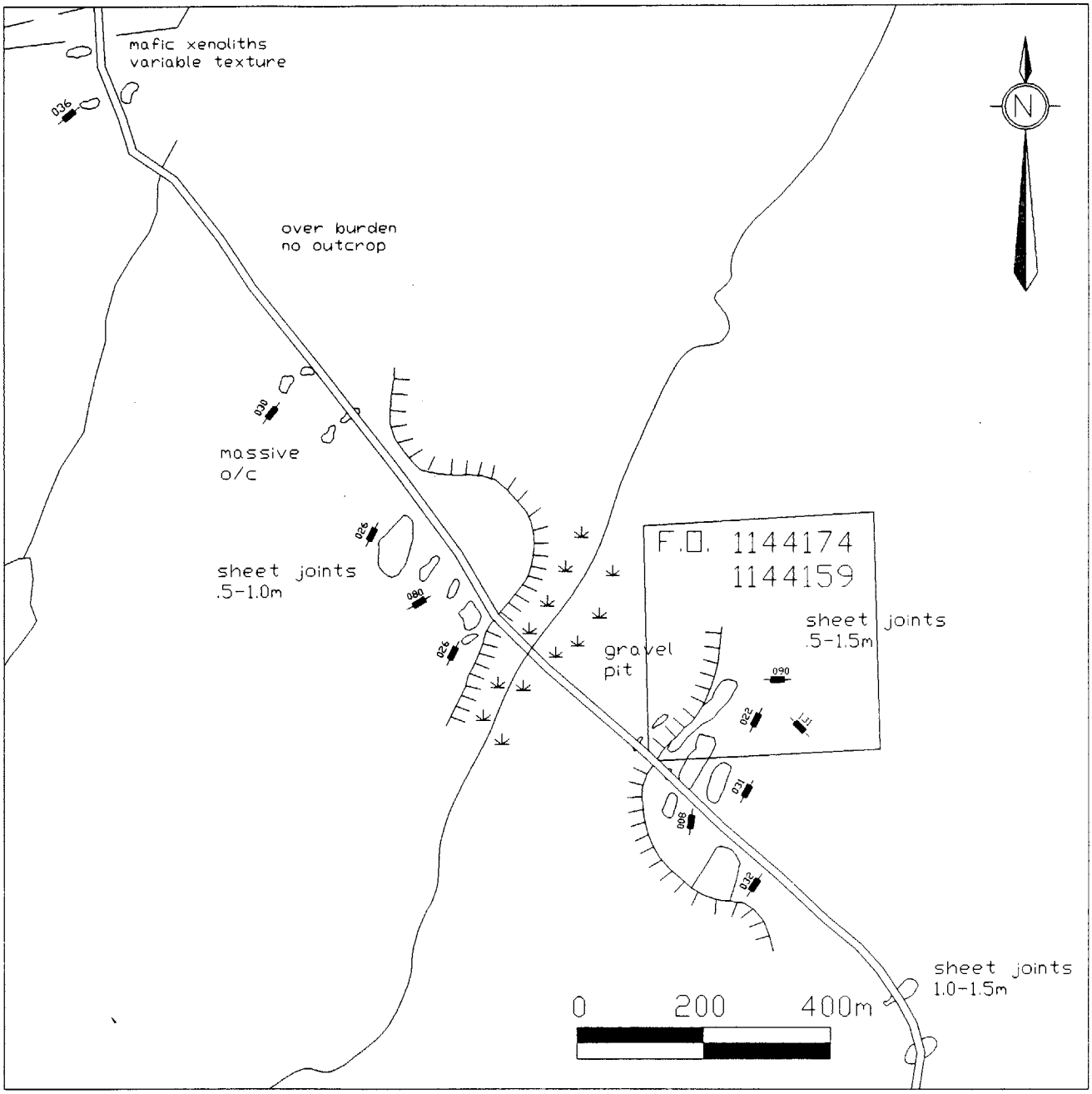

Figure 6: McKenzie -1 Occurrence, general geology and structure

1) **PROPERTY NAME:** Nelson Granite Quarry **DATE(S) VISITED:** March 1992

2) **ALTERNATE NAME(S):**

3) **COMMODITY:** **Main:** Pink granite

4) **DEVELOPMENT HISTORY AND OWNERSHIP:**

PAST: 1981 Nelson Granite Ltd. opened their quarry, directly south of the Vermilion Pink quarry, across Highway 17.

CURRENT: 1994 Nelson Granite is producing from a quarry north of Aaron Lake which is due north from the old quarry.

5) **LOCATION AND ACCESS:**

N.T.S.	52 F/14SW		
Latitude:	49· 29' 26"	**Northing:**	5481891
Longitude:	93· 29' 52"	**Easting:**	0463949

GENERAL LOCATION:

The quarry is located in Docker Township approximately 12 km west-southwest of the town of Vermilion Bay.

ACCESS:

The active quarry is located on the north side of Highway 17, north of Aaron Lake, 12 km west-southwest of the town of Vermilion Bay (Figure 7). The inactive pit and small fabrication plant is located on the south side of the highway. The active quarry is accessed by driving approximately 2 km on the old GQI access road north of the highway. The road to the current workings forks to the left just before the old GQI quarry.

MAP REFERENCES:

Claim Map M1968, Docker Township, Kenora Mining Division
Map P.242, Manitou Lakes Sheet (Davies 1963)
Map 2443, Kenora-Fort Frances Sheet (Blackburn 1979)

REFERENCES:

Assessment Files, Kenora
Breaks et al. (1976b; 1978)
Industrial Minerals Geologist's Files, Thunder Bay
Pryslak (1969, 1976)

Vos et al. (1982)
Resident Geologist's Files, Kenora District
Storey (1986)

6) GENERAL GEOLOGY AND STRUCTURE:

The quarry is hosted within the potassic suite of granites of the synvolcanic Dryberry Batholith in the Wabigoon Subprovince (Blackburn et al. 1991).

Storey (1986) described the previous work dealing with the quarry:

> The area was mapped by Pryslak (1969, 1976) and included in a reconnaissance scale map by Breaks et al. (1975f, 1978). The quarry was described by Carr (1955), Guillet (in Hewitt 1964); Pryslak (1976) repeated Guillet's description. The deposit is mentioned in Vos et al. (1982).

The rock is homogeneous, massive, medium grained pink granite. The body is egg shaped in plan, 2.8 by 1.8 km. This is the same deposit that the Granite Quarriers (GQI) Inc. quarry is located in and the rock is identical. The rock is very uniform in colour. A few minor quartz veins up to 2 cm wide are present.

7) STONE DESCRIPTION:

MINERALOGY:

Storey (1986) described the mineralogy of the granite:

> The rock was classified as quartz monzonite by Mattinson (1952) and granite by Pryslak (1976). A modal analysis from Mattison (1952) plots as granite in the Streckeisen (1976) classification.
>
> "There is a slight layering parallel to the sheeting. This is evidenced by a slight lightening of the pink colour of the feldspar. Biotite is roughly aligned parallel to these layers. This effect is present in several places in the deposit. When present the layering forms lines 2 cm apart on the surface. Microcline crystals up to 1 cm form dark pink phenocryst-like forms although the texture is not porphyritic."

The granites are characterized by the abundant coarse-grained microcline in irregular anhedral crystals up to 5 mm in size. Plagioclase feldspar (albite) is found in granules of similar size. It is usually slightly altered and does not always show its sharp multiple twinning. It also carries micrographic inclusions of quartz at some if its contacts with potash feldspar producing a textural feature called myrmekite. Although the latter is not a mineral, its ubiquity in the rock is worthy of note in the table.

Quartz occurs interstitial to the feldspar. It is somewhat smaller in grain size, sometimes showing strain. In places, it is found as small inclusions in the large crystals of feldspar as well as in the myrmekite noted above.

Biotite mica is the sole ferromagnesium mineral in the granites. It is disseminated through the rock in small clusters of two to four flakes in a uniform manner. In a few places, it has been replaced by chlorite. Generally, the mica is fresh and unaltered.

No sulphide minerals are evident in either granite sample.

Vermilion Pink Granite

Mineral	#82-17 (stained) %	#P-154 %
quartz	26	32
pink feldspar	39	32
white feldspar	30	28
ferromagnesia	4	6
myrmekite	1	2

Minor and accessory minerals in both granite samples:

minor	accessory
chlorite (after mica)	apatite
-	zircon
-	magnetite

Sample #82-17 collected by C. Storey (1986)
Sample #P-154 collected by A. Pryslak (1976)

Petrographic description by Geoscience Laboratory, Ontario Geological Survey, Toronto

JOINTING:

The rock has very few fractures. Vertical joints are oriented 050·/90· and 155·/90·; these are widely spaced and in many parts of the outcrop are not evident. Sheeting is thick.

Initial drilling indicated horizontal fractures at approximately 7.6 m to 13.7 m (Resident Geologist's Files, Kenora District). Quarrying operations exposed a first sheet at 2.5 m. The rock is identical to the Granite Quarriers deposit. The same sheeting and layering are present although the sheets are more nearly horizontal.

COLOUR:

The stone possesses a uniform pink colour (see Photo 5, Appendix A).

TEXTURE:

The stone is medium grained.

OTHER FEATURES:

8) PHYSICAL PROPERTIES:

Vermilion Pink Granite

Compressive Strength:	19,370 psi (133.6 MPa)
Modulus of Rupture:	1,850 psi (12.8 MPa)
Absorption:	0.25%
Bulk Specific Gravity:	2.62
Abrasive Hardness:	81

Testing conducted by Geoscience Laboratories, Ontario Geological Survey, Toronto

9) CHEMICAL ANALYSIS:

SiO_2	Al_2O_3	Fe_2O_3	FeO	MgO	MnO	CaO	Na_2O	K_2O	TiO_2	P_2O_5
73.70	13.90	0.81	0.72	0.36	0.04	1.29	2.94	4.85	0.19	0.05

Analyses by Geoscience Laboratory, Ontario Geological Survey, Toronto

10) COMMENTS/RECOMMENDATIONS:

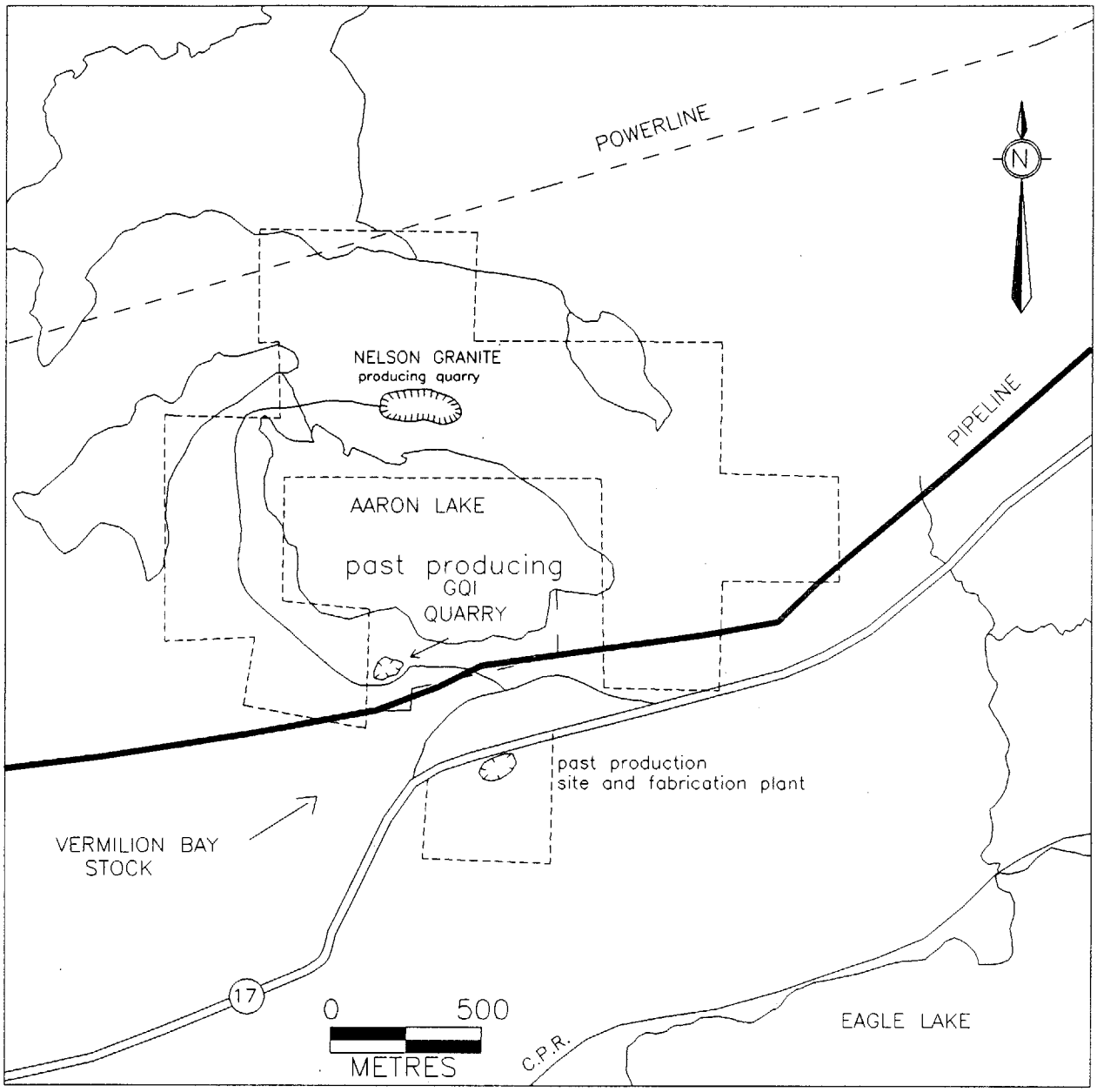

Figure 7: Nelson Granite and Granite Quarriers (GQI) Inc., location map

1) **PROPERTY NAME:** Palin Granite
Pine Green Quarry

DATE(S) VISITED: September 1992

2) **ALTERNATE NAME(S):** Pine Green Quarry
Direct Lake Green Granite

3) **COMMODITY:** **Main:** Green granite, yellow granite

4) **DEVELOPMENT HISTORY AND OWNERSHIP:**

PAST: Prior to 1986 the area received sporadic exploration for dimension stone.

1986 Property identified by M.C. Gerow (MNDM) and Palin Granite Oy representatives during regional helicopter field trip. Site staked by G. Zebruck on behalf of Palin Granite Oy.

1988 Palin Granite Canada Inc. incorporated to co-ordinate exploration and development in the Canada

1989 Exploration begun to identify potential dimension stone deposits.

1990 A 5 km road constructed to access potential quarry site, diamond drilling conducted, test blocks removed for market evaluation and physical testing.

1992 Palin Granite Canada Ltd. opened its Pine Green Quarry on July 15. Planned production for 1992 was 84,000 cu. ft.

CURRENT: 1994 Palin Granite Canada Ltd. is still operating the quarry.

5) **LOCATION AND ACCESS:**

N.T.S. 52 L/01SW
Latitude: 50· 05' 00" **Northing:** 5548446
Longitude: 94· 16' 00" **Easting:** 0409377

GENERAL LOCATION:

The quarry is located in the Direct Lake area, approximately 65 km north of Kenora on the Jones Road (Figure 8).

ACCESS:

The quarry can be accessed by a series of all-weather bush roads. Travel north from Kenora on Jones Road for 43.5 km. Turn left on the Lount Lake Road and travel 16.1 km. Take the left fork in the road and travel 3.2 km. The road terminates at the quarry.

MAP REFERENCES:

Claim Map G-2618, Forgotten Lake Area, Kenora Mining Division
Map 2443, Kenora-Fort Frances Sheet (Blackburn 1979)
Map P.1030, Kenora-Minaki Sheet, Operation Kenora-Sydney Lake (Breaks et al. 1975)
Map P.1031, Gordon-Big Canyon Lakes Sheet, Operation Kenora-Sydney Lake (Breaks et al. 1975)

REFERENCES:

Assessment Files, Kenora Resident Geologist's Office
Beakhouse (1991)
Industrial Minerals Geologist Files
Resident Geologist Files, Kenora District
Storey (1986)

6) GENERAL GEOLOGY AND STRUCTURE:

Beakhouse (1991) describes the geology of the area:

> The Winnipeg River Subprovince is a dominantly granitoid domain within the central part of the western Superior Province. The Subprovince is flanked to the south by a granite-greenstone domain (western Wabigoon Subprovince) and to the north by a metasedimentary migmatite domain (English River Subprovince) and a greenstone domain (Bird River Subprovince).
>
> Granodioritic to granitic plutons, the granitic suite, and minor dioritic to granodioritic plutons, the mafic suite, were emplaced between 2.66 and 2.71 Ga. The granitic suite is interpreted to have originated by the partial melting of the older metatonalites in tectonically thickened crust.

Beakhouse (1991) goes on to describe the Lount Lake Batholith:

The various phases of the Lount Lake batholith are typical of the granitic suite. The most abundant rock type is medium-grained granodiorite commonly characterized by large (less than 10 cm in diameter; usually approximately 1 to 3 cm in their longest dimension), subhedral to euhedral, perthitic microcline megacrysts. On the basis of their textures, composition and phase equilibria considerations, these megacrysts have been interpreted to be late magmatic megacrysts rather than true phenocrysts or porphyroblasts (Beakhouse 1983). Biotite is the ubiquitous and dominant mafic phase. Subordinate hornblende occurs very locally in close proximity to amphibolitic enclaves and is interpreted to be xenocrystic. Common primary accessory phases include magnetite, epidote, sphene, zircon and apatite.

Secondary alteration products include white mica, epidote and carbonate (after plagioclase), and chlorite and magnetite (after biotite).

7) **STONE DESCRIPTION:**

MINERALOGY:

Pine Green Granite:

This section of medium-grained, equigranular, alkali feldspar granite consists predominantly of interlocking grains of quartz and alkali feldspars with lesser amounts of interstitial biotite mica. Trace amounts of apatite, opaques (likely iron oxides or sulphides) and zircon are also present in interstitial areas. Alkali feldspars are partially altered producing mottled patches of sericite mica within feldspar grains. Microcline exhibits characteristic polysynthetic twinning. Mutual grain boundaries between quartz grains are characterized by polygonal, triagonal junctions suggesting thermal annealing after crystallization of primary mineral grains.

Petrographic description by Geoscience Laboratory, Ontario Geological Survey, Toronto

In 1991 C. Storey (Resident Geologist's Files, Kenora District) described the mineralogy of the Pine Green Granite:

The stone is primarily composed of potassium feldspar megacrysts up to 4 cm, within a quartz, potassium feldspar, plagioclase feldspar, biotite matrix. The matrix is fine-grained with grain sizes ranging from 1-3 mm. Quartz is clear and colourless, the plagioclase feldspar is clear to milky white. Yellow-brown staining along fractures and grain boundaries contribute to the overall colour. There is possibly incipient alteration (albitization ?) along fractures and around grain boundaries in the megacrysts. There is no evidence of perthitic intergrowth in the megacrysts. Modal analysis indicates the rock is a granite. The samples plot in the granite field on the Streckeisen diagram.

JOINTING:

Jointing and sheeting is widely spaced and allows for the removal of blocks of virtually any size.

COLOUR:

The rock at surface (60 cm to 6 m) is a yellow colour while at depth it is green. Both stones are being quarried for production (see Photos 6 & 7, Appendix A).

TEXTURE:

The stone is coarse grained to megacrystic.

OTHER FEATURES:

8) PHYSICAL PROPERTIES:

The following test results were obtained by Palin Granite Canada Ltd. (Industrial Minerals Geologist's Files, Thunder Bay):

Pine Green Granite

Compressive Strength:	20,133 psi (138.67 MPa)
Modulus of Rupture:	1,608 psi (11.09 MPa)
Absorption:	0.1818%
Bulk Specific Gravity:	2.67
Density:	166.6 lb/ft^3 (2,665 kg/m^3)
Abrasive Hardness:	62.4

Crystal Gold Granite

Compressive Strength:	24,746 psi (171 MPa)
Modulus of Rupture:	1,701 psi (11.73 MPa)
Absorption:	0.3202%
Bulk Specific Gravity:	2.681
Density:	167.3 lb/ft^3 (2,676.8 kg/m^3)

9) CHEMICAL ANALYSIS:

10) COMMENTS/RECOMMENDATIONS:

The Palin Granite Pine Green Quarry was successfully opened in July 1992. However, due to the recession and a cancellation of contracts, the quarry has been idle since October of 1993. Hopefully when the economy recovers, market demand will generate the reopening of the quarry.

1) **PROPERTY NAME**: Red Deer Lake Deposit **DATE(S) VISITED**:

2) **ALTERNATE NAME(S)**:

3) **COMMODITY**: **Main**: Brown granite

4) **DEVELOPMENT HISTORY AND OWNERSHIP**:

PAST:

Prior to 1987 no exploration for dimension stone had been conducted.

1987 — Claims stake by C.B. Nelson for Nelson Granite. B.R. Crowley staked 6 claims and transferred them to T. Coppola of Canital Granite.

1988 — Canital Granite removed some test blocks from the site. Nelson Granite conducted power stripping and mechanical work including removal of some test blocks. C. Wrazej staked a single claim west of Red Deer Lake. Transferred claim to A.T. Palin.

1989 to 1991 — Nelson Granite continued to work on their property. T. Coppola transferred all interest to Manex Granit Inc. Manex continued working on the property. A.T. Palin conducted geophysical and geological surveys. A.T. Palin transferred claim to Palin Granite Canada Inc. No further work conducted, claim cancelled.

CURRENT:

Nelson Granite and Canital Granite continue to hold claims north and west of Red Deer Lake.

5) **LOCATION AND ACCESS**:

N.T.S.	52 L/01SE		
Latitude:	94· 09' 00"	**Northing:**	5555615
Longitude:	50· 02' 50"	**Easting:**	0425181

GENERAL LOCATION:

This deposit is located on the north and west shoreline of Red Deer Lake approximately 40 km northeast of Kenora and 15 km northwest of Jones (Figure 8).

ACCESS:

The area can be accessed by travelling north from Kenora on Highways 604 & 671 and the Lount Lake Road for approximately 60 km.

MAP REFERENCES:

Claim Map G-2658, Wonderland Lake Area, Kenora Mining Division
Map 2443, Kenora-Fort Frances Sheet (Blackburn 1979)
Map P.1031, Gordon-Big Canyon Lakes Sheet, Operation Kenora-Sydney Lake (Breaks et al. 1975)

REFERENCES:

Beakhouse (1991)
Breaks et al. (1978)
Industrial Minerals Geologist's Files, Thunder Bay
Kennedy and Sherlock (1988)
Resident Geologist's Files, Kenora District, Kenora
Storey (1986)

6) GENERAL GEOLOGY AND STRUCTURE:

Beakhouse (1991) describes the geology of the area:

> The Winnipeg River Subprovince is a dominantly granitoid domain within the central part of the western Superior Province. The Subprovince is flanked to the south by a granite-greenstone domain (western Wabigoon Subprovince) and to the north by a metasedimentary migmatite domain (English River Subprovince) and a greenstone domain (Bird River Subprovince).
>
> Granodioritic to granitic plutons, the granitic suite, and minor dioritic to granodioritic plutons, the mafic suite, were emplaced between 2.66 and 2.71 Ga. The granitic suite is interpreted to have originated by the partial melting of the older metatonalites in tectonically thickened crust.

Beakhouse (1991) goes on to describe the Lount Lake Batholith:

> The various phases of the Lount Lake batholith are typical of the granitic suite. The most abundant rock type is medium-grained granodiorite commonly characterized by large (less than 10 cm in diameter; usually approximately 1 to 3 cm in their longest dimension), subhedral to euhedral, perthitic

> microcline megacrysts. On the basis of their textures, composition and phase equilibria considerations, these megacrysts have been interpreted to be late magmatic megacrysts rather than true phenocrysts or porphyroblasts (Beakhouse 1983). Biotite is the ubiquitous and dominant mafic phase. Subordinate hornblende occurs very locally in close proximity to amphibolitic enclaves and is interpreted to be xenocrystic. Common primary accessory phases include magnetite, epidote, sphene, zircon and apatite. Secondary alteration products include white mica, epidote and carbonate (after plagioclase), and chlorite and magnetite (after biotite).

7) **STONE DESCRIPTION:**

MINERALOGY:

The stone is composed of pink potassium feldspar phenocrysts in a fine- to medium-grained matrix of potassium and plagioclase feldspars, quartz and biotite.

JOINTING:

Kennedy and Sherlock (1988) described the jointing:

> The granite formation is very massive with few, widely spaced, vertical fractures. Sheeting or horizontal fracturing is spaced from 1 to 5 m and greater allowing for extraction of very large blocks.

COLOUR:

The stone is reddish-brown in colour (see Photo 8, Appendix A).

TEXTURE:

The stone displays a coarse-grained and porphyritic texture.

OTHER FEATURES:

8) **PHYSICAL PROPERTIES:**

9) CHEMICAL ANALYSIS:

Sample No.	SiO_2	Al_2O_3	Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	TiO_2	P_2O_5
87MCK-0002	69.09	15.21	3.27	0.04	0.59	2.00	3.10	5.97	0.58	0.26
87MCK-0002D	69.17	15.16	3.20	0.04	0.57	1.98	3.21	5.96	0.55	0.25

Analyses by Geoscience Laboratories, Ontario Geological Survey, Toronto

10) COMMENTS/RECOMMENDATIONS:

There is little doubt in the authors mind that the granite deposits around Red Deer Lake are potentially of world class quality and quantity. Due to a hostile reception by cottage owners in the late 1980s, development of these deposits was shelved by the interested parties. With the new Mining Act, Closure Plan and Environmental Regulations in place to deal with the cottagers concerns, it is hoped that these deposits will be developed in the near future.

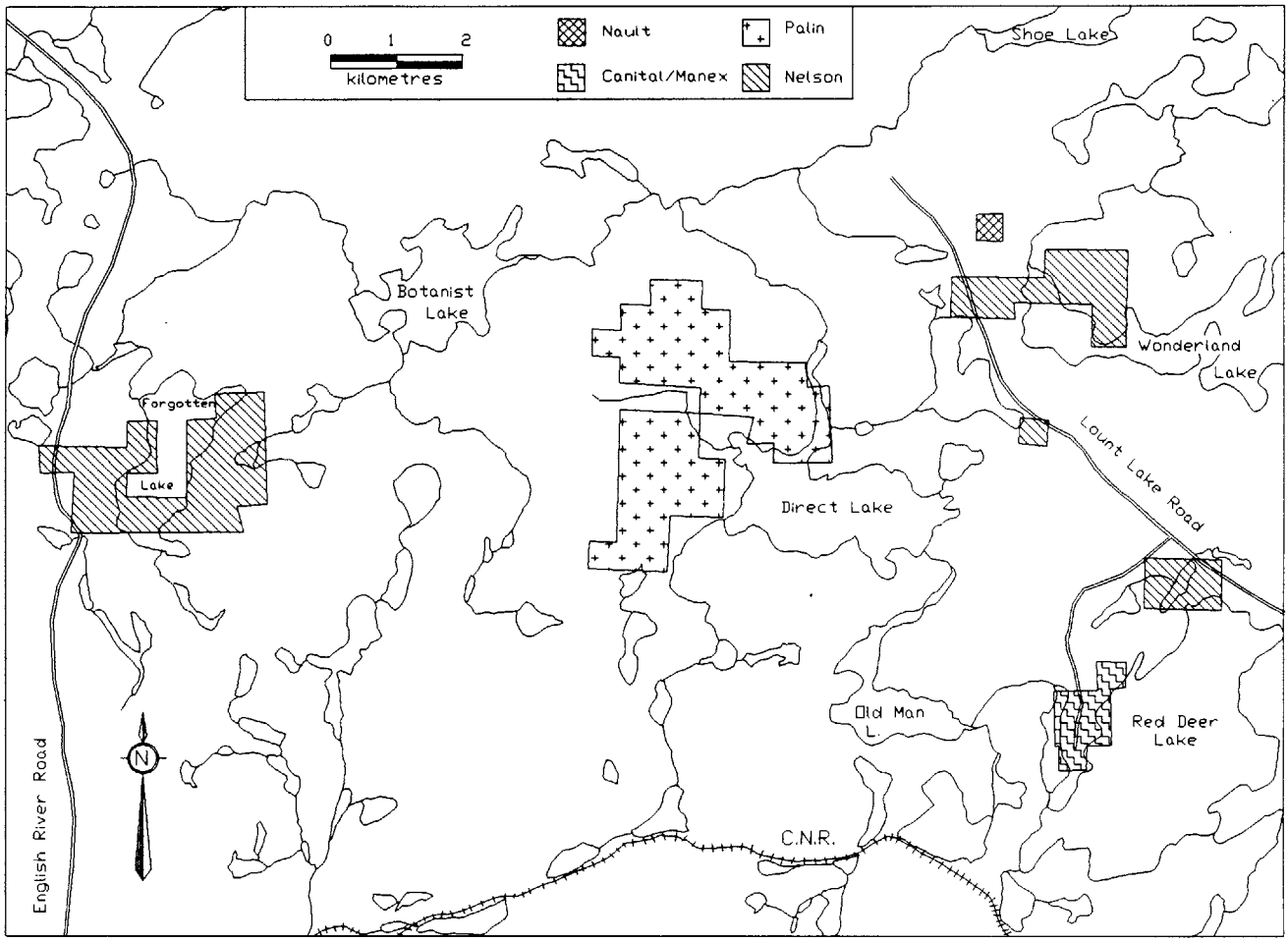

Figure 8: Granite deposits in the Red Deer Lake Area, location map

1) **PROPERTY NAME**: Snook Lake Deposit **DATE(S) VISITED**: July 1988

2) **ALTERNATE NAME(S)**:

3) **COMMODITY**: **Main**: Red granite

4) **DEVELOPMENT HISTORY AND OWNERSHIP**:

PAST:		Prior to 1987 no exploration was conducted for dimension stone.
	1987	G.R. Zebruck of Kenora staked three unpatented claims over a high potential dimension stone site.
	1988	G.R. Zebruck conducted radiometric and geological surveys. Kenora Gold Occurrences Inc. signed an option agreement with G.R. Zebruck to work the property.
	1989	Kenora Gold Occurrences Inc. conducted sample testing to see if the stone met ASTM standards.
	1991	The option lapsed and the property was returned to G.R. Zebruck
CURRENT:	1994	G. Zebruck still holds the claims over the site.

5) **LOCATION AND ACCESS**:

N.T.S.	52 L/02NE		
Latitude:	50· 13' 45"	**Northing:**	5565276
Longitude:	94· 42' 00"	**Easting:**	0378745

GENERAL LOCATION:

The site is located approximately 50 km northwest of Kenora and 23 km north of Minaki, north of Tourist Lake in the Snook Lake area.

ACCESS:

The property can be accessed from Kenora by highway and a series of logging roads. Take Highway 658 north from Kenora to the English River Road, travel to the Sand Lake Road and take this road to the Snook Lake road. Total road mileage from Kenora to the site is 88 km.

MAP REFERENCES:

Claim Map G-2644, Snook Lake Area, Kenora Mining Division
Map 39g, Minaki to Sydney Lake (Derry 1930)
Map P.1028, Umfreville-Separation Lakes Sheet, Operation Kenora-Sydney Lake (Breaks et al. 1975)

REFERENCES:

Assessment Files, Kenora
Beakhouse (1991)
Blackburn et al. (1990)
Industrial Minerals Files (Kenora)
Resident Geologist's Files, Kenora District, Kenora

6) **GENERAL GEOLOGY AND STRUCTURE:**

Beakhouse (1991) describes the geology of the area:

> The Winnipeg River Subprovince is a dominantly granitoid domain within the central part of the western Superior Province. The Subprovince is flanked to the south by a granite-greenstone domain (western Wabigoon Subprovince) and to the north by a metasedimentary migmatite domain (English River Subprovince) and a greenstone domain (Bird River Subprovince).
>
> Granodioritic to granitic plutons, the granitic suite, and minor dioritic to granodioritic plutons, the mafic suite, were emplaced between 2.66 and 2.71 Ga. The granitic suite is interpreted to have originated by the partial melting of the older metatonalites in tectonically thickened crust.

Beakhouse (1991) goes on to describe the Lount Lake Batholith:

> The various phases of the Lount Lake batholith are typical of the granitic suite. The most abundant rock type is medium-grained granodiorite commonly characterized by large (less than 10 cm in diameter; usually approximately 1 to 3 cm in their longest dimension), subhedral to euhedral, perthitic microcline megacrysts. On the basis of their textures, composition and phase equilibria considerations, these megacrysts have been interpreted to be late magmatic megacrysts rather than true phenocrysts or porphyroblasts (Beakhouse 1983). Biotite is the ubiquitous and dominant mafic phase.

Subordinate hornblende occurs very locally in close proximity to amphibolitic enclaves and is interpreted to be xenocrystic. Common primary accessory phases include magnetite, epidote, sphene, zircon and apatite. Secondary alteration products include white mica, epidote and carbonate (after plagioclase), and chlorite and magnetite (after biotite).

7) **STONE DESCRIPTION:**

MINERALOGY:

Granite is composed of pink and red potassium feldspar phenocrysts which are .5 to 1 cm long. The matrix is made up of quartz, potassium feldspar and biotite. The biotite can form up to 50% of the matrix.

The mineralogy is described in detail in a report by Independant Test-Labs Limited of Winnipeg, Manitoba for J.E. Dunham of Kenora Gold Occurrences Inc. of Toronto, Ontario (Assessment Files, Kenora Resident Geologist's Files, Kenora):

> Microcline is mainly coarse-grained (crystals greater than 5 mm), subhedral to euhedral and is distinguished by albite and pericline polysynthetic twinning resulting in a distinctive grid pattern under crossed nicols.
>
> Orthoclase is medium-grained, anhedral and occasionally displays simple Carlsbad twins. Myrmekitic intergrowths of quartz in orthoclase occur mainly where orthoclase abuts against microcline.
>
> Quartz occurs an anhedral, fine to medium individual grains and also as very fine-grained, granular masses between some feldspar grains.
>
> Biotite occurs as medium- to fine-grained, euhedral to anhedral grains between feldspar grains and displays a random orientation.
>
> Plagioclase is medium-grained, subhedral and generally displays simple albite twinning.
>
> The mineral grains display an interlocking granular texture with no visible structural defects.

Two types of alteration occur in trace amounts. Some biotite grains have partially altered to chlorite. Most plagioclase display a small amount of very fine-grained saussurite alteration.

Minerals	Est. Vol. %	Interpretation
Alkali Feldspar:		
Microline	40	Primary major
Orthoclase	30	" "
Quartz	15	" "
Biotite	10	" "
Plagioclase	5	" minor
Opaques	tr	" accessory
Chlorite	tr	Alteration
Saussurite	tr	"

JOINTING:

Dominant fracture sets are 040°, spaced 3.8 to 5 m apart, 060°, 080°, 120° and 180°. Sheeting is 1.5 to 2 m in thickness with an orientation of 070° dipping to the east.

COLOUR:

The stone is red in colour (see Photo 9, Appendix A).

TEXTURE:

The stone is coarse grained to porphyritic.

OTHER FEATURES:

A few gneissic patches and pegmatitic veins are seen on the property. The site is a hill approximately 30 m above the surrounding area with a logging road going around it.

8) PHYSICAL PROPERTIES:

Compressive Strength:	20,595 psi (142 MPa dry)
	12,328 psi (85 MPa wet)
Absorption:	0.28%
Bulk Specific Gravity:	2.61
Modulus of Rupture:	9.0 MPa dry
Modulus of Rupture:	9.2 MPa wet
Abrasive Hardness:	49.25

Testing conducted by Independant Test-Lab Limited, Winnipeg, Manitoba

9) CHEMICAL ANALYSIS:

Sample No.	SiO_2	Al_2O_3	Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	TiO_2	P_2O_5
87MCK-0004	74.01	14.44	1.12	0.01	0.20	1.40	3.34	5.33	0.11	0.02

Analyses by Geoscience Laboratory, Ontario Geological Survey, Toronto

10) COMMENTS/RECOMMENDATIONS:

1) **PROPERTY NAME**: Wennesaga -8 Occurrence **DATE(S) VISITED**: July 1993

2) **ALTERNATE NAME(S)**:

3) **COMMODITY**: **Main**: Pinkish-brown granite

4) **DEVELOPMENT HISTORY AND OWNERSHIP**:

PAST: The area has undergone little exploration or prospecting.

CURRENT: 1994 This occurrence is currently held by the Economic Development Office of Ear Falls.

5) **LOCATION AND ACCESS**:

N.T.S.	52 K/15NE		
Latitude:	50° 56' 06"	**Northing:**	5642472
Longitude:	92° 33' 30"	**Easting:**	0531036

GENERAL LOCATION:

This site is located 63.1 km northeast of Ear Falls on the Wennesaga Road.

ACCESS:

The site is accessible from Ear Falls by an all-weather logging road.

MAP REFERENCES:

Claim Map G-1884, Slate Lake Area, Red Lake Mining Division
Map P.1200, Operation Kenora-Ear Falls, Papaonga-Wapesi Lake Sheet (Breaks et al. 1975)

REFERENCES:

Hinz and Lucas (1992)
Industrial Minerals Geologist Files, Thunder Bay
Raoul (1992)

6) **GENERAL GEOLOGY AND STRUCTURE**:

Hinz and Lucas (1992) described the general geology:

> The area is underlain by rocks of the Winnipeg River (to the south), the English River (the centre) and Uchi Lake (to the north) subprovinces. The Winnipeg River Subprovince is composed of granitic intrusives and gneissic domes. The English River Subprovince consists of primarily metasedimentary migmatitic rocks. The Uchi Subprovince contains metasedimentary and metavolcanic belts with gneissic-intrusive complexes between the belts.

7) STONE DESCRIPTION:

MINERALOGY:

Raoul (1992) provided a petrographic description of the stone:

> A pinkish-brown (tan), medium-grained "granite". The body is very uniform in texture and colour with black, elongated crystals of amphibole (hornblende). The mineral constituents are: orthoclase (70%), plagioclase (15%), quartz (5%) and hornblende (10%). The outcrop was traversed several times and all samples were identical in composition and texture.

JOINTING:

The northern and central portions of the area mapped were massive, with widely spaced (>5 m) joints (Figure 9). Two main joint directions were measured, 170 to 190· and 234·. Sheet joints ranged in thickness from 0.5 to 2.0 m. In the southern portion jointing ranged from 048 to 050· and 330 to 340· and were also widely spaced, sheeting was not observed.

COLOUR:

In outcrop the stone displays a pinkish-brown colour. When polished the stone is pink with a slight hint of brown (see Photo 10, Appendix A).

TEXTURE:

The stone has an equigranular, medium-grained texture. Typical grain sizes are no larger than 6 mm.

OTHER FEATURES:

8) PHYSICAL PROPERTIES:

9) **CHEMICAL ANALYSIS:**

10) **COMMENTS/RECOMMENDATIONS:**

This occurrence has a high potential for quarrying. From mapping it is apparent that structurally the jointing is relatively consistent and widely spaced. What would need to be evaluated is the texture and colour across the occurrence. Stripping of the ridge and test block removal would be recommended to fully evaluate the site.

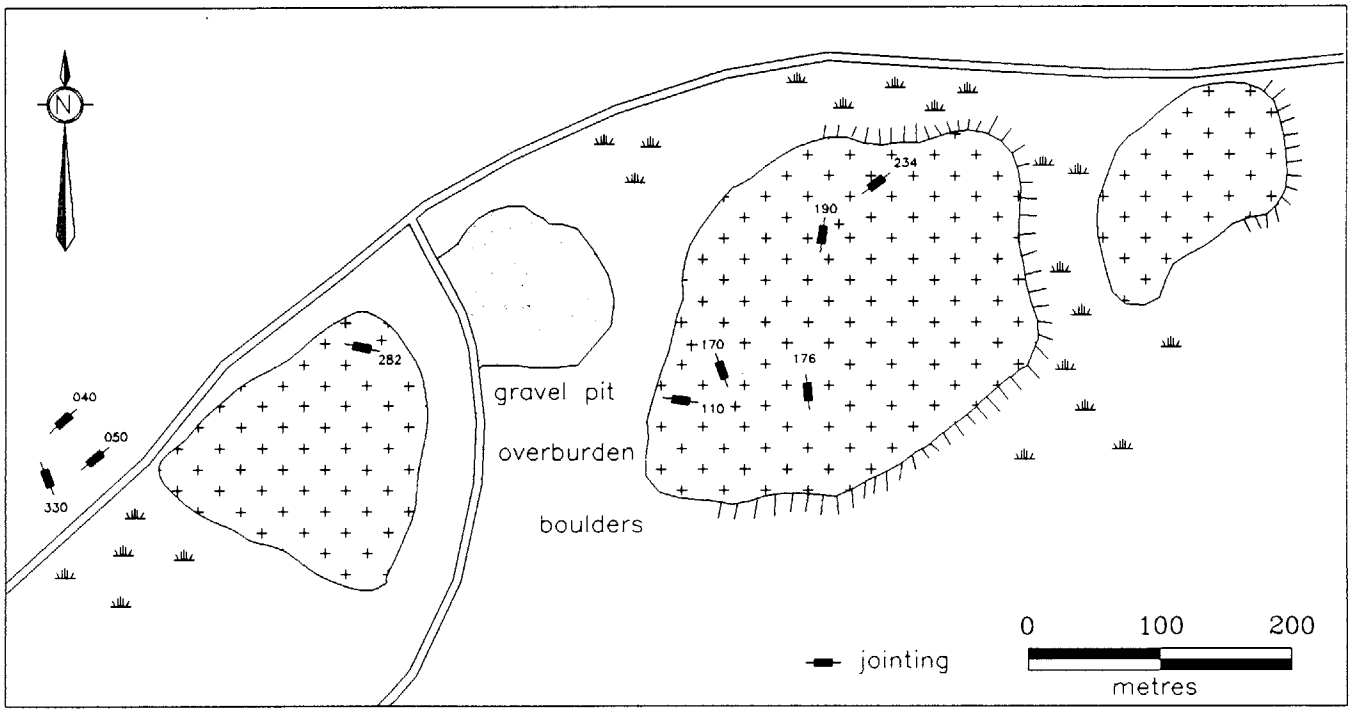

Figure 9: Wennesaga -8 Occurrence, general geology

1) **PROPERTY NAME:** Wonderland Lake Deposit **DATE(S) VISITED:**

2) **ALTERNATE NAME(S):**

3) **COMMODITY:** **Main:** Red granite

4) **DEVELOPMENT HISTORY AND OWNERSHIP:**

PAST:		Prior to 1984 no exploration was conducted for dimension stone.
	1984	M.P. Smerchanski of Winnipeg, Manitoba staked a single claim northwest of Wonderland Lake. No work recorded.
	1985	L.P. Nault staked two claims northwest of Wonderland Lake. Claims transferred to P. Nault.
	1986	Mystery Mountain Minerals Ltd. of Gatineau, Quebec drilled nine holes totalling 90.5 m.
	1987	Nault conducted petrographic studies on the granite. Eleven claims staked, to the east of the Nault claims, by C.B. Nelson for Nelson Granite of Vermilion Bay.
	1988 to 1989	Nelson Granite conducted stripping, physical and mechanical work and removed some test blocks. Nault claims cancelled.
CURRENT:	1994	Nelson Granite still holds the 11 claims on the northwest shore of Wonderland Lake.

5) **LOCATION AND ACCESS:**

N.T.S.	52 L/01SE		
Latitude:	50· 05' 00"	**Northing:**	5548349
Longitude:	94· 11' 00"	**Easting:**	0415339

GENERAL LOCATION:

This deposit is located on the northwest shoreline of Wonderland Lake approximately 40 km northeast of Kenora and 15 km northwest of Jones (Figure 8).

ACCESS:

The area can be accessed by travelling north from Kenora on Highways 604 & 671 and the Lount Lake Road for approximately 60 km.

MAP REFERENCES:

Claim Map G-2658, Wonderland Lake Area, Kenora Mining Division
Map 2443, Kenora-Fort Frances Sheet (Blackburn 1979)
Map P.1031, Gordon-Big Canyon Lakes Sheet, Operation Kenora-Sydney Lake (Breaks *et al.* 1975)

REFERENCES:

Beakhouse (1991)
Breaks *et al.* (1978)
Industrial Minerals Geologist's Files, Thunder Bay
Resident Geologist's Files, Kenora District, Kenora
Storey (1986)

6) GENERAL GEOLOGY AND STRUCTURE:

Beakhouse (1991) describes the geology of the area:

> The Winnipeg River Subprovince is a dominantly granitoid domain within the central part of the western Superior Province. The Subprovince is flanked to the south by a granite-greenstone domain (western Wabigoon Subprovince) and to the north by a metasedimentary migmatite domain (English River Subprovince) and a greenstone domain (Bird River Subprovince).
>
> Granodioritic to granitic plutons, the granitic suite, and minor dioritic to granodioritic plutons, the mafic suite, were emplaced between 2.66 and 2.71 Ga. The granitic suite is interpreted to have originated by the partial melting of the older metatonalites in tectonically thickened crust.

Beakhouse (1991) goes on to describe the Lount Lake Batholith:

> The various phases of the Lount Lake batholith are typical of the granitic suite. The most abundant rock type is medium-grained granodiorite commonly characterized by large (less than 10 cm in diameter; usually approximately 1 to 3 cm in their longest dimension), subhedral to euhedral, perthitic microcline megacrysts. On the basis of their

> textures, composition and phase equilibria considerations, these megacrysts have been interpreted to be late magmatic megacrysts rather than true phenocrysts or porphyroblasts (Beakhouse 1983). Biotite is the ubiquitous and dominant mafic phase. Subordinate hornblende occurs very locally in close proximity to amphibolitic enclaves and is interpreted to be xenocrystic. Common primary accessory phases include magnetite, epidote, sphene, zircon and apatite. Secondary alteration products include white mica, epidote and carbonate (after plagioclase), and chlorite and magnetite (after biotite).

7) STONE DESCRIPTION:

MINERALOGY:

The stone is comprised of the following mineral constituents: 20 to 35% potassium feldspar; 45% quartz; 10 to 25% plagioclase; and 10% biotite.

JOINTING:

Storey (1986) described the jointing:

> The vertical joint sets trend 045-060· and 145-160·. These are wide spaced often 10 m or more. The 060· direction is the predominant set; sheeting is 0.5 to 1 m at the surface and appears to thicken with depth.

COLOUR:

The stone is red in colour (see Photo 11, Appendix A).

TEXTURE:

The stone displays a porphyritic texture.

OTHER FEATURES:

The feldspar phenocrysts display a definite mineral lineation/preferred orientation.

8) PHYSICAL PROPERTIES:

9) CHEMICAL ANALYSIS:

Sample No.	SiO_2	Al_2O_3	Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	TiO_2	P_2O_5
87MCK-0003	68.95	15.25	3.68	0.05	0.65	1.82	2.99	6.04	0.44	0.28
89MCK-0016	71.89	14.62	2.58	0.03	0.64	1.41	3.06	5.30	0.35	0.17

Analyses by Geoscience Laboratories, Ontario Geological Survey, Toronto

10) COMMENTS/RECOMMENDATIONS:

THUNDER BAY DISTRICT

1) **PROPERTY NAME:** Barnum Lake Pluton **DATE(S) VISITED:**

2) **ALTERNATE NAME(S):**

3) **COMMODITY:** **MAIN:** Pink Granite

4) **DEVELOPMENT HISTORY AND OWNERSHIP:**

PAST: This pluton has had minimal prospecting and exploration activity within it.

CURRENT: 1994 The whole of the Barnum Lake Pluton is patented land with both surface and mining rights reserved.

5) **LOCATION AND ACCESS:**

N.T.S.	52 A/11NW		
Latitude:	48· 38' 50"	**Northing:**	5390520
Longitude:	89· 16' 30"	**Easting:**	0332429

GENERAL LOCATION:

The pluton is located approximately 25 km north of Thunder Bay. It is in Jacques Township, Lots 1 to 6, Conc. I and II.

ACCESS:

Access to the pluton is gained via Highway 589 (Figure 10). Starting at Highway 102, drive north on Highway 589 approximately 13 km. to the village of Lappe. Drive 11 km. past Lappe to where the highway forks, take the right fork. The road enters the pluton 1.6 km. past the fork. Access to a large portion of the pluton is gained via private roads off Highway 589.

MAP REFERENCES:

Claim Map G-666, Jacques Township, Thunder Bay Mining Division
Map No. 48c, Gorham Township & Vicinity (MacDonald 1941)
Map P.177, Lakehead-Shebandowan Sheet (Pye and Fenwick 1962)

REFERENCES:

Brown and Fogal (1993)
Cheadle (1979)
Industrial Minerals Geologist's Files, Thunder Bay
Kehlenbeck (1976, 1977)
MacDonald (1941)
Steinert (1975)

6) GENERAL GEOLOGY AND STRUCTURE:

The surrounding rocks are Archean pelitic to semipelitic mica schists and gneisses. The pluton itself is oval and covers an area of 6.5 km^2. The major rock-type is quartz monzonite with lesser amounts of feldspar-megacrystic quartz syenite and quartz monzodiorite. Outcrop exposure is fair to good. The terrain is generally rolling hills with minor areas of swamp and bog.

7) STONE DESCRIPTION:

MINERALOGY:

Kehlenbeck (1977) described the mineralogy of the pluton:

> In general, the microcline megacrysts normally contain numerous inclusions of quartz and plagioclase. Amphibole and biotite also occur as inclusions in the megacrysts, although these are less common.
>
> The matrix of the rocks from the intrusion is composed of plagioclase, quartz, amphibole, and biotite. Accessory minerals include sphene, apatite, epidote, zircon and opaques.

JOINTING:

Many of the outcrops observed, especially areas of large exposure, show widely spaced joint sets (1 to 3 m) that are well developed and orthogonal. There are some outcrops in the area that lack these joints. The sheeting is roughly 1.2 m except for surface spalling due to weathering.

COLOUR:

The colour throughout the pluton is generally pink. In places near the contact with the country rocks the colour varies from light pink to grey. Towards the centre the colour becomes consistent. Phenocrysts are buff to salmon pink in colour.

TEXTURE:

Kehlenbeck (1977) described the texture:

> A typical outcrop contains, buff to salmon coloured potash feldspar megacrysts ranging in size up to 3 cm. These are set in a coarse- to medium-grained, hypidiomorphic, granular matrix composed of pink plagioclase, quartz, biotite, and amphibole.

OTHER FEATURES:

Weathering of the outcrops is minimal except for spalling (0.5 to 1 m) thick near Warnica Lake. Inclusions of grey granitic material are commonly found within the outcrops. The xenoliths range in size from 3 to 30 cm, with the smaller inclusions being more common. There are rare aplitic dykes and hematite staining of the fractures.

8) PHYSICAL PROPERTIES:

Barnum Lake Granite

Compressive Strength:	22,619 psi (155.79 MPa)
Modulus of Rupture:	1,762 psi (12.19 MPa)
Absorption:	0.15%
Bulk Specific Gravity:	2.68

Testing conducted by Geoscience Laboratories, Ontario Geological Survey, Toronto

9) CHEMICAL ANALYSIS:

Sample No.	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	FeO	MgO	MnO	CaO	Na_2O	K_2O	P_2O_5
B58	67.35	0.36	15.41	1.53	0.94	0.70	0.05	1.20	4.75	6.39	0.29
B6	67.05	0.44	15.89	1.91	1.12	0.92	0.05	1.27	4.47	5.03	0.37

Analyses conducted by Kehlenbeck (1977), Lakehead University, Thunder Bay

10) COMMENTS/RECOMMENDATIONS:

The Barnum Lake pluton is a good prospect for stone production. The stone is attractive, unique and takes a good polish with excellent grain boundary closure. The jointing pattern in many area's of the pluton are favourable for production of large blocks. The negative aspects are the many inclusions in most of the pluton and the fact that all the land is patented with surface and mining rights reserved.

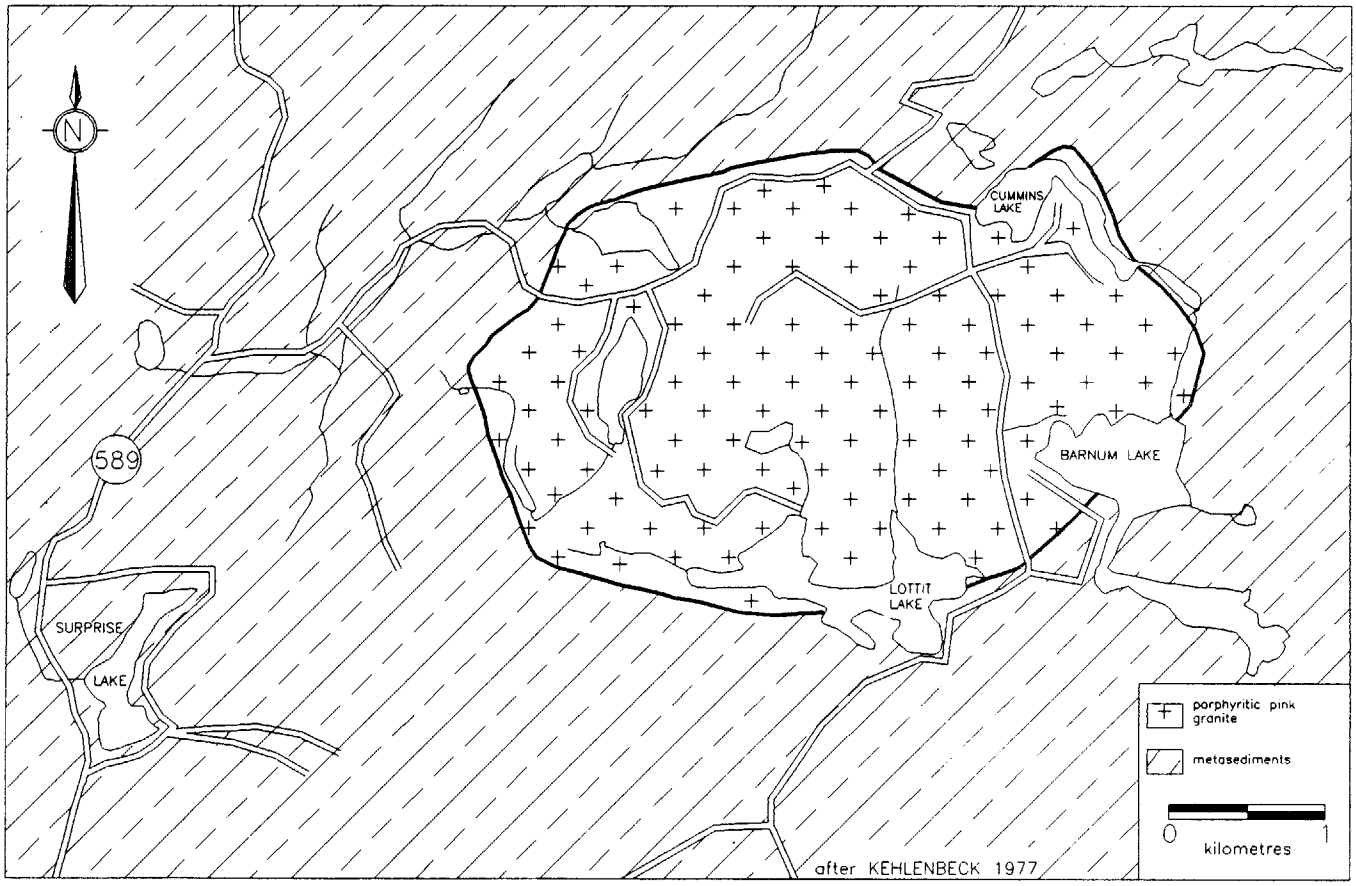

Figure 10: Barnum Lake Pluton, location and general geology

1) **PROPERTY NAME:** Black Bay Mine and Quarry

DATE(S) VISITED: October 1993

2) **ALTERNATE NAME(S):**

3) **COMMODITY:** **Main:** Jasper-dolomite

4) **DEVELOPMENT HISTORY AND OWNERSHIP:**

PAST:	1890	Duncan McEachren discovered this marble deposit early in this year. With the hope of developing the property, he brought possible investors from Winnipeg and Duluth. (Daily Sentinel, May 31, 1890; June 28, 1890;Aug. 15, 1890; Oct. 29, 1890; Weekly Herald, June 21, 1890; Sept. 20, 1890).
	1891	The property was secured by the Black Bay Mine and Quarry Co. of Duluth. Test blocks were removed and shipped to the companies head office in Chicago. (Daily Sentinel, May 6, 1891; Weekly Herald, Nov. 7, 1891; First Report of the Ontario Bureau of Mines).
	1892	It is reported that the newly formed Lake Superior Jasper Company was going to have a lot of success with the Mahogany-Stone deposit. However, there are no reports on further development or sales from the site. (Weekly Herald, May 21, 1892; Goudge 1938).
CURRENT:	1994	The patented claim is currently owned by L. Morrow and C. Jacobsen.

5) **LOCATION AND ACCESS:**

N.T.S.	52 A/15SE		
Latitude:	48· 45' 40"	**Northing:**	5401881
Longitude:	88· 34' 35"	**Easting:**	0384147

GENERAL LOCATION:

The quarry is located approximately 52 km northeast of Thunder Bay in the west half of Lot 3, Conc. 4, Dorion Twp.

ACCESS:

The deposit lies approximately 400 m west of the railway on an ascending slope with granite hills to the north and south (Figure 11). The stone is 1.8 km from navigable waters in Black Bay, Lake Superior.

MAP REFERENCES:

Claim Map G-651, Dorion Township, Thunder Bay Mining Division

REFERENCES:

Blue (1891)
Goudge (1938)
Industrial Minerals Geologist's Files, Thunder Bay
McIlwaine and Tihor (1975)
Miller (1904)

6) GENERAL GEOLOGY AND STRUCTURE:

The area is underlain by Mesoproterozoic Sibley Group calcareous sediments that have been intruded by diabase sills and dikes.

7) STONE DESCRIPTION:

MINERALOGY:

JOINTING:

Near the surface, the company was able to quarry blocks that were 1 to 1.5 m thick, 1 to 1.5 m wide and 1.5 to 2 m long.

COLOUR:

The stone is a mottled light orange-red colour.

TEXTURE:

The stone is fine grained.

OTHER FEATURES:

8) PHYSICAL PROPERTIES:

9) CHEMICAL ANALYSIS:

Sample No.	SiO_2	Al_2O_3	Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	TiO_2	P_2O_5
85MCK-0013	15.58	2.03	0.56	0.35	35.58	44.78	0.05	0.92	0.05	0.09

Analyses by Geoscience Laboratory, Ontario Geological Survey, Toronto

10) COMMENTS/RECOMMENDATIONS:

This quarry is significant more historically than economically. Outcrop exposure is minimal and locating the actual quarry difficult. Samples taken are attractive, however, the stone would be more well suited for use as a decorative or ornamental stone.

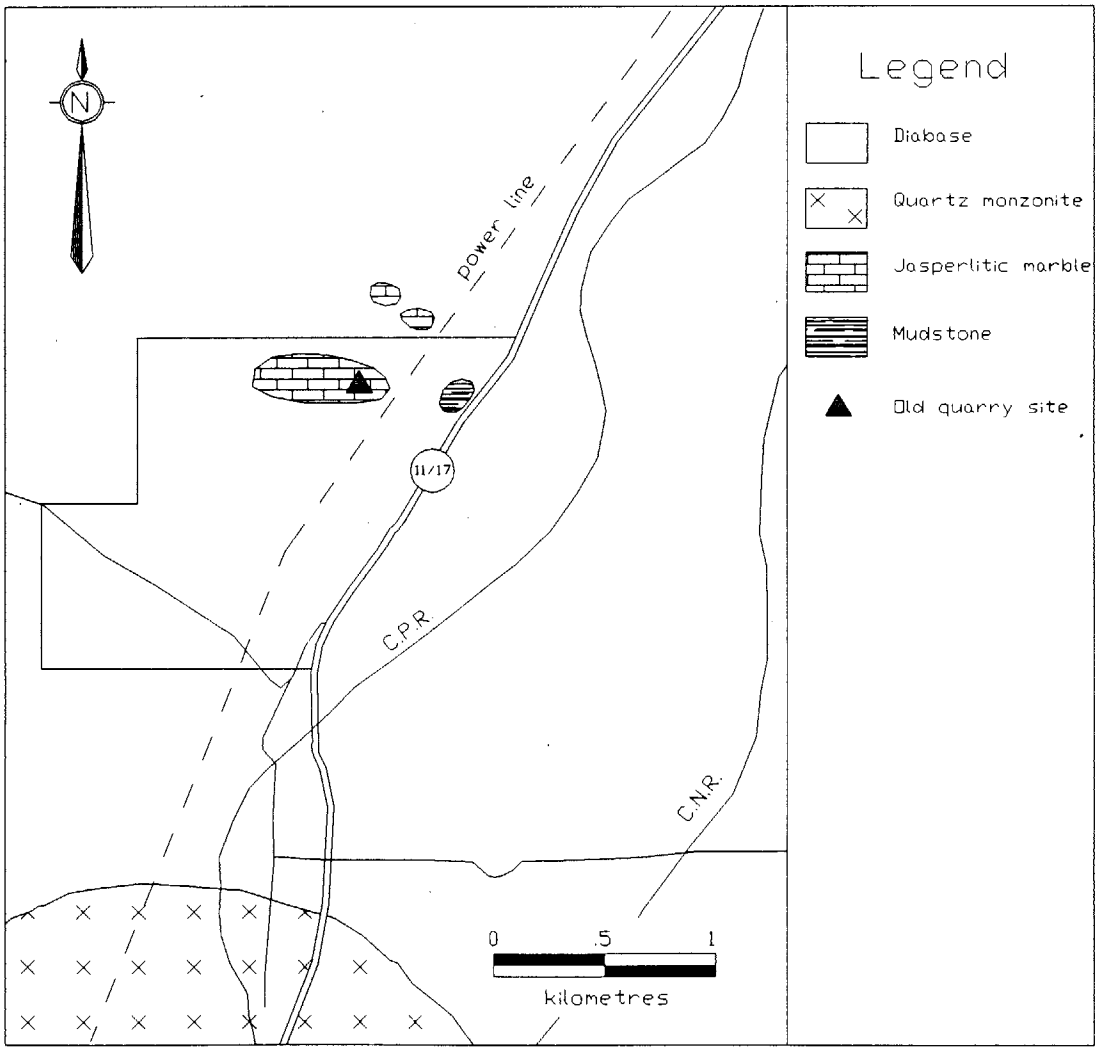

Figure 11: Black Bay Mine and Quarry, location map

1) **PROPERTY NAME**: C.P.R. Quarry - MacKenzie **DATE(S) VISITED**: June 1991

2) **ALTERNATE NAME(S)**:

3) **COMMODITY**: **Main**: Red Granite

4) **DEVELOPMENT HISTORY AND OWNERSHIP**:

PAST:	1880s	There is very little information available on this quarry. It is reported that during the early 1880s, 55 men were employed at the site to extract 800 to 900 cubic yards of material per month. The stone was used primarily by the C.P.R. in bridge construction (Thunder Bay Daily Sentinel, March 16, 1883; Weekly Herald, July 3, 1884).
CURRENT:	1994	Patented.

5) **LOCATION AND ACCESS**:

N.T.S.	52 A/10		
Latitude:	48· 32' 30"	**Northing:**	5378204
Longitude:	88· 59' 30"	**Easting:**	0352991

GENERAL LOCATION:

The quarry is located in MacGregor Township, in the southeastern corner of Mining Location 5B.

ACCESS:

The quarry can be accessed by road from Highway 11/17 at a point 14 km east of Highway 527. The hamlet of MacKenzie is approximately 2.5 km north on this road. Park at the railroad tracks at MacKenzie and walk west along the tracks for approximately 1.5 km. The quarry face lies within a cliff that is about 60 m south of the tracks.

MAP REFERENCES:

Claim Map G-672, MacGregor Township, Thunder Bay Mining Division.

REFERENCES:

Industrial Minerals Geologist's Files, Thunder Bay
Rogers (1979)
Scott (1990)

6) GENERAL GEOLOGY AND STRUCTURE:

The quarry is located within an Early Precambrian felsic intrusive body called the MacKenzie Granite. Scott (1990) described the McKenzie Granite:

> The Mackenzie Granite is situated in the southern potion of MacGregor Township and occupies an area from Mount Baldy in the west to Birch Beach on Thunder Bay to the east, a distance of about 22 km. The Mackenzie Granite has been faulted and generally attenuated in the area 1.6 km northwest of Mary Harbour, but where not faulted, the granitic body is in the order of 3.2 km wide.

7) STONE DESCRIPTION:

MINERALOGY:

The stone is composed primarily of microcline, oligoclase, quartz,and biotite. Accessory minerals include apatite and opaque minerals and secondary minerals include sericite and epidote.

JOINTING:

Well developed, regular joint sets are oriented 170·, 160·, 240· and 040·. There are some other randomly oriented minor joints present.

COLOUR:

The stone is pink to slightly greenish in colour.

TEXTURE:

The stone is medium to coarse grained.

OTHER FEATURES:

8) PHYSICAL PROPERTIES:

9) CHEMICAL ANALYSIS:

Sample No.	SiO_2	Al_2O_3	Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	TiO_2	P_2O_5
85MCK-0007	71.10	15.80	1.84	0.05	0.75	1.24	4.18	4.66	0.32	0.04

Analyses by Geoscience Laboratory, Ontario Geological Survey, Toronto

10) COMMENTS/RECOMMENDATIONS:

1) **PROPERTY NAME**: Dutchak Marble **DATE(S) VISITED**:

2) **ALTERNATE NAME(S)**:

3) **COMMODITY**: **Main**: Marble

4) **DEVELOPMENT HISTORY AND OWNERSHIP**:

PAST:	1984	The occurrence was staked by W.D. Dutchak. These were cancelled later in the year. Mr. Dutchak was then issued a quarry permit to remove small amounts of the stone.
CURRENT:	1994	Currently open for staking.

5) **LOCATION AND ACCESS**:

N.T.S.	52 H/7SW		
Latitude:	49° 15' 00"	**Northing:**	5456925
Longitude:	88° 59' 04"	**Easting:**	0355580

GENERAL LOCATION:

The occurrence is approximately 2 km (1 mile) west of Muskrat Lake.

ACCESS:

The area can be reached by road as follows: Travel north on Hwy. 527 for approximately 91 km.

Start	(0 m)	-turn off Hwy. 527 to GLP camp 45 road
13.9 km	(13.9 km)	-turn right; sign points to Muskrat Lake
5.8 km	(19.7 km)	-at junction with Pebble Lake road (goes to left) go straight through
1.1 km	(20.8 km)	-turn left; sign to Muskrat Lake
12.3 km	(33.1 km)	-at junction with road to Can-opener Lake go straight through
0.8 km	(33.9 km)	-turn right onto Agate Lake road; Chesekan Lake road goes to the left
0.4 km	(34.3 km)	-turn right onto Agate Lake road; Black Bay road goes to the left
3.4 km	(37.7 km)	-turn right
0.5 km	(38.2 km)	-site

MAP REFERENCES:

Claim Map G-71, Little Sturge Lake, Thunder Bay Mining Division

REFERENCES:

Coates (1972)
Industrial Mineral Geologist's Files, Thunder Bay

6) GENERAL GEOLOGY AND STRUCTURE:

The area is underlain by calcareous sediments of the Mesoproterozoic Sibley Group that have been intruded by later diabase sills and dikes.

7) STONE DESCRIPTION:

MINERALOGY:

JOINTING:

COLOUR:

The stone occurs as greys, greens, and reds.

TEXTURE:

Hand samples show continuous and discontinuous layers.

OTHER FEATURES:

8) PHYSICAL PROPERTIES:

Dutchak Marble

Compressive Strength:	9,964 psi (68.72 MPa)
Modulus of Rupture:	3,609 psi (24.97 MPa)
Absorption:	0.05%
Bulk Specific Gravity:	2.69

Testing conducted by Geoscience Laboratories, Ontario Geological Survey, Toronto

9) CHEMICAL ANALYSIS:

Sample No.	SiO_2	Al_2O_3	Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	TiO_2	P_2O_5
85MCK-0014	25.32	0.75	0.59	0.16	17.56	55.47	0.06	0.00	0.03	0.06

Analyses by Geoscience Laboratory, Ontario Geological Survey, Toronto

10) COMMENTS/RECOMMENDATIONS:

1) **PROPERTY NAME**: Eva Lake Stock **DATE(S) VISITED**: July 1992

2) **ALTERNATE NAME(S)**:

3) **COMMODITY**: **MAIN**: Grey Granite

4) **DEVELOPMENT HISTORY AND OWNERSHIP**:

PAST: No claims staked on ground; only activity in area is cottage lots on Marion & Eva Lakes and Hwy. construction.

CURRENT: 1994 The majority of the pluton is open.

5) **LOCATION AND ACCESS**:

N.T.S.	52 B/11NE		
Latitude:	48· 41' 30"	**Northing:**	5394496
Longitude:	91· 13' 00"	**Easting:**	0631242

GENERAL LOCATION:

The pluton lies on Hwy. 11 approximately 55 km west of Kashabowie. This area is just southwest of Gateway Bay, Eva Lake.

ACCESS:

Highway 11 transects the northeast and southwest parts of the pluton (Figure 12). The southwest half of the intrusive is accessible by two bush roads off the TransCanada Hwy. Limited access to the northeast half of the area is available via the Eva Lake Resort Road.

MAP REFERENCES:

Claim Map G-526, Eva Lake, Thunder Bay Mining Division

REFERENCES:

Pirie (1978)
Goodwin and Howat (1977)

6) **GENERAL GEOLOGY AND STRUCTURE**:

The Eva Lake Stock has intruded Archean gneissic-migmatite rocks of the Quetico Subprovince. The stock is oval and measures 1.6 km by 1.3 km. Outcrop exposure is poor due to the Eagle-Finlayson end moraine. The Eva Lake Stock has been

identified as a diatextite with a composition that classifies it as a quartz monzonite. The rock exhibits weak foliation and ghost-like structures, termed nebulites, both of which are recognized by the concentrations of mafic minerals.

7) STONE DESCRIPTION:

MINERALOGY:

Staining of a sample showed the rock to be composed of 40 to 50% potassium feldspar, 30 to 50% plagioclase, 15 to 20% quartz, and 5% hornblende and muscovite together.

JOINTING:

The jointing in the examined outcrops was well developed and regular. The best developed set has an orientation of 140· with a near vertical dip, and a spacing of 2.5 to 3 m. A weaker developed joint set was noted trending 40 to 50, but it is irregular in its occurrence. Little or no fracturing was observed in the outcrops examined. Even the road outcrops that had been blasted show very little fracturing. Where outcrops allowed the measuring of sheeting, it was noted to be horizontal and 2 to 3 m thick.

COLOUR:

Near the centre of the intrusive the colour is a consistent light grey. Upon close examination, one can see the ghost structures defined by the concentration of mafic minerals. These structures sometimes outline assimilated xenoliths or are seen as streaks with irregular orientations. Close to the edge, the colour varies from pink to grey, and the ghost structures are still recognizable.

TEXTURE:

The texture of the rock is very uniform. The stone is a medium grained (1 to 5 mm) with rare phenocrysts up to 1 cm in length.

OTHER FEATURES:

In the outcrops examined, two small (2.5 to 5 cm wide) pegmatitic dikes that parallel joint sets, were noted. Other than the nebulites, no inclusions or xenoliths were identified. At one outcrop a small horizontal shear zone was observed.

8) PHYSICAL PROPERTIES:

9) CHEMICAL ANALYSIS:

10) COMMENTS/RECOMMENDATIONS:

The Eva Lake Stock should be examined more closely. The authors only looked at a very small section along Highway 11. Exposures on bush roads should be examined to see if there are any high potential areas.

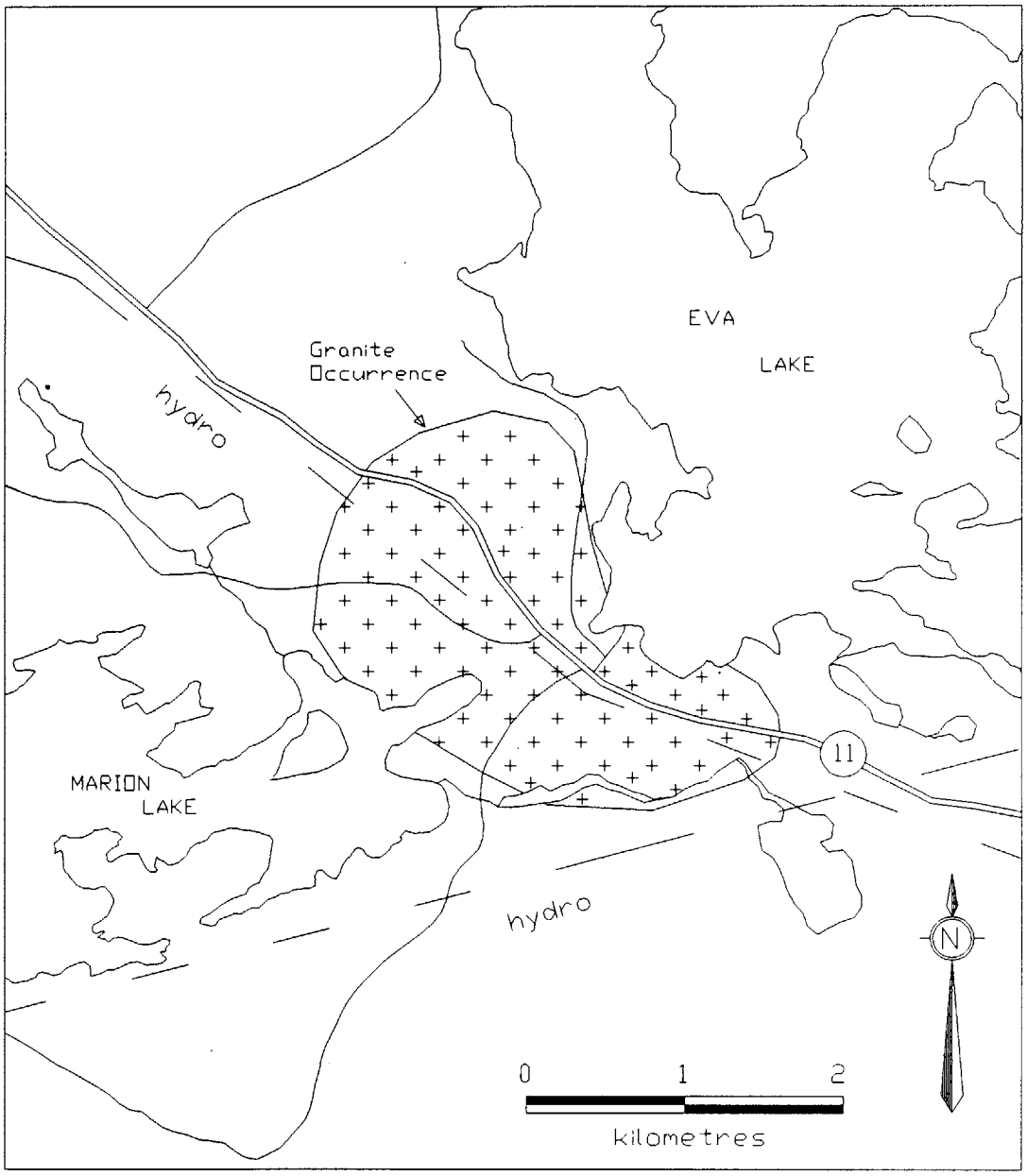

Figure 12: Eva Lake Stock, location and general geology

1) **PROPERTY NAME**: Lundmark Marble Occurrence **DATE(S) VISITED**:

2) **ALTERNATE NAME(S)**: Lundmark Prospect

3) **COMMODITY**: **MAIN**: Marble **SECONDARY**: Brucite, lime

4) **DEVELOPMENT HISTORY AND OWNERSHIP**:

PAST:	1960s	The area east of Eaglehead Lake was staked a number of times, no work was recorded and the claims were cancelled.
	1975	The occurrence was located and staked by H. Lundmark and W. McAteer of Thunder Bay. Stripping, trenching and geological mapping were conducted. Two claims, TB 434842 and TB 519233, were brought to lease for the purpose of small scale production of ornamental stone.
CURRENT:	1994	Currently the two leased claims are still held by H. Lundmark and W. McAteer. No work has been reported on the property in recent years.

5) **LOCATION AND ACCESS**:

N.T.S.	52 H/06SW		
Latitude:	49· 19' 41"	**Northing:**	5466382
Longitude:	89· 21' 29"	**Easting:**	0328663

GENERAL LOCATION:

The property is located 58 km NNE of Thunder Bay. A road travels east of Highway 527 from Eaglehead Lake. The west claim group and a trail leads from the baseline on the west group to the east group.

ACCESS:

Access is gained by bush road, east from Highway 527.

MAP REFERENCES:

Claim Map G-714, Eaglehead Lake Area, Thunder Bay Mining Division
P.1528 (1978)
Map 2235, Disraeli Lake Sheet (1971)

REFERENCES:

Fenwick and Scott (1975)
Industrial Minerals Geologist's Files, Thunder Bay
Fenwick et al. (1980)
Resident Geologist's Files, Thunder Bay District
Vos et al. (1987)

6) GENERAL GEOLOGY AND STRUCTURE:

The occurrence is hosted in Mesoproterozoic Sibley Group sedimentary rocks which lie unconformably over the Archean basement of metasediments and metavolcanics. The Sibley sediments have been intruded by Keweenawan-age Logan diabase sills. The sedimentary rocks are predominantly clastic with minor limestones and dolomites.

Mechanical stripping has exposed 4.5 to 5 m of dolostone which is both overlain and underlain by a purple to reddish-brown mudstone. Within the dolostone horizon three distinct colours are noted: an upper 1.0 to 1.15 m of layered variable coloured dolostone; a middle 3 m blue-grey stromatolitic dolostone; and a lower 0.5 m green to brown dolostone with minor grey dolostone.

The occurrence was stripped and exposed in a cliff face. From top to bottom the following sequence is seen: diabase; purple spotted mudstone; grey dolostone; white brucitic marble; and purple spotted mudstone. The white marble reaches a maximum thickness of 2.74 m and is exposed for a strike length of approximately 72 m. At the northwestern end of the exposure, the white marble grades into grey dolostone, while at the southeastern end it is covered by overburden. The grey dolostone is exposed for a strike length of 120 to 180 m and is at least 3 m thick.

7) STONE DESCRIPTION:

MINERALOGY:

"white marble" - primarily very fine-grained calcite (65 to 70%) with secondary brucite (30-35%) and minor serpentine as interstitial mineral phases

"grey marble" - dolomite is predominant with secondary calcite

JOINTING:

COLOUR:

The following colour sequence was observed from top to bottom within the occurrence:

1-1.5 m - layered variable-coloured dolostone

3.0 m - blue-grey stromatolitic dolostone

0.5 m - green to brown dolostone with some grey dolostone

Locally, the blue-grey dolostone grades into white brucitic marble where it is in contact with diabase.

TEXTURE:

OTHER FEATURES:

The blue-grey marbles may be removed in fairly large blocks. The physical tests show that the dolostone would be suitable for dimension stone purposes. The main disadvantage of the property is the fact that 5 to 7 m of diabase overlies the dolostone on a cliff face. This factor would necessitate either extensive development work and waste rock or the use of underground quarrying techniques.

8) PHYSICAL PROPERTIES:

Sample F11-75

Compressive Strength:	21,200 psi (146.2 MPa)
Absorption:	0.19%
Bulk Specific Gravity:	2.58
Modulus of Rupture:	4,400 psi (30.3 MPa)

Sample F55-76

Compressive Strength:	28,193 psi (194.4 MPa)
Absorption:	0.23%
Bulk Specific Gravity:	2.82
Modulus of Rupture:	2,783 psi (19.2 MPa)
Abrasion Resistance:	26.3

Testing conducted by Geoscience Laboratories, Mineral Research Branch, Toronto

9) CHEMICAL ANALYSIS:

Sample No.	SiO_2	Al_2O_3	Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	TiO_2	P_2O_5
F11-75	1.40	0.48	0.12	---	23.4	35.2	----	---	----	----
F55-76	2.00	0.20	0.30	---	20.9	43.0	----	---	----	----

Analyses by Geoscience Laboratory, Ontario Geological Survey, Toronto

10) COMMENTS/RECOMMENDATIONS:

1) **PROPERTY NAME**: McCrindle Marble Occurrence **DATE(S) VISITED**: May 1993, October 1993

2) **ALTERNATE NAME(S)**:

3) **COMMODITY**: **Main**: White marble

4) **DEVELOPMENT HISTORY AND OWNERSHIP**:

PAST: No previous work has been conducted in this area.

CURRENT: 1994 Property staked for Cumberland Resources for gold and base metal exploration. A large exposure of white marble was located by prospector Mel Stewart and geologist Mike Leahey.

5) **LOCATION AND ACCESS**:

N.T.S.	52 H/6SW		
Latitude:	49· 18' 55"	**Northing:**	5464965
Longitude:	89· 21' 35"	**Easting:**	0328497

GENERAL LOCATION:

The occurrence is located approximately 103 km (64 miles) due north of Thunder Bay. It is 4 km northwest of the north end of Poshkokagan Lake and 2.6 km west of Highway 527.

ACCESS:

The property may be accessed from Highway 527 by a bush road heading east. The road is located 7.7 km south of the junction of Highways 527 and 811. Travel 3.8 km east on the main road, a bush road goes north from here. Travel north for approximately 1.0 km, park and travel by foot north 600 metres. The occurrence is located on a hill overlooking a small lake.

MAP REFERENCES:

Claim Map G-773, Wabikon Lake, Thunder Bay Mining Division
Map 2058, Garden Lake Area, East Half (Milne 1964)

REFERENCES:

Milne (1964)
Industrial Minerals Geologist's Files, Thunder Bay

6) GENERAL GEOLOGY AND STRUCTURE:

The occurrence is located on the south shore or a small lake. The occurrence is hosted within the Kama Hill Formation of the Mesoproterozoic Sibley Group. A diabase sill overlies the occurrence, the contact is not visible thus an exact thickness is not obtainable. Thickness of the exposure is estimated at approximately 20 m.

7) STONE DESCRIPTION:

MINERALOGY:

Samples taken at the occurrence were composed of calcite, brucite and dolomite as indicated by the following analyses:

X-ray Diffraction Analyses

Sample No.	Mineralogy
IM-93-012	calcite>brucite>=dolomite
-013	calcite>brucite>dolomite
-014	calcite>brucite>=dolomite
-015	calcite>brucite>=dolomite>barite
-016	dolomite>>calcite>brucite

Analyses conducted by Geoscience Laboratories, Ontario Geological Survey, Sudbury

JOINTING:

COLOUR:

In hand specimen the rock displays a white to off-white colour. Where fractures are present weathering has produced a reddish-brown discolouration (see Photo 12, Appendix A).

TEXTURE:

OTHER FEATURES:

8) PHYSICAL PROPERTIES:

9) CHEMICAL ANALYSIS:

Sample No.	SiO_2	Al_2O_3	Fe_2O_3	MgO	CaO	Na_2O	K_2O	P_2O_5	TiO_2	MnO
12030	13.29	3.36	1.24	15.29	30.28	0.19	1.22	0.11	0.11	0.11
12031	1.38	0.30	0.25	20.56	33.60	0.01	0.01	0.08	0.00	0.11
12032	1.24	0.36	0.14	20.75	38.85	0.01	0.01	0.08	0.01	0.09
12033	1.47	0.25	0.21	21.06	32.34	0.01	0.01	0.07	0.00	0.11
12035	1.62	0.48	0.07	20.60	37.29	0.02	0.01	0.08	0.01	0.10
12036	0.98	0.24	0.14	22.09	37.72	0.01	0.01	0.07	0.00	0.11
12037	1.25	0.25	0.10	21.30	38.02	0.06	0.01	0.07	0.00	0.11
12038	1.58	0.24	0.07	21.17	38.04	0.08	0.01	0.07	0.01	0.11
12039	1.16	0.16	0.09	20.45	35.05	0.02	0.01	0.07	0.00	0.11
12040	1.38	0.33	0.07	18.48	33.63	0.01	0.01	0.46	0.01	0.09
12041	1.44	0.45	0.21	18.84	35.98	0.01	0.01	0.06	0.01	0.10
IM-93-008	1.71	0.30	0.27	23.35	53.02	0.12	0.02	0.03	0.01	0.17
-009	1.93	0.32	0.31	18.01	34.55	0.08	0.01	0.04	0.01	0.17

Analyses for samples 12030 to 12041 by Accurassay Labs, Thunder Bay.
Analyses for samples IM-93-008 and 009 by Chemex Labs Ltd., Vancouver.

Carbonate Analysis by Chittick Method

Sample No.	% Calcite	% Dolomite	Total Carbonate
IM-93-012	56.91	10.07	66.98
-013	60.04	6.41	66.45
-014	52.82	16.47	69.29
-015	50.07	13.73	63.79

Chittick Analyses by Geoscience Laboratories, Ontario Geological Survey, Sudbury

10) COMMENTS/RECOMMENDATIONS:

This is the largest and most significant occurrence of marble in the Thunder Bay area. It is hosted in Sibley Group rocks and at this time is the only marble occurrence which may host quarriable stone. Other known occurrences such as the Lundmark and Dutchak are overlain by thick diabase sills which restrict their potential for development. The McCrindle Marble Occurrence is thick, relatively massive and does not have a diabase cap. Sample blocks cut and polished received a great deal of interest as the Toronto Mines and Minerals Symposium in December 1993 and at the Prospectors and Developers Convention in March 1994. The property owner was encouraged to strip a larger area to evaluate the jointing frequency and possible colour variations. The discovery of this occurrence indicates that there is a high potential for the Sibley Group to host previously unknown marble and sandstone deposits.

1) **PROPERTY NAME**: Pearl Lake Quarry **DATE(S) VISITED**: June 1991

2) **ALTERNATE NAME(S)**:

3) **COMMODITY**: **MAIN**: Aggregate

4) **DEVELOPMENT HISTORY AND OWNERSHIP**:

PAST:	1902	The site was opened by a Buffalo Syndicate as a source for crushed rock. Seventy men were employed at the site. The rock was loaded onto cars, on a spur off the C.P.R., and hauled to Fort William to be used in the concrete in the elevators (Daily Times-Journal, July 12, 1902).
	1909	Eighteen men were employed at the site to extract blocks that were taken to the Stanworth-Martin fabricating plant in Port Arthur (The Morning Herald, Sept. 11, 1909).
CURRENT:	1994	The quarry is currently patented for surface and mining rights. Owners are not known.

5) **LOCATION AND ACCESS**:

N.T.S.	52 A/10		
Latitude:	48· 40' 40"	**Northing:**	5392714
Longitude:	88· 38' 20"	**Easting:**	0379355

GENERAL LOCATION:

The quarry site is located in Mining Location E, McTavish Township, near Pearl Lake, just west of Hwy. 11-17 (Figure 13).

ACCESS:

A secondary road goes to the quarry site off Hwy. 11-17, approximately 1.5 miles east of Pearl.

MAP REFERENCES:

McIlwaine (1971a, 1971b)

REFERENCES:

Kustra (1969)

6) GENERAL GEOLOGY AND STRUCTURE:

The quarry is within an Archean pluton called the Hilma Lake Granite. This unit has intruded metasediments and migmatitic metasediments.

7) STONE DESCRIPTION:

MINERALOGY:

It is a quartz monzonite in composition.

JOINTING:

The stone at the quarry is very fractured and jointed.

COLOUR:

The granite is red.

TEXTURE:

The stone is equigranular to porphyritic and medium to coarse grained.

OTHER FEATURES:

Inclusions and pegmatitic veins are common.

8) PHYSICAL PROPERTIES:

Pearl Lake Red Granite

Compressive Strength:	23,889 psi (164.54 MPa)
Modulus of Rupture:	2,491 psi (17.24 MPa)
Absorption:	0.04%
Bulk Specific Gravity:	2.63

Testing conducted by Geoscience Laboratories, Ontario Geological Survey, Toronto

9) CHEMICAL ANALYSIS:

Sample No.	SiO_2	Al_2O_3	Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	TiO_2	P_2O_5
85MCK-0008	74.14	14.47	1.37	0.02	0.52	0.49	2.86	5.93	0.19	0.00

Analyses by Geoscience Laboratory, Ontario Geological Survey, Toronto

10) COMMENTS/RECOMMENDATIONS:

Although this quarry was previously used as a source of aggregate, the authors noted blocks up to 5 tons on site. The stone is attractive and could be suited to the monument industry. Prospecting other areas of the Hilma Lake Granite is recommended.

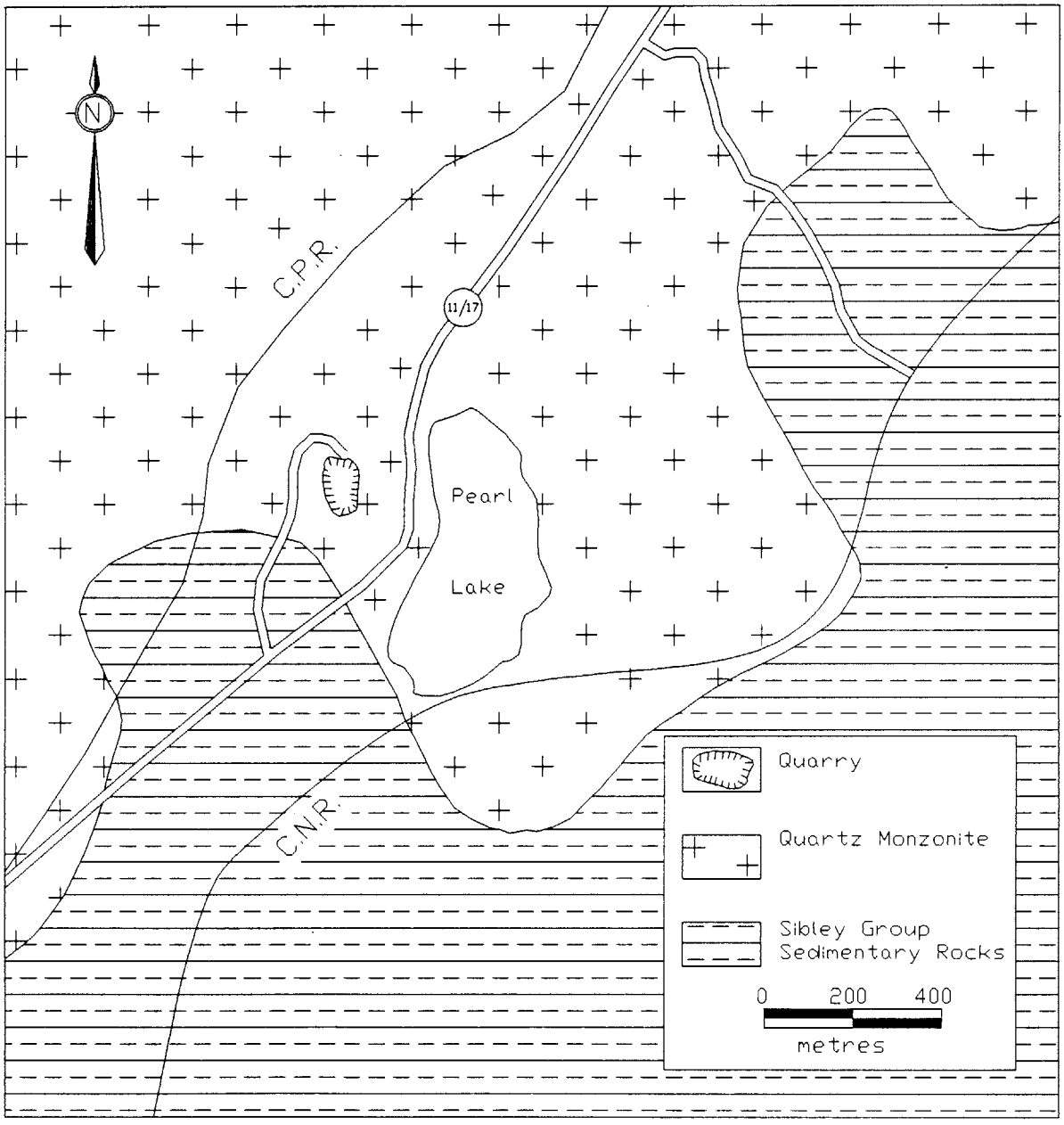

Figure 13: Pearl Lake Quarry, location and general geology

1) **PROPERTY NAME:** Poshkokagan River Marble Occurrence **DATE(S) VISITED:** June 1991

2) **ALTERNATE NAME(S):**

3) **COMMODITY:** **MAIN:** Marble

4) **DEVELOPMENT HISTORY AND OWNERSHIP:**

PAST: The "marbles" of the river valley were identified and mapped by Bell (1870) and Wilson (1910). In the 1930s various prospectors explored the area and returned to Thunder Bay with samples that had potential for use as a building and ornamental stone. At that time, these deposits were used to encourage the construction of a railroad to access the area west of Lake Nipigon. This would allow for the development of the marble deposits as well as the chromite at Obonga Lake. The railway was never constructed and the area has remained inactive since.

CURRENT: 1994 The area is currently unstaked.

5) **LOCATION AND ACCESS:**

N.T.S.	52 H/6SE		
Latitude:	49° 21' 41"	**Northing:**	5469613
Longitude:	89° 08' 20"	**Easting:**	0344692

GENERAL LOCATION:

The outcrops are found approximately 21 km south of the river's mouth in Chief Bay, Lake Nipigon; the area lies approximately 16 km west of Black Sturgeon Lake.

ACCESS:

There are various logging and winter roads that provide access to the river valley.

MAP REFERENCES:

Claim map G-710, Circle Lake, Thunder Bay Mining Division.

REFERENCES:

Bell (1870)
Industrial Minerals Geologist's Files, Thunder Bay
Wilson (1910)

6) GENERAL GEOLOGY AND STRUCTURE:

Areas of the Poshkokagan River valley are underlain by Proterozoic argillaceous dolomitic limestone of the Sibley Group and intrusive Keweenawan diabase sills and dikes. The area near the river has extensive drift and overburden coverage, therefore the best exposures are within the river valley. A gorge in the upper Poshkokagan River has a depth of 43 m which is covered by talus. There are areas exposed within the cliffs that show the marble units.

7) STONE DESCRIPTION: (from Wilson 1910)

MINERALOGY:

JOINTING:

The beds within the unit reach a maximum thickness of 0.6 m and dip slightly southward.

COLOUR:

The prevailing colour of the stone is white or yellowish white, but some beds are mottled pale green and red. The stone weathers easily to a grey-white clay.

TEXTURE:

The stone is fine grained.

OTHER FEATURES:

8) PHYSICAL PROPERTIES:

9) CHEMICAL ANALYSIS:

10) COMMENTS/RECOMMENDATIONS:

Historical articles state that beds of white dolomite, up to 2 feet in thickness occur in a 140 foot deep gorge, found in the upper reaches of the Poshkokagan River. Although this particular occurrence was not found the authors feel that the most likely spot to look would be at Lime Lake or at the south end of Poshkokagan Lake. With the discovery of the McCrindle Marble Occurrence in 1993, the possibility exists for other large marble occurrences to be found.

1) **PROPERTY NAME:** Trout Lake Pluton **DATE(S) VISITED:** May 1992

2) **ALTERNATE NAME(S):**

3) **COMMODITY:** **Main:** Red Porphyritic Granite

4) **DEVELOPMENT HISTORY AND OWNERSHIP:**

PAST: This pluton has had minimal prospecting and exploration activity within it.

CURRENT: 1994 For the most part the pluton is covered by patented land with both surface and mineral rights reserved. However, in the west central portion of the pluton there is 3.2 km^2 which is crown land.

5) **LOCATION AND ACCESS:**

N.T.S.	52 A/11SW		
Latitude:	48· 36' 50"	**Northing:**	5387126
Longitude:	89· 24' 45"	**Easting:**	0322185

GENERAL LOCATION:

The pluton is located approximately 26 km north of Thunder Bay. The bulk of the pluton lies within Ware Township (Lots 1 to 8, Conc. IV to VIII).

ACCESS:

Access to the pluton is gained via Mapleward Road and Highway 591. Starting at Hwy. 102 (Dawson Rd.) travel north on Mapleward Road for approximately 10 km. At this point the road changes to Hwy. 591 (Figure 14). The eastern portion of the pluton is reached 1.2 km past this point. Access to the remainder of the area can be gained via logging roads that exit Hwy. 591. These roads provide access to the boundary of the pluton; access to the centre is limited.

MAP REFERENCES:

Claim Map G-698, Ware Township, Thunder Bay Mining Division
Map No. 48c, Gorham Township & Vicinity (MacDonald 1941)
Map P.177, Lakehead-Shebandowan Sheet (Pye and Fenwick 1962)

REFERENCES:

Brown and Fogal (1993)
MacDonald (1941)
Industrial Minerals Geologist's Files, Thunder Bay

6) GENERAL GEOLOGY AND STRUCTURE:

The pluton has intruded Archean pelitic to semi-pelitic metasediments. The pluton itself is a pink hornblende granite that is uniformly porphyritic, with feldspar phenocrysts up to 2.5 cm in length.

7) STONE DESCRIPTION:

MINERALOGY:

JOINTING:

The majority of outcrops examined show irregular orientation and spacing in the joint sets. In most cases the spacing is <1 m. Fractures are very common.

COLOUR:

On the weathered surface the granite appears pink (the penetration of the weathering is 1 to 2 cm). The fresh surface is a brick red colour with phenocrysts that are white to salmon pink in colour. The colour is consistent throughout most of the pluton except in the northern part where it varies from pink to greyish pink to grey.

TEXTURE:

The texture is inconsistent over areas of the pluton. Patches of fine-grained or pegmatitic granitic material are common. Overall, the stone is medium to coarse grained with phenocrysts up to 2 cm in length.

OTHER FEATURES:

Xenoliths of fine-grained mafic material or fine-grained red granitic material are common. There are also occurrences of aplitic dikes and quartz veins in the northern portion of the pluton. Evidence of faulting (slickensides) are noted in outcrops near Hwy. 591.

8) PHYSICAL PROPERTIES:

Trout Lake Granite

Compressive Strength:	19,473 psi (134.31 MPa)
Modulus of Rupture:	1,138 psi (7.87 MPa)
Absorption:	0.21%
Bulk Specific Gravity:	2.68

Testing conducted by Geoscience Laboratories, Ontario Geological Survey, Toronto

9) CHEMICAL ANALYSIS:

Sample No.	SiO_2	Al_2O_3	Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	TiO_2	P_2O_5
85MCK-0001	67.60	16.34	3.81	0.06	1.95	0.99	4.18	4.44	0.53	0.23

Analyses by Geoscience Laboratory, Ontario Geological Survey, Toronto

10) COMMENTS/RECOMMENDATIONS:

Although samples from the Trout Lake Pluton are quite attractive, the irregular jointing and texture across the pluton decreases its potential significantly. If one were to evaluate the potential of the pluton the evaluation would be restricted to the small portion covered by crown land.

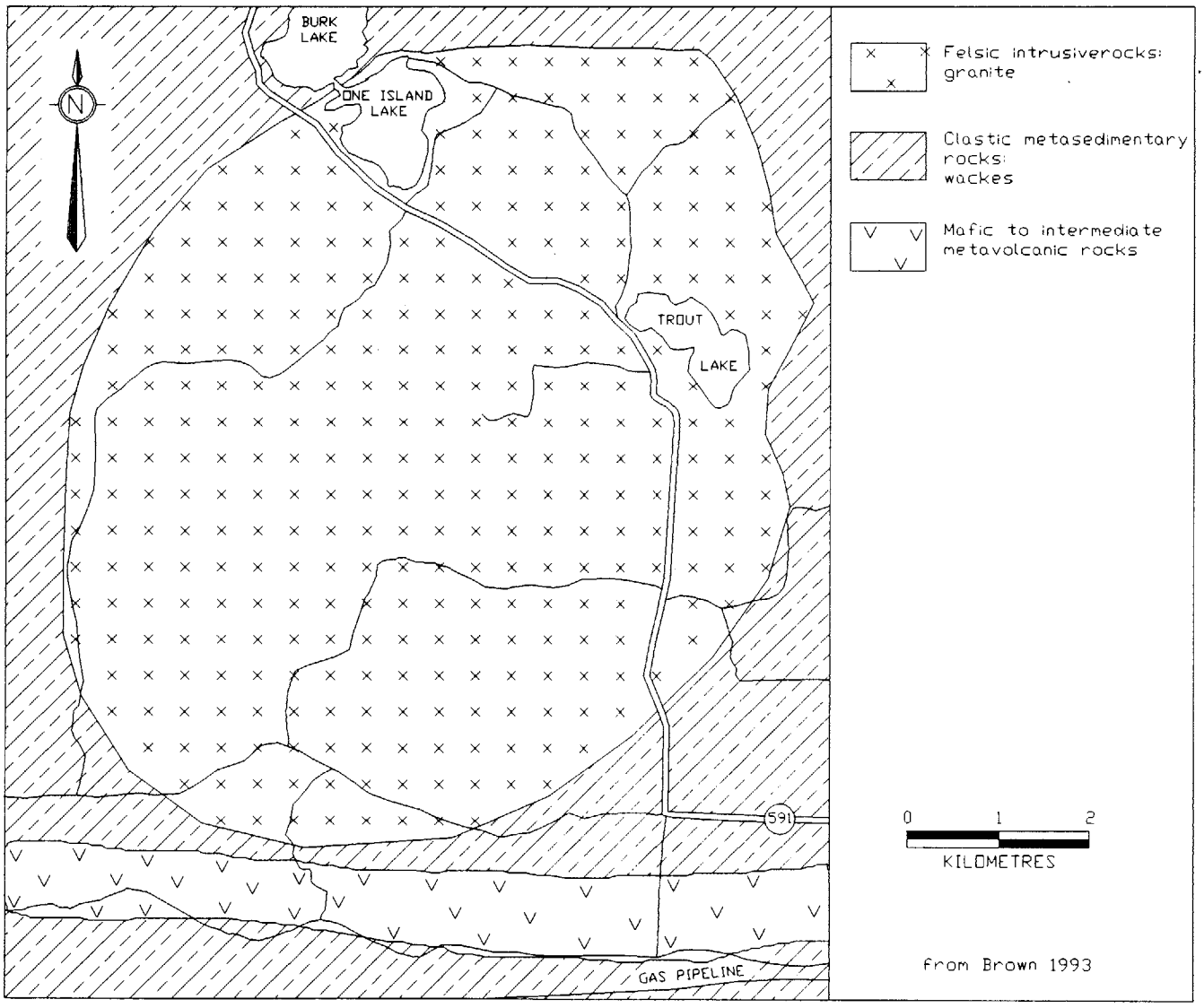

Figure 14: Trout Lake Pluton, location and general geology

1) **PROPERTY NAME**: Whitelily Lake Granite **DATE(S) VISITED**:

2) **ALTERNATE NAME(S)**:

3) **COMMODITY**: **MAIN**: Pink Porphyritic Granite

4) **DEVELOPMENT HISTORY AND OWNERSHIP**:

PAST: The only activity in the area is just south of the pluton on an iron formation.

CURRENT: 1994 Currently open for staking.

5) **LOCATION AND ACCESS**:

N.T.S.	52 A/11NE		
Latitude:	48· 39' 32"	**Northing:**	5391425
Longitude:	89· 05' 22"	**Easting:**	0346131

GENERAL LOCATION:

It is located approximately 20 km north of Hwy. 11-17 along Hwy. 527 (Spruce River Road).

ACCESS:

Highway 527 traverses the eastern portion of the pluton (Figure 15). Access to the centre is very limited.

MAP REFERENCES:

Claim Map G-747, Onion Lake Area, Thunder Bay Mining Division
Map No. 48c, Gorham Township & Vicinity (MacDonald 1941)
Map P.177, Lakehead-Shebandowan Sheet (Pye and Fenwick 1962)

REFERENCES:

MacDonald (1941)

6) **GENERAL GEOLOGY AND STRUCTURE**:

The granite has intruded Archean metasediments of the Quetico Subprovince. The pluton itself is a biotite granite that is roughly circular and covers approximately 12 km^2.

7) **STONE DESCRIPTION**:

MINERALOGY:

JOINTING:

There are areas examined that show the unit has been cataclastically deformed. The evidence is brecciated zones and fault zones.

COLOUR:

In the deformed areas the stone is a red syenitic material with green amphibole. In areas of little deformation the stone is a pink colour.

TEXTURE:

The stone is composed of large, pink feldspar phenocrysts within a fine to medium grained quartz, feldspar, biotite matrix.

OTHER FEATURES:

8) **PHYSICAL PROPERTIES:**

9) **CHEMICAL ANALYSIS:**

10) **COMMENTS/RECOMMENDATIONS:**

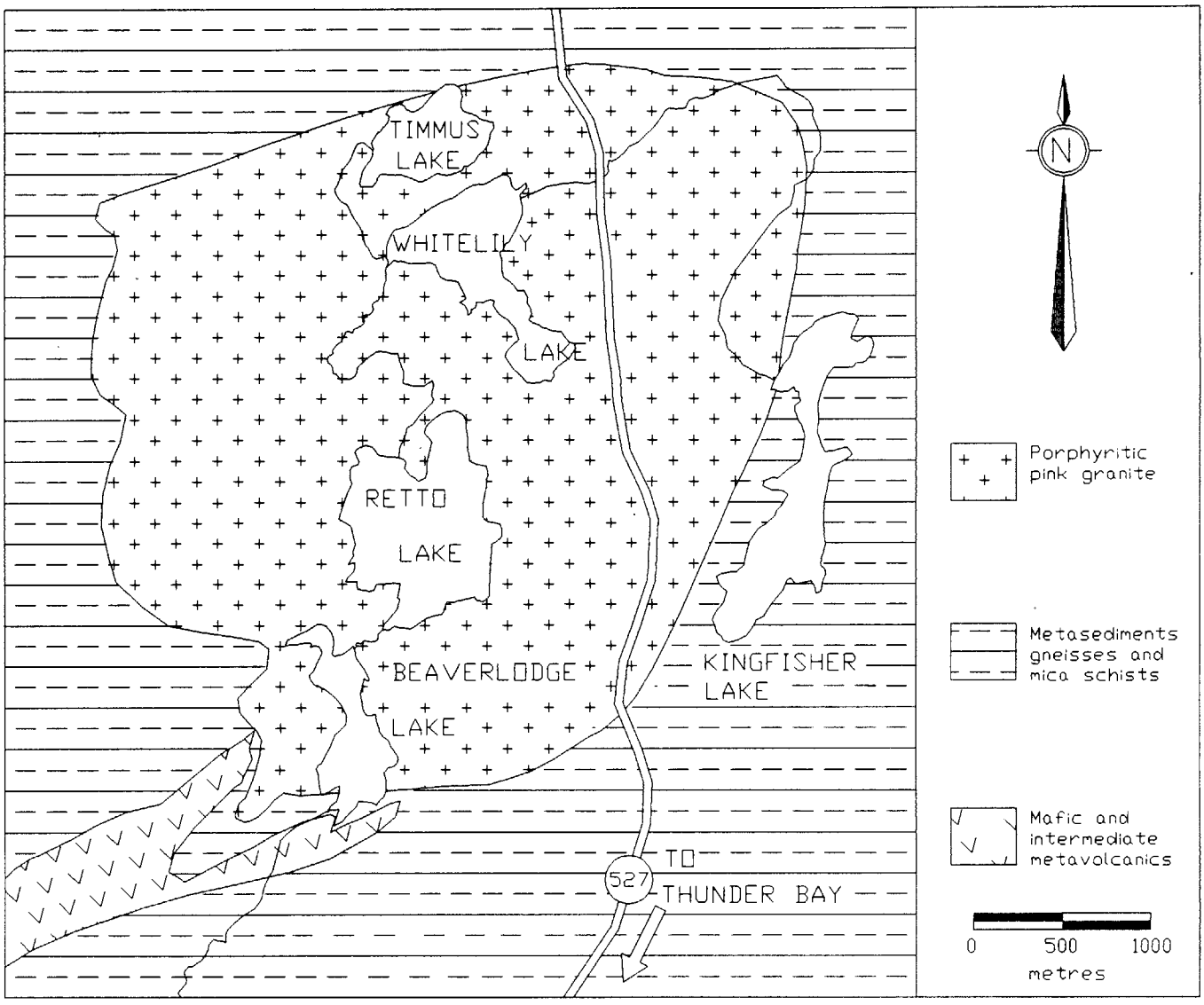

Figure 15: Whitelily Lake Granite, location and general geology

1) **PROPERTY NAME**: Wolf River Sandstone Quarry **DATE(S) VISITED**: May 1991

2) **ALTERNATE NAME(S)**: Stirling Township Quarry
Dowler/Watty Quarry
Stirling Township, Lot 2, Conc. VI

3) **COMMODITY**: **Main**: Buff sandstone

4) **DEVELOPMENT HISTORY AND OWNERSHIP**:

PAST:	1913 to 1915	W.R. Berford of Fort William staked two claims, TB 1836 and 1837. Work was reported on the claims and a small amount of stone was quarried and used in Port Arthur. In the early 1920s W.R. Berford abandoned the claims.
	1921	The quarry was restaked by W.A. Dowler and M. Watty of Hurkett, Ontario. The claims were patented and production resumed.
	1931	The last report of production at the quarry by Dowler and Watty is cited in this year by T.L. Tanton (1931)
	1941	The patent was dropped.
	1949	A new issue of patent was issued to E.G. Gamble.
	1982	D. Burrows staked the site and transferred all rights to Noranda Mines Ltd. No work was recorded.
	1983	Ownership of the patented claims was transferred from R.G. and M.L. Gamble to A.A. Renaud of Dorion.
CURRENT:	1994	The rights to the patented claims are still held by A.A. Renaud.

5) LOCATION AND ACCESS:

N.T.S.	52 A/15SE		
Latitude:	48· 55' 10"	**Northing:**	5411499
Longitude:	88· 35' 20"	**Easting:**	0383595

GENERAL LOCATION:

The quarry site is located approximately 7.5 km northwest of Dorion in southwest Stirling Township, Lot 2, Conc. VI.

ACCESS:

At Dorion turn left off Highway 11/17 onto the Fish Hatchery Road. Follow the signs to the Fish Hatchery (approximately 4.8 km), turn right before entering the Hatchery. Approximately .25 km take the left fork in the road. Past the fork, approximately 50 m, a bush trail leads to the quarry on the Wolf River (Figure 16).

MAP REFERENCES:

Claim Map G-175, Stirling Township, Thunder Bay Mining Division
Map P.995, Dorion-Wolf Lake Area (Eastern Part) (McIlwaine and Tihor 1975)

REFERENCES:

Hawley (1930)
Industrial Minerals Geologist's Files, Thunder Bay
Resident Geologist's Files, Thunder Bay District, Thunder Bay
Tanton (1920, 1929, 1931)

6) GENERAL GEOLOGY AND STRUCTURE:

The area is underlain by Mesoproterozoic Sibley Group sandstones and siltstones. The grains are sand sized quartz grains that are poorly sorted and subangular in shape. The quartz grains are cemented together by carbonate (calcite) and silica (chalcedony).

Tanton (1929) described the geology of the quarry:

> Lot 2, Concession VI - On the west side of the Wolf River, just below the falls, is the abandoned quarry from which sandstone was quarried for buildings in Port Arthur. The stone is well cemented with quartz and calcite, is buff to white in colour, and is exposed in a bluff 18 feet high. The upper layers are flat-lying, while those at the base dip 7·S., which appears to be an original dip or cross-bedding on a large scale. Near the top the sandstone is well

jointed in blocks averaging 9 inches across; below it is more massive and in beds from 3 to 4 feet thick. To the west the deposit is overlain by a high ridge of glacial till.

7) STONE DESCRIPTION:

MINERALOGY:

The Wolf River sandstone is composed of 85 to 90% quartz, 5 to 10% calcite and 2 to 3% fine micaceous minerals. The quartz grains are angular to subrounded and display a mosaic texture. Quartz overgrowths are very common and some minor chalcedony is seen. Fine-grained anhedral masses of calcite fill the spaces between the quartz grains. The micaceous minerals are seen as rims around the quartz and in the matrix, some are iron-stained. They are too fine to identify.

JOINTING:

The top of the sandstone is well jointed in blocks averaging 8 inches across, below it is more massive with beds ranging from 3 to 4 feet thick.

COLOUR:

The sandstone has been described as being buff coloured to white to slightly pinkish.

TEXTURE:

The sandstone is equigranular and fine grained.

OTHER FEATURES:

8) PHYSICAL PROPERTIES:

9) CHEMICAL ANALYSIS:

Sample No.	SiO2	Al2O3	Fe2O3	MgO	CaO	K2O	TiO2	MnO	S
85MCK-0004	93.86	3.28	0.32	0.33	1.35	0.76	0.07	0.03	0.02

Analyses conducted by Geoscience Laboratory, Ontario Geological Survey, Toronto

10) COMMENTS/RECOMMENDATIONS:

The author feels that this site has a low potential for development. Situated on the Wolf River and covered by thick glacial till there is virtually no space in which to open a quarry. Other potions of the Sibley Group rocks should be prospected for thickly bedded sandstones.

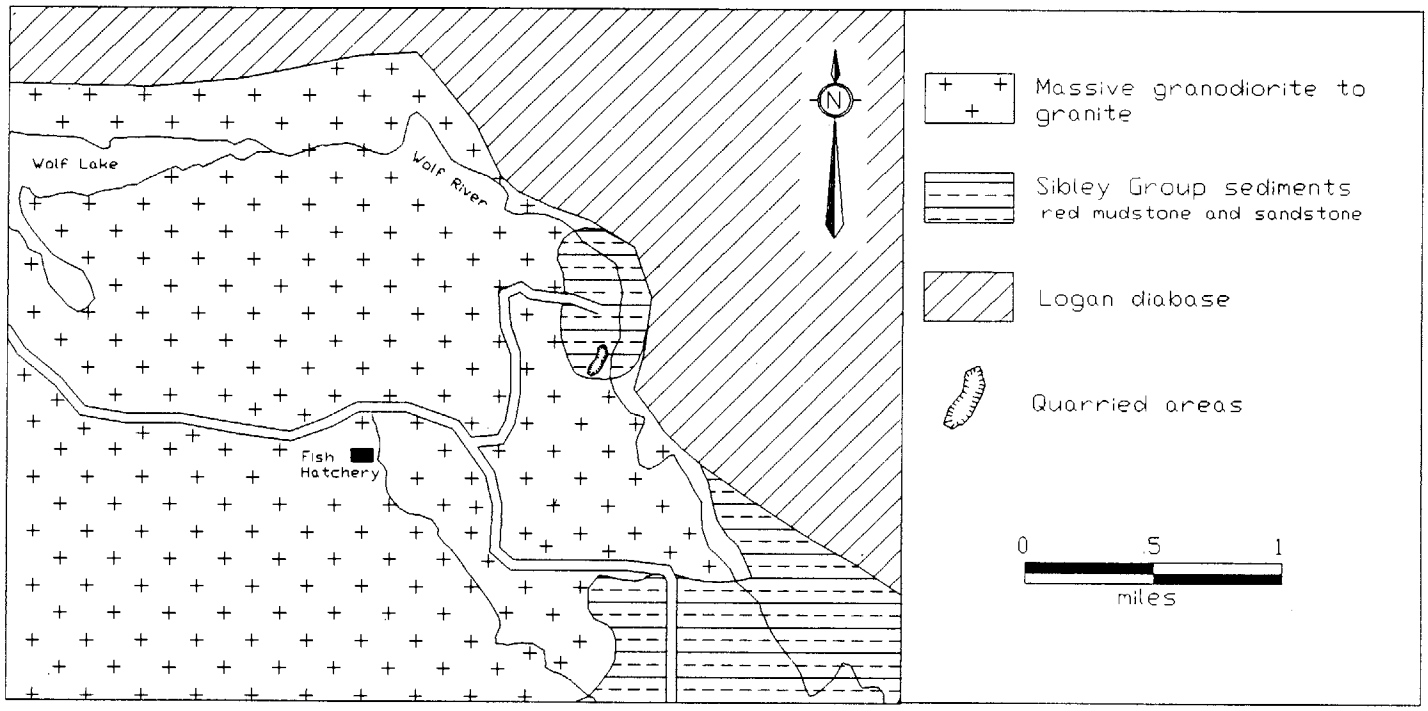

Figure 16: Wolf River Sandstone Quarry, location and general geology

BEARDMORE-GERALDTON DISTRICT

1) **PROPERTY NAME:** Chipman Lake Stock **DATE(S) VISITED:** June 1992

2) **ALTERNATE NAME(S):**

3) **COMMODITY:** **Main:** Granite

4) **DEVELOPMENT HISTORY AND OWNERSHIP:**

PAST: This occurrence has experienced minimal prospecting and exploration.

CURRENT: Most of stock is currently open for staking.

5) **LOCATION AND ACCESS:**

N.T.S.	42 E/16NE		
Latitude:	49° 56' 30"	**Northing:**	5532208
Longitude:	86° 14' 00"	**Easting:**	0555013

GENERAL LOCATION:

The Chipman Lake stock is located in north-central O'Meara Township, approximately 13 km east of Longlac, in northwestern Ontario.

ACCESS:

Highway 11 east of Longlac 11.5 km. Bush road north of highway for 15.7 km, turn right onto road 17-7. Follow road for 3.0 km., turn left onto Ogahalla Road. Chipman Lake stock intersects the road 3.5 km from last intersection (Figure 15).

MAP REFERENCES:

Claim Map G-498, O'Meara Township, Thunder Bay Mining Division
Map P.1068, Chipman Lake Area (Sage 1975)

REFERENCES:

Biczok (1976)
Burns (1992)
Industrial Minerals Geologist's Files, Thunder Bay
Jones (1975)
Resident Geologist Files, Beardmore-Geraldton District
Sage (1975, 1985)

6) GENERAL GEOLOGY AND STRUCTURE:

Sage (1985) described the geology of the Chipman Lake stock:

> The area is underlain predominantly by Early Precambrian rocks which in the vicinity of the south end of Chipman Lake, have been fenitized and intruded by Late Precambrian carbonatite dikes. The Early Precambrian rocks belong to the Wabigoon Subprovince of the Superior Province of the Canadian Shield.

7) STONE DESCRIPTION:

MINERALOGY:

Sage (1985) classified the stock as diorite to syenodiorite.

JOINTING:

Outcrop exposure is poor and those that are exposed are highly fractured and cross-cut by numerous granitic and dioritic dikes.

COLOUR:

Fresh surfaces are greenish in colour.

TEXTURE:

The syenites are medium to fine grained.

OTHER FEATURES:

8) PHYSICAL PROPERTIES:

9) CHEMICAL ANALYSIS:

Sample	SiO2	TiO2	Al2O3	Fe2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5
JC-1	48.04	1.21	15.93	4.56	6.09	8.32	6.11	0.17	4.20	2.73	0.92
JC-5	53.61	0.91	16.17	4.04	3.80	6.10	4.63	0.13	4.65	4.01	0.69
JC-2	55.02	0.80	16.78	3.03	4.23	5.45	4.18	0.12	4.78	4.05	0.64
JC-4a	55.42	0.74	16.71	2.91	3.84	5.57	4.60	0.09	5.01	3.32	0.47

JC-1 - monzodiorite
JC-5 - alkali-feldspar syenite
JC-2 - alkali-feldspar syenite
JC-4a - monzodiorite

(From Sage 1985)

10) COMMENTS/RECOMMENDATIONS:

This particular occurrence has a very low potential for development as a dimension stone source. Ubiquitous fracturing and veining makes the possibility of block extraction virtually impossible. The stone could have potential as a source of ornamental stone for the production of giftware or trophy bases.

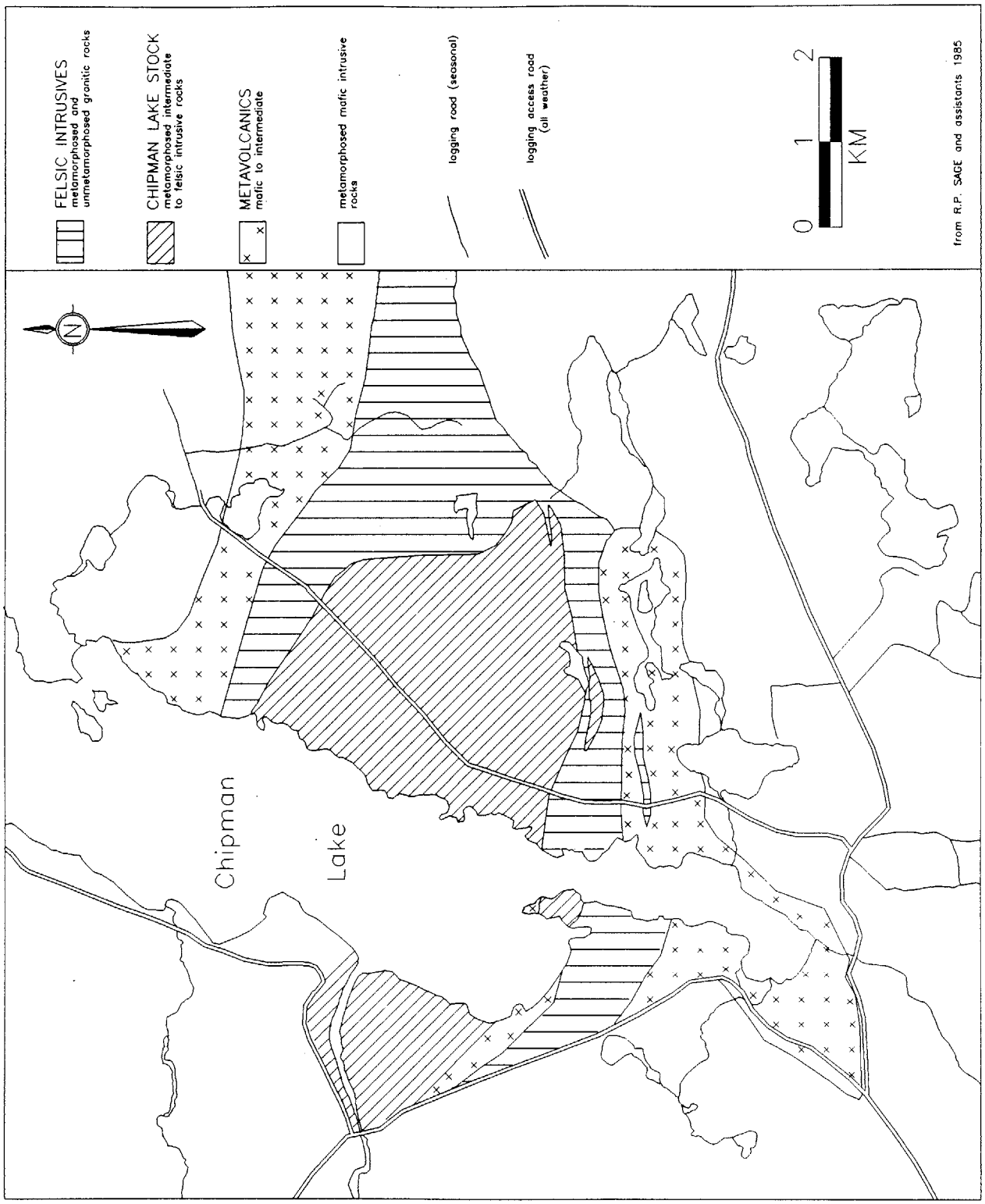

Figure 17: Chipman Lake Stock, general geology

1) **PROPERTY NAME:** Cooke Point Marble Quarry **DATE(S) VISITED:** August 1993

2) **ALTERNATE NAME(S):**

3) **COMMODITY:** **Main:** Marble

4) **DEVELOPMENT HISTORY AND OWNERSHIP:**

PAST:	1866	The deposit was identified and described as early as 1866 (Bell, 1869; Royal Commission Report, 1890; ODM, Vol. 17, 1908).
	1930	James W. Lawrence and Robin Boyle of Toronto staked 26 claims to cover the deposit and shoreline.
	1931	The Lake Nipigon Marble Corporation, Ltd. did work at the site that included the removal of test blocks and the construction of buildings. A storehouse, a bunkhouse, and a dining hall were erected at the site to accommodate 12 men.
	1932 to 1954	Because of promising test results, Lawrence and Boyle attempted to develop the site as a source of ornamental stone. This failed due to the lack of a market. With the war in the 1940s, the two gentlemen began examining other possible uses for the marble. The stone was tested as a source of magnesium and as a flux material. The magnesium content was not high enough to support a magnesium market and the silica content was to high for use as a flux. In the 1950s the claims lapsed and no activity has been reported since that time.
CURRENT:	1994	The quarry is currently unstaked.

5) **LOCATION AND ACCESS:**

N.T.S.	52 H/8NW		
Latitude:	49· 27' 54"	**Northing:**	5479690
Longitude:	88· 15' 25"	**Easting:**	0408921

GENERAL LOCATION:

The quarry is located on the eastern part of Cooke Point, on the southern shore of Lake Nipigon, west of the Virgin Islands (Figure 18).

ACCESS:

The point can be reached by boat from launches in the village of Macdiarmid and in South Bay.

MAP REFERENCES:

Claim Map G-129, South Bay (Lake Nipigon), Thunder Bay Mining Division.
Map 2232, Nipigon-Schreiber Sheet (Carter et al. 1970-71)

REFERENCES:

Bell (1870)
Chartton et al. (1890)
Coates (1972)
Coleman and Moore (1908)
Hewitt (1964)
Industrial Minerals Geologist's Files, Thunder Bay
Vos et al. (1987)

6) GENERAL GEOLOGY AND STRUCTURE:

The Quarry is located within calcareous sediments of the Proterozoic Sibley Group. This unit is exposed at the base of a Keweenawan diabase sill for about 1.6 km along the lake shore and rise 6 m above the water level. The unit is dolomitic limestone that is thinly bedded and gently folded. The quarry site is currently overgrown and is recognized by the presence of the old railway steel and pieces of equipment in the water.

7) STONE DESCRIPTION:

MINERALOGY:

Coleman and Moore (1908) described the mineralogy of the marble:

> Thin sections show fine-grained, closely interlocking calcite, with small amounts of some turbid substance.

JOINTING:

Overall the unit is thinly bedded and has many vertical fractures.

COLOUR:

The stone is white or pale green in colour. There are some areas with a reddish tint.

TEXTURE:

The stone is very fine grained.

OTHER FEATURES:

8) PHYSICAL PROPERTIES:

Weathering test: a sample was immersed in sodium sulphate for 24 hours, taken out of the solution, and heated for 24 hours. This cycle was done four consecutive times without sign of cracking or disintegration.

Absorption test: a sample was dried for 24 hours then immersed in corn oil for 24 hours, after which the sample was removed and weighed (absorption 0.98%)

Compression test: three samples (2" cubes) had lead weights applied at right angles to the face. These are the results:

SAMPLE	Load per square inch
1	5750
2	4250
3	5882
Average:	5294

Tests performed by J.T. Donald and Co., Montreal (1931)

9) CHEMICAL ANALYSIS:

10) COMMENTS/RECOMMENDATIONS:

The location of this quarry essentially eliminates any possibility of future development. The quarry is inaccessible by road and located on Lake Nipigon which is classed as a Forest Reserve. The stone is attractive, however, exposures observed by the author displayed thin beds and a thick cap of diabase which would make extraction difficult.

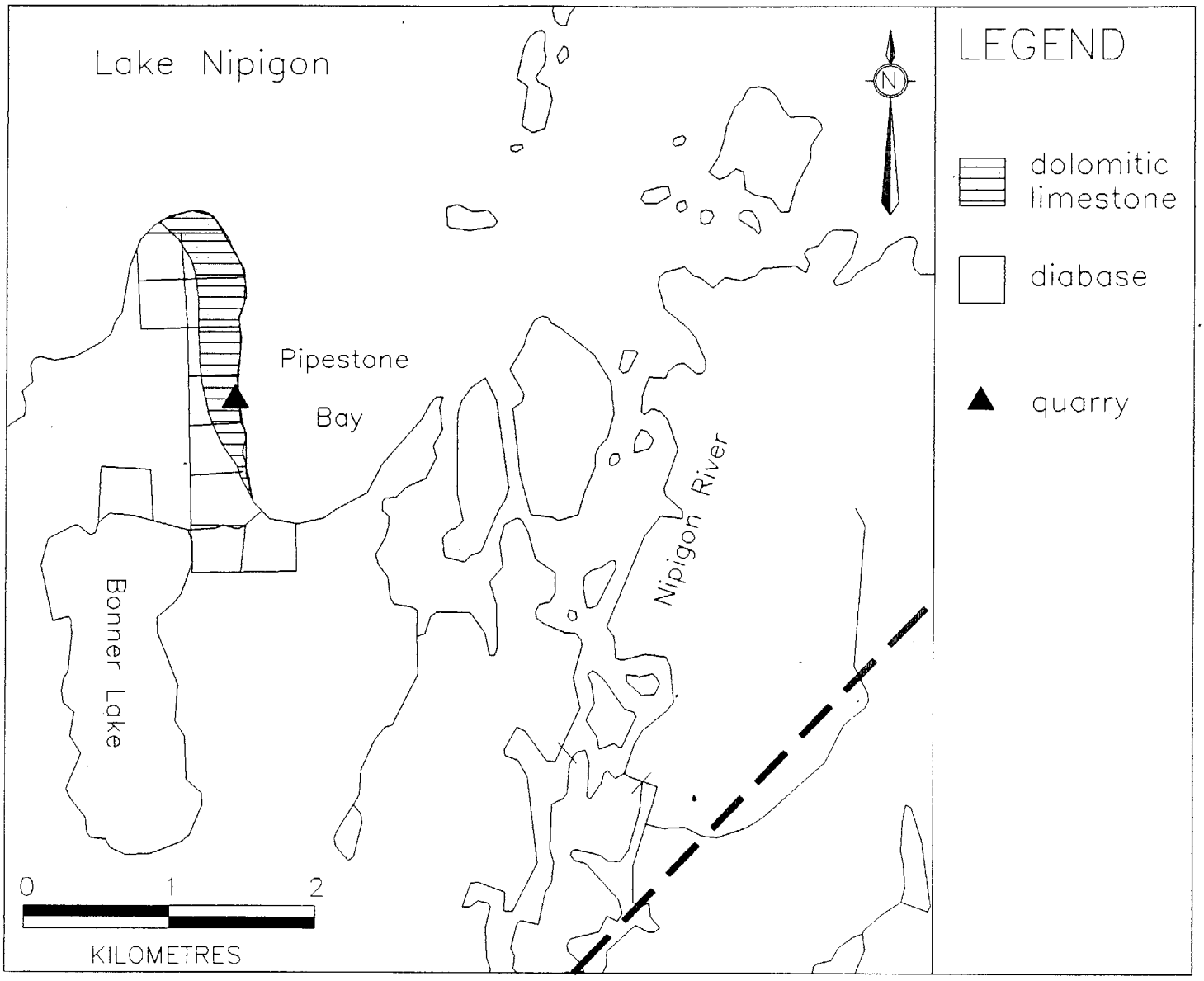

Figure 18: Cooke Point Marble Quarry, location map

SCHREIBER-HEMLO DISTRICT

1) **PROPERTY NAME:** Angler Quarry **DATE(S) VISITED:** October 1992

2) **ALTERNATE NAME(S):** Angler Granites Ltd.
Angler Mining Company Ltd.

3) **COMMODITY:** **Main:** Black granite

4) **DEVELOPMENT HISTORY AND OWNERSHIP:**

PAST:	1929	Mr. H. England staked 11 claims covering red and black granite deposits (Daily Times-Journal, Nov. 27, 1930).
	1931	Test blocks were removed from the black granite site by Angler Granites Ltd. (Thomson 1931).
	1961	Claims staked by James Aldridge, transferred to Angler Mining Company Ltd.
	1963 to 1965	Eight diamond drill cores were completed by the Angler Mining Company Ltd. (Resident Geologist files, MNDM, Thunder Bay).
	1985	Staked by D. Petrunka.
	1988	Optioned to Cold Spring Granite Canada Ltd.
	1990	Property returned to D. Petrunka.
CURRENT:	1994	The property is currently held by D. Petrunka.

5) **LOCATION AND ACCESS:**

N.T.S.	42 D/16SW		
Latitude:	48· 46' 20"	**Northing:**	5402078
Longitude:	86· 25' 20"	**Easting:**	0542453

GENERAL LOCATION:

The quarry is located approximately 7.5 km northwest of the town of Marathon on the C.P.R. mainline railway (Figure 19).

ACCESS:

An access road for the C.P.R. line branches west off Hwy. 17 approximately 7 km northwest of the Marathon airport. The railroad tracks are approximately 2 km southwest along this access road. Upon reaching the tracks, walk north along the tracks for 1.25 km. The quarry is on the east side of the tracks under a powerline.

MAP REFERENCES:

Claim Map G-2854, McCoy Township, Thunder Bay Mining Division
Map P.114, Port Coldwell Area (Puskas 1967)
Map P.3233, Port Coldwell Complex, East Half (Walker et al. 1993)

REFERENCES:

Carr (1955)
Currie (1980)
Industrial Minerals Geologist's Files, Thunder Bay
Puskas (1967)
Resident Geologist's Files, Schreiber-Hemlo District
Thomson (1931)
Walker et al. (1991, 1992, 1993)

6) GENERAL GEOLOGY AND STRUCTURE:

The claims are underlain by Fe-rich augite syenite (Walker et al. 1992) of the Proterozoic Coldwell alkalic complex. Geological mapping over the area was done by Puskas (1967) and recently by Walker et al. (1991, 1992, 1993).

Walker et al. (1992) described the iron-rich augite syenites as follows:

> The iron-rich augite syenite appears to be a low angle sheet-like intrusion, which dips approximately 15· toward the centre of the complex. It intrudes the basaltic xenoliths of the roof pendant and the Eastern and Western Gabbro, and it has inclusions of recrystallized amphibole quartz syenite. A variation in mineralogy from the bottom to the top through the sheet is present and consists of: fayalite-iron-rich, augite-magnetite syenite; iron-rich augite syenite; fayalite-iron-rich augite syenite; and amphibole syenite."

7) **STONE DESCRIPTION:**

MINERALOGY:

Walker et al. (1992) described the mineralogy of the iron-rich augite syenite:

> Iron-rich augite syenite, which forms the majority of the intrusion, typically contains iridescent tabular to lath-shaped feldspars with cryptoperthitic intergrowths and up to 30% interstitial, iron-rich augite. Variable amounts of fayalite, amphibole, aenigmatite and rare quartz occur in the subunit. The rock is generally black to olive-brown, coarse grained and massive.

In thin section, the stone is composed primarily of subhedral, <1 to 5 mm crystals of perthitic, turbid, feldspar crystals (50%). The turbid texture is due to the presence of vacuoles and in some crystals the turbidity is zoned. Anhedral to subhedral biotite (10%) and pyroxene (25%) crystals are also present. For the pyroxene crystals it is common to see aegerine-augite crystals with aegerine rims. Opaque minerals and iron staining make up approximately 10% of the rock. The opaque minerals are anhedral and are rimmed by biotite. Although they occur as inclusions in both the feldspar and pyroxene crystal, they are found more commonly in the latter. The iron-staining is very uncommon, but it does occur as spots and along fractures.

JOINTING:

The jointing has two orientations, 000 to 010· and 160 to 180·, with a separation of 1 to 2 m. Some of these may be surface features as some curve and are discontinuous. Surface spalling is common and sheeting appears thin, reaching a thickness up to 1 m. This may only be a surface feature. It is hard to see the nature of the rock with depth due to the outcrop and overburden.

COLOUR:

The stone is dark green-black in fresh cut surfaces.

TEXTURE:

The stone is medium to coarse grained.

OTHER FEATURES:

There are three small areas that have had blocks removed. Just west of the rail line on the on the south side of Redsucker Creek lies one small quarried area with a rubble

pile. Under the powerline is a second quarry. Between this site and the railroad lies a third small opening, with a rubble pile and remnants of a derrick.

The iron-rich augite syenite outcrops over a very large area in the vicinity of Marathon. Variations include a lighter green stone which contains the schillerescent mineral, spectrolite (e.g. at Shack Lake).

8) PHYSICAL PROPERTIES:

Bulk Specific Gravity:	2.79
% Absorption 2 hrs.:	0.11
48 hrs.:	0.19
Compressive Strength:	26,477 (psi)
Modulus of Rupture:	1,709 (psi)

Tests done by Geoscience Laboratories, Ontario Geological Survey, Toronto

9) CHEMICAL ANALYSIS:

Sample No.	SiO_2	Al_2O_3	Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	TiO_2	P_2O_5
	57.74	13.43	14.03	0.32	0.34	4.24	4.89	4.61	1.30	0.13

Analyses conducted by Geoscience Laboratories, Ontario Geological Survey, Toronto

10) COMMENTS/RECOMMENDATIONS:

Although the Angler Quarry site itself is not amenable to quarrying due to its small size, there are numerous sites in the immediate vicinity which may have potential. Since the iron-rich augite syenite outcrops over a very large area within the Coldwell Complex, there may be some suitable sites yet to be found.

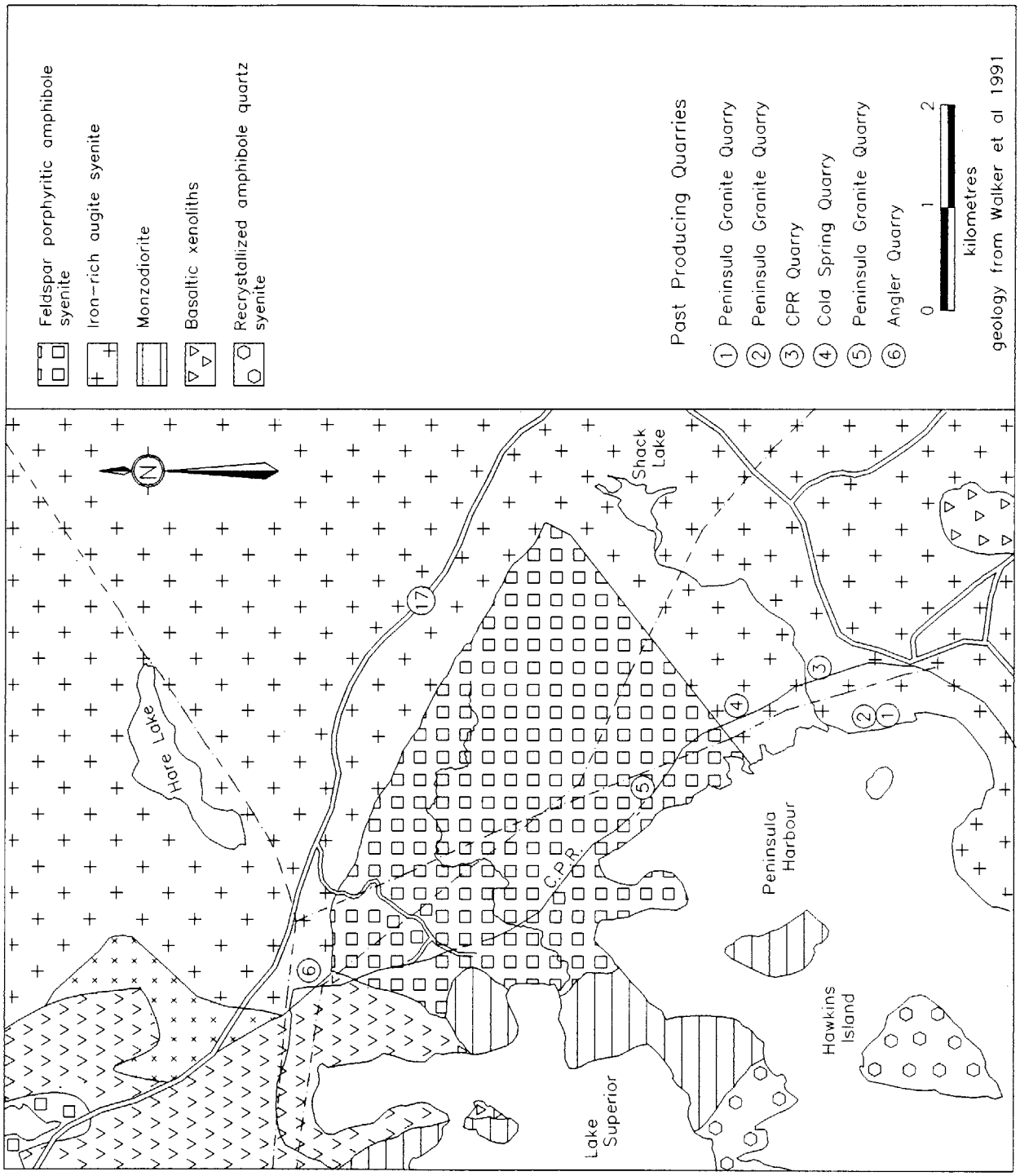

Figure 19: Past-producing granite quarries in the Marathon area, location and general geology

1) **PROPERTY NAME**: Cold Spring Granite Company **DATE(S) VISITED**: October 1992

2) **ALTERNATE NAME(S)**: Peninsula Granite Quarry

3) **COMMODITY**: **Main**: Black granite

4) **DEVELOPMENT HISTORY AND OWNERSHIP**:

PAST: 1931 The ground covering the black granite was purchased by the Cold Spring Granite Company from the Peninsula Granite Quarries Ltd. During the year, a new quarry was opened with a new derrick, drilling equipment, and power plant. Twelve men were employed to quarry blocks that weighed up to 35 tons. In 1931, twenty car loads of black granite were sent to Cold Spring, Minnesota for fabrication (Thomson 1932; The Northern Miner 1931). In the late 1930s the quarry operations were abandoned due to the lack of market.

CURRENT: 1994 The patented claims are currently held by James River-Marathon Ltd.

5) **LOCATION AND ACCESS**:

N.T.S.	42 D/9NW		
Latitude:	48· 43' 55"	**Northing:**	5397625
Longitude:	86· 22' 45"	**Easting:**	0545654

GENERAL LOCATION:

The quarry is located beside the C.P.R. in the southern portion of Lot 20, Conc. XI; approximately 1.2 km north of the town of Marathon (Figure 19).

ACCESS:

A C.P.R. access road follows the tracks, north out of Marathon. Park at the end of this road and walk north along the tracks for approximately 1 km. The quarry is on the east side of the tracks.

MAP REFERENCES:

Claim Map G-630, Pic Township, Thunder Bay Mining Division
Map P.114, Port Coldwell Area (Puskas 1967)
Map P.3233, Port Coldwell Complex, East Half (Walker et al. 1993)

REFERENCES:

Billings (1974)
Currie (1980)
Hewitt (1964)
Industrial Minerals Geologist Files
Puskas (1967)
Thomson (1933)
Walker et al. (1991, 1992, 1993)

6) GENERAL GEOLOGY:

The claims are underlain by Fe-rich augite syenite (Walker et al. 1992) of the Proterozoic Coldwell alkalic complex. Geological mapping over the area was done by Puskas (1967) and recently by Walker et al. (1991, 1992, 1993).

Walker et al. (1992) described the iron-rich augite syenite as follows:

> The iron-rich augite syenite appears to be a low angle sheet-like intrusion, which dips approximately 15· toward the centre of the complex. It intrudes the basaltic xenoliths of the roof pendant and the Eastern and Western Gabbro, and it has inclusions of recrystallized amphibole quartz syenite. A variation in mineralogy from the bottom to the top through the sheet is present and consists of: fayalite-iron-rich, augite-magnetite syenite; iron-rich augite syenite; fayalite-iron-rich augite syenite; and amphibole syenite.

7) STONE DESCRIPTION:

MINERALOGY:

Walker et al. (1992) described the mineralogy of the iron-rich augite syenite:

Iron-rich augite syenite, which forms the majority of the intrusion, typically contains iridescent tabular to lath-shaped feldspars with cryptoperthitic intergrowths and up to 30% interstitial, iron-rich augite. Variable amounts of fayalite, amphibole, aenigmatite and rare quartz occur in the subunit. The rock is generally black to olive-brown, coarse grained and massive.

JOINTING:

Two sets occur at the quarry. The most prominent strikes 335· and dips 50· S while the other set strikes 005· and is vertical. The sheeting ranges from 0.45 to 2.4 m and dips 8 to 10· W (Thomson 1932).

COLOUR: The stone is dark brown-black in fresh cut surfaces.

TEXTURE: The stone is medium to coarse grained.

OTHER FEATURES:

8) PHYSICAL PROPERTIES:

9) CHEMICAL ANALYSIS:

Sample No.	SiO_2	Al_2O_3	Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	TiO_2	P_2O_5
.	56.97	13.40	17.26	0.48	0.28	3.22	4.68	4.52	0.56	0.00

Analyses conducted by Geoscience Laboratories, Ontario Geological Survey, Toronto

10) COMMENTS/RECOMMENDATIONS:

Although the Cold Spring quarry site itself is not amenable to quarrying due to its small size, there are numerous sites in the immediate vicinity which may have potential. Since the iron-rich augite syenite outcrops over a very large area within the Coldwell Complex, there may be some suitable sites yet to be found.

1) **PROPERTY NAME**: C.P.R. Quarry **DATE(S) VISITED**: June 1992

2) **ALTERNATE NAME(S)**: Peninsula C.P.R. Quarry

3) **COMMODITY**: **Main**: Black granite

4) **DEVELOPMENT HISTORY AND OWNERSHIP**:

PAST:	1880s	Blocks were removed during the construction of the Canadian Pacific Railway. The quarried blocks were used in the building of bridges to cross the Pic and Little Pic rivers.
CURRENT:	1994	Patented claims held by the Town of Marathon.

5) **LOCATION AND ACCESS**:

N.T.S.	42 D/9NW		
Latitude:	48° 44' 00"	**Northing:**	5397840
Longitude:	86° 22' 42"	**Easting:**	0545468

GENERAL LOCATION:

The site lies within Lot 20, Conc. X on the east side of the C.P.R. line, approximately 1 km north of Marathon (Figure 19).

ACCESS:

The C.P.R. quarry can be reached by following an access road which follows the tracks, north out of Marathon. The quarry is in a rock outcrop at the north end of a sand pit at the end of the road.

MAP REFERENCES:

Claim Map G-630, Pic Township, Thunder Bay Mining Division
Map P.114, Port Coldwell Area (Puskas 1967)
Map P.3233, Port Coldwell Complex, East Half (Walker et al. 1993)

REFERENCES:

Billings (1974)
Coleman (1902)
Currie (1980)
Industrial Minerals Geologist Files, Thunder Bay
Kerr (1910)
Puskas (1967)

Resident Geologist's Files, Schreiber-Hemlo District, Thunder Bay
Walker et al. (1991, 1992, 1993)

6) GENERAL GEOLOGY:

The claims are underlain by Fe-rich augite syenite (Walker et al. 1992) of the Proterozoic Coldwell alkalic complex. Geological mapping over the area was done by Puskas (1967) and recently by Walker et al. (1991, 1992, 1993).

Walker et al. (1992) described the iron-rich augite syenite as follows:

> The iron-rich augite syenite appears to be a low angle sheet-like intrusion, which dips approximately 15° toward the centre of the complex. It intrudes the basaltic xenoliths of the roof pendant and the Eastern and Western Gabbro, and it has inclusions of recrystallized amphibole quartz syenite. A variation in mineralogy from the bottom to the top through the sheet is present and consists of: fayalite-iron-rich, augite-magnetite syenite; iron-rich augite syenite; fayalite-iron-rich augite syenite; and amphibole syenite.

7) STONE DESCRIPTION:

MINERALOGY:

Walker et al. (1992) described the mineralogy of the iron-rich augite syenite:

> Iron-rich augite syenite, which forms the majority of the intrusion, typically contains iridescent tabular to lath-shaped feldspars with cryptoperthitic intergrowths and up to 30% interstitial, iron-rich augite. Variable amounts of fayalite, amphibole, aenigmatite and rare quartz occur in the subunit.

JOINTING:

COLOUR:

The stone is reddish to dark brown in fresh cut surfaces.

TEXTURE:

The stone is coarse grained.

OTHER FEATURES:

8) **PHYSICAL PROPERTIES:**

9) **CHEMICAL ANALYSIS:**

Sample No.	SiO_2	Al_2O_3	Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	TiO_2	P_2O_5
85MCK-0010	59.88	14.62	11.59	0.29	0.17	2.95	5.43	5.00	0.79	0.08

Analyses conducted by Geoscience Laboratories, Ontario Geological Survey, Toronto

10) **COMMENTS/RECOMMENDATIONS:**

Although the C.P.R. Quarry site itself is not amenable to quarrying due to its small size, there are numerous sites in the immediate vicinity which may have potential. Since the iron-rich augite syenite outcrops over a very large area within the Coldwell Complex, there may be some suitable sites yet to be found.

1) **PROPERTY NAME**: Dotted Lake Occurrence **DATE(S) VISITED**: August 1993

2) **ALTERNATE NAME(S)**:

3) **COMMODITY**: **Main**: Grey granite

4) **DEVELOPMENT HISTORY AND OWNERSHIP**:

PAST:	1988	This area was previously staked by Calicchia Stone Industries of Cleveland, Ohio. Samples were taken for slabbing and polishing. No further work was conducted.
	1992	A. Turner of Manitouwadge restaked the area.
	1993	A. Turner carried out stripping, etc.
CURRENT:	1994	A. Turner still holds claims over the occurrence.

5) **LOCATION AND ACCESS**:

N.T.S.	42 C/13 SE		
Latitude:	48· 51' 45"	**Northing:**	5412715
Longitude:	85· 44' 30"	**Easting:**	0592293

GENERAL LOCATION:

The property is located 31 km south of the town of Manitouwadge off Highway 614 on the Dotted Lake-Twist Lake road and 1 km southeast of Dotted Lake.

ACCESS:

Highway 614 north from Highway 17 for 12.5 km. Take the Dotted Lake-Twist Lake road east of the highway for 9.5 km. Large outcrops can be seen on both sides of the road for approximately 1 to 2 km.

MAP REFERENCES:

Claim Map G-604, Olga Lake Sheet, Thunder Bay Mining Division
Map 2146, Dotted Lake Sheet (Milne 1968)
Map 2147, White Lake Sheet (Milne 1968)
Map P.2738, White Lake (Hemlo) Area, Theresa Lake Section (Siragusa 1984)
Map P.3046, White Lake (Hemlo) Area, Dotted Lake and Black River Sections (Siragusa 1984)

REFERENCES:

Hinz and Lucas (1992)
Industrial Minerals Geologist's Files, Thunder Bay
Milne (1968)
Resident Geologist's Files, Schreiber-Hemlo District
Siragusa (1984)
Schnieders *et al.* (1991)

6) GENERAL GEOLOGY AND STRUCTURE:

The area is underlain by Precambrian rocks of the Abitibi-Wawa subprovince. The Dotted Lake batholith is a leucogranodiorite which intruded mafic metavolcanics. The body is described in detail by Milne (1968):

> No inhomogenity was noted in the main mass of the Dotted Lake Batholith, which appears to consist throughout of biotite leucogranodiorite. The typical rock is light-pink to white in colour, massive, coarse grained, and inequigranular, and has about 3 percent mafic minerals. Biotite is the only mafic mineral visible in handspecimen with quartz and feldspar and occasionally epidote. The granodiorite is intrusive into the metavolcanic rocks with sharp contacts, and generally the granodiorite in the contact area is slightly finer grained and darker in colour than in the main mass of granodiorite.

7) STONE DESCRIPTION:

MINERALOGY:

Primary mineral constituents are plagioclase feldspar, quartz, potassium feldspar and biotite with trace magnetite.

JOINTING:

Joint spacings on some portions of the outcrops were greater than 2 m apart while other areas displayed zones of extensive fracturing (Figures 20a, 20b).

COLOUR:

Polished samples revealed an attractive pink to grey colour.

TEXTURE:

The stone is coarse grained and equigranular.

OTHER FEATURES:

8) **PHYSICAL PROPERTIES:**

9) **CHEMICAL ANALYSIS:**

10) **COMMENTS/RECOMMENDATIONS:**

Although this site is not truly quarriable material, there are enough indications to warrant further investigation.

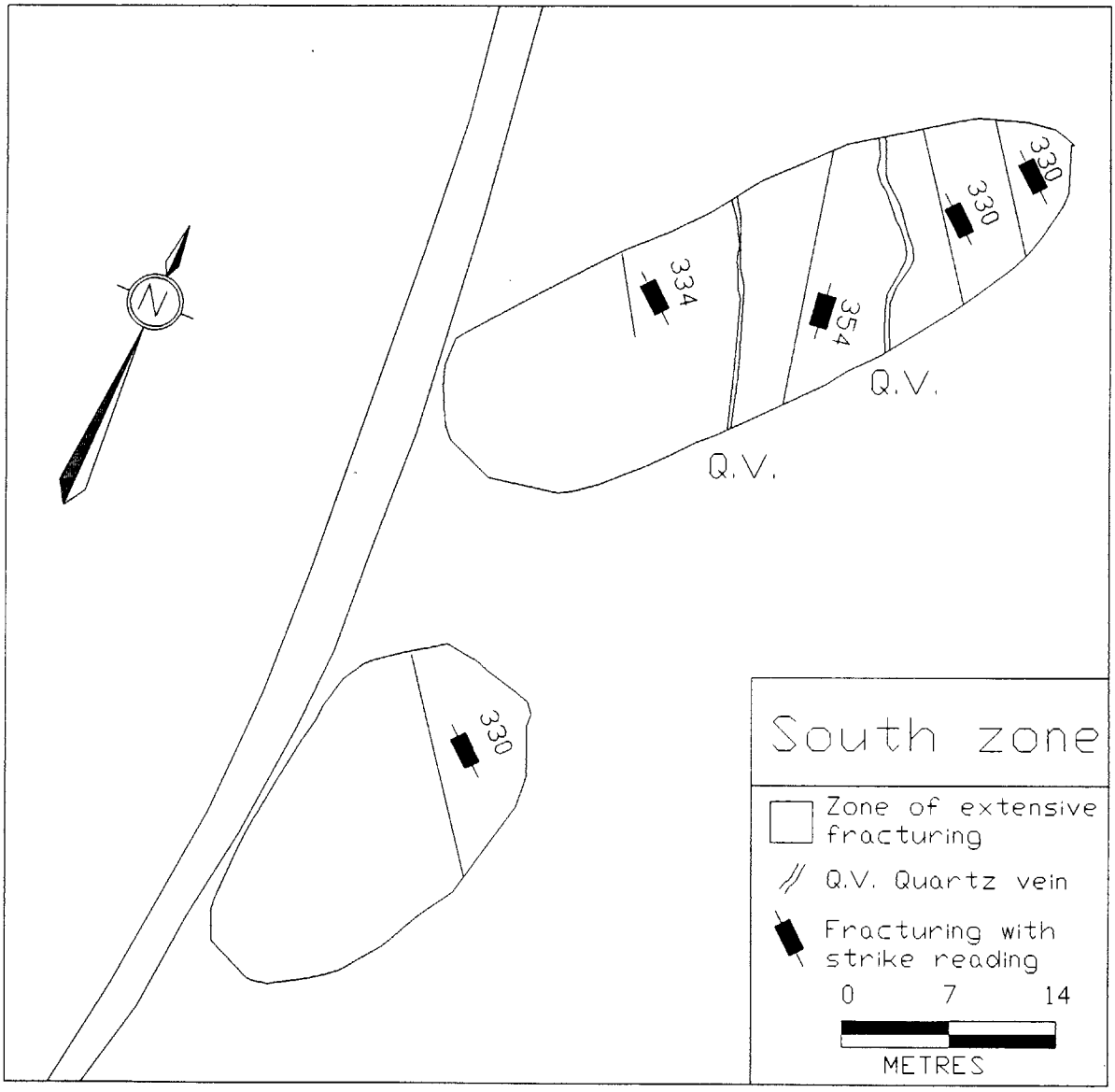

Figure 20a: Dotted Lake Occurrence, South Zone, structure

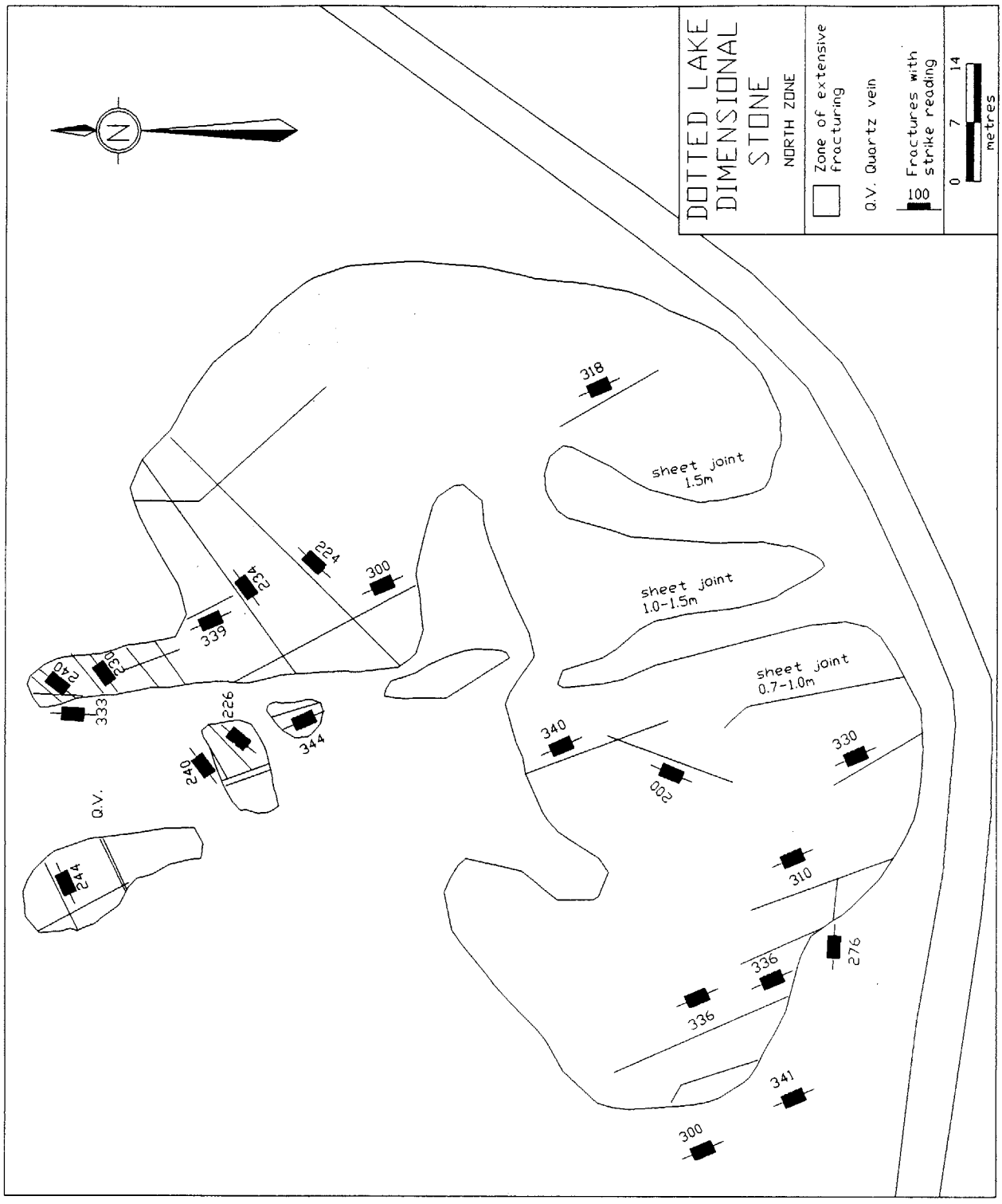

Figure 20b: Dotted Lake Occurrence, North Zone, structure

1) **PROPERTY NAME:** La Grange Island Quarry **DATE(S) VISITED:** May 1991

2) **ALTERNATE NAME(S):** The Stone Quarrying Company
Lake Superior Freestone Quarry

3) **COMMODITY:** **Main:** Red sandstone

4) **DEVELOPMENT HISTORY AND OWNERSHIP:**

PAST:	1882	After the inspection of the deposit by Messrs. Laird, Russell, and Wiley, the Stone Quarrying Company was formed and quarry operations began on La Grange Island. During this year the company may have changed its name and/or ownership, as the quarry stopped being referred to as The Stone Quarrying Company, and was called the Lake Superior Freestone Quarry owned by Laird, Marks and Co. During the year a dock and buildings were erected and a tramway road was cut from the quarry face to the shore (200 to 300 ft.). Ten men were employed to extract the stone which was shipped primarily to Chicago (The Daily Sentinel, April 4, 1882; May 15, 1882; June 17, 1882; October 23, 1882. The Weekly Herald, July 1, 1882; July 15, 1882; October 17, 1882).
	1883	The CPR Syndicate began using this stone for the building of their bridges. The stone was also shipped to Chicago for use in building construction and sold for $1.35 per cubic foot. Once the railway was completed to Nipigon, the owners of the quarry planned to ship the stone to Winnipeg (The Weekly Herald, February 14, 1883).
	1883 to present	As there were no further references to the quarry, it suggests that the site was abandoned before full production.
	1988	J. and M. Dampier located the quarry face and staked six claims to cover it and the surrounding area. No work was reported.

CURRENT: 1994 The quarry is currently unstaked.

5) LOCATION AND ACCESS:

N.T.S.	51 A/16NE		
Latitude:	48· 55' 20"	**Northing:**	5419219
Longitude:	88· 08' 30"	**Easting:**	0416362

GENERAL LOCATION:

The La Grange Island sandstone quarry is located on the southeast side of La Grange Island in Nipigon Bay, Lake Superior (Figure 21). The island is 13.5 km southeast of the town of Nipigon and is accessible by boat from the Nipigon marina launch site. The quarry is approximately 250 m northwest of a small bay on the east side of the island.

The quarry is a small opening (4 m x 10 m) in the face of a ridge that trends north to northwest in for approximately 600 m. At the opening there is an elevated rubble ridge 2 m high and 3 m wide extending 30 m out from the cliff face. This is presumably the base for a tramway that appears to have been abandoned before completion. At the end of the tramway is a small cart probably used in the construction of the base. Also at the quarry site is a small grout pile located on the south side of the tramway. Most of the waste blocks are large sheet-like pieces of stone up to 2 m x 2 m in size and less than 30 cm thick. Some smaller blocks, approximately 0.5 m per side and 0.4 m thick, are also located in the grout pile.

The quarry face is approximately 24 m wide and 7.5 m at its highest point (Figure 21).

ACCESS:

The island is reached by boat from Nipigon or Red Rock. The quarry is a short walk from the southeastern shore.

MAP REFERENCES:

Claim Map G-142, Vert Island, Thunder Bay Mining Division
Map P.357, Red Rock-Pine Portage Sheet (Pye 1966)
Map 2232, Nipigon-Schreiber Sheet (Carter, McIlwaine and Wisbey 1972)

REFERENCES:

Franklin et al. (1982)
Industrial Minerals Geologist's Files
Kennedy and Sherlock (1989)

6) GENERAL GEOLOGY AND STRUCTURE:

The island is underlain by Mesoproterozoic Sibley Group sandstones and siltstones. They have been intruded by Keweenawan Logan diabase sills.

The sandstone in the quarry is a red quartz arenite of the Pass Lake Formation (Kennedy and Sherlock 1989). The quarry face displays interbedded paraconglomerate, pebbly arenite and quartz arenite. Between 2 conglomeratic units, sedimentary structures such as horizontal lamination, planar bedding, cross-bedding, ripples and dish structures(?) were observed. Reduction spots (Scott 1987) were observed in the quartz arenite at its upper contact with the lower conglomerate. The La Grange quartz arenite is similar to that at the Vert Island quarry, 1.5 km to the east. The Vert Island quartz arenite assayed 80% SiO_2 (Kennedy and Sherlock 1989).

7) STONE DESCRIPTION:

MINERALOGY:

JOINTING:

The quartz arenite contains beds ranging in thickness from very thinly bedded (1 to 3 cm) to medium bedded (10 to 30 cm) (Figure 21). The sandstone splits into thin sheets, 2 to 30 cm thick, along bedding planes. The sheeting does not appear to be just a surface feature since the thin bedding observed in the quarry face continues with depth.

COLOUR:

The stone is a very consistent, brick red colour. There are a few bleached areas and reduction spots.

TEXTURE:

The stone is composed of silt- to sand-sized particles with some thin beds of conglomerate.

OTHER FEATURES:

The sandstone exhibits sedimentary structures such as cross-bedding.

8) PHYSICAL PROPERTIES:

Tests conducted on samples from Vert Island using the ASTM test method (C241-85), abrasion resistance of stone subjected to foot traffic, returned a value of 25. The ASTM standard specification for sandstone requires a minimum value of 8.

The abrasion resistance value is a function of a sample's specific gravity, the average weight of the sample and the loss of weight during the grinding test (Storer 1988).

9) CHEMICAL ANALYSIS:

A sample from Vert Island produced the following results:

Sample No.	SiO2	Al2O3	Fe2O3	MnO	MgO	CaO	Na2O	K2O	TiO2	P2O5
85MCK-0012	83.12	6.42	1.50	0.05	0.60	4.35	0.04	3.72	0.20	0.00

Analyses by Geoscience Laboratories, Ontario Geological Survey, Toronto

10) COMMENTS/RECOMMENDATIONS:

The fact that the beds are no thicker than 30 cm indicates that this site would not be suitable for the removal of large blocks as dimension stone. The very thinly bedded material would be suitable for use as a flagstone.

The test results and the ability to split the stone into thin sheets would indicate the La Grange sandstone would make an excellent flagstone.

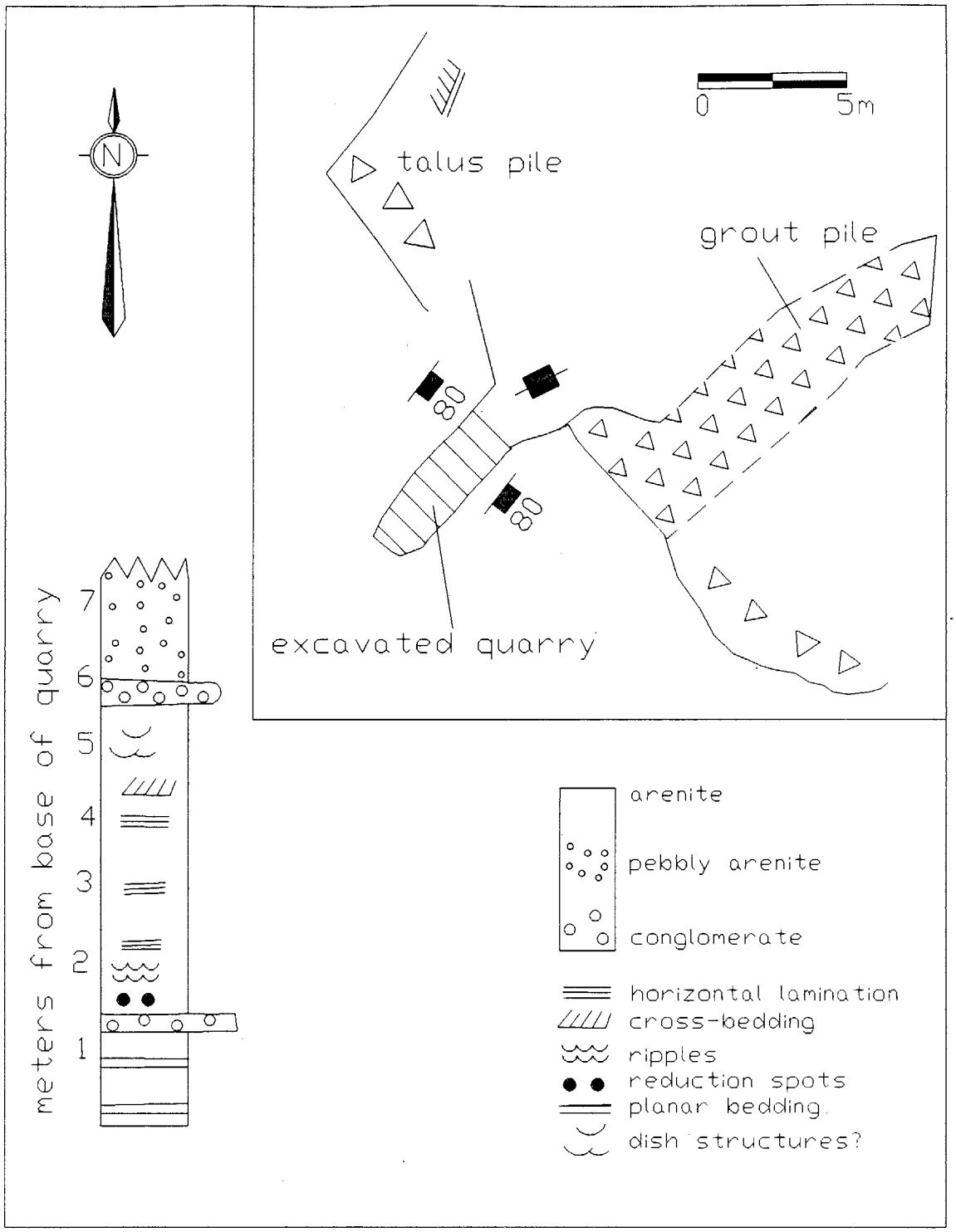

Figure 21: La Grange Island Quarry, plan view of the quarry and stratigraphic section

1) **PROPERTY NAME:** Lake Superior Stone Syndicate **DATE(S) VISITED:**

2) **ALTERNATE NAME(S):**

3) **COMMODITY:** **Main:** Black granite

4) **DEVELOPMENT HISTORY AND OWNERSHIP:**

PAST:	1960	The Syndicate was formed by C.S. Downey of North Bay with a group of men in Toronto. The claim block also included part of the claims of the Angler Occurrence. A marketing study was conducted and quarrying was scheduled to begin in the fall of 1960. However, failure to secure a market resulted in development of the property to cease (Puskas 1967; Billings 1974)
	1962	The claims were cancelled.
CURRENT:	1994	Portions of the ground staked by the syndicate are currently staked by various individuals.

5) **LOCATION AND ACCESS:**

N.T.S.	42 D/16SW and 42 D/9NW		
Latitude:	48° 45' 25"	**Northing:**	5400398
Longitude:	86° 23' 20"	**Easting:**	0544917

GENERAL LOCATION:

The claim group (47 claims) extended south from Hare Lake to within 0.8 km of the Marathon townsite (Pic Twp.) (Figure 22).

ACCESS:

The large area of this claim group has limited access by road, rail and powerline.

MAP REFERENCES:

Claim Maps G-2854, McCoy Township and G-630, Pic Township, Thunder Bay Mining Division
Map P.114, Port Coldwell Area (Puskas 1967)
Map P.3233, Port Coldwell Complex, East Half (Walker et al. 1993)

REFERENCES:

Billings (1974)
Currie (1980)
Industrial Minerals Geologist's Files, Thunder Bay
Puskas (1967)
Resident Geologist Files, Thunder Bay
Walker et al. (1991, 1992, 1993)

6) GENERAL GEOLOGY AND STRUCTURE:

The 47 claims covered the area west of the past producing quarries (near the railroad) to Highway 17 and included the Angler Property.

The claims are underlain by Fe-rich augite syenite (Walker et al. 1992) of the Proterozoic Coldwell alkalic complex. Geological mapping over the area was done by Puskas (1967) and recently by Walker et al. (1991, 1992, 1993).

Walker et al. (1992) described the iron-rich augite syenite as follows:

> The iron-rich augite syenite appears to be a low angle sheet-like intrusion, which dips approximately 15° toward the centre of the complex. It intrudes the basaltic xenoliths of the roof pendant and the Eastern and Western Gabbro, and it has inclusions of recrystallized amphibole quartz syenite. A variation in mineralogy from the bottom to the top through the sheet is present and consists of: fayalite-iron-rich, augite-magnetite syenite; iron-rich augite syenite; fayalite-iron-rich augite syenite; and amphibole syenite.

7) STONE DESCRIPTION:

MINERALOGY:

Walker et al. (1992) described the mineralogy of the iron-rich augite syenite:

> Iron-rich augite syenite, which forms the majority of the intrusion, typically contains iridescent tabular to lath-shaped feldspars with cryptoperthitic intergrowths and up to 30% interstitial, iron-rich augite. Variable amounts of fayalite, amphibole, aenigmatite and rare quartz occur in the subunit. The rock is generally black to olive-brown, coarse grained and massive.

JOINTING:

COLOUR:

The stone is generally a dark colour, being similar to the other black granites in the area.

TEXTURE:

The stone is medium to coarse grained.

OTHER FEATURES:

8) **PHYSICAL PROPERTIES:**

9) **CHEMICAL ANALYSIS:**

10) **COMMENTS/RECOMMENDATIONS:**

The property covers a large area underlain by feldspar porphyritic amphibole syenite and iron-rich augite syenite. There are no clearly identified occurrences on the property. Therefore, it is recommended that the property be prospected for any exposures of massive stone with consistent texture and colour. If any sites are located they should be stripped, drilled to determine the consistency of colour with depth and then test blocks removed. The attractive brown, black and green colours observed at other sites could be found within the property boundary.

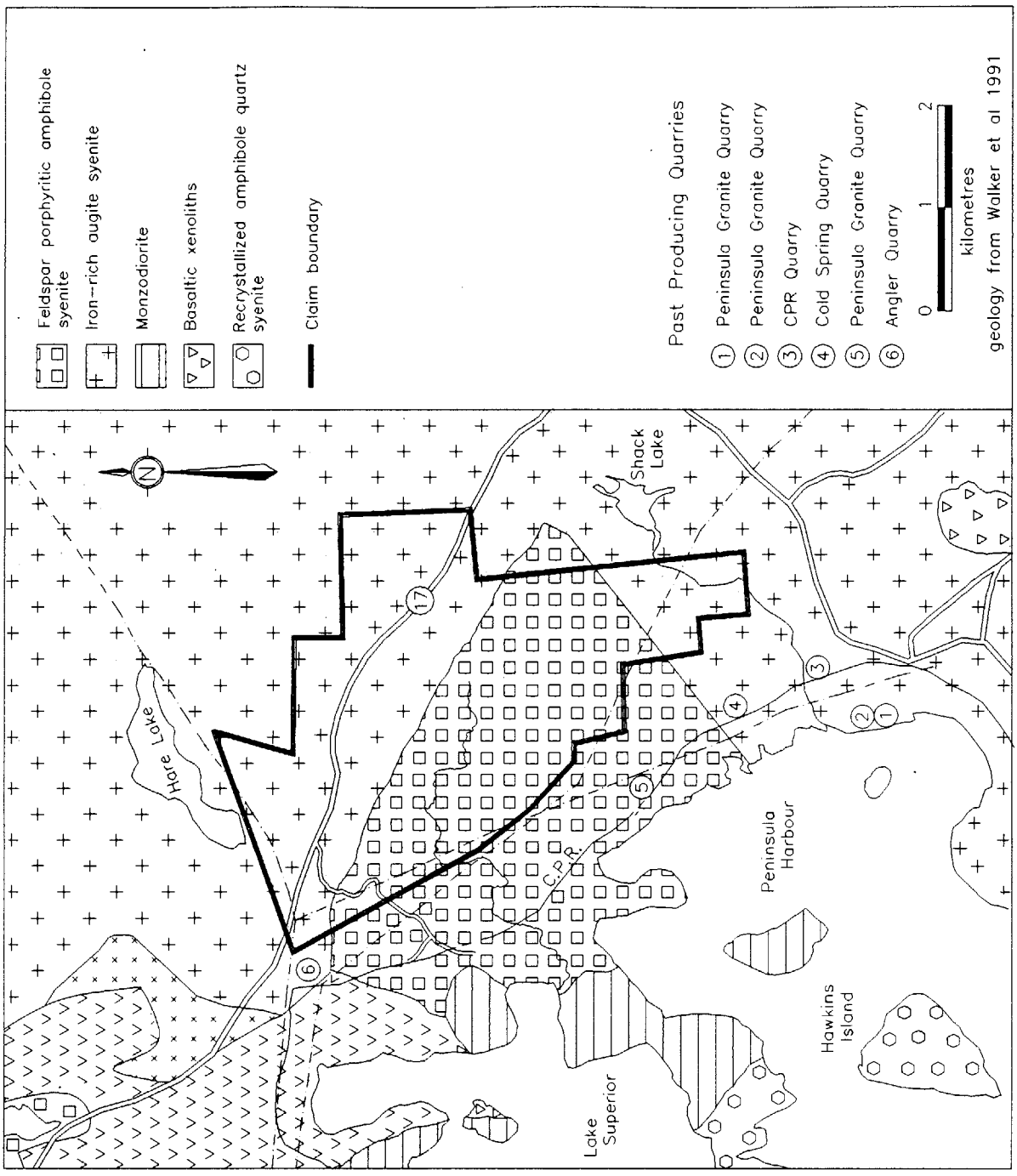

Figure 22: Lake Superior Stone Syndicate, location and geology

1) **PROPERTY NAME:** Marathon Black Granite **DATE(S) VISITED:** July 1993

2) **ALTERNATE NAME(S):** Petrunka, D.
Cold Spring Granite Canada Ltd.

3) **COMMODITY:** **Main:** Black granite

4) **DEVELOPMENT HISTORY AND OWNERSHIP:**

PAST:

CURRENT: 1994 D. Petrunka still holds the property and is looking to option the property or a joint-venture partner.

5) **LOCATION AND ACCESS:**

N.T.S.	42 D/16SW		
Latitude:	48· 46' 30"	**Northing:**	5402395
Longitude:	86· 24' 30"	**Easting:**	0543472

GENERAL LOCATION:

The property is located 500 m south of Highway 17 in central McCoy Township approximately 7.0 km north-northwest of Marathon (Figure 23).

ACCESS:

The property can be accessed by a gravel road departing south from Highway 17 at a point approximately 5.2 km west from the turn-off to Marathon.

MAP REFERENCES:

Claim Map G-2854, McCoy Township, Thunder Bay Mining Division
Map P.114, Port Coldwell Area (Puskas 1967)
Map P.3233, Port Coldwell Complex, East Half (Walker et al. 1993)

REFERENCES:

Assessment Files, Thunder Bay
Billings (1974)
Currie (1980)
Hewitt (1964)
Industrial Minerals Geologist Files
Puskas (1967)
Resident Geologist's Files, Schreiber-Hemlo District
Walker et al. (1991, 1992, 1993)

6) GENERAL GEOLOGY AND STRUCTURE:

The claims are underlain by Fe-rich augite syenite (Walker et al. 1992) of the Proterozoic Coldwell alkalic complex. Geological mapping over the area was done by Puskas (1967) and recently by Walker et al. (1991, 1992, 1993).

Walker et al. (1992) described the iron-rich augite syenite as follows:

> The iron-rich augite syenite appears to be a low angle sheet-like intrusion, which dips approximately 15· toward the centre of the complex. It intrudes the basaltic xenoliths of the roof pendant and the Eastern and Western Gabbro, and it has inclusions of recrystallized amphibole quartz syenite. A variation in mineralogy from the bottom to the top through the sheet is present and consists of: fayalite-iron-rich, augite-magnetite syenite; iron-rich augite syenite; fayalite-iron-rich augite syenite; and amphibole syenite.

7) STONE DESCRIPTION:

MINERALOGY:

Walker et al. (1992) described the mineralogy of the iron-rich augite syenite:

> Iron-rich augite syenite, which forms the majority of the intrusion, typically contains iridescent tabular to lath-shaped feldspars with cryptoperthitic intergrowths and up to 30% interstitial, iron-rich augite. Variable amounts of fayalite, amphibole, aenigmatite and rare quartz occur in the subunit. The rock is generally black to olive-brown, coarse grained and massive.

JOINTING:

COLOUR:

The stone is black to olive-brown with some greenish sections in fresh cut surfaces (see Photo 13, Appendix A).

TEXTURE:

The stone is generally coarse grained.

OTHER FEATURES:

8) **PHYSICAL PROPERTIES:**

Bulk Specific Gravity:	2.738
% Absorption 2 hrs.:	
48 hrs.:	0.560
Compressive Strength:	20,130 (psi) dry
	18,420 (psi) wet
Modulus of Rupture:	1,420 (psi) dry
	1,530 (psi) wet

Tests done by Twin City Testing Corp., St. Paul, Minnesota (Assessment Files, Thunder Bay)

9) **CHEMICAL ANALYSIS:**

10) **COMMENTS/RECOMMENDATIONS:**

This property is one of the most favourable properties in the Marathon area. Although the site is not amenable to quarrying, it is very close. The area surrounding the property and to the northeast near Hare Lake should be prospected.

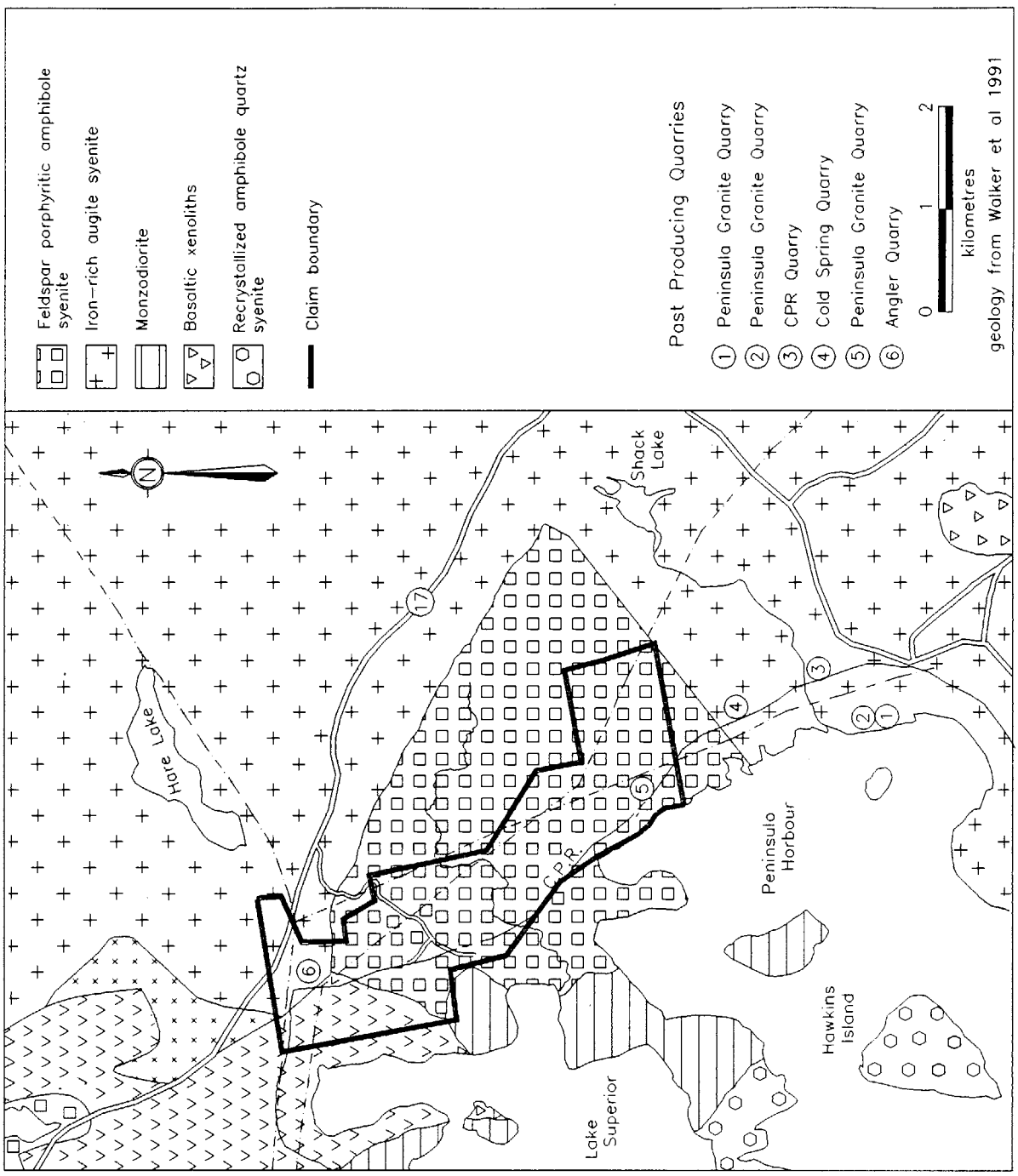

Figure 23: Marathon Black Granite, location and geology

1) **PROPERTY NAME**: Marathon Red Granite **DATE(S) VISITED**: October 1992

2) **ALTERNATE NAME(S)**: Port Coldwell syenite

3) **COMMODITY**: **Main**: Red granite

4) **DEVELOPMENT HISTORY AND OWNERSHIP**:

PAST:	1880s	An attempt to quarry the red syenite for building construction was made near Port Coldwell.
	1960	Red syenite staked by Paavo Pelto of Schreiber and Joseph Clement of Hillsport. All of these claims were cancelled by 1962.
	1965	Area staked by Samuel Hannah, Fort William. Claims cancelled by 1966.
	1985	Highway exposures staked by Dave Petrunka, Thunder Bay.
	1988	Dave Petrunka staked additional claims, property optioned to Cold Spring Granite (Canada) Ltd.
	1990	Cold Spring Granite (Canada) Ltd. dropped option on the property.
CURRENT:	1992	Dave Petrunka holds the ground and is looking for joint venture/option partners.

5) **LOCATION AND ACCESS**:

N.T.S.	42 D/16SW		
Latitude:	48· 46' 20"	**Northing:**	5402009
Longitude:	86· 33' 45"	**Easting:**	0532147

GENERAL LOCATION:

The property is 30 km west of Marathon on Highway 17. Approximately 2.5 km northwest of Port Coldwell and northeast of the highway (Figure 24).

ACCESS:

The property is traversed by Highway 17, a cliff face lies 10 m northeast of the highway.

MAP REFERENCES:

Claim map G-781, Coldwell Township, Thunder Bay Mining Division
Map P.114, Port Coldwell Area (Puskas 1967)
Map P.3233, Port Coldwell Complex, East Half (Walker et al. 1993)

REFERENCES:

Currie (1980)
Industrial Minerals Geologist's Files, Thunder Bay
Kerr (1910)
Puskas (1967)
Resident Geologist's Files, Schreiber-Hemlo District, Thunder Bay Walker et al. (1991, 1992, 1993)

6) GENERAL GEOLOGY AND STRUCTURE:

The claims are underlain by amphibole-natrolite-nepheline syenite (Walker et al. 1992) of the Proterozoic Coldwell alkalic complex. Geological mapping over the area was done by Puskas (1967) and recently by Walker et al. (1991, 1992, 1993).

7) STONE DESCRIPTION:

MINERALOGY:

In thin section, the stone is composed of primarily anhedral, "turbid" crystals of perthitic feldspar. The turbid areas are caused by the presence of numerous vacuoles. The reddish colour of the stone may be due to iron-staining of the vacuoles and fractures within the feldspar crystals. Anhedral pyroxene (augite), biotite, amphibole (hornblende), and opaque minerals occur together.

JOINTING:

COLOUR:

The stone is red-brown on fresh surface and orange-red on the weathered surface (see Photo 14, Appendix A).

TEXTURE: The stone is medium to coarse grained with some randomly distributed mafic knots.

OTHER FEATURES:

Diamond drilling conducted by Cold Spring Granite Canada Ltd. noted a change in colour at a depth of approximately 9.1 m.

8) **PHYSICAL PROPERTIES:**

Bulk Specific Gravity	2.75
% Absorption 2 hrs	0.22
48 hrs	0.32
Compressive Strength	22,049 psi
Modulus of Rupture	1,394 psi

Tests performed by Geoscience Laboratories, Ontario Geological Survey, Toronto.

9) **CHEMICAL ANALYSIS:**

10) **COMMENTS/RECOMMENDATIONS:**

The primary concern with this property is the change in colour at depth. It appears that the bright red colour is a surface weathering feature. The stone, however, would make a very attractive crushed stone for landscaping or precast concrete.

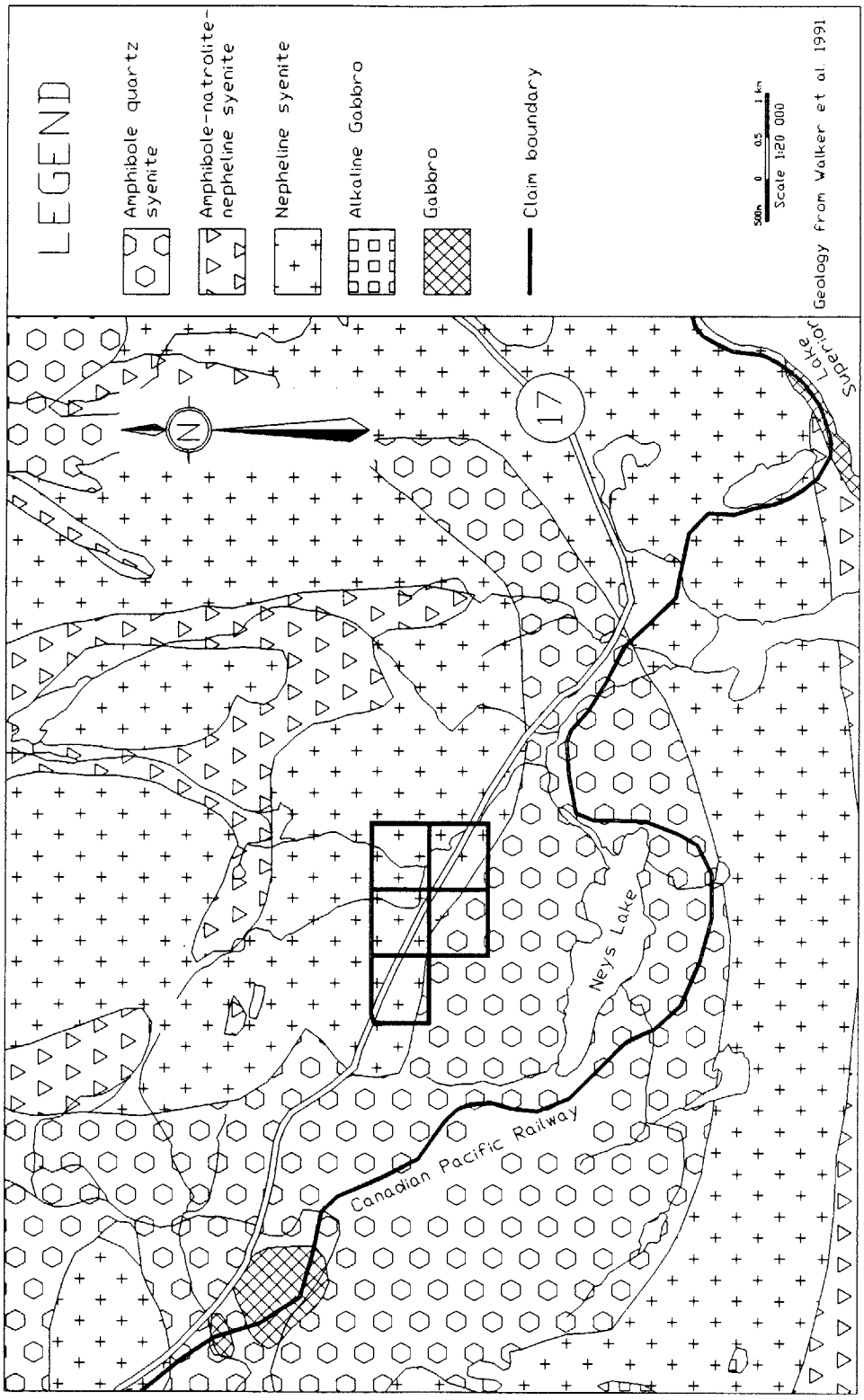

Figure 24: Marathon Red Granite, location and geology

1) **PROPERTY NAME**: Middleton Property **DATE(S) VISITED:**

2) **ALTERNATE NAME(S):**

3) **COMMODITY:** **Main:** Black granite

4) **DEVELOPMENT HISTORY AND OWNERSHIP:**

PAST:	1931	Mr. Wm. Morrison had seven claims staked for him by E.P.A. Phillips east on Middleton to encompass a black granite similar to the laurvikite at Peninsula (Northern Miner, Nov. 5, 1931; Thomson 1933). These claims were cancelled in 1933.
	1946	Morrison restaked the ground, but they were again cancelled in 1949. All other staking and prospecting activity in the area involved the iron and titanium occurrences to the north of the tracks.
CURRENT:	1994	Peter Moses has the majority of the area staked.

5) **LOCATION AND ACCESS:**

N.T.S.	42 D/15SE		
Latitude:	48· 47' 22"	**Northing:**	5403891
Longitude:	86· 38' 54"	**Easting:**	0525831

GENERAL LOCATION:

The property is located in the southeast corner of Walsh Township approximately 22 km west of Marathon (Figure 25).

ACCESS:

The area near the C.P.R. can be reached in various ways. There is a trail to Middleton off Hwy. 17 near the Renshaw-Tripp Fe-Ti occurrence (approximately 1.5 km west of the Little Pic River). At Middleton, the tracks can be followed east for approximately 1 km. The area can also be reached by following the railroad tracks for approximately 1.5 km, starting in Neys Provincial Park. The "Lookout Trail" passes to within 100 m of the tracks. This method of access involves crossing the Little Pic River railroad bridge (approximately 70 m long). At Neys Park there is a boat launch on the Little Pic River. This would allow looking at outcrop along the shore of Lake Superior. One would have to go inland approximately 275 m to reach the tracks at the occurrence.

MAP REFERENCES:

Claim Map G-636, Walsh Twp., Thunder Bay Mining Division
Map P.3232, Port Coldwell Complex, West Half (Walker et al. 1993)

REFERENCES:

Industrial Minerals Geologist's Files, Thunder Bay
Resident Geologist's Files, Schreiber-Hemlo District, Thunder Bay
Thomson (1933)
Walker (1967)
Walker et al. (1991, 1992, 1993)

6) GENERAL GEOLOGY AND STRUCTURE:

The claims are underlain by Fe-rich augite syenite (Walker et al. 1992) of the Proterozoic Coldwell alkalic complex. Geological mapping over the area was done by Puskas (1967) and recently by Walker et al. (1991, 1992, 1993).

Walker et al. (1992) described the iron-rich augite syenite as follows:

> The iron-rich augite syenite appears to be a low angle sheet-like intrusion, which dips approximately 15· toward the centre of the complex. It intrudes the basaltic xenoliths of the roof pendant and the Eastern and Western Gabbro, and it has inclusions of recrystallized amphibole quartz syenite. A variation in mineralogy from the bottom to the top through the sheet is present and consists of: fayalite-iron-rich, augite-magnetite syenite; iron-rich augite syenite; fayalite-iron-rich augite syenite; and amphibole syenite.

7) STONE DESCRIPTION:

MINERALOGY:

Walker et al. (1992) described the mineralogy of the iron-rich augite syenite:

> Iron-rich augite syenite, which forms the majority of the intrusion, typically contains iridescent tabular to lath-shaped feldspars with cryptoperthitic intergrowths and up to 30% interstitial, iron-rich augite. Variable amounts of fayalite, amphibole, aenigmatite and rare quartz occur in the subunit. The rock is generally black to olive-brown, coarse grained and massive.

Large crystals of soda-orthoclase, often showing Carlsbad twinning, predominate with minor amounts of augite, olivine, magnetite, and apatite. The dark colour is due to iron-oxide staining the feldspar (Thomson 1933). Walker (1967) described the augite syenite as being composed of equal amounts of titanaugite and perthitic potash feldspar. Perthite shows remnants of finely twinned oligoclase within clear orthoclase. Hornblende and biotite replace part of the augite. Dark red-brown sphene is a common accessory mineral. The nepheline syenite pegmatite is composed of 80% perthitic alkalic feldspar, 10% hornblende and biotite in equal amounts,and 10% hydronepheline ("ranite"). The latter is likely an alteration product of natrolite.

JOINTING:

The jointing is irregular, but there are areas where large blocks could be obtained.

COLOUR:

The stone is a dark green to black and has long, lath-shaped crystals of feldspar which show a light blue iridescence.

TEXTURE:

The stone is medium to coarse grained.

OTHER FEATURES:

8) **PHYSICAL PROPERTIES:**

9) **CHEMICAL ANALYSIS:**

10) **COMMENTS/RECOMMENDATIONS:**

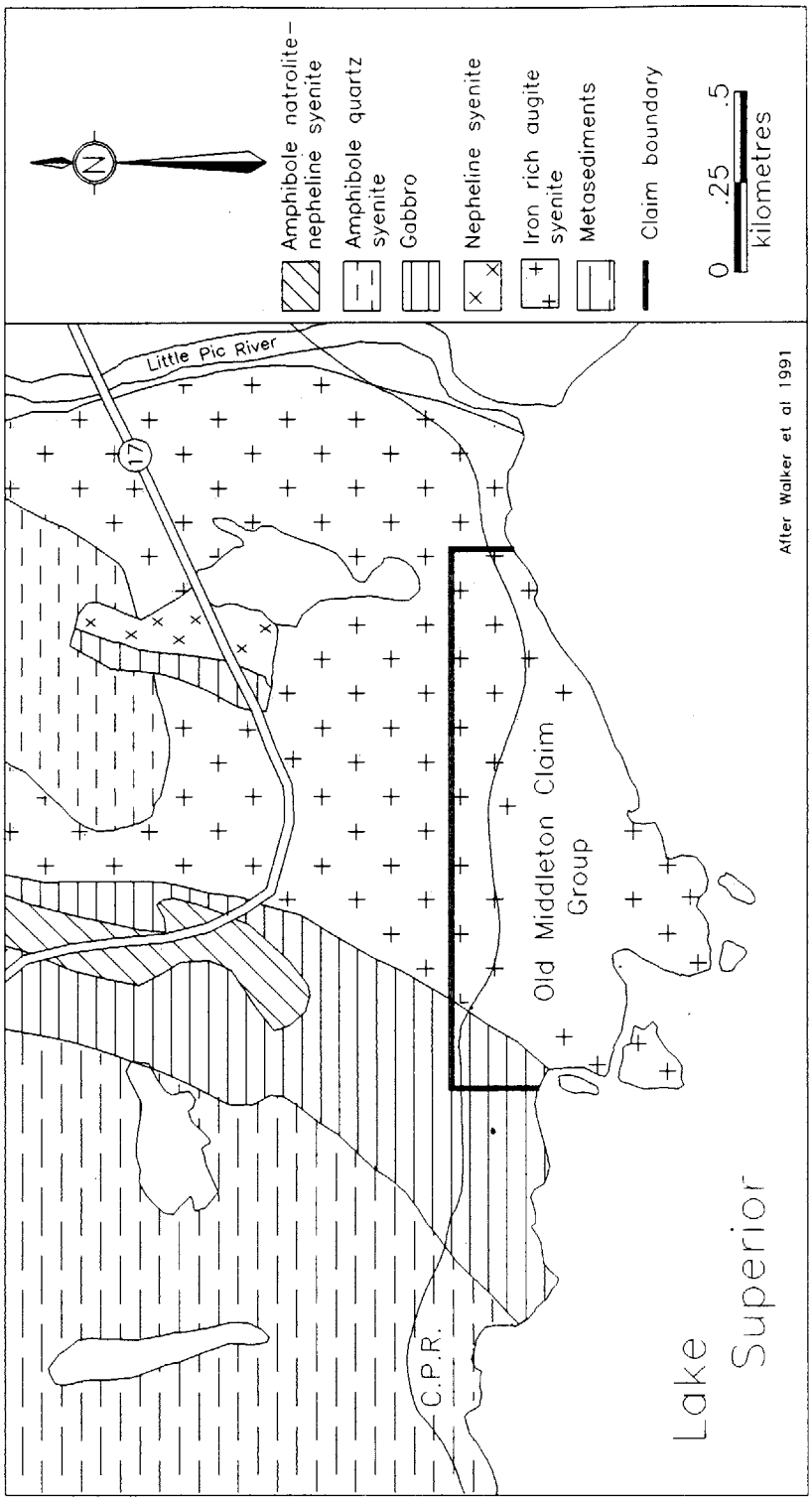

Figure 25: Middleton Property, location and geology

1) **PROPERTY NAME**: Morrison Claims **DATE(S) VISITED**:

2) **ALTERNATE NAME(S)**:

3) **COMMODITY**: **Main**: Black granite

4) **DEVELOPMENT HISTORY AND OWNERSHIP**:

PAST:	1931 to 1934	Mr. Wm. Morrison staked three claims in August of 1931. They were later cancelled in December 1934.
	1986	The area was untouched until Mr. P. Culhane staked claims that covered the bulk of the same ground.
CURRENT:	1994	The claims are patented and held by James River-Marathon Ltd.

5) **LOCATION AND ACCESS**:

N.T.S.	42 D/16SW		
Latitude:	48· 43' 00"	**Northing:**	5395925
Longitude:	86· 23' 00"	**Easting:**	0545361

GENERAL LOCATION:

The claim group was located in the northwest corner of Pic Township, Lots 20 and 21, Conc. X and XI (Figure 26).

ACCESS:

There are various trails just west of the golf course on Hwy. 626 that provide access to the area.

MAP REFERENCES:

Claim Map G-630, Pic Township, Thunder Bay Mining Division
Map P.114, Port Coldwell Area (Puskas 1967)
Map P.3233, Port Coldwell Complex, East Half (Walker et al. 1993)

REFERENCES:

Currie (1980)
Industrial Minerals Geologist's Files, Thunder Bay
Puskas (1967)
Resident Geologist's Files, Schreiber-Hemlo District, Thunder Bay
Thomson (1933)
Walker et al. (1991, 1992, 1993)

6) GENERAL GEOLOGY AND STRUCTURE:

The claims are underlain by Fe-rich augite syenite (Walker et al. 1992) of the Proterozoic Coldwell alkalic complex. Geological mapping over the area was done by Puskas (1967) and recently by Walker et al. (1991, 1992, 1993).

Walker et al. (1992) described the iron-rich augite syenite as follows:

> The iron-rich augite syenite appears to be a low angle sheet-like intrusion, which dips approximately 15· toward the centre of the complex. It intrudes the basaltic xenoliths of the roof pendant and the Eastern and Western Gabbro, and it has inclusions of recrystallized amphibole quartz syenite. A variation in mineralogy from the bottom to the top through the sheet is present and consists of: fayalite-iron-rich, augite-magnetite syenite; iron-rich augite syenite; fayalite-iron-rich augite syenite; and amphibole syenite.

7) STONE DESCRIPTION:

MINERALOGY:

Walker et al. (1992) described the mineralogy of the iron-rich augite syenite:

> Iron-rich augite syenite, which forms the majority of the intrusion, typically contains iridescent tabular to lath-shaped feldspars with cryptoperthitic intergrowths and up to 30% interstitial, iron-rich augite. Variable amounts of fayalite, amphibole, aenigmatite and rare quartz occur in the subunit. The rock is generally black to olive-brown, coarse grained and massive.

JOINTING:

There is a well-developed system of widely spaced joints which would allow for the extraction of large blocks.

COLOUR:

The stone is a dark brown-black on fresh cut surfaces.

TEXTURE:

The stone is coarse grained.

OTHER FEATURES:

8) PHYSICAL PROPERTIES:

9) CHEMICAL ANALYSIS:

10) COMMENTS/RECOMMENDATIONS:

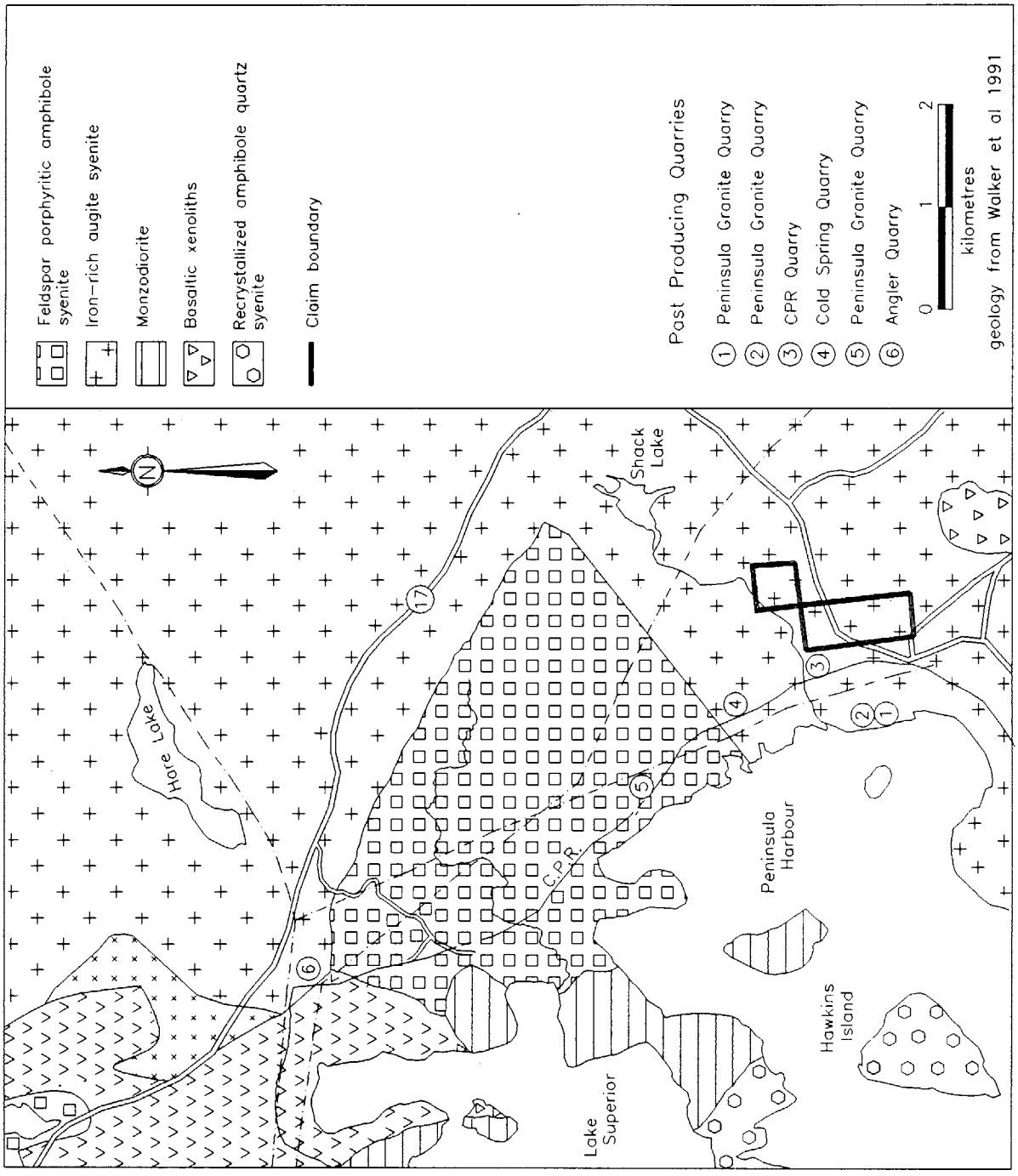

Figure 26: Morrison Claims, location and geology

1) **PROPERTY NAME**: Nipigon River Marble

DATE(S) VISITED: October 1993

2) **ALTERNATE NAME(S)**:

3) **COMMODITY**: **Main**: Marble

4) **DEVELOPMENT HISTORY AND OWNERSHIP**:

PAST:	1883	C.P.R. hired 150 men to extract marble along the west side of the river. (Thunder Bay Sentinel, June 9, 1884).
	1884	Workers, under the direction of Mr. Reid, were removing blocks for the Nipigon C.P.R. bridge 2 miles north of the quarry (Thunder Bay Sentinel, June 9, 1884).
	1885	Messrs. Guerard and Duclos of Port Arthur Marble Works removed blocks of the Nipigon Marble to manufacture monuments. It was hoped that this marble would replace the material brought in from Vermont (The Daily Sentinel, Oct. 19, 1885).
	1886	The quarry attracted attention not only as a building stone source, but also as a quick-setting hydraulic cement. A sample of the stone was also made part of the mineral exhibit sent to Toronto Exhibition (The Weekly Herald, Feb. 6, 1886; The Daily Sentinel, Mar. 9, 1886).
	1910	The stone was used for facing and steps in the Masonic Hall erected in Port Arthur (Daily Times-Journal, Apr. 15, 1910; Aug. 23, 1924).
CURRENT:	1994	Surface rights owned by the Thunder Bay Naturalist Club (Susan Bryan - contact); the mineral rights are currently open (searched February 1994).

5) LOCATION AND ACCESS:

N.T.S.	52 A/16NE		
Latitude:	48· 58' 30"	**Northing:**	5425210
Longitude:	88· 15' 00"	**Easting:**	0408524

GENERAL LOCATION:

The quarry face is located on the eastern shore of the Nipigon River in the northern part of Lot 8, Conc. I, Nipigon Twp., Thunder Bay Mining Division (Figure 27).

ACCESS:

The quarry can be accessed by boat from a launch at the Nipigon Marina across the river.

MAP REFERENCES:

Claim Map G-176, Nipigon Township, Thunder Bay Mining Division
Map P.357, Red Rock-Pine Portage Sheet (Pye 1966)
Map 2232, Nipigon-Schreiber Sheet (Carter et al. 1972)

REFERENCES:

Hewitt (1964)
Goudge (1938)
Industrial Minerals Geologist's Files, Thunder Bay
Resident Geologist's Files, Schreiber-Hemlo District, Thunder Bay
Tanton (1931)
Vos et al. (1987)

6) GENERAL GEOLOGY AND STRUCTURE:

The quarry is located within calcareous metasediments of the Mesoproterozoic Sibley Group. The area surrounding the quarry face is comprised of Keweenawan diabase sills that have intruded the metasediments. The quarry site is hard to define, but appears to be an area 30 m deep and 20 m wide where stone has been extracted. The quarry face is 14 m high and trends 170 to 190·. There is very little evidence of quarrying activity at the site, but there is a drill hole on the quarry face. Near the surface weathering results in parting along the layers, however the stone tends to be more solid in the lower section of the quarry face. The immediate area is overlain by diabase. The potential for large blocks is very good; for example, there is a block at the quarry that is 1.3 m by 1.75 m by 0.9 m.

7) STONE DESCRIPTION:

MINERALOGY:

In thin section the marble displays a fine-grained, saccharoidal texture. Minerals present include calcite, dolomite, epidote and opaque minerals, probably chalcocite. Some veinlets (< 2.0 mm) of calcite are seen. The saccharoidal texture indicates the rock has undergone extensive recrystallization.

JOINTING:

Horizontal partings are 1 to 4 m apart with a separation of 2 m being common. Major vertical fractures are 2 m apart with minor fractures occurring in between. These minor fractures may only be surface features.

COLOUR:

The stone is a layered marble composed of altered green limestone with purplish mudstone. The green and purple layers are generally 10 to 15 cm thick, but do occur as thick as 20 cm and as thin as 2 cm.

TEXTURE:

The stone is very fine grained and displays compositional layering.

OTHER FEATURES:

8) PHYSICAL PROPERTIES:

9) CHEMICAL ANALYSIS:

Sample No.	SiO2	TiO2	Al2O3	Fe2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5
89MCK-0009	35.21	0.20	8.20	2.04	1.53	0.05	23.56	26.74	0.00	2.38	0.09
89MCK-0010	29.19	0.10	5.20	2.04	0.00	0.03	27.63	35.32	0.00	0.41	0.07

Analyses conducted by Geoscience Laboratories, Ontario Geological Survey, Toronto

10) COMMENTS/RECOMMENDATIONS:

The past producing Nipigon River Marble quarry being located on the river, will probably never again see production. A short distance south from the quarry are a series of native pictographs. The surface rights to the quarry have been obtained by the Thunder Bay Naturalists Club to protect the pictographs and nesting peregrine falcons.

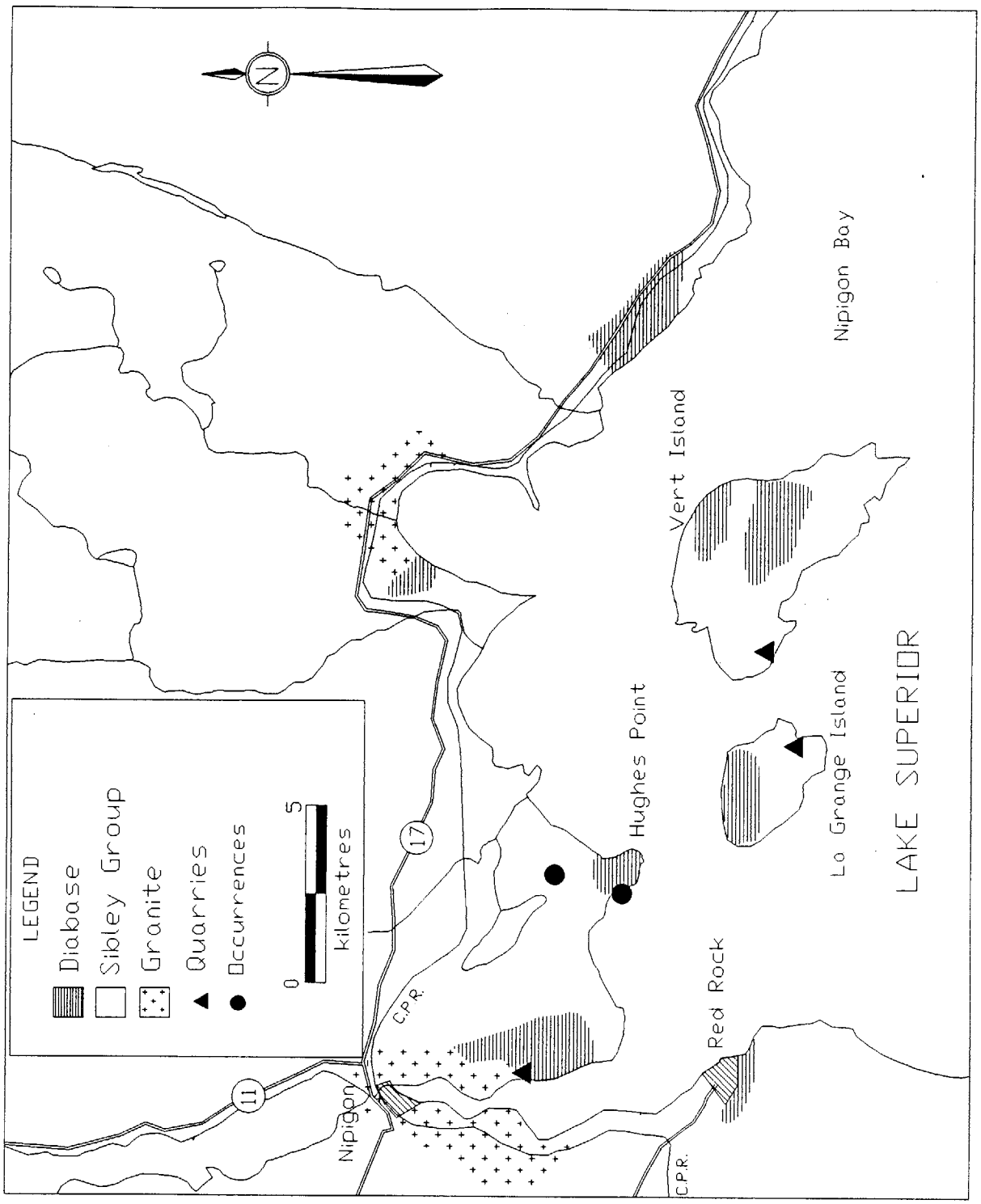

Figure 27: Marble and sandstone past-producing quarries and occurrences in the Nipigon Area, location and general geology

1) **PROPERTY NAME:** Peninsula Granite Quarries Limited **DATE(S) VISITED:** June 1992

2) **ALTERNATE NAME(S):** Marathon Brown Granite

3) **COMMODITY:** **Main:** Black and brown granite

4) **DEVELOPMENT HISTORY AND OWNERSHIP:**

PAST:	1880s	A number of small quarries were operated to supply stone for the construction of railway trestles for the Canadian Pacific Railway.
	1927	Commercial operations were initiated by Peninsula Granite Quarries Ltd. on 17 claims (TB 7202-04, 7225-27, 9270-72, 9281, 9283, 9296-98 and 9546-48) located on the east shore of Carden Cove. The company opened four small quarries, two on TB 7204, one on 7202 and another on TB 9270. The company produced brown granite from claim TB 9270 and black granite from the other three quarries.
	1931	At the end of 1931 the company sold its interest in all the quarries to the Cold Spring Granite Company of Cold Spring, Minnesota.
	1932	All operations ceased due to lack of markets.
	1960	The northern claims were staked by Lake Superior Stone Syndicate. No work was recorded.
	1984	The northern claims were staked by Noranda Inc. (Geco Division). Geological mapping and mechanical stripping were conducted.
	1986	Claims restaked by D. Petrunka of Thunder Bay.
	1988	Claims optioned to Cold Spring Granite Company of Cold Spring, Minnesota. Diamond drilling, ground probing radar survey and sampling were conducted.

	1990	Cold Spring Granite Company dropped their option on the claims.
CURRENT:	1994	Patented claims TB 7202-04 and TB 7226 are currently held by James River of Marathon Ltd. D. Petrunka of Thunder Bay currently holds claims TB 9270-72, TB 9281, TB 9283 and TB 9296-98. Claims TB 9546-48 have reverted to the crown and the surface rights are withdrawn from staking.

5) LOCATION AND ACCESS:

N.T.S.	42 D/9NW		
Latitude:	48· 44' 56"	**Northing:**	5399497
Longitude:	86· 23' 57"	**Easting:**	0544168

GENERAL LOCATION:

The quarries are located at various points along Carden Cove, north of the town of Marathon for approximately 5 km (Figure 19).

ACCESS:

A C.P.R. access road follows the tracks, north out of Marathon. Park at the end of this road and walk north along the tracks. The Cold Spring Quarry is at approximately 1 km on the east side of the tracks while the Peninsula Quarry is approximately 4 km north. The two smaller quarries are located on the waterfront on the northern extension of the James River property.

MAP REFERENCES:

Claim Map G-630, Pic Township, Thunder Bay Mining Division
Map P.114, Port Coldwell Area (Puskas 1967)
Map P.3233, Port Coldwell Complex, East Half (Walker et al. 1993)

REFERENCES:

Billings (1974)
Currie (1980)
Hewitt (1964)
Industrial Minerals Geologist Files
Puskas (1967)
Thomson (1933)
Walker et al. (1991, 1992, 1993)

6) GENERAL GEOLOGY:

The quarries are underlain by Fe-rich augite syenite and amphibole syenite (Walker et al. 1992) of the Proterozoic Coldwell alkalic complex. Geological mapping over the area was done by Puskas (1967) and recently by Walker et al. (1991, 1992, 1993).

Walker et al. (1992) described the iron-rich augite and amphibole syenites as follows:

> The iron-rich augite syenite appears to be a low angle sheet-like intrusion, which dips approximately 15· toward the centre of the complex. It intrudes the basaltic xenoliths of the roof pendant and the Eastern and Western Gabbro, and it has inclusions of recrystallized amphibole quartz syenite. A variation in mineralogy from the bottom to the top through the sheet is present and consists of: fayalite-iron-rich, augite-magnetite syenite; iron-rich augite syenite; fayalite-iron-rich augite syenite; and amphibole syenite.
>
> The feldspar porphyritic amphibole syenite occurs west of the iron-rich augite syenite and east of the recrystallized amphibole quartz syenite. It hosts large blocks of basaltic xenoliths, up to 1 km in size, and is closely related to rare metal-bearing pegmatites. In most places, the feldspar porphyritic amphibole syenite occurs as an irregular-shaped intrusion below the basaltic xenoliths and is above the iron-rich augite syenite. The feldspar porphyritic amphibole syenite has extensively assimilated the inclusions of basaltic xenoliths and monzodiorite. Pegmatites, which appear to have originated from the feldspar porphyritic amphibole syenite, occurs along fractures within the basaltic xenoliths and at the contact between the feldspar porphyritic amphibole syenite and iron-rich augite syenite.

7) STONE DESCRIPTION:

MINERALOGY:

Walker et al. (1992) described the mineralogy of the iron-rich augite and amphibole syenite:

Iron-rich augite syenite, which forms the majority of the intrusion, typically contains iridescent tabular to lath-shaped feldspars with cryptoperthitic intergrowths and up to 30% interstitial, iron-rich augite. Variable amounts of fayalite, amphibole, aenigmatite and rare quartz occur in the subunit. The rock is generally black to olive-brown, coarse grained and massive.

The feldspar porphyritic amphibole syenite characteristically contains 2 textural variants: 1) a feldspar porphyritic amphibole syenite with an aphanitic to medium-grained groundmass and interstitial amphibole; and 2) a later intrusion of medium-grained amphibole syenite with columnar feldspar and interstitial amphibole.

JOINTING:

Thomson (1931) described the jointing at the black granite quarry located on the shore of Carden Cove and the red granite quarry located on claim TB 9270:

The black granite quarry is located 30 feet from the shore of Peninsula harbour and about 1,800 feet west of Peninsula station. The working face runs at right angles to the shore line; it is 70 feet in length and has at present a maximum height of 14 feet. Blocks 10 feet in length and weighing up to 3 tons are quarried. These are hauled by team to the railway.

Two sets of joints are seen in the quarry. The most prominent strikes almost due north and varies in dip from vertical to 70·W. The cross-jointing strikes east-west and is nearly vertical. At the quarry the north-south joints are 70 feet apart and run parallel for at least 500 feet. Rectangular blocks of a size limited only by plant capacity can be quarried. The sheets lie horizontally and exhibit an even and well-defined floor. The first sheet quarried had a maximum thickness of 14 feet. Drilling in the next sheet below to a depth of 10 feet did not reach another sheeting plane. The rift is roughly parallel to the sheeting planes.

> A red granite quarry is to be opened near the southeast corner of claim T.B. 9,270, about 200 feet east of the railway on the side of a ridge, which at its summit reaches an elevation of 700 feet above Lake Superior. At this place a large quarry can be maintained. When visited by the writer, shipments of red granite were being obtained from surface blocks cut on the east side of the C.P.R. right-or-way. These were hoisted directly to freight cars.
>
> The most prominent joints strike east and north of east; the other system strikes S. 20°-30° E. Joints are so widely spaced that the largest blocks in commercial demand can be obtained. The sheets slope at an angle of 5° S.W. The rock quarries quite readily into rectangular blocks.

COLOUR:

The stone from the quarry located on the shoreline is dark brown-black in fresh cut surfaces (see Photo 15, Appendix A).

Thomson (1931) described the colour of the red granite from claim TB 9270:

> The sawn surface of the red granite exhibits a light-pink matrix mottled with fine, irregular anhedra of blue-green hornblende. The rock takes a good polish and exhibits a uniform granular pattern.

TEXTURE:

Both the black and red granites are medium grained.

OTHER FEATURES:

8) PHYSICAL PROPERTIES:

9) CHEMICAL ANALYSIS:

Sample No.	SiO_2	Al_2O_3	Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	TiO_2	P_2O_5
Black	57.36	15.18	1.51	0.21	0.40	4.16	4.59	4.90	0.96	0.15
Red	57.58	14.91	2.47	0.23	1.14	3.21	4.45	4.75	0.81	0.16

Analyses conducted by the Provincial Assay Office, Ontario Department of Mines, Toronto, 1930.

10) **COMMENTS/RECOMMENDATIONS:**

Although these quarry sites are not amenable to quarrying due to their small size, there are numerous sites in the immediate vicinity which may have potential. Since the iron-rich augite and feldspar porphyritic amphibole syenites outcrop over a very large area within the Coldwell Complex, there may be some suitable sites yet to be found.

1) **PROPERTY NAME**: Quarry Island Sandstone Quarry **DATE(S) VISITED**:

2) **ALTERNATE NAME(S)**: Rossport Sandstone
McKay Harbour Freestone

3) **COMMODITY**: **Main**: White sandstone, silica

4) **DEVELOPMENT HISTORY AND OWNERSHIP**:

PAST:		There is very little information available that discusses the development of this sandstone quarry. The available references indicate that the quarry operated in the late 1800s. The extracted stone was used in the Thunder Bay area in bridges, foundations, and some buildings (Terrace Bay-Schreiber News, Oct. 19, 1983; Feb. 8, 1983).
	1985	Walter Seeber staked claims covering the former quarry as a possible source of building stone. Mr. Seeber also had been assessing the rock's potential as a silica source.
	1986	W. Seeber hired a consultant and conducted a sampling, beneficiation and market study on the silica deposit.
	1988	W. Seeber transferred a 50% interest to S. Digregorio and retained 50%. Two claims, TB 834909 and 911 were surveyed.
	1989	Two diamond drill holes for a total of 204' were recorded by Seeber and Digregorio.
	1990	Claims TB 834909 and 911 were brought to lease.
CURRENT:	1994	The southern portion of the island is covered by two leased claims held by S. Digregorio and the estate of W. Seeber. The rest of the island is currently open.

5) LOCATION AND ACCESS:

N.T.S.	42 D/13		
Latitude:	48· 48' 50"	**Northing:**	5406675
Longitude:	87· 30' 45"	**Easting:**	0462374

GENERAL LOCATION:

Southwest corner of Quarry Island, Nipigon Bay, Lake Superior; approximately 2.5 km (1.5 mi.) south of Rossport (Figure 28).

ACCESS:

The island can be reached by boat launched at Rossport.

MAP REFERENCES:

Claim Map G-610, Rossport, Thunder Bay Mining Division.
Map 2285, St. Ignace Island and Adjacent Islands (Giguere 1975)

REFERENCES:

Cheadle (1987)
Franklin et al. (1982)
Giguere (1975)
Industrial Minerals Geologist's Files, Thunder Bay

6) GENERAL GEOLOGY AND STRUCTURE:

The quarry is located within Mesoproterozoic sandstones of the Sibley Group. This group unconformably overlies the Paleoproterozoic Animikie Rove Formation which also outcrops on the island. Both of these formations are intruded by a Keweenawan diabase sill. The only evidence of quarrying on the island is the rubble piles found in the vicinity of the quarry face.

7) STONE DESCRIPTION:

MINERALOGY:

In thin section, the sample is composed of 90 to 95% quartz and 5 to 10% sericite. Quartz also occurs as cement (15 to 20% of total quartz). The quartz grains are well-sorted and are subangular to subrounded in shape. The grains have tangential and planar contacts. Some of these contacts are the result of quartz overgrowths, which are marked by the presence of fine micas between the grain and overgrowth. The sericite and fine micas are more commonly found as masses with the same shape and size as the quartz grains. This similarity may infer that the sericite and micas may originally have been feldspar grains.

JOINTING:

COLOUR:

In hand sample the stone has a white colour with small patches having a yellow tint.

TEXTURE:

The sample is composed of sand sized (1 to 2 o) quartz grains, rounded to subrounded in shape.

OTHER FEATURES:

8) **PHYSICAL PROPERTIES:**

9) **CHEMICAL ANALYSIS:**

Sample No.	SiO_2	Al_2O_3	Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	TiO_2	P_2O_5
85MCK-0005	98.32	1.24	0.00	0.01	0.01	0.06	0.07	0.10	0.08	0.00

Analyses by Geoscience Laboratories, Ontario Geological Survey, Toronto

10) **COMMENTS/RECOMMENDATIONS:**

This quarry was evaluated by W. Seeber and S. Digregorio for its silica potential from 1985 to 1990. Any attempt to develop this site would have to take special care to assess any environmental concerns associated with development on islands in Lake Superior. The Ministry of Natural Resources, Ministry of the Environment and the Rossport Islands Advisory Board would have to be consulted.

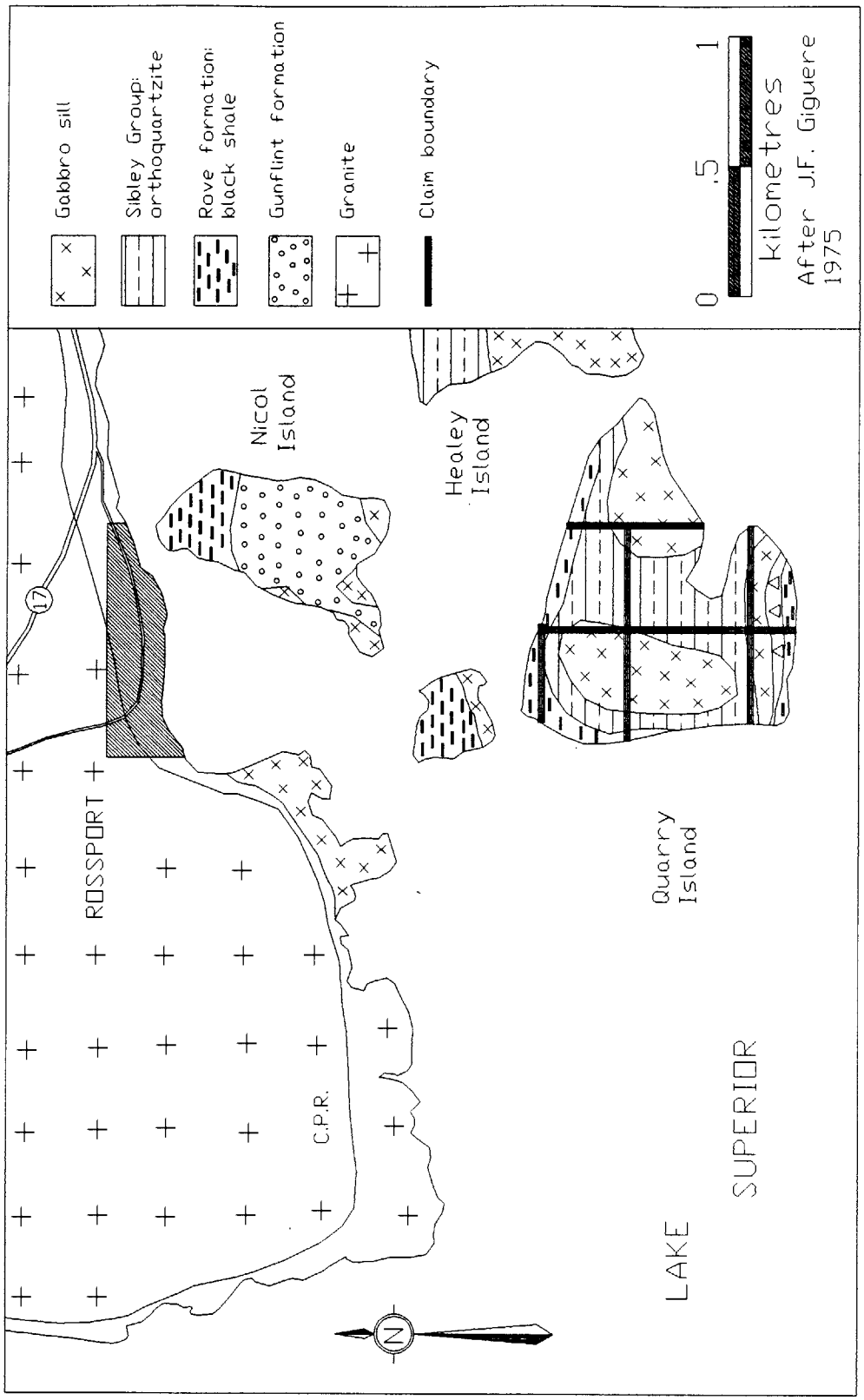

Figure 28: Quarry Island, location and general geology

1) **PROPERTY NAME**: Simpson Island Sandstone Quarry **DATE(S) VISITED**:

2) **ALTERNATE NAME(S)**:

3) **COMMODITY**: **Main**: Buff sandstone

4) **DEVELOPMENT HISTORY AND OWNERSHIP**:

PAST:	1904	W.C. Thompson discovered the deposit during the winter of 1904. He staked the site for Superior Stone Supply and A.I. Thompson and Sons (Daily Times-Journal, May 8, 1909).
	1905	The two companies opened a quarry on the island. It was necessary to purchase a barge to haul the stone from the island to Fort William. At the quarry, 25 men were employed to extract the stone and another 25 men were required at the yard. It is reported that the stone quarried was used in Fort William and Port Arthur as well as being shipped to Ottawa and elsewhere (Daily Times-Journal: Oct. 24, 1905; May 8, 1909: Weekly Times-Journal, Oct. 28, 1905).
	1906 to early 1910s	Quarry operations continued on the island. The Superior Stone Supply and A.I. Thompson and Sons made the stone available as rough blocks or cut to order for building construction. The Stanworth-Martin fabrication plant in Thunder Bay purchased rough blocks of the Simpson Island sandstone and manufactured monuments and blocks for building construction. Since there is no information available that indicates when quarry operations ceased on Simpson Island. It is assumed that the quarry was abandoned about the same time as the liquidation of the Stanworth-Martin Company in 1912 (Daily Times-Journal: Feb. 20, 1906; March 8, 1906, The Morning Herald, May 18, 1912).
	1970	Various prospectors staked claims in the area of the old quarry, but none covered the former workings.

	1985	W. Seeber staked the quarry site. The claim was cancelled in 1987.
CURRENT:	1994	The quarry is currently open for staking.

5) LOCATION AND ACCESS:

N.T.S.	42 D/13		
Latitude:	48° 50' 25"	**Northing:**	5409741
Longitude:	87° 44' 00"	**Easting:**	0446190

GENERAL LOCATION:

The quarry is located on the north shore of Simpson Island, Lake Superior, approximately 15 km (9.5 mi.) west of Rossport (Figure 29).

ACCESS:

The island is reached by boat launched from Nipigon or Rossport.

MAP REFERENCES:

Claim Map G-610, Rossport, Thunder Bay Mining Division
Map 2232, Nipigon-Schreiber Sheet (Carter et al. 1973)
Map 2285, St. Ignace Island and Adjacent Islands (Giguere 1975)

REFERENCES:

Cheadle (1987)
Franklin et al. (1982)
Giguere (1975)
Industrial Minerals Geologist's Files
Resident Geologist's Files, Schreiber-Hemlo District
Tanton (1931)

6) GENERAL GEOLOGY AND STRUCTURE:

The island is underlain predominantly by Mesoproterozoic Keweenawan volcanic rocks and sediments. These unconformably overlie the Sibley Group sediments that outcrop on the northern shore of the island. The quarry is hosted within the Sibley sedimentary rocks.

The quarry site is barely visible from the water, but its location can be found by a small patch of white, pebbly beach. From this point on the shore, the quarry face is approximately 15 m inland. The scale diagram illustrates the length and height variation of the quarry face. Other items at the quarry are remnants of derricks and machinery left on the island when quarry operations ceased in the early 1910s.

7) **STONE DESCRIPTION:**

MINERALOGY:

In thin section, the stone is composed of 80 to 90% quartz, 10 to 15% feldspar grains, most of which have been altered to sericite and other fine micas, 2 to 5% chert and trace amounts of opaque material.

The quartz grains are subangular to subrounded in shape, medium to coarse in size (0 to 2 o), and have rims of sericite and fine micas. The feldspar grains have the same size and shape as the quartz grains and as stated previously, are now altered to sericite and micas. The feldspar and quartz grains have tangential and planar contacts with siliceous material, sericite and fine micaceous material as the matrix.

The rock is classified as a subarkose.

JOINTING:

COLOUR:

The stone is a buff-coloured sandstone with a pink hue. It weathers to a creamy pink shade.

TEXTURE:

In hand sample, the rock is composed of equigranular, medium to coarse (0 to 2 o), well-sorted quartz grains with a white, chalky matrix.

OTHER FEATURES:

8) **PHYSICAL PROPERTIES:**

Bulk Specific Gravity:	2.35
% Absorption 2 hrs:	2.7
48 hrs:	4.5
Compressive Strength (psi):	5,788
Modulus of Rupture (psi):	1,435

Tests done by Geoscience Laboratories, Ontario Geological Survey, Toronto.

9) **CHEMICAL ANALYSIS:**

Sample No.	SiO_2	Al_2O_3	Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	TiO_2	P_2O_5
85MCK-0006	89.74	6.30	0.19	0.02	0.56	0.13	0.00	2.93	0.10	0.00

Analyses conducted by Geoscience Laboratories, Ontario Geological Survey, Toronto

10) COMMENTS/RECOMMENDATIONS:

Any attempt to develop this site would have to take special care to assess any environmental concerns associated with development on islands in Lake Superior. The Ministry of Natural Resources, Ministry of the Environment and the Rossport Islands Advisory Board would have to be consulted.

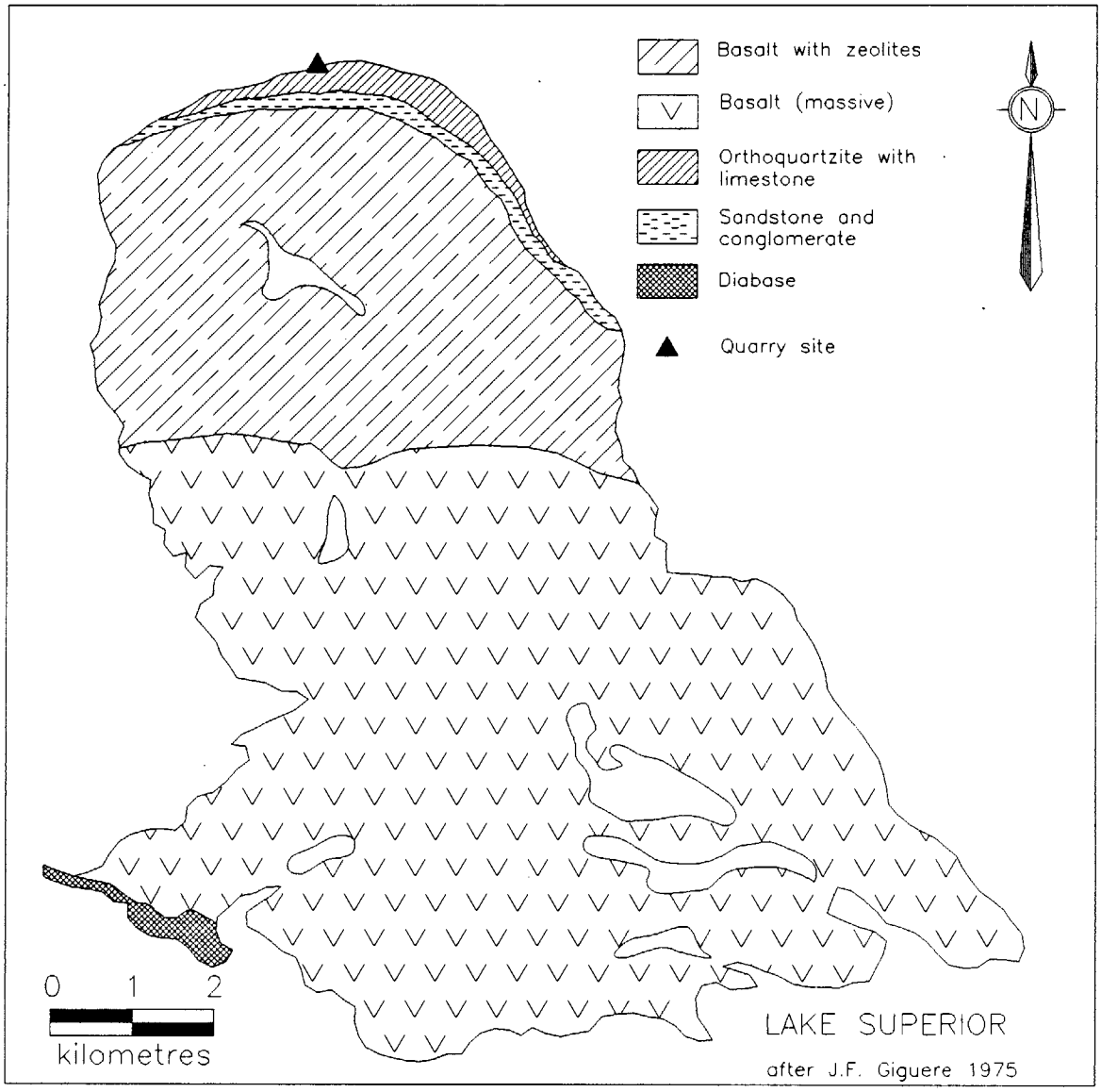

Figure 29: Simpson Island, location and general geology

1) **PROPERTY NAME**: Vert Island Sandstone Quarry **DATE(S) VISITED**: May 1991 & July 1992

2) **ALTERNATE NAME(S)**: Chicago-Verte Island Sandstone Quarry
Cummings and Co. Quarry
Freestone Quarry, Isle Verte

3) **COMMODITY**: Red sandstone

4) **DEVELOPMENT HISTORY AND OWNERSHIP**:

PAST:

1881 A deposit of "brownstone" was staked by Duncan McEachren in the Nipigon Channel (Thunder Bay Sentinel, July 29, 1881).

1882 The quarry was opened by C.M. Cummings and Co. under the direction of C.M. Cummings. During the summer they constructed two docks (one 30 by 100 ft. and a larger cribwork dock), a double tramway with a derrick at each end and buildings. Twenty-five men were employed to extract a large amount of stone, all of which went to Chicago. One contract for $100,000 worth of stone was reported. The stone sold for $1.25 to $1.75 per cubic foot. One cargo of sandstone was shipped weekly with each shipment probably being 600 tons. From April to June the company spent $8,000 on labour and machinery. (The Daily Sentinel, April 1, 1882; April 21, 1882. The Weekly Sentinel, May 6, 1882; November 22, 1882. The Weekly Herald, June 17, 1882; August 5, 1882; September 16, 1882. The Weekly Herald and Superior Mining Journal, July 8, 1882).

1883 The quarry was operated by the Chicago-Verte Island Sandstone Co. under the direction of General John McArthur. A change of ownership may have occurred as Mr. Cummings is not mentioned again. A large boarding house and a blacksmith shop were built at the quarry. Twenty-five men were working in the quarry and ten or fifteen more were expected. The company reportedly had numerous orders for the stone. Shipment was

primarily to Chicago and other U.S. cities. (The Thunder Bay Daily Sentinel, March 13, 1883. The Weekly Herald, June 27, 1883).

1884 — Fifty men were employed at the quarry. By early August six loads of sandstone had been shipped to Chicago. The stone was advertised for sale in Winnipeg. (The Daily Sentinel, August 6, 1884).

1885 — The Vert Island Quarry was in full operation in February. Three hundred tons of stone was hauled over the ice to the CPR station at Red Rock for shipment to Winnipeg. (The Daily Sentinel, February 17, 1885).

1886 — Work at the quarry continued with large quantities of stone constantly being extracted. Forty to fifty men were employed. A 15-ton derrick and a new dock were constructed enabling the loading of two vessels at one time. (The Daily Sentinel and North Shore Miner, February 16, 1886; May 17, 1886; June 14, 1886).

1887 to 1888 — The quarry continued operations with General John McArthur of Chicago in charge. It was reported that $30,000 was spent since 1883 on docks, buildings and the plant and that 30,000 to 50,000 cubic feet of stone had been shipped yearly. (Port Arthur Illustrated, 1889).

1889 to 1894 — Extraction of the sandstone by the Chicago-Verte Island Sandstone Quarry continued and Mr. Tobin, a government building contractor, had men dressing sandstone. (The Daily Sentinel, July 7, 1892; The Thunder Bay Sentinel, July 27, 1894).

1895 to 1902 — The quarry appears to have been idle during this period. the imposition of a high duty (The McKinley Tariff) on sandstone going into the U.S. put economic pressure on the operations and contributed to its closure. When operations ceased, immense quantities of quarried stone and machinery was left on the island. A tug load of Vert Island stone (presumably the

previously quarried material) was reported to have been brought to Fort William to be used for window ledges, etc. The site was also examined by Mr. Cameron as a possible supply for the government buildings. (Daily Times-Journal, July 19, 1900; February 4, 1902, September 10, 1902).

1903 to 1912 — The Superior Stone Supply and A.I. Thompson and Sons gained control of the sandstone quarry on Vert Island. They used the supply of previously quarried material to fill orders in Port Arthur and Fort William. These two companies opened a white sandstone quarry on Simpson Island in 1905. The two sandstones were available cut to order for construction purposes and in rough blocks. Some of the rough blocks were sold to the Stanworth-Martin Company, which was a fabrication plant in Port Arthur. This plant closed in 1912, providing an indication when operations ceased on Vert and Simpson Islands. Since this time not work has occurred at the quarry on Vert Island. (Daily Times-Journal, July 29, August 21, September 11, September 14, October 10, November 30, 1903; April 27, June 27, July 8, October 11, 1904; February 28, March 7, May 6, August, 16, 1905; February 20, 1906; January 30, 1907; May 8; 1908. The Morning Herald, May 18, 1912).

1912 to present — No reported activity at the quarry.

CURRENT: The quarry is composed of four patented claims (TB 4356, TB 4424 to 4426). Ownership is divided as follows:

TB 4356 and TB 4424 - R.M. Rowsome
- D.F. Moran
- J.A. MacDonald

TB 4425 - R.M. Rowsome
- D.F. Moran

TB 4426 - J.A. MacDonald

5) LOCATION AND ACCESS:

N.T.S.	52 A/16NE		
Latitude:	48· 55' 50"	**Northing:**	5420098
Longitude:	88· 05' 50"	**Easting:**	0419633

GENERAL LOCATION:

The quarry is located on the west shore of Vert Island, Nipigon Bay, Lake Superior, 15 km southeast of the town of Nipigon (Figure 22). The quarry is located directly east of La Grange Island on the most westerly part of Vert Island. The site is easily identified by the presence of four old docks, now stone rubble promontories. The quarry face is located approximately 120 m inland from these docks and is illustrated in the enclosed diagram.

ACCESS:

The quarry is reached by boat launched at either Nipigon or Red Rock.

MAP REFERENCES:

Claim Map G-142, Vert Island, Thunder Bay Mining Division
Map P.357, Red Rock-Pine Portage Sheet (Pye 1966)
Map 2232, Nipigon-Schreiber Sheet (Carter et al. 1972)

REFERENCES:

Franklin et al. (1982)
Industrial Minerals Geologist's Files, Thunder Bay
Tanton (1931)

6) GENERAL GEOLOGY AND STRUCTURE:

The island is underlain by Mesoproterozoic Sibley Group siltstones and sandstones of the Pass Lake Formation. They have been capped and intruded by Keweenawan Logan diabase sills.

7) STONE DESCRIPTION:

MINERALOGY:

JOINTING:

The unit has sedimentary features such as crossbedding, mudcracks, and ripple marks. These bedding features are a few centimetres to 2 m apart.

COLOUR: The stone is a brick red colour (see Photo 16, Appendix A).

TEXTURE:

The stone is composed of silt- to sand-sized grains.

OTHER FEATURES:

8) PHYSICAL PROPERTIES:

Bulk Specific Gravity		2.46
% Absorption	2 hrs.	1.3
	48 hrs.	2.2
Compressive Strength (psi)		16,691
Modulus of Rupture (psi)		2,323

Tests done by Geoscience Laboratories, Ontario Geological Survey, Toronto.

Abrasion Resistance (Ha)

Specimen No.	Location A	B	C
1	32.2	23.6	26.9
2	26.1	26.4	26.1
3	23.2	20.7	19.5

Specific Gravity 2.45

Tests done by Energy Mines and Resources, Canmet, Ottawa.

9) CHEMICAL ANALYSIS:

Sample No.	SiO_2	Al_2O_3	Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	TiO_2	P_2O_5
85MCK-0006	79.40	6.13	1.43	0.05	0.57	4.16	0.04	3.55	0.19	0.00

Analyses conducted by Geoscience Laboratories, Ontario Geological Survey, Toronto

10) COMMENTS/RECOMMENDATIONS:

This quarry still holds a significant amount of quarriable sandstone. The most obvious impediment is its location on Vert Island in Nipigon Bay, Lake Superior. Environmental concerns would have to be addressed in consultation with the Ministry of Natural Resources and Ministry of Environment.

APPENDIX A

Note: The photos in this appendix, while accurately illustrating the texture of the stone, may not accurately illustrate the colour. Clients are recommended to examine the actual stone samples to see the true colour of the stone. All samples are housed in the Thunder Bay Resident Geologist's office.

Photo 1. Butler Grey Granite

Photo 2. CN Trax -3 Occurrence

Photo 3. Forgotten Lake Yellow Granite

Photo 4. McKenzie -1 Occurrence

Photo 5. Vermilion Pink, Nelson Granite

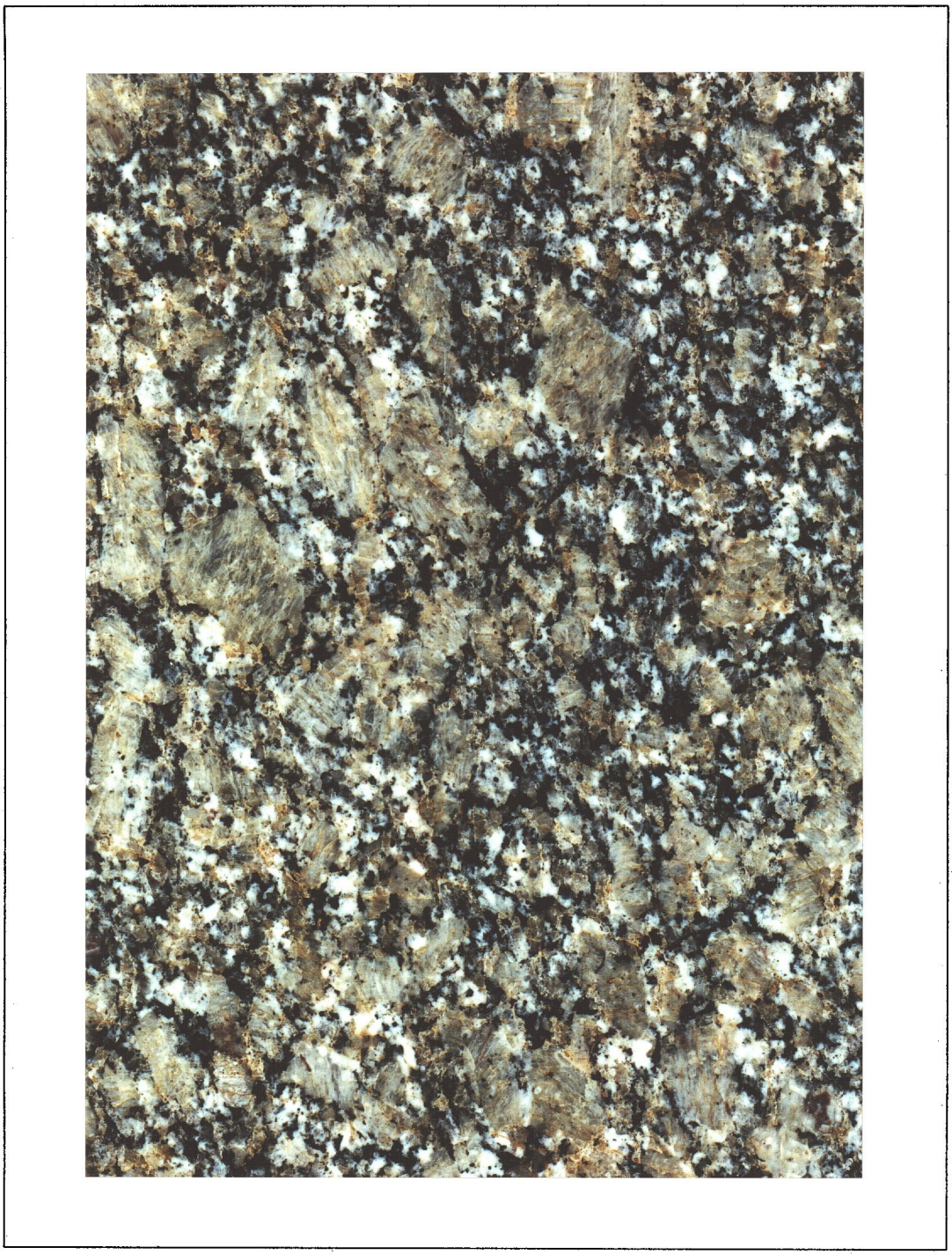

Photo 6. Pine Green, Palin Granite Canada Ltd.

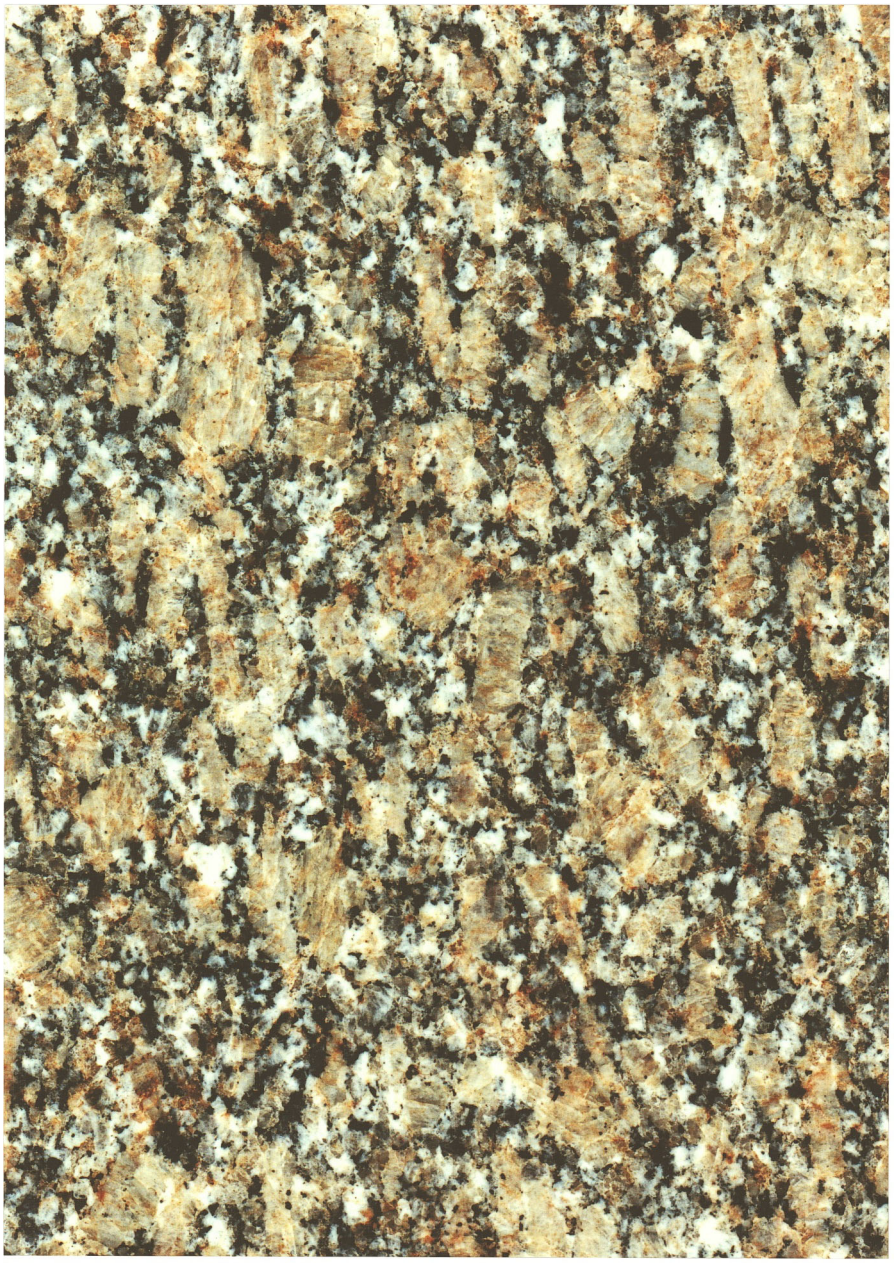

Photo 7. Crystal Gold, Palin Granite Canada Ltd.

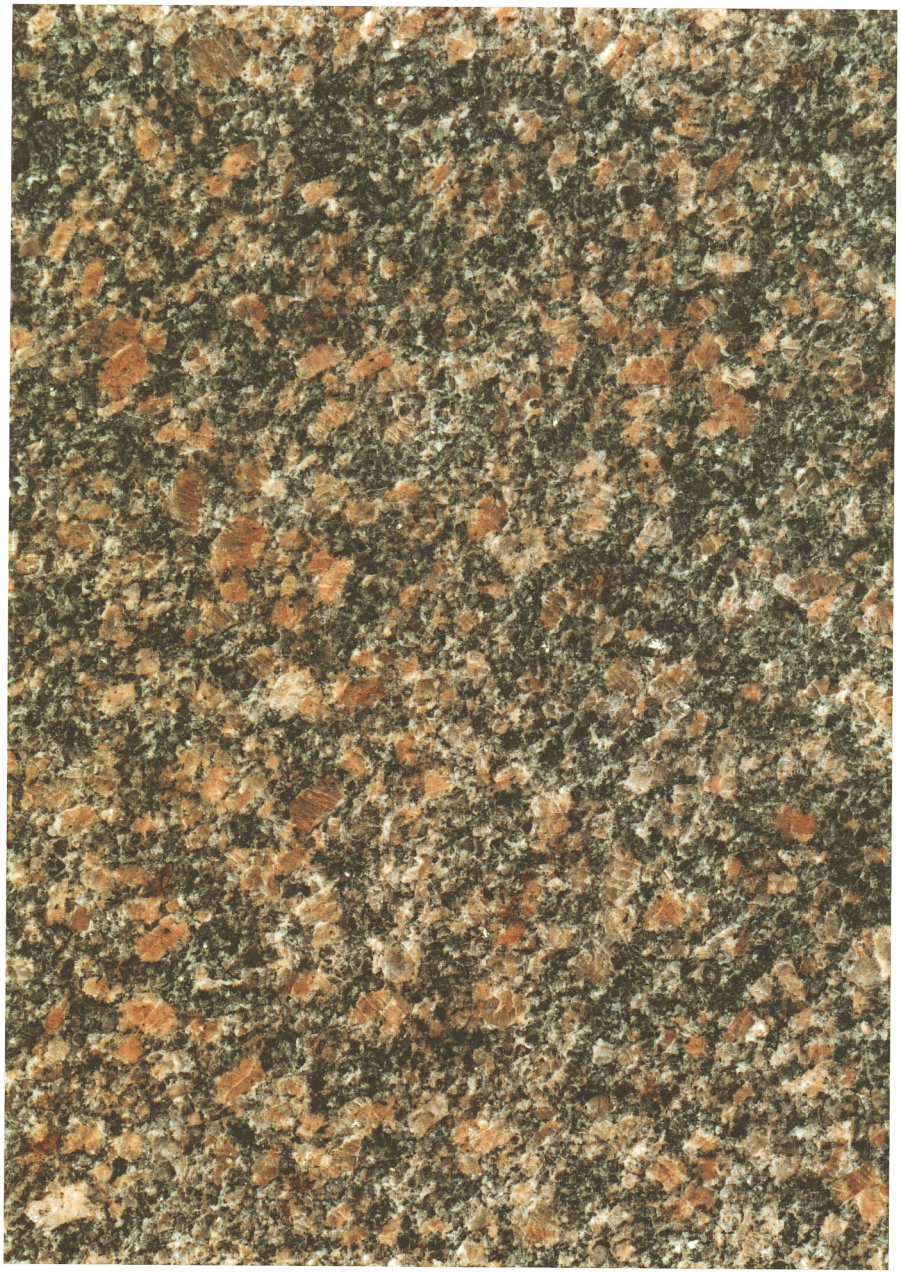

Photo 8. Red Deer Brown Granite

Photo 9. Snook Lake Red Granite

Photo 10. Wennesaga -8 Occurrence

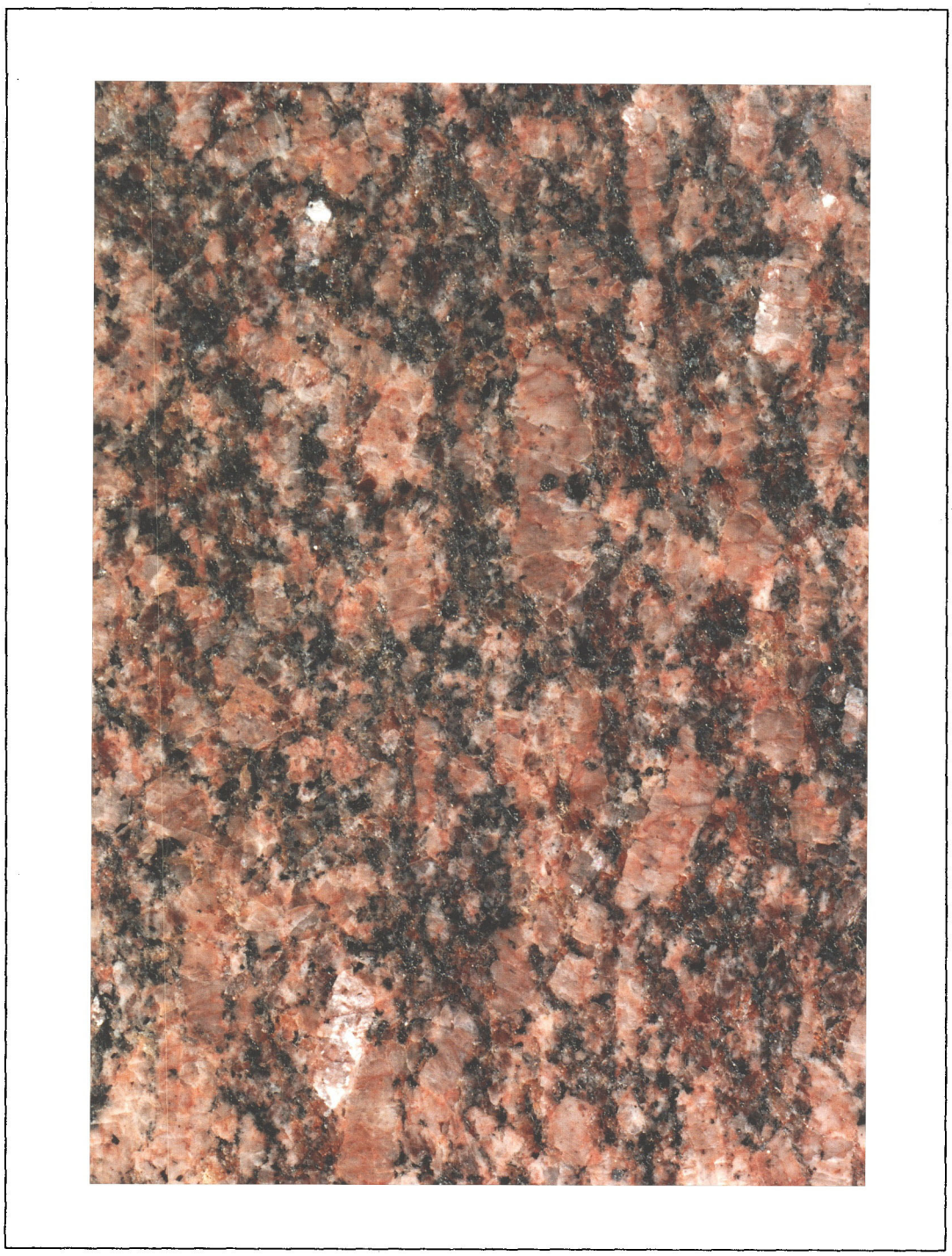

Photo 11. Wonderland Lake Red Granite

Photo 12. McCrindle Marble Occurrence

Photo 13. Marathon Black Granite

Photo 14. Marathon Red Granite

Photo 15. Marathon Brown Granite.

Photo 16. Vert Island Red Sandstone .

APPENDIX B

This list contains all the dimension stone files housed in the Thunder Bay Resident Geologist's Office in Thunder Bay, excluding those relating to the properties documented in this report.

COMMODITY	FILE NAME	NTS AREA
Granite	White River granite	42 C/11
	Dotted Lake Batholith	42 C/12
	Cold Spring Granite Canada Ltd.	42 D/09
	Cold Spring Granite Quarry	42 D/09
	C.P.R. Quarry, Marathon	42 D/09
	Culhane Claims	42 D/09
	Marathon Quarries (Peninsula)	42 D/09
	Petrunka Brown Granite	42 D/09
	Port Coldwell Red Syenite	42 D/09
	Merit Investments, Farrel/Kasner	42 D/09
	Noranda Inc. (Geco Division)	42 D/09
	Morrison Claims	42 D/09
	Peninsula Granite Quarries	42 D/09
	Marathon Field Guide	42 D/09
	Coldwell Property	42 D/15
	Flint Bay Syenite	42 D/15
	Middleton Claims	42 D/15
	Terrace Bay Batholith	42 D/15
	Lake Superior Stone Syndicate	42 D/16
	Culhane Claims	42 D/16
	Angler Quarry	42 D/16
	Killala Lake Alkalic Complex	42 E/02
	Kabamichigama Lake	42 E/04
	Granite in the Cottage Lakes Area	42 E/10
	Granite in the Beardmore-Geraldton Area	42 E/10
	Industrial Minerals Potential of BGLN Region	42 E/10
	Granite in the Longlac Area	42 E/10
	Greenspar Occurrence	42 E/12
	Granville Crushed Rock Plant	42 G/05
	Forsgren Claims	52 A/10
	Henderson Lake Stock	52 B/09
	Burchell Lake Stock	52 B/10
	Fountain Lake Stock	52 B/10
	Elbow Lake Complex	52 B/10
	Moss Lake Syenite	52 B/10
	Eva Lake Stock	52 B/11
	Marmion Lake Batholith	52 B/13
	Sapawe Stock	52 B/14
	Clearwater Lake Area	52 B/16
	Falcon Island, Lake of the Woods	52 E/07
	Cygnet Lake	52 E/15
	Lount Lake Batholith	52 E/15

	Oval Lake Occurrence	52 F/09
	Basket Lake Pluton	52 F/09
	Revell Batholith	52 F/09
	Revell Batholith, Nelson Granite	52 F/09
	Dryberry Batholith, Palin Granite	52 F/13
	Bannerman and Horne	52 F/14
	van Nostrand Stock	52 G/03
	White Otter Lake Pluton	52 G/04
	Gummeson Occurrence	52 G/05
	Cecil Lake Pluton	52 G/05
	McCausland Lake Pluton	52 G/07
	Metionga Lake Pluton	52 G/09
	Indian Lake Granite	52 G/12
	Valora-Jigger Lakes Stock	52 G/14
	Harmon Lake Pluton	52 G/16
	Kimmewin Lake	52 J/06
	Keys Lake	52 L/01
	Swan Lake (Whitedog I.R.) - Nault	52 L/02
	Haycock Township - Nault	52 L/02
	Frank Black Granite	52 N/02
Marble	Hughes Point Marble Occurrence	52 A/16
	Ruby Hill Marble Occurrence	52 A/16
	Poshkokagan River Limestone	52 H/06
Sandstone	Isle Royal Sandstone	52 A/02
	Mining Location V18	52 A/07
	Black Bay Peninsula	52 A/09

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CONVERSION FACTORS FOR MEASUREMENTS IN ONTARIO GEOLOGICAL SURVEY PUBLICATIONS

Conversion from SI to Imperial			Conversion from Imperial to SI		
SI Unit	*Multiplied by*	*Gives*	*Imperial Unit*	*Multiplied by*	*Gives*
		LENGTH			
1 mm	0.039 37	inches	1 inch	**25.4**	mm
1 cm	0.393 70	inches	1 inch	**2.54**	cm
1 m	3.280 84	feet	1 foot	**0.304 8**	m
1 m	0.049 709 7	chains	1 chain	20.116 8	m
1 km	0.621 371	miles (statute)	1 mile (statute)	**1.609 344**	km
		AREA			
1 cm@	0.155 0	square inches	1 square inch	**6.451 6**	cm@
1 m@	10.763 9	square feet	1 square foot	**0.092 903 04**	*m@
1 km@	0.386 10	square miles	1 square mile	2.589 988	km@
1 ha	2.471 054	acres	1 acre	0.404 685 6	ha
		VOLUME			
1 cm#	0.061 02	cubic inches	1 cubic inch	**16.387 064**	cm#
1 m#	35.314 7	cubic feet	1 cubic foot	0.028 316 85	m#
1 m#	1.308 0	cubic yards	1 cubic yard	0.764 555	m#
		CAPACITY			
1 L	1.759 755	pints	1 pint	0.568 261	L
1 L	0.879 877	quarts	1 quart	1.136 522	L
1 L	0.219 969	gallons	1 gallon	**4.546 090**	L
		MASS			
1 g	0.035 273 96	ounces (avdp)	1 ounce (avdp)	28.349 523	g
1 g	0.032 150 75	ounces (troy)	1 ounce (troy)	**31.103 476 8**	g
1 kg	2.204 62	pounds (avdp)	1 pound (avdp)	**0.453 592 37**	kg
1 kg	0.001 102 3	tons (short)	1 ton (short)	**907.184 74**	kg
1 t	1.102 311	tons (short)	1 ton (short)	**0.907 184 74**	t
1 kg	0.000 984 21	tons (long)	1 ton (long)	**1016.046 908 8**	kg
1 t	0.984 206 5	tons (long)	1 ton (long)	**1.016 046 908 8**	t
		CONCENTRATION			
1 g/t	0.029 166 6	ounce (troy)/ ton (short)	1 ounce (troy)/ ton (short)	34.285 714 2	g/t
1 g/t	0.583 333 33	pennyweights/ ton (short)	1 pennyweight/ ton (short)	1.714 285 7	g/t

OTHER USEFUL CONVERSION FACTORS

	Multiplied by	
1 ounce (troy) per ton (short)	20.0	pennyweights per ton (short)
1 pennyweight per ton (short)	0.05	ounces (troy) per ton (short)

Note: Conversion factors which are in bold type are exact. The conversion factors have been taken from or have been derived from factors given in the Metric Practice Guide for the Canadian Mining and Metallurgical Industries, published by the Mining Association of Canada in co-operation with the Coal Association of Canada.

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