42A01SE0105 63.5997 OTTO

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EVALUATION OF BUILDING STONE POTENTIAL OF THE OTTO TWP. PROPERTY LARDER LAKE MINING DIVISION ONTARIO

DATE: DEC. 1990
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PREPARED FOR: MR. J. WALLS

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MAPS AT END OF REPORT

GEOLOGY OF OTTO STOCK AND TRAVERSES Scale: 1"=1/2 mi.

INTRODUCTION

The Otto Stock, located southwest of Kirkland Lake, Ontario, is a 6 mile diameter alkalic intrusive body. Mapping of the area by government geologists describe the Stock as being largely comprised of syenite, quartz syenite and granite.
The aim of the present survey is to prospect and sample the coarser grained areas in order to evaluate the potential of the Otto Stock rocks for building/monument stone on behalf of Mr. Jim Walls of Pickering, Ontario.

LOCATION AND ACCESS

The area of study is located in the central portion of Otto Township, Larder Lake Mining Division, Ontario, approcimately 15 miles southwest of the town of Kirkland Lake. Access to the area may be gained by a gravel road off Highway #112, at the village of Dane.

EXPLORATION HISTORY

1966 The Ontario Department of Mines published a preliminary geological map no. p.330 of the north half of Otto Township

1969 The Ontario Department of Mines published a preliminary geological map no. 501 of Otto Township and Northern part of Marquis Township

1972 The Ontario Derpartment of Mines publishe Geological Report 99, Geology of the Eby and Otto Area, District of Timiskaming by H.L. Lovell, with coloured map 2239.

1979 The Ontario Geological Survey published a preliminary map p.896 of Otto Township.

According to the Resident Geolosist's office in Kirkland Lake, no mining exploration work has been recorded on the area of interest.

REGIONAL GEOLOGY

The area of interest is in part of the Abitibi Greenstone belt comprised of volcanic, sedimentary, and intrusive rocks that make up the prolific gold producing Kirkland Lake-Larder Lake belt.

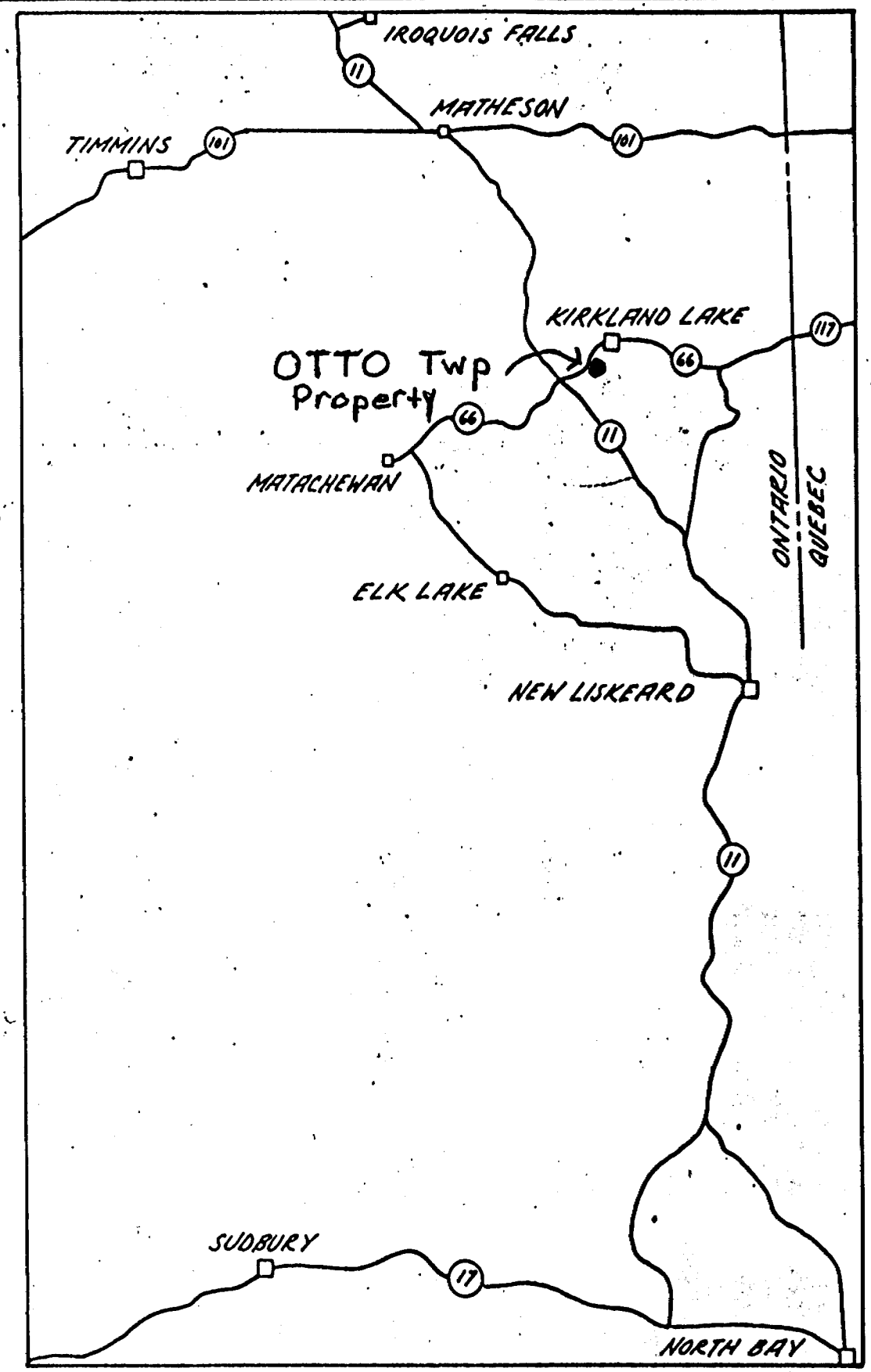


FIG 1

Property Location Map

Scale 1" = 16 mi

Table 1 Table of Lithological units

Cenozoic
Pleistocene and recent
silt, clay, sand, gravel
Unconformity

PRECAMBRIAN
Proterozoic
late mafic intrusive rocks(nippising or keweenawan)
diabase
Intrusive Contact

Huronian
Cobalt group
Gowganda formation
conglomerate, arkose, greywacke, argillite
Unconformity

alkalic intrusive rocks
syenite, quartz syenite, porphyritic syenite, nepheline syenite, granite, aplite dikes
lamporphyre dikes, diorite
Intrusive Contact

Archean
mafic intrusive rocks(Matachewan or Nipissing)
diabase
Intrusive Contact

felsic intrusive rocks(algoman)
granite, porphyritic granite, granodiorite, granodioritic gneiss, syenite, trachyte
Intrusive Contact

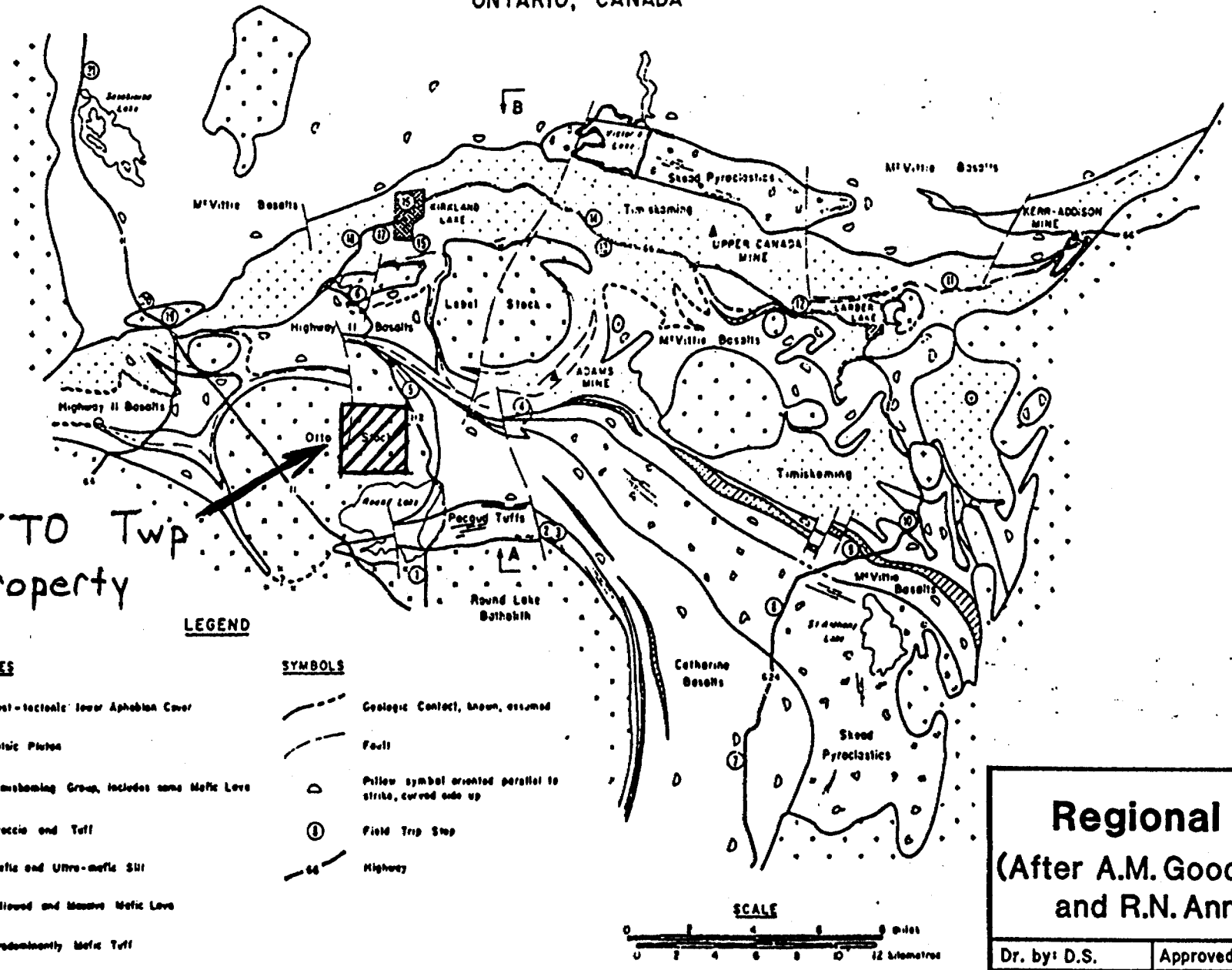
early mafic and ultramafic rocks(haileyburian, early algoman and keewatin)
serpentine, peritotite, gabbro, diorite
Intrusive Contact

metasediments(Timiskaming and Keewatin)
conglomerate, quartzite, greywacke, tuff, agglomerate, breccia
Unconformity and Interbedding

felsic metavolcanics(Keewatin)
rhyolite, dacite, dacite porphyry, iron formation, silicic tuff, agglomerate

mafic metavolcanics and metasediments
basalt, andesite, andesite porphyry, dacite, chloritic mafic tuff, agglomerate, amphibolite, garnet-epidote amphibolite, amphibolite gneiss, biotite-garnet-pyroxene amphibolite

GEOLOGICAL SKETCH MAP
KIRKLAND LAKE AREA
ONTARIO, CANADA



Regional Geology
(After A.M. Goodwin, R.H. Ridler and R.N. Annells, 1972)

Dr. by: D.S.	Approved by: B.L.	
Scale: 1:300,000	NTS 32D	Figure No.: 2

The area of interest is directly underlain by a large Proterozoic alkalic intrusive body, known as the Otto Stock.
The Otto Stock is approximately 6 miles in diameter and ranges in composition from quartz syenite to nepheline syenite. In addition, the stock contains many Archean volcanic and sedimentary xenoliths.

According to ODM report 99 by H. Lovel, quartz syenite, syenite and granite make up the bulk of the stock. The rocks are generally pink, coarse grained, and moderately porphyritic with phenocryst sizes upto 3/4 inches in length. The rocks are generally weathered to a dark to medium pink colour and are pink to light grey on fresher surfaces. The syenitic rocks are composed mostly of euhedral feldspars (microperthite) with lesser interstitial quartz, pyroxene amphiboles, biotite and accessory apatite, sphene, zircon and magnetite.

The Otto Stock is surrounded by a contact metamorphic aureol approximately 1/4 mile in width. Host volcanic rocks along the northern rim of the Stock are higher in metamorphic grade than their counterparts to the south. Rounded inclusions of altered host rocks are found in abundance near the contact, but are also present throughout most of the intrusion. There are two types of inclusions; one is a "core and mantle" type where a core of greenish prismatic amphibole such as tremolite is surrounded by a rim of black biotite. The other type inclusion is comprised of bits of banded tuff or schist with feldspathized interbands.

FIELD WORK

Three traverses were performed on an area of interest over a 1 1/2 by 1 1/2 mile area in the central part of the Otto Stock in concessions III and IV, lots 2,3,4 and 5 of Otto Township, plus numerous stops were made along Highway 11, Highway 112, Rosegrove Beach Road (along the north shore of Round Lake) and a gravel road running north in lot 9 through concessions II, III, IV, V, and VI of Otto Township over a five day period commensing October 11, 1990 and ending October 15,1990. Report writing and drafting was done December 20, 1990. The author was the only person involved with the field work. Six samples were collected from various points over the area of interest from the traverses and the most promising two samples were cut and polished.

DISCUSSION

Rock types encountered from traversing the area of interest generally consist of coarse grained syenite, that are pink on weathered surface and pinkish to light grey on fresher surfaces. The appearance of the syenite is typically coarse, interlocking euhedral feldspar laths, upto 80 or 85% with trace interstitial quartz and 15 to 20% dark green, bladed amphiboles. There are trace oxides and/or sulphides. On an outcrop scale, there are generally trace to 1% oval to subrounded mafic inclusions from a few millimeters upto several centimeters in size. Locally, there can be upto 5% of these mafic inclusions. They are typically dark green to black, biotitic with an amphibole core. No major or minor fracture patterns were observed on the outcrop surfaces.
An area of coarse pegmatitic feldspars was found along traverse #2, west of Highway 11 in concessions III and IV, lots 2 and 3. The appearence of this rock type is porphyritic, with 1 inch feldspar phenocrysts in a coarse grained, euhedral feldspar rich-amphibole matrix.

Samples #2 and #5 were cut and polished for an examination of the syenite on a fresher surface. Both samples have varying amounts of large porphyritic feldspars and mafic inclusions. Both samples took a polish well, with no chipping or cracking. Upon examination of the fresher surfaces, it is evident that the feldspars, both porphyritic and in the matrix are somewhat zoned, with the outer rim being dark pink, and gradually becoming a light grey towards the interior. The larger feldspars were also heavily fractured. Several microfractures were also noted in the samples that were not evident on the weathered surface. A dark pink alteration halo was evident upto 1/2 inch thick around each of these microfractures.

CONCLUSIONS AND RECOMMENDATIONS

The Otto Stock intrusion is largely comprised of syenite, quartz syenite and granite. Average crystal size for the feldspars is upto 3/4 of an inch.

Traversing the area of interest revealed coarse grained massive pink syenite with trace to 2% dark green to black mafic inclusions upto several centimeters in size.

An area from traverse #2, west of highway 11 revealed pegmatitic feldspar phenocrysts in a coarse grained euhedral feldspar matrix.

Polished samples of the syenite and large porphyritic feldspar syenite reveal heavily fractured and zoned feldspars, plus numerous zoned microfractures, previously not observed on sample or weathered surfaces.

The zoning of the feldspars, presence of mafic inclusions and presence of zoned microfractures in the samples detract from the usefullness and visual aspect of this rock type as a commercial building /monument stone. Even if the zoned feldspars and microfracturing were to disappear after removing the top 10 or 15 feet of rock, as is normal practice, there is no guarantee that material could be selectively removed without any of the mafic inclusions.

Further work in the area for building/monument stone is unwarranted at the present time.

November, 1990.

Bradley C. Leonard

REFERENCES

Lovel, H.L.
1972: Geology of the Eby and Otto Area District of Timiskaming
Ontario Geological Survey Geological Report 99

Ontario Department of Mines
1969: Otto Township and Northern part of Marquis Township
Ontario Department of mines Preliminary Geological Map 501

CERTIFICATE OF QUALIFICATIONS

I, Bradley C. Leonard of 2081 Sunnyside Rd. In the City Of Sudbury, do hereby declare that:

1. I am a graduate of the University of Toronto in 1983 with an honours BSc. degree, specialist in geological science:

2. I have been continually practicing my profession since graduation, the last 3 years as a contract geologist:

3. This report was prepared by me using assessment file records from the Ministry of Northern Development and mines, Kirkland Lake office; Ontario Geological Survey reports and maps; and personal visits to the property.

4. I have no direct interest in the property.

Bradley C. Leonard

CON V

CON IV

CON III

CON II

Lot 10 Lot 9 Lot 8 Lot 7 Lot 6 Lot 5 Lot 4 Lot 3 Lot 2 Lot 1

Gravel Road

Blanche River

HWY 11

Traverse #1

Traverse #2

Traverse #3

lineaments

Rosegrove Beach

Round Lake

1 Metavolcanic and Metasedimentary Rocks.

2 Alkalic Intrusive Rocks.

2^a Coarse Syenite + Pegmatite
2^b Mafic Syenite
2^c Medium syenite
2^d Autolithic syenite
2^e Qtz Syenite, granite.
X1 - Sample Location.
Geological Contact
lineaments

GEOLOGY, TRAVERSE AND SAMPLE LOCATION MAP OTTO TWP, ONT.

scale: 1" = ½mi BY: B.C.L. NOV. 1990

(after Map 2239 - EBY - OTTO Area)