

## LIMESTONE/DOLOSTONE EVALUATION\*

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Project 4-1 was initiated in late 1971 with the following objectives:

1. To compile the large amount of available data concerning carbonate deposits in Newfoundland.
2. To evaluate potentially commercial deposits in favourable areas of the province.
3. To publish the results of the investigation.

The first and third objectives were met with the publication in July of report 74-2, "Limestone Deposits of Newfoundland and Labrador (DeGrace, 1974). Work on the second objective continued under the direction of D.M. Besaw, with the evaluation of dolostone deposits on the Port au Port Peninsula as potential fluxstone or metallurgical grade stone. At the present time, no further work on Project 4-1 is planned.

The field investigation extended for a period of 5 weeks and involved: a) examination of areas underlain by the Pine Tree unit of the St. George Group (Besaw, 1972, 1973; DeGrace, 1974) amenable for quarrying; b) sampling of potential quarry areas for chemical analysis; and c) calculation of probable quarryable tonnages. Sixty-seven fresh

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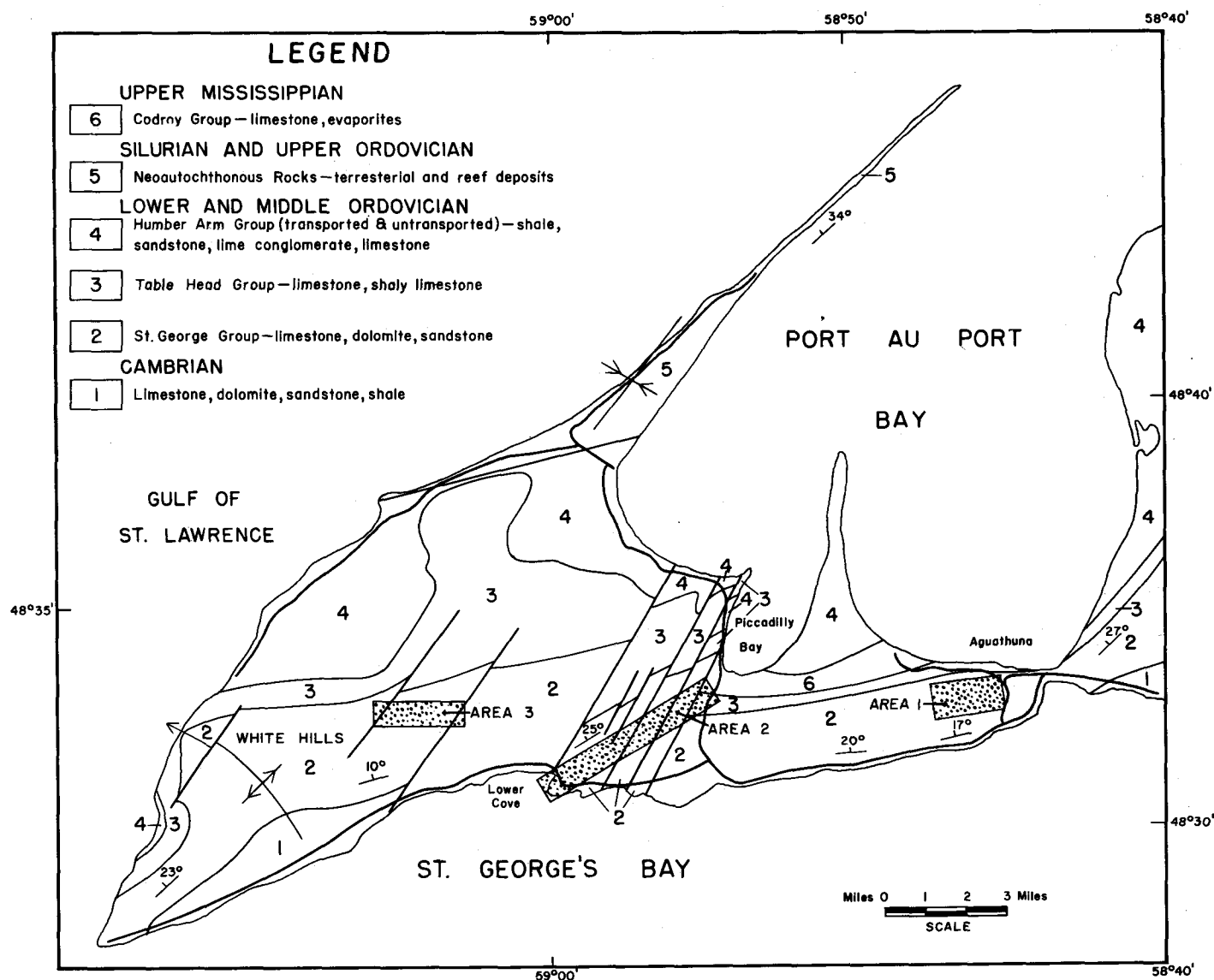


Fig. 1 Generalized geology of the Port au Port Peninsula, showing locations of selected areas referred to in the text.

grab samples for analysis were collected with either the use of a plugger and explosives or a maul.

Based on these and previous analytical results, as well as observations germane to practical quarrying problems, the following conclusions have been reached.

1. The vast dolostone deposits on the Port au Port Peninsula are confined to the St. George Group (Fig. 1). This shelf deposit consists of interbedded limestone and dolostone with minor sandstone. Within the St. George Group, potential metallurgical grade dolostone is restricted to a massive, 200 foot thick, coarse dolarenite section which is referred to as the Pine Tree unit (Besaw, 1972, 1973). Minor chert is the only megascopic impurity.

Two excellent potential quarrying sites in the Pine Tree unit exist at tidewater. They are situated at Aguathuna (Area 1, fig. 1) and near Piccadilly Bay (Area 2).

2. At Aguathuna (Area 1), the composition of the Pine Tree unit as determined from available analyses is:

CaO	33.00
MgO	18.00
SiO	1.50
Al <sub>2</sub> O <sub>3</sub>	0.50

$\text{Fe}_2\text{O}_3$	0.30
S	0.04

Within a 3/4 mile radius of the existing quarry, 38,000,000 tons of stone are quarryable.

3. Near Piccadilly Bay (Area 2), the composition of the Pine Tree unit as determined from analytical results available to date is:

CaO	31.07
MgO	19.21
$\text{SiO}_2$	0.70
$\sim\text{Fe}_2\text{O}_3$	0.13

About 20,000,000 tons of stone are quarryable in the immediate Piccadilly Bay area. Further work is required to examine the deposits to the southwest towards Lower Cove.

4. In Areas 1 and 2, the Pine Tree unit is overlain by a high-purity limestone unit 60 feet thick. This "White Hills unit" (DeGrace, 1974), in Aguathuna has a composition as follows:

CaO	52.48
MgO	2.19
$\text{SiO}_2$	0.60
$\text{Al}_2\text{O}_3$	0.22
$\text{Fe}_2\text{O}_3$	0.07
S	0.03

In these areas, White Hills limestone could be used to dilute the underlying dolostone of the Pine Tree unit if necessary, so as to conveniently alter the overall composition of the material quarried.

5. The Pine Tree unit in the White Hills (Area 3) has little potential as a fluxstone due to the presence of abundant quartz and chert impurities.

#### References

Besaw, D.M.

1972: Limestone Evaluation, Port au Port Peninsula; Nfld. Dept. of Mines and Energy, Min. Dev. Div. unpub. report.

Besaw, D.M.

1973: Evaluation of Deposits in the Port au Port Peninsula Area, Limestone Evaluation Project 4-1; Nfld. Dept. of Mines and Energy, Min. Dev. Div. unpub. report.

DeGrace, J.R.

1974: Limestone Resources of Newfoundland and Labrador; Nfld. Dept. of Mines and Energy, Min. Dev. Div. Report 74-2, 117 p.