

From the Mineral Inventory Files

Silurian Limestones in the Annapolis Valley Deserve a Closer Look

Historically, production of limestone and dolomite in Nova Scotia has come from either the Carboniferous Windsor Group or the Precambrian George River Group. However, in this article I would like to highlight a potential source for limestone in Silurian metasedimentary rocks along the southern margin of the Annapolis Valley. Limestone units in the late Silurian New Canaan Formation have been known for some time but have never been evaluated for their potential as an industrial mineral resource. Like many other geologists, I have known of these calcareous units for some time, but until I actually examined them in the field I did not realize how extensive they are.

Shortliff Lake, Digby County

In the early 1980s, Shell Canada Resources Limited carried out a twelve hole diamond-drilling program in search of uranium at Shortliff Lake, Digby County (Fig. 1). The drillholes intersected only minor uranium occurrences but nine of the holes defined an interbedded sequence of calcareous metasiltstone, marl and siliceous limestone 300-

400 m thick. In addition, prospecting suggested that a considerable area north of Shortliff Lake is underlain by mafic rocks of volcanic or intrusive origin. Previous workers assumed that the area was underlain by metasediments of the Halifax and White Rock formations but the geology is more characteristic of the New Canaan or Torbrook formations.

When I reviewed the Shell drill core in 1989 two things impressed me, the high calcareous content of some of the limestone units, and the thickness of the interbedded sequence. Assays of two, half-metre long grab samples from the core indicated that the limestones consist of 40-42% CaO and 0.8-1% MgO. Silica concentrations of 12.3-12.7% SiO₂ place the rocks in the siliceous limestone category and may limit their potential to agricultural lime applications. It is also possible that further exploration along strike could define less siliceous beds.

New Canaan, Kings County

In 1992, DNR geologist Paul Smith carried out a seven hole diamond-drilling

program near New Canaan, Kings County, to study the stratigraphy of the New Canaan Formation (Fig. 1). The drillholes intersected a 250-300 m thick sequence of interstratified volcanic rocks, volcanoclastics and lava flows with fossiliferous siltstone and siliceous limestone (Fig. 1). Four separate limestone units occur throughout the formation, interstratified with the volcanic rocks. Paul analyzed two samples of the limestone and found CaO and SiO₂ concentrations similar to levels found at Shortliff Lake. There is a strong possibility that the rocks at Shortliff Lake and New Canaan are part of the same unit.

South Alton, Kings County

The New Canaan Formation underlies the area around South Alton, Kings County (Fig. 1), where it occurs as a steeply dipping sequence of interbedded limestone, limy sediments and volcanic rocks. Contact metamorphism resulting from intrusion of the nearby South Mountain Batholith has raised the metamorphic grade of the rocks, producing occurrences of marble and impure marble. Local farmers excavated two small quarries here as a source of agricultural limestone many years ago.

These occurrences indicate a potential limestone resource that warrants a closer look. This is particularly true for agricultural applications given the proximity of these rocks to major farming regions in southwest Nova Scotia. The existing transport subsidy for agricultural lime (currently \$14.15/t in Yarmouth County, \$9.30/t in Annapolis County, \$7.20/t in Kings County) has been reduced this year and may be removed in the future. Obviously, the economic factors relevant to any potential development of this limestone resource are changing.

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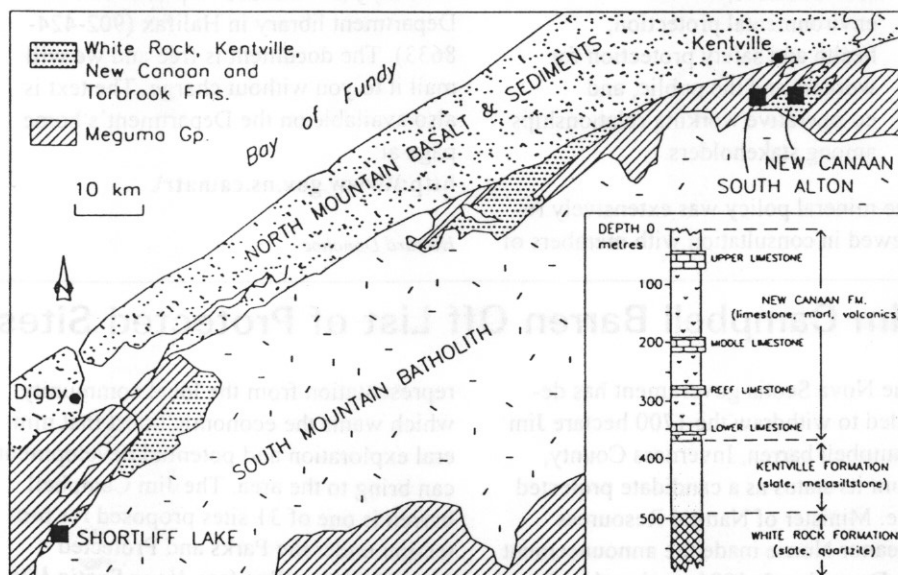


Figure 1. General geology of the Annapolis Valley region. The inset is a stratigraphic column derived from NSDNR diamond-drilling.