

SALT AND POTASH RESOURCES IN NOVA SCOTIA

by

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ABSTRACT

The salt and potash resources of Nova Scotia are described from all available geological, geophysical and geochemical data. Twenty-three deposits and thirteen occurrences are known with subeconomic potash (sylvite and carnallite) associated with thirteen of the salt deposits in the Middle to Late Viséan (Early Carboniferous) Windsor Group. Minor evaporites, including halite, are locally present in the underlying Horton Group but no potentially exploitable deposits are known.

The Windsor Group (Viséan) is a regionally widespread unit up to 1000 metres thick. It is dominated by subaqueous and diagenetic marine evaporites, including halite, anhydrite, gypsum and potash, with subordinate interstratified redbeds and marine carbonates. These rocks display a wide range of structural and stratigraphic complexities within the Carboniferous depositional and tectonic setting. Carboniferous basins in Nova Scotia are part of the complex Magdalen (Fundy) Basin system developed in the Acadian Orogen in Atlantic Canada. They contain up to 7000 metres of pull-apart basin molassic sediments with minor, but economically important, marine evaporites of the Windsor Group. Deformation varies from negligible in the relatively stable platform blocks characterized by thin sediment accumulation, to substantial deformation in the fragmented basinal areas involving Hercynian strike slip, thrust and normal faulting, gravity sliding, evaporite diapirism and folding of the thick sedimentary fill.

Until recently, the distribution and geology of the evaporites, especially salt and potash, have been poorly understood because of limited data. Recent drilling has established that salt is present throughout the Windsor Group section. The principal salt unit including potash (sylvite and carnallite) is located in a major carbonate-sulphate-chloride cycle at the base of the Windsor Group. Thinner and younger salt beds with minor potash are locally present in association with anhydrite and marine carbonate in numerous saline minicycles.

The major salt producers in Nova Scotia are a conventional underground mine at Pugwash operated by The Canadian Salt Company Limited and a brining mine at Nappan operated by Domtar Incorporated, Sifto Salt Division. Nova Scotia has large salt resources and some potash. It is located near potential markets and along major shipping routes. These factors should enhance further development of mining, chemical and underground storage industries in the Province.