Deposits of earthenware clay in southwest Cape Breton: origin and economic potential

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There are abundant surface clay deposits in the lowlands of southwest Cape Breton with potential for use as low temperature ceramic products. Ice-dammed lakes formed at the end of the last glaciation when a large glacier in the Gulf of St. Lawrence dammed up meltwater sourced in highlands that rim the Gulf. Coastal plain basins were filled with fine-grained, turbid sediment from eroding till deposits washed in by slope runoff and glacier melt in the highlands. Some of the glaciolacustrine facies found in these basins are unusually fine-grained and massive. They lack graded beds and coarse silt and sand strata that often characterize glacial lake sediments (varves) and have a low percentage of dropstones. The implication is that active glaciers were not directly calving into these bodies of water, but dammed the basin outlets at lower elevations. The age of the youngest of these ice-dammed lakes has been bracketed by an organic paleosol underlying lake clay at several localities dated around 11,200–10,800 ^{14}C yrs B.P. and regional basal lake sediment accumulation ages of around 10,000 yrs B.P. The last of these ephemeral ice-dammed lakes formed when a glacier in the Gulf of St. Lawrence re-advanced during the Younger Dryas period (11–10 ka), a brief but intense cold period at the end of the last glaciation.

These clay deposits are widespread, fine-grained, and homogenous. Utilization of clay as a resource material for ceramics and structural clays depends on a range of properties unique for each industry. A common denominator for all industrial clay uses is a large-volume source of moderately uniform clay that has a low shrinkage/swelling percentage, consistent firing colour, relatively low firing temperature, and good strength after firing. The initial firing tests show that clays are of the earthenware type, and meet the requirements of many low temperature ceramic products. They have excellent plasticity and good strength after firing. It appears from the initial testing, that the Cape Breton deposits are very similar to the glaciolacustrine Lantz clay of central Nova Scotia, which is currently mined for structural (brick-tile) and pottery use. More testing will be required to fully evaluate

these clays, and a joint program to evaluate Cape Breton clays is being initiated with the Nova Scotia College of Art and Design. The project is funded through the Targeted Geoscience Initiative (TGI), aimed at stimulating resource development in Cape Breton by improving the geoscience knowledge base relating to both the Carboniferous bedrock and the overlying Mesozoic and Cenozoic sediments in the area.