

Resources of a different kind: application of geochemical analytical techniques to archaeological research

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Both conservators and archaeologists have come to rely on the analytical tools and techniques used by earth scientists to aid in the identification and understanding of Newfoundland and Labrador's archaeological resources. From elemental mapping techniques to bulk artifact XRF analysis, the Ferryland artifact collection is currently being examined by both students and researchers in an attempt to piece together the past. This paper describes the methods and techniques being used to assess both the burial environment, artifact condition and artifact composition for a seventeenth-century colonial site at Ferryland, Newfoundland. Results of the chemical characterization of the burial environment and iron and slag composition will be discussed as well as current projects examining the countries of origin for tin-glazed earthenware, terra sigillata ware, silver cuff-links and smoking pipes.

Characterization of soil samples involved chemical

analysis by XRF, ICP-MS and soil solution ion activity by a pH meter, conductivity meter and a potentiostat. The identification of mineralogy was performed using XRD. Analyses of iron nail samples were performed using electron microscopy. Ceramics and clay pipes have been examined using LAM-ICP-MS and ICP-MS analytical tools. Problems obtaining suitable standards for archaeological materials and developing sample holders for non-destructive analyses will be briefly discussed.

The results for the burial environment examination indicate that iron preservation is linked to soil porosity, pH, conductivity, corrosion rate, and Cl concentrations. The slag analysis indicated that both charcoal and coal were used as a fuel source by the Ferryland blacksmith. The country-of-origin research is ongoing; however, available results will be presented.