

The Legacy of Glacial Lakes in Nova Scotia

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At the end of the last ice age a myriad of large lakes formed in the highland-rimmed valleys of Nova Scotia. Glacial Lake Shubenacadie covered more than 250 square kilometres in the Shubenacadie and Musquodoboit valleys and formed when a glacier occupied the Minas Basin, causing the water to back up into the southern valley and spill over into the chain of lakes that define the Shubenacadie canal system, eventually emptying into Halifax Harbour. Deposits of massive clay settled in the lake basins and sand and gravel deposits mark the lake shorelines. Glacial Lake Shubenacadie attained a maximum depth of 30 m, controlled by the elevation of the rock sill at Lake William, the highest lake along the Shubenacadie canal spillway. Glacial lakes also formed by a similar process in the Annapolis Valley (Glacial Lake Aldershot) and in the lowlands of southeast Cape Breton (Glacial Lake Dawson). The origin of the thick massive clay deposits within these basins is also enigmatic, as glacial lake deposits tend to have seasonal, melt-induced layering and ice-rafted debris. The lack of bedding can be explained by turbid mixing in relatively shallow lakes, and the lack of dropstones by relatively small and distant ice dams. The Younger Dryas, a still unexplained catastrophic cooling occurring about 13 000 years ago, caused glaciers to re-advance, and reform glacial lakes in some of the lowland basins.

At the turn of the Twentieth Century local glacial lake clays were utilized for brick making in many parts of Nova Scotia, but today they are used to make bricks only at Lantz, Nova Scotia. The homogeneity, plasticity and low-firing temperatures of Nova Scotia glacial lake clays make them an attractive raw material in a mix for brick and tile manufacture. Locally available sand and kaolin can be added to extend firing ranges and reduce shrinkage, producing a wide variety of structural clay products. Plastic Nova Scotia clays can be utilized in pottery, and in the production of clay “slips”. The Department of Natural Resources and Dalhousie University are in the process of evaluating Nova Scotia clay for environmental liner and seal applications.