

Ice-flow history, eastern Bathurst Mining Camp

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One objective of the EXTECH-II project is to complete Quaternary mapping of the Bathurst Mining Camp (BMC) at 1:50 000 scale to define: (1) the distribution and character of surficial materials, (2) the relative chronology of ice flow, and (3) the contrast in glacial features in different parts of the BMC. During 1996, surficial mapping and till sampling were conducted in the Nepisiguit Falls map area, with emphasis on the area between the Captain North Extension and Brunswick No.12 deposits. Eighty-five till samples have been collected to date, filling gaps in a pre-existing regional survey. Exploration trenches and a Geological Surveys Branch pitting program assist in defining the stratigraphy, glacial shearing, and facies changes in glacial and pre-glacial surficial materials.

The western part of the Nepisiguit Falls map area is host to many known massive-sulphide deposits. The underlying bedrock comprises mainly sedimentary and bimodal volcanic rocks of the Miramichi and Tetagouche groups respectively. Carboniferous sedimentary rocks underlie the eastern part of the area. Outcrop is sparse and regolith thicknesses of >4 m are common locally. However, any large outcrops shown on the bedrock maps were visited because they commonly have well developed striae, grooves, and whaleback forms, indicating multiple phases of glacial flow.

A compilation of ice-flow indicators from this project and previous work indicates that the glacial history of the eastern part of the BMC is complex. An ice-flow domain boundary (Miramichi Highlands/New Brunswick Lowlands physiographic boundary) crosses the area in a northeast direction approximating the western margin of the Curventon-Bathurst Valley (CBV), a low-lying, poorly drained area with many swamps and glacially streamlined and fluted bedrock. Initially, ice flowed off the highlands in an eastward (070–110°) direction into the extreme western part of the Nepisiguit Falls map area (California Flow Pattern). Just southwest of the Nepisiguit Falls map area, ice flow was in a southeast (140°) direction (Sevogle Flow Pattern). Subsequently, ice flowed in a north-northeast to north direction through the CBV to the Baie des Chaleurs (Nepisiguit Flow Pattern). There is evidence (striations) of a late-stage ice flow (Tracadie Flow Pattern) in a northwest direction across the CBV. At some locations, there is evidence for early northeastward (020–030°) and southeastward (130°) flow preceding the dominant eastward ice flow. A till fabric in the southern part of the area in thick till over Carboniferous rocks trends at approximately 035°, matching striations and grooves nearby and indicating till deposition in the CBV by the Nepisiguit Flow Pattern.