

**Quaternary geology and glacial dispersal studies, Bathurst Mining Camp,
northern New Brunswick - an overview of Extech II**

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The EXTECH II project, designed to develop methods and improve the existing geoscience database involved in the exploration for massive sulphide deposits in the Bathurst Mining Camp (BMC), started in 1994. One aspect of the project involves surficial mapping and the study of glacial dispersion around massive sulphide deposits in the BMC. Since more than 80% of the area is covered by glacial deposits, the study of glacial dispersal is an important complementary mineral explora-

tion technique. This study will concentrate on both the dispersion of pebbles in the till and on the dispersion of the trace elements in the till matrix. The results will aid in the interpretation of data collected in other EXTECH II projects, including lead isotopes in till, geochemistry of soils and stream-sediments, hydrochemistry of ground and surface waters, biogeochemistry, and radiometric surveys.

Surficial mapping at 1:50 000 scale and basal till sampling

on an approximate 2 km grid has been carried out over much of the BMC in recent years. Regional mapping, in conjunction with the data acquired during several detailed surveys, has provided the background necessary to determine optimum mapping scales and sample spacing for the EXTECH II project areas. Generally in the BMC, basal till is thin (<1-2 m thick); glacial dispersal is short (<500 m to a maximum of 1 km); till clasts reflect local underlying bedrock (<10% transported from up-ice); and striations, pebble lithologies and location of boulder erratics indicate a dominate eastward ice movement (070°-110°). In 1994, Quaternary mapping and collection of basal till, and pebbles from basal till was completed around selected deposits in the BMC. Detailed studies of the Half Mile Lake (315 sample sites on 30 and 120 m spacing) and Restigouche

(126 sample sites on a 250 m grid) massive sulphide deposits and an initial study of the Willett mineral occurrence (45 samples on 250 m spacing) was carried out. At Half Mile Lake, a 120 m trench and 20 pits (1.5-3.5 m depth) were excavated in the 3 km² area around the Upper AB Zone to study and compare the vertical variation in till geochemistry and Pb isotopic signatures of till (a total of 205 samples taken at 10 cm vertical intervals). Detailed Quaternary mapping, and till geochemical, till clast and till mineralogical studies will serve to define: (1) the distribution and character of surficial materials, (2) the relative chronology of ice flow, and (3) the direction of glacial transport and dilution rate down-ice from massive sulphide deposits. Results from these case studies can be applied to other sites in the area.