

9. PILOT GEOCHEMICAL - GLACIAL GEOLOGICAL SURVEYS, 1972

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Pilot geochemical exploration studies, with surficial geological support, were carried out to test and evaluate the effectiveness of various regional and detailed techniques for base-metal exploration within two distinct geological terrains in Newfoundland, Fig. 1. Studies were carried out near a massive sulphide, base-metal deposit in Wild Bight volcanic rocks of the Ordovician Exploits Group in the Notre Dame Bay area, and near zinc sulphide deposits in Cambro-Ordovician carbonate rocks on the Great Northern Peninsula at Daniel's Harbour.

Stream and lake sediments, lake waters, B and C horizon soils, and till were sampled. Basal till samples were collected by a percussion drilling technique. Water samples were analyzed for Cu, Zn, Ni and Hg; and sediment, soil and till samples for Cu, Zn, Ni, Co, Pb, Ag and Mn. Certain of the latter samples were analyzed also for As, Fe and Hg.

Regional lake and stream sediment surveys have delineated target areas for follow-up studies characterized by relatively high element values: As, Zn and Cu in the Notre Dame Bay area, and Zn in the Daniel's Harbour area. Fe, Mn and organic content acting singly or in combination were found to have a significant effect on the distribution of certain elements in lake and stream sediments. Thus, in future surveys, their scavenging influence should be removed, as required, by data processing prior to interpretation. Stream sediment surveys were applicable at regional or follow-up study levels. Lake waters are not as effective as lake and stream sediments but they appear to have potential.

Detailed follow-up soil and upper till studies near the massive sulphide deposit were not effective but the upper till studies showed potential. Soil sampling was effective in the Daniel's Harbour area where both B and C horizon soil data provided the definition of suboutcropping mineralization.

In the Notre Dame Bay area, the basal till sampling technique was uniquely effective in the plateau peat bog terrain overlying the massive sulphide deposit because it provided anomalous Zn, Cu and As dispersion patterns that reflect the known sulphide body. The technique also provided a means of

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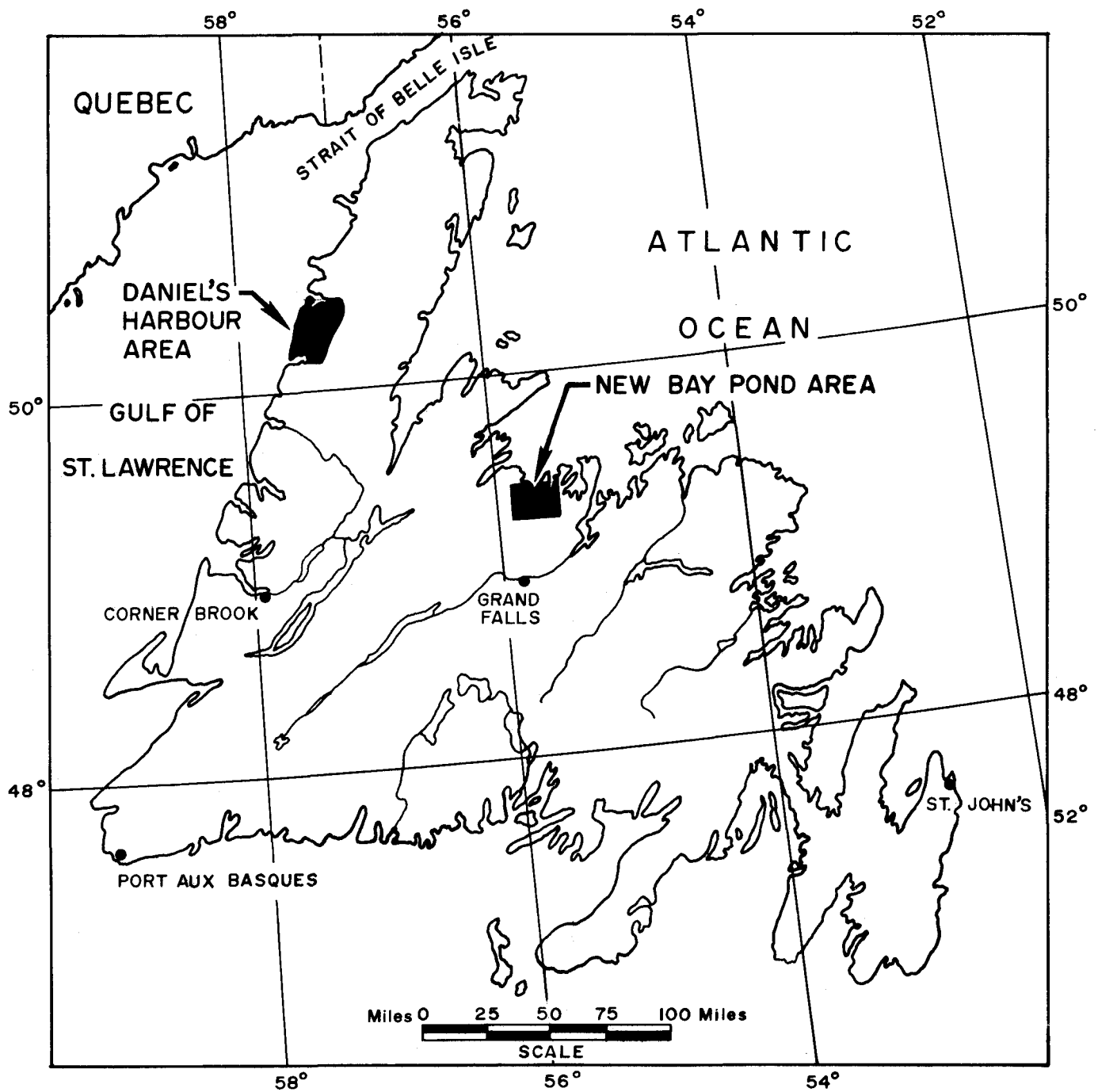


Figure 1.

discriminating between those geophysical anomalies caused by a suboutcropping sulphide source from those that are not. In the Daniel's Harbour area, where the till thickness exceeded 6 feet basal till sampling effectively provided a definition of zinc dispersion patterns in the till indicating the source of soil anomalies. At till depths less than 6 feet, B and C horizon soils were found to be adequate and as effective as basal till sampling.

The results of these studies will be published early in 1974.