

**Geological studies south of the Brunswick Mines area (21 P/5 west), Bathurst Camp,
northern New Brunswick**

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A 1:10 000 scale mapping project is being conducted between the Brunswick No. 6 and Heath Steele mines to delineate, in detail, the surface distribution of the massive-sulphide-bearing "Brunswick Horizon". This horizon typically occurs at or near the contact between the Middle Ordovician Nepisiguit Falls and Flat Landing Brook formations. The Nepisiguit Falls Formation consists mainly of interlayered, fine- to coarse-grained, quartz and quartz-feldspar crystal-rich rocks and fine-grained sedimentary rocks.

These are divided into quartz-augen schist (QAS), quartz-feldspar-augen schist (QFAS), chlorite schist (CS), and iron formation/massive sulphides (the "Brunswick Horizon"). Most of the Nepisiguit Falls Formation rocks have been classified as tuffites, tuffs, lava flows, and/or porphyries.

The Flat Landing Brook Formation overlies the Nepisiguit Falls Formation and comprises mainly aphyric to feldspar-phyric, massive and fragmental, rhyolite and hyaloclastites. Many of these rocks exhibit false pyroclastic textures

and were previously interpreted as tuffs and pyroclastic deposits. Volcaniclastic and volcanic-derived sedimentary rocks, stratigraphically equivalent to the rhyolites, are locally present and may overlie the massive sulphide deposits (e.g., Brunswick No. 12).

The area has been affected by at least five phases of deformation, but it is mainly the F2 and F4 folds that govern the macroscopic distribution of the rocks. Southwestward-

directed thrusting, associated with the first phase of deformation (D1), has produced a repetition of the stratigraphy in the map area. The structure and stratigraphy of the area have been evaluated within the framework of the recently reinterpreted regional tectonostratigraphy. Lithogeochemical results indicate a potential for distinguishing between the Nepisiguit Falls and Flat Landing Brook formations based on heavy rare-earth-element concentrations.