

A new interpretation of the geology of the Kingston Peninsula, southern New Brunswick

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New mapping during the summer of 1996 shows that the Kingston Peninsula is underlain mainly by metavolcanic and minor metasedimentary rocks (Bayswater Group) intruded by high-level granitic plutons. Previous U-Pb (zircon) dating has shown that both the volcanic and granitic rocks are Silurian in age. The Bayswater Group consists of

four elongate units composed dominantly of (from southeast to northwest): (1) dacitic lithic and lithic-crystal tuff; (2) dacitic and rhyolitic crystal tuff; (3) dacitic lithic tuff with less abundant crystal tuff, interlayered with metasedimentary rocks (phyllite and schist); and (4) andesitic flows and tuffs with minor volcanogenic siltstone and

slate, and rhyolite. Preliminary petrographic studies suggest that the metamorphic grade in these units is upper greenschist facies. The granitic plutons are characterized by fine grain size and abundant granophyric and locally porphyritic textures, consistent with high-level emplacement. Based on petrological similarities, minor felsic dykes in the volcanic rocks are probably related to the granitic plutons.

Both the volcanic rocks and granitic plutons are intruded by abundant amphibolitic dykes, which may originally have had dioritic mineralogy (magnesian-hornblende + andesine/labradorite), but which have been metamorphosed to greenschist facies like their host rocks. In contrast to previous interpretations, no bimodal dyke complex is present in the Kingston Peninsula.

Other map units include basaltic flows with minor tuff and rhyolite (Long Reach Formation), which form a narrow

fault-bounded band along the northwestern margin of the peninsula, and the Gorhams Bluff tuff unit, which has recently yielded a U-Pb (zircon) age of ca. 555 Ma and is part of the Neoproterozoic Belleisle Group. On the southeastern margin of the peninsula, conglomerate, sandstone, and siltstone of Carboniferous age occur in faulted and locally unconformable contact with the Bayswater Group.

Many of the tuffaceous and plutonic rocks contain abundant pyrite, and, locally, minor concentrations of base-metal sulphides and slightly anomalous gold values. Minor barite veins and Cu showings occur in the Long Reach Formation. Although exploration activity in the area has been very limited, the late- to post-Carboniferous faults warrant further investigation because of a close spatial association of stream-sediment geochemical anomalies with these structures.