

Preliminary Bedrock Geology of the Liverpool and Lake Rossignol Map Areas (NTS 21A/02 and 21A/03), Southern Nova Scotia

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The second year of the South Shore Nova Bedrock Mapping Project focused on completion of the Liverpool and Lake Rossignol map area

s (NTS 21A/02 and 21A/03, respectively) in southern Nova Scotia. The main objectives of the 2005 map season were to: (1) produce two 1:50 000 scale geological bedrock maps, (2) attempt a stratigraphic subdivision of the Meguma Group and (3) comment on the economic potential of the area.

The oldest units are the Cambrian to Early Ordovician Goldenville and Halifax formations. The two-part subdivision of the Goldenville Formation recognized in the previous map areas to the south and southwest is continued into the 2005 map area. However, an intervening middle unit is recognized in the eastern part of area. The lower unit is thickly bedded, massive, grey metasandstone interbedded with laminated metasandstone, minor metasilstone and rare black slate. This unit displays a featureless aeromagnetic signature. In the eastern part of the 2005 map area, this lower unit is overlain by a unit of regularly bedded, grey metasandstone and minor metasilstone which contrasts with the lower unit in displaying a distinct, relatively high aeromagnetic pattern. The upper unit consists of massive to well laminated grey metasandstone at the base and fines upwards into dominantly green metasilstone and slate with thin metasandstone beds. The metasandstone beds typically display cross-stratification. The upper 50 m of this unit locally contains thin pink cotucle beds. Although the lower part of this unit has a featureless aeromagnetic signature, the metasilstone-dominated upper part displays two distinct aeromagnetic bands that can be traced on a regional scale. Calc-silicate nodules and beds are common throughout the Goldenville Formation. Grazing and burrowing trace fossils were observed in the upper unit but have not yet been assigned an age. The overlying Halifax Formation consists of black slate and metasilstone, interbedded locally with pyrite- and arsenopyrite-rich beds. The contact with the underlying Goldenville Formation is sharp and conformable.

The Meguma Group is intruded by the 380-373 Ma South Mountain Batholith, Bald Mountain Pluton and Port Mouton Pluton. In the map area they consist of medium- to coarse-grained, biotite- and muscovite-bearing monzogranite. The Bald Mountain Pluton previously was mapped as one body but based on aeromagnetic data it is now interpreted to consist of several smaller stocks. The South Mountain Batholith and Bald Mountain Pluton contain abundant xenoliths of metasedimentary rocks, and have well developed contact metamorphic aureoles.

The Meguma Group in the map area, as elsewhere, is deformed into regional, northeast-trending F_1 folds with a well developed axial planar cleavage, produced during the Devonian Acadian Orogeny. Intersection lineations (L_1) plunge gently to the northeast and southwest. Deformation was accompanied by greenschist-facies (biotite-grade) metamorphism. The Early Jurassic Shelburne Dyke is poorly exposed, but based on its distinctive aeromagnetic signature can be traced through the map area.

Several past-producing gold districts occur in the Liverpool - Lake Rossignol map area, where bedding-parallel quartz veins in the Goldenville Formation are gold-bearing. In addition, gold-bearing quartz clasts and free gold have been discovered in thick till that covers most of the area. Close to the contact with the South Mountain Batholith, several breccia outcrops in the Goldenville Formation and boulders of metasandstone contain significant galena and sphalerite. The Goldenville Formation hosts one operating aggregate quarry, and several gravel and sand pits are currently being used. The area has potential for other aggregate and sand/gravel deposits.

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