Preliminary Bedrock Geology of the New Germany Map Area (NTS 21A/10), Southern Nova Scotia

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The fourth summer of the South Shore Nova Bedrock Mapping Project focused on metasedimentary rocks on the New Germany map sheet (NTS 21A/10) in southern Nova Scotia. As in the previous year, the main objectives of the 2007 field season were to: (1) produce a 1:50 000 scale geological bedrock map, (2) assess the validity of the stratigraphic subdivisions of the Meguma Group made in the previous three field seasons on map sheets to the southwest, and (3) comment on the economic potential of the area.

As a result of mapping in the Meguma Group, combined with petrographic and chemical studies, a re-evaluation of its stratigraphy is warranted. As previously proposed, the lower metasandstone-dominated Goldenville Formation and upper slate-dominated Halifax Formation should be elevated formally to 'group' status, because the new mapping associated with this project and the previous Southwest Nova Project has demonstrated that both of these traditional formations can themselves be subdivided into formations and members. Thus, the Meguma Group will be elevated to a 'supergroup', and the Goldenville and Halifax formations elevated to group status.

Mapping on the New Germany sheet showed that the Late Neoproterozoic to Early Cambrian Goldenville Group, in that area, can be subdivided into three formations, similar to those in the previous map areas to the south and southwest. The lower unit (Green Harbour Formation) is thickly bedded, massive, grey metasandstone interbedded with laminated metasandstone and minor metasiltstone. The middle unit (Government Point Formation) consists of cleaved, well laminated, grey to green-grey metasiltstone with thin crosslaminated metasandstone beds. The upper unit (Moshers Island Formation) is similar to the Government Point Formation, but contains thin dark brown to black manganese-rich beds and nodules. Close to the contacts with the South Mountain Batholith the manganese nodules and beds contain spessartine garnet (coticules). Calcsilicate nodules and beds are common in the Goldenville Group.

The overlying, Late Cambrian to Early Ordovician Halifax Group consists of black, rusty slate to silty slate. The slate is interbedded with cross-stratified, fine grained metasandstone with abundant sulphide minerals, and is typical of the Cunard Formation. The contact with the underlying Moshers Island Formation of the Goldenville Group is sharp and conformable. The conformably overlying Feltzen Formation is poorly exposed in the map area, but consists of grey, thinly bedded metasiltstone. The Meguma Supergroup in the map area is deformed into regional, northeasterly-trending F_1 folds with a well developed axial planar cleavage, produced during the Devonian Neoacadian Orogeny. Deformation was accompanied by greenschist-facies (biotite-grade) metamorphism.

The Meguma Supergroup was intruded by the ca. 380-373 Ma South Mountain Batholith. In the map area the Batholith consists of coarse grained, megacrystic monzogranite to granodiorite, locally with abundant xenoliths of metasedimentary rocks and porphyritic granite. The Batholith produced a well developed contact metamorphic aureole in the adjacent Meguma Supergroup with cordierite- and rare andalusite-bearing hornfels in the more pelitic units.

One past-producing gold mine occurs in the map area, where bedding-parallel quartz veins in the Green Harbour Formation are gold-bearing. This occurrence is unique in the Meguma Supergroup because the gold-bearing veins are crosscut by granitic dykes related to the South Mountain Batholith, indicating that gold mineralization occurred prior to intrusion. The Meguma Supergroup also hosts several small-scale rock quarries, and numerous gravel and sand pits are currently being used. The area has potential for additional base metal prospects, as well as aggregate and sand and gravel deposits.

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