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LEGEND

SURFICIAL DEPOSITS

QUATERNARY

HOLOCENE – LATE WISCONSINAN

UNREPRESENTATED MARINE – ALLUVIAL, OUTWASH AND ICE CONTACT DEPOSITS (MA, OW, IC): MA: silty clay, sand and gravel; forms estuarine deposits, alluvial floodplain and alluvial channel deposits. OW: silt, sand and gravel: massive to horizontally bedded; channel sequences common; forms flat plains and terraced deposits. IC: silty sand, gravel and boulders, abrupt grain size transition between shallow to steeply dipping beds; faulting is common; clasts reflect provenance of surrounding till; may be interstratified with till; forms kames, kame terraces, ice contact deltas and eskers; thickness 1-15 m.

LATE – MIDDLE WISCONSINAN

SHELBURNE RIVER TILL: Occurs as granite (GSRT) and greywacke/slate (MSRT) lithological facies; loose, texture varies from a sandy matrix-rich to a stony, clast supported till; colour varies from white (10YR8/1)* to very pale brown (10YR7/3); nonweathered appearance; occurs as hummocks, ridges and a rolling ground moraine; deposits are crudely stratified; spatially associated with kames and eskers; exhibits extensive onlap of clasts down-ice onto adjacent bedrock units; renewal distances** vary from 0.1 km to >5 km; matrix may be derived from up ice lithologies and may not reflect the composition of the pebble fraction; thickness varies from 1-3 m in areas of ground moraine to 10-15 m on hummocks and ridges; the major transport direction is toward the southeast with lesser transport toward the south and west.

BEAVER RIVER TILL: Divided into ablation, ground moraine and drumlin derived units.

Ablation moraine: Occurs as granite (GTC), greywacke (GWC) and slate (SLC) lithological facies; loose, matrix supported till containing intrabeds of silt, sand and gravel; colour varies from very pale brown (10YR7/4) to yellowish-brown (10YR5/4); forms hummocks and ridges with associated ice contact deposits; locally derived or may exhibit extensive onlap of clasts and matrix down-ice onto adjacent rock types; renewal distances vary from 0.1 to 6 km; thickness 1-10 m; glacial transport is toward the southeast and south.

Ground moraine: Subdivided into granite (GTB), greywacke (GWB) and slate (SLB) lithological facies; structureless stony matrix though sandier varieties with minor washed zones around boulders are common; colour varies from light yellowish-brown (10YR6/4) to dark yellowish-brown (10YR4/4) in the granitic facies, light olive-brown (2.5Y5/4) in the greywacke and slate facies; generally forms a featureless ground moraine; exhibits rapid lithological change down-ice of bedrock contacts, >90% of clasts are transported less than 1 km; renewal distances vary from tens to hundreds of metres; thickness 1-6 m; glacial transport directions are difficult to determine due to short renewal distance, it is southeastward across most of the South Mountain Batholith (SMB) however northward, northwestward and westward dispersal was mapped in the northern and western margins of the SMB.

Drumlin derived moraine (GTB(D)): Loose, medium to coarse-grained sandy matrix, moderately stony, minor washing; colour is brown (10YR5/3) to dark yellowish brown (10YR4/4); till mantles and forms a ground moraine between drumlins; nongranitic lithologies are incorporated from stratigraphically older tills; matrix composition is in part dependent on composition of reworked older till; thickness 1-4 m; actual glacial transport directions are the same as those of the ground moraine unit, however a strong southeast transport was inherited from older reworked southeast transported till(s).

LAWRENCETOWN TILL: Muddy to sandy till, moderately compact, jointed, greenish mottling in the weathered zone; colour varies from dark reddish-brown (2.5YR3/4) to strong brown (7.5YR4/6); occurs as a ground moraine and drumlins; also includes areas previously mapped as undivided till that contain exposures of Hartlen (GTA), Beaver River (GTB) and Lawrencetown Tills; due to limited areal extent individual tills do not form mappable units; clast lithologies vary from 10-90 percent local bedrock to 10-90 percent non-granitic clasts derived from as far as 90 km; distal sources are the metasedimentary /volcanic/mafic complex of the Cobequid Highlands, Meguma Group, metasedimentary and volcanic rocks of the White Rock, New Canaan, Kentville and Torbrook Formations, Windsor Sub-basin and North Mountain basalt; reversal distances vary from hundreds of metres to tens of kilometres; thickness is 1-2 m as a ground moraine and 4-30 m as drumlins; dispersal directions vary from southward in the eastern SMB to southeastward in the western part of the SMB.

EARLY WISCONSINAN (?)

HARTLEN TILL: Occurs as granite (GTA) and slate (STA) lithological facies; sandy, compact till, clast-rich, fissile; colour varies from strong brown (7.5YR4/6) in granite facies to olive (5Y5/3) in slate facies; generally forms or cores drumlins; clast lithology dominated by local bedrock lithologies; 10-35 percent of clasts transported 20-25 km; thickness 1-10 m; glacial transport is toward the southeast with lesser transport toward the east-southeast(?).

PRE-WISCONSINAN

RESIDUUM: Chemically weathered bedrock; commonly develops a soil-like consistency due to insitu weathering followed by glacial mixing; may retain hypidiomorphic granular texture of parent granite, preservation of K-feldspar megacrysts and hydrothermally altered fracture zones; restricted to the topographically higher regions of the Southern Uplands; thickness varies from a thin veneer to >3 m.

BEDROCK: Glacially scoured bedrock; areas of discontinuous till veneer and B horizon soil developed to bedrock; bedrock structure and large scale features of glacial erosion are easily discernible on aerial photographs.

* All colours from Munsell Soil Colour Chart

** Renewal distance is the distance required by a given rock type (measured from the proximal contact of the up-ice lithology) to increase its proportion in till from 0% to 50% (Paltaniemi, 1985).

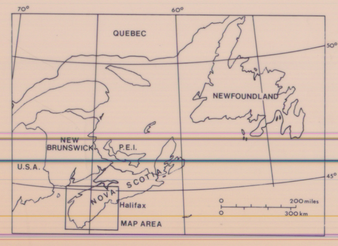
SYMBOLS

- Drumlins
- Esker: flow in direction of arrow
- flow direction unknown
- Moraines

SYMBOLS

- Erosional Contact
- Gradational Lithofacies Contact
- Stratigraphic Relationship Uncertain

FIGURE 1: Block diagram illustrates the spatial and temporal relationships observed or inferred on the South Mountain Batholith between till units, their lithofacies and their relationships with underlying bedrock geology. Horizontal and vertical scales are schematic only.



NOVA SCOTIA DEPARTMENT OF MINES AND ENERGY
OPEN FILE MAP 89-018

PRELIMINARY GLACIAL GEOLOGY OF THE SOUTH MOUNTAIN BATHOLITH
WESTERN NOVA SCOTIA

P.W. FINCK, R.M. GRAVES, F.J. BONER

SCALE 1:250 000

kilometres 5 0 5 10 15 20 25 kilometres

miles 5 0 5 10 15 miles

Base map derived from A Map of Nova Scotia, 1979 for Nova Scotia Departments of Lands and Forest, Mines and Energy, and Highways.

NOVA SCOTIA DEPARTMENT OF MINES AND ENERGY
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