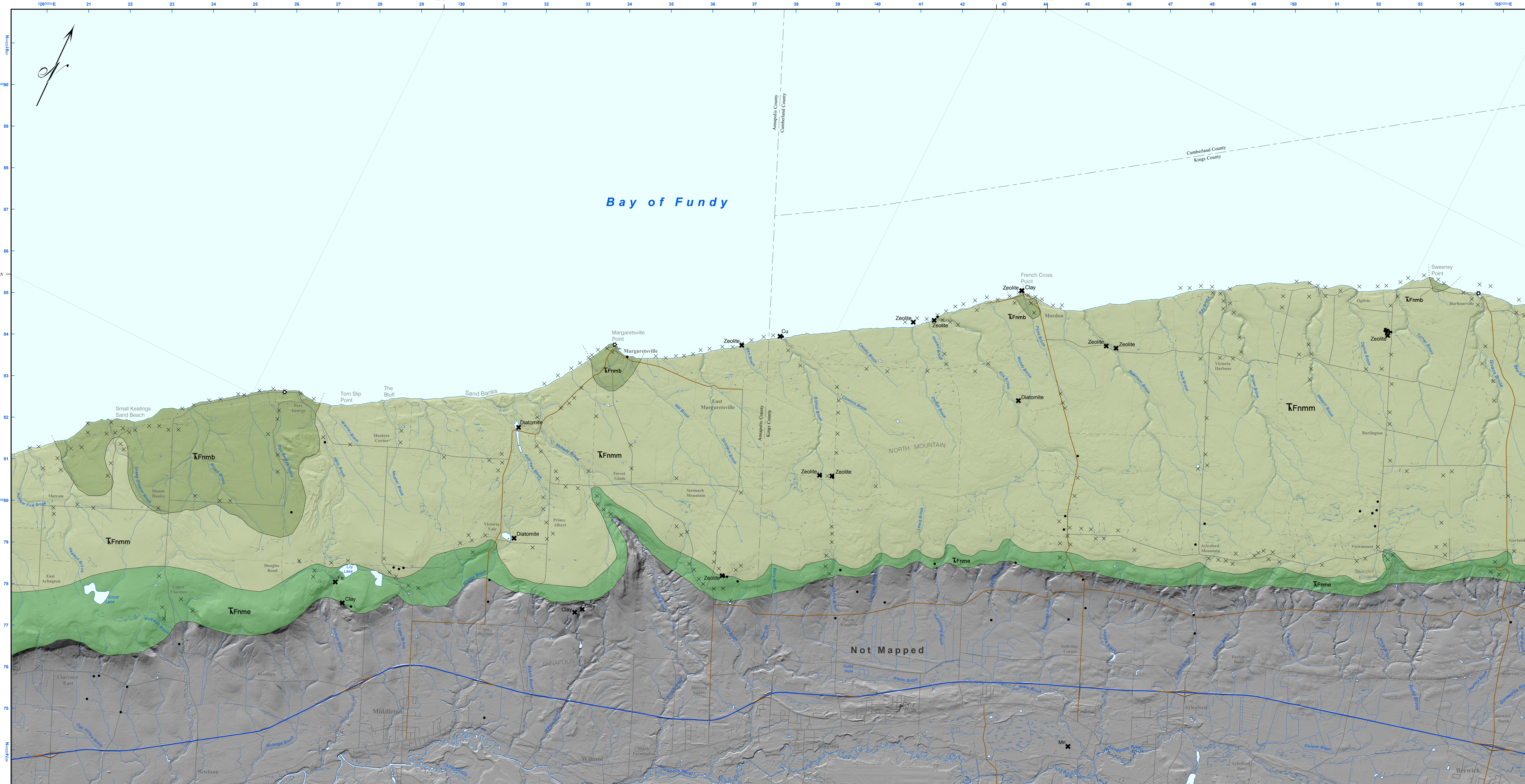


Legend

MESOZOIC

TRIASSIC

FUNDY GROUP

NORTH MOUNTAIN FORMATION

TRFnmb — BRIER ISLAND MEMBER (Upper Flow Unit) (TRFnmb): this unit (≤150 m) occurs at the top of the basalt sequence, conformable on unit TRFnmm and outcrops extensively on the northern shorelines except in the central part of the mapped area where it is notably absent. The basalt is massive, dark grey to grey-green with microcrysts (≤5%) of plagioclase and pyroxene with variable (≤30-40%) amounts of mesostasis in a medium-grained, ophitic-textured host. This unit consists of 1 or 2 flow sheets, has colonnade-style polygonal jointing (≤1 m) and, at the base, inclined pipe vesicles occur. The lower 10-20 m locally (e.g., Morden, Margaretsville) contains felsic material (ca. 65-74 wt. % SiO_2) in the form of dykes, amoeboid masses and spectacular segregation pipes (3-60 cm; 10-15/m^2) that are sometimes cored by agate and crystalline silica. Rarely veins of silica cut the unit and locally areas of intense silica alteration occur.

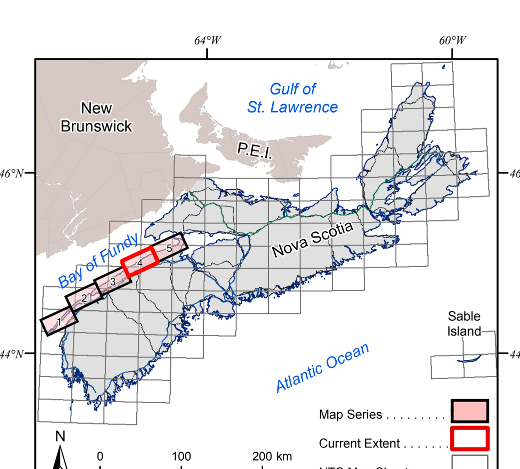
TRFnmm — MARGARETSVILLE MEMBER (Middle Flow Unit) (TRFnmm): this unit occurs between the massive and relatively fresher TRFnme and TRFnmb flows. Due to alteration the unit is recessive and occupies low lying, locally swampy (e.g., Long Island and Brier Island) areas. Significantly, in the eastern part of the mapped area (i.e., Scots Bay) the unit is in contact with the younger Triassic Scots Bay Formation rather than the Brier Island Member. The unit varies in thickness from ≤20-40 m in the western part of the mapped area to ≤170 m maximum thickness in the central area; areal exposure varies considerably towards the east. Individual flows are fine grained, dark grey to grey-green and/or red-brown, massive to intensely vesiculated, generally altered and, therefore, very friable. The unit contains multiple (15-20), thin (≤15-20 m), geometrically complex flow sheets with abundant, zonally-arranged vesicles (e.g., pipes, vesicle cylinders and sheets) which are mostly occluded with different zeolite phases (locally 20-30% by volume) and lesser silica and micaceous material. In thicker flows the cores or lower parts can be massive and rarely exhibit columnar jointing. Abundant field evidence (e.g., flow lobes, stacked lobes, vesicle zonation, tumuli) indicates this is a compound flow unit consisting of abundant inflated pahoehoe flow sheets. Red-brown oxidized tops and neptunian dykes of fine-grained, red-brown siliceous material in the upper half of flows indicate a time hiatus between flows. Veins of silica material, including jasper and chalcedony, occur.

TRFnme — EAST FERRY MEMBER (Lower Flow Unit) (TRFnme): this unit occurs at the base of the basalts and outcrops extensively on shorelines in the western part of the mapped area, but lesser in inland areas in the central and eastern parts of the mapped area. The basalt is grey-green and dominantly holocrystalline with microcrysts (≤5%) of plagioclase and pyroxene with variable (≤15%) amounts of mesostasis. The contact with the underlying Triassic Blomidon Formation sedimentary rocks, which are altered (i.e., whitish clay material) near the contact, is rarely exposed (e.g., north of Bridgetown, eastern side of Digby Gut). (Note: The Blomidon Formation is not shown on this map series. See Keppie (2000) for location). The top (≤1-5 m) and bottom (≤10-25 cm) of the flow are chilled and vesiculated with the top also locally red-brown due to oxidation. The unit contains well-developed polygonal jointing (i.e., columnar joints 2 m) of colonnade and complex entablature patterns. The upper part of the flow is distinguished by layers (30-50 cm) of vesiculation, now occluded by zeolites, and also by bands (centimetres to 1-3 m) of mafic pegmatite (upper 30-50 m). These sheet-like layers are comb-textured and pyroxene-rich with a granophyric matrix; concordant or discordant rhyolite or granophyre seams (≤3 cm) may also occur. The unit may also contain large (tens of metres wide) circular features, referred to as rootless cones, which are most prevalent in the central and western parts of the mapped area. Fractures cutting the unit are lined with zeolites or silica, or more rarely sedimentary dykes consisting of fine-grained, silica-rich, red-brown material.

Symbols *

- Outcrop
- Drillhole (after Fisher, 2006)
- Mineral occurrence (Au - gold, Cu - copper, Fe - iron, Mn - manganese, V - vanadium) (after O'Reilly *et al.*, 2009) — Cu
- Radiometric date (U-Pb zircon; Ma) (after Hodych and Dunning, 1992) — U 202±1
- Geological contact (defined, assumed)
- Fault (defined)
- LiDAR survey area (Webster, 2010)
- Lighthouse
- Rock in water
- Arterial highway — 102
- Trunk highway — 4
- Collector highway — 333
- Hard surface road
- Loose surface/resource access road
- Trail, footpath, cart track
- Railway (active, inactive)
- Coastline
- River, stream
- County boundary
- Transmission line (single line)
- Swamp
- Lake/ocean

* Note: Compiled symbols list for map series. All symbols may not appear on each map.



Map Notes

This is 1 map in a series of 5 bedrock geology maps at a scale of 1:50 000.

GIS databases, cartography and reproduction by Angie Ehler, Brian Fisher, John MacNeil and Jeff McKinnon of the Nova Scotia Department of Natural Resources, Geoscience Information Services Section, 2010. The GIS databases and map were developed using ArcGIS® 9.3.

Universal Transverse Mercator Projection (UTM), Zone 20, Central Meridian 63°00' West.

North American Datum (NAD) 1983 Canadian Spatial Reference System (CSRS) 98.

Base and digital data derived from the Nova Scotia Topographic Database (NSTDB), Copyright Her Majesty the Queen in Right of the Province of Nova Scotia. The NSTDB is available from Service Nova Scotia and Municipal Relations (SNSMR), Land Information Services Division (LIS), Nova Scotia Geomatics Centre (NSGC), Amherst, Nova Scotia.

Shaded relief image derived from a 5 m LiDAR bare-earth Digital Elevation Model of the North Mountain area, Nova Scotia, DP ME 455, Version 1, 2010. Azimuth of 315° and sun angle of 45°. Compiled by T. Webster. Composite of several individual surveys dating back to 2000. The Annapolis Valley section of the North Mountain was acquired by the Applied Geomatics Research Group with funding from the Canada Foundation for Innovation (2000, 2003, 2004). The Digby Neck, Long Island and Brier Island sections were acquired by the Applied Geomatics Research Group with funding from the Geological Survey of Canada (Atlantic), Natural Resources Canada (2006).

Descriptive Text

This map series shows the extent of the North Mountain Formation, which is a laterally continuous unit of basalt outcropping semicontinuously for about 200 km from Cape Split in the east to Brier Island in the west. The basalt is sandwiched between Triassic age clastic sedimentary rocks of the Blomidon and Scots Bay formations. (Note: The Blomidon Formation is not shown on this map series. See Keppie (2000) for location). The North Mountain Formation consists of three members which are arranged in a conformable, layer-cake stratigraphy dipping gently (2-5°) towards the Bay of Fundy; however, more irregular dips locally occur in the middle member (TRFnmm) owing to the inflation of individual pahoehoe-type flows during formation. Importantly, zeolites are common in the members and in the case of the middle member (TRFnmm) pervasive. Full details of previous work, zeolite occurrences and formation and the physical volcanology are found in the selected references.

Disclaimer

The information on this map may have come from a variety of government and nongovernment sources. The Nova Scotia Department of Natural Resources does not assume any liability for errors that may occur. This map is intended for use at the published scale of 1:50 000.

Recommended Citation

Kontak, D.J. and Webster, T.L. 2010: Bedrock geology map of basaltic rocks of the North Mountain Formation from East Arlington to Harbourville, part of NTS sheets 21A/14, 21A/15, 21H/02 and 21H/03, Annapolis and Kings counties, Nova Scotia; Nova Scotia Department of Natural Resources, Mineral Resources Branch, Open File Map ME 2010-11, scale 1:50 000.

Nova Scotia Department of Natural Resources
Mineral Resources Branch

Open File Map ME 2010-11

Bedrock Geology Map of Basaltic Rocks of the North Mountain Formation from East Arlington to Harbourville, Part of NTS Sheets 21A/14, 21A/15, 21H/02 and 21H/03, Annapolis and Kings Counties, Nova Scotia

D.J. Kontak and T.L. Webster

Scale 1:50 000

1 0 1 2 3 4 5 km

Halifax, Nova Scotia
2010

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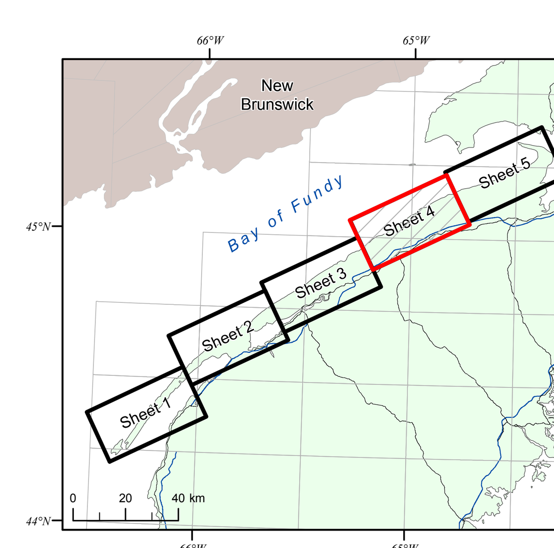

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Dec 17, 2010