Inventory of Geological Values in the Vicinity of Colbart Lake, Nova Scotia

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Geology in the Vicinity of Colbart Lake

The bedrock geology in the vicinity of Colbart Lake consists of two primary lithologies; the Halifax Formation and the South Mountain Batholith (SMB).

The region directly north of Colbart Lake is dominated by the Halifax Formation. This unit is characterized by finely laminated dark grey or black slates that contain abundant deposits of pyrite (Schenk 1995).

The region toward the south of Colbart Lake is dominated by the SMB, whereby the lake itself is situated directly on top of the contact between these two lithologies. The SMB, in the vicinity of Colbart Lake, is a leucomonzogranite (a type of granite that contains a monzogranitic composition of less than 6% mafic minerals). Furthermore, the unit contains numerous xenoliths (pieces of bedrock that have become imbedded within the granitoid body) of the Halifax Formation.

Geologic History of the Site

The geologic history in the vicinity of Colbart Lake began in North Africa, near present day Morocco, approximately 500 million years ago during the Ordovician Period. At this time, sediments were eroded from the African craton, whereby they became deposited on the African continental shelf and abyssal plain, creating the Halifax Formation (Schenk 1995). Plate tectonics caused North Africa to collide with present-day Nova Scotia, thereby creating the Appalachian mountains. During this collision, tremendous heat and pressure melted the earth's crust, creating the magma which later solidified as the granites of the SMB, approximately 375 million years ago during the Devonian Period (Tate and Clarke 1995). This magma rose through the Halifax Formation host rock, melting pieces of the lithology,

thereby creating the numerous xenoliths present within the site. As the magma cooled, it condensed, creating several faults and fractures within the pluton. The river known as the McIntosh run actually flows directly along one of these faults. A rifting event during the Jurassic Period separated Nova Scotia from North Africa, thereby stranding the local bedrock geology from its point of origin along the African coast.

More recently (within the last 100 000 years), during the Quaternary Period, glaciers covered Nova Scotia. The tremendous weight of these ice sheets caused the region to subside. Since the faults and fractures within the SMB are the weakest part of the bedrock, these features were amplified by the weight of the glaciers, thereby forming immense fissures within the vicinity of Colbart Lake. As the glaciers continued to flow over the region, these fissures directed their movements, creating the unusual lineations and ridges within the site. When the glaciers retreated approximately 10 000 years ago, the unique landforms in the vicinity of Colbart Lake became exposed.

Outstanding Values of the Site

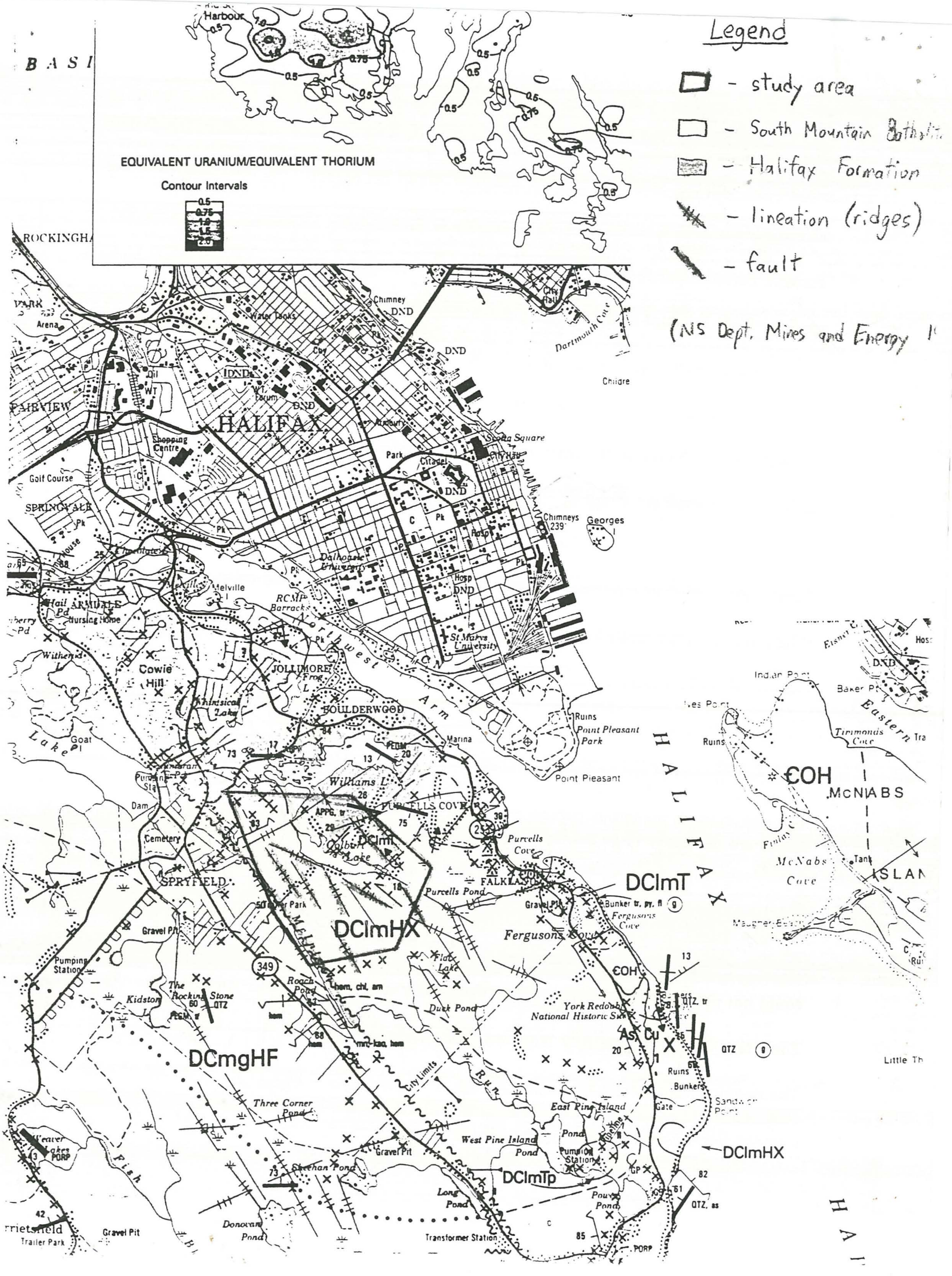
The site contains numerous parallel ridges on the surface of the granitic bedrock. These ridges are unusually large and abundant, and represent a landform that is rare or unique to the region.

The land between the parallel ridges are often colonized by aquatic plants. It is uncommon, in Nova Scotia, to have permanent pond vegetation in such a barren environment.

The barren landscape creates a habitat that could support several rare species of plants that could not persist in non-barren habitats (Maher et. al. 1978).

The site contains an unusually large stand of jack pine trees.

The region offers tremendous opportunities for education and research in the field of earth sciences. The presence of, exposed bedrock, linear ridges, xenoliths, geologic contacts, and plutonic deformational faults makes the region excellent for interpretation and study.



Legend
- study area
- South Mountain Batholith
- Halifax Formation
- lineation (ridges)
- fault
(NS Dept. Mines and Energy 1
EQUIVALENT URANIUM/EQUIVALENT THORIUM
Contour Intervals
0.5
0.75
1.0
1.5
2.0
HALIFAX
Dalhousie University
St Marys University
Point Pleasant Park
Purcells Cove
Williams L.
Colbert Lake
SPRYFIELD
Cowie Hill
JOLLIMORE
BOULDERWOOD
Northwest Arm
Purcells Pond
Fergusons Cove
York Redoubt National Historic Site
East Pine Island Pond
West Pine Island Pond
Three Corner Pond
Long Pond
McNABS
McNabs Cove
Eastern
DCImT
DCImHX
DCImTp
DCmgHF
COH
As, Cu
QTZ
PORP

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