

## **Coastal erosion: A geotechnical examination of successful and unsuccessful stabilization methods used in Nova Scotia**

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Nova Scotia has a long, geologically diverse coastline that is responding to long-term sea-level rise in an equally diverse manner. Segments of coastline, typically within individual littoral cells, may show minimal erosion and stable or even prograding shorelines. On a regional basis, however coastal erosion is widespread, and coastal communities are reacting by implementing extensive armouring solutions. Parts of the Bay of Fundy coast and large areas along the Northumberland Strait and Gulf of St. Lawrence may represent some of the most at-risk coastlines in Nova Scotia. The north shore of the Minas Basin has rates of erosion estimated at 0.3 to >1 m per year.

Despite high rates of erosion, local infrastructure development is accelerating, often characterized by (historic) summer cottage development that, similar to other parts of Nova Scotia, are becoming multi-season dwellings as owners retire and extend the cottage season. Extensive coastal stabilization, most commonly construction of stone revetments, is being utilized in an attempt to protect property and infrastructure. Most of the stabilization is being undertaken by local contractors with highly variable levels of expertise. The quality of the armouring solutions varies both locally and regionally. It is not unusual to observe well-constructed revetments juxtaposed with failing or failed structures.

The presentation compares and contrasts various examples of armouring in Nova Scotia. Geotechnical aspects of a properly designed revetment will be discussed along with the coastal process that need to be considered when designing and constructing revetments. Environmental as well as geotechnical aspects of best practices are examined.