

## Item No. 3

Halifax Regional Council  
October 18, 2022

**TO:** Mayor Savage and Members of Halifax Regional Council

**SUBMITTED BY:**

Original Signed by 

Jacques Dubé, Chief Administrative Officer

**DATE:** October 3, 2022

**SUBJECT:** Information Report: Dartmouth Cove Infilling - Pyritic Slate Disposal Sites

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### INFORMATION REPORT

#### ORIGIN

Regional Council motion of May 31, 2022:

THAT Halifax Regional Council:

3. Direct the Chief Administrative Officer to provide a staff report on what the HRM, the Port of Halifax and other relevant stakeholders should undertake to situate pyritic slate disposal sites.

#### LEGISLATIVE AUTHORITY

*HRM Charter*, Section 188 (1): "The Council may make by-laws, for municipal purposes, respecting

- (a) the health, well being, safety and protection of persons;
- (b) the safety and protection of property;
- (c) persons, activities and things in, on or near a public place or place that is open to the public;
- (d) nuisances, activities and things that, in the opinion of the Council, may be or may cause nuisances, including noise, weeds, burning, odours, fumes and vibrations..."

*HRM Charter*, Part VIII, Planning & Development

#### BACKGROUND

Pyritic slate releases acid when exposed to oxygen and water. This occurs when it is exposed during excavation, raising the problem of how to dispose of fill containing acid-producing slate. Acidic runoff damages freshwater ecology and can result in fish kill. Groundwater contamination may also result.

More information on the chemical reactions and environmental impacts can be found in an Information Report to the Environment & Sustainability Standing Committee meeting of October 6, 2011, [Pyritic Slate Process for HRM Property](#). Additional information is available in the Nova Scotia Department of Natural Resources Information Circular ME 067, *Acid Rock Drainage in Southwest Nova Scotia*.<sup>1</sup>

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<sup>1</sup> L. L. Trudell and C. E. White (November 2013) <https://novascotia.ca/natr/meb/data/pubs/ic/ic67.pdf>

To address this problem, excavation fill containing acid-bearing slate has been placed into seawater to create new land. This has historically been done to support waterfront development at Mill Cove in Bedford and is currently underway at Fairview Cove. Halifax Port Authority will be using such material to infill between piers to expand the South End container terminal. More recently, a private interest applied to the federal government to place pyritic slate fill in a Dartmouth Cove water lot near an established residential neighbourhood. In June, Irving Shipbuilding proposed to expand and modify its site and facilities at the Halifax Shipyard, including rock infill, creating approximately 13 acres of additional yard space.<sup>2</sup>

"Acid Generating Rock" is regulated by the Province through the *Sulphide Bearing Materials Disposal Regulations*, made under Section 66 of the *Environment Act*.<sup>3</sup> Excavation of Acid Generating Rock is regulated to minimize the impacts to the environment that could result in changing the acidity of the water and adversely affecting aquatic ecosystems and groundwater.

Federal approvals for infill depend on navigational and environmental compatibility, and do not consider future use of the new lands created. In most Community Plan Areas, municipal zoning does not apply directly to submerged land, including water lots. Once a water lot is filled to create new land, the new land acquires the zoning that applies to the abutting land. In the Regional Centre, Halifax and Dartmouth Plan Areas, a Water Access Designation and Zone is intended to protect the character and environment of waterfront neighbourhoods by limiting the development of infilled water lots. The Zone is applied on the Northwest Arm, Lake Banook and Lake Mic Mac.

## **DISCUSSION**

Much of the Halifax region is underlaid by pyritic slate, and construction often requires excavation for underground parking and to provide level building sites. As a result, there is high demand for seawater disposal sites, and construction companies pay for the privilege of placing their excavation fill there. Opportunities to do so arise from pre-Confederation private water lots, of which many are located around Halifax Harbour and the Northwest Arm.

Saltwater disposal of acid-bearing slate mitigates its direct environmental impact in two ways:

- Submerging the rock greatly reduces its exposure to oxygen, which is involved in the chemical reaction that produces the acid.
- Seawater is naturally alkaline, which helps neutralize any acid that is produced.

When acid-bearing slate is used to create new land, it is capped with non-acid-bearing rock above the low water level, to avoid any new exposure to oxygen. Nevertheless, proposals to submerge pyritic slate tend to be controversial, due to public concerns about dust, noise, vibration, truck access routes, visual aesthetics, ecological disturbance and potential development on any newly created land.

In response to the May 31, 2022 motion of Regional Council<sup>4</sup>, Regional Planning has issued a Fee Proposal Request to engage a pre-qualified consultant to prepare a strategic plan for the disposal of acid-bearing slate and the infilling of pre-confederation water lots. The Project Scope is provided in Attachment A. The aim is to identify key parameters and generate a shortlist of sites best suited for this purpose, bearing in mind other municipal planning priorities. This may be followed up by more detailed, site-specific studies as needed, in addition to stakeholder engagement. Upon completion of this strategy, staff will return to Regional Council for further direction.

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<sup>2</sup> Bousquet, Tim, "Irving Shipyard wants to fill in a 13-acre chunk of the Halifax Harbour", *Halifax Examiner*, Morning File (Monday, July 25, 2022) <https://www.halifaxexaminer.ca/featured/irving-shipyard-wants-to-fill-in-a-13-acre-chunk-of-the-halifax-harbour/>

<sup>3</sup> *Sulphide Bearing Material Disposal Regulations made under Section 66 of the Environment Act* S.N.S. 1994-95, c. 1, O.I.C. 95-296 (effective April 11, 1995), N.S. Reg. 57/1995  
[https://novascotia.ca/just/regulations/regs/env5795.HTM#:~:text=4%20\(1\)%20Subject%20to%20subsection.approval%20issued%20under%20these%20regulations.](https://novascotia.ca/just/regulations/regs/env5795.HTM#:~:text=4%20(1)%20Subject%20to%20subsection.approval%20issued%20under%20these%20regulations.)

<sup>4</sup> Item 15.4.1, May 31, 2022 agenda of Regional Council, "Dartmouth Cove Infilling":  
<https://cdn.halifax.ca/sites/default/files/documents/city-hall/regional-council/220531rc1541.pdf>

### **FINANCIAL IMPLICATIONS**

The costs associated with this study can be accommodated within the approved operating budget using existing resources.

### **RISK CONSIDERATION**

Risks associated with the course of action set forth in this report are rated as low. The purpose of the strategic planning scope described in this report includes minimizing and mitigating any negative impacts arising from future pyritic slate marine infill.

### **COMMUNITY ENGAGEMENT**

The study scope is technical at this stage. Further community engagement may be recommended as part of any further work arising from this overall analysis.

### **ENVIRONMENTAL IMPLICATIONS**

Saltwater sequestration is an established best practice for disposing of pyritic slate. The strategic planning described in this report will identify sites offering the greatest potential public benefit with the lowest environmental risk arising from other factors, and will identify best practices for mitigating any such risk.

### **ATTACHMENTS**

Attachment A: Pyritic Slate Marine Disposal Strategy Scope

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A copy of this report can be obtained online at [halifax.ca](http://halifax.ca) or by contacting the Office of the Municipal Clerk at 902.490.4210.

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## Attachment A

### Pyritic Slate Marine Disposal Strategy Scope

#### **Scope of Work:**

Prepare a conceptual master plan for marine acid-bearing slate disposal sites which minimize ecological and land use impacts while maximizing opportunities for environmental mitigation and compatible land uses. The primary focus (Primary Study Area) is on pre-confederation water lots abutting the Halifax Harbour shoreline including the Bedford Basin and Northwest Arm. Recommendations are also sought on other potential waterfront locations within the Municipality (Secondary Study Area) where pyritic slate could be placed without excessive trucking distances. Consideration should be given to alternative modes for carrying fill, including marine and rail, and to affordable mitigation of noise, dust, safety risk, ecological impact and aesthetics.

This assessment will help HRM understand the key areas of the Municipality that could accept pyritic slate. The study should be desktop in nature. An overall method should be set forth identifying the key parameters that must be considered in disposing of pyritic slate. For example, a matrix could identify those key parameters, evaluate possible sites and identify the strengths and weaknesses of each one. Once top candidate sites are identified, additional detailed analysis may be required in future studies (this would be outside the scope of this study).

#### **Key research questions include:**

1. What successes and challenges have arisen with waterfront infilling in general, and pyritic slate marine disposal in particular, in Nova Scotia?
2. How much pyritic slate is likely to be excavated in HRM, where, and in what time frames?

Note: HRM can provide historic and current development permit locations, which the consultant could overlay with geological mapping to get a sense of where slate excavation has been happening. Interviews with planners and developers would give a sense of where, and how much, excavation is likely to happen in the foreseeable future. HRM can provide assumptions based on where development is happening, how much growth is happening, and past trends to determine how much marine infill capacity is needed. This is meant to show order of magnitude on an average annual basis reflecting growth rates and recognizing that there may be wide fluctuations within that average. The consultant could use a combination of analysis and engagement.

It is expected that the federal government would have records of what permits have been granted for marine filling, and how much marine infill is happening.

3. What are the volume, depth and area thresholds for cost-effective disposal and marine infill?
4. What are the viable distances and modes for transporting fill?

Note: This is expected to be a cost-benefit analysis. How much does it cost to transport fill by different transportation modes (truck, barge, rail) and how much does it pay to dispose of it? At a certain point, and for different modes, is the distance cost-prohibitive? Are there different ways (e.g., truck, barge, rail) of transporting fill – some more cost-effective than others - that would affect the viability of potential disposal sites?

5. How much are developers willing to pay for pyritic slate disposal?

Note: This is expected to involve a cost-benefit analysis. The Municipality already has some sense of the “going rate” but is interested in how that rate is traded off against transportation costs. We know that developers want to limit the costs of disposal, and distance is one way to do that. To analyze this

the consultant should meet with developers who work with pyritic slate. The consultants may wish to consider including someone on their team who understands the market conditions and pressures in Halifax. This might provide insight into building projects on the whole, and how the presence of pyritic slate affects development and the distances or modes used for transporting pyritic slate, as well as costs to dispose of it from/to any given site.

6. Where are the most effective and least disruptive opportunities for pyritic slate marine disposal in HRM?
7. Could marine disposal take place entirely below the water surface, and if so, where?
8. What measures can mitigate or compensate for sea level rise, ecological disruption, cultural encroachment, public access, noise, dust, vibration, erosion and visual blight from marine disposal?

Note: The consultant is not expected to conduct modelling to determine the potential impacts from climate change. HRM will provide overall scenarios and implications of climate change through our HalifACT project. HRM is looking to understand if there is anything that should be considered in assessing potential slate disposal sites that is specific to disposal of pyritic slate and climate change. This could be dealt with through engagement with knowledge holders (federal government, port, other sites that have used pyritic slate, etc.)

9. What powers has the Municipality to regulate location, phasing, configuration, mitigation and hours of operation for marine infill?
10. What other agencies can assist with implementing the strategy, and how would they benefit?

**Estimated Schedule for Completion of Study: March 2023**