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**Information Item No.2**  
**Environment & Sustainability Standing Committee**  
**December 7, 2020**

**TO:** Chair and Members of the Environment and Sustainability Standing Committee

*-Original Signed-*

**SUBMITTED BY:**

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Kelly Denty, Director, Planning and Development

*-Original Signed-*

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Jacques Dubé, Chief Administrative Officer

**DATE:** August 27, 2020

**SUBJECT:** Water Quality Monitoring in HRM Lakes

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**INFORMATION REPORT**

**ORIGIN**

On December 6, 2018, the following motion of the Environment and Sustainability Standing Committee regarding Item 12.3.1 was put and passed:

*THAT the Environment and Sustainability Standing Committee request staff prepare a report considering:*

- 1. Strategic partnerships with volunteer community groups in monitoring the water quality of Halifax Regional Municipality lakes and collecting baseline data;*
- 2. Investing in water testing equipment, specifically a Conductivity Temperature Depth (CTD) instrument, for multiple parameter testing;*
- 3. Activating the Green Network Plan strategy and expand its approach to watershed issues; and*
- 4. Considering this recommendation when receiving upcoming studies and reports.*

**LEGISLATIVE AUTHORITY**

All lakes in Nova Scotia are owned by the provincial government. The Province of Nova Scotia also has legislative authority over water resource management through the Environment Act, Part X.

Section 227 of the *Halifax Regional Municipality Charter* provides that “The Council may adopt a municipal planning strategy for all, or part of the Municipality ...”

Clause 229(1)(c) of the *Halifax Regional Municipality Charter* provides that “A municipal planning strategy may include statements of policy with respect to ... the protection, use and development of lands within the Municipality, including the identification, protection, use and development of lands subject to flooding, steep slopes, lands susceptible to subsidence, erosion or other geological hazards, swamps, marshes or other environmentally sensitive areas;”

Policy E-24 of the *Regional Municipality Planning Strategy* provides that “HRM may consider preparing a water quality monitoring protocol to provide guidance for water quality monitoring plans accepted by HRM under clause (n) of policy E-23 and any other monitoring programs to be undertaken for HRM by landowners.”

Subclause 79(1)(av)(iii) of the *Halifax Regional Municipality Charter* provides that “The Council may expend money required by the Municipality for ... all other expenditures ... incurred in the due execution of the duties, powers and responsibilities by law vested in, or imposed upon, the Municipality, the Mayor, Council or officers.”

## **BACKGROUND**

The Halifax Regional Municipality is not mandated, by legislation or regulation, to conduct water quality monitoring. Municipal water quality sample collection and analysis began in 2002 as part of a performance management program in support of beach and wastewater system program management. This program was developed in response to recommendations from the Water Resource Management Study by Dillon Consulting (2003) and was enhanced in 2006 pursuant to the direction of Halifax Regional Council.

The Municipality’s Regional Plan [officially, the Regional Municipal Planning Strategy (RMPS)], approved by Regional Council on June 27, 2006, included a chapter on the Environment – Chapter 2. This chapter discussed the need to undertake environmental protection in a holistic way to achieve the key outcomes of the Plan, which were:

1. To protect the natural environment by establishing development practices that are sensitive to water, land and air;
2. To foster the development of an integrated system of natural areas, parks, trails and corridors to maintain ecosystem health and preserve HRM citizens’ quality of life;
3. To support the development of integrated environmental planning practices at the local level; and,
4. To promote the cooperation of other government agencies, private landowners and non-government organizations to achieve good environmental management and planning.

The Open Space Network, discussed in this chapter, includes nine land use types, eight of which refer specifically to wetlands, watersheds, or water resources. Seven recommendations in this section directly or indirectly support long term water quality and quantity within the Municipality.

Watershed planning, as discussed in Section 3 of this chapter, requires the Municipality to carry out watershed studies as part of a comprehensive secondary (community-level) planning process. These studies are to determine the carrying capacity of the watersheds, and to develop water quality objectives for the same watersheds, which are to be adopted following study completion. Twelve objectives were established for these studies, including the recommendation of a monitoring plan to assess if the specific water quality objectives for the watershed are being met.

Chapter 2 concluded with a list of requirements to create more detailed policies, dubbed “Functional Plans”, including a Water Quality Monitoring Functional Plan (Policy E-18), and an Open Space Functional Plan (Policy E-19).

The Water Quality Monitoring Functional Plan was meant to:

1. Meet body contact recreation standards for our lakes, waterways and coastal waters; and,
2. Stem the decline of lakes from eutrophication and sedimentation and other urban runoff inputs by managing development on a watershed basis.

The RMPS specified that the Functional Plan should consider:

1. specifying the duration of monitoring for the pre-construction, construction and post-construction phases of development;
2. specifying the physical and chemical water quality indicators to be measured, the location and frequency of testing and the format of submissions to the Municipality in each phase of development;
3. assessing lake water quality against the water quality objectives established under Policy E-17 to detect changes such as eutrophication, which would be used as a basis for re-evaluating watershed management controls and future development potential within the area;
4. conforming with all water quality policies, specifications, protocols and review and approval procedures approved by Regional Council; and,
5. establishing an on-going monitoring program for selected lakes and rivers to determine the state of water resources and to detect changes over time.

Although staff commissioned the development of the Water Quality Monitoring Functional Plan and presented the consultant's final report to Regional Council on May 18, 2010, the Municipality did not adopt or implement the Plan.

The Open Space Functional Plan was meant to determine an economically and environmentally sustainable strategy for the equitable maintenance and distribution of parks and open space throughout the Municipality.

As previously indicated, staff had initiated and then expanded a water quality monitoring program. At the direction of Regional Council in fall 2009, management conducted a service review of the water quality sampling program<sup>1</sup>. That review found that the program was in alignment with Council's focus area to implement the RMPS and supported Council's Priority Outcome of a Clean, Healthy Environment. It also noted that "the program had focussed largely on technical data gathering and (needed) to use the data and lessons learned to become a strategically managed program that (sought) specific outcomes, efficiencies, analysis and reporting and (reaches) out to the community to build partnerships and to educate."

The Municipality's RMPS was officially updated in November 2014. Although the new strategy did not reference a Water Quality Monitoring Functional Plan, it maintained a requirement to complete the former Open Space Functional Plan, renamed the Halifax Green Network Plan (HGPN). This Plan was completed and approved by Regional Council in August 2018.

The Municipality's water quality monitoring program ended in 2011 and some Councillors have since asked for it to be reinstated. The former program was originally envisioned to provide a baseline understanding of the quality of some of the Municipality's lakes and rivers but did not include specific objectives. Staff recommended doing a review of the past water quality monitoring program along with a jurisdictional scan and best practices review before beginning a new program. Funds were committed to this initiative in the 2019/20 and 2020/21 operating budgets and work is underway.

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<sup>1</sup> Report available online at <http://legacycontent.halifax.ca/council/agendasc/documents/100427ca11.1.3.pdf>

## **DISCUSSION**

### Water Quality Monitoring

The Municipality has initiated a broad review of watershed planning and water quality monitoring activities, as directed by the Regional Plan, to increase the effectiveness of watershed planning functions and water quality monitoring efforts, and to clarify water quality program outcomes. This review forms the first part of a two-year initiative to consider a new water quality monitoring program that includes key objectives and ideally key partnerships.

The review considers the origin and limitations of the former monitoring program, identification and prioritization of risks to water quality, including emerging issues such as harmful algae blooms, and incorporates observations and lessons learned from other municipal water quality monitoring activities and related studies. The consultant undertaking the study to support the review has also been asked to explore collaborative partnerships for a potential future program.

Staff will provide a recommendation to Council regarding a future water quality monitoring program based on the findings of the review and stakeholder engagement. The program development process will be comprehensive, addressing factors such as manual or automated sampling, equipment and supply requirements, program resource requirements (such as staff, technology, vehicles), and, critically, develop specific linkages between monitoring data and decisions in all affected program areas, such as land use planning, approvals, and park and recreation operations.

The selection of appropriate water quality equipment depends on the monitoring program design – that is, what should be measured, what should be sampled, and where, when, and how often are samples to be taken. Many programs benefit from the use of multi-parameter sondes, which typically include sensors for conductivity, temperature, depth, dissolved oxygen, and pH, with options for additional parameters.

It will also consider and address all other relevant policies and documents, including but not limited to:

- Approved watershed studies completed since 2006;
- The Water Quality Monitoring Functional Plan final report (2009);
- Recommendations presented in the 2009 Water Quality Sampling Service Review (2010);
- Analysis of the HRM Lakes Water Quality Monitoring Program Data (2012);
- The Paper Mill Lake Watershed Assessment (2016);
- Halifax / Halifax Water Integrated Stormwater Management Policy Draft Framework (2017); and,
- The Pollution Source Control Study for Lake Banook and Lake Micmac (2019).

This program development process will actively consider the establishment of strategic partnerships with third parties regarding the collection of water quality data that serves the specified interests of the recommended monitoring program. Organizations that will be considered for strategic water quality-related partnerships include volunteer-based community groups, non-profit organizations, and any other suitable organizations, including academic programs and research centres.

Staff will soon present two new recommendation reports to Council on water quality monitoring. The first, pursuant to the successfully completed Pollution Source Control Study on lakes Banook and Micmac, will respond to the recommendations of that study. The second, on water quality monitoring policy and programming, will present staff's recommendations based on the review and engagement process identified above. This work was completed through consulting services and will be finalized in fall 2020.

### Halifax Green Network Plan

To “activate the Green Network Plan strategy” is to implement the 79 recommendations contained in the Plan. Pursuant to Regional Council’s approval of the final Halifax Green Network Plan (HGPN) in August 2018, staff are now using the HGPN to guide planning projects and the multi-year budgeting and business

planning process. As outlined in the HGPN, the timeframes for implementation include items that provide immediate and on-going guidance to municipal activities and decisions, as well as actions that are expected to be implemented in a short (1-2 year), medium (2-4) or long (4-7 year) timeframe.

The HGPN, although not a watershed plan, addresses some watershed issues. Its purpose is to provide land management and community design direction to:

1. Maintain ecologically and culturally important land and aquatic systems;
2. Promote the sustainable use of natural resources and economically important open spaces, and,
3. Identify, define and plan land suited for parks and corridors.

The HGPN addresses these considerations through the themes of ecology, working landscapes, community shaping, outdoor recreation, and cultural landscapes. These are inclusive of several watershed issues, such as but not limited to, water movement, vegetated areas, corridors & buffers, and land use types and patterns. Attachment 1 identifies the key HGPN objectives and actions related to watershed management.

### Conclusion

The requests made by the Regional Watersheds Advisory Board, as reflected in the ESSC’s originating motion for this report, are under active consideration through the program review process. Consulting work on this process will conclude in fall 2020. Results and associated recommendations will be reported to Regional Council thereafter.

### **FINANCIAL IMPLICATIONS**

There are no financial implications for this report currently. The recommendation report for a new water quality monitoring program will be brought to Council in the future. The consultants report recommended adopting one of three models. The models will be assessed and costed by staff and brought back for Council’s consideration.

### **COMMUNITY ENGAGEMENT**

No community engagement was required for this report.

### **ATTACHMENTS**

Attachment 1. Halifax Green Network Plan watershed management objectives and actions

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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 1. Halifax Green Network Objectives by Theme  
 Actions highlighted in bold are related to watershed management

Theme	Objectives
Ecology	<ul style="list-style-type: none"> <li>• Maintain wildlife habitats, biodiversity and landscape connectivity.</li> <li>• <b>Conserve and manage steep slopes, easily disturbed soils and other land forms that are vulnerable to erosion and degradation.</b></li> <li>• <b>Protect riparian corridors and wetlands from degradation, pollution and other threats.</b></li> <li>• <b>Maintain and enhance the urban forest.</b></li> <li>• <b>Coordinate efforts to manage water quality and quantity while expanding the Region's Green Network.</b></li> <li>• <b>Prioritize the preservation of open spaces as a low cost and sustainable approach to both mitigating and adapting to climate change impacts.</b></li> <li>• Use the Green Network Database to inform future land use and infrastructure planning initiatives.</li> <li>• <b>Work with the Province to expand the tools available to the Municipality to protect and manage the natural environment.</b></li> </ul>
Working Landscapes	<ul style="list-style-type: none"> <li>• Provide sufficient space and opportunities for resource extraction and forestry uses.</li> <li>• Protect and promote the sustainable use of high valued agricultural lands.</li> <li>• Provide greater opportunities for small-scale agriculture.</li> <li>• Support eco-tourism and the protection of scenic landscapes.</li> </ul>
Community Shaping	<ul style="list-style-type: none"> <li>• <b>Consider the Green Network when reviewing the location of urban development and service boundaries.</b></li> <li>• <b>Preserve natural corridors and sensitive natural features when planning the development of new urban neighbourhoods and business parks.</b></li> <li>• Maintain and improve natural connections between the Chebucto Peninsula and Mainland Nova Scotia, as well as those within the Peninsula itself.</li> <li>• Encourage rural residential development to locate within rural centres.</li> <li>• Limit and carefully control rural residential development located between rural centres.</li> <li>• Consider opportunities to support the Green Network when constructing, repairing and developing transportation and utility corridors.</li> </ul>
Outdoor Recreation	<ul style="list-style-type: none"> <li>• Recognize the importance of parks for community health and well-being.</li> <li>• <b>Adopt a multi-jurisdictional parks network planning approach that supports both recreation service delivery and natural systems protection.</b></li> <li>• Develop new park network service delivery standards based on the settlement patterns and natural influences identified within the Regional Plan.</li> </ul>

	<ul style="list-style-type: none"> <li>• Evaluate service needs and overlap to guide parkland acquisition, disposal and management decisions.</li> <li>• Evaluate the functional performance of existing and proposed Municipal Parkland to guide parkland acquisition, disposal and management decisions.</li> <li>• Use and expand available park planning policy tools to address parkland and facility needs as demands arise from new development.</li> <li>• Support the establishment of a Nature Park Network in cooperation with Provincial and Federal governments and conservation groups.</li> <li>• Continue to place an emphasis on planning and establishing the future Regional Parks that are identified within the Regional Plan.</li> <li>• Recognize new Nature Parks and open space areas.</li> <li>• Continue to implement the recommendations of major open space studies that have been undertaken.</li> <li>• Connect parks and open space areas for recreation and mobility purposes.</li> </ul>
Cultural Landscapes	<ul style="list-style-type: none"> <li>• Develop a cultural landscape program</li> <li>• Identify, preserve and celebrate valued cultural landscapes in the design and management of open spaces and developments.</li> <li>• Ensure that all perspectives and voices are heard when identifying cultural landscapes and carrying out initiatives that may impact valued cultural features.</li> </ul>