HALIFAX

Lake Water Quality Monitoring Program

Environment and Sustainability Standing Committee

June 3, 2021

Lake Monitoring in HRM

- Municipal-led program 2006-2011
  - Small study from 2015-17
- Beach monitoring
- Lake synoptic study (every 10 years)
- Several academic & community-led initiatives
- Community concern of overall lake health

HALIFAX

Why Monitor?

- To inform decision making

- Establish baseline conditions

- Answer questions

- Address key concerns

- Meet other legislated requirements

HALIFAX

AECOM Report

- Finalized in 2020
- Stakeholder consultation
- Other municipal case studies
- Developed 3 frameworks + recommendations for a municipally-led program

HALIFAX

Framework Options

Element	Framework 1	Framework 2	Framework 3
Sample Size	Class A Lakes (High Vulnerability) Class B Lakes (Moderate Vulnerability) Reference Lakes Total Number of Lakes: ~74	Priority Eutrophication Lakes Priority Chloride Enrichment Lakes Total Number of Lakes: ~23	Class A Lakes (High Vulnerability) Class B Lakes (Moderate Vulnerability) Reference Lakes Total Number of Lakes: ~74
Operations and Management	• HRM staff led • Community support for lakes with community volunteers; monitoring by HRM staff to be reduced over time with progressively more volunteer commitment • Observational information from residents or other stakeholders	• Community-led with HRM support for lakes without community volunteers; monitoring by HRM staff to be reduced over time with progressively more volunteer commitment • Observational information from residents or other stakeholders	• HRM staff is responsible for all aspects of program operation and management, including monitoring activities. • Observational information from residents or other stakeholders
Cost Responsibility	• HRM funded with in-kind support from volunteers (to conduct monitoring, provide equipment if available)	• HRM funded with in-kind support from volunteers (to conduct monitoring, provide equipment if available)	• HRM funded and implemented

HALIFAX

Figure 8

Water Quality Policy and Program Development

Proposed Future Potential Lake Monitoring Program
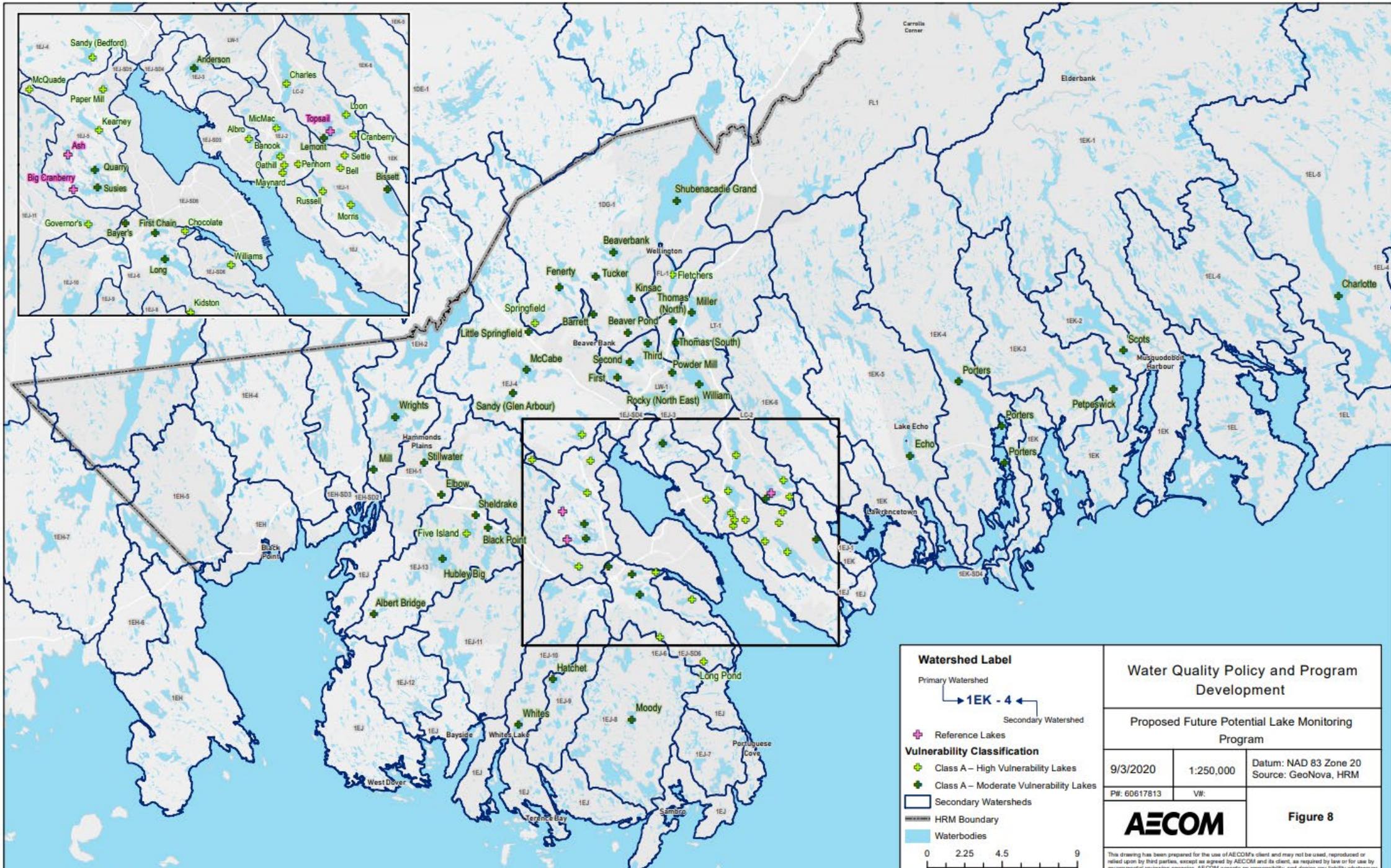
Watershed Label

Primary Watershed

1EK - 4

Secondary Watershed

✚ Reference Lakes

Vulnerability Classification
- ✚ Class A – High Vulnerability Lakes
- ✚ Class A – Moderate Vulnerability Lakes
- ▭ Secondary Watersheds
- ▦ HRM Boundary
- ▨ Waterbodies

0   2.25   4.5   9
Kilometers

9/3/2020 | 1:250,000 | Datum: NAD 83 Zone 20 Source: GeoNova, HRM

P#: 60617813 | V#:

AECOM

This drawing has been prepared for the use of AECOM's client and may not be used, reproduced or relied upon by third parties, except as agreed by AECOM and its client, as required by law or for use by governmental reviewing agencies. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that modifies this drawing without AECOM's express written consent.

Budget for Framework 1

HRM Water Quality Monitoring Program		Total
Year 1 (No sampling)	- WQM Staffing - $ 85,000 - Equipment - $50,000 - Data Management software - $10,000	$145,000
Year 2 (Sampling Begins)	- WQM Staffing - $133,000 - Sampling costs - $30,000 - Ongoing Costs - $10,000 - Consulting & Research - $50,000 - Grant Program - $7,500	$230,500
Subsequent Years	- WQM Staffing - $133,000 - Sampling - $30,000 - Ongoing costs - $10,000 - Consulting & Research - $50,000 - Grant Program - $7,500	$230,500

HALIFAX

Framework 1

- Hybrid approach
- Meets HRM's data needs
- Engages active network of community groups
- Provides room to grow

Community science is vital to ensuring Canada has a safe water supply

By **Geoffrey Gunn** Contributor
Wed., May 19, 2021 | 2 min. read

HALIFAX

What will be monitored?

- Secchi depth (clarity)
- Lake depth
- Field measurements (including full water column profiles)
  - Temperature
  - pH
  - Dissolved oxygen
  - Specific conductivity
- Laboratory Analysis
  - Total Phosphorus
  - Chlorophyll α
  - E. coli

HALIFAX

Timeline

- 2021-2022
  - Start up year
  - No Monitoring
- 2022-2023
  - Sampling Begins
- 2023 – onward
  - Program Report
  - Water Quality Report Card
  - Monitoring Program Framework Review
  - Identify opportunities for next steps

HALIFAX

All this data… then what?

- Water Quality Report Card
- Lake Management Plans for at-risk lakes

HALIFAX

What will this mean for HRM?

- Robust baseline dataset of vulnerable lakes
- Covers broad geographic area
- Active participation from community

HALIFAX