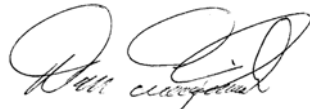



TO: Mayor Kelly and Members of Halifax Regional Council

SUBMITTED BY:



Dan English, Chief Administrative Officer



Wayne Anstey, Deputy Chief Administrative Officer - Operations

DATE: April 10, 2008

SUBJECT: Water Quality Notification

SUPPLEMENTARY REPORT

ORIGIN

- Motion of Council, January 8, 2008
- Information Report to Council, February 26, 2008
- Motion of Council, March 18, 2008 (Item 11.4.1):
“Staff requested to initiate a policy regarding public notification of poor water quality, particularly when high counts of faecal coliform are detected, within the 53 lakes included in the current sampling program. This would apply whether it is an HRM supervised swim area or not.”

RECOMMENDATION

It is recommended that Council adopt Option #1 as outlined in this report:

Option #1: Maintain the current sampling program schedule, issue public advisories for any lakes detected with FC values above 400, and re-sample the lake after three months during the next scheduled sampling period. Withdraw the advisory if the lake has returned below 400, or reaffirm the advisory if it remains above 400.

BACKGROUND

The information report of Feb. 26, 2008 provided background on the policy and operational implications of issuing public advisories when the HRM lake sampling program detects levels of fecal coliform bacteria which exceed the swimming guideline level. The HRM program samples 70 lakes, of which 17 are also sampled weekly during swimming season by NS Department of Environment (NSDoE) at supervised beaches (where HRM provides lifeguarding service). For those 17 lakes, NSDoE determines when advisories are necessary. This leaves 53 lakes sampled only by HRM, for which public advisories may need to be issued. There are many other lakes in the urban-suburban areas of HRM not sampled under the HRM water quality program. Within the HRM boundaries, there are over 1200 lakes, and it would be far too costly in staff resources and lab costs to test a significant fraction of these. The HRM Regional Plan provides for “an on-going monitoring program for selected lakes and rivers” (Policy E-18). Criteria for selecting lakes were established in consultation with the HRM watershed boards. These include: geographic representation; proximity to HRM sewer infrastructure which may impact a lake; degree of present watershed development impacts; anticipated future development impacts; use of the lake and degree of public interest; and to assess the adequacy of performance for mitigative measures required of developers or initiated by HRM/Halifax Water. The HRM monitoring program was never intended to address public health issues for lakes outside the supervised beach program. HRM cannot make any statements regarding water quality on lakes which are not monitored, and can only report on monitored lakes as a service to the public within the limitations of the locations and frequencies of the samples taken.

DISCUSSION

The province of NS, through NSDoE, samples HRM beaches weekly at those locations where HRM provides lifeguarding services. If a sample exceeds 200 fecal coliform (FC) per 100ml, the site is immediately re-sampled. If the re-sample also exceeds 200FC, or if any single sample exceeds 400FC, then NSDEL recommends that the beach be immediately closed, and HRM issues an advisory to the public. The HRM water quality program samples lakes three times per year (spring-summer-fall), at approximately 3-month intervals, at the deep point in the lake and at the outlet. The rationale for the HRM water quality testing program under the HRM Regional Plan is to establish background conditions for water resources, to test for changes in water quality over time, and to provide a performance measure for mitigative methods undertaken by HRM or required of developers to protect water quality. Within the scope of the present program, if HRM detects a lake exceeding the swimming guideline level for FC bacteria (400/100ml is the guideline level for a single sample), then that lake would normally be re-sampled in approximately three months time.

In other jurisdictions, sampling and public notices regarding excess bacteria levels are normally confined to supervised beaches, as is currently the case in HRM. Staff are not aware of any other municipalities who conduct sampling programs and release public notices related to un-supervised beaches. That being said, the situation in HRM may be somewhat unusual in the national context, as due to geography, we have many more lakes within the urban and suburban core areas than would be typical.

If HRM chooses to issue advisories, this may be the “thin edge of the wedge” and may lead to future expectations for the municipality to creep into an area of service delivery that has an unclear fit within the municipal mandate. The responsibility for public health, and environmental regulation lies with the Provincial and Federal levels of government. The public may expect some degree of follow-up monitoring for those lakes for which HRM issues a swimming advisory. The present three month sampling interval will not allow HRM to detect if levels have returned below the guideline for three months, and will discourage swimming during all of that period. More frequent follow-up sampling for FC might allow withdrawal of the swimming advisory in a shorter time frame.

Advisories and withdrawals would be issued in the form of press releases. HRM will collaborate with NSDEL and NS Department of Health on appropriate wording (proposed wording is attached).

OPTIONS

- 1) Maintain the current sampling program schedule, issue public advisories for any lakes detected with FC values above 400, and re-sample the lake after three months during the next scheduled sampling period. Withdraw the advisory if the lake has returned below 400, or reaffirm the advisory if it remains above 400.
- 2) Provide for weekly follow-up monitoring of FC at one location for those lakes with FC values above 400, until such time as the lake returns to levels below 200, at which point the advisory would be withdrawn.
- 3) Provide for weekly follow-up monitoring of FC for those lakes with FC values above 400, until such time as the lake returns to levels below 200, at which point the advisory would be withdrawn. In addition, provide for further sampling at additional locations to try to establish the likely source, along with a sample for Bacterial Source Tracking, which can establish if the FC source is likely human, animal or bird waste.

Under Option #1, HRM will advise the NS Departments of Environment and Health of any results in excess of the guidelines, should the province wish to take any further action under their mandates.

BUDGET IMPLICATIONS

Option #1 does not require any additional resources.

Budget Summary (Option #1)

Operating Account D947 - SEMO Environmental Water Quality

Cumulative Unspent Balance	\$247,089
Option #1, estimated cost (08/09)	<u>\$247,089</u>
Uncommitted Balance	\$0

As outlined in the Information Report of Feb. 26, 2008, options 2 and 3 will involve additional costs for follow-up sampling, which are not currently budgeted for in FY 2008/09. These costs cannot be estimated exactly, as this depends on the number of lakes which exceed the guideline and the length of time required for follow-up monitoring. The following table indicates a range of possible costs.

(FC @ \$22/sample, BST @ \$100/sample - cost has reduced since the February quote)

Lakes	Dates	Investigated Sites	FC Cost	BST (1 per lake)	Cost Total/FY
10	3	2	\$ 1,320	\$ 1,000	\$ 2,320
20	5	3	\$ 6,600	\$ 2,000	\$8,600
30	7	4	\$ 18,480	\$ 3,000	\$ 21,480

Vehicle operation: \$5,000/FY

Truck purchase \$30,000

Option #2: Assuming 20 lakes / 5 dates / 1 site involved -
Incremental operating funding required: \$2,200

Option #3: Assuming 20 lakes / 5 dates / 3 sites per lake involved -
Incremental operating funding required: \$8,600
Incremental capital funding required: \$30,000 for a truck purchase
Incremental operating funding required: \$5,000 for vehicle operation

The proposed budget tabled for 2008/09 can support Option #1. It should be noted that when HRM struggles to find adequate resources to respond to things within it's mandate, it is inappropriate to put any of those scarce resources on areas outside our mandate.

FINANCIAL MANAGEMENT POLICIES / BUSINESS PLAN

This report complies with the Municipality's Multi-Year Financial Strategy, the approved Operating, Capital and Reserve budgets, policies and procedures regarding withdrawals from the utilization of Capital and Operating reserves, as well as any relevant legislation.

ALTERNATIVES

Option #1 as outlined in this report is recommended. Council may decide to approve alternative options #2 or #3.

ATTACHMENTS

Proposed wording of a public advisory notice (press release).
Information Report to Council, February 26, 2008

A copy of this report can be obtained online at <http://www.halifax.ca/council/agendasc/cagenda.html> then choose the appropriate meeting date, or by contacting the Office of the Municipal Clerk at 490-4210, or Fax 490-4208.

Report Prepared by:



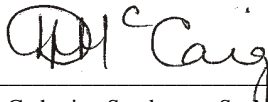
Tony Blouin, Manager of Environmental Performance

Report Approved by:



Cathie O'Toole, Director, Infrastructure & Asset Management 490-4825

Financial Approved by:



for Catherine Sanderson, Sr. Manager, Financial Services, 490-1562

Attachment 1
Proposed Wording - Public Advisory Press Release

The public is advised that fecal coliform bacteria levels which exceed the limits under provincial and federal recreational guidelines were detected in Lake _____ on _____, 2008. Under these conditions, swimming and other forms of contact recreation are not recommended, and should be avoided until further notice. HRM tests the water quality of a limited number of unsupervised lakes seasonally during spring, summer and fall, for purposes unrelated to recreational use. These lakes will be re-tested in approximately three months. Only lakes with supervised swimming beaches are tested on a weekly basis and this is only during swimming season. For a list of the lakes that HRM tests, please check the HRM website under Lakes and Rivers. HRM does not test any lakes that are not on the list. HRM reports on the available water quality information as of the date and location sampled, and does not make any guarantees as to water quality or safety in regards to any of the lakes within HRM.

For further information, check the HRM web site under Lakes and Rivers:
<http://www.halifax.ca/environment/lakesandrivers.html>




PO Box 1749
Halifax, Nova Scotia
B3J 3A5 Canada

Attachment 2

Halifax Regional Council
February 26, 2008

TO: Mayor Kelly and Members of Halifax Regional Council

SUBMITTED BY: 
Cathie O'Toole, Director, Infrastructure & Asset Management

DATE: February 13, 2008

SUBJECT: Water Quality Notification

INFORMATION REPORT

ORIGIN

Motion of Council, January 8, 2008:

“To request a staff report that a change be made to HRM’s policy regarding water quality notification. HRM currently has a Lakes Quality Sampling Program and Baseline Sampling Program in various lakes within the Municipality. The results of these tests are on line. However, currently HRM does not notify the public of Public Health concerns unless it is an HRM supervised swim area. I propose that Regional Council request a staff report regarding the possibility of staff notifying the public of poor water quality, particularly when high counts of faecal coliform are detected within the lakes tested. This would apply whether it is an HRM supervised swim area or not.”

BACKGROUND

Regional Plan Policy E-18 requires establishment of a Water Quality Functional Plan “to establish a comprehensive water quality monitoring program for the Municipality”, including “an on-going monitoring program for selected lakes and rivers to determine the state of water resources and to detect changes over time”. As a municipality, HRM conducts one type of activity which may affect water quality: approval of land development. Halifax Regional Water Commission (HRWC) conducts the operation of municipal stormwater and wastewater infrastructure which may affect water quality.

Through the approvals process, HRM requires developers to implement stormwater and wastewater management plans including mitigative measures and infrastructure to reduce water quality impacts. In operating municipal infrastructure, HRWC may affect water quality through overflows and accidental releases, leaks, cross-connections, etc. HRM historically has not had any performance measures in place to assess the adequacy of mitigative measures, or to detect water quality impacts. The water quality monitoring program provides such performance measurement for receiving waters. Sampling has occasionally been required under development agreements for major subdivisions, but has been limited in time and space. The provincial and federal governments do not conduct any regular comprehensive water quality monitoring, although it would more closely align with their mandates than with municipal mandates in Nova Scotia.

DISCUSSION

HRM Water Quality Program

The Water Quality Functional Plan is currently in development. The Water Quality Sampling Program was initiated in 2006 with 50 lakes, sampled twice that year for a range of water quality parameters. Lakes were chosen based on criteria established in consultation with staff and the HRM Watershed Boards, including degree of risk from development, municipal infrastructure, water uses and stakeholder interest. The field sampling is conducted by HRM staff, and sample analysis is contracted to a local commercial laboratory. A new approved FTE was hired in 2007. The program was expanded in 2007 to include lakes which had been sampled since 2001, for bacteria only, by the Environmental Engineering Services (EES) branch of HRM. The HRM program has also included fecal coliform (FC) bacteria since 2006 for 70 lakes.

In 2007, the 70 lakes were sampled three times (spring, summer, fall). The intention is to continue this as an ongoing operational program, with annual review of the list of lakes and parameters sampled. Current parameters include temperature, oxygen, pH, conductivity, nutrients (phosphorus & nitrogen), turbidity, colour, suspended solids, dissolved metals, chlorophyll and fecal coliform (FC) bacteria. Results for 2006 were reported to Council on March 27, 2007. It should be noted that with 70 lakes currently included in the program, many lakes in and around the urban/suburban core are not presently sampled.

Water quality data is on the HRM web site at <http://www.halifax.ca/environment/lakesanddrivers.html>. Data is made available within 1-2 months of collection as a service to the public, allowing for lab reporting time and data compilation. At the January 8, 2008 Council meeting some concerns were raised regarding difficulty accessing water quality data through HRM's web site. Subsequent to that discussion, access has been improved through provision of a direct link from the HRM main page Quicklinks menu.

Annual projected program cost for 08/09 is \$160K. Under the Regional Planning budget, \$72K was allocated in 2006 in support of the new FTE to assist in operating the water quality program. \$125K of capital funds were also allocated to initiate the program. Since 2006, some of the capital funds have been used to purchase field equipment, a boat and motor. Operating funds have been used to support laboratory costs, and to fill the new position of Environmental Performance Officer. On a go-forward basis, the \$72K operating funds will be used for the FTE and support/benefits. Field work is conducted during a one-month period, three times per year, using a rented truck. The balance of capital funds will be converted to operating for FY08/09 to support ongoing lab analysis costs. These funds should have been originally budgeted as operating in FY06/07 rather than as capital. Closing out the capital account to operating is a solution in FY08/09 only. Additional ongoing operating budget of approximately \$90K will be required for FY09/10 and beyond to sustain the program. It is hoped sustainable funding for FY09/10 and beyond will be negotiated with other levels of government and Halifax Water, or found within existing HRM resources.

Public Notification

Fecal coliforms, while not pathogens themselves, are an indicator of the possible presence of disease-causing organisms, and may arise from many possible sources, including human waste, animal waste and waterfowl. National guidelines for contact recreation (including swimming) recommend no more than 200FC/100ml of water (minimum 5 samples averaged over 30 days). The province of NS, through NSDEL, samples HRM beaches weekly where HRM provides lifeguarding services. If a sample exceeds 200FC, the site is immediately re-sampled. If the re-sample exceeds 200FC, or if any sample exceeds 400FC, then NSDEL recommends that the beach be immediately closed, and HRM issues an advisory to the public. **The position of NSDEL, and the NS Department of Health, is that any lake with a developed watershed may be subject to contamination sources, that it is not necessary or appropriate to issue public advisories for unsupervised lakes, and that the public should only swim at supervised beaches.**

NSDEL samples bacteria at 24 supervised beaches, of which 17 are on lakes also sampled by HRM for water quality. As advisories are already issued for these 17 lakes if FC bacteria exceed guidelines, HRM would need to be prepared to issue additional advisories for the 53 unsupervised lakes in the current sampling program.

If HRM decides to issue advisories for unsupervised lakes when FC bacteria exceed guidelines, then additional resources will be required to conduct follow-up monitoring to establish when and if FC numbers return below guideline limits. Any changes to scope of the present program would incur additional costs which would have to be assessed by staff. Advisories should only be issued during

the season for aquatic recreation (June-September). Public advisories would require immediate reporting of FC data and issuance of an appropriate press release. As per the amended Council motion, NS Department of Health would also be notified directly. The advisory would remain in effect until such time as repeat sampling detected levels below guidelines (if resources for re-sampling are available), or until the normal sampling program sampled the lake(s) in question again - normally a three-month period. Ideally, and for due diligence, lakes should be re-sampled weekly for FC bacteria until levels fall below guidelines. Additional sampling at multiple locations may allow detection of the FC bacteria source(s). If sources are identified, then action by either HRM/Halifax Water (for municipal infrastructure) or the province (for other sources such as agriculture) may be warranted.

If advisories were issued when a single lake sample exceeds the FC guideline of 400FC/100ml (confirmed by NSDEL as the appropriate limit), then during 2007 HRM would have issued advisories for 23 lakes for at least one date in the spring-summer period, and 2 of those would have been for at least two dates. Of these 23, 4 are lakes with supervised beaches sampled by NSDEL, for which separate advisories would not have been necessary. From 2001 to 2006, HRM would have issued between 5 and 30 advisories annually for levels above 400FC/100ml. An additional advisory would be issued when/if the lake(s) returned to levels below the guideline.

The wording of advisories would need to be carefully crafted. Issuance of advisories does not guarantee safety, and can only be based upon the data available for specific dates and locations. Tests showing FC bacteria levels below guidelines also do not guarantee safety, and only reflect the level on the date and at the site tested.

Additional resources would be required to conduct follow-up monitoring after detecting FC levels above guidelines (for those lakes not monitored by NSDEL). Assuming weekly monitoring for FC until levels return below the guideline maximum, the following shows a possible range of additional annual lab costs for FC analysis @ \$22/sample. Bacterial source tracking (BST) methodology can establish the origin of FC bacteria - human, animal or bird. This is useful in identifying likely source(s). This method could optionally be employed for a single sample per lake @ \$500 per sample.

<u>Lakes</u>	<u>Dates</u>	<u>Investigated Sites</u>	<u>FC Cost</u>	<u>BST Cost (1 per lake)</u>	<u>Total/FY</u>
10	3	2	\$ 1,320	\$ 5,000	\$ 6,320
20	5	3	\$ 6,600	\$ 10,000	\$ 16,600
30	7	4	\$ 18,480	\$ 15,000	\$ 33,480

Additionally, purchase of a truck would be required to perform ongoing monitoring, as the current periodic rental arrangement would not suffice. Capital cost of a suitable truck is estimated at \$30,000 (4-wheel, king cab for transport of boat, motor, equipment). Additional annual operational costs (fuel, maintenance, equipment, travel expenses, etc.) are estimated at \$5000/yr.

BUDGET IMPLICATIONS

There are no budget implications at this time, as no additional resources are required to carry out the current Water Quality Monitoring Program for 2008/09.

FINANCIAL MANAGEMENT POLICIES / BUSINESS PLAN

This report complies with the Municipality's Multi-Year Financial Strategy, the approved Operating, Capital and Reserve budgets, policies and procedures regarding withdrawals from the utilization of Capital and Operating reserves, as well as any relevant legislation.

ATTACHMENTS

None.

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Report Prepared by : Tony Blouin, Manager of Environmental Performance, 490-4610



Report Approved by: Cathie O'Toole, Director, Infrastructure & Asset Management, 490-4825