24 Hour Emergency Phone:
(902) 490-6940

Lake Major Watershed Newsletter

Halifax Water

Volume 9 Issue 2 | Winter 2016

Water Protection: A Multiple Barrier Approach

Halifax Water ensures top quality water is delivered to our customers. To protect its water supplies, including Lake Major, Halifax Water uses a multiple barrier approach that involves a system of checks and balances from the source to the tap. Details on these systems and processes are illustrated and described in the previous five newsletter issues (http://www.halifax.ca/hrwc/Publications.php#LMNews). Through the multiple barrier approach, Halifax Water staff can ensure, with confidence, that water quality standards are maintained to the highest level, for the benefit of all Halifax Water customers.

This issue of the newsletter is the second of a two-part series focusing on Continuous Monitoring and Testing: ***Part II – Treated Water Monitoring and Compliance.***

Attention
African Nova Scotian Students!

Halifax Water, through the *Nova Scotia Community College*, offers a

$7200 bursary through the Arnold D. Johnson Sr. Award

to an African Nova Scotian Student **enrolled or enrolling** full-time in the

NSCC Waterfront Campus Environmental Engineering Technology Program!

Application deadline is

Late summer/fall 2016

For more information about how to apply for this award and other valuable resources for African Nova Scotian students please visit:

http://www.nscc.ca/docs/africancanadianguide.pdf

The Lake Major Watershed Newsletter is a Halifax Water publication.
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Continuous Monitoring and Testing: Part II – Treated Water Monitoring and Compliance

Halifax Water staff are committed to supplying drinking water in compliance with the "*Guidelines for Canadian Drinking Water Quality*" (http://www.hc-sc.gc.ca/ewh-semt/water-eau/drink-potab/guide/index-eng.php), established by Health Canada.

In 1996 a water quality committee was established with representatives from Nova Scotia Environment (NSE), Halifax Water and the Provincial Medical Health Office to address water quality issues in a proactive manner and to establish emergency response protocol.

Some of the water quality management (WQM) tools that Halifax Water uses are mandated by provincial legislation, while others have been voluntarily adopted by Halifax Water. Testing water samples is the primary water quality management (WQM) tool to control water processing at Halifax Water, which is used to ensure water utility excellence.

Halifax Water conducts over 100,000 individual parameter tests per year at the water supply plants (WSPs) and in the distribution system. Continuous monitoring is conducted in each WSP for chlorine, turbidity and pH. Halifax Water also takes water samples twice a week at 48 locations (4800 tests per year) throughout the distribution systems (water pipes and reservoirs), for chlorine, turbidity and bacteria. Water samples are also taken regularly for treatment plant performance and process control; disinfection by-products (e.g., chlorine); baseline Giardia ("beaver fever") and Cryptosporidium (microscopic parasites), tested twice a year by sampling the raw water coming into the WSP; regular lake (source water) sampling (discussed in the Summer 2015 Newsletter issue) to monitor lake health and to check for pathogens; and corrosion monitoring to make sure the treated water is not corrosive to household plumbing. In the past 40 years, the number of water quality parameters that utilities must monitor and treat has increased twenty-fold!

The table on the opposite page lists some of the parameters measured for, and used in, Lake Major's water treatment process and control sampling program – from the raw water point to the finished product – conducted in-house at the Lake Major WSP for quality and bacteriological safety. Water quality tests are also carried out by an independent accredited laboratory that sends the results directly to NSE which monitors Halifax Water's performance. Definitions of the parameters and reasons for testing them are also outlined on the opposite page.

To ensure customer satisfaction with respect to water quality, all calls are reviewed by qualified staff. Halifax Water staff are trained and available to conduct in-home visits to investigate any water quality customer complaints. For any water quality-related concerns please call 490-4820 between 8 a.m. and 4 p.m.

Lake Major Watershed Community News

In June 2015, close to 50 people from **the Lake Loon/Cherry Brook community participated in a clean-up/BBQ**. After the clean-up, participants were treated to a bouncy castle sponsored by Councillor Lorelei Nicoll and a BBQ sponsored by Halifax Water, capped off with a baseball game.

Also in June, six members of the **1st Lawrencetown Boy Scout Troop** and their families collected **32 large bags of garbage** during a roadside clean-up along Lake Major Road.

A great, big, **THANK YOU** to all, from the LMWAB for helping to keep the Lake Major watershed clean.

Howard Riley and Marsha Hudson-Ashe tend the BBQ at the Lake Loon/Cherry Brook community clean-up, June 2015.

LMWAB Member Profile: Brenton Sparks

The Lake Major Watershed Advisory Board (LMWAB) is proud to introduce its new Chairman, Brenton Sparks. Brenton was born and raised in Lake Loon/Cherry Brook. He is trained in auto-body repair, has a background in construction and owns his own business in these sectors. For 14 years, Brenton worked at and managed his own successful construction business in Toronto where he gained confidence and valuable people skills. Like many native Nova Scotians who go away to work, he was compelled to bring the skills and knowledge he gained back home, to help revitalize his community.

Since returning to his birthplace, Brenton is fulfilling his passion to represent his community as President of the Lake Loon /Cherry Brook Development Association (LLCBDA).

One of Brenton's most recognizable efforts as leader of the LLCBDA is in saving the Community Centre (see Lake Major Newsletter Issues: Summer 2014 and Summer 2015). Brenton also exercises his leadership skills by overseeing many of the Lake Loon/Cherry Brook community program development and educational opportunities including recreational activities, tutoring programs and employment opportunities for youth, and rallies; and facilitating fundraising efforts such as Halifax Water-sponsored community clean-ups and pancake breakfast. Youth trips sponsored by the LLCBDA have included trips to Sobeys to learn how to cook nutritious food and share recipes to cook at home; and receiving help with school subjects.

Brenton's leadership skills have obviously impressed the community. Not only has the LLCBDA chosen him to represent them on the LMWAB, he holds the Chair position with the LMWAB as well.

Brenton takes pride in sharing his knowledge and raising awareness about important community activities, particularly when it comes to keeping the community's water supply clean.

The LMWAB welcomes Brenton's energy and dedication to the Lake Loon/Cherry Brook community!

Lake Major Water Quality Considerations

Testing the quality of raw source water is important because its quality determines how the water will be treated during processing at the water supply plant (WSP). Water quality parameters that especially influence the treatment process include those measured in the field (in-situ), i.e., turbidity, colour, pH, total organic carbon (TOC) and water temperature (which fluctuates daily, sometimes over a 20 °C range, depending on the weather), and chemical parameters, i.e., manganese, aluminum and iron, which are tested at an accredited third-party lab.

Since the WSP was built in 1999, Lake Major water quality has shifted, especially colour and TOC which have significantly increased since Hurricane Juan in 2003. This shift in water quality can impact treatment processes and potentially increase overall treatment costs to Halifax Water. Halifax Water works closely with the regulatory agency (Nova Scotia Environment) and research institutes to develop ways to effectively operate the WSP and manage the watershed area while minimizing both the cost to the customer and impact on the environment.

A research project is poised to begin in 2016 to better understand the changes in Lake Major raw water quality and its impact on operations. The research will collect and evaluate water quality in all seasons, and at various depths and locations to provide insight for optimizing WSP performance.

Halifax Water staff collecting water samples.

Halifax Water on Screen

To see the work we do at Halifax Water and some of the faces of the dedicated staff who perform this work, we invite you to visit our YouTube Channel link at: https://www.youtube.com/channel/UC4SuO2XqgECbp2qNFK7f7kQ

Treated Water: Testing Locations, Parameters and Frequencies

Process Location	Parameter	Frequency
Raw Water (coming into the plant)	pH	1 per day
	Temperature	1 per day
	Turbidity	1 per day
	Colour	1 per day
Settled Water	Turbidity	2 per day
	Colour	2 per day
	pH	2 per day
Filtered Water	Turbidity	2 per day
	Colour	2 per day
	pH	2 per day
	Aluminum	2 per day
	Free Chloride	2 per day
Finished Water	Turbidity	3 per day
	Colour	3 per day
	pH	8 per day
	Flouride	4 per day
	Phosphate	2 per day
	Free Chloride	8 per day
Plant Waste Water	Temperature	1 per day
	Turbidity	1 per day
	Colour	1 per day
	pH	1 per day
	Total Suspended Solids (TSS)	1 per day
	Aluminum	1 per day
	Free Chloride	1 per day

Parameter Definitions/ Reasons for Measuring

Colour	Measures light absorbed by various materials in the water.
Iron	Measured for aesthetics (MAC* 300.0 micro g/L). Too much may cause solids to form in pipe fixtures that break off causing staining and water to taste unpleasant and may increase unwanted bacteria growth.
Manganese	Measured for aesthetics (MAC* 50.0 micro g/L) for reasons similar to iron.
pH	Measures acidity and alkalinity: >7=alkaline (e.g., bleach); <7=acidity (e.g., lemon juice).
Temperature	Self-explanatory.
Total Suspended Solids (TSS)	Measures level of sediments or silt in water. High TSS mostly caused by soil erosion or dredging interferes with the water treatment process.
Turbidity	Measures how clear water is.
Aluminum	Used in the water treatment process. Levels are tested to ensure residuals are minimal (i.e., MAC* 200 micro g/L).
Flouride	Use is supported by NS Department of Health and Wellness at levels <1.5 mg/L. http://novascotia.ca/dhw/environmental/fluoride.asp
Free Chloride	Measured to ensure enough chloride has been added to make water safe to drink.
Phosphate	Used in water treatment process to inhibit pipe erosion.
*MAC	Maximum Allowable Concentration