Lake Major Watershed Newsletter

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Lake Major Dam to be Replaced

The existing Lake Major Dam is a rock-filled timber crib structure originally built for a private milling operation in the 1940s. It is located just off Lake Major Road in North Preston. The former City of Dartmouth took ownership of the Lake Major dam in 1960 during improvements to the Dartmouth water supply system, when Lake Major became the primary water source for Dartmouth and area communities. Halifax Water assumed ownership of the dam during amalgamation of the municipality in 1996.

Halifax Water carried out a Dam Safety Review in 2012 which recommended that consideration be given to the replacement or upgrade of the dam. Based on that recommendation, a consultant has been retained to study viable locations for a replacement structure.

During a routine inspection, Halifax Water crews discovered issues with the fish ladder adjoining the Lake Major dam. It was determined that the fishway structure required stabilization. Although the dam is structurally sound, immediate repairs to the fish ladder were required. An emergency repair was conducted on January 17, 2015 which involved a mandatory evacuation of approximately 135 homes near Little Salmon River, downstream of the Lake Major dam.

The work to replace the dam is currently in the conceptual design phase. The location of the new structure will be based on a number of key items including:

- minimizing environmental impacts;
- allowing fish passage through the structure; and
- satisfying current and future water supply demands.

As part of the design process, Halifax Water will be conducting public consultation on the concept designs.

Water Protection: A Multi- Barrier Approach

From the source to the tap, Halifax Water ensures top quality water is delivered to our customers. To protect its water supplies, including Lake Major, Halifax Water uses a multi-barrier approach (see www.Halifax.ca/hrwc/WaterQualityManagement.php) which involves a system of checks and balances from the source to the tap, guided by the step process outlined in *Developing a Municipal Source Water protection Plan: A Guide for Water Utilities and Municipalities* found at www.novascotia.ca/nse/water/docs/WaterProtectionPlanSummary.pdf. This step process achieves the goals set out in the Drinking Water Strategy for Nova Scotia (see https://novascotia.ca/nse/water/docs/NSWaterStrategy.pdf.

These systems and processes are illustrated and described in more detail in previous issues of the Lake Major Newsletter found at www.halifax.ca/hrwc/Publications.php#LM News.

The previous issue of this newsletter explained the third step in Halifax Water's multi-barrier approach – ***Cross-Connection Control and Backflow Prevention***.

This issue and next will focus on the second-last step of Halifax Water's multi-barrier approach; i.e.; ***Continuous Monitoring and Water Quality Testing***.

Please turn to the back page to learn how Halifax Water monitors and tests the raw source water before it reaches the water treatment processing plant.

Attention

African Nova Scotian Students!

Halifax Water, through the *Nova Scotia Community College*, is offering a

$7200 bursary through the Arnold D. Johnson Award

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

NSCC Waterfront Campus Environmental Engineering Technology Program!

Application deadline is

Wednesday October 21, 2015

For more information please visit http://www.nscc.ca/admissions/scholarships_and_bursaries/student-awards/default.aspx

Lake Major Community News

Halifax Water provided funding towards the Cherry Brook BBQ and clean-up held on June 6, 2015. Approximately 40 community members participated.

In the last issue of this newsletter we reported the fundraising efforts by the Lake Loon-Cherry Brook Development Association (LLCBDA) to acquire the abandoned community centre, an historical landmark, pictured above.

In April 2015, Halifax Regional Council declared the community centre property at 220 Lake Loon Road, Cherry Brook and a portion of the adjacent property at 266 Lake Loon Road (for septic and parking), as "surplus to municipal purposes". These properties have been categorized as "Community Interest" under Administrative Order 50 (see details at http://www.halifax.ca/surplusproperties/communityinterest/documents/CherryBrookCommunityCentre_PosterBoard.pdf). They may now be purchased by a not for profit group at less than market value. Council's decision has opened the door a little wider for the LLCBDA to pursue its goal to restore the community centre for the benefit of the community.

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

The Lake Major Watershed Newsletter is a Halifax Water publication.

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LMWAB Member Profile: Spencer Colley

Spencer Colley is among our newest members of the Lake Major Watershed Advisory Board (LMWAB) representing the East Preston Ratepayers Association. Spencer was born, raised and educated in East Preston and married Rose Glasgow. Together they raised two sons and a daughter. Spencer worked for the Halifax Regional Police Department and retired in 1997 after approximately 26 years of service.

Although Spencer grew up in a Progressive Conservative home, he embraced the ideals of the Liberal party and joined their ranks in 1995. His enthusiasm for the Party was instrumental in securing a victory for Wayne Adams who was elected to the provincial legislature under the John Savage government that same year. Adams holds the distinction of being the first Nova Scotia black MLA and Cabinet Minister and held the Environment portfolio from 1996 – 1998. Prior to becoming an MLA and while councillor for the area, Adams sat as a member of the Lake Major Joint Action Committee, from which evolved the LMWAB.

After holding many positions within the Preston Liberal Association, Spencer became President in 2000 and held that position for more than two terms. While President, Spencer helped Liberal MLA, Keith Caldwell, become elected for the Preston Constituency. Keith is serving his second term.

Spencer is now Past-President and one of the most involved and active members in the Association, heading all fundraising endeavours, special projects and often assisting the MLA in preparing presentations.

In addition to supporting the Federal and Provincial Liberal Associations, Spencer's community service extends to the East Preston Ratepayers Association, which has led to his membership on the LMWAB.

Spencer places high importance on keeping himself and others informed which is demonstrated by his volunteer position on the LMWAB, to create more awareness in the watershed community about keeping clean water clean and safe for those served by Lake Major. Welcome to the Board, Spencer!

Watershed Monitoring

Watershed monitoring consists of maintaining a presence in the watershed area by way of patrolling, encouraging public reporting of unauthorized or suspicious activities, conducting raw and treated water sampling, and liaising with various governing agencies and stakeholders to ensure a clean and safe drinking water supply. Effective monitoring of the Lake Major watershed area also highly depends on maintaining good relationships between the authorities responsible for regulating and protecting the drinking water supply and the source water area community representatives.

The key mechanism for effective monitoring of the Lake Major watershed lies within the **Lake Major Watershed Advisory Board** (LMWAB) which consists of representatives from the Lake Major, North Preston, East Preston, and Lake Loon /Cherry Brook communities and the regulatory authorities for the water supply and area. Development of the LMWAB was the first step in the multi-barrier approach for source water protection in the Lake Major watershed.

Raw Source Water Quality Testing

Raw source water quality testing for the Lake Major water supply begins at the water supply source, that is, Lake Major. Raw (source) water samples are collected and/or parameters measured at strategic points inside the watershed area.

While some source water quality testing parameters are measured with hand-held instruments in the field (*in-situ*), other parameters are measured by collecting water samples in specialized bottles which are delivered to an independent lab for assessment.

Source water samples are measured against available *Water Quality Guide-lines for the Protection of Aquatic Life (WQGPAL) (http://st-ts.ccme.ca/en/index .html)* set by the Canadian Council of Ministers of the Environment (CCME). In many instances, these *WQGPAL* are more stringent than the "*Guidelines for Canadian Drinking Water Quality*", (GCDWQ) as established by Health Canada. When WQGPAL are not available, GCDWQ are used.

Raw water is also sampled at the water supply treatment plant where continuous testing is an integral part of the **operational treatment process**, part II of the *Water Management Program,* to be described in the next issue of this newsletter.

Prior to 2009, source water quality monitoring consisted of collecting raw water samples at the water treatment plant and/or in response to emergencies to fulfill regulatory obligations. In September 2009, Halifax Water updated and formalized its raw water sampling program to include a proactive *five-part Source Water Quality Monitoring Program* (SWQMP) to measure watershed health at established sample sites (described above) with respect to baseline, risks, activities, targets and operations.

Baseline sampling is used to set water quality parameter baselines within the watershed area. *In-situ* baseline sampling parameters include Dissolved Oxygen, pH, Temperature, Specific Conductivity, and Turbidity. Lab tested parameters include Total Suspended Solids, *E. coli, Total Phosphorus, Nitrate-Nitrogen, Total* Organic Carbons, Total Chlorides and a metals scan. All baseline parameters are measured monthly except for the metals scan which is mea sured twice per year.

Deep Lake baseline monitoring and testing is also collected, in season, for similar testing parameters at 1m intervals along the water column.

Subsequent water quality sample data results are compared with baseline measurements to determine whether any changes in water quality parameters require an investigation and whether they are associated with land use activities.

Risk-based sampling is scheduled and testing parameters are specifically linked to probable risk(s) (e.g., petroleum-hydrocarbons in association with highways). Test results may prompt changes in water quality management, protection efforts, regulations and/or restrictions of certain activities.

Activity-based sampling is scheduled based on known events including forestry, road de-icing, construction and other known activities. The parameters tested for are determined by the activity and the impact it may present to the water supply source. Activity-based sampling test results help determine cause-and-effect relationships and short and long-term effects of impacts on the watershed area; how to best manage land-use activities; and the frequency with which physical patrols and water quality monitoring need to be conducted.

Target-based sampling is done in response to incidents or unplanned events such as a fuel or environmental spill, significant weather events, vandalism or malicious intent. Such sampling monitors the impacts of events with the potential to shut down the pumping station and provides a warning system that helps to protect customers.

Operational raw water sampling is routinely performed as per regulatory requirement to uphold operation permits. Such sampling is the responsibility of all water quality supervisors and managers.

Raw water compliance monitoring is also conducted at the water supply plant intake and reported back to Nova Scotia Environment.

Water quality data gathered for both operational and raw water sampling programs may be used as supplemental data for either program if necessary.