



Staff Report

Infrastructure and Public Works

Report To: Committee of the Whole
Meeting Date: February 27, 2019
Report Number: CSPW.19.019
Subject: Councilor Standard of Care for Drinking Water Systems
Prepared by: Allison Kershaw, Manager of Water and Wastewater Services

A. Recommendations

THAT Council receive Staff Report CSPW.19.019, entitled "Councilor Standard of Care for Drinking Water Systems" for their information.

B. Overview

This report provides information concerning the responsibilities of members of Council under the Safe Drinking Water Act, in particular the Statutory Standard of Care provision, which came into effect on December 31, 2012.

C. Background

Safeguarding drinking water, now and for our future generations, is a vitally important role. It requires leadership, vigilance and ongoing collaboration between the province and Ontario municipalities. Municipal Councilors have decision making responsibilities for a municipal drinking water system or have oversight of an accredited operating authority and as such have a role in ensuring the integrity of the Town's drinking water system.

D. Analysis

Attachment #1 is a review of questions and concerns brought forward by municipal Council for the Water Services Team to answer.

E. The Blue Mountains Strategic Plan

Goal #2: Engage Our Communities & Partners
Objective #1 Improve External Communication with our Constituents

Goal #3: Support Healthy Lifestyles
Objective #1 Promote the Town as a Healthy Community
Objective #4 Commit to Sustainability

Goal #4: Promote a Culture of Organizational & Operational Excellence
Objective #2 Improve Internal Communications Across our Organization
Objective #3 To Consistently Deliver Excellent Customer Service
Objective #4 To Be a Financially Responsible Organization

Goal #5: Ensure Our Infrastructure is Sustainable
Objective #1 Develop a Long-Term Asset Management Plan for the Maintenance, Renewal and Replacement of Existing Infrastructure
Objective #2 Avoid Unexpected Infrastructure Failure and Associated Costs and Liability
Objective #3 Implement Best Practices in Sustainable Infrastructure
Objective #4 Ensure that Infrastructure is Available to Support Development

F. Environmental Impacts

Provision of Safe Drinking Water

G. Financial Impact

None.

H. In Consultation

Meg Boyd, Water & Wastewater Compliance & Efficiency Coordinator

Scott Hill, Water Supervisor

I. Public Engagement

The topic of this Staff Report has not been subject to a Public Meeting and/or a Public Information Centre as neither a Public Meeting nor a Public Information Centre are required. Comments regarding this report should be submitted to Allison Kershaw, managerwww@thebluemountains.ca

J. Attached

1. Knowledge of the Drinking Water System

Respectfully submitted,

Allison Kershaw

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This document can be made available in other accessible formats as soon as practicable and upon request



Knowledge of the Drinking Water System

Infrastructure and Public Works

What Should I be Asking?

Question 1: What are the risks to public health?

Answer 1: There are always potential risks to public health with a Drinking Water System. Risks could be in the form of a pathogen or a contaminate entering the Drinking Water System or failure of equipment to deliver water.

The Town has a multi-barrier approach to mitigate the risks involved with treating and delivering water to the public. There are many steps in the treatment of water, and each step is evaluated to ensure the water was properly treated. The Town undertakes more sampling than required by regulation. The Town's treatment system exceeds the minimum requirements set by the province.

Equipment utilized to treat and deliver water is designed with 100% redundancy. If a pump fails, there will be a back-up pump on-line and ready to go. Should there be a power outage, most of the booster stations are equipped with back-up power. In situations when back-up power isn't available, the water pressure can still be maintained by elevated storage.

The Town is equipped with a comprehensive SCADA, Supervisory Control and Data Acquisition, system. SCADA monitors the Town's system 24hrs a day. If there is an issue with any part of the process, it triggers an alarm that is sent directly to the water operators.

The Town also has a cross connection control and backflow prevention program. This ensures that the water provided by the Town cannot be contaminated by an external source.

All the risks to public health with the drinking system is thoroughly evaluated through the Drinking Water Quality Management (DWQMS). The Town undergoes a comprehensive drinking water inspection by the province every year. The inspection includes review of all the operational and analytical data and the measures put in place by the Town to mitigate risks to public health.

Question 2: Are there any areas of risk that Council needs to address?

Answer 2: In accordance with the Drinking Water Quality Management System, every thirty-six months the Town undertakes a comprehensive risk assessment of the Drinking Water System. This was last completed in October 2018. The hazards and potential effects are assessed and the preventative control measures, as well as the monitoring processes and procedures are

identified. The hazards with a risk evaluation of greater than 9 are re-evaluated on a yearly basis. In Table 1, the hazards with a total score of 9 or greater are documented.

Table 1

Activity or Process Step	Description of Hazardous Event / Hazard	Total Score	Critical Control Point	Critical Control Limit
Distribution	Watermain Break Low water pressure	9	Customer Feedback Capital Asset Plan Leak Detection Program SCADA High Water Demand and Pump Hours Site Patrols	<20 psi (140 kPa) in distribution system
Distribution	Illegal Connections Cross Connections	10	Site Patrols Building Code Requirements Cross Connection and Backflow By-law Water By-law	Customer Feedback Bacteriological Testing

Question 3: What checks and balances are in place to ensure the continued safety of our drinking water?

Answer 3: The Drinking Water System has a number of checks and balances in place to ensure the drinking water is safe and properly treated. Our Drinking Water System is designed by an engineer with experience in water treatment and distribution. The Town’s treatment system meets and exceeds the requirements set by the province necessary to treat raw water from a surface water source. The design was approved by the Ontario Ministry of Environment Conservation and Parks. The Town was issued a Drinking Water Works Permit and a Drinking Water License to operate the plant.

The treatment process is closely monitored by a multitude of instrumentation, that is calibrated on a regular basis. If during the treatment process, the water does not meet the expected level of treatment, the high lift pumps shut down and no water is delivered to the consumers. Operators must review all instrumentation data and sign off that it has been reviewed. In addition to the instrumentation checks, operators also collect samples from the process and complete some in house testing. Raw, treated and distribution samples are also sent to a lab every week for analysis. The Town exceeds the provincial regulation in regards to the amount of sampling completed to ensure there is a good representation across the community. If a sample fails to meet the standards set by the province, the Town is notified by the lab. The lab also notifies the MECP and the Grey Bruce Health Unit. The Town must also notify the MECP and the Grey Bruce Health Unit when a sample has failed to meet the standard. The Town also provides the corrective action and results from a resample to both MECP and the Grey Bruce Health Unit. All drinking water test results are available to the public at the Town Hall.

The Town is inspected yearly by a MECP Water Inspector. The Inspection Report includes a review of all operational data and analysis, including instrumentation analysis, in house testing and lab analysis. The Inspector also confirms that all of the instrumentation has been calibrated as required. The Inspector may take samples to be analyzed at the MECP lab.

The water treatment plant and water distribution system are run by licensed water operators, with extensive experience in the treatment and distribution of water. The Town's operators undergo continuous training in order to maintain their licenses.

The Drinking Water System is required to maintain the Drinking Water Quality Management System (DWQMS). This includes an annual internal and external audit. The DWQMS is designed to protect public health by achieving consistent good practice in managing and operating a Drinking Water System. The DWQMS consists of twenty-one elements and incorporates Owner and Operating Authority's responsibilities, risk assessment and hazard analysis, emergency planning and document and record control.

Question 4: Are we meeting our legislative and regulatory requirements?

Answer 4: Yes. The Town has extensive sampling and preventative maintenance programs in place to ensure we are compliant with regulatory requirements.

Question 5: How are we managing our drinking water infrastructure? Do we have an asset management plan for our water infrastructure?

Answer 5: The Town has initiated an asset management program. The first step was compiling an inventory list which has been completed. Assessing age, material type and conditions are currently underway. The Town has reviewed all as-built drawings that are available for the water infrastructure to help confirm age, diameter and material types. The Town has developed a calibrated water model to help analyze operational scenarios and undertake design modifications.

Question 6: Are there any emerging issues related to our drinking water that Council should be aware of?

Answer 6: The Town's Drinking Water Quality Management System (DWQMS), Elements 7 & 8, Risk Assessment and Risk Assessment Outcomes require staff to review all risks to the Drinking Water System. For each hazard identified, a risk assessment, a critical control point and limit will also be identified.

Some of the additional hazards that were evaluated in the more recent years include long term impacts to climate change, water supply shortfall, extreme weather events, sustained extreme temperatures, chemical spill impacting source water, terrorism and vandalism action, sustained pressure loss, backflow, sudden changes to raw water characteristics and algal blooms. Through the DWQMS hazard evaluation, control measures of all of these risks have been identified.

The Town is currently undertaking a Water Distribution Master Plan. This plan will identify where there may be shortfalls on being able to provide enough water for domestic use and have adequate fire-fighting capabilities.

In addition, the Town's water operators undergo significant training each year. The training is provided by experts in the water industry. Some of the training does focus on emerging issues related to drinking in Ontario.

Question 7: If there is a drinking water emergency, what is our emergency management plan? What is the role of Council in a drinking water emergency?

Answer 7: Emergency procedures have been developed for the Water Section for emergency response and are located in the Operations and Maintenance Manuals at the Water Treatment Plant. The emergency management procedures that are documented are meant to compliment the Town's Emergency Response Plan which has been legislated by the Province through Emergency Measures Ontario.

The Mayor is trained in the Emergency Procedures through the Town's Emergency Management Plan. When emergencies are declared, the roles and responsibilities of key personnel are outlined in the Town's Emergency Management Plan.

Mayor or Deputy Mayor Responsibilities include but are not limited to:

- The Mayor shall be notified immediately if water cannot be supplied in sufficient amounts to provide fire protection or if water quality poses an acute health risk to customers and boil water advisory or drinking water advisory must be issued
- The Mayor will be the primary contact for all required communications with the Owner
- The Mayor will inform Councilors of events as necessary

Question 8: Have Staff taken required training and upgrading?

Answer 8: Ontario Regulation 128/04 requires that all Water Treatment and Distribution Operators possess operating licenses appropriate to the class of facility where they are employed. The Town's Water Treatment System is a Class II and the Town's Water Distribution System is a Class III.

The amount of training an Operator is required to complete over the three year renewal period is based on the highest class of drinking water facility operated. As the Water Distribution System is Class III, Operators are required to complete 42 hours of MECP Director Approved Training (Continuing Educational Units) and 78 hours of On-the Job Training in a three year period.

Additionally, every drinking water Operator must complete the Mandatory Certificate Renewal Course within each renewal period. The course content is changed every three years to ensure that all Operators are kept up to date on emerging issues within the industry.

Staff maintain records of all training courses attended to ensure Operators fulfill their training requirements when their license is due for renewal.

Operator Licences are as follows:

Table 2 – Operator Licences

Operator	Title	Water Treatment Class	Water Distribution Class
Scott Hill	Water Supervisor Overall Responsible Operator	3	3
Rob Gilchrist	Senior Water Operator Overall Responsible Operator	2	3
Stephanie Cole	Senior Water Operator Overall Responsible Operator	2	3
Don McArthur	Senior Water Operator Overall Responsible Operator	2	3
Scott Marritt	Water Operator	2	3
Allan Scott	Water Operator	2	2
Kevin McGuire	Water Operator	1	1

Question 9: What is the water source for the Town of The Blue Mountains?

Answer 9: The raw water source for the Thornbury Water Treatment Plant (WTP) is Georgian Bay. The Town lies within the Grey-Sauble Conservation Authority and Nottawasaga Valley Conservation Authority. Collingwood supply is from the Town of Collingwood which also comes from Georgian Bay.

Question 10: What is the physical condition of major infrastructure?

Answer 10: The water treatment plant was put into service in 1978. At that time, it serviced the Town of Thornbury. The plant was upgraded in 1988 with the addition of two gravity filters. In 2008-2009, the conventional filters were replaced with microfiltration membrane units. The treatment plant itself is in good repair. The technology utilized to treat the water is current. Through the assessment management program, staff have started to consider the life expectancy of the components of the plant. The Town has a preventative maintenance program to maintain the water system. During the yearly budget process, maintenance and upgrades to the plant are considered. There are some energy-saving upgrades for the plant that could reduce operational costs. They have been identified in the budget. In addition, the Town attempts to stay current with new developments in water treatment and distribution.

The distribution system buried infrastructure varies in age and materials. The assessment management program has identified watermains that should be replaced. In the next 5 years, approximately 5% of the watermains should be replaced.

There are a number of reservoirs and booster stations in the distribution system. The yearly budget process has identified repairs and improvements required to ensure these stations operate efficiently and as required.

Question 11: Do we have competent senior managers? Do they conduct regular performance appraisals of staff?

Answer 11: The Town has senior managers who have expertise in water treatment and distribution. Senior management meet regularly with the Water Section and stay current with new developments in the treatment and distribution of drinking water.

Question 12: Is there adequate Staff in place to operate and maintain the system?

Answer 12: Currently, the Town has enough staff to operate and maintain the system. The Town however is undergoing significant growth. As the Town continues to assume more water infrastructure there will be a need to assess our staffing requirements for the water department.

Question 13: How are new operators trained?

Answer 13: After successful completion of the Operator in Training (OIT) Water Treatment and Water Distribution Ministry of the Environment Conservation and Parks (MECP) Entry Level Course and OIT exam, a new Operator will train with an experienced Operator.

After one year working as an OIT, the Operator must successfully complete a Class I Water Treatment or Distribution exam to become a Class I Water Treatment and/or Water Distribution Operator.

Question 14: Was our last inspection rating from the Ministry of Environment and Climate Change 100 percent? If no, why not?

Answer 14: An inspection of the Blue Mountains' Drinking Water System was initiated on January 26, 2018 by the MECP. There was one Non-Compliance with Regulatory Requirements found. Records did not confirm that the water treatment equipment that provides chlorination or chloramination for secondary disinfection purposes was operated so that at all times and all locations in the distribution system chlorine residual was never less than 0.05 mg/l free of 0.25 mg/l combined.

The inspection report includes an Inspection Summary Rating Record which is designed to encourage Drinking Water Systems to strive for continuous improvement. Based on the MECP established rating methodology, The Blue Mountains' Drinking Water System received at 96.13% rating for the 2018 reporting period.

Question 15: What are the risks currently facing our water sources, drinking water facilities and infrastructure? What are the plans to address these risks?

Answer 15: The risks currently facing our source water include Pathogens and Chemicals. The Source Protection Plan outlines the steps that municipalities, the province, landowners, industries, farmers and others need to take to keep water clean before it enters our streams, rivers and groundwater systems. These watershed-based plans identify the threats to water quality and water quantity/supply, identify vulnerable areas and then propose steps to reduce the risks to our water.

The Town has undertaken a Water Distribution Master Plan to ensure that there is adequate water in the areas where water is needed to meet not only the domestic requirements, but also adequate water flow for fire-fighting. The study will outline distribution improvements needed.

Question 16: If there is an emergency with the Drinking Water System, what procedures are followed? How will Council members be notified? How will the public be notified?

Answer 16: The Drinking Water Quality Management System (DWQMS) Element #18 – Emergency Management identifies possible emergency situations that could result in the loss of the Town’s ability to supply safe drinking water to consumers. Emergency procedures have been developed for the Water Section for emergency response and are located in the Operations and Maintenance Manuals at the Water Treatment Plant and the Water Operations Centre.

The Mayor will be trained in the Emergency Procedures the Town’s Emergency Management Plan. The Mayor will inform Councilors of events as necessary. The Mayor will also notify the public.

From the Town’s Emergency Response Plan, the Mayor or acting Mayor is responsible for the following:

- Providing overall leadership in responding to an emergency;
- Officially declare an emergency to exist within a designated area, declare all or a part of the Town as an emergency area, declare an “evacuation area” as required.
- Notifying Emergency Management Ontario, Ministry of Community Safety and Correctional Services of the declaration of the emergency and termination of the emergency.
- Ensuring the member of Council are advised of the declaration and termination of an emergency, and are kept informed of the emergency.
- Authorize Town expenditures until such time that Council can meet.
- Make a formal request to neighbouring Municipalities for assistance as required.
- Authorize an appeal for public volunteers if needed.
- Officially declare that the emergency has terminated.
- Notify Emergency Management Ontario, neighbouring Municipal officials, Town Council and the Public of the termination of the emergency.
- In coordination with Communication and Economic Development Coordinator, and following consultation with the Community Control Group, make public statements on behalf of the Town.
- Maintain log and ensure that all decisions are recorded.

Question 17: What is the Municipality's responsibilities in implementing the source protection plan? Is there a source protection plan?

Answer 17: The Town is part of the Grey Sauble Source Protection Area and has an approved Source Protection Plan that applies to Saugeen Valley Source Protection Area, Grey Sauble Source Protection Area and Northern Bruce Peninsula Area. The Plan was approved on July 15, 2016.

The Municipality, is responsible for the following:

- Enforcing Part IV of the Clean Water Act, or delegating the enforcement to another authority;
- Using Municipal planning tools to prohibit and/or manage drinking water threats that could emerge in the future;
- Updating existing Municipal operations and programs; and
- Reporting on the implementation of the Source Protection Plan policies to the Saugeen Valley Grey Sauble and Northern Bruce Peninsula Source Protection Authorities.

The Town has negotiated with Grey Sauble Conservation Authority to provide the enforcement and required reporting of the Source Protection Plan for the Town. This agreement also includes providing the risk assessment of future threats in the Intake Protection Zone. In addition, the Town is also affected by the Nottawasaga Source Protection Plan, as a Town is in the Wellhead Protection Area for two Municipal wells for the Township of Clearview. Grey Sauble Conservation Authority also provide enforcement, reporting and risk assessment for this area as well.

The Official Plan has been updated to include the Source Protection Plan requirements. The Zoning by-law has been amended to meet the requirements of the Plan.

Question 18: How and when do I ask for annual reports on the Drinking Water System from senior management?

Answer 18: The Town is legislated to ensure that an Annual Report for the period of January 1 through to December 31 is prepared no later than February 28th of the following year.

The Annual Report must contain:

- A brief description of the Drinking Water System, including a list of water treatment chemicals used by the system;
- A summary of the results of required tests;
- A summary of any adverse results reported and corrective action taken; and
- A description of any major expenses incurred to install, repair or replace required equipment

The Town is also required to provide a Summary Report to Council no later than March 31 of each year.

The Summary Report must contain:

- A list of any regulatory requirements applicable to the system that were not met at any time during the period covered by the report, the duration of the failure, and the measures that were taken to correct the failure; and,
- A summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows and compared to the rated capacity of the system

Question 19: Is the Drinking Water System periodically audited? How often? What should a Councillor do when a Councillor receive audit results for consideration?

Answer 19: An Internal Audit of the Town's Quality Management System is conducted at least once every Calendar Year.

An External Audit, completed by a third party accreditation body, is completed on a three year cycle:

Year 1: Surveillance Audit (Systems Audit)

Year 2: Surveillance Audit (Systems Audit)

Year 3: Re-accreditation

Question 20: Is the Town's Drinking Water System financially sustainable for the future? Are there financial plans in place?

Answer 20: The Town's current Water Financial Plan, prepared by Finance & IT Services was approved by Town Council on April 20, 2015. The Financial Plan has been prepared to comply with the requirements of Ontario Regulation 453/07 and addresses the Town's Drinking Water System and associated distribution system. The financial statements contained with the Plan adhere to the six year forecast requirement.

As system needs change and evolve, so too does the Plan. The Financial Plan will be updated at a minimum, every five years.

Question 21: What are the requirements for keeping The Municipal Drinking Water License valid, such as renewal timelines?

Answer 21: As of September 2012, all Municipal residential Drinking Water Systems must be licensed under the Municipal Drinking Water Licensing Program.

Licences are valid for 5 years as long as the Town's:

- maintains status as (or employ) an accredited operating authority

- prepare a financial plan and have it approved by Municipal Council
- have a valid permit to take water
- operate the Drinking Water System according to the conditions in the licence

Question 22: What maintenance, rehabilitation and renewal plans are in place for our Drinking Water System?

Answer 22: The Town is currently undertaking a Water Distribution Master Plan. This plan will identify the shortcomings of the Town’s ability to distribute water, not only for domestic use, but for firefighting as well.

The Town has an assess management program. This program assesses the age and the condition of infrastructure and will provide life- expectancies of equipment.

The water system has a comprehensive preventative maintenance program for all components of the Drinking Water System. During the development of the yearly budget, elements of the Drinking Water System are considered and budgeted for it needed.

Question 23: Who will be the spokesperson during a drinking water emergency?

Answer: 23: During a drinking water emergency, as with any other Municipal emergency, the Town’s Mayor will be the spokesperson. The Mayor will be trained in the Emergency Procedures though the Town’s Emergency Management Plan.

From the Town’s Emergency Response Plan, the Mayor or acting Mayor is responsible for the following:

- Providing overall leadership in responding to an emergency;
- Officially declare an emergency to exist within a designated area, declare all or a part of the Town as an emergency area, declare an “evacuation area” as required.
- Notifying Emergency Management Ontario, Ministry of Community Safety and Correctional Services of the declaration of the emergency and termination of the emergency.
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- In coordination with Communication and Economic Development Coordinator, and following consultation with the Community Control Group, make public statements on behalf of the Town.
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