

**Report to
Rapport au:**

**Environment and Climate Protection Committee
Comité de l'environnement et de la protection climatique
19 June 2018 / 19 juin 2018**

**and Council
et au Conseil
27 June 2018 / 27 juin 2018**

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**Submitted by
Soumis par:**

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Ward: CITY WIDE / À L'ÉCHELLE DE LA VILLE File Number: ACS2018-PWE-GEN-0017

**SUBJECT: 2017 Drinking Water Quality Management System Annual
Management Review Report**

**OBJET: Rapport d'examen annuel 2017 du système de gestion de la qualité
de l'eau potable.**

REPORT RECOMMENDATIONS

That the Environment and Climate Protection Committee recommend that Council receive the 2017 Drinking Water Quality Management System Annual Management Review Report.

RECOMMANDATIONS DU RAPPORT

Que le Comité de l'environnement et de la protection climatique recommande au Conseil de prendre connaissance du Rapport d'examen annuel 2017 du système de gestion de la qualité de l'eau potable.

BACKGROUND

In 2002, Justice Dennis O'Connor published Part Two of the Report of the Walkerton Inquiry, which recommended the adoption of a quality management approach for municipal drinking water systems. The report also recommended that a quality management standard, specifically designed for drinking water systems, be developed and implemented in Ontario; thus, leading to the creation of the Drinking Water Quality Management Standard (DWQMS). The requirement to implement the DWQMS is now mandated through the *Safe Drinking Water Act, 2002*.

As the Owner of the municipal drinking water systems, Council has a number of duties and responsibilities under the *Safe Drinking Water Act, 2002*, which are described in sections 11, 13, 16 and 17 of the Act. The duties of the Owner related to the Standard of Care are described under section 19 and came into force on December 31, 2012. In order to ensure that City Councillors were made aware of their duties and responsibilities under the Act, staff organized a Technical Briefing of newly elected City Councillors on October 5, 2015.

In his 2002 report, Justice O'Connor further commented that municipalities who had an accredited Operating Authority would be making a significant step in meeting the owner's due diligence responsibilities and standard of care. One of the primary tools that the Owner has in place to satisfy the Standard of Care under the Act is to have Municipal Drinking Water Licences for all its drinking water systems. The elements of each Licence include:

- A permit to take water;
- A drinking water works permit;
- An operational plan;
- A financial plan; and

- An accredited operating authority.

The City of Ottawa has valid licences for all seven of its drinking water systems:

- Central System (Britannia and Lemieux water purifications plants and water distribution system);
- Carp Communal Well System;
- Vars Communal Well System;
- Kings Park (Richmond) Communal Well System;
- Munster Hamlet Communal Well System; and
- Shadow Ridge (Greely) Communal Well System¹.

The City of Ottawa received the first phase of DWQMS accreditation effective April 29, 2009 (Limited Scope – Entire DWQMS), with Full Scope accreditation on October 3, 2011, then re-accreditation on September 4, 2014 and again on October 2, 2017. Results of the 2017 external audit demonstrated zero findings of non-conformance. The third party accreditation body conducts their surveillance audits of the City's Quality Management System (QMS) annually between the years when re-accreditation is required.

A requirement of the DWQMS is to conduct an annual management review of the QMS and to ensure that the results of this review are communicated to the Owner (Council) by Top Management. Top Management is a term defined in the DWQMS as, "*A person, persons or a group of people at the highest management level within an operating authority that makes decisions respecting the QMS and recommendations to the owner respecting the subject system or subject systems.*" Thus, Top Management at the City of Ottawa includes the General Manager of Public Works and Environmental Services (PWES) Department, the Director of Water Services and other select Managers within PWESD and Water Services. Top Management is responsible to make recommendations to the Owner regarding the drinking water systems and the QMS.

The main purpose of this report is to provide Council, as the Owner of the municipal drinking water systems, with an update on the implementation and the performance of the QMS in 2017.

¹ It should be noted that Shadow Ridge is not owned by the City, but the City of Ottawa is the Operating Authority.

DISCUSSION

The DWQMS is the key tool that supports and assures Council, as the Owner of the drinking water systems, that it is meeting its duties and responsibilities under the Safe Drinking Water Act, 2002 and the Statutory Standard of Care (section 19).

As a requirement of the Operational Plan, a comprehensive review of the QMS must be undertaken annually by Top Management. This requirement is completed as part of the Management Review, which entails a series of meetings attended by Top Management where specific items are reviewed for the past year. This review and any recommendations for improvement are included within the Management Review reports prepared each year.

Overall, the City of Ottawa has implemented its Operational Plan successfully. Some examples that demonstrate this achievement in 2017, as documented in the Management Review report, include:

- City's Water Services has successfully implemented a robust Drinking Water Quality Management System for 10 full years starting in 2008. The program is well established, well managed, with high staff engagement and commitment.
- Continued excellent external audit results have been received since its initial accreditation in 2009. In August 2017, the third party accreditation body (NSF International Strategic Registrations) conducted their on-site re-accreditation audit of the City's DWQMS. Audit results demonstrated zero findings of non-conformance. This is the sixth consecutive year that the City has received 0 non-conformances for its DWQMS.
- Council's continued commitment to infrastructure investments and maintaining high quality standards throughout the City's drinking water systems with the implementation of: the Backflow Prevention program, the Large Diameter Watermain Condition Assessment and the necessary Water By-law amendments.
- Successful completion of outstanding operational high priority action items. Since 2008, a total of 108 Operational Continual Improvement Priority 1 action items have been identified and all of them (100 %) have now been completed.
- 2017 was the lowest year on record with only 148 watermain breaks, resulting in a historical low 4.8 breaks per 100 km. This is 90 breaks below the 5-year rolling average of 238 breaks. 2017 was a relatively mild winter; as a result, the frost did

not penetrate close to the depth of the watermains. In addition, the City's Infrastructure Capital Renewal programs have targeted watermains with higher break rates, which are typically cast iron watermains.

- City personnel have continued to demonstrate commitment to provide excellent customer service investigations for water quality enquiries, no water or poor pressure, and water leaks.
- The completion of the planned preventive maintenance program remains a key priority for Water Production's maintenance teams. Since 2013, the overall completion, of the preventive maintenance program, has risen from 80% to 96%.
- Demonstrated water quality excellence that is protective of public health despite record-high rainfall and related impacts to source water. The high river flows of 2017 resulted in increased river alkalinity and dissolved organic content due to heavy rainfall flushing carbonates out of groundwater sources and laden organics from forest contributions. Overall, the treatment plants continued to produce high quality drinking water throughout this challenging period.
- There was a reduction in precautionary boil water advisories in the city's communal water systems due to infrastructure improvements.
- The City has an implementation plan to address the increasing trend in nitrate concentrations in Shadow Ridge communal well , as noted below in section: *Raw Water Supply and Drinking Water Trends*
- Efforts by Planning, Infrastructure and Economic Development (PIED) and PWESD are on-going to clarify and align asset management responsibilities.
- Substantive progress in the large diameter watermain condition assessment program continued in 2017, as noted below in section: *Results of the infrastructure review*.
- This Management Review has identified areas for continual improvement, as noted in *Document 1: 2017 Management Review Action Items*.

All of these efforts reinforce the fact that the City of Ottawa produces and delivers some of the best quality and safest drinking water in the world.

There are a total of 16 topics that must be considered in the annual management review (Table 1). This report provides an update to only those items that require attention. All

other items not discussed in this report have either been reported to Council previously or the items have been reviewed and determined to be in compliance with all regulations or in conformance with the Operational Plan. A full list of recommended action items as a result of the 2017 Management Review can be found in Document 1.

Table 1: List of Items for Annual Review that will be discussed in this report

Management Review Topic	Summary provided in this report
Incidents of regulatory non-compliance	Not required this year (refer to ACS2018-PWE-GEN-0011)
Incidents of adverse drinking water tests	Not required this year (refer to ACS2018-PWE-GEN-0011)
Deviations from critical control point limits and response actions	Not required this year
Efficacy of the risk assessment process	Not required this year
Results of audits (internal and external)	Not required this year
Results of relevant emergency response testing	Not required this year
Operational performance	Not required this year
Raw water supply and drinking water quality trends	Yes, see below
Follow-up action items from previous management reviews	Not required this year
Status of management action items identified between reviews	Not required this year
Changes that could affect the QMS	Yes, see below
Summary of consumer feedback	Not required this year
Resources needed to maintain the QMS	Not required this year

Management Review Topic	Summary provided in this report
Results of the infrastructure review	Yes, see below
Operational plan currency, content and updates	Not required this year
Summary of staff suggestions	Not required this year

Raw Water Supply and Drinking Water Trends

As previously reported in the 2016 DWQMS Annual Report (ACS2017-PWE-GEN-0029), there is evidence of an increasing nitrate concentration in the ground water wells in Shadow Ridge Well System. The trend for nitrate has gradually increased by approximately 0.30 – 0.40 mg/L every year but levelled off slightly during 2017. If the trend continues at the historical rate, the source wells will reach the drinking water MAC (maximum acceptable concentration) of 10 mg/L **in 12 - 15 years**. Although the nitrate level has been steadily increasing, this concentration is well within the safe drinking water MAC standard for nitrate with an average of 4.45 mg/L in treated water during 2017. Nitrate levels at all of the other municipal well systems are essentially non-detect.

The City's Planning, Infrastructure and Economic Development (PIED) Department has initiated an assessment of the water quality within a deeper aquifer. The first phase of the aquifer study has identified excellent water quality in the deeper strata. The next phase will consist of drilling two test wells to confirm the production rate, well interference and the final concentration of background parameters. These two test wells would then be put into production to service the Shadow Ridge community.

Results of the Infrastructure Review

The Office of the Auditor General Annual Report (2012) recommended that the following be provided as part of the Drinking Water Quality Management System annual report:

- submit to Council a summary of inspections on critical water transmission mains, including an action plan for correction of pipes identified to be in very poor condition (Recommendation 8).

Management agreed with this recommendation and responded that a summary of inspections on critical water transmission mains, including an action plan for correction

of pipes identified to be in poor condition, be reflected in the 2013 DWQMS annual report to Council. This practice has continued with each subsequent DWQMS annual management report to Council.

In order to continue meeting the recommendation made by the Office of the Auditor General in the 2012 Annual Report, a summary of the Large Diameter Watermain Condition Assessment results and follow-up activities is described and provided in *Document 2: Large Diameter Watermains Inspection Results and Corrective Action Plans*.

Changes that Could Affect the QMS

It is anticipated that a new well system, Richmond West, will be commissioned in the fall of 2018. As a result of this new drinking water system, efforts are currently underway to update and/or obtain documents and records, including SOPs, Municipal Drinking Water Licenses and Permits, Source Protection approvals and third party accreditation. In 2019, PWESD will bring forward a Council report to seek Council endorsement of the revised DWQMS Operational Plan, which will include the existing drinking water systems and the new well system Richmond West, following the 2018 municipal election. As noted in the DWQMS Operational Plan, the QMS Representative shall ensure Council endorsement is received for the current Operational Plan following changes in Council due to elections or otherwise. The Owner (i.e., the Municipal Council of the City of Ottawa) most recently endorsed the Operational Plan through a Council resolution in 2015 (*Ottawa City Council Minutes 19; Wednesday, 14 October 2015, Report File Number: ACS2015-COS-ESD-0017*), following the 2014 municipal elections.

Next Steps

In the meantime, Staff will continue to provide safe drinking water and ensure all legislation is followed under the *Safe Drinking Water Act, 2002*. Staff will also be implementing all action items identified as part of the 2017 Management Review. Furthermore, in order to ensure that City Councillors are made aware of their duties and responsibilities, related to the Standard of Care under the Act, additional information will be included as part of the Council Orientation sessions this Fall. Finally and as previously mentioned, Staff will be bringing forward a report in early 2019 to seek Council endorsement of the revised DWQMS Operational Plan.

RURAL IMPLICATIONS

There is evidence of an increasing trend in nitrate concentration in the ground water wells in Shadow Ridge. The trend for nitrate has gradually increased by approximately 0.30 – 0.40 mg/L every year but levelled off slightly during 2017. While nitrate levels are still well-below the MAC for Ontario Drinking Water Standards, the City's PIED Department has initiated an assessment of the water quality within a deeper aquifer. The first phase of the aquifer study has identified excellent water quality in the deeper strata. The next phase will consist of drilling two test wells to confirm the production rate, well interference and the final concentration of background parameters. These two test wells would then be put into production to service the Shadow Ridge community.

As this community is part of Ward 20, the Ward Councillor has been kept apprised of the City's on-going efforts to address the water quality of the well systems in Shadow Ridge. Staff have been actively engaging with residents through the Councillor, keeping them informed of the City's long-term plans to ensure a sustainable good quality water source in the Shadow Ridge Community.

CONSULTATION

Public consultation or notification is not required as this report is administrative in nature.

COMMENTS BY THE WARD COUNCILLOR(S)

This is a City-wide report.

ADVISORY COMMITTEE(S) COMMENTS

This section is not applicable.

LEGAL IMPLICATIONS

There are no legal implications associated with receiving this Report

RISK MANAGEMENT IMPLICATIONS

There are risk implications. These risks have been identified and explained in the report and are being managed by the appropriate staff.

ASSET MANAGEMENT IMPLICATIONS

The recommendations documented in this report are consistent with the City's [Comprehensive Asset Management \(CAM\) Program](#) objectives.

The Drinking Water Quality Management System considers asset management system elements that help inform decision making processes necessary to protect Ottawa's drinking water system and reduce public health risks.

FINANCIAL IMPLICATIONS

There are no financial implications associated with this report.

ACCESSIBILITY IMPACTS

There are no accessibility impacts associated with this report.

ENVIRONMENTAL IMPLICATIONS

The development of the QMS is provincially legislated under the *Safe Drinking Water Act, 2002*. The QMS has been reviewed by a third-party accreditation body and the City of Ottawa has obtained its Operating Authority Accreditation. This report also fulfills the legislative requirement to report on the Annual Management Review of the QMS to the Owner.

TERM OF COUNCIL PRIORITIES

The implementation of the Operational Plan supports the city's overall vision of Service Excellence by focusing on its residents as a main strategic priority. The Operational Plan ensures the commitment to provide a reliable supply of safe drinking water to the consumer; meet or exceed applicable legislation and regulations; implement, maintain and continually improve the QMS, infrastructure and technology; and deliver excellent customer service through responsiveness, accountability and innovation.

SUPPORTING DOCUMENTATION

Document 1: 2017 Management Review Action Items

Document 2: Large Diameter Watermains Inspection Results and Corrective Action Plans.

DISPOSITION

Staff will continue to work to provide safe drinking water, following all legislation. Staff will implement any direction received as a result of this report.