



Town of Newmarket
395 Mulock Drive P.O. Box 328,
Newmarket, Ontario, L3Y 4X7

Email: info@newmarket.ca | Website: newmarket.ca | Phone: 905-895-5193

2021 DWQMS Communication Report Staff Report to Council

Report Number: 2022-13

Department(s): Water/Wastewater

Author(s): Rob Gillis, Manager, Water/Wastewater

Meeting Date: March 21, 2022

Recommendations

1. That the report entitled 2021 DWQMS Communication Report dated 21 March 2022 be received; and,
2. That Staff be authorized and directed to do all things necessary to give effect to this resolution.

Executive Summary

The information contained within this Information Report, and its associated attachments, are intended to satisfy the communication requirements between the Operating Authority and the Owner, as specified within the Drinking Water Quality Management Standard (DWQMS).

This Information Report, and its associated attachments, contains information with respect to the Drinking Water Quality Management System requirements that are applicable to the Town as well as information regarding the Town's DWQMS Operational Plan.

This Information Report, and its associated attachments, also contains information pertaining to the 2021 annual provision of infrastructure review; the 2021 internal audit results; the 2021 external audit results; the Operating Authority organizational structure; drinking water system infrastructure maintenance, rehabilitation & renewal programs; 2021 sampling, testing & monitoring results; and 2021 management review results. This information Report, and its associated attachments, contains information for the 2021 calendar year.

Purpose

The purpose of this Information Report, and its associated attachments, is to satisfy the communication requirements, between the Operating Authority and Owner, as specified within Ontario the Drinking Water Quality Management Standard.

Background

The Drinking Water Quality Management Standard (DWQMS) sets out the framework for Operating Authorities and Owner's of Drinking Water Systems to develop and maintain a Quality Management System (QMS) that is relevant and appropriate for their respective drinking water system. The DWQMS is the approved QMS under the *Safe Drinking Water Act, 2002 (SDWA, 2002)*. The purpose of a QMS is to establish policy and objectives, achieve those objectives as well as direct and control an organization with regards to quality. To adhere to the DWQMS requirements the Town has developed a DWQMS Operational Plan that is relevant and appropriate for the Town, this DWQMS Operational Plan is the QMS associated with the Town's drinking water system. The Town's QMS is subject to annual internal and external audits as part of the on-going Operating Authority accreditation process. The DWQMS, and associated QMS requirements, is one of the components associated with the provincial drinking water system approvals framework that is applicable to the Town. The Town is required to maintain compliance with all applicable DWQMS requirements at all times and adequately address any identified incidents of non-compliance; there are 21 Elements associated with the DWQMS, and they are as follows:

1. Quality Management System
2. Quality Management System Policy
3. Commitment & Endorsement
4. QMS Representative
5. Document & Records Control
6. Drinking Water System
7. Risk Assessment
8. Risk Assessment Outcomes
9. Organizational Structure, Roles, Responsibilities & Authorities
10. Competencies
11. Personnel Coverage
12. Communications
13. Essential Supplies & Services
14. Review & Provision of Infrastructure
15. Infrastructure Maintenance, Rehabilitation & Renewal
16. Sampling, Testing & Monitoring
17. Measurement & Recording Equipment Calibration & Maintenance
18. Emergency Management
19. Internal Audits
20. Management Review
21. Continual Improvement

Each DWQMS Element has a number of individual requirements that must be adhered to at all times by the Operating Authority and Owner in order to maintain compliance with DWQMS requirements. Under Element 2 of the DWQMS the Operating Authority is required to “establish and maintain a Quality Management System that is consistent with the Quality Management System Policy”; in addition to all the other applicable requirements specified under Element 2 of the DWQMS. The Town’s Quality Management System Policy is as follows:

The Town of Newmarket Water Distribution System is recognized by the Ministry of Environment & Climate Change (MOECC) as a Large Municipal Residential Drinking Water System.

The Town of Newmarket is committed to the consistent delivery of safe drinking water through compliance with applicable legislative and regulatory requirements.

The Town will strive to achieve this goal through the implementation, maintenance, and continuous improvement of the Quality Management System.

The Town commits to ensure open communication, both with public, as well as staff concerning all policies, procedures and documentation pertaining to DWQMS.

The Quality Management Policy applies to all municipal management and staff, and is posted at the Operations Centre, Municipal Offices, and on the Town’s website.

Under the DWQMS, the Operating Authority is required to communicate with the Owner of the drinking water system on a number of items, which include the following:

- The description of the Operating Authority organizational structure including respective roles, responsibilities and authorities under Element 9;
- The results of the Annual Provision of Infrastructure Review under Element 14;
- The Infrastructure Maintenance, Rehabilitation and Renewal Programs under Element 15;
- Sampling, Testing and Monitoring Results under Element 16; and
- The results of the Annual Management Review under Element 20

The Mayor and Council are considered to be the Owner of the Town’s drinking water system; this is documented within “Appendix 9b: Owner & Operating Authority Organizational Structure” of the Town’s DWQMS Operational Plan. Public Works Services, specifically the Water/Wastewater Division, is identified as the Operating Authority of the Town’s drinking water system; this is also documented within “Appendix 9b: Owner & Operating Authority Organizational Structure” of the Town’s DWQMS Operational Plan. Water/Wastewater is the division of Public Works Services that operates the Town’s drinking water system as only the staff within this division possess the certification to legally, and competently, operate the Town’s drinking water system.

Top Management for the Town's drinking water system is represented by the Commissioner of Development & Infrastructure Services, Director of Public Works Services and Manager of Water/Wastewater; this is also documented within "Appendix 9b: Owner & Operating Authority Organizational Structure" of the Town's DWQMS Operational Plan.

Discussion

2021 Annual Provision of Infrastructure Review Results

Under Element 14 of the DWQMS, the Town is required to ensure "that the adequacy of the infrastructure necessary to operate and maintain the Subject System is reviewed at least once every calendar year". The Operating Authority is also required to "communicate the findings of the review to the Owner", in addition to all the other applicable requirements specified under Element 14 of the DWQMS. The findings of the 2021 Annual Provision of Infrastructure Review are located within "Attachment One: 2021 Provision of Infrastructure Review Meeting Minutes".

2021 Internal Audit Results

Under Element 19 of the DWQMS, the Operating Authority is required to ensure that internal audits are conducted at least once every calendar year, in addition to all the other applicable requirements specified under Element 19 of the DWQMS.

Information regarding the 2021 Internal Audit results is located within "Attachment Two: 2021 Management Review Meeting Minutes".

2021 External Audit Results

The Town's DWQMS Operational Plan, and associated practices and procedures, are subject to annual external audits by an accreditation body designated by the Ministry of Environment, Conservation and Parks (MECP). This is a mandatory requirement in order for the Town to maintain its accreditation as the Operating Authority for the Town's drinking water system.

The Operating Authority recertification process is a 3 (three) year cycle. In years 1 (one) and 2 (two), surveillance system audits are performed on the Town's DWQMS Operational Plan by the designated accreditation body; in year 3 (three), a comprehensive re-accreditation audit is conducted on the Town's DWQMS Operational Plan, and associated practices and procedures by the designated accreditation body. In 2021, a third year comprehensive re-accreditation audit was conducted on the Town's DWQMS Operational Plan and the Town of Newmarket received its Certificate of Accreditation.

Information regarding the 2021 External Audit results is located within "Attachment Two: 2021 Management Review Meeting Minutes".

Operating Authority Organizational Structure

Under Element 9 of the DWQMS, the Town's Operational Plan is required to "describe the organizational structure of the Operating Authority including respective roles, responsibilities and authorities". The Operating Authority is also required to "communicate this information to Operating Authority personnel and the Owner", in addition to all the other applicable requirements specified under Element 9 of the DWQMS.

Information regarding the Operating Authority Organizational Structure is located within "Attachment Three: Operational Plan Appendix 9b: Owner & Operating Authority Organizational Structure" and "Attachment Four: Appendix 9c: Table of Operating Authority Personnel Roles, Responsibilities & Authorities"; which is the Element 9 content of the Town's DWQMS Operational Plan that satisfies the above described DWQMS requirement.

Infrastructure Maintenance, Rehabilitation & Renewal Programs

Element 15 of the DWQMS pertains to "Infrastructure Maintenance, Rehabilitation and Renewal" programs and initiatives associated with the Town's drinking water system. Under Element 15 of the DWQMS the Operating Authority is required "communicate the programs to the Owner"; in addition to all the other applicable requirements specified under Element 15 of the DWQMS. Information regarding the Town's drinking water system Infrastructure Maintenance, Rehabilitation and Renewal Programs is located within "Attachment Five: Element 15 – Infrastructure Maintenance, Rehabilitation and Renewal"; which is the Element 15 content associated with the Town's DWQMS Operational Plan.

2021 Sampling, Testing & Monitoring Results

Element 16 of the DWQMS pertains to "Sampling, Testing and Monitoring" associated with the Town's drinking water system. Under Element 16 of the DWQMS the 'Operating Authority is required to share applicable sampling, testing and monitoring results with the Owner', in addition to all the other applicable requirements specified under Element 16 of the DWQMS. The applicable 2021 Sampling, Testing & Monitoring Results are as follows:

Chlorine Residual Sampling, Testing & Monitoring Results

The Town collected approximately 4594 individual chlorine residual grab samples in 2021 from the Town's drinking water distribution system. Under O.Reg. 170/03, the Town is required to collect at least 7 (seven) distribution samples each week and test them immediately to determine the combined chlorine residual. The Town collects distribution samples and immediately tests them for combined chlorine residual well in excess of the above minimum regulatory requirement. These samples provide the Town with important water quality data which allows for more informed operational decisions to be made in the on-going effort to ensure compliance with the Town's respective

legislative and regulatory obligations that relate to the Town's drinking water distribution system.

The chlorine residuals observed, as a result of the approximately 4594 individual chlorine residual grab samples collected in 2021, resulted in a combined chlorine residual range of 0.00 mg/L to 3.56 mg/L. A combined chlorine distribution system grab sample result that indicates that the concentration of combined chlorine is less than 0.25 mg/L, and the concentration of free chlorine is less than 0.05 mg/L, is prescribed as an adverse drinking water test result under O.Reg. 170/03. The Town observed 88 adverse drinking water test results in 2021 where the combined chlorine residual was less than 0.25 mg/L, and the concentration of the free chlorine residual was less than 0.05 mg/L. Based upon the information currently possessed by the Operating Authority, all these Adverse Water Quality Incidents were resolved in a timely manner in compliance with the requirements specified by the MECP and local Medical Officer of Health (MOH).

The regulatory limit for chloramines is 3.0 mg/L as specified within O.Reg. 169/03 - Ontario Drinking Water Quality Standards. However, under the Town's Municipal Drinking Water License (124-101) the Town has regulatory relief, from the MECP, to permit a maximum concentration of 4.0 mg/L of chloramines within the Town's drinking water distribution system. Therefore, any chloramine residual observed, in the Town's drinking water distribution system, between 3.0 mg/L and 4.0 mg/L, is not considered to be an adverse drinking water test result under O.Reg. 170/03; and therefore does not need to be reported and resolved in accordance with the requirements specified in O.Reg. 170/03 and the *Safe Drinking Water Act, 2002*.

Microbiological Sampling, Testing & Monitoring Results

The Town collected approximately 1359 microbiological (i.e. Total Coliform and E.coli) samples in 2021 from the Town's drinking water distribution system. 2 (two) of these samples resulted in the presence of Total Coliform; the presence of E.coli and/or Total Coliform in a drinking water sample is an exceedance of the microbiological standards specified within the Ontario Drinking Water Quality Standard, O.Reg. 169/03. Based upon the information currently possessed by the Operating Authority, all these Adverse Water Quality Incidents were resolved in a timely manner in compliance with the requirements specified by the MECP and local MOH. Of the approximately 1359 microbiological samples collected in 2021, approximately 676 of which were also analyzed for Heterotrophic Plate Count (HPC); the HPC range observed as a result of these samples was 0 - 3900 Colony Forming Units/mL. In Ontario, there is currently no regulatory limit for HPC levels within active drinking water distribution systems; HPC is predominately used as an indicator of drinking water system operational performance to assess the cleanliness and integrity of the distribution system.

Trihalomethane (THM) Sampling, Testing & Monitoring Results

The quarterly Running Annual Average (RAA) associated with the THM sampling that the Town completed in 2021 is as follows:

THM Q1 2021 RAA	0.0148 mg/L
THM Q2 2021 RAA	0.0153 mg/L
THM Q3 2021 RAA	0.0159 mg/L
THM Q4 2021 RAA	0.0161 mg/L

This is well below the regulatory limit for THM as specified within O.Reg. 169/03 - Ontario Drinking Water Quality Standards, which is 0.100 mg/L, expressed as a running annual average of quarterly results.

Haloacetic Acids (HAA) Sampling, Testing & Monitoring Results

The quarterly Running Annual Average (RAA) associated with the HAA sampling that the Town completed in 2021 is as follows:

HAA Q1 2021 RAA	0.0080 mg/L
HAA Q2 2021 RAA	0.0080 mg/L
HAA Q3 2021 RAA	0.0080 mg/L
HAA Q4 2021 RAA	0.0080 mg/L

This is well below the regulatory limit for HAA as specified within O.Reg. 169/03 - Ontario Drinking Water Quality Standards, which is 0.08 mg/L, expressed as a running annual average of quarterly results.

Nitrate Sampling, Testing & Monitoring Results

The Town completed 4 (four) drinking water sampling events in 2021 that included nitrate testing and monitoring; the nitrate range observed as a result of these sampling events was <0.50 - 0.74 mg/L. This is well below the regulatory limit for nitrate as specified within O.Reg. 169/03 - Ontario Drinking Water Quality Standards, which is 10.0 mg/L.

Nitrite Sampling, Testing & Monitoring Results

The Town completed 16 (sixteen) drinking water sampling events in 2021 that included nitrite testing and monitoring; the nitrite range observed as a result of these sampling events was 0.000 - 0.099 mg/L. This is well below the regulatory limit for nitrite as specified within O.Reg. 169/03 - Ontario Drinking Water Quality Standards, which is 1.0 mg/L.

Sodium Sampling, Testing & Monitoring Results

The Town completed 4 (four) drinking water sampling events in 2021 that included sodium testing and monitoring; the sodium range observed as a result of these sampling events was 14.0 - 24.7 mg/L. A drinking water sample with a result indicating that the concentration of sodium exceeds 20 mg/L is prescribed as an adverse result of a drinking water test for the purpose of Section 18 of the *Safe Drinking Water Act, 2002*, and must therefore be reported accordingly if a report has not been in the preceding 57 months. The last report that the Town made with respect to a sodium exceedance was January 11th, 2021; therefore, the next reporting date with respect to an adverse result for sodium in the Town's drinking water is October 11th, 2025.

In 2021, twelve (12) exceedances were observed by the Town with respect to sodium concentrations in drinking water samples that were collected. Sodium is a naturally occurring element in the environment that may be present naturally in both groundwater and surface water sources. Sodium levels in groundwater and surface water sources may also be influenced by road salt application practices. Sodium levels within municipal drinking water may also be influenced due to the addition of water conditioning chemicals, such as sodium silicate and sodium fluoride as well as water treatment chemicals such as sodium hypochlorite.

Fluoride Sampling, Testing & Monitoring Results

The Town completed 4 (four) drinking water sampling events in 2021 that included fluoride testing and monitoring; the fluoride range observed as a result of these sampling events was 0.22 - 0.64 mg/L. This is well below the regulatory limit for fluoride as specified within O.Reg. 169/03 - Ontario Drinking Water Quality Standards, which is 1.5 mg/L

Lead Sampling, Testing & Monitoring Results

In 2021, the Town collected 18 (eighteen) individual drinking water samples from the distribution system and submitted them for lead testing; the lead range observed in these samples was Non Detectable - <0.0005 mg/L. This is well below the regulatory limit for lead as specified within O.Reg. 169/03 - Ontario Drinking Water Quality Standards, which is 0.010 mg/L.

2021 Management Review Results

Under Element 20 of the DWQMS, Top Management is required to "report the results of the management review, the identified deficiencies, decisions and action items to the Owner", in addition to all the other applicable requirements specified under Element 20 of the DWQMS. Information regarding the results of the 2021 Management Review, including any identified deficiencies, decisions and action item that resulted, are located within Attachment Two: 2021 Management Review Meeting Minutes

Conclusion

This Information Report, and its associated attachments, satisfies the communication requirements between the Operating Authority and Owner, as specified within the Drinking Water Quality Management Standard (DWQMS).

The information contained within this Information Report and its associated attachments can assist the Mayor and Council, as the Owners of the Town's drinking water system, in meeting their respective Standard of Care requirements as identified within *the Safe Drinking Water Act, 2002*.

The DWQMS is one of the many legislative and regulatory requirements that the Town is required to comply with in regards to the operation of its drinking water system. The information contained within this Information Report, and its associated attachments, helps to demonstrate the Town's adherence to its commitments as documented within the Quality Management System Policy for the Town's DWQMS Operational Plan.

Business Plan and Strategic Plan Linkages

The information contained within this Information Report, and its associated attachments, aligns with the Town's mission of "making Newmarket even better"; as continual improvement is one of the DWQMS requirements identified under Element 21.

Consultation

Key stakeholders that contributed to the content of this Information Report and its associated attachments include:

- Operating Authority Personnel
- AET Group Inc. – Internal Audit Service Provider
- SAI Global Management System – External Audit Service Provider/Operating Authority Accreditation Entity

Human Resource Considerations

No human resource considerations are directly associated with this Information Report and its associated attachments.

Budget Impact

No budget impacts are directly associated with this information Report and its associated attachments.

Attachments

- Attachment One: 2021 Provision of Infrastructure Review Meeting Minutes
- Attachment Two: 2021 Management Review Meeting Minutes

- Attachment Three: Operational Plan Appendix 9b: Owner & Operating Authority Organizational Structure
- Attachment Four: Operational Plan Appendix 9c: Table of Operating Authority Personnel Roles, Responsibilities & Authorities
- Attachment Five: Element 15 – Infrastructure Maintenance, Rehabilitation and Renewal

Approval

Rob Gillis, Manager, Water/Wastewater

Mark Agnoletto, Director, Public Works Services

Peter Noehammer, Commissioner, Development & Infrastructure Services

Contact

For more information regarding this Information Report please contact Rob Gillis, Manager of Water/Wastewater, at 905-953-5300 ext. 2553 or by email at rgillis@newmarket.ca.