



The Corporation of the Municipality of Arran-Elderslie

Staff Report

Council Meeting Date: October 10, 2023

Subject: SRWS.23.06 Drinking Water Quality Management Standard Review and Updates for Year End 2022

Report from: Chris Legge, Water & Sewer Foreman

Appendices: Appendix A - Quality Management Policy
Appendix B - Quality Management System Representative
Appendix C – SLD9-2021 Organizational Structure Roles Responsibilities and Authorities
Appendix D – SLD12-2022 Sign Page Owner Communications

Recommendation

Be It Resolved that Council hereby,

1. Accepts report SRWS.23.06 which includes Drinking Water Quality Management Standard (DWQMS) review and updates for year end 2022.

Report Summary

This report is provided to Council on a yearly basis in conjunction with DWQMS to provide an annual review of the Water & Sewer Operations Division of the Public Works Department. Sign-off sheets are included in the report, and the annual reports can be found on the Arran-Elderslie website for review.

Background

The Municipality of Arran-Elderslie has an Operation Plan which is part of the Drinking Water Quality Management Standard (DWQMS). Every year, as part of the DWQMS requirement, a management review is conducted.

This report highlights the Management Review and Annual Water & Wastewater Reports. Typically, in the past, annual Ministry of the Environment Conservation and Parks (MECP) water inspections are also included. The timing of inspections no longer aligns with the delivery of this report. A separate report, SRWS.23.03 on January 30th 2023, presented the results of the 2022 inspections to Council.

Analysis

- 1. Incidents of Regulatory Non-Compliance:

The MECP conducted the Tara Drinking Water System Inspection and the Arran-Elderslie Inspection both on July 28, 2022. Both inspections were done on-site with proper Covid protocols followed. Both water systems operated by the municipality received inspection reports that indicated no “Actions Required” or “Recommended Actions”. The two (2) systems also were given final inspection ratings of 100% with no non-compliance issues.

- 2. Incidents of Adverse Drinking Water Tests:

The Arran-Elderslie Drinking Water System had zero (0) adverse microbiological samples taken in the 2022 calendar year. This compares to one (1) adverse microbiological sample in 2021. No Adverse Water Quality Incidents (AWQI) were issued in 2022. On October 4, 2022 an equipment failure occurred at the Arran-Elderslie Water Treatment Plant. Details of the failure were documented to the MECP Water Inspector. The incident was recorded but was not considered a non-compliance issue with MECP.

The Tara Water System had zero (0) adverse microbiological samples taken in the 2022 calendar year which is consistent with zero (0) in 2021. There were also zero (0) AWQI's in 2022. This compares to one (1) AWQI in 2021.

- 3. Deviations from Critical Control Point Limits & Response Actions:

The following are considered critical control points from the risk assessment completed on the water system: Low Chlorine Residual, Chlorine Pump Failure, Ultra-Violet Failure, Power Outage, Chlorine Contact Time Issues, Watermain Breaks, and Low Distribution Pressure.

In 2022, the Arran-Elderslie Water System had an operator respond to two (2) alarms, one (1) of which were related to critical control points. These alarms included one (1) water main break. The non-critical control point alarm was one (1) power outage related.

An operator responded to an additional eleven (11) alarms for the Tara Water System, three (3) of which were critical control point alarms. Those included one (1) UV related, one (1) watermain break, and one (1) chlorine related.

Additional alarms included six (6) calls for hydro related issues, one (1) computer system issue, and one (1) gas monitor alarm.

Wastewater Alarms included three (3) wastewater alarms in Paisley, two (2) due to power outages and one (1) due to equipment failure. Chesley Wastewater had two (2) alarms. One (1) due to power outage and one (1) equipment failure.

Overall, staff responded to eighteen (18) alarms in the 2022 calendar year, down from the nineteen (19) alarms responded to in 2021. Alarm volume in most systems remained consistent. The volume of Critical Control Alarms decreased from twelve (12) in 2021 to four (4) in 2022. Staff has consistently prioritized maintenance and capital projects on items that reduce our critical alarms, and the effort appears to be paying dividends. Additionally, extreme weather events continue to contribute to both power and wastewater related alarms, which is out of the control of operators.

4. Risk Assessment Process of DWQMS:

The risk assessment process for both the Arran-Elderslie and Tara Drinking Water System was completed internally by Staff on April 7, 2021. This process was completed in relation to internal training for the DWQMS and was thought to be a good process to complete as part of the training for new Staff members. As well the risk assessment was reviewed on November 14, 2022 to review and assess the new Cyber Security Threat Risk table added as the result of an OFI in the 2022 Surveillance Audit. The full Risk Assessment is triggered every three (3) years for review purposes. With a full review scheduled for 2024

5. Internal and Third-Party Audit Results:

A Systems Audit was conducted for the DWQMS on October 28, 2022. This was a surveillance audit conducted off-site with just a document review due. The systems audit found no minor or major non-conformances, and five (5) opportunities for improvement that Staff reviewed and took into consideration for implementation.

A full re-accreditation audit was conducted by SAI Global from November 30, 2021 to December 2, 2021. These larger in-depth audits are conducted every three (3) years. With a full Re-accreditation due to be completed in 2024.

6. Results of Emergency Testing:

In conjunction with the review of the DWQMS manual on Jan 17th, 2022, Staff also reviewed all emergency policies. Again, with new Staff hired it was believed that reviewing all policies would be best to get Staff familiar with Emergency Response Plans (ERP).

These ERPs relate directly to the risk assessment review we completed allowing Staff to look at each ERP.

7. Operational Performance:

Over the last two years, the EPCOR gas project has required staff assistance with locates. Staff are marking all water and wastewater mains and services as well as hydrants, valves etc. In conjunction with these locates, our GIS information systems are being updated as needed to ensure accuracy. The Ontario One Call locate volume that the Department receives has dramatically increased over the past few years. Staff completed 772 Locate requests in 2021, the volume increased to 1,143 in 2022. This represents a 48% increase.

The Arran-Elderslie Water & Sewer Operations Division of the Public Works Department employed three (3) certified operators and one (1) operator in training in 2022. The Division has seen extensive increase in locate volume. As a group, the Division was asked to obtain information from various infrastructure to comply with the Asset Management Plan. The GIS program is largely run through the Water & Sewer Operations Division of the Public Works Department over the last few years. In addition, the Division is also part of the Emergency Planning through the County.

The Arran-Elderslie Water & Sewer operations staff continue to maintain the water systems to a high standard, ensuring compliance with all MECP requirements, as evidenced in the 100% rating in inspection reports

8. Roles, Responsibilities and Authorities of the Owner and Top Management:

SLD-9 is the section of the Operational Plan that lists the roles and responsibilities of everyone's position and is included in this report. This has been included for multiple years to highlight the importance of each of the roles and responsibilities. There are training opportunities that exist for Council as well as Management to take a course offered at the Walkerton Clean Water Centre pertaining to these roles.

9. Summary of Key Performances Element 15:

DWQMS Element 15 is the infrastructure, maintenance, rehabilitation, and renewal portion of the operational plan. The following key performance indices will be highlighted in this review: water per capita, number of water mains and service leaks, new services connected in each town, and meters of water main replaced.

The 2022 water numbers are the recorded numbers processed through the treated water at each water plant or site. The following numbers indicate approximate usage by Arran-Elderslie water users:

Chesley:	2022 usage of 231,293 m ³ or 235m ³ per connection 2021 usage of 204,203m ³ or 214m ³ per connection
Paisley:	2022 Usage of 117,343m ³ or 214m ³ per connection 2021 Usage of 115,700m ³ or 213 m ³ per connection
Tara:	2022 Usage of 112,176 m ³ or 216m ³ per connection 2021 Usage of 116,965m ³ or 229m ³ per connection

10. Water Main Breaks and Service Leaks 2022

The Chesley distribution system had one (1) watermain break and two (2) service leaks in 2022, both service leaks were due to old poly lines. There were 14 additional services added to the system, all in the Jeasinic Estates development. One full-service line was replaced on Bearman Street.

The Paisley distribution system had four (4) water main breaks and three (3) service leaks due to natural gas installation in 2022. In addition, five (5) new services were installed in Paisley. The Paisley Trunk watermain also added three (3) household service connections

The Tara distribution system had two (2) cast iron water main breaks. There were no service leaks in 2022. An additional four new (4) services, in the Chestnut Hill Development, were connected to the system.

11. Water Main Replacement in 2022

Kurtis Smith Excavating replaced undersized 4-inch cast iron water mains to 6-inch PVC on 3th Street SW from 4th Ave SW. to 5th Ave SW. As well as 4th Ave SW between 4th St SW and 7th Street SW. This project was in conjunction with Sewer main and lateral replacement as well as a new road surface and curb /sidewalk replacement.

Percon Construction completed a project on Mill Drive in Paisley. This involved an extension of 8-inch HDPE water main to a previously unserved property in Brockton. A portion of this replaced an undersized poly main servicing three customers in Paisley. This upgrade provided a new fire hydrant for added fire protection. This project was at the cost of the Brockton property owner and was then assumed by the Municipality.

12. Raw Water Supply and Drinking Water Quality Trends:

The Arran-Elderslie and Tara Drinking Water System has undergone extensive work in the past few years to ensure reliability and production of the raw water supply in each town.

The Arran-Elderslie system has had motors replaced in both the CP#2 and CP#3 wells in the past five years. Included in these jobs is rehabilitation work within the well, and a review of overall condition like piping and check valves. A comparison of well Draw down levels (when well pumps are operating) between 2020 and 2022 show that the wells continue to operate safely at their expected capacities.

All Raw water supply wells in Arran-Elderslie are sampled for E-coli and Total coliform weekly. CP#2 and CP#3 had zero (0) instances of e-coli or total coliform counts in 2022

As mentioned in many of the past management reviews, CP#1 well had continued to have on-going issues. The capital budget for 2022 had funds set aside to begin the process of exploring for another water source within the Community Park area. This process is ongoing and was included in the 2022 budget. In June of 2021, the Community Park Well #1 was taken offline. For the entire year of 2022 CP#1 had not been operated and CP#2 and CP#3 ran very well through the hot days of summer with no issues for demand. In the spring of 2022, a 6-inch test well (TW1/22) was drilled by Well Initiatives. This well was located near the southeast corner of the Chesley Community Park property. The site chosen was based on hydrological studies that were conducted in the early 2000's, as part of the construction of CP#3 and the Arran-Elderslie water treatment plant. After initial drilling a pump test was conducted in the summer. The pumping volume of the test well was 10 liters/second. CP#1 flow was 20.8L/sec. In August the decision was made to not continue with the development of TW1/22, and second site was chosen for another Test Well. Well Initiatives was unable to complete the drilling of a second TW in 2022. Drilling of TW2/23 was conducted in the spring of 2023. It is much more promising with production in the similar range of CP#3 at 30L/sec. As of the date of this report test and engineering reports are outstanding.

The Tara Drinking Water System has also seen extensive work completed to the wells in the past few years. In October 2019, a new wet-end pump was installed at Well #2 in Tara, and the well piping was shortened by twenty (20) feet. In June of 2020, Well #3 in Tara had the pump, motor and three lengths of pipe replaced within the well. A comparison of well draw-down levels in the Tara raw water wells between 2020 and 2022 show that the wells continue to operate safely at their expected capacities.

All three production wells in the Tara drinking water system are sampled weekly for E-Coli and total coliform. Well #2 and Well#4 had zero (0) instances of E-Coli or total coliform. Well # 3, the only GUDI (Groundwater Under Direct Influence) had seven (7) instances of E-Coli or Total Coliform in a raw water sample. This is not unexpected with a GUDI well and the treatment system is designed for and capable of treating these instances

13. Status and Follow-Up from previous reviews:

As mentioned earlier, staff are moving forward on an alternative drinking water source in the community park for the Arran-Elderslie supply, as a replacement for CP#1. The goal will be to have a new source operational before the end of 2024.

The Water & Sewer Division of the Public Works Department continues to play a large role in the GIS program for Arran-Elderslie. Again, In the summer of 2022 a student was hired to move the program forward and get data collected. This process has greatly benefitted staff with the Ontario One Call locate process. The data collected has allowed staff to use some of the GIS maps for large projects such as Natural Gas installation and Fibre Optic installation projects in all towns. Staff are continuing to streamline this project to make all mapping applications for locates more efficient.

14. Changes that could Affect the DWQMS:

The Arran-Elderslie and Tara Drinking Water System both had the license for each system updated in early 2021. These are valid for 5 years and will need to be renewed in early 2026.

The Arran-Elderslie and Tara Drinking Water Systems Operations Manuals were updated in March of 2022, They will need reviewed and updated in March of 2024.

This work was completed in-house which included an updated water financial plan completed by the Water and Sewer Operations Division and the Finance Department.

The DWQMS had an external systems audit conducted in 2022 by SAI global as well a re-accreditation audit was conducted in 2021. There will be a Systems audit in 2023, with a re-accreditation due in 2024.

15. Consumer Feedback:

There were no written complaints from Arran-Elderslie ratepayers in 2022. Often, staff receive calls from the municipal office or ratepayers and quick response times often diffuse or resolve problems quickly. The new Citizen Request Portal introduced in 2022 will assist in monitoring and tracking inquiries and response times.

16. Resources needed to Maintain the DWQMS:

As mentioned previously, resources have been spent recently to update the licenses for both the Arran-Elderslie and Tara Water systems. However, this was handled internally through the Water and Sewer Division and Finance Department.

Re-accreditation of the DWQMS was completed in 2021. This again involved staff time to prepare documents and send them off and have on-site interviews with the auditing team. In addition, the re-accreditation itself was a six thousand five hundred (\$6,500) dollar expense. In 2022, the systems audit cost two thousand one hundred (\$2,100) dollars. Another systems audit in 2023 will cost an additional two thousand one hundred (\$2,100). Another Re-Accreditation will be due in 2024 and staff will need to find a consultant to complete this process as the contract with SAI is expiring in 2023.

17. Results of Infrastructure:

Included in the report is SLD-14 for the 2022 season. This table is completed based on MECP compliance, grants, upgrades, and financial plans. Kurtis Smith excavating replaced water and sewer mains on 3rd Street SW in Chesley, and water and sewer replacement on 4th Avenue SW in Chesley. The extension of water main on Mill Street in Paisley was completed by Percon Construction and once completed was assumed by the Municipality. The watermain projects on Queen Street in Paisley and Hamilton Street in Tara that were in budget for 2022, were deferred to 2023, to coincide with other works needing to be completed in conjunction with the watermain. Exploration work for a new water source for the Arran-Elderslie water source as mentioned before is ongoing.

The Chesley water tower had a mechanical mixer installed in 2022. A mixer was recommended after a video inspection in 2020 which indicated that the water tower had less than ideal mixing of the water in the tower. This mixer will improve chlorine residual stability and improve temperature and water age uniformity.

Arran-Elderslie and Tara Drinking Water Systems had the alarm dialers replaced at both sites. The dialers were original equipment that are critical for operator response to alarm conditions. The original dialers were getting out of date and repair parts would have been difficult to source.

18. Operation Plan Currency, Content and Updates:

The DWQMS was reviewed by Staff in January 2022 with new hires, and the team was able to review a large portion of the manual. New Risk Assessment guidelines were also reviewed with the addition of Communication Failure Risk. Staff reviewed changes to SLD's as well as reviewed any changes because of the Re-Accreditation Audit. Staff also did a review session in November 2022 and reviewed the Risk Assessment with the addition of a Cyber Security Risk Assessment. Any updates because of the systems audit in 2022 were also reviewed. Staff have updated their First Aid and CPR as needed with Management setting up a rotating schedule. Staff continue to be diligent to obtain the proper training via online courses.

19. Additional Suggestions:

The DWQMS is due for a full Re-Accreditation Audit in 2024. Staff will need to look at sourcing a consultant to complete this Audit.

The Water System Financial Plans prioritize Water Main replacement based on Age, Frequency of breaks and size. The Water Division, will also need to continue to work with the Roads Division, to prioritize street work that benefits both sections at the same time.

Link to Strategic/Master Plan

This report aligns with the DWQMS SLD-12 Owner Communications, and SLD-20 Management Review. It also links to the Water and Sewer Financial plans.

Financial Impacts/Source of Funding

The DWQMS document requires Staff resources on a yearly basis. The Ministry of Environment Conservation and Parks (MECP) requires external audits for accreditation. Internal audits are conducted both by Arran-Elderslie personnel, and by sharing resources with neighboring municipalities. These all require changes, training, and staff time to review and implement recommendations.

Finance has completed reviewed the financial plans for the water system. This process aligns with both the Arran-Elderslie and Tara Drinking Water System license approvals that again were completed internally in early 2021.

Approved By: Sylvia Kirkwood, CAO