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# HALDIMAND COUNTY

## Report ENV-01-2025 Annual Water Quality Reports

For Consideration by Council in Committee on February 25, 2025

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### OBJECTIVE:

To provide an annual summary of Haldimand County's drinking water systems.

### RECOMMENDATIONS:

1. THAT Report ENV-01-2025 Annual Water Quality Reports be received;
2. AND THAT the 2024 Drinking Water Quality Management Standard Top Management Review Meeting Minutes be received.

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**Reviewed by:** Brandon Hedges, Manager, Environmental Operations

**Respectfully submitted:** Dan McKinnon, General Manager, Public Works Operations

**Approved:** Cathy Case, Chief Administrative Officer

### EXECUTIVE SUMMARY:

The Annual Water Quality Report responds to requirements identified in Ontario Regulation 170/03 under the Safe Drinking Water Act, 2002, and are intended to provide the public and Council with information about Haldimand County's drinking water systems.

The reports include summaries of water quality, water taken/supplied by the drinking water systems and regulatory compliance.

Haldimand County received one non-compliance incident from the 2023/2024 Caledonia and Cayuga Distribution System annual drinking water inspection and three non-compliance incidents for each of the 2024 Dunnville and Nanticoke drinking water inspections. Details of these findings may be found on pages 4 and 5 of this Council report, in addition to:

1. page 20 of the attached Caledonia and Cayuga Water Quality Report;
2. page 17 of the attached Dunnville Water Quality Report; and
3. page 20 of the attached Nanticoke Water Quality Report.

Based on the inspection ratings, these are considered minor in nature and County staff have already completed or initiated corrective action plans to prevent future occurrences.

In addition to the reports, Haldimand County's Municipal Drinking Water License (MDWL) is issued by the Ministry of the Environment, Conservation and Parks (MECP). The Licensing Program is the approval framework for municipal drinking water systems. In order to be issued a MDWL, there are five requirements, one of them being an accepted Operational Plan stemming from prerequisites made within the Drinking Water Quality Management Standard (DWQMS). There are 21 elements included within the DWQMS. Element 20, Management Review, states that "Top Management" shall report the

results of the annual management review, the identified deficiencies, decision and action items to the Owner.

## **BACKGROUND:**

Drinking water is regulated by the Ontario Government through the Ministry of the Environment, Conservation and Parks (MECP), O. Reg. 170/03, under the Safe Drinking Water Act 2002, and requires Haldimand County to prepare an annual report for each county drinking water system and present it to Council. These reports must be made available to the public free of charge. Copies can be obtained at the Haldimand County Administration Building (by request) or from the Haldimand County website.

The purpose of the annual report, under Schedule 11 of O. Reg. 170/03, is to provide the public with drinking water system information, which includes water quality sample results for water supplied by the distribution system.

The purpose of the summary report, under Schedule 22 of O. Reg. 170/03, is to provide the owner, specifically the Mayor and members of Council, with information to allow them to make informed decisions regarding the drinking water systems under their care. This report is intended as a full disclosure mechanism to ensure that Council, senior management, regulatory agencies and the public are aware of any outstanding compliance issues or operational changes within the systems.

The Summary Report must:

- a) list the requirements of the Act, the regulations, the system's approval and any order that the system failed to meet at any time during the period covered by the report and specify the duration of the failure;
- b) for each requirement referred to in clause (a) of this section, that was not met, specify the duration of the failure and the measures that were taken to correct the failure;
- c) 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 daily instantaneous peak flow rates; and
- d) a comparison of the summary referred to in item (c) to the rated capacity and flow rates approved in the system's approval.

## **ANALYSIS:**

Haldimand County has three distinct drinking water systems: the Caledonia and Cayuga distribution system; the Dunnville drinking water system; and the Nanticoke drinking water system. As a result, the municipality is required to develop water quality reports for each drinking water system.

Regulatory compliance includes reporting any adverse water quality incidents to the Ministry of Health (MOH) and the MECP. In all instances, corrective actions are initiated to resolve the issues. When an adverse test result or operating condition occurs, the event is referred to as a non-confirmed adverse. The regulation requires operators to take corrective action and then resample/test to confirm if the corrective actions have resolved the event. When corrective actions, in most cases flushing the system is the action, do not resolve the adverse, the event is then referred to as a confirmed adverse and further corrective actions are required.

For the Caledonia and Cayuga distribution system there were three non-confirmed adverse water quality reports reported in 2024:

- June 12, 2024 – Lab report of 6 cfu/100mL of total coliforms at a sampling station. The corrective action was flushing of stations and chlorine residual testing was completed. RESOLVED;
- June 26, 2024 – Lab report of 80 cfu/100mL of total coliforms and 1 E. coli at a sampling station. The corrective action was flushing of stations and chlorine residual testing was completed. RESOLVED; and
- September 25, 2024 – Lab report of 7 cfu/100mL of total coliforms at a sampling station. Corrective action was flushing of stations and chlorine residual testing was completed. RESOLVED.

For the Dunnville drinking water system there was one non-confirmed adverse water quality report reported in 2024:

- June 12, 2024 – Lab reported a microbiological reading NDOGN (No Data Overgrown with Non-target) at a sampling station. NDOGN represents a cover of undetermined bacteria. The corrective action was flushing of sampling stations and chlorine residual testing was completed. RESOLVED.

For the Nanticoke drinking water system there was one non-confirmed adverse water quality report reported in 2024:

- June 20, 2024 – Low pressure event. Townsend communications was lost from 02:05-02:29. Before communication was lost, Townsend pressure was 54 psi and when it was at 9.93 psi, the minimum Nanticoke discharge pressure during this time gap was 345 kpa (50 psi) at 02:14. The corrective action was flushing of hydrants and chlorine residual testing was completed. RESOLVED.

In 2024, the increases/decreases of total treated water through the distribution system can be found below:

Drinking Water System	2024 Percent Change
Caledonia and Cayuga Distribution System	- 4.87%
Dunnville Drinking Water System	+ 2.3%
Nanticoke Drinking Water System	+ 3.7%

**MECP Inspections:**

MECP inspections were completed for all the 2024 reporting window. These inspections provide Haldimand County and its contract operators an opportunity to review best management practices and work towards continually improving the operation and management of the drinking water systems.

The 2023/2024 Caledonia and Cayuga distribution system inspection rating had not been finalized before the completion and presentation of the 2023 annual drinking water reports. The rating has since been received and included in the 2024 annual report. The 2024/2025 annual inspection, although it has been completed, has not yet been rated and therefore the rating will be included in the 2025 annual report.

The MECP provides an inspection risk rating to Haldimand County based on its inspection findings for the reporting year. The drinking water system inspection ratings are as follows:

<b>Drinking Water System</b>	<b>2023/2024 MECP Inspection Rating</b>
Caledonia and Cayuga Distribution System	97.35%
	<b>2024/2025 MECP Inspection Rating</b>
Caledonia and Cayuga Distribution System	Rating Pending Final Inspection Report
	<b>2024 MECP Inspection Rating</b>
Dunnville Drinking Water System	96.83%
Nanticoke Drinking Water System	96.80%

There was one non-compliance incident identified during the 2023/2024 inspection of the Caledonia and Cayuga distribution system:

- All sampling requirements for lead prescribed by schedule 15.1 of O. Reg 170/03 were not met. Alkalinity and pH samples are required to be taken once in each period (December 15<sup>th</sup> – April 15<sup>th</sup> and June 15<sup>th</sup> – October 15<sup>th</sup>) in every 12-month period. Lead samples are required every three years during each of the sampling periods. Lead samples were last taken in January 2021 and September 2021. One of the four sets of pH and alkalinity samples were missed in the spring of 2023. Two locations were to be sampled for alkalinity and pH at each the Cayuga and Caledonia areas but only one set was identified on the work order for Caledonia.

There were three non-compliance incidents identified during the 2024 inspection of the Dunnville drinking water system:

- O. Reg. 170/03, Schedule 10-4. (1) states that the Owner of a drinking water system and the operating authority for the system shall ensure that a water sample is taken at least once every week from the drinking water systems raw water, before any treatment is applied to the water. On August 16<sup>th</sup>, 2024, the MECP was notified that the raw water bacteriological sample taken on August 12<sup>th</sup>, 2024 at the Port Maitland Low Lift had a total chlorine residual of 0.19 mg/L. A new injection line and sample line was being installed along with a new sample pump and chlorine pumps. The new injection line goes out to the head of the intake for zebra mussel control and the new sample line extends beyond the intake to ensure samples are not chlorinated. The chlorine pumps were put into service on August 9<sup>th</sup> and the sample pump was not completely installed by the contractors, leading to taking the August 12<sup>th</sup> sample from the normally non-chlorinated industrial wet well, which now has been chlorinated. The separate intake sample line (with no chlorine) was put in place on August 16<sup>th</sup>, 2024, for future raw water samples;
- Haloacetic acid sampling requirements prescribed by Schedule 13-6 of O. Reg. 170/03 were not met. In accordance with O. Regulation 170/03 Schedule 13-6.1, the owner and operating authority shall ensure that at least one distribution water sample that is likely to have an elevated potential for the formation of haloacetic acids (HAA) is collected and tested for HAA each calendar quarter. HAA samples were not taken on the first calendar quarter of 2024, but were completed on all calendar quarters of 2023, and the second calendar quarter of 2024; and

- Trihalomethane sampling requirements prescribed by Schedule 13-6 of O. Reg. 170/03 were not met.

There were three non-compliance incidents for the Nanticoke drinking water system:

- Haldimand County has a harmful algal bloom monitoring plan in place that meets the requirements of the MDWL, but Schedule C, Condition 6.4 of the MDWL was not met. Weekly microcystin samples are required between June 1<sup>st</sup> and October 31<sup>st</sup> each year. Weekly treated and raw microcystin samples were missed for the week of June 19<sup>th</sup>, 2023;
- Haloacetic acid sampling requirements prescribed by Schedule 13-6 of O. Reg. 170/03 were not met. In accordance with O. Regulation 170/03 Schedule 13-6.1, the owner and operating authority shall ensure that at least one distribution water sample that is likely to have an elevated potential for the formation of haloacetic acids (HAA) is collected and tested for HAAA each calendar quarter. HAA samples were not taken on the first calendar quarter of 2024, but were completed on all calendar quarters of 2023, and the second calendar quarter of 2024; and
- Trihalomethane (THM) sampling requirements prescribed by Schedule 13-6 of O. Reg. 170/03 were not met. In accordance with O. Regulation 170/03 Schedule 13-6, the owner and operating authority shall ensure that at least one distribution water sample that is likely to have an elevated potential for the formation of THM is collected and tested for THM each calendar quarter. THM samples were not taken on the first calendar quarter of 2024, but were completed on all calendar quarters of 2023, and the second calendar quarter of 2024.

Corrective/preventative actions were presented by Haldimand County to the MECP for all the above non-conformances and no further actions were required. Haldimand County and its contract operators are diligent in ensuring that regulatory requirements are achieved and that Haldimand County residents are provided with safe, reliable drinking water.

### Water Production Summaries 2024

System and Municipal Drinking Water License	Rated Capacity (m <sup>3</sup> /day)	Average Daily Flow (m <sup>3</sup> /day)	Maximum Daily Flow (m <sup>3</sup> / day)	Percentage of Capacity
Dunnville 066-101	14,500	3,013	5,747	39.6%
Caledonia 066-103	13,000	4,110	6,414	41.5%
Cayuga 066-103	2,333	572	808	34.6%
Nanticoke 066-102	13,636	7,026	10,701	78.4%

Average system water flows are approximately **3,680 m<sup>3</sup>/day**. This would represent 48.5% of the rated capacity.

Haldimand County did experience nine (9) minor water main breaks which were all classified as Category 1 breaks. A watermain break with no evident or suspected contamination is as Category 1. If, at any time, contamination is evident or suspected, the watermain break shall be reclassified as Category 2.

## 2024 Monthly Total Flows (ML)

	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
<b>Caledonia</b>	116.1	107.4	113.3	114.4	135.7	129.3	133.3	136.5	141.1	131.3	125.1	125.8
<b>Cayuga</b>	15.9	15.1	16.0	16.1	19.3	18.0	19.3	19.2	19.1	18.8	15.9	17.0
<b>Dunnville</b>	75.0	75.0	78.4	82.0	106.7	105.5	103.3	99.3	93.1	98.7	91.7	94.5
<b>Nanticoke</b>	209.1	196.6	191.9	182.7	228.0	232.6	242.5	224.7	223.7	224.4	208.8	200.5

Note: 1 megaliter (ML) equals 1,000 cubic meters (m<sup>3</sup>)

## 2024 DWQMS Management Review

The DWQMS Operational Plan provides an overview of Haldimand County's operational processes, procedures, current infrastructure, and resource adequacies through the management review and infrastructure and resource adequacies.

One of the critical elements is that the Operational Plan is endorsed in writing by top management and the owner, which in this case are senior staff and Haldimand County Council, respectfully. This element requires that top management demonstrates its commitment to the DWQMS by being aware of the requirements and providing direction and resources as required.

As described, Council and top management's commitment is a crucial part of a successful DWQMS and must clearly be recognized in terms of acknowledgement of ownership and providing resources.

The Quality Management System (QMS) representative determines a suitable frequency for management review meetings for the drinking water system. At a minimum, reviews must be conducted at least once every calendar year.

The review meeting includes all drinking water systems, and the topics listed below are discussed and documented for each individual system in the Management Review meeting minutes.

The agenda topics for the management review meeting are as follows:

1. Incidents of non-compliance
2. Incidents of adverse drinking water tests
3. Deviations from critical control point limits and response actions
4. Effectiveness of the risk assessment process
5. Internal and third-party audit results
6. Results of emergency response testing
7. Operations performance
8. Raw water supply and drinking water quality trends
9. Follow-up on action items from previous management reviews
10. The status of management action items identified between reviews
11. Changes that could affect the Quality Management System
12. The results of the infrastructure review
13. Operational Plan currency, content and updates
14. Staff suggestions

**FINANCIAL/LEGAL IMPLICATIONS:**

Not applicable.

**STAKEHOLDER IMPACTS:**

Not applicable.

**REPORT IMPACTS:**

Agreement: No

By-law: No

Budget Amendment: No

Policy: No

**REFERENCES:**

None.

**ATTACHMENTS:**

1. Caledonia and Cayuga Water Quality Report 2024
2. Nanticoke Water System 2024 Annual Water Quality Report
3. Dunnville Water System 2024 Annual Water Quality Report
4. 2024 DWQMS Top Management Review Meeting Minutes