



2025 ANNUAL  
DRINKING  
WATER SYSTEM  
REPORT

Waterford Drinking Water System



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# 2025 Annual Drinking Water System Report

## Waterford Drinking Water System

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### 1. Introduction

The Corporation of Norfolk County has prepared this report to satisfy the requirements of Section 11 of Ontario Regulation (O. Reg.) 170/03. This Annual Report must be prepared no later than February 28<sup>th</sup> of each year.

This report covers the period from January 1<sup>st</sup>, 2025 to December 31<sup>st</sup>, 2025, and the information provided complies with the reporting requirements of Section 11 of O. Reg. 170/03.

A summary of Waterford's Municipal Drinking Water System is outlined below:

Drinking Water System Number: 220000905

Drinking Water System Name: Waterford Drinking Water System

Drinking Water System Owner: Corporation of Norfolk County

Drinking Water System Category: Large Municipal Residential

### 2. Reporting Requirements under O. Reg. 170/03 – Section 11

As required by Section 11 Annual reports, this report includes the following information for the reporting period noted above:

- A brief description of the drinking water system, including a list of water treatment chemicals used by the system;
- A summary of any reports made to the Ministry of Environment, Conservation and Parks (MECP) for Adverse Water Quality Incidents (AWQI's);
- A summary of the results of tests required under O. Reg. 170/03, an approval, the municipal drinking water licence (MDWL) or an order, including an Ontario Water Resources Act (OWRA) order;
- A description of any corrective actions taken;
- A description of any major expenses incurred to install, repair or replace required equipment;

- A statement of where a report prepared under Schedule 22 (Drinking Water Summary Report) will be available for inspection by any member of the public during normal business hours without charge; and
- A summary of Schedule 15.1 Lead sampling details.

### 3. Evidence of Compliance

#### Availability of the Annual Report

In accordance with O. Reg. 170/03 – Section 11, a copy of the Annual Report for each drinking water system will be posted, by the end of February each year, on the Norfolk County website at [norfolkcounty.ca](http://norfolkcounty.ca).

A Summary Report on regulatory compliance and system capability is also required annually under Schedule 22 of O. Reg. 170/03. This report summarizes any known failures, duration and corrective measures taken to meet the requirements of the Safe Drinking Water Act (SDWA), regulations, the system’s approval, drinking water works permit (DWWP), municipal drinking water licence (MDWL), and any order applicable. The Summary Report is presented to Norfolk County Council for acceptance before March 31<sup>st</sup> of each year. The Summary report is made available to the public in April on the Norfolk County website noted above or by request from the Environmental Services.

Copies of the Summary Report and Annual Reports for each drinking water system are available to the public, free of charge, at the following location:



#### **Gilbertson Administration Building**

12 Gilbertson Drive, Simcoe, Ontario, N3Y 4N5

Hours: Monday to Friday, 8:30 a.m. to 4:30 p.m.

#### Description of the Municipal Drinking Water System

The Waterford Drinking Water System (Waterford DWS) supplies water to the community of Waterford. The system is supplied by two groundwater wells, and the Waterford Water Treatment Plant (Waterford WTP) includes iron and manganese removal as well as a reservoir. The Waterford DWS serves a population of approximately 4,200.

The water distribution system includes a 3,160m<sup>3</sup> water standpipe, which acts as a reservoir when the system requires larger amounts of water than the wells can supply (such as firefighting and peak flows) and helps to maintain a constant system pressure. There are approximately 203 fire hydrants and approximately 36,740m of water main and transmission main ranging in size from 150mm to 400mm in diameter. The piping material consists of asbestos-cement, cast-iron, High-Density Polyethylene (HDPE) Polyvinyl Chloride (PVC) and ductile iron.

## Water Treatment Chemicals

The following water treatment chemicals were used during the reporting period:

- Sodium Hypochlorite
- Sodium Permanganate
- Poly Aluminum Chloride

## Significant Expenses Incurred

A brief summary of the major expenses incurred during the reporting period to install, repair or replace required equipment, and value of each, is included in Table 1.

**Table 1 – Summary of Expenses Incurred**

Activity	Cost Incurred (2025)
<b>General Operations Maintenance and Repair in Water Treatment Plants and Distribution System</b>	\$46,917.76
<b>Well Rehabilitations</b>	\$34,083.86
<b>Filter Valve Replacements</b>	69,007.62

## 4. Microbiological Sampling and Testing

### *E. coli* and Total Coliform

As per Schedule 10 Microbiological Sampling and Testing, of O. Reg. 170/03, sampling and analysis for *E. coli* and total coliforms was conducted weekly on the raw and treated water at the facilities and in the distribution system. The results from the 2025 sampling program for the Waterford DWS are shown in the table below.

**Table 2 – *E. coli* and Total Coliform Sampling Results**

Location	Number of Samples	Range of <i>E. coli</i> Results (cfu/100mL)	Range of Total Coliform Results (cfu/100mL)
Well #3 – raw	53	0 – 0	0 – 0
Well #4 – raw	52	0 – 0	0 – 0
Treated	52	0 – 0	0 – 0
Distribution System	156	0 – 0	0 – 0

## Heterotrophic Plate Count (HPC)

As per Schedule 10 Microbiological Sampling and Testing, of O. Reg. 170/03, sampling and analysis for HPC was conducted weekly on the raw and treated water at the facilities and on 25% of the required distribution system samples. HPC results greater than 500cfu/1mL (colony forming units per 1 mL) may indicate a change in water quality but are not considered an indicator of unsafe drinking water. The results from the 2025 sampling program for the Waterford DWS are shown in the table below.

**Table 3 – HPC Sampling Results**

Location	Number of Samples	Number of HPC Samples	Range of HPC Results (cfu/1mL)
Treated	52	52	<10 – 20
Distribution System	156	53	<10 – 240

## 5. Chemical Sampling and Testing

As per Schedule 13 Chemical sampling and testing, of O. Reg. 170/03, sampling and testing for chemical parameters listed in Schedule 13, Schedule 23 and Schedule 24, is required at varying frequencies. The 2025 results for chemical sampling and testing are provided in Appendix A - Summary of Chemical Results.

If the result obtained for a parameter listed Schedule 23 or Schedule 24 exceeds half the Maximum Allowable Concentration (MAC) found in O. Reg. 169/03 Ontario Drinking Water Quality Standards (ODWQS), sampling and testing frequency shall be increased to once every three (3) months. No additional sampling and testing is required for the Waterford DWS.

## 6. Operational Monitoring

As per Schedule 7 Operational checks, of O. Reg. 170/03, operational checks were conducted including raw and treated water turbidity, and treated and distribution water free chlorine residuals.

### Turbidity

Turbidity is measured in Nephelometric Turbidity Units (NTU). Under O. Reg. 170/03 turbidity in groundwater is not reportable, however it is desirable to have < 1 NTU at the well and < 5 NTU in the distribution system. The raw water turbidity is sampled weekly at each well, and the treated water turbidity is monitored continuously. The results from the 2025 raw water turbidity monitoring program for the Waterford DWS are shown in the table below.

**Table 4 – Water Turbidity Monitoring Results**

Location	Number of Grab Samples	Range of Turbidity Results (NTU)
Well #3	50	0.06 – 0.17
Well #4	54	0.06 – 0.16
Filter #1	8760*	0.000 – 0.315
Filter #2	8760*	0.000 – 2.530
Filter #3	8760*	0.000 – 0.661

\*Continuous Monitoring

### Chlorine Residual

As per Schedule 7 of O. Reg. 170/03, free chlorine residuals in the treated water are monitored continuously at the point of entry to the distribution system at all water treatment plants. The minimum required free chlorine residual in the distribution system is 0.05 mg/L, any samples below this must be reported as an AWQI and addressed via corrective actions. The results from the 2025 free chlorine residual monitoring program for the Waterford DWS are shown in the table below.

**Table 5 – Chlorine Residual Monitoring Results**

Location	Number of Grab Samples	Range of Free Chlorine Residual Results (mg/L)
WTP	8760*	0.690 – 2.000
Distribution System	531	0.30 – 1.67

\*Continuous Monitoring

## 7. Adverse Test Results

As per Schedule 16 Reporting adverse test results and other problems, of O. Reg. 170/03, there were no AWQI's issued for the Waterford DWS. The table below describes the date the adverse occurred, the parameter, the result, the corrective action taken and the date resolved.

**Table 6 – AWQI Summary**

Incident Date (dd/mm/yyyy)	Parameter	Result	Corrective Action	Date Resolved (dd/mm/yyyy)
None				

## 8. Appendix A: Summary of Chemical Results

### Understanding Chemical Sampling and Testing Results

The following tables summarize the laboratory results of the chemical testing Norfolk County is required to complete. Different parameters are required to be tested for at different frequencies as noted below.

Results are shown as concentrations with units of either milligrams per litre (mg/L) or micrograms per litre (ug/L). 1 mg/L is equal to 1000 ug/L. The Maximum Acceptable Concentration (MAC) is the highest amount of a parameter that is acceptable in municipal drinking water and can be found in O. Reg. 169/03 Ontario Drinking Water Quality Standards (ODWQS). The Method Detection Limit (MDL) is the lowest amount to which the laboratory can confidently measure.

The following tables summarize the sampling and testing results for the parameters listed in Schedule 13 (fluoride, nitrate/nitrite, sodium), during the reporting period or the most recent sample results for the Waterford DWS.

**Table 7 – Waterford WTP Fluoride, Nitrate/Nitrite, Sodium (Schedule 13)**

Parameter	Sample Date (dd/mm/yyyy)	Result Value	Unit of Measure	Exceedance
<b>Fluoride</b>	05/05/2025	0.19	mg/L	No
<b>Nitrate</b>	10/02/2025	0.006<MDL	mg/L	No
	05/05/2025	0.006<MDL	mg/L	No
	11/08/2025	0.006<MDL	mg/L	No
	03/11/2025	0.006	mg/L	No
<b>Nitrite</b>	10/02/2025	0.003<MDL	mg/L	No
	05/05/2025	0.003<MDL	mg/L	No

Parameter	Sample Date (dd/mm/yyyy)	Result Value	Unit of Measure	Exceedance
	11/08/2025	0.003<MDL	mg/L	No
	03/11/2025	0.003<MDL	mg/L	No
<b>Sodium</b>	05/05/2025	18.8	mg/L	No

The following tables summarize the sampling and testing results for the Inorganic Parameters listed in Schedule 23, during the reporting period or the most recent sample results for the Waterford DWS.

**Table 8 – Waterford WTP Inorganic Parameters (Schedule 23)**

Parameter	Sample Date (dd/mm/yyyy)	Result Value	Unit of Measure	Exceedance
<b>Antimony</b>	05/05/2025	0.6 <MDL	ug/L	No
<b>Arsenic</b>	05/05/2025	0.2 <MDL	ug/L	No
<b>Barium</b>	05/05/2025	117	ug/L	No
<b>Boron</b>	05/05/2025	23	ug/L	No
<b>Cadmium</b>	05/05/2025	0.003<MDL	ug/L	No
<b>Chromium</b>	05/05/2025	0.17	ug/L	No
<b>Lead</b>	Exempt			
<b>Mercury</b>	05/05/2025	0.01<MDL	ug/L	No
<b>Selenium</b>	05/05/2025	0.04<MDL	ug/L	No
<b>Uranium</b>	05/05/2025	0.356	ug/L	No

The following tables summarize the sampling and testing results for the Organic Parameters listed in Schedule 24, during the reporting period or the most recent sample results for the Waterford DWS.

**Table 9 – Waterford WTP Organic Parameters (Schedule 24)**

Parameter	Sample Date (dd/mm/yyyy)	Result Value	Unit of Measure	Exceedance
<b>Alachlor</b>	05/05/2025	0.02<MDL	ug/L	No
<b>Atrazine + N-dealkylated metabolites</b>	05/05/2025	0.01<MDL	ug/L	No
<b>Azinphos-methyl</b>	05/05/2025	0.05<MDL	ug/L	No
<b>Benzene</b>	05/05/2025	0.32<MDL	ug/L	No
<b>Benzo(a)pyrene</b>	05/05/2025	0.004<MDL	ug/L	No
<b>Bromoxynil</b>	05/05/2025	0.33<MDL	ug/L	No
<b>Carbaryl</b>	05/05/2025	0.05<MDL	ug/L	No
<b>Carbofuran</b>	05/05/2025	0.01<MDL	ug/L	No
<b>Carbon Tetrachloride</b>	05/05/2025	0.17<MDL	ug/L	No

Parameter	Sample Date (dd/mm/yyyy)	Result Value	Unit of Measure	Exceedance
Chlorpyrifos	05/05/2025	0.02<MDL	ug/L	No
Diazinon	05/05/2025	0.02<MDL	ug/L	No
Dicamba	05/05/2025	0.20<MDL	ug/L	No
1,2-Dichlorobenzene	05/05/2025	0.41<MDL	ug/L	No
1,4-Dichlorobenzene	05/05/2025	0.36<MDL	ug/L	No
1,2-Dichloroethane	05/05/2025	0.35<MDL	ug/L	No
1,1-Dichloroethylene (vinylidene chloride)	05/05/2025	0.33<MDL		
Dichloromethane	05/05/2025	0.35<MDL	ug/L	No
2-4 Dichlorophenol	05/05/2025	0.15<MDL	ug/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	05/05/2025	0.19<MDL	ug/L	No
Diclofop-methyl	05/05/2025	0.40<MDL	ug/L	No
Dimethoate	05/05/2025	0.06<MDL	ug/L	No
Diquat	05/05/2025	1<MDL	ug/L	No
Diuron	05/05/2025	0.03<MDL	ug/L	No
Glyphosate	05/05/2025	1<MDL	ug/L	No
Malathion	05/05/2025	0.02<MDL	ug/L	No
MCPA	05/05/2025	0.00012<MDL	mg/L	No
Metolachlor	05/05/2025	0.01<MDL	ug/L	No
Metribuzin	05/05/2025	0.02<MDL	ug/L	No
Monochlorobenzene	05/05/2025	0.3<MDL	ug/L	No
Paraquat	05/05/2025	1<MDL	ug/L	No
Pentachlorophenol	05/05/2025	0.15<MDL	ug/L	No
Phorate	05/05/2025	0.01<MDL	ug/L	No
Picloram	05/05/2025	1<MDL	ug/L	No
Polychlorinated Biphenyls(PCB)	05/05/2025	0.04<MDL	ug/L	No
Prometryne	05/05/2025	0.03<MDL	ug/L	No
Simazine	05/05/2025	0.01<MDL	ug/L	No
Terbufos	05/05/2025	0.01<MDL	ug/L	No
Tetrachloroethylene	05/05/2025	0.35<MDL	ug/L	No
2,3,4,6-Tetrachlorophenol	05/05/2025	0.20<MDL	ug/L	No
Triallate	05/05/2025	0.01<MDL	ug/L	No
Trichloroethylene	05/05/2025	0.44<MDL	ug/L	No

Parameter	Sample Date (dd/mm/yyyy)	Result Value	Unit of Measure	Exceedance
<b>2,4,6-Trichlorophenol</b>	05/05/2025	0.25<MDL	ug/L	No
<b>Trifluralin</b>	05/05/2025	0.02<MDL	ug/L	No
<b>Vinyl Chloride</b>	05/05/2025	0.17<MDL	ug/L	No

The following table summarizes the sampling and testing results for Trihalomethane (THM) and Haloacetic Acids (HAA) in the distribution system, during the reporting period or the most recent sample results for the Waterford DWS. The regulatory limit is based on the running annual average (RAA) of quarterly results and is 100ug/L for THM and 80ug/L for HAA.

**Table 10 – Distribution System THM & HAA Results (Schedule 13)**

Parameter	Sample Date (dd/mm/yyyy)	Result Value	Unit of Measure	Exceedance
<b>Trihalomethane (THM)</b> RAA = 36ug/L	10/02/2025	30	ug/L	No
	05/05/2025	31	ug/L	
	11/08/2025	45	ug/L	
	03/11/2025	48	ug/L	
<b>Haloacetic Acids (HAA)</b> RAA = 18.6ug/L	10/02/2025	13.2	ug/L	No
	05/05/2025	19.7	ug/L	
	11/08/2025	16.0	ug/L	
	03/11/2025	18.2	ug/L	

The following table summarizes the Lead sampling and testing results, as set out in Schedule 15.1 Lead, during the reporting period or the most recent sample results for the Waterford DWS. Norfolk County follows the Reduced sampling schedule which requires pH and alkalinity samples be collected twice a year and lead samples collected every third year from the distribution system.

**Table 11 – Lead Sampling & Testing (Schedule 15.1)**

Parameter	Sample Date (dd/mm/yyyy)	Number of Samples	Range of Results	Number of Exceedances
<b>Lead (ug/L)</b>	04/03/2024	3	0.06 – 0.25	0
	23/09/2024	3	0.26 – 1.03	0
<b>pH</b>	03/03/2025	3	7.1 – 7.56	0
	22/09/2025	3	7.56 – 7.75	0
<b>Alkalinity (mg/L)</b>	03/03/2025	3	175 – 179	0
	22/09/2025	3	192 – 199	0