Merrickville Drinking Water System

Waterworks # 220001227
System Category – Large Municipal Residential

Annual Water Report

Prepared For: Village of Merrickville-Wolford

Reporting Period of January 1st – December 31st, 2024

Issued: March 05, 2025

Revision: 1

Operating Authority:

OCWA
ONTARIO CLEAN WATER AGENCY
AGENCE ONTARIENNE DES EAUX

This report has been prepared to satisfy the annual reporting requirements in O.Reg 170/03 Section 11 and Schedule 22

Table of Contents

Revision History

Date	Revision #	Revision Notes
February 26, 2025	0	Annual report issued
March 05, 2025	1	AWQI Date

Report Availability

This system does not serve more than 10,000 residence and the annual reports will be available to users at The Village of Merrickville-Wolford Office. Notification will be at the Municipal Office and copies provided free of charge if requested. The Village of Merrickville-Wolford is located at 317 Brock St. W. PO Box 340, Merrickville, Ontario K0G 1N0.

Compliance Report Card

Compliance Event	# of Events
Ministry of Environment Inspections	- 1 Ministry inspection on May 22nd, 2024 - Final Inspection Rating: 100%
Ministry of Labour Inspections	- No Ministry of Labour Inspections in 2024
QEMS External Audit	- 1 QMS Audit on November 4th , 2024 - 1 Minor OFI noted ○ Update supporting documentation for new PCT
AWQI's/BWA	- 07-24-24 TC AWQI
Non-Compliance	- No Non-Compliances in 2024
Community Complaints	- No complaints recorded in 2024
Spills	- No spills in 2024
Watermain Breaks	- 2 water main breaks in 2024

System Process Description

Raw Source

Well 1 is located on the north side of Main Street East approximately 60 metres east of St. Lawrence Street. Well 1 consists of a 35 meter deep drilled groundwater production well, equipped with a submersible deep well pump, with a discharge pipe connecting to a well pump header in the main pump house described below, including a vented watertight galvanized steel enclosure over the wellhead.

Well 2 is located on the north side of Main Street East approximately 60 metres east of St. Lawrence Street. Well 2 consists of a 49 meter deep drilled groundwater production well, equipped with a submersible deep well pump, with a discharge pipe connecting to the Clearwell in the main pump house described below, including a vented watertight galvanized steel enclosure over the wellhead.

Well 4 is located on the north side of Main Street East approximately 85 metres east of St. Lawrence Street. Well 4 consists of a 50 meter deep drilled groundwater production well, equipped with a submersible deep well pump, connecting to a pipe discharging to the Clearwell in the main pump house described below, including a vented watertight galvanized steel enclosure over the wellhead.

The Main Pump house is comprised of a building located at the site of Well 1, housing treatment, pumping and control equipment. This includes a pump header and appurtenances including a flow meter, discharging into a dual celled Clearwell described below; two centrifugal high lift pumps, one duty pump and one standby pump connected to the pumping station discharge main; and one centrifugal fire pump.

The Clearwell consists of two cells located below and extending behind the main pump house. Clearwell Cell Number 1 is un-baffled, and has a storage volume of 590 cubic meters (m_3). Clearwell Cell 2 is baffled and has a storage volume of 141 m_3.

Treatment

Disinfection is provided using sodium hypochlorite (a liquid form of chlorine) injected into the Clearwell reservoir. One sodium hypochlorite feed system injects sodium hypochlorite solution into the raw water discharge line of Well 1. The second chemical metering system is located in Well House 4 and injects sodium hypochlorite solution into the common raw water discharge line of Wells 2 and 4.

Treatment Chemicals used during the reporting year:

Chemical Name	Use	Supplier
Sodium Hypochlorite	Disinfection	Jutzi

Distribution

The high lift pumps at the main pump house maintain the pressure for the distribution system. There is approximately 8 km of water distribution mains with water service connections, hydrants, valves and manual blow-offs.

Summary of Non-Compliance

Adverse Water Quality Incidents

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
07-24-2024	165448	305 St Lawrence	Total Coliform	3 cfu/100 mL in one distribution Sample	O.Reg. 170/03	Re Sample and test. Resample results 0 Total Coliform

Non-Compliance

Legislation	requirement(s) system failed to meet	duration of the failure (i.e. date(s))	Corrective Action	Status
There were no non-compliance incidents reported during the reporting period.				

Non-Compliance Identified in a Ministry Inspection:

Legislation	requirement(s) system failed to meet	duration of the failure (i.e. date(s))	Corrective Action	Status
There was no actions identified in the received inspection report.				

Flows

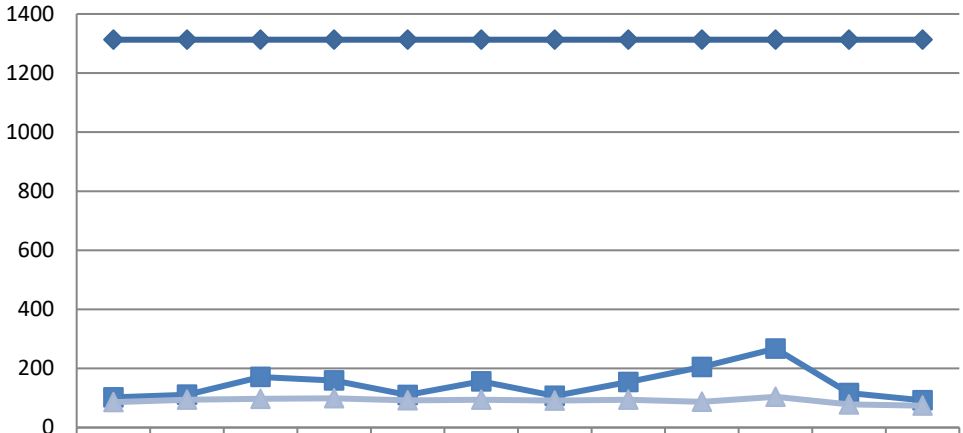
The Merrickville Drinking Water System is operating on average under half the rated capacity.

Raw Water Flows

The Raw Water flows are regulated under the Permit to Take Water. The 2024 Raw Flow Data was submitted to the Ministry electronically under permit #2110-AP9LSG, and the confirmation is attached in Appendix A.

Well # 1 Total Monthly Flows (m3/d)

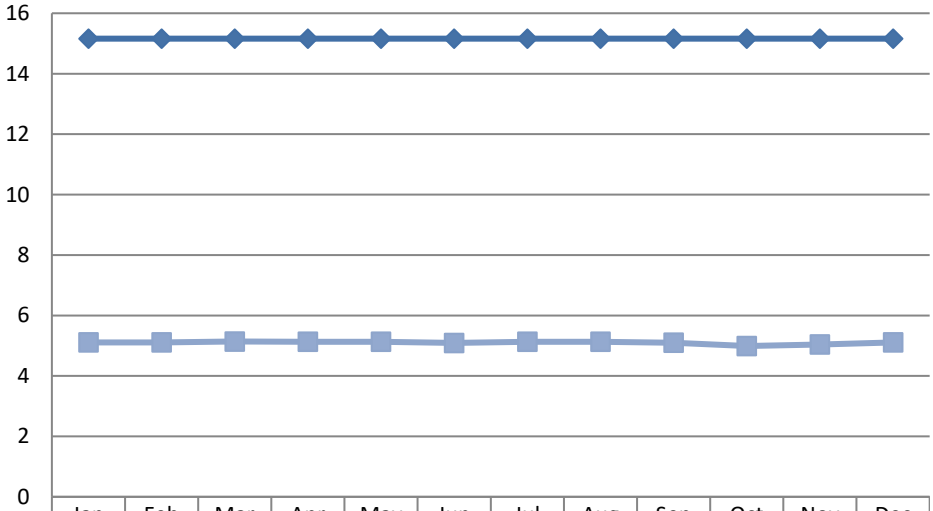
Max Allowable PTTW



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable (m3/d)	1312.9	1312.9	1312.9	1312.9	1312.9	1312.9	1312.9	1312.9	1312.9	1312.9	1312.9	1312.9
Max Flow (m3/d)	102.0	111.0	171.0	159.0	110.0	156.0	107.0	154.0	205.0	267.0	116.7	92.0
Avg (m3/d)	86.0	94.0	97.0	99.0	92.0	94.0	91.0	94.0	87.0	104.0	78.0	74.0

Well #1 Monthly Rated Flows (L/s)

Max allowable rate - PTTW

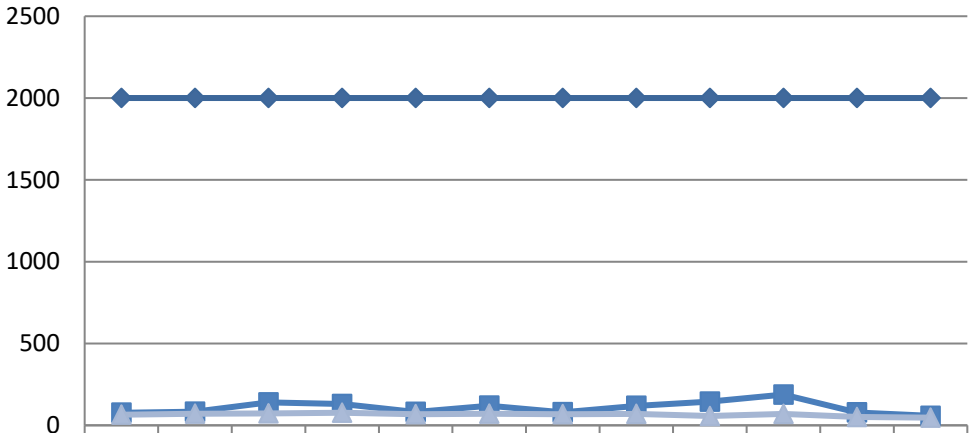


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable Rate (L/sec)	15.16	15.16	15.16	15.16	15.16	15.16	15.16	15.16	15.16	15.16	15.16	15.16
Max Rate (L/s)	5.11	5.11	5.14	5.13	5.13	5.09	5.13	5.13	5.10	4.99	5.04	5.11

*The pump for Well #1 is rated for 7.9 L/s

Well # 2 Total Monthly Flows (m3/d)

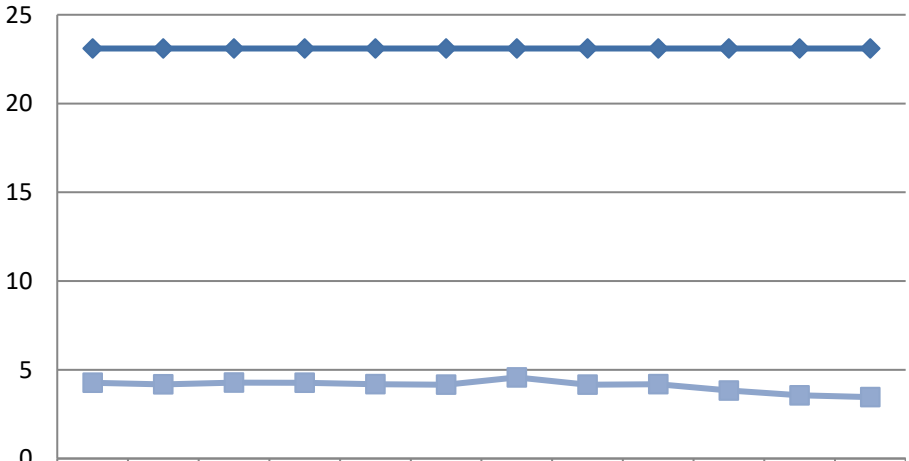
Max Allowable PTTW



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable (m3/d)	2000.2	2000.2	2000.2	2000.2	2000.2	2000.2	2000.2	2000.2	2000.2	2000.2	2000.2	2000.2
Max Flow (m3/d)	77	83	140	130	82	120	80	119	145	188	79	58
Avg (m3/d)	65	71	73	77	68	71	68	70	57	70	51	47

Well #2 Monthly Rated Flows (L/s)

Max allowable rate - PTTW

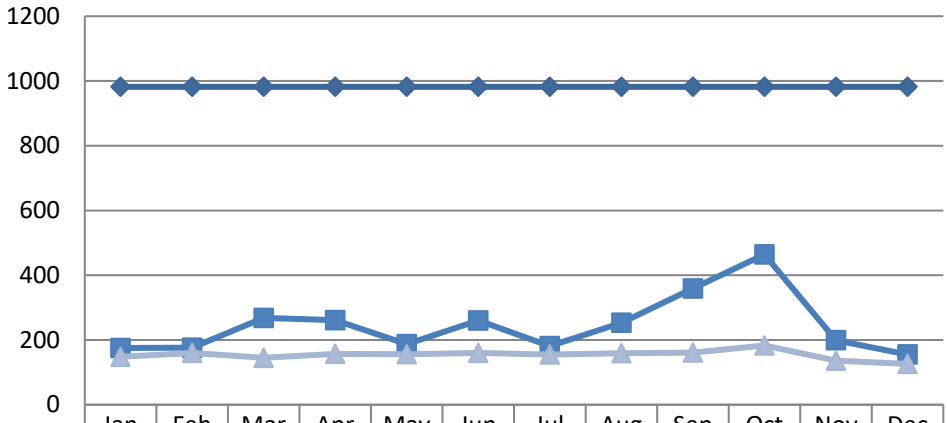


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable Rate (L/sec)	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1
Max Rate (L/s)	4.27	4.18	4.28	4.27	4.19	4.16	4.57	4.16	4.19	3.83	3.56	3.46

*The pump for Well #2 is rated for 4.7 L/s

Well # 4 Total Monthly Flows (m3/d)

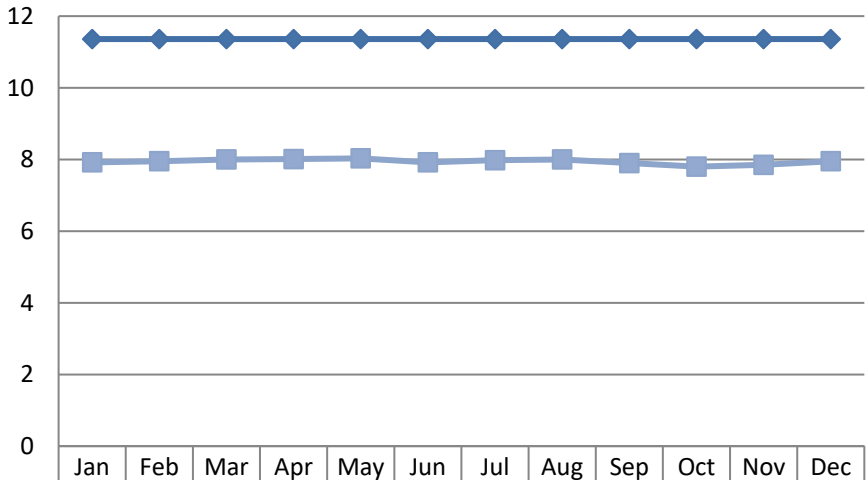
Max Allowable PTTW



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable (m3/d)	981.9	981.9	981.9	981.9	981.9	981.9	981.9	981.9	981.9	981.9	981.9	981.9
Max Flow (m3/d)	175	176	268	261	187	260	181	253	359	464	199	155
Avg (m3/d)	148	160	145	157	156	160	155	159	161	183	136	126

Well #4 Monthly Rated Flows (L/s)

Max allowable rate - PTTW



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable Rate (L/sec)	11.36	11.36	11.36	11.36	11.36	11.36	11.36	11.36	11.36	11.36	11.36	11.36
Max Rate (L/s)	7.92	7.95	8.00	8.01	8.03	7.92	7.98	8.00	7.90	7.80	7.85	7.95

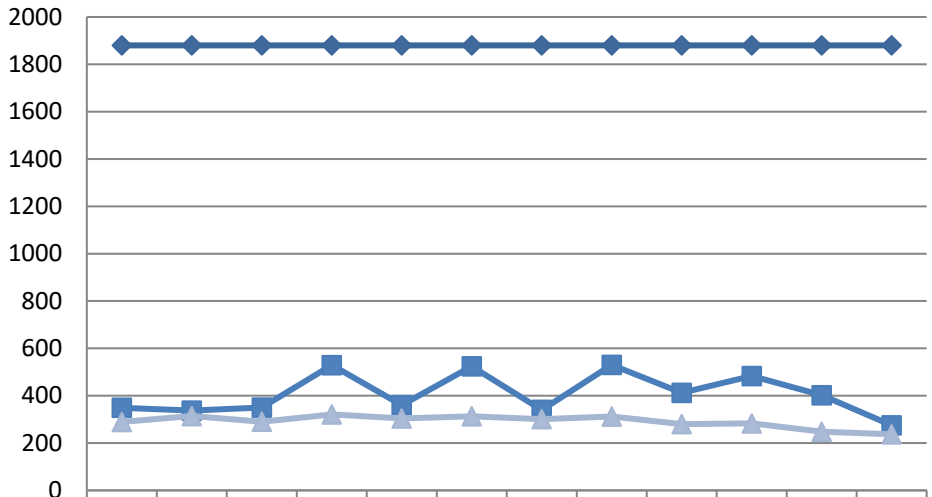
*The pump for Well #4 is rated for 9.2 L/s

Treated Water Flows

The Treated Water flows are regulated under the Municipal Licence.

Monthly Rated Flows

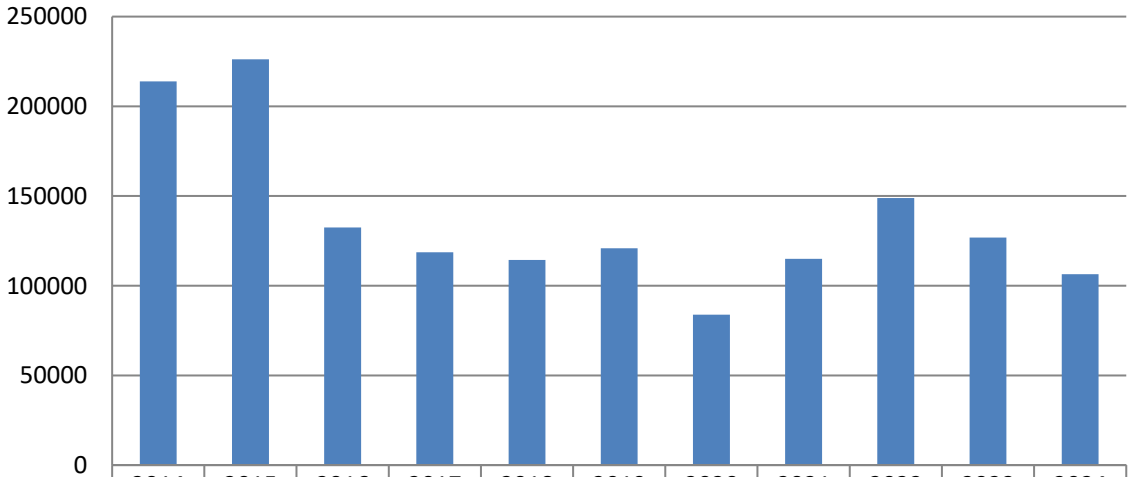
Rated Capacity - MDWL



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rated Capacity (m3/d)	1880	1880	1880	1880	1880	1880	1880	1880	1880	1880	1880	1880
Max Daily Flow (m3/d)	349	337	350	529	360	524	340	530	412	483	402	275
Avg (m3/d)	289	314	290	321	304	313	301	312	280	283	248	237

Annual Total Flow Comparison

Total Annual m^3



	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
WTP (m3)	213849	226161	132492	118662	114313	120908	83842	115012	148898	126817	106406

Regulatory Sample Results Summary

Microbiological Testing

	# of Samples Collected	Range of E.Coli Results		Range of Total Coliform Results		# of HPC Samples	Range of HPC Results	
		Minimum #	Maximum #	Minimum #	Maximum #		Minimum #	Maximum #
RW Well 1	53	0	0	0	0	26	10	70
RW Well 2	53	0	0	0	1	14	2	100
RW Well 4	53	0	0	0	0	11	10	10
Treated Water	54	0	0	0	0	53	10	30
Distribution System	117	0	0	0	1	117	10	240

Operational Testing

Parameter & Sample Type	No. of Samples Collected	Range of Results	
		Minimum	Maximum
Turbidity; In-House (NTU)- RW1	13	0.23	0.68
Turbidity; In-House (NTU)- RW2	13	0.40	0.68
Turbidity; In-House (NTU)- RW4	13	0.36	0.71
Turbidity; In-House (NTU)- TW	4	0.22	0.33
Free Chlorine Residual; DW Field (mg/L) Lab Upload- DW	117	0.30	1.23
Free Chlorine Residual; TW Field (mg/L) Lab Upload- TW	53	0.30	1.42
Free Chlorine Residual; On-Line (mg/L)- DW	8760	0.92	2.00
Free Chlorine Residual; In-House (mg/L)- DW1	52	0.48	1.08
Free Chlorine Residual; In-House (mg/L)- DW2	52	0.30	1.23
Free Chlorine Residual; In-House (mg/L)- TW	70	0.92	1.31
Free Chlorine Residual; On-Line (mg/L)- TW	8760	0.94	1.70

NOTE: spikes recorded by on-line instrumentation were a result of air bubbles and various maintenance/calibration activities. All spikes are reviewed for compliance with O.Reg 170/03

Inorganic Parameters

These parameters are tested as a requirement under 170/03. Sodium and Fluoride are required to be tested every 5 years. Nitrate and Nitrite are tested quarterly and the metals are tested annually as required under 170/03. In the event any of the parameters exceed half of the maximum allowable concentration the parameter is required to be sampled quarterly.

- MAC = Maximum Allowable Concentration as per O.Reg 169/03
- MDL = Method Detection Limit

Treated Water	Sample Date (yyyy/mm/dd)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Antimony: Sb (ug/L) - TW	2024/01/02	< MDL 0.1	6	No	No
Arsenic: As (ug/L) - TW	2024/01/02	0.1	10	No	No
Barium: Ba (ug/L) - TW	2024/01/02	102	1000	No	No
Boron: B (ug/L) - TW	2024/01/02	143	5000	No	No
Cadmium: Cd (ug/L) - TW	2024/01/02	< MDL 0.015	5	No	No
Chromium: Cr (ug/L) - TW	2024/01/02	< MDL 1	50	No	No
Mercury: Hg (ug/L) - TW	2024/01/02	< MDL 0.02	1	No	No
Selenium: Se (ug/L) - TW	2024/01/02	< MDL 1	50	No	No
Uranium: U (ug/L) - TW	2024/01/02	0.9	20	No	No
Additional Inorganics					
Fluoride (mg/L) - TW	2019/01/07	< MDL 0.1	1.5	No	No
Nitrate: (mg/L) - TW	2024/01/02	< MDL 0.05	10	No	No
Nitrate: (mg/L) - TW	2024/04/08	< MDL 0.05	10	No	No
Nitrate: (mg/L) - TW	2024/07/02	< MDL 0.05	10	No	No
Nitrate: (mg/L) - TW	2024/10/01	< MDL 0.05	10	No	No
Nitrite: (mg/L) - TW	2024/01/02	< MDL 0.05	1	No	No
Nitrite: (mg/L) - TW	2024/04/08	0.07	1	No	No
Nitrite: (mg/L) - TW	2024/07/02	< MDL 0.05	1	No	No
Nitrite: (mg/L) - TW	2024/10/01	< MDL 0.05	1	No	No
Sodium / Na (mg/L) - TW	2021/02/01	36.2	20*	Yes	Yes

*There is no MAC for Sodium. The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.

Schedule 15 Sampling:

The Schedule 15 Sampling is required under O.Reg 170/03. This system is under the plumbing exemption. No plumbing samples were collected. Next lead samples due July 2026.

Distribution System	Number of Sampling Points	Number of Samples	Range of Results		MAC (ug/L)	Number of Exceedances
			Minimum	Maximum		
Alkalinity (mg/L)	5	5	270	279	N/A	N/A
pH	5	5	7.00	7.50	N/A	N/A
Lead (ug/l)	3	3	0.00	0.00	10	0

Organic Parameters

These parameters are tested annually as a requirement under O.Reg 170/03. In the event any of the parameters exceed half of the maximum allowable concentration the parameter is required to be sampled quarterly.

Treated Water	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
1,1-Dichloroethylene (ug/L)-TW	2024/01/02	< MDL 0.5	14	No	No
1,2-Dichlorobenzene (ug/L)-TW	2024/01/02	< MDL 0.5	200	No	No
1,2-Dichloroethane (ug/L)-TW	2024/01/02	< MDL 0.5	5	No	No
1,4-Dichlorobenzene (ug/L)-TW	2024/01/02	< MDL 0.5	5	No	No
2,3,4,6-Tetrachlorophenol (ug/L)-TW	2024/01/02	< MDL 0.2	100	No	No
2,4,6-Trichlorophenol (ug/L)-TW	2024/01/02	< MDL 0.2	5	No	No
2,4-Dichlorophenol (ug/L)-TW	2024/01/02	< MDL 0.2	900	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L)-TW	2024/01/02	< MDL 1	100	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA) (ug/L)-TW	2024/01/02	< MDL 10	100	No	No
Alachlor (ug/L) -TW	2024/01/02	< MDL 0.3	5	No	No
Atrazine + N-dealkylated metabolites (ug/L)-TW	2024/01/02	< MDL 0.5	5	No	No
Azinphos-methyl (ug/L)-TW	2024/01/02	< MDL 1	20	No	No
Benzene (ug/L)-TW	2024/01/02	< MDL 0.5	1	No	No
Benzo(a)pyrene (ug/L)-TW	2024/01/02	< MDL 0.006	0.01	No	Yes
Bromoxynil (ug/L)-TW	2024/01/02	< MDL 0.5	5	No	No
Carbaryl (ug/L)-TW	2024/01/02	< MDL 3	90	No	No
Carbofuran (ug/L) -TW	2024/01/02	< MDL 1	90	No	No
Carbon Tetrachloride (ug/L) -TW	2024/01/02	< MDL 0.2	2	No	No
Chlorpyrifos (ug/L) -TW	2024/01/02	< MDL 0.5	90	No	No
Diazinon (ug/L)-TW	2024/01/02	< MDL 1	20	No	No
Dicamba (ug/L)-TW	2024/01/02	< MDL 1	120	No	No
Dichloromethane (Methylene Chloride) (ug/L)-TW	2024/01/02	< MDL 5	50	No	No
Diclofop-methyl (ug/L)-TW	2024/01/02	< MDL 0.9	9	No	No
Dimethoate (ug/L)-TW	2024/01/02	< MDL 1	20	No	No
Diquat (ug/L)-TW	2024/01/02	< MDL 5	70	No	No
Diuron (ug/L)-TW	2024/01/02	< MDL 5	150	No	No
Glyphosate (ug/L)-TW	2024/01/02	< MDL 25	280	No	No
Malathion (ug/L)-TW	2024/01/02	< MDL 5	190	No	No
Metolachlor (ug/L)-TW	2024/01/02	< MDL 3	50	No	No
Metribuzin (ug/L)-TW	2024/01/02	< MDL 3	80	No	No
Paraquat (ug/L)-TW	2024/01/02	< MDL 1	10	No	No
PCB (ug/L)-TW	2024/01/02	< MDL 0.05	3	No	No
Pentachlorophenol (ug/L)-TW	2024/01/02	< MDL 0.2	60	No	No

Treated Water	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Phorate (ug/L)-TW	2024/01/02	< MDL 0.3	2	No	No
Picloram (ug/L)-TW	2024/01/02	< MDL 5	190	No	No
Prometryne (ug/L)-TW	2024/01/02	< MDL 0.1	1	No	No
Simazine (ug/L)-TW	2024/01/02	< MDL 0.5	10	No	No
Terbufos (ug/L)-TW	2024/01/02	< MDL 0.5	1	No	No
Tetrachloroethylene (ug/L)-TW	2024/01/02	< MDL 0.5	10	No	No
Triallate (ug/L) -TW	2024/01/02	< MDL 10	230	No	No
Trichloroethylene (ug/L)-TW	2024/01/02	< MDL 0.5	5	No	No
Trifluralin (ug/L)-TW	2024/01/02	< MDL 0.5	45	No	No
Vinyl Chloride (ug/L)-TW	2024/01/02	< MDL 0.2	1	No	No
HAA Total (ug/L) RAA* -DW	2024	4.825	80	No	No
Trihalomethane: Total (ug/L) RAA*-DW	2024	16.75	100	No	No

*RAA=Running Annual Average

Additional Legislated Samples

There was no additional sampling required.

Major Maintenance Summary

Work order	Description
4194554	Well 4 SCADA integration.
3761620	Suction pipe replacement.
3761617	Clear well clean out.
4093035	Cooling fan for fire pump VFD.
4191498	Generator Annual Inspection.
4194024	Generator Fuel Lines.
3761618	Drinking water chlorine analyzer replacement.

Distribution Maintenance

Work order	Description
Client Project	Residential Water Meter Replacement Program by client, 380 installed in 2024.
Client Project	Evaluating options for alternant river crossing.
Client Project	Parkview and Lewis St W homes.
4279662	Distribution allowance parts, Stand posts, Stems and meter replacement work.
3761599	Hydrant replacement and service install.

Appendix A

WTRS Data and Submission Confirmation