2024 DRINKING WATER SYSTEMS ANNUAL WATER QUALITY AND SUMMARY REPORT

Ontario Regulation 170/03 Section 11 & Schedule 22

Hamilton

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1 INTRODUCTION

A key priority of the City of Hamilton is to ensure a safe, high-quality, consistent drinking water supply to our residents. This report for municipalities has been prepared in accordance with the Safe Drinking Water Act, Ontario Regulation 170/03, Section 11, and Schedule 22 for 2024.

The City of Hamilton is the owner of the following Drinking Water Systems:

Drinking Water System (DWS)	Drinking Water System Number	Municipal Drinking Water Licence Number	Drinking Water Works Permit Number	Permit to Take Water Number
Hamilton DWS, Woodward Subsystem	220003118	005-101	005-201	2437-BCLNEJ
Hamilton DWS, Fifty Road Subsystem	260069173	005-101	005-201	N/A
Freelton DWS	220004117	005-102	005-202	4650-BB2HXG (FDF01 & FDF03)
Greensville DWS	220004126	005-103	005-203	P-300-8263989068 (FDG01)
Carlisle DWS	220004108	005-104	005-204	4347-BYPPG2 (FDC01 & FDC02)
				8228-AJZK9H (FDC03R)
				4207-AJZJ4L (FDC05)
Lynden DWS	250001830	005-105	005-205	0634-ASERU8 (FDL01 & FDL03)

There were no Provincial Officer’s Orders issued with regard to drinking water. All Adverse Water Quality Incidents (AWQI) were reported to the Ontario Ministry of Environment, Conservation and Parks (MECP) Spills Action Centre (SAC) and Public Health Services (PHS) and are provided in this report. All water-taking quantities and flow rates were within approved rated capacities and provincial water-taking limits.

The MECP Inspection Cycle spans two (calendar) years, from April 1 to March 31. Ratings are given upon completion of the inspection and the issuance of the Inspection Report. Ratings for the two inspection cycles that occurred in 2024 are as follows.

TABLE 1.1: 2023 - 2024 INSPECTION CYCLE RATINGS (STATUS AS OF DECEMBER 31, 2024)

Drinking Water System (DWS)	Inspection Status	Report Status	Inspection Rating (2023/2024)
Hamilton DWS, Woodward Subsystem	Complete	Complete	96.64%
Hamilton DWS, Fifty Road Subsystem	Complete	Complete	98.15%
Freelton DWS	Complete	Complete	99.13%
Greensville DWS	Complete	Complete	99.91%
Carlisle DWS	Complete	Complete	95.64%
Lynden DWS	Complete	Complete	94.88%

TABLE 1.2: 2024 - 2025 INSPECTION CYCLE RATINGS (STATUS AS OF DECEMBER 31, 2024)

Drinking Water System (DWS)	Inspection Status	Report Status	Inspection Rating (2024/2025)
Hamilton DWS, Woodward Subsystem	Commenced	Pending	Pending
Hamilton DWS, Fifty Road Subsystem	Complete	Complete	98.93%
Freelton DWS	Complete	Complete	100.00%
Greensville DWS	Commenced	Pending	Pending
Carlisle DWS	Complete	Complete	97.20%
Lynden DWS	Commenced	Pending	Pending

1.1 ANNUAL REPORTS

The Drinking Water Annual Report required under Ontario Regulation 170/03 Section 11, and Schedule 22 is provided to all drinking water system owners who are connected to the system and to whom we provide drinking water.

Hamilton residents are notified through the local newspaper that the annual report is available at no charge at **www.hamilton.ca/WaterQuality** and can request a copy by contacting (905) 546-2489 or ww_csr@hamilton.ca. The Report is available for inspection at 700 Woodward Avenue, Administration Building, Compliance Support Group.

1.2 WATER QUALITY AND OPERATIONAL TESTING

Appendix A.1 of this report includes a summary of the water quality and operational testing results for each drinking water system.

1.3 SUMMARY OF MONETARY EXPENSES INCURRED IN 2024

In February 2024, due to a cybersecurity incident, the City of Hamilton experienced an information technology (IT) outage that impacted multiple systems across the City's network. While some systems have returned since the incident, the work order system and databases that held information related to expenses associated with the drinking water systems have not been restored.

2 HAMILTON DRINKING WATER SYSTEM, WOODWARD SUBSYSTEM WATER QUALITY ANNUAL REPORT

2.1 GENERAL INFORMATION

The Hamilton Drinking Water System, Woodward Subsystem (Woodward Subsystem), is a large municipal residential system that supplies a significant portion of Hamilton's population with drinking water.

The population it serves is approximately 569,353 within Hamilton, Stoney Creek, Dundas, Ancaster, Waterdown, and Glanbrook. The Woodward Subsystem also supplies treated water to parts of Haldimand County (Caledonia, York, and Cayuga) and parts of Halton Region.

The Woodward Avenue Water Treatment Plant has two raw water intake pipes (1.52 m and 2.44 m in diameter). To begin the treatment process, raw water is drawn from Lake Ontario at 915 m and 945 m.

Drinking Water System Number	Drinking Water System (DWS) Name	Drinking Water System Owner	Drinking Water System Category	Reporting Period
220003118	Hamilton DWS, Woodward Subsystem	City of Hamilton	Large Municipal Residential	January 1, 2024 to December 31, 2024

2.1.1 TREATMENT

- The raw water intake pipes have the ability to add chlorine for zebra mussel control when needed.
- The low-lift pumping station has three travelling screens, through which debris is removed before the water is pumped to the Woodward Avenue Water Treatment Plant.
- At the pre-treatment stage, polyaluminum chloride is added to the water to coagulate suspended solids. Additional chlorine is also added at this stage to ensure disinfection.
- The water is clarified by flocculation and sedimentation, then filtration using sand and granulated activated carbon media filters.
- Chlorine, ammonia, hydrofluorosilic acid (fluoride) and phosphoric acid are added before the treated water is sent to the distribution system. Chlorine is added as the primary means to ensure disinfection. Ammonia is added to convert the chlorine to mono-chloramine to help maintain stable chlorine residuals in the distribution system. Hydrofluorosilic acid is added to the drinking water to promote dental health, and phosphoric acid is added to help reduce lead corrosion.
- Pumps within the high-lift pumping station convey water from the Woodward Avenue Water Treatment Plant to the distribution system.

2.1.2 DISTRIBUTION

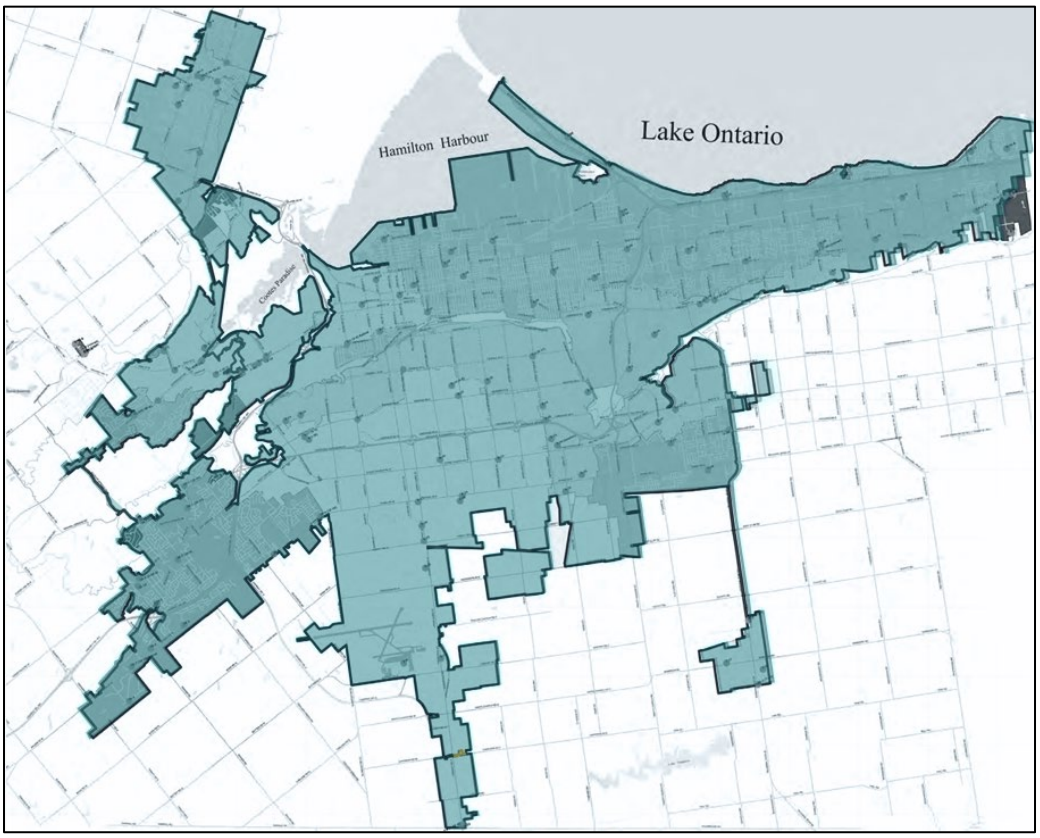
The Woodward Subsystem consists of 22 pumping stations, 10 reservoirs, four elevated storage tanks, one standpipe, and approximately 2,130 km of water mains.

2.1.3 SAMPLING AND ANALYSIS

Continuous monitoring equipment such as chlorine analyzers, turbidity meters, fluoride and phosphate analyzers monitor the water 24/7 to ensure the maintenance of high-quality drinking water. Raw water is sampled and analyzed weekly and treated water is

sampled and analyzed six days per week. Distribution water is sampled and analyzed five days per week with chlorine residual in the distribution system analyzed daily.

2.1.4 MAP OF DRINKING WATER SYSTEM



2.2 CORROSION CONTROL PROGRAM

On November 8, 2018, orthophosphate was added for corrosion control in the Hamilton Drinking Water System, Woodward Subsystem. Corrosion control is mandated and approved by the MECP. This program is intended to mitigate potential exposure to lead that may leach into drinking water from lead pipes, lead-based fixtures, and lead solder. Included as part of the program is a regulatory post-implementation sampling and monitoring plan to check the progress and effectiveness of the program for lead control.

Since program implementation, 12 rounds of the legislated Community Lead Sampling Program required by Schedule 15.1 of Ontario Regulation 170/03 have occurred. The sampling results demonstrate a reduction in lead concentrations and a decreasing trend in the percentage of samples above the Maximum Acceptable Concentration (MAC) of 10 ug/L set by Ontario Regulation 169/03.

System-wide corrosion control sampling continued in 2024 and provides monitoring data beyond the regulatory requirements for the entire Woodward distribution system. This branch of the monitoring program allows for system-wide surveillance of orthophosphate levels and potential secondary impacts. In the event of an observed

anomaly, flushing and enhanced sampling are initiated to determine the cause, and appropriate action is taken.

The plant optimization dosing performance study continued in 2024, producing recommendations to begin the first phase of orthophosphate concentration reduction and move towards a maintenance dosage. In October 2024, the target orthophosphate concentration was reduced from 2.10 mg/L to 1.90 mg/L at the point of entry into the distribution system. The study will continue in 2025 and provide additional recommendations as Hamilton Water moves towards a maintenance dose.

In March 2024, the MECP received the Corrosion Control Program Annual Report summarizing the program's overall effectiveness. Since the addition of orthophosphate began, ongoing proactive flushing of the distribution system has been performed. The City of Hamilton continues to meet the regulatory requirements of the Corrosion Control Program, and minimal secondary impacts have been observed. Continual improvement to the program includes reviewing industry best practices and recommendations from consultant technical reports.

2.3 PROVISION OF DRINKING WATER TO OTHER MUNICIPALITIES

The following is a list of municipal drinking water systems that receive drinking water from the Hamilton Drinking Water System, Woodward Subsystem:

Drinking Water System Name	Drinking Water System Number
Caledonia/Cayuga/York Water Distribution System	260004566
North Aldershot Water Distribution System	260086762
Snake Road Water Distribution System	260086775
Bridgeview Community Water Distribution System	260068419

2.4 WATER TREATMENT CHEMICALS USED DURING THIS REPORTING PERIOD

- polyaluminum chloride
- liquid chlorine
- aqueous ammonia
- hydrofluorosilicic acid
- phosphoric acid

2.5 BREAKDOWN OF SIGNIFICANT MONETARY EXPENSES

In February 2024, the City of Hamilton experienced an IT outage that impacted multiple systems across its network. It was determined that the outage was a result of a

cybersecurity incident. While some systems have returned since the incident, the work order system and databases that held information related to expenses associated with the drinking water system have not been restored.

The following projects involving the installation, repair or replacement of required equipment took place in 2024
Garner Road Pumping Station (HD018) Upgrades

2.6 ADVERSE TEST RESULTS AND REPORTABLE INCIDENTS

The following outlines the notices submitted in accordance with subsection 18(1) of the Safe Drinking Water Act or section 16-4 of Schedule 16 of O.Reg. 170/03 and reported to the MECP SAC.

Notification Date (y-m-d)	Location	Adverse Water Quality Incident	Resolution
2024-05-09	A-SS-12, 237 Manitou Way, Optimist Park	Total Coliforms = Present (Regulatory requirement is Not Detectable)	Resampled adverse location, one upstream and one downstream location. All results passed.
2024-05-16	D-SS-11, 57 Hillside Ave.	Total Coliforms = Present (Regulatory requirement is Not Detectable)	Resampled adverse location, one upstream and one downstream location. All results passed.
2024-05-21	297 Woodworth Ave.	Improper disinfection resulting from a Category 2 watermain break with potential/suspected sewage contamination.	Drinking Water Advisory was issued to affected homes. A disinfection plan was prepared in consultation with Public Health Services and approved by the MECP. Eight microbiological samples were collected, and all results passed.
2024-05-23	HDR2A Bowman Scenic Reservoir	Lead = 0.0166 mg/L (Maximum Acceptable Concentration: 0.010 mg/L)	Resampled adverse location. Result passed.

Notification Date (y-m-d)	Location	Adverse Water Quality Incident	Resolution
2024-05-27	Post Hydrant SB01H090P, 195 Constellation Dr.	Total Chlorine = 0.12 mg/L Free Chlorine = 0.02 mg/L Combined Chlorine = 0.10 mg/L (Regulatory requirement is minimum Combined Chlorine of 0.25 mg/L or Free Chlorine of 0.05 mg/L)	The watermain was flushed to restore chlorine.
2024-06-19	D-SS-09, 51 Robinhood Dr.	Total Coliforms = Present (Regulatory requirement is Not Detectable)	Resampled adverse location, one upstream and one downstream location. All results passed.
2024-06-25	7-15, Pumping Station HD007, 293 Highland Rd. W.	Total Coliforms = Present (Regulatory requirement is Not Detectable)	Resampled adverse location, one upstream and one downstream location. All results passed.
2024-07-23	H-SS-37, Opposite 54 Mars Ave.	Total Chlorine = 0.13 mg/L Free Chlorine = 0.02 mg/L Combined Chlorine = 0.11 mg/L (Regulatory requirement is minimum Combined Chlorine of 0.25 mg/L or Free Chlorine of 0.05 mg/L)	The watermain was flushed to restore chlorine.
2024-07-26	H-SS-32, 363 Wellington St. N.	Total Coliforms = Present (Regulatory requirement is Not Detectable)	Resampled adverse location, one upstream and one downstream location. All results passed.

Notification Date (y-m-d)	Location	Adverse Water Quality Incident	Resolution
2024-08-28	H-SS-39, Opposite 265 South Bend Rd. E.	Total Coliforms = Present (Regulatory requirement is Not Detectable)	Resampled adverse location, one upstream and one downstream location. All results passed.
2024-09-13	H-SS-37, Opposite 54 Mars Ave.	Total Chlorine = 0.08 mg/L Free Chlorine = 0.00 mg/L Combined Chlorine = 0.08 mg/L (Regulatory requirement is minimum Combined Chlorine of 0.25 mg/L or Free Chlorine of 0.05 mg/L)	The watermain was flushed to restore chlorine.
2024-09-14	H-SS-32, 363 Wellington St N.	Total Coliforms = Present (Regulatory requirement is Not Detectable)	Resampled adverse location, one upstream and one downstream location. The result failed at the original adverse location, which resulted in another AWQI on September 15.
2024-09-15	H-SS-32, 363 Wellington St. N.	Total Coliforms = 1 MPN/100mL (Regulatory requirement is Not Detectable)	The original adverse location was resampled, with one upstream and one downstream location. Two consecutive sets of samples were taken 24 to 48 hours apart. All results passed.
2024-09-25	Hydrant HA42H016, Devon Pl.	Total Coliforms = Present (Regulatory requirement is Not Detectable)	Resampled adverse location, one upstream and one downstream location. The result failed at the original adverse location, which resulted in another AWQI on September 26.

Notification Date (y-m-d)	Location	Adverse Water Quality Incident	Resolution
2024-09-26	Hydrant HA42H016, Devon Pl.	Total Coliforms = 1 MPN/100mL (Regulatory requirement is Not Detectable)	Resampled adverse location, one upstream and one downstream location. The result failed at the original adverse location, which resulted in another AWQI on September 27.
2024-09-27	Hydrant HA42H016, Devon Pl.	Total Coliforms = 2 MPN/100mL (Regulatory requirement is Not Detectable)	The original adverse location was resampled, with one upstream and one downstream location. Two consecutive sets of samples were taken 24 to 48 hours apart. All results passed.
2024-10-15	GF12V310, 3105 Fletcher Rd.	Total Chlorine = 0.09 mg/L Free Chlorine = 0.01 mg/L Combined Chlorine = 0.08 mg/L (Regulatory requirement is minimum Combined Chlorine of 0.25 mg/L or Free Chlorine of 0.05 mg/L)	The watermain was flushed to restore chlorine.
2024-11-09	H-SS-32, 363 Wellington St. N.	Total Coliforms = Present (Regulatory requirement is Not Detectable)	Resampled adverse location, one upstream and one downstream location. All results passed.
2024-12-12	H-SS-32, 363 Wellington St. N.	Total Coliforms = Present (Regulatory requirement is Not Detectable)	Resampled adverse location, one upstream and one downstream location. All results passed.

2.7 MECP INSPECTION FINDINGS AND SELF-DECLARED NON-COMPLIANCES

The following is a summary of findings that were either issued during a MECP inspection or self-declared during the 2024 calendar year.

The 2023-2024 inspection report was completed on March 4, 2024. The findings of non-compliance are reported in the table below.

The 2024-2025 inspection commenced, and the report remains pending as of December 31, 2024.

2023-2024 MECP INSPECTION REPORT NON-COMPLIANCES, MARCH 4, 2024

#	Finding Type	Finding	Status
1	Non-compliance	The City shall ensure that only certified operators are operating the DWS, in accordance with the regulations.	Action Complete
2	Non-compliance	Logbooks were not properly maintained and/or did not contain the required information.	Action Complete
3	Non-compliance	1. Standard operating procedures were not implemented as per Municipal Drinking Water Licence 2. No evidence that actions were taken after a recommendation from a consultant report regarding the DWS.	Action Complete

SELF-DECLARED NON-COMPLIANCES

#	Finding Type	Finding	Status
1	Self-declared Non-compliance	1. The lead sampling results were not delivered to one (1) occupant, where a sample was taken from their tap. 2. Canada Post did not deliver notices to four (4) occupants of premises where a sample was taken from their tap.	Action in process

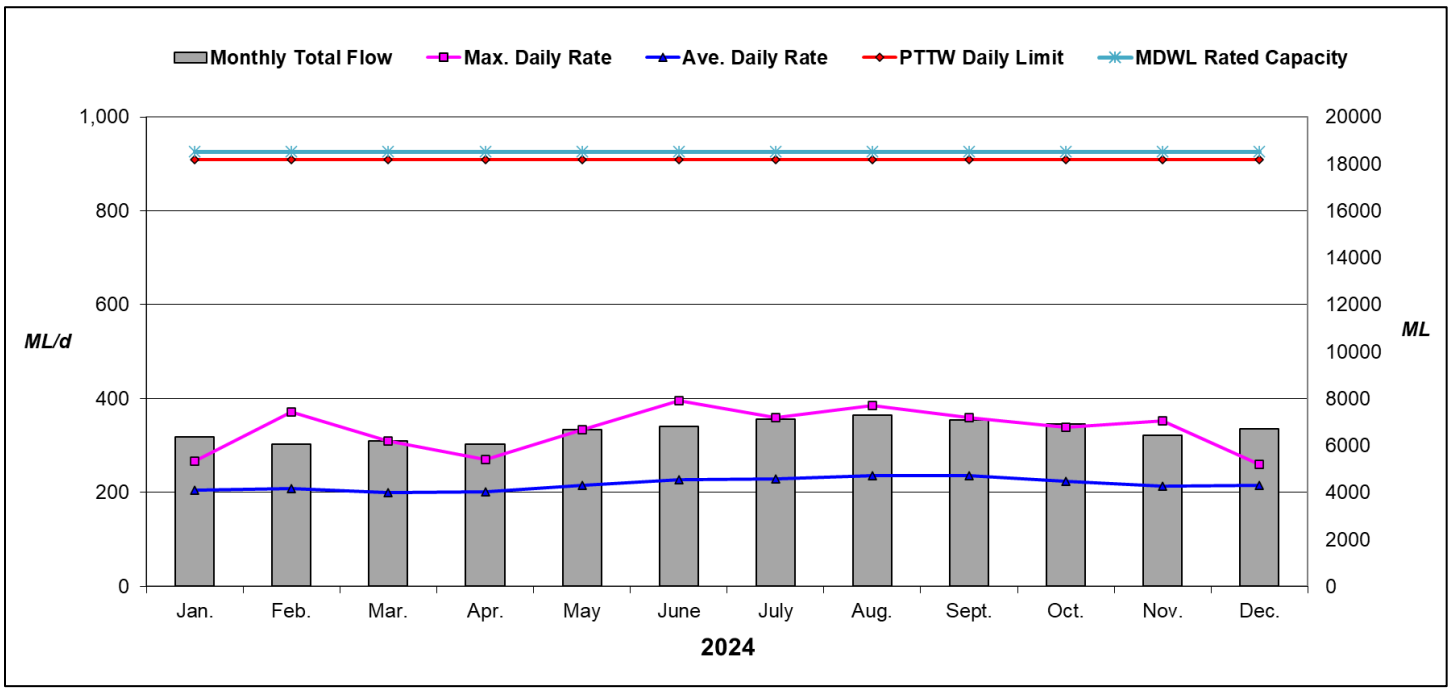
2.8 WATER PRODUCTION REPORTS - SUMMARY

The following provides a summary of daily flow rates and instantaneous peak flow rates in comparison to the capacity of the waterworks as identified in the Permit to Take Water (PTTW) and Municipal Drinking Water Licence (MDWL). This information is tabulated in the accompanying tables.

TABLE 2.1: WOODWARD TREATMENT PLANT – 2024 MONTHLY PRODUCTION (SUMMARY)

Month	Monthly Total Flow (ML)	Average Daily Rate (ML/d)	Maximum Daily Rate (ML/d)	PTTW Daily Limit (ML/d)	MDWL Daily Rated Capacity (ML/d)
January	6,352	205	266	909	926
February	6,045	208	371	909	926
March	6,183	199	310	909	926
April	6,052	202	271	909	926
May	6,668	215	334	909	926
June	6,831	228	396	909	926
July	7,117	230	360	909	926
August	7,295	235	385	909	926
September	7,088	236	360	909	926
October	6,924	223	339	909	926
November	6,434	214	353	909	926
December	6,696	216	259	909	926

FIGURE 2.1: WOODWARD TREATMENT PLANT – 2024 MONTHLY PRODUCTION (SUMMARY)



3 HAMILTON DRINKING WATER SYSTEM, FIFTY ROAD SUBSYSTEM WATER QUALITY ANNUAL REPORT

3.1 GENERAL INFORMATION

The municipal water supply for this area is supplied by the Town of Grimsby's water distribution system and serves an approximate population of 201 residents. Treated water is provided from Grimsby, west along Highway 8, then south on Fifty Road to Concession Road and to an underground, 1,100 m³ storage reservoir operated by the City of Hamilton. The reservoir on Reservoir Park Road supplies water to the residents.

Drinking Water System Number	Drinking Water System Name	Drinking Water System Owner	Drinking Water System Category	Reporting Period
260069173	Hamilton Drinking Water System, Fifty Road Subsystem	City of Hamilton	Small Municipal Residential	January 1, 2024 to December 31, 2024

For more information on the Town of Grimsby's Quality Management System, Drinking Water Quality Management System Policy, Licences/Permits, Operational Plan and Annual Drinking Water Quality Report, please visit **www.grimsby.ca**.

3.1.1 TREATMENT

- Water is treated by Grimsby and the Hamilton reservoir acts as a free chlorine contact chamber to ensure disinfection of the water. Chlorine residual in the reservoir is maintained by a rechlorination system.
- Fluoride and orthophosphate are not added to the water supplied by the Town of Grimsby.

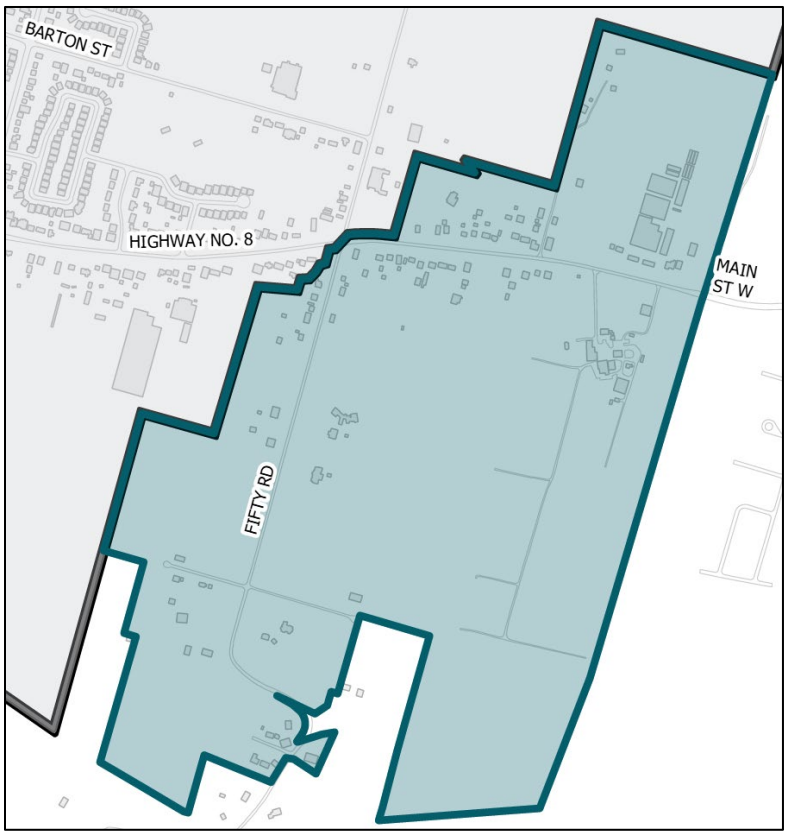
3.1.2 DISTRIBUTION

A pump running continuously maintains the distribution system's water pressure. Water pumped in excess of system demand is circulated back to the reservoir.

3.1.3 SAMPLING AND ANALYSIS

The distribution system's water is sampled and analyzed once a week, and the chlorine residual is analyzed twice a week.

3.1.4 MAP OF DRINKING WATER SYSTEM



3.2 PROVISION OF DRINKING WATER TO OTHER MUNICIPALITIES

No municipal drinking water systems receive water from the Hamilton Drinking Water System, Fifty Road Subsystem.

3.3 WATER TREATMENT CHEMICALS USED DURING THIS REPORTING PERIOD

- sodium hypochlorite (chlorine)

3.4 BREAKDOWN OF SIGNIFICANT MONETARY EXPENSES

There were no significant expenses incurred for installing, repairing and replacing required equipment in 2024. There were no significant projects initiated or expenses to highlight for the Hamilton Drinking Water System, Fifty Road Subsystem in 2024.

3.5 ADVERSE TEST RESULTS AND REPORTABLE INCIDENTS

The following outlines the notices submitted in accordance with subsection 18(1) of the Safe Drinking Water Act or section 16-4 of Schedule 16 of O.Reg. 170/03 and reported to the MECP SAC.

There were no Adverse Water Quality Incidents from January 1, 2024, to December 31, 2024.

3.6 MECP INSPECTION FINDINGS AND SELF-DECLARED NON-COMPLIANCES

The following is a summary of findings that were either issued during a MECP inspection or self-declared during the 2024 calendar year.

The 2024-2025 inspection report was completed on September 17, 2024. The findings of non-compliance are reported in the table below.

2024-2025 MECP INSPECTION REPORT NON-COMPLIANCES, SEPTEMBER 17, 2024

#	Finding Type	Finding	Status
1	Non-compliance	Logbooks were not properly maintained and/or did not contain the required information.	Action in process

SELF-DECLARED NON-COMPLIANCES

No self-declared non-compliances were reported for the Hamilton Drinking Water System, Fifty Road Subsystem in 2024.

3.7 WATER PRODUCTION REPORTS – SUMMARY

The Memorandum of Understanding between the Town of Grimsby and the City of Hamilton does not include a rated capacity. The City of Hamilton is working with the Town of Grimsby and the Niagara Region to negotiate a Water Supply Agreement.

4 FREELTON DRINKING WATER SYSTEM WATER QUALITY ANNUAL REPORT

4.1 GENERAL INFORMATION

The Freelton Drinking Water System consists of two-wells, each with their own treatment facility, one elevated water storage tank, sampling and analysis. This system serves an approximate population of 804 residents. Groundwater is the municipal water source for the community of Freelton.

Drinking Water System Number	Drinking Water System Name	Drinking Water System Owner	Drinking Water System Category	Reporting Period
220004117	Freelton Drinking Water System FDF01, FDF03	City of Hamilton	Large Municipal Residential	January 1, 2024 to December 31, 2024

4.1.1 WATER WELLS

- Well FDF01 is a 250 mm diameter, approximately 21-metre-deep drilled groundwater well.
- Well FDF03 is a 300 mm diameter, approximately 50-metre-deep drilled groundwater well.

4.1.2 TREATMENT

- Sodium hypochlorite (chlorine) is used at each well location within a free chlorine contact chamber to ensure disinfection of the water prior to it entering the distribution system.
- Fluoride and orthophosphate are not added as part of the treatment process.

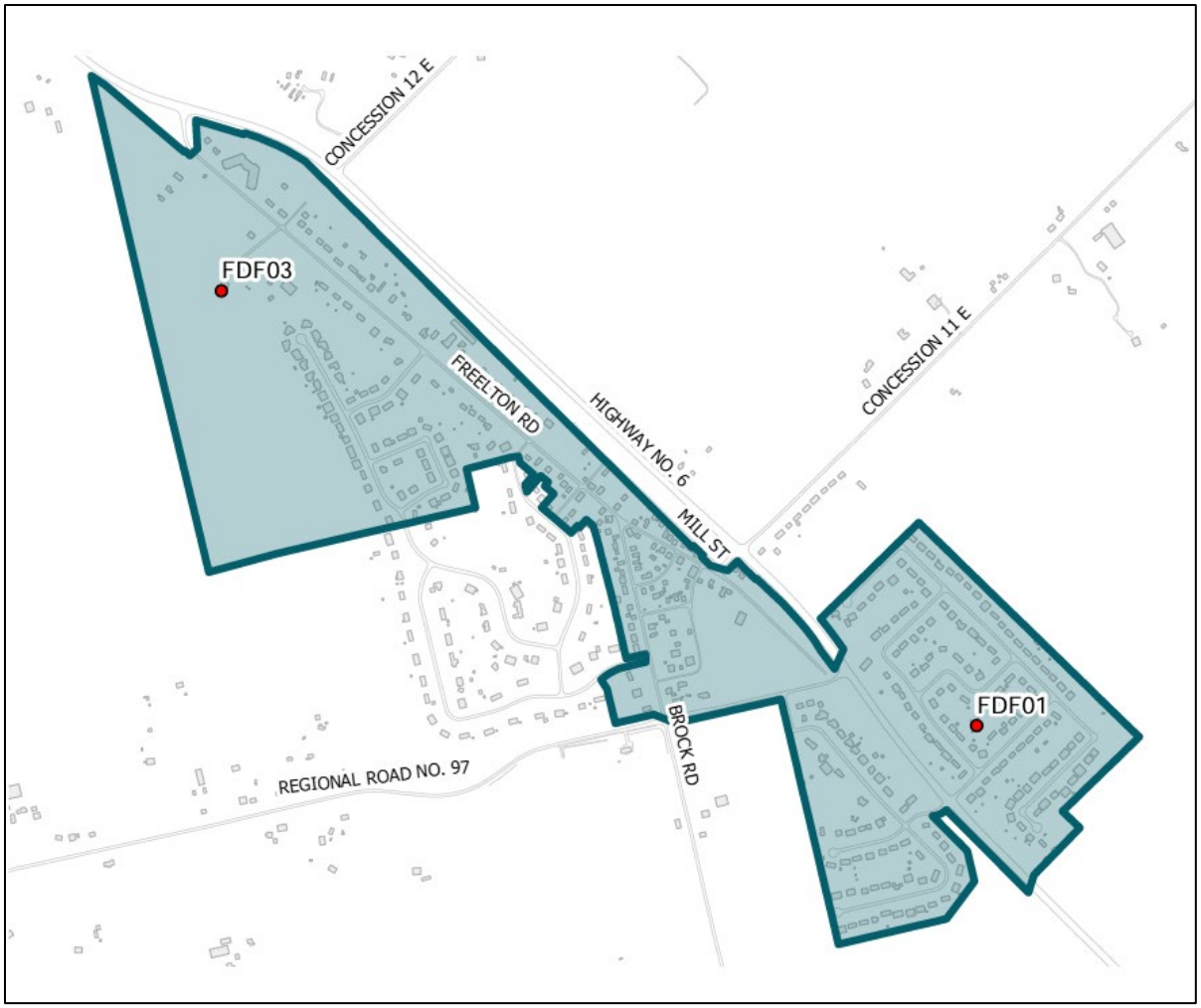
4.1.3 WATER STORAGE

An elevated water storage tank with an operating capacity of 2,840 m³ is available for peak-hour water demand equalization and fire and emergency storage.

4.1.4 SAMPLING AND ANALYSIS

On-line chlorine residual and turbidity analyzers continually monitor the treatment process and water quality. Raw, treated, and distributed water is sampled and analyzed weekly, and chlorine residual in the distribution system is analyzed daily.

4.1.5 MAP OF FREELTON DRINKING WATER SYSTEM



4.2 PROVISION OF DRINKING WATER TO OTHER MUNICIPALITIES

No municipal drinking water systems receive drinking water from the Freelton Drinking Water System.

4.3 WATER TREATMENT CHEMICALS USED DURING THIS REPORTING PERIOD

- sodium hypochlorite (chlorine)

4.4 BREAKDOWN OF SIGNIFICANT MONETARY EXPENSES

There were no significant expenses incurred for installing, repairing and replacing required equipment in 2024. There were no significant projects initiated or expenses to highlight for the Freelton Drinking Water System in 2024.

4.5 ADVERSE TEST RESULTS AND REPORTABLE INCIDENTS

The following outlines the notices submitted in accordance with subsection 18(1) of the Safe Drinking Water Act or section 16-4 of Schedule 16 of O.Reg. 170/03 and reported to the MECP SAC.

Notification Date (y-m-d)	Location	Adverse Water Quality Incident	Resolution
2024-08-28	F-SS-B, Logan Ct., and Wildan Dr.	Total Coliforms = Present (Regulatory requirement is Not Detectable)	Resampled adverse location, one upstream and one downstream location. All results passed.
2024-10-30	F-SS-C, Wildan Dr.	Total Coliforms = Present (Regulatory requirement is Not Detectable)	Resampled adverse location, one upstream and one downstream location. All results passed.

4.6 MECP INSPECTION FINDINGS AND SELF-DECLARED NON-COMPLIANCES

The following is a summary of findings that were either issued during a MECP inspection or self-declared during the 2024 calendar year.

The 2023-2024 inspection report was completed on January 17, 2024, and the findings of non-compliance are reported in the table below.

The 2024-2025 inspection report was completed on November 12, 2024. There were no findings of non-compliance for the inspection year.

2023-2024 MECP INSPECTION REPORT, JANUARY 17, 2024

#	Finding Type	Finding	Status
1	Non-compliance	Logbooks were not properly maintained and/or did not contain the required information.	Action Complete
2	Non-compliance	During the review of the logs and records, it was noted that on two occasions alarms were not recorded in the logbooks, operators did not immediately respond to alarms, and during the 72-hour review, continuous monitoring data was not examined in detail.	Action Complete

SELF-DECLARED NON-COMPLIANCES

No self-declared non-compliances were reported for the Freelton Drinking Water System in 2024.

4.7 WATER PRODUCTION REPORTS – SUMMARY

The following provides a summary of daily flow rates and instantaneous peak flow rates in comparison to the capacity of the waterworks as identified in the Permit to Take Water (PTTW) and Municipal Drinking Water Licence (MDWL). This information is tabulated in the accompanying tables.

TABLE 4.1: FREELTON WELL (FDF01) – 2024 MONTHLY PRODUCTION (SUMMARY)

Month	Monthly Total Flow (m^3)	Average Daily Rate (m^3/d)	Maximum Daily Rate (m^3/d)	PTTW Daily Limit (m^3/d)	MDWL Daily Rated Capacity (m^3/d)
January	6,373	206	697	1,584	878
February	5,095	176	637	1,584	878
March	6,824	220	594	1,584	878
April	6,684	223	614	1,584	878
May	7,262	234	663	1,584	878
June	5,849	195	670	1,584	878
July	6,320	204	644	1,584	878

Month	Monthly Total Flow (m^3)	Average Daily Rate (m^3/d)	Maximum Daily Rate (m^3/d)	PTTW Daily Limit (m^3/d)	MDWL Daily Rated Capacity (m^3/d)
August	7,539	243	674	1,584	878
September	6,133	204	690	1,584	878
October	5,595	180	640	1,584	878
November	5,613	187	616	1,584	878
December	6,868	222	703	1,584	878

FIGURE 4.1: FREELTON WELL (FDF01) – 2024 MONTHLY PRODUCTION (SUMMARY)

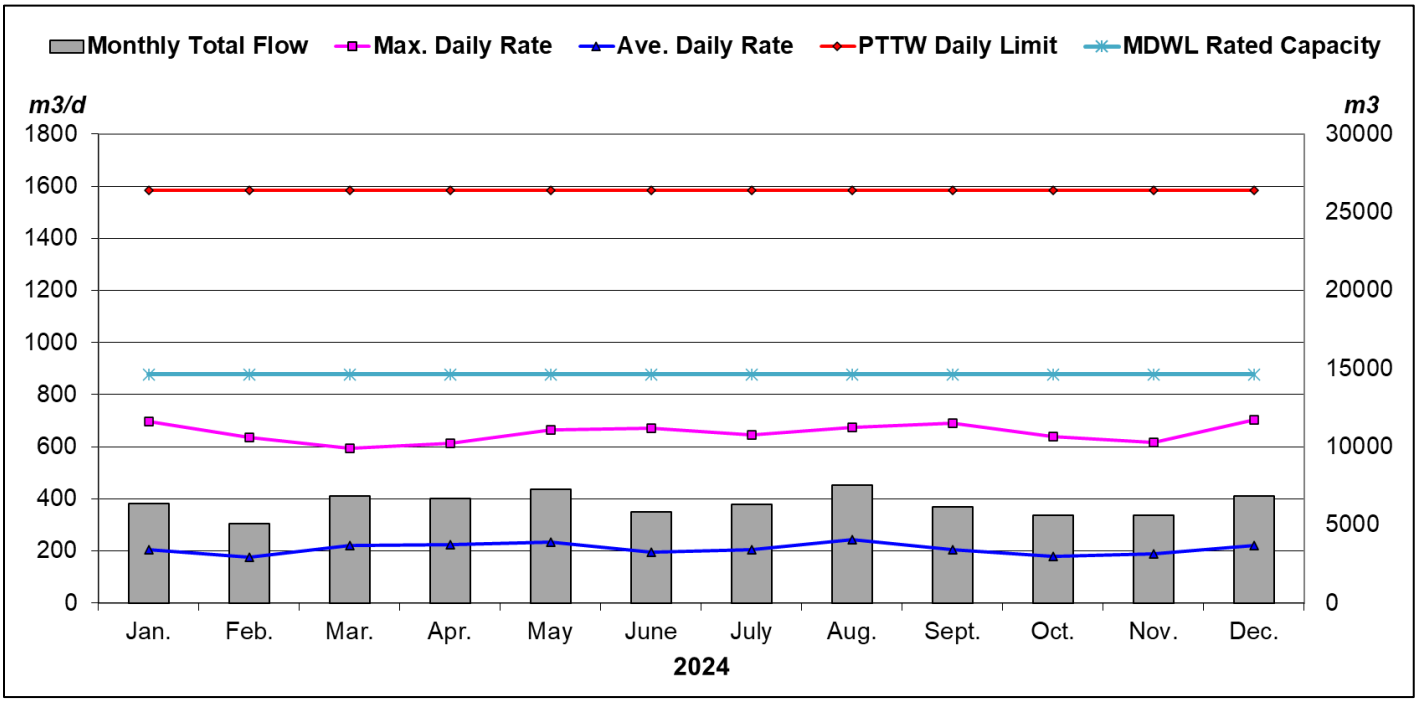


TABLE 4.2: FREELTON WELL (FDF03) – 2024 MONTHLY PRODUCTION (SUMMARY)

Month	Monthly Total Flow (m^3)	Average Daily Rate (m^3/d)	Maximum Daily Rate (m^3/d)	PTTW Daily Limit (m^3/d)	MDWL Daily Rated Capacity (m^3/d)
January	5,639	182	613	1,607	1,607
February	6,915	238	706	1,607	1,607

Month	Monthly Total Flow (m^3)	Average Daily Rate (m^3/d)	Maximum Daily Rate (m^3/d)	PTTW Daily Limit (m^3/d)	MDWL Daily Rated Capacity (m^3/d)
March	6,388	206	558	1,607	1,607
April	6,322	211	571	1,607	1,607
May	6,701	216	624	1,607	1,607
June	5,499	183	636	1,607	1,607
July	6,184	199	600	1,607	1,607
August	6,762	218	629	1,607	1,607
September	6,189	206	655	1,607	1,607
October	5,334	172	584	1,607	1,607
November	4,779	159	563	1,607	1,607
December	4,142	134	534	1,607	1,607

FIGURE 4.2: FREELTON WELL (FDF03) – 2024 MONTHLY PRODUCTION (SUMMARY)

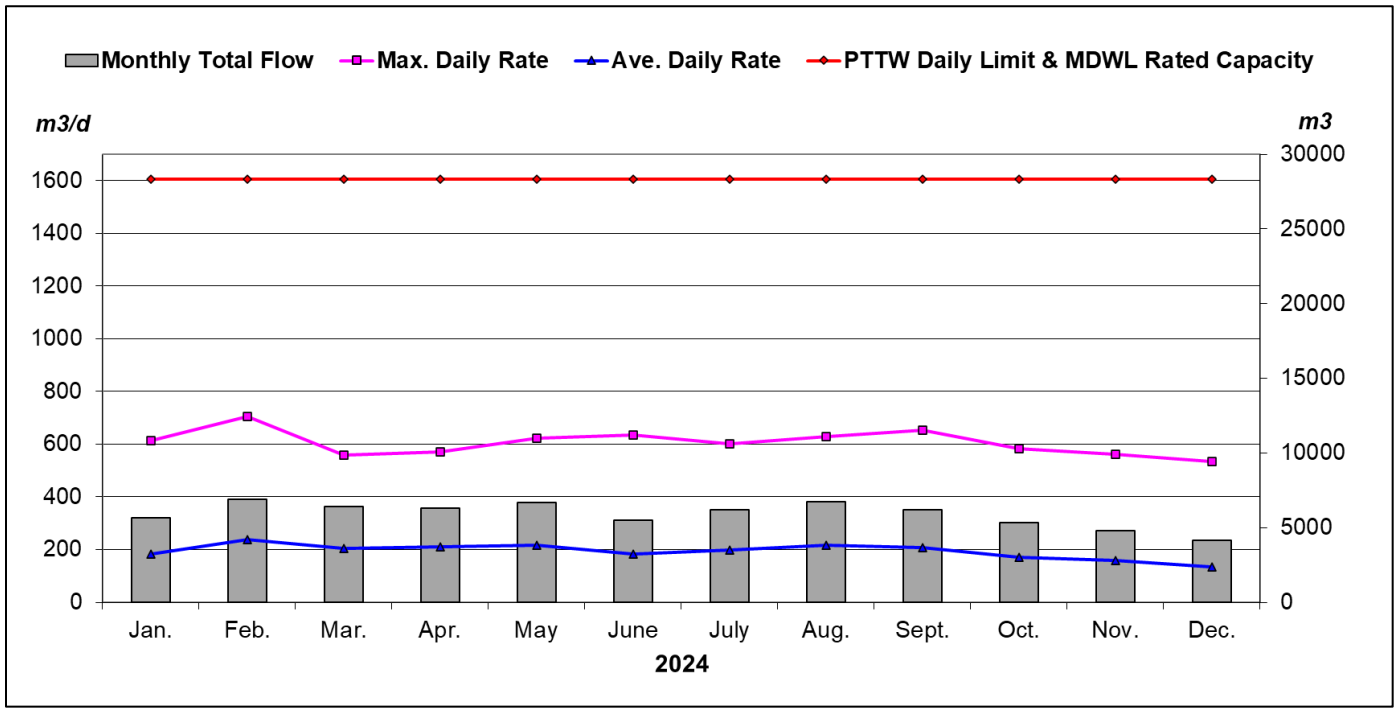
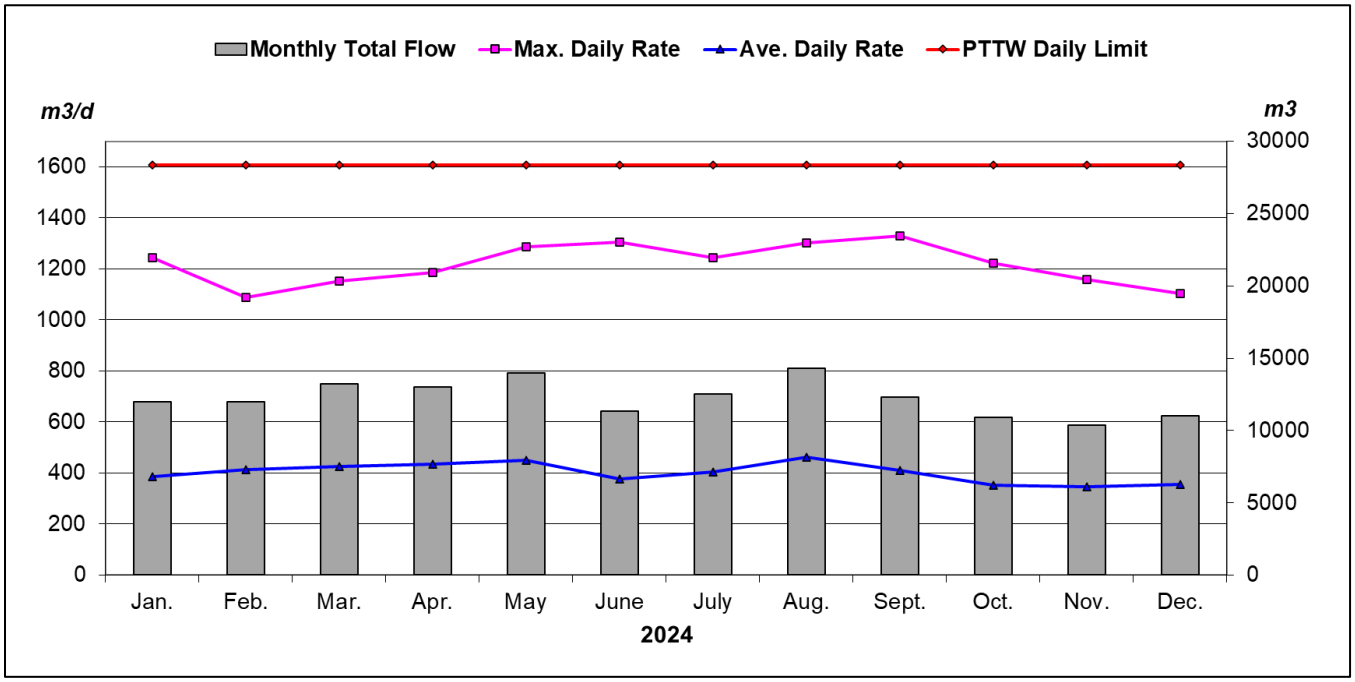


TABLE 4.3: FREELTON WELL (FDF01 AND FDF03) – 2024 MONTHLY PRODUCTION (SUMMARY)

Month	Monthly Total Flow (m^3)	Average Daily Rate (m^3/d)	Maximum Daily Rate (m^3/d)	PTTW Daily Limit (m^3/d)	MDWL Daily Rated Capacity (m^3/d)
January	12,012	387	1,243	1,607	n/a
February	12,011	414	1,088	1,607	n/a
March	13,212	426	1,152	1,607	n/a
April	13,006	434	1,185	1,607	n/a
May	13,963	450	1,287	1,607	n/a
June	11,348	378	1,306	1,607	n/a
July	12,504	403	1,244	1,607	n/a
August	14,301	461	1,303	1,607	n/a
September	12,322	411	1,329	1,607	n/a
October	10,929	353	1,224	1,607	n/a
November	10,393	346	1,159	1,607	n/a
December	11,010	355	1,104	1,607	n/a

FIGURE 4.3: FREELTON WELL (FDF01 AND FDF03) – 2024 MONTHLY PRODUCTION (SUMMARY)



5 GREENSVILLE DRINKING WATER SYSTEM WATER QUALITY ANNUAL REPORT

5.1 GENERAL INFORMATION

The Greensville Drinking Water System consists of one well, one treatment facility, and sampling and analysis, serving an approximate population of 111 residents.

Drinking Water System Number	Drinking Water System Name	Drinking Water System Owner	Drinking Water System Category	Reporting Period
220004126	Greensville Drinking Water System FDG01	City of Hamilton	Small Municipal Residential	January 1, 2024 to December 31, 2024

5.1.1 WATER WELL

Greensville Well FDG01 is a 150 mm diameter, approximately 12-metre-deep drilled groundwater well under the direct influence of surface water (GUDI).

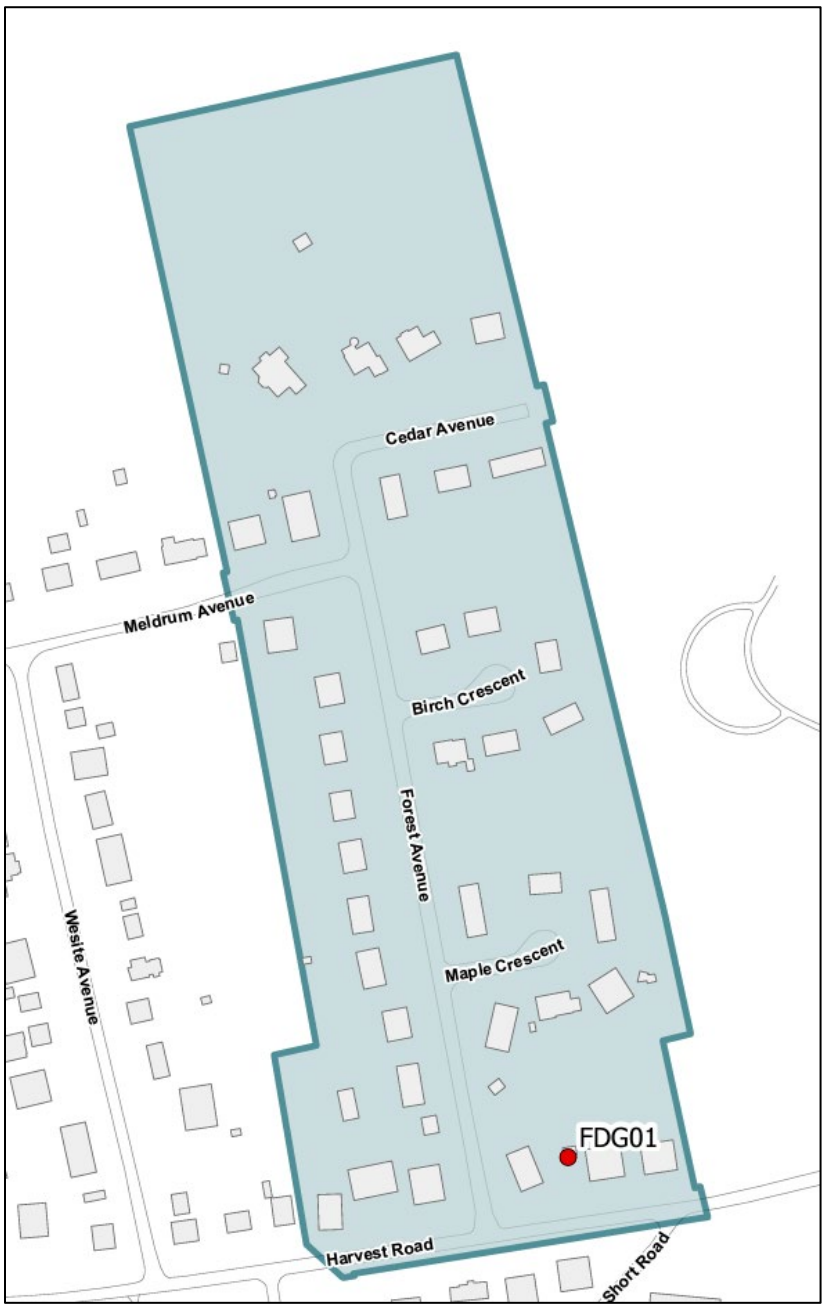
5.1.2 TREATMENT

- Water passes through two-stage cartridge filters and is disinfected using ultraviolet light and sodium hypochlorite (chlorine) before entering the distribution system.
- A free chlorine contact chamber is used to ensure disinfection of the water.
- Fluoride and orthophosphate are not added as part of the treatment process.
- Hydropneumatic pressure tanks are used to control system pressures.

5.1.3 SAMPLING AND ANALYSIS

The treatment facility is equipped with online chlorine residual and turbidity analyzers that continually monitor the treated water quality. Raw, treated, and distributed water is sampled and analyzed weekly. In addition, chlorine residual in the distribution system is analyzed daily.

5.1.4 MAP OF GREENSVILLE DRINKING WATER SYSTEM



5.2 PROVISION OF DRINKING WATER TO OTHER MUNICIPALITIES

No municipal drinking water systems receive drinking water from the Greensville Drinking Water System.

5.3 WATER TREATMENT CHEMICALS USED DURING THIS REPORTING PERIOD

- sodium hypochlorite (chlorine)

5.4 BREAKDOWN OF SIGNIFICANT MONETARY EXPENSES

There were no significant expenses incurred for installing, repairing and replacing required equipment in 2024. There were no significant projects initiated or expenses to highlight for the Greensville Drinking Water System in 2024.

5.5 ADVERSE TEST RESULTS AND REPORTABLE INCIDENTS

The following outlines the notices submitted in accordance with subsection 18(1) of the Safe Drinking Water Act or section 16-4 of Schedule 16 of O.Reg. 170/03 and reported to the MECP SAC.

There were no Adverse Water Quality Incidents from January 1, 2024, to December 31, 2024.

5.6 MECP INSPECTION FINDINGS AND SELF-DECLARED NON-COMPLIANCES

The following is a summary of findings that were either issued during a MECP inspection or self-declared during the 2024 calendar year.

The 2023-2024 inspection report was completed on March 25, 2024, and the findings of non-compliance are reported in the table below.

The 2024-2025 inspection report commenced and remains pending as of December 31, 2024.

2023-2024 MECP INSPECTION REPORT NON-COMPLIANCES, MARCH 25, 2024

#	Finding Type	Finding	Status
1	Non-compliance	Logbooks were not properly maintained and/or did not contain the required information.	Action complete
2	Non-compliance	The operator-in-charge did not ensure that records were maintained of all adjustments made to the processes within his or her responsibility.	Action complete
3	Non-compliance	The logbooks and 72 hour trend review comments did not identify the 2023 PTTW flow exceedance	Action in process

SELF-DECLARED NON-COMPLIANCES

No self-declared non-compliances were reported for the Greensville Drinking Water System in 2024.

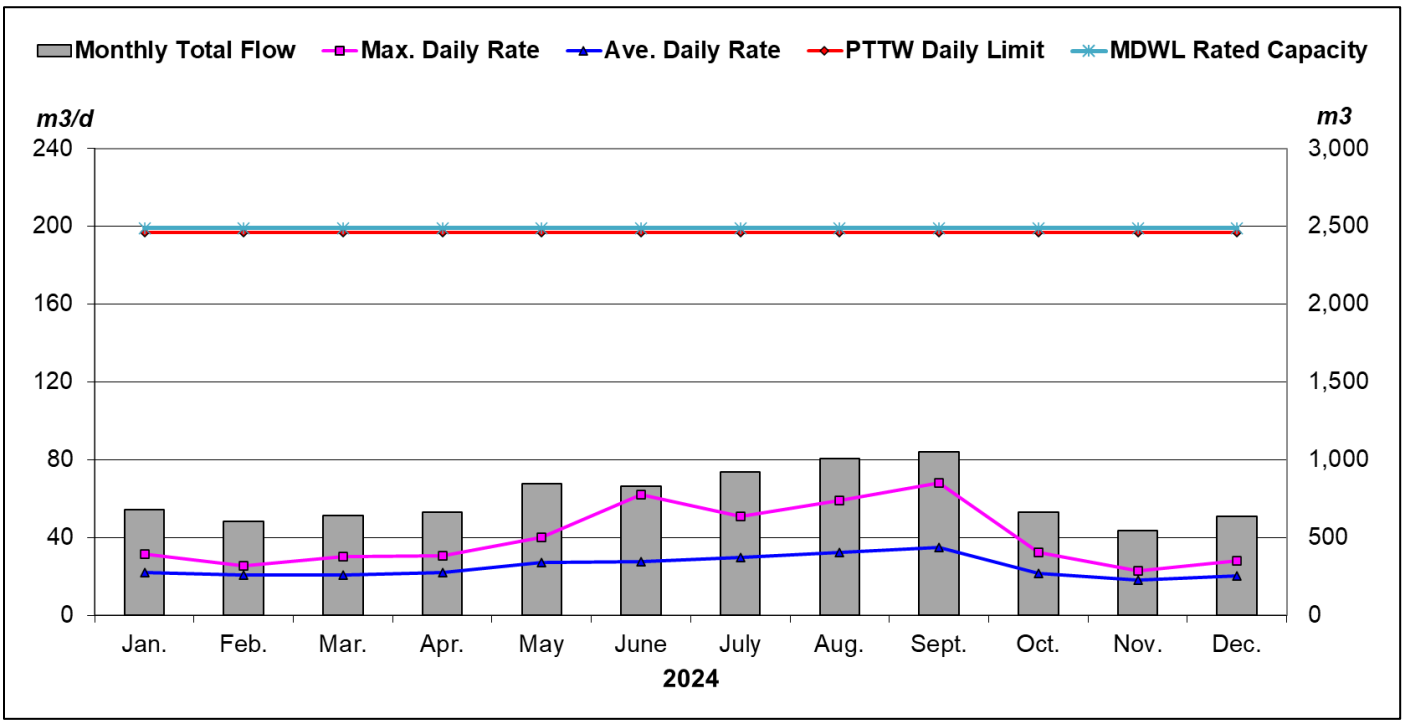
5.7 WATER PRODUCTION REPORTS – SUMMARY

The following provides a summary of daily flow rates and instantaneous peak flow rates in comparison to the capacity of the waterworks as identified in the Permit to Take Water (PTTW) and Municipal Drinking Water Licence (MDWL). This information is tabulated in the accompanying tables.

TABLE 5.1: GREENSVILLE WELL (FDG01) – 2024 MONTHLY PRODUCTION (SUMMARY)

Month	Monthly Total Flow (m^3)	Average Daily Rate (m^3/d)	Maximum Daily Rate (m^3/d)	PTTW Daily Limit (m^3/d)	MDWL Daily Rated Capacity (m^3/d)
January	680	22	31	197	199
February	604	21	25	197	199
March	643	21	30	197	199
April	661	22	30	197	199
May	844	27	40	197	199
June	829	28	62	197	199
July	920	30	51	197	199
August	1,009	33	59	197	199
September	1,048	35	68	197	199
October	665	21	32	197	199
November	547	18	23	197	199
December	634	20	28	197	199

FIGURE 5.1: GREENSVILLE WELL (FDG01) – 2024 MONTHLY PRODUCTION (SUMMARY)



6 CARLISLE DRINKING WATER SYSTEM WATER QUALITY ANNUAL REPORT

6.1 GENERAL INFORMATION

The Carlisle Drinking Water System consists of four wells, one elevated water storage tank, two treatment facilities, and sampling and analysis. It serves a population of approximately 1,833 residents. The municipal water source for the community of Carlisle is groundwater.

Drinking Water System Number	Drinking Water System Name	Drinking Water System Owner	Drinking Water System Category	Reporting Period
220004108	Carlisle Drinking Water System FDC01, FDC02, FDC03R, FDC05	City of Hamilton	Large Municipal Residential	January 1, 2024 to December 31, 2024

6.1.1 WATER WELLS

- Well FDC01 is a drilled groundwater well and has a diameter of 157 mm and a depth of approximately 42 m.
- Well FDC02 is a drilled groundwater well and has a diameter of 300 mm at a depth of 2.6 m and a diameter of 250 mm to a depth of 36 m.
- Well FDC03R has a diameter of 200 mm and a depth of approximately 33.5 m. It is a drilled groundwater well under the influence of surface water (GUDI).
- Well FDC05 has a diameter of 214 mm and a depth of approximately 28 m. It is a drilled groundwater well under the influence of surface water (GUDI).

6.1.2 TREATMENT

- Within the treatment facility, wells FDC01 and FDC02 are joined to a common header for flow metering and disinfection. Sodium hypochlorite (chlorine) is added within a free chlorine contact chamber to disinfect the water.
- Within the treatment facility, wells FDC03R and FDC05 have separate flow metering, filtration and ultraviolet light disinfection streams. The flows are combined for treatment by sodium hypochlorite (chlorine) within a contact chamber to ensure disinfection of the water prior to entering the distribution system.
- Fluoride and orthophosphate are not added as part of the treatment process.

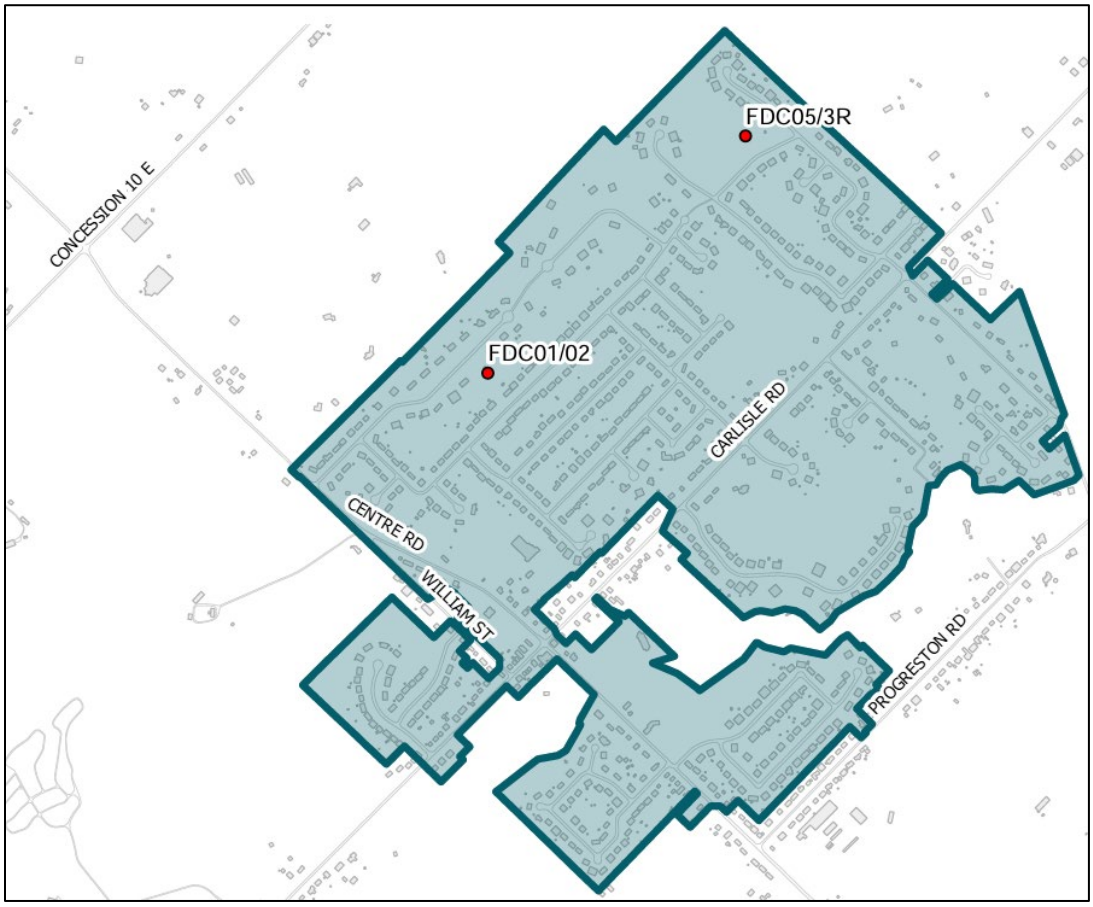
6.1.3 WATER STORAGE

An elevated water storage tank is located at the same site as wells FDC01 and FDC02. The storage tank has an operating capacity of 1,400 m^3. It was designed for peak-hour water demand equalization and fire and emergency storage.

6.1.4 SAMPLING AND ANALYSIS

All treatment facilities are equipped with online chlorine residual and turbidity analyzers that continually monitor the treated water quality. Raw, treated, and distribution water is sampled and analyzed weekly, and chlorine residual in the distribution system is analyzed daily.

6.1.5 MAP OF CARLISLE DRINKING WATER SYSTEM



6.2 PROVISION OF DRINKING WATER TO OTHER MUNICIPALITIES

No municipal drinking water systems receive drinking water from the Carlisle Drinking Water System.

6.3 WATER TREATMENT CHEMICALS USED DURING THIS REPORTING PERIOD

- sodium hypochlorite (chlorine)

6.4 BREAKDOWN OF SIGNIFICANT MONETARY EXPENSES

In February 2024, the City of Hamilton experienced an IT outage that impacted multiple systems across its network. It was determined that the outage was a result of a cybersecurity incident. While some systems have returned since the incident, the work order system and databases that held information related to expenses associated with the drinking water system have not been restored.

The following projects involving the installation, repair or replacement of required equipment took place in 2024
VFD Replacement

6.5 ADVERSE TEST RESULTS AND REPORTABLE INCIDENTS

The following outlines the notices submitted in accordance with subsection 18(1) of the Safe Drinking Water Act or section 16-4 of Schedule 16 of O.Reg. 170/03 and reported to the MECP SAC.

There were no Adverse Water Quality Incidents from January 1, 2024, to December 31, 2024.

6.6 MECP INSPECTION FINDINGS AND SELF-DECLARED NON-COMPLIANCES

The following is a summary of findings that were either issued during a MECP inspection or self-declared during the 2024 calendar year.

The 2024-2025 inspection report was completed on August 29, 2024, and the findings of non-compliance are reported in the table below.

2024-2025 MECP INSPECTION REPORT NON-COMPLIANCES, AUGUST 29, 2024

#	Finding Type	Finding	Status
1	Non-compliance	All continuous analyzers were not calibrated, maintained, and operated in accordance with the manufacturer's instructions or the regulation.	Action complete

SELF-DECLARED NON-COMPLIANCES

No self-declared non-compliances were reported for the Carlisle Drinking Water System in 2024.

6.7 WATER PRODUCTION REPORTS – SUMMARY

The following provides a summary of daily flow rates and instantaneous peak flow rates in comparison to the capacity of the waterworks as identified in the Permit to Take Water (PTTW) and Municipal Drinking Water Licence (MDWL). This information is tabulated in the accompanying tables.

TABLE 6.1: CARLISLE WELL (FDC01) – 2024 MONTHLY PRODUCTION (SUMMARY)

Month	Monthly Total Flow (m^3)	Average Daily Rate (m^3/d)	Maximum Daily Rate (m^3/d)	PTTW Daily Limit (m^3/d)	MDWL Daily Rated Capacity (m^3/d)
January	892	29	115	851	n/a
February	968	33	151	851	n/a
March	1,361	44	236	851	n/a
April	1,629	54	236	851	n/a
May	1,607	52	182	851	n/a
June	1,498	50	145	851	n/a
July	892	29	155	851	n/a
August	2,075	67	244	851	n/a
September	2,397	80	293	851	n/a
October	1,191	38	183	851	n/a
November	785	26	161	851	n/a
December	1,425	46	229	851	n/a

FIGURE 6.1: CARLISLE WELL (FDC01) – 2024 MONTHLY PRODUCTION (SUMMARY)

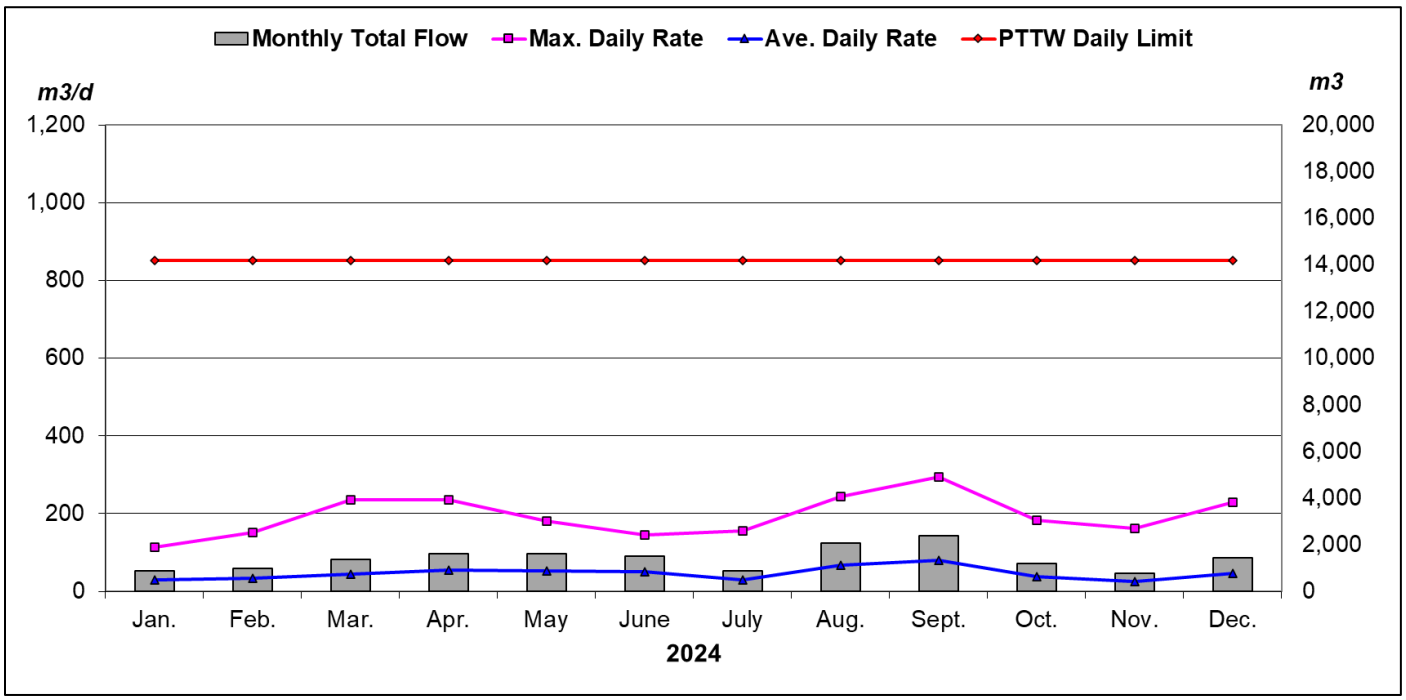


TABLE 6.2: CARLISLE WELL (FDC02) – 2024 MONTHLY PRODUCTION (SUMMARY)

Month	Monthly Total Flow (m^3)	Average Daily Rate (m^3/d)	Maximum Daily Rate (m^3/d)	PTTW Daily Limit (m^3/d)	MDWL Daily Rated Capacity (m^3/d)
January	1,381	45	172	851	n/a
February	985	34	162	851	n/a
March	756	24	147	851	n/a
April	1,498	50	183	851	n/a
May	2,716	88	204	851	n/a
June	1,991	66	196	851	n/a
July	2,180	70	209	851	n/a
August	2,725	88	268	851	n/a
September	2,014	67	306	851	n/a
October	2,086	67	328	851	n/a
November	1,063	35	180	851	n/a
December	1,323	43	225	851	n/a

FIGURE 6.2: CARLISLE WELL (FDC02) – 2024 MONTHLY PRODUCTION (SUMMARY)

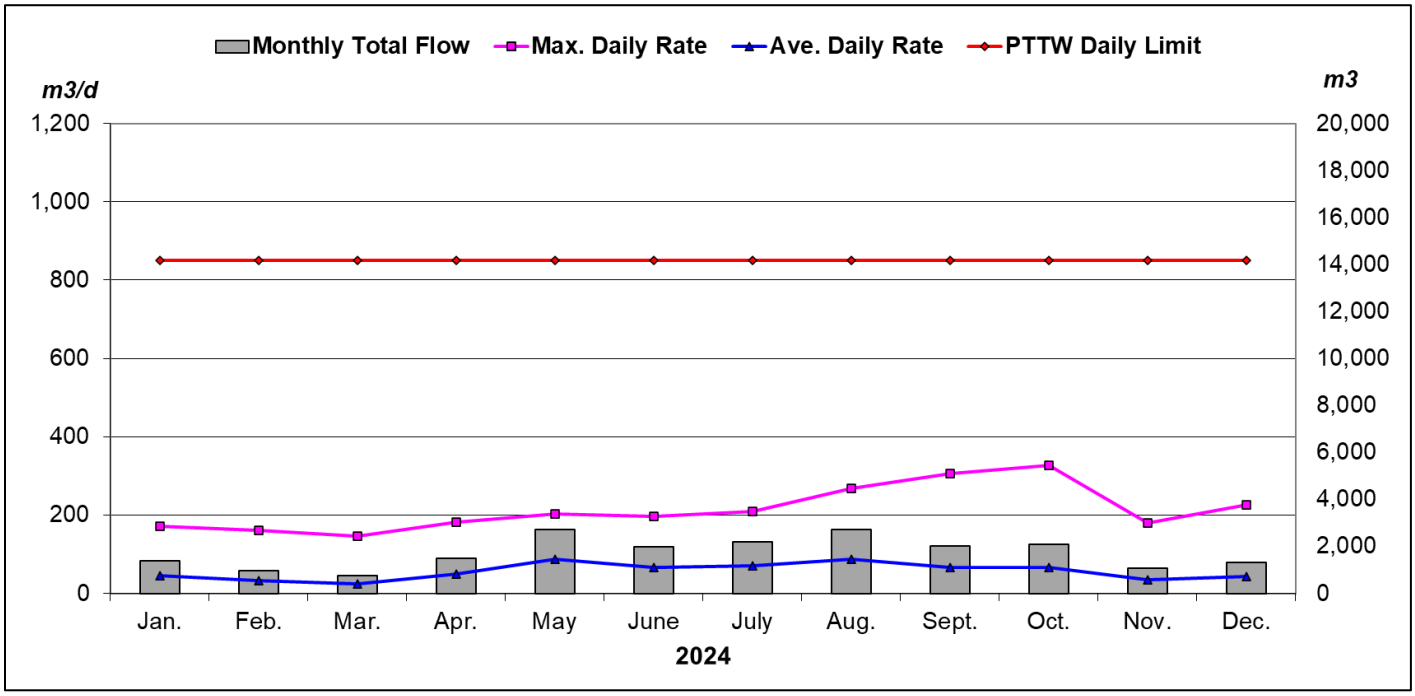


TABLE 6.3: CARLISLE WELL (FDC01 AND FDC02) – 2024 MONTHLY PRODUCTION (SUMMARY)

Month	Monthly Total Flow (m^3)	Average Daily Rate (m^3/d)	Maximum Daily Rate (m^3/d)	PTTW Daily Limit (m^3/d)	MDWL Daily Rated Capacity (m^3/d)
January	2,273	73	287	1,702	851
February	1,953	67	173	1,702	851
March	2,117	68	258	1,702	851
April	3,126	104	418	1,702	851
May	4,323	139	365	1,702	851
June	3,489	116	323	1,702	851
July	3,072	99	310	1,702	851
August	4,800	155	509	1,702	851
September	4,410	147	600	1,702	851
October	3,277	106	510	1,702	851
November	1,848	62	193	1,702	851
December	2,749	89	455	1,702	851

FIGURE 6.3: CARLISLE WELL (FDC01 AND FDC02) – 2024 MONTHLY PRODUCTION (SUMMARY)

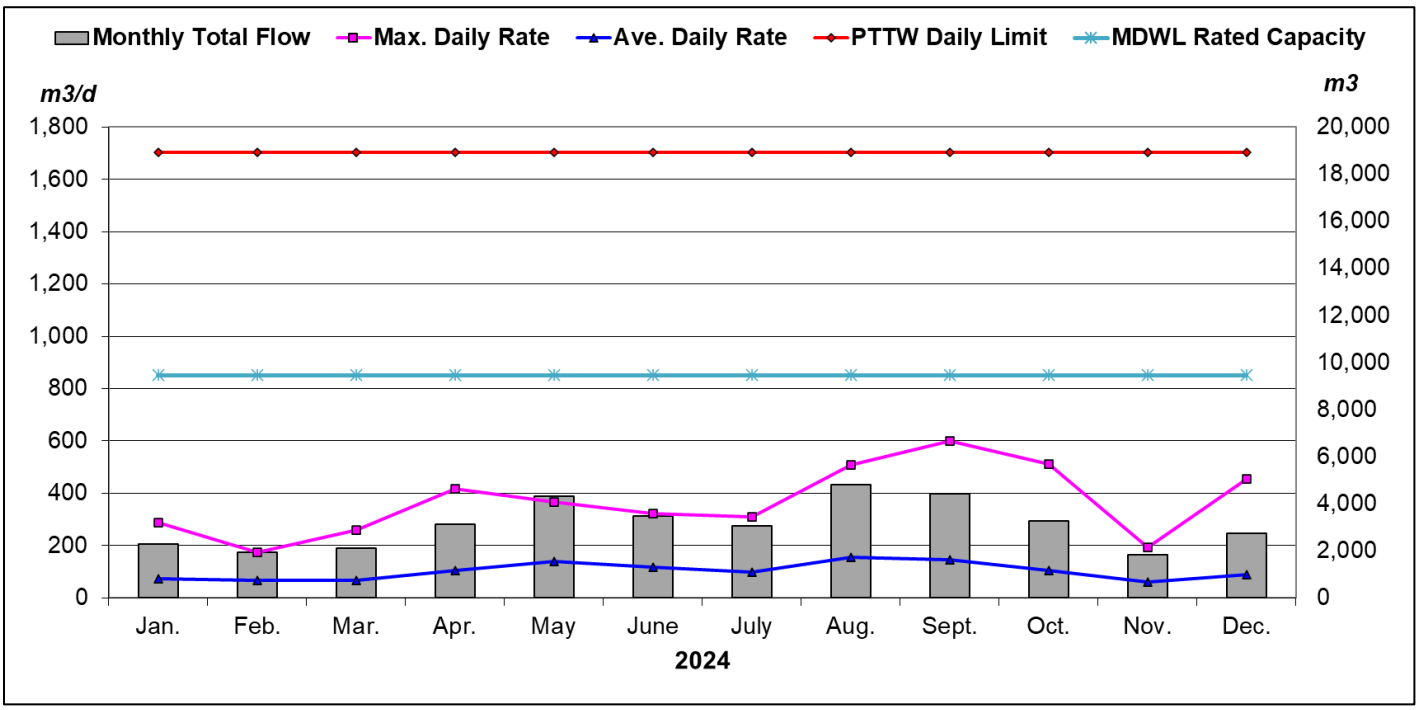


TABLE 6.4: CARLISLE WELL (FDC03R) – 2024 MONTHLY PRODUCTION (SUMMARY)

Month	Monthly Total Flow (m^3)	Average Daily Rate (m^3/d)	Maximum Daily Rate (m^3/d)	PTTW Daily Limit (m^3/d)	MDWL Daily Rated Capacity (m^3/d)
January	3,288	106	591	2,160	n/a
February	0*	0*	0*	2,160	n/a
March	0*	0*	0*	2,160	n/a
April	0*	0*	0*	2,160	n/a
May	2,999	97	724	2,160	n/a
June	11,850	395	902	2,160	n/a
July	10,128	327	696	2,160	n/a
August	13,756	444	1,041	2,160	n/a
September	10,955	365	1,098	2,160	n/a
October	4,996	161	593	2,160	n/a
November	6,049	202	649	2,160	n/a
December	5,137	166	556	2,160	n/a
*Well FDC03R was out of service for several months for repairs					

FIGURE 6.4: CARLISLE WELL (FDC03R) – 2024 MONTHLY PRODUCTION (SUMMARY)

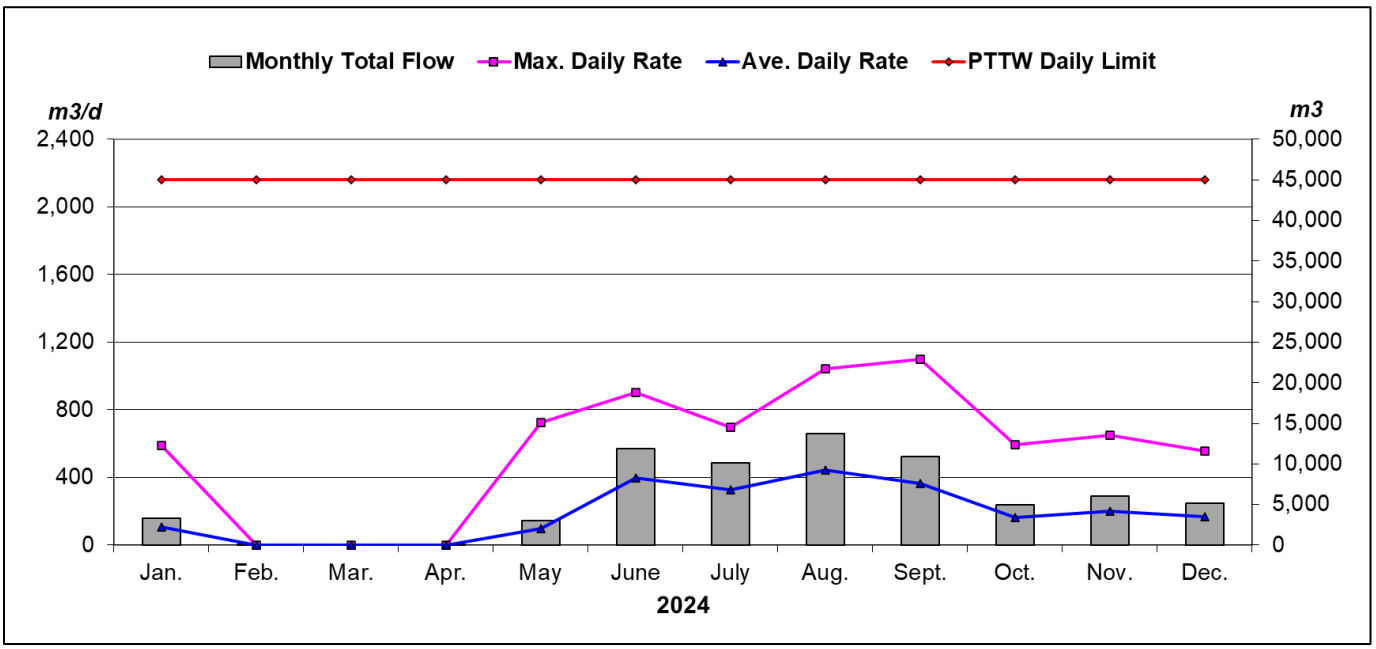


TABLE 6.5: CARLISLE WELL (FDC05) – 2024 MONTHLY PRODUCTION (SUMMARY)

Month	Monthly Total Flow (m^3)	Average Daily Rate (m^3/d)	Maximum Daily Rate (m^3/d)	PTTW Daily Limit (m^3/d)	MDWL Daily Rated Capacity (m^3/d)
January	6,710	216	529	1,296	n/a
February	9,266	320	643	1,296	n/a
March	9,557	308	546	1,296	n/a
April	9,865	329	676	1,296	n/a
May	14,938	482	821	1,296	n/a
June	11,958	399	997	1,296	n/a
July	15,729	507	826	1,296	n/a
August	14,761	476	951	1,296	n/a
September	14,715	490	956	1,296	n/a
October	9,938	321	627	1,296	n/a
November	7,074	236	705	1,296	n/a
December	7,737	250	571	1,296	n/a

FIGURE 6.5: CARLISLE WELL (FDC05) – 2024 MONTHLY PRODUCTION (SUMMARY)

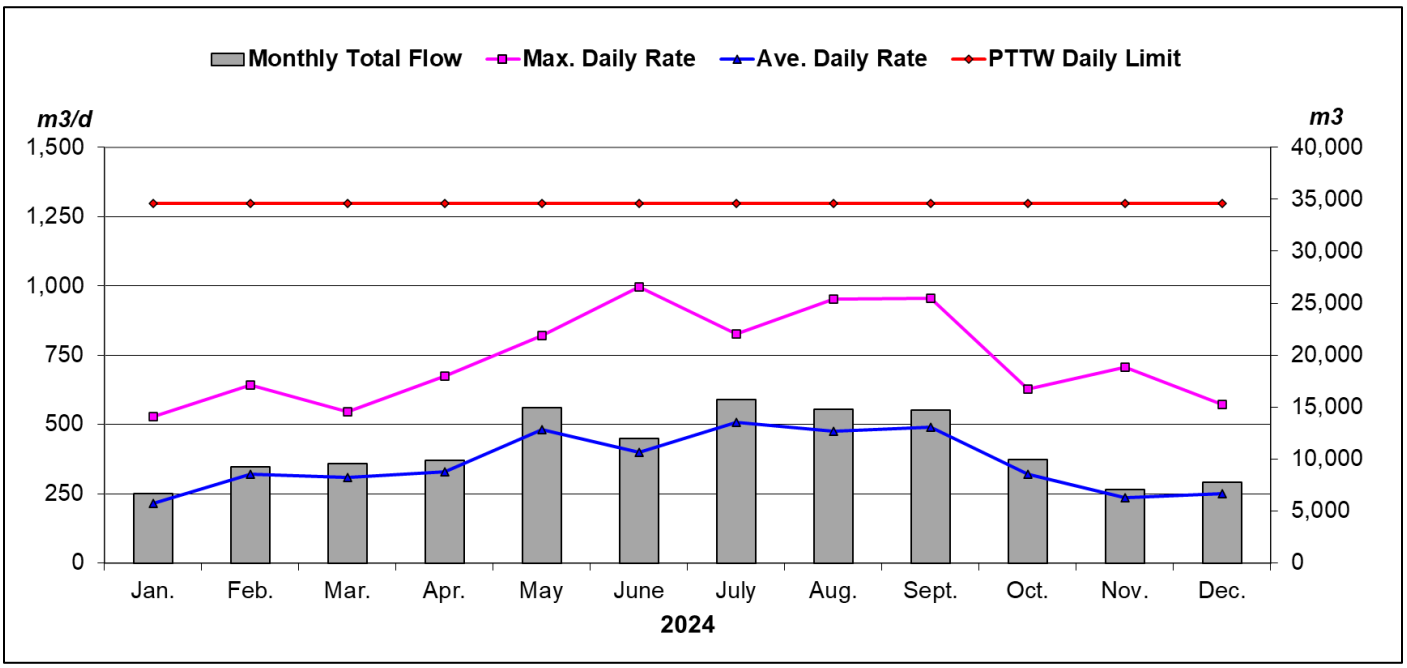
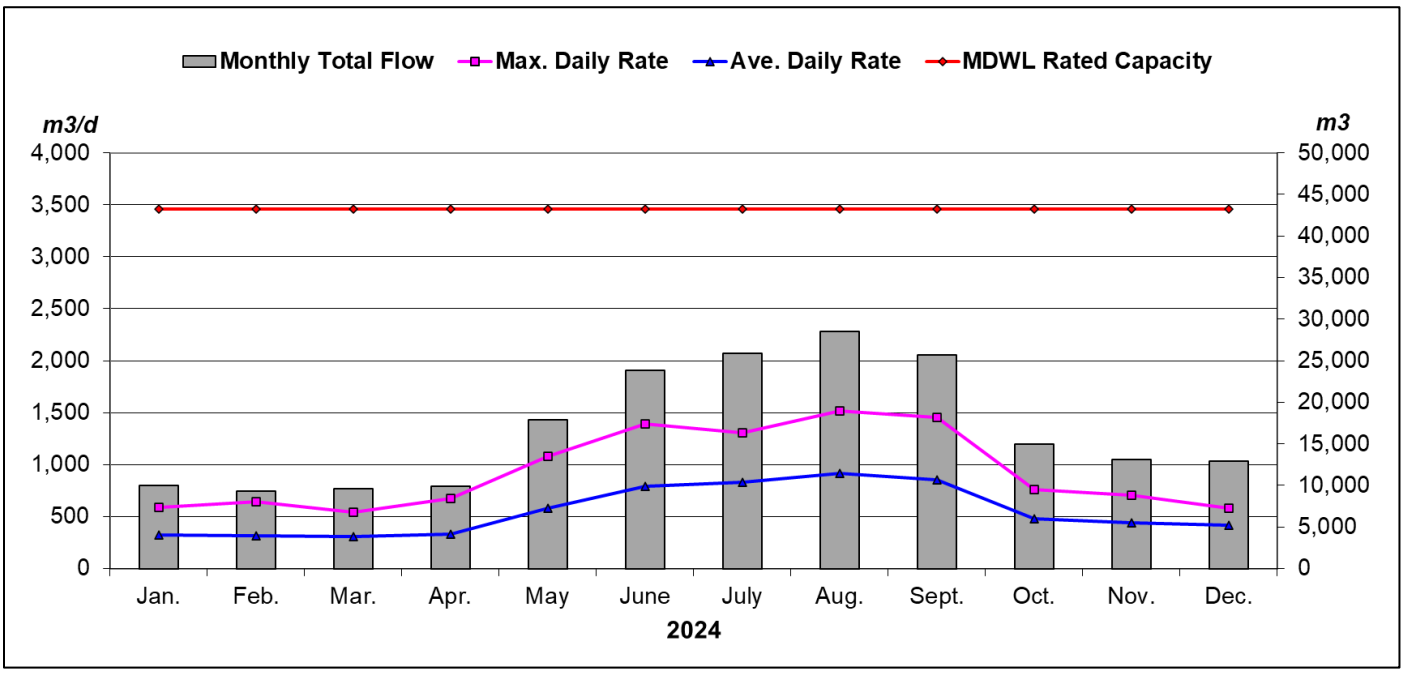


TABLE 6.6: CARLISLE WELL (FDC03R AND FDC05) – 2024 MONTHLY PRODUCTION (SUMMARY)

Month	Monthly Total Flow (m^3)	Average Daily Rate (m^3/d)	Maximum Daily Rate (m^3/d)	PTTW Daily Limit (m^3/d)	MDWL Daily Rated Capacity (m^3/d)
January	9,997	322	591	n/a	3,456
February	9,266	320	643	n/a	3,456
March	9,557	308	546	n/a	3,456
April	9,865	329	676	n/a	3,456
May	17,937	579	1,082	n/a	3,456
June	23,808	794	1,391	n/a	3,456
July	25,857	834	1,308	n/a	3,456
August	28,517	920	1,514	n/a	3,456
September	25,670	856	1,457	n/a	3,456
October	14,934	482	757	n/a	3,456
November	13,123	437	705	n/a	3,456
December	12,874	415	579	n/a	3,456

FIGURE 6.6: CARLISLE WELL (FDC03R AND FDC05) – 2024 MONTHLY PRODUCTION (SUMMARY)



7 LYNDEN DRINKING WATER SYSTEM WATER QUALITY ANNUAL REPORT

7.1 GENERAL INFORMATION

The Lynden Drinking Water System consists of two wells, one reservoir, one treatment facility, and sampling and analysis. It serves a population of approximately 393 residents. Groundwater is the municipal water source for the community of Lynden.

Drinking Water System Number	Drinking Water System Name	Drinking Water System Owner	Drinking Water System Category	Reporting Period
250001830	Lynden Drinking Water System FDL03	City of Hamilton	Large Municipal Residential	January 1, 2024 to December 31, 2024

7.1.1 WATER WELLS

- Well FDL01 is a drilled groundwater well and has a diameter of 200 mm and a depth of approximately 54.6 m. The well has been out of service since July 9, 2020. FDL01 will be decommissioned and replaced with a new well, FDL1R in 2025.
- Well FDL03 is a drilled groundwater well and has a diameter of 200 mm and a depth of 52 m.

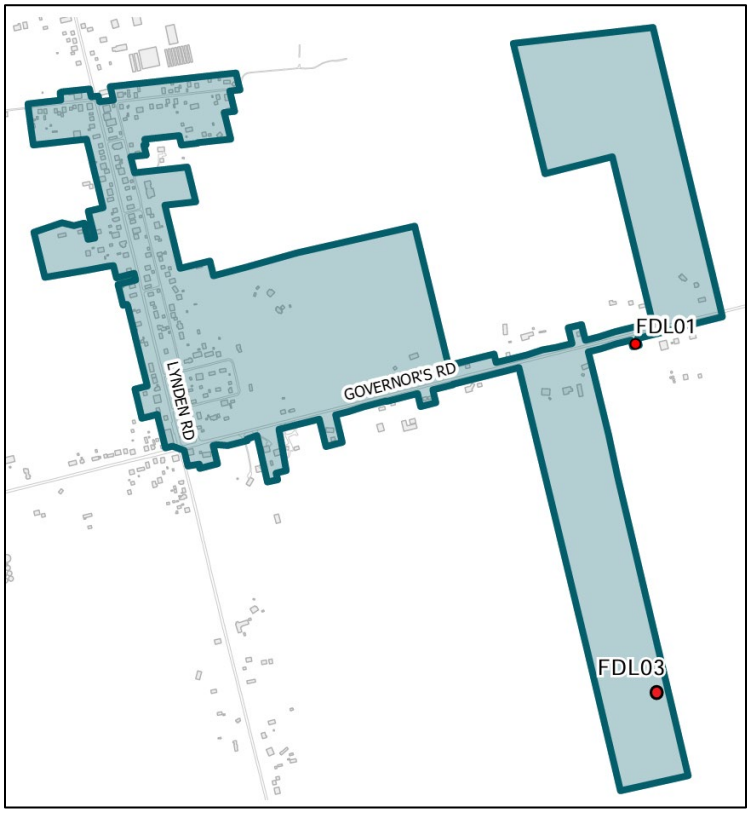
7.1.2 TREATMENT

- The treatment facility houses equipment to remove hydrogen sulphide (H2S) including a carbon dioxide injection system and air stripper. Following H2S removal, the treatment includes filtration through a cartridge filter and addition of sodium hypochlorite (chlorine). The reservoir acts as a chlorine contact chamber to ensure disinfection of the water.
- Fluoride and orthophosphate are not added as part of the treatment process.

7.1.3 SAMPLING AND ANALYSIS

The treatment facility is equipped with online chlorine residual and turbidity analyzers that continually monitor the treated water quality. Raw, treated, and distributed water are sampled and analyzed weekly, and chlorine residual in the distribution system is analyzed daily.

7.1.4 MAP OF LYNDEN DRINKING WATER SYSTEM



7.2 PROVISION OF DRINKING WATER TO OTHER MUNICIPALITIES

No municipal drinking water systems receive drinking water from the Lynden Drinking Water System.

7.3 WATER TREATMENT CHEMICALS USED DURING THIS REPORTING PERIOD

- sodium hypochlorite (chlorine)
- carbon dioxide

7.4 BREAKDOWN OF SIGNIFICANT MONETARY EXPENSES

In February 2024, the City of Hamilton experienced an IT outage that impacted multiple systems across its network. It was determined that the outage was a result of a cybersecurity incident. While some systems have returned since the incident, the work order system and databases that held information related to expenses associated with the drinking water system have not been restored.

The following projects involving the installation, repair or replacement of required equipment took place in 2024
Investigation of a new back up well- FDL1R

7.5 ADVERSE TEST RESULTS AND REPORTABLE INCIDENTS

The following outlines the notices submitted in accordance with subsection 18(1) of the Safe Drinking Water Act or section 16-4 of Schedule 16 of O.Reg. 170/03 and reported to the MECP SAC.

There were no Adverse Water Quality Incidents from January 1, 2024, to December 31, 2024.

7.6 MECP INSPECTION FINDINGS AND SELF-DECLARED NON-COMPLIANCES

The following is a summary of findings that were either issued during a MECP inspection or self-declared during the 2024 calendar year.

The 2023-2024 inspection report was completed on February 9, 2024, and the findings of non-compliance are reported in the table below.

The 2024-2025 inspection report remains pending as of December 31, 2024.

2023-2024 MECP INSPECTION REPORT NON-COMPLIANCES, FEBRUARY 9, 2024

#	Finding Type	Finding	Status
1	Non-compliance	Logbooks were not properly maintained and/or did not contain the required information.	Action complete
2	Non-compliance	All required notifications of adverse water quality incidents were not immediately provided.	Action complete

SELF-DECLARED NON-COMPLIANCES

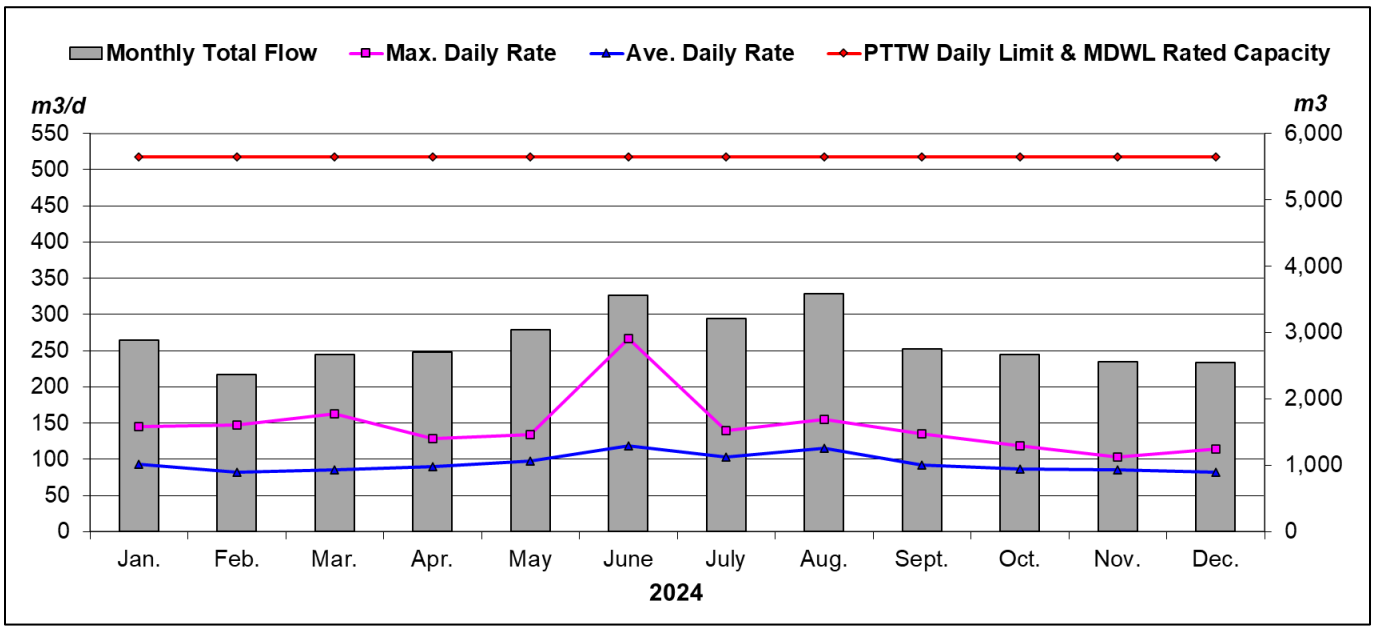
No self-declared non-compliances were reported for the Lynden Drinking Water System in 2024.

7.7 WATER PRODUCTION REPORTS – SUMMARY

TABLE 7.1: LYNDEN WELL (FDL03) – 2024 MONTHLY PRODUCTION (SUMMARY)

Month	Monthly Total Flow (m^3)	Average Daily Rate (m^3/d)	Maximum Daily Rate (m^3/d)	PTTW Daily Limit (m^3/d)	MDWL Daily Rated Capacity (m^3/d)
January	2,886	93	145	518	518
February	2,372	82	148	518	518
March	2,669	86	163	518	518
April	2,707	90	128	518	518
May	3,044	98	134	518	518
June	3,561	119	266	518	518
July	3,207	103	140	518	518
August	3,583	116	155	518	518
September	2,759	92	135	518	518
October	2,671	86	119	518	518
November	2,561	85	103	518	518
December	2,545	82	115	518	518

FIGURE 7.1: LYNDEN WELL (FDL03) – 2024 MONTHLY PRODUCTION (SUMMARY)



2024 WATER QUALITY AND OPERATIONAL TESTING SUMMARY

Appendix A.1

Hamilton

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1 HAMILTON DRINKING WATER SYSTEM, WOODWARD SUBSYSTEM

1.1 DEFINITIONS

AWQI: Adverse Water Quality Incident

CFU: Colony Forming Unit

MPN: Most Probable Number

mg/L: milligrams per litre

mL: millilitre

N/A: Not Applicable

NTU: Nephelometric Turbidity Unit

ug/L: microgram per litre

P/A: Present/Absent

CU: Colour Units

C: degrees Celsius

1.2 LEAD TESTING

SUMMARY OF LEAD TESTING UNDER SCHEDULE 15.1 OF REGULATION 170/03 DURING THIS REPORTING PERIOD.

Parameter	Points Sampled	Samples Taken	Result Value Range	Unit of Measure	Lead AWQI	Lead Exceedances
Distribution						
Alkalinity	20	20	84 to 91	mg/L	N/A	N/A
Lead	20	20	<0.0001 to 0.0004	mg/L	0	N/A
pH - Field	20	20	7.27 to 7.59	pH	N/A	N/A
Plumbing Non-Residential						
Lead	10	20	<0.0001 to 0.0040	mg/L	N/A	0
pH - Field	10	10	7.34 to 7.67	pH	N/A	N/A

Parameter	Points Sampled	Samples Taken	Result Value Range	Unit of Measure	Lead AWQI	Lead Exceedances
Plumbing Residential						
Lead	101	202	<0.0001 to 0.0118	mg/L	N/A	1
pH - Field	101	101	7.08 to 7.87	pH	N/A	N/A

1.3 MICROBIOLOGICAL TESTING

MICROBIOLOGICAL TESTING DONE UNDER SCHEDULE 10, 11, 12 AND 17, 18 OF REGULATION 170/03, DURING THIS REPORTING PERIOD.

Parameter	Sample Date(s)	Number of Samples	Result Value Range	Unit of Measure
Raw				
Escherichia coli	2024-01-02 to 2024-12-31	53	0 to 99	MPN/100mL
Total Coliform	2024-01-02 to 2024-12-31	53	0 to 2480	MPN/100mL
Treated				
Escherichia coli	2024-01-01 to 2024-12-31	506	ALL ABSENT	P/A/100mL
Heterotrophic Plate Count	2024-01-01 to 2024-12-31	302	0 to 3	CFU/1mL
Total Coliform	2024-01-01 to 2024-12-31	506	ALL ABSENT	P/A/100mL
Distribution				
Escherichia coli	2024-05-09 to 2024-12-12	33	0	MPN/100mL
Escherichia coli	2024-01-01 to 2024-12-31	1893	ALL ABSENT	P/A/100mL
Heterotrophic Plate Count	2024-01-01 to 2024-12-31	997	0 to 188	CFU/1mL
Total Coliform	2024-05-09 to 2024-12-12	33	0 to 1	MPN/100mL

Parameter	Sample Date(s)	Number of Samples	Result Value Range	Unit of Measure
Total Coliform	2024-01-01 to 2024-12-31	1893	9 DETECTIONS	P/A/100mL

1.4 OPERATIONAL TESTING

OPERATIONAL TESTING DONE UNDER SCHEDULE 7, 8 OR 9 OF REGULATION 170/03 DURING THE PERIOD COVERED BY THIS ANNUAL REPORT.

NOTE: If results are obtained from continuous monitors, then 8760 is reported as the number of samples.

Parameter	Samples Taken	Result Value Range	Unit of Measure
Turbidity - Treated - Filter 1	8760	0.02 to 0.14	NTU
Turbidity - Treated - Filter 2	8760	0.02 to 0.14	NTU
Turbidity - Treated - Filter 3	8760	0.02 to 0.15	NTU
Turbidity - Treated - Filter 4	8760	0.02 to 0.12	NTU
Turbidity - Treated - Filter 5	8760	0.02 to 0.12	NTU
Turbidity - Treated - Filter 6	8760	0.02 to 0.41	NTU
Turbidity - Treated - Filter 7	8760	0.02 to 0.18	NTU
Turbidity - Treated - Filter 8	8760	0.02 to 0.40	NTU
Turbidity - Treated - Filter 9	8760	0.02 to 0.12	NTU
Turbidity - Treated - Filter 10	8760	0.02 to 0.12	NTU
Turbidity - Treated - Filter 11	8760	0.02 to 0.10	NTU
Turbidity - Treated - Filter 12	8760	0.02 to 0.17	NTU

Parameter	Samples Taken	Result Value Range	Unit of Measure
Turbidity - Treated - Filter 13	8760	0.02 to 0.12	NTU
Turbidity - Treated - Filter 14	8760	0.02 to 0.11	NTU
Turbidity - Treated - Filter 15	8760	0.02 to 0.12	NTU
Turbidity - Treated - Filter 16	8760	0.02 to 0.14	NTU
Turbidity - Treated - Filter 17	8760	0.02 to 0.10	NTU
Turbidity - Treated - Filter 18	8760	0.02 to 0.10	NTU
Turbidity - Treated - Filter 19	8760	0.02 to 0.13	NTU
Turbidity - Treated - Filter 20	8760	0.02 to 0.12	NTU
Turbidity - Treated - Filter 21	8760	0.02 to 0.12	NTU
Turbidity - Treated - Filter 22	N/A*	N/A*	NTU
Turbidity - Treated - Filter 23	8760	0.02 to 0.12	NTU
Turbidity - Treated - Filter 24	8760	0.02 to 0.11	NTU
Combined Chlorine - Treated	8760	1.58 to 3.42	mg/L
Free Chlorine - Distribution	2034	0 to 0.27	mg/L
Combined Chlorine - Distribution	2034	0.08 to 3.05	mg/L
Fluoride – Treated	8760	0.40 to 0.79	mg/L
*Filter 22 was out of service during this reporting period			

1.5 ADDITIONAL TESTING

SUMMARY OF ADDITIONAL TESTING AND SAMPLING CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENT OF A LICENCE, APPROVAL, ORDER OR OTHER LEGAL INSTRUMENT.

NOTE: If results are obtained from continuous monitors, then 8760 is reported as the number of samples.

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Raw			
Microcystins	2024-01-09 to 2024-12-10	<0.15 to 0.54	ug/L
Treated			
Alkalinity	2024-04-22 to 2024-10-28	86 to 89	mg/L
Chloride	2024-01-09 to 2024-12-10	28.9 to 38.3	mg/L
Colour (apparent)	2024-01-30 to 2024-10-22	<2	CU
Copper	2024-01-30 to 2024-10-22	0.0003 to 0.0004	mg/L
Iron	2024-01-30 to 2024-10-22	<0.003	mg/L
Lead	2024-01-30 to 2024-10-22	<0.0001	mg/L
Microcystins	2024-06-04 to 2024-10-28	<0.15	ug/L
Sulphate	2024-01-09 to 2024-12-10	22.1 to 23.8	mg/L
Total Dissolved Solids	2024-01-30 to 2024-10-22	182 to 226	mg/L
Distribution			
Iron	2024-01-29 to 2024-10-21	<0.003 to 0.485	mg/L
o-Phosphate as PO4	2024-01-03 to 2024-12-23	1.41 to 4.81	mg/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Temperature - Field	2024-01-03 to 2024-12-23	4.3 to 23.7	C
Turbidity - Field	2024-01-03 to 2024-12-23	0.06 to 2.44	NTU
Plumbing			
Copper	2024-03-11 to 2024-09-27	0.0013 to 0.1170	mg/L

Parameter	Samples Taken	Result Value Range	Unit of Measure
Temperature – Raw	8760	0.29 to 22.74	C
pH – Treated	8760	6.95 to 7.47	pH
Orthophosphate – Treated	8760	1.34 to 2.76	mg/L
Orthophosphate – Treated	365	1.00 to 2.85	mg/L
Turbidity - Treated	8760	0.03 to 7.75	NTU

1.6 INORGANIC TESTING

SUMMARY OF INORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Treated			
Antimony	2024-04-22 to 2024-10-28	0.0001 to 0.0002	mg/L
Arsenic	2024-04-22 to 2024-10-28	0.0005	mg/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Barium	2024-04-22 to 2024-10-28	0.0187 to 0.0211	mg/L
Boron	2024-04-22 to 2024-10-28	0.022 to 0.026	mg/L
Cadmium	2024-04-22 to 2024-10-28	<0.0001	mg/L
Chromium	2024-04-22 to 2024-10-28	<0.0001	mg/L
Fluoride	2024-04-22 to 2024-10-28	0.62 to 0.66	mg/L
Mercury	2024-04-22 to 2024-10-28	<0.05	ug/L
Nitrate as N	2024-01-22 to 2024-10-28	0.23 to 0.45	mg/L
Nitrite as N	2024-01-22 to 2024-10-28	<0.01	mg/L
Selenium	2024-04-22 to 2024-10-28	0.0001 to 0.0002	mg/L
Sodium	2024-04-22 to 2024-10-28	14.2 to 17.0	mg/L
Uranium	2024-04-22 to 2024-10-28	0.186 to 0.202	ug/L

1.7 ORGANIC TESTING

SUMMARY OF ORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Treated			
1,1-Dichloroethylene	2024-04-22 to 2024-10-28	<0.33	ug/L
1,2-Dichlorobenzene	2024-04-22 to 2024-10-28	<0.41	ug/L
1,2-Dichloroethane	2024-04-22 to 2024-10-28	<0.35	ug/L
1,4-Dichlorobenzene	2024-04-22 to 2024-10-28	<0.36	ug/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
2,3,4,6-Tetrachlorophenol	2024-04-22	<0.20	ug/L
2,4,6-Trichlorophenol	2024-04-22	<0.25	ug/L
2,4-D	2024-04-22	<0.19	ug/L
2,4-Dichlorophenol	2024-04-22	<0.15	ug/L
Alachlor	2024-04-22	<0.02	ug/L
Atrazine + Desethyl-atrazine	2024-04-22	0.05	ug/L
Azinphos-methyl	2024-04-22	<0.05	ug/L
Benzene	2024-04-22 to 2024-10-28	<0.32	ug/L
Benzo[a]pyrene	2024-04-22	<0.004	ug/L
Bromoxynil	2024-04-22	<0.33	ug/L
Carbaryl	2024-04-22	<0.05	ug/L
Carbofuran	2024-04-22	<0.01	ug/L
Carbon Tetrachloride	2024-04-22 to 2024-10-28	<0.20	ug/L
Chlorobenzene	2024-04-22 to 2024-10-28	<0.3	ug/L
Chlorpyrifos (Dursban)	2024-04-22	<0.02	ug/L
Diazinon	2024-04-22	<0.02	ug/L
Dicamba	2024-04-22	<0.20	ug/L
Dichloromethane	2024-04-22 to 2024-10-28	<0.50	ug/L
Diclofop-methyl	2024-04-22	<0.40	ug/L
Dimethoate	2024-04-22	<0.06	ug/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Diquat	2024-04-22	<1	ug/L
Diuron	2024-04-22	<0.03	ug/L
Glyphosate	2024-04-22	<1	ug/L
Malathion	2024-04-22	<0.02	ug/L
MCPA	2024-04-22	<0.00012	mg/L
Metolachlor	2024-04-22	<0.01	ug/L
Metribuzin (Sencor)	2024-04-22	<0.02	ug/L
Paraquat	2024-04-22	<1	ug/L
PCBs Total	2024-04-22	<0.04	ug/L
Pentachlorophenol	2024-04-22	<0.15	ug/L
Phorate	2024-04-22	<0.01	ug/L
Picloram	2024-04-22	<1	ug/L
Prometryne	2024-04-22	<0.03	ug/L
Simazine	2024-04-22	<0.01	ug/L
Terbufos	2024-04-22	<0.01	ug/L
Tetrachloroethylene	2024-04-22 to 2024-10-28	<0.35	ug/L
Triallate	2024-04-22	<0.01	ug/L
Trichloroethylene	2024-04-22 to 2024-10-28	<0.44	ug/L
Trifluralin	2024-04-22	<0.02	ug/L
Vinyl Chloride	2024-04-22 to 2024-10-28	<0.20	ug/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Distribution			
Haloacetic Acids*	Running annual average for the last four quarters	23.0	ug/L
Total Trihalomethanes*	Running annual average for the last four quarters	<5.3	ug/L
*The Maximum Acceptable Concentration for Trihalomethanes and Haloacetic Acids in the distribution system is based on a running average of the results from all sampling events in the past four quarters. This running average can be found in the result value range column.			

1.8 PARAMETERS EXCEEDING PRESCRIBED HALF-STANDARD

There were no Schedule 23 or 24 parameters that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards (O.Reg. 169/03).

2 HAMILTON DRINKING WATER SYSTEM, FIFTY ROAD SUBSYSTEM

2.1 DEFINITIONS

AWQI: Adverse Water Quality Incident

CFU: Colony Forming Unit

MPN: Most Probable Number

HPC: Heterotrophic Plate Count

mg/L: milligrams per litre

mL: millilitre

N/A: Not Applicable

ug/L: microgram per litre

P/A: Present/Absent

2.2 LEAD TESTING

Fifty Road DWSS is exempt from sampling for lead in plumbing as per Schedule 15.1-5. (10) of O. Reg. 170/03. Relief is in place from taking residential and non-residential plumbing samples. Lead samples from the distribution system are collected every three years under the reduced schedule.

SUMMARY OF LEAD TESTING UNDER SCHEDULE 15.1 OF REGULATION 170/03 DURING THIS REPORTING PERIOD.

Parameter	Points Sampled	Samples Taken	Result Value Range	Unit of Measure
Distribution				
Alkalinity	2	2	85 to 89	mg/L
pH - Field	2	2	7.47 to 7.50	pH

2.3 MICROBIOLOGICAL TESTING

MICROBIOLOGICAL TESTING DONE UNDER SCHEDULE 10, 11, 12 AND 17, 18 OF REGULATION 170/03, DURING THIS REPORTING PERIOD.

Parameter	Sample Date(s)	Number of Samples	Result Value Range	Unit of Measure
Distribution				
Escherichia coli	2024-01-01 to 2024-12-30	106	ALL ABSENT	P/A/100mL
Heterotrophic Plate Count	2024-01-01 to 2024-12-30	106	0 to 3	CFU/1mL
Total Coliform	2024-01-01 to 2024-12-30	106	ALL ABSENT	P/A/100mL

2.4 OPERATIONAL TESTING

OPERATIONAL TESTING DONE UNDER SCHEDULE 7, 8 OR 9 OF REGULATION 170/03 DURING THE PERIOD COVERED BY THIS ANNUAL REPORT.

Parameter	Samples Taken	Result Value Range	Unit of Measure
Free Chlorine - Distribution	158	0.53 to 1.56	mg/L

2.5 ORGANIC TESTING

SUMMARY OF ORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Distribution			
Haloacetic Acids*	Running annual average for the last four quarters	33.1	ug/L
Total Trihalomethanes*	Running annual average for the last four quarters	32.3	ug/L
*The Maximum Acceptable Concentration for Trihalomethanes and Haloacetic Acids in the distribution system is based on a running average of the results from all sampling events in the past four quarters. This running average can be found in the result value range column.			

2.6 PARAMETERS EXCEEDING PRESCRIBED HALF-STANDARD

There were no Schedule 23 or 24 parameters that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards (O.Reg. 169/03).

3 FREELTON DRINKING WATER SYSTEM

3.1 DEFINITIONS

AWQI: Adverse Water Quality Incident

CFU: Colony Forming Unit

MPN: Most Probable Number

HPC: Heterotrophic Plate Count

mg/L: milligrams per litre

mL: millilitre

N/A: Not Applicable

NTU: Nephelometric Turbidity Unit

ug/L: microgram per litre

P/A: Present/Absent

3.2 LEAD TESTING

Freelton DWS is exempt from sampling for lead in plumbing as per Schedule 15.1-5. (10) of O. Reg. 170/03. Relief is in place from taking residential and non-residential plumbing samples. Lead samples from the distribution system are collected every three years under the reduced schedule.

SUMMARY OF LEAD TESTING UNDER SCHEDULE 15.1 OF REGULATION 170/03 DURING THIS REPORTING PERIOD.

Parameter	Points Sampled	Samples Taken	Result Value Range	Unit of Measure
Distribution				
Alkalinity	4	4	299 to 318	mg/L
pH - Field	4	4	7.29	pH

3.3 MICROBIOLOGICAL TESTING

MICROBIOLOGICAL TESTING DONE UNDER SCHEDULE 10, 11, 12 AND 17, 18 OF REGULATION 170/03, DURING THIS REPORTING PERIOD.

Parameter	Sample Date(s)	Number of Samples	Result Value Range	Unit of Measure
Freelton Well Raw FDF01				
Escherichia coli	2024-01-01 to 2024-12-30	53	0	MPN/100mL
Total Coliform	2024-01-01 to 2024-12-30	53	0	MPN/100mL
Freelton Well Raw FDF03				
Escherichia coli	2024-01-02 to 2024-12-31	53	0	MPN/100mL
Total Coliform	2024-01-02 to 2024-12-31	53	0	MPN/100mL
Freelton Well Treated FDF01				
Escherichia coli	2024-01-01 to 2024-12-30	53	ALL ABSENT	P/A/100mL
Heterotrophic Plate Count	2024-01-01 to 2024-12-30	53	0 to 1	CFU/1mL
Total Coliform	2024-01-01 to 2024-12-30	53	ALL ABSENT	P/A/100mL
Freelton Well Treated FDF03				
Escherichia coli	2024-01-02 to 2024-12-31	53	ALL ABSENT	P/A/100mL
Heterotrophic Plate Count	2024-01-02 to 2024-12-31	53	0 to 3	CFU/1mL
Total Coliform	2024-01-02 to 2024-12-31	53	ALL ABSENT	P/A/100mL
Distribution				
Escherichia coli	2024-08-28 to 2024-10-30	6	0	MPN/100mL
Escherichia coli	2024-01-01 to 2024-12-31	159	ALL ABSENT	P/A/100mL
Heterotrophic Plate Count	2024-01-01 to 2024-12-31	212	0 to 4	CFU/1mL

Parameter	Sample Date(s)	Number of Samples	Result Value Range	Unit of Measure
Total Coliform	2024-08-28 to 2024-10-30	6	0	MPN/100mL
Total Coliform	2024-01-01 to 2024-12-31	159	2 DETECTIONS	P/A/100mL

3.4 OPERATIONAL TESTING

OPERATIONAL TESTING DONE UNDER SCHEDULE 7, 8 OR 9 OF REGULATION 170/03 DURING THE PERIOD COVERED BY THIS ANNUAL REPORT.

NOTE: If results are obtained from continuous monitors, then 8760 is reported as the number of samples.

Parameter	Samples Taken	Result Value Range	Unit of Measure
Turbidity - Raw FDF01	53	0.05 to 0.38	NTU
Turbidity - Raw FDF03	53	0.07 to 0.93	NTU
Free Chlorine - Treated FDF01	8760	0.92 to 2.62	mg/L
Free Chlorine - Treated FDF03	8760	1.17 to 2.72	mg/L
Free Chlorine - Distribution	366	1.02 to 2.45	mg/L

3.5 INORGANIC TESTING

SUMMARY OF INORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Freelton Well Treated FDF01			
Antimony	2024-04-23 to 2024-10-29	0.0001	mg/L
Arsenic	2024-04-23 to 2024-10-29	0.0001 to 0.0002	mg/L
Barium	2024-04-23 to 2024-10-29	0.0684 to 0.0703	mg/L
Boron	2024-04-23 to 2024-10-29	0.024	mg/L
Cadmium	2024-04-23 to 2024-10-29	<0.0001 to 0.0001	mg/L
Chromium	2024-04-23 to 2024-10-29	<0.0001	mg/L
Fluoride	2024-04-23 to 2024-10-29	0.08 to 0.09	mg/L
Mercury	2024-04-23 to 2024-10-29	<0.05	ug/L
Nitrate as N	2024-01-23 to 2024-10-29	1.98 to 2.30	mg/L
Nitrite as N	2024-01-23 to 2024-10-29	<0.01	mg/L
Selenium	2024-04-23 to 2024-10-29	0.0003	mg/L
Sodium	2024-04-23 to 2024-10-29	50.9 to 55.1	mg/L
Uranium	2024-04-23 to 2024-10-29	0.300 to 0.308	ug/L
Freelton Well Treated FDF03			
Antimony	2024-04-23 to 2024-10-29	0.0001 to 0.0002	mg/L
Arsenic	2024-04-23 to 2024-10-29	0.0003 to 0.0006	mg/L
Barium	2024-04-23 to 2024-10-29	0.0708 to 0.0744	mg/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Boron	2024-04-23 to 2024-10-29	0.019 to 0.020	mg/L
Cadmium	2024-04-23 to 2024-10-29	<0.0001	mg/L
Chromium	2024-04-23 to 2024-10-29	<0.0001	mg/L
Fluoride	2024-04-23 to 2024-10-29	0.16	mg/L
Mercury	2024-04-23 to 2024-10-29	<0.05	ug/L
Nitrate as N	2024-01-23 to 2024-10-29	0.05 to 0.13	mg/L
Nitrite as N	2024-01-23 to 2024-10-29	<0.01	mg/L
Selenium	2024-04-23 to 2024-10-29	<0.0001	mg/L
Sodium	2024-04-23 to 2024-10-29	46.6 to 62.1	mg/L
Uranium	2024-04-23 to 2024-10-29	0.289 to 0.323	ug/L

3.6 ORGANIC TESTING

SUMMARY OF ORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Freelton Well Treated FDF01			
1,1-Dichloroethylene	2024-04-23 to 2024-10-29	<0.33	ug/L
1,2-Dichlorobenzene	2024-04-23 to 2024-10-29	<0.41	ug/L
1,2-Dichloroethane	2024-04-23 to 2024-10-29	<0.35	ug/L
1,4-Dichlorobenzene	2024-04-23 to 2024-10-29	<0.36	ug/L
2,3,4,6-Tetrachlorophenol	2024-04-23	<0.20	ug/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
2,4,6-Trichlorophenol	2024-04-23	<0.25	ug/L
2,4-D	2024-04-23	<0.19	ug/L
2,4-Dichlorophenol	2024-04-23	<0.15	ug/L
Alachlor	2024-04-23	<0.02	ug/L
Atrazine + Desethyl-atrazine	2024-04-23	<0.01	ug/L
Azinphos-methyl	2024-04-23	<0.05	ug/L
Benzene	2024-04-23 to 2024-10-29	<0.32	ug/L
Benzo[a]pyrene	2024-04-23	<0.004	ug/L
Bromoxynil	2024-04-23	<0.33	ug/L
Carbaryl	2024-04-23	<0.05	ug/L
Carbofuran	2024-04-23	<0.01	ug/L
Carbon Tetrachloride	2024-04-23 to 2024-10-29	<0.20	ug/L
Chlorobenzene	2024-04-23 to 2024-10-29	<0.3	ug/L
Chlorpyrifos (Dursban)	2024-04-23	<0.02	ug/L
Diazinon	2024-04-23	<0.02	ug/L
Dicamba	2024-04-23	<0.20	ug/L
Dichloromethane	2024-04-23 to 2024-10-29	<0.50	ug/L
Diclofop-methyl	2024-04-23	<0.40	ug/L
Dimethoate	2024-04-23	<0.06	ug/L
Diquat	2024-04-23	<1	ug/L
Diuron	2024-04-23	<0.03	ug/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Glyphosate	2024-04-23	<1	ug/L
Malathion	2024-04-23	<0.02	ug/L
MCPA	2024-04-23	<0.00012	mg/L
Metolachlor	2024-04-23	<0.01	ug/L
Metribuzin (Sencor)	2024-04-23	<0.02	ug/L
Paraquat	2024-04-23	<1	ug/L
PCBs Total	2024-04-23	<0.04	ug/L
Pentachlorophenol	2024-04-23	<0.15	ug/L
Phorate	2024-04-23	<0.01	ug/L
Picloram	2024-04-23	<1	ug/L
Prometryne	2024-04-23	<0.03	ug/L
Simazine	2024-04-23	<0.01	ug/L
Terbufos	2024-04-23	<0.01	ug/L
Tetrachloroethylene	2024-04-23 to 2024-10-29	<0.35	ug/L
Triallate	2024-04-23	<0.01	ug/L
Trichloroethylene	2024-04-23 to 2024-10-29	<0.44	ug/L
Trifluralin	2024-04-23	<0.02	ug/L
Vinyl Chloride	2024-04-23 to 2024-10-29	<0.20	ug/L
Freelton Well Treated FDF03			
1,1-Dichloroethylene	2024-04-23 to 2024-10-29	<0.33	ug/L
1,2-Dichlorobenzene	2024-04-23 to 2024-10-29	<0.41	ug/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
1,2-Dichloroethane	2024-04-23 to 2024-10-29	<0.35	ug/L
1,4-Dichlorobenzene	2024-04-23 to 2024-10-29	<0.36	ug/L
2,3,4,6-Tetrachlorophenol	2024-04-23	<0.20	ug/L
2,4,6-Trichlorophenol	2024-04-23	<0.25	ug/L
2,4-D	2024-04-23	<0.19	ug/L
2,4-Dichlorophenol	2024-04-23	<0.15	ug/L
Alachlor	2024-04-23	<0.02	ug/L
Atrazine + Desethyl-atrazine	2024-04-23	<0.01	ug/L
Azinphos-methyl	2024-04-23	<0.05	ug/L
Benzene	2024-04-23 to 2024-10-29	<0.32	ug/L
Benzo[a]pyrene	2024-04-23	<0.004	ug/L
Bromoxynil	2024-04-23	<0.33	ug/L
Carbaryl	2024-04-23	<0.05	ug/L
Carbofuran	2024-04-23	<0.01	ug/L
Carbon Tetrachloride	2024-04-23 to 2024-10-29	<0.20	ug/L
Chlorobenzene	2024-04-23 to 2024-10-29	<0.3	ug/L
Chlorpyrifos (Dursban)	2024-04-23	<0.02	ug/L
Diazinon	2024-04-23	<0.02	ug/L
Dicamba	2024-04-23	<0.20	ug/L
Dichloromethane	2024-04-23 to 2024-10-29	<0.50	ug/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Diclofop-methyl	2024-04-23	<0.40	ug/L
Dimethoate	2024-04-23	<0.06	ug/L
Diquat	2024-04-23	<1	ug/L
Diuron	2024-04-23	<0.03	ug/L
Glyphosate	2024-04-23	<1	ug/L
Malathion	2024-04-23	<0.02	ug/L
MCPA	2024-04-23	<0.00012	mg/L
Metolachlor	2024-04-23	<0.01	ug/L
Metribuzin (Sencor)	2024-04-23	<0.02	ug/L
Paraquat	2024-04-23	<1	ug/L
PCBs Total	2024-04-23	<0.04	ug/L
Pentachlorophenol	2024-04-23	<0.15	ug/L
Phorate	2024-04-23	<0.01	ug/L
Picloram	2024-04-23	<1	ug/L
Prometryne	2024-04-23	<0.03	ug/L
Simazine	2024-04-23	<0.01	ug/L
Terbufos	2024-04-23	<0.01	ug/L
Tetrachloroethylene	2024-04-23 to 2024-10-29	<0.35	ug/L
Triallate	2024-04-23	<0.01	ug/L
Trichloroethylene	2024-04-23 to 2024-10-29	<0.44	ug/L
Trifluralin	2024-04-23	<0.02	ug/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Vinyl Chloride	2024-04-23 to 2024-10-29	<0.20	ug/L
Distribution			
Haloacetic Acids*	Running annual average for the last four quarters	12.4	ug/L
Total Trihalomethanes*	Running annual average for the last four quarters	<5.3	ug/L
*The Maximum Acceptable Concentration for Trihalomethanes and Haloacetic Acids in the distribution system is based on a running average of the results from all sampling events in the past four quarters. This running average can be found in the result value range column.			

3.7 PARAMETERS EXCEEDING PRESCRIBED HALF-STANDARD

There were no Schedule 23 or 24 parameters that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards (O.Reg. 169/03).

4 GREENSVILLE DRINKING WATER SYSTEM

4.1 DEFINITIONS

AWQI: Adverse Water Quality Incident

CFU: Colony Forming Unit

MPN: Most Probable Number

HPC: Heterotrophic Plate Count

mg/L: milligrams per litre

mL: millilitre

N/A: Not Applicable

NTU: Nephelometric Turbidity Unit

ug/L: microgram per litre

P/A: Present/Absent

CU: Colour Units

4.2 LEAD TESTING

Greensville DWS is exempt from sampling for lead in plumbing as per Schedule 15.1-5. (10) of O. Reg. 170/03. Relief is in place from taking residential and non-residential plumbing samples. Lead samples from the distribution system are collected every three years under the reduced schedule.

SUMMARY OF LEAD TESTING UNDER SCHEDULE 15.1 OF REGULATION 170/03 DURING THIS REPORTING PERIOD.

Parameter	Points Sampled	Samples Taken	Result Value Range	Unit of Measure
Distribution				
Alkalinity	2	2	352 to 371	mg/L
pH - Field	2	2	7.14 to 7.18	pH

4.3 MICROBIOLOGICAL TESTING

MICROBIOLOGICAL TESTING DONE UNDER SCHEDULE 10, 11, 12 AND 17, 18 OF REGULATION 170/03, DURING THIS REPORTING PERIOD.

Parameter	Sample Date(s)	Number of Samples	Result Value Range	Unit of Measure
Greensville Well Raw FDG01				
Escherichia coli	2024-01-03 to 2024-12-26	52	0	MPN/100mL
Total Coliform	2024-01-03 to 2024-12-26	52	0 to 2	MPN/100mL
Greensville Well Treated FDG01				
Escherichia coli	2024-01-03 to 2024-12-26	52	ALL ABSENT	P/A/100mL
Heterotrophic Plate Count	2024-01-03 to 2024-12-26	52	0 to 1	CFU/1mL

Parameter	Sample Date(s)	Number of Samples	Result Value Range	Unit of Measure
Total Coliform	2024-01-03 to 2024-12-26	52	ALL ABSENT	P/A/100mL
Distribution				
Escherichia coli	2024-01-03 to 2024-12-26	52	ALL ABSENT	P/A/100mL
Heterotrophic Plate Count	2024-01-03 to 2024-12-26	52	0 to 5	CFU/1mL
Total Coliform	2024-01-03 to 2024-12-26	52	ALL ABSENT	P/A/100mL

4.4 OPERATIONAL TESTING

OPERATIONAL TESTING DONE UNDER SCHEDULE 7, 8 OR 9 OF REGULATION 170/03 DURING THE PERIOD COVERED BY THIS ANNUAL REPORT.

NOTE: If results are obtained from continuous monitors, then 8760 is reported as the number of samples.

Parameter	Samples Taken	Result Value Range	Unit of Measure
Turbidity - Treated FDG01	8760	0.03 to 0.38	NTU
Free Chlorine - Treated FDG01	8760	1.23 to 3.04	mg/L
Free Chlorine - Distribution	366	1.29 to 2.74	mg/L

4.5 INORGANIC TESTING

SUMMARY OF INORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Greensville Well Treated FDG01			
Antimony	2024-04-24 to 2024-10-30	<0.0001	mg/L
Arsenic	2024-04-24 to 2024-10-30	<0.0001	mg/L
Barium	2024-04-24 to 2024-10-30	0.134 to 0.136	mg/L
Boron	2024-04-24 to 2024-10-30	0.042 to 0.046	mg/L
Cadmium	2024-04-24 to 2024-10-30	<0.0001	mg/L
Chromium	2024-04-24 to 2024-10-30	0.0002	mg/L
Fluoride	2024-04-24 to 2024-10-30	0.11 to 0.12	mg/L
Mercury	2024-04-24 to 2024-10-30	<0.05	ug/L
Nitrate as N	2024-01-03 to 2024-12-04	5.23 to 5.92	mg/L
Nitrite as N	2024-01-03 to 2024-12-04	<0.01	mg/L
Selenium	2024-04-24 to 2024-10-30	0.0003	mg/L
Sodium	2024-04-24 to 2024-10-30	122 to 129	mg/L
Uranium	2024-04-24 to 2024-10-30	0.629 to 0.687	ug/L

4.6 ORGANIC TESTING

SUMMARY OF ORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Greensville Well Treated FDG01			
1,1-Dichloroethylene	2024-04-24 to 2024-10-30	<0.33	ug/L
1,2-Dichlorobenzene	2024-04-24 to 2024-10-30	<0.41	ug/L
1,2-Dichloroethane	2024-04-24 to 2024-10-30	<0.35	ug/L
1,4-Dichlorobenzene	2024-04-24 to 2024-10-30	<0.36	ug/L
2,3,4,6-Tetrachlorophenol	2024-04-24	<0.20	ug/L
2,4,6-Trichlorophenol	2024-04-24	<0.25	ug/L
2,4-D	2024-04-24	<0.19	ug/L
2,4-Dichlorophenol	2024-04-24	<0.15	ug/L
Alachlor	2024-04-24	<0.02	ug/L
Atrazine + Desethyl-atrazine	2024-04-24	<0.01	ug/L
Azinphos-methyl	2024-04-24	<0.05	ug/L
Benzene	2024-04-24 to 2024-10-30	<0.32	ug/L
Benzo[a]pyrene	2024-04-24	<0.004	ug/L
Bromoxynil	2024-04-24	<0.33	ug/L
Carbaryl	2024-04-24	<0.05	ug/L
Carbofuran	2024-04-24	<0.01	ug/L
Carbon Tetrachloride	2024-04-24 to 2024-10-30	<0.20	ug/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Chlorobenzene	2024-04-24 to 2024-10-30	<0.3	ug/L
Chlorpyrifos (Dursban)	2024-04-24	<0.02	ug/L
Diazinon	2024-04-24	<0.02	ug/L
Dicamba	2024-04-24	<0.20	ug/L
Dichloromethane	2024-04-24 to 2024-10-30	<0.50	ug/L
Diclofop-methyl	2024-04-24	<0.40	ug/L
Dimethoate	2024-04-24	<0.06	ug/L
Diquat	2024-04-24	<1	ug/L
Diuron	2024-04-24	<0.03	ug/L
Glyphosate	2024-04-24	<1	ug/L
Malathion	2024-04-24	<0.02	ug/L
MCPA	2024-04-24	<0.00012	mg/L
Metolachlor	2024-04-24	<0.01	ug/L
Metribuzin (Sencor)	2024-04-24	<0.02	ug/L
Paraquat	2024-04-24	<1	ug/L
PCBs Total	2024-04-24	<0.04	ug/L
Pentachlorophenol	2024-04-24	<0.15	ug/L
Phorate	2024-04-24	<0.01	ug/L
Picloram	2024-04-24	<1	ug/L
Prometryne	2024-04-24	<0.03	ug/L
Simazine	2024-04-24	<0.01	ug/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Terbufos	2024-04-24	<0.01	ug/L
Tetrachloroethylene	2024-04-24 to 2024-10-30	<0.35	ug/L
Triallate	2024-04-24	<0.01	ug/L
Trichloroethylene	2024-04-24 to 2024-10-30	<0.44	ug/L
Trifluralin	2024-04-24	<0.02	ug/L
Vinyl Chloride	2024-04-24 to 2024-10-30	<0.20	ug/L
Distribution			
Haloacetic Acids*	Running annual average for the last four quarters	15.8	ug/L
Total Trihalomethanes*	Running annual average for the last four quarters	5.3	ug/L
*The Maximum Acceptable Concentration for Trihalomethanes and Haloacetic Acids in the distribution system is based on a running average of the results from all sampling events in the past four quarters. This running average can be found in the result value range column.			

4.7 PARAMETERS EXCEEDING PRESCRIBED HALF-STANDARD

There were no Schedule 23 or 24 parameters that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards (O.Reg. 169/03).

5 CARLISLE DRINKING WATER SYSTEM

5.1 DEFINITIONS

AWQI: Adverse Water Quality Incident

CFU: Colony Forming Unit

MPN: Most Probable Number

HPC: Heterotrophic Plate Count

mg/L: milligrams per litre

mL: millilitre

N/A: Not Applicable

NTU: Nephelometric Turbidity Unit

ug/L: microgram per litre

P/A: Present/Absent

5.2 LEAD TESTING

Carlisle DWS is exempt from sampling for lead in plumbing as per Schedule 15.1-5. (10) of O. Reg. 170/03. Relief is in place from taking residential and non-residential plumbing samples. Lead samples from the distribution system are collected every three years under the reduced schedule.

SUMMARY OF LEAD TESTING UNDER SCHEDULE 15.1 OF REGULATION 170/03 DURING THIS REPORTING PERIOD.

Parameter	Points Sampled	Samples Taken	Result Value Range	Unit of Measure
Distribution				
Alkalinity	4	4	311 to 342	mg/L
pH - Field	4	4	7.22 to 7.28	pH

5.3 MICROBIOLOGICAL TESTING

MICROBIOLOGICAL TESTING DONE UNDER SCHEDULE 10, 11, 12 AND 17, 18 OF REGULATION 170/03, DURING THIS REPORTING PERIOD.

Parameter	Sample Date(s)	Number of Samples	Result Value Range	Unit of Measure
Carlisle Well Raw FDC01				
Escherichia coli	2024-01-02 to 2024-12-31	53	0	MPN/100mL

Parameter	Sample Date(s)	Number of Samples	Result Value Range	Unit of Measure
Total Coliform	2024-01-02 to 2024-12-31	53	0 to 2	MPN/100mL
Carlisle Well Raw FDC02				
Escherichia coli	2024-01-02 to 2024-12-31	53	0	MPN/100mL
Total Coliform	2024-01-02 to 2024-12-31	53	0 to 3	MPN/100mL
Carlisle Well Raw FDC03R				
Escherichia coli	2024-01-01 to 2024-12-30	37	0	MPN/100mL
Total Coliform	2024-01-01 to 2024-12-30	37	0	MPN/100mL
Carlisle Well Raw FDC05				
Escherichia coli	2024-01-01 to 2024-12-30	53	0	MPN/100mL
Total Coliform	2024-01-01 to 2024-12-30	53	0	MPN/100mL
Carlisle Well Treated FDC01				
Escherichia coli	2024-01-02 to 2024-12-31	53	ALL ABSENT	P/A/100mL
Heterotrophic Plate Count	2024-01-02 to 2024-12-31	53	0 to 2	CFU/1mL
Total Coliform	2024-01-02 to 2024-12-31	53	ALL ABSENT	P/A/100mL
Carlisle Well Treated FDC02				
Escherichia coli	2024-01-02 to 2024-12-31	53	ALL ABSENT	P/A/100mL
Heterotrophic Plate Count	2024-01-02 to 2024-12-31	53	0 to 1	CFU/1mL
Total Coliform	2024-01-02 to 2024-12-31	53	ALL ABSENT	P/A/100mL
Carlisle Well Treated FDC03R				
Escherichia coli	2024-01-01 to 2024-12-30	37	ALL ABSENT	P/A/100mL

Parameter	Sample Date(s)	Number of Samples	Result Value Range	Unit of Measure
Heterotrophic Plate Count	2024-01-01 to 2024-12-30	37	0 to 1	CFU/1mL
Total Coliform	2024-01-01 to 2024-12-30	37	ALL ABSENT	P/A/100mL
Carlisle Well Treated FDC05				
Escherichia coli	2024-01-01 to 2024-12-30	53	ALL ABSENT	P/A/100mL
Heterotrophic Plate Count	2024-01-01 to 2024-12-30	53	0 to 1	CFU/1mL
Total Coliform	2024-01-01 to 2024-12-30	53	ALL ABSENT	P/A/100mL
Distribution				
Escherichia coli	2024-01-01 to 2024-12-31	159	ALL ABSENT	P/A/100mL
Heterotrophic Plate Count	2024-01-01 to 2024-12-31	212	0 to 23	CFU/1mL
Total Coliform	2024-01-01 to 2024-12-31	159	ALL ABSENT	P/A/100mL

5.4 OPERATIONAL TESTING

OPERATIONAL TESTING DONE UNDER SCHEDULE 7, 8 OR 9 OF REGULATION 170/03 DURING THE PERIOD COVERED BY THIS ANNUAL REPORT.

NOTE: If results are obtained from continuous monitors, then 8760 is reported as the number of samples.

Parameter	Samples Taken	Result Value Range	Unit of Measure
Turbidity - Raw FDC01	53	0.06 to 1.40	NTU
Turbidity - Raw FDC02	53	0.06 to 0.46	NTU
Turbidity - Treated FDC03R	8760	0.06 to 0.38	NTU
Turbidity - Treated FDC05	8760	0.02 to 0.26	NTU

Parameter	Samples Taken	Result Value Range	Unit of Measure
Free Chlorine - Treated FDC01 and FDC02	8760	1.29 to 2.74	mg/L
Free Chlorine - Treated FDC03R and FDC05	8760	1.43 to 2.37	mg/L
Free Chlorine - Distribution	366	1.17 to 2.22	mg/L

5.5 INORGANIC TESTING

SUMMARY OF INORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Carlisle Well Treated FDC01			
Antimony	2024-04-23 to 2024-10-29	<0.0001	mg/L
Arsenic	2024-04-23 to 2024-10-29	0.0001	mg/L
Barium	2024-04-23 to 2024-10-29	0.0896 to 0.0919	mg/L
Boron	2024-04-23 to 2024-10-29	0.019 to 0.020	mg/L
Cadmium	2024-04-23 to 2024-10-29	<0.0001	mg/L
Chromium	2024-04-23 to 2024-10-29	<0.0001 to 0.0001	mg/L
Fluoride	2024-04-23 to 2024-10-29	0.07	mg/L
Mercury	2024-04-23 to 2024-10-29	<0.05	ug/L
Nitrate as N	2024-01-23 to 2024-10-29	1.58 to 3.47	mg/L
Nitrite as N	2024-01-23 to 2024-10-29	<0.01	mg/L
Selenium	2024-04-23 to 2024-10-29	0.0002	mg/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Sodium	2024-04-23 to 2024-10-29	15.5 to 19.2	mg/L
Uranium	2024-04-23 to 2024-10-29	0.437 to 0.442	ug/L
Carlisle Well Treated FDC02			
Antimony	2024-04-23 to 2024-10-29	<0.0001	mg/L
Arsenic	2024-04-23 to 2024-10-29	0.0001	mg/L
Barium	2024-04-23 to 2024-10-29	0.0941 to 0.0944	mg/L
Boron	2024-04-23 to 2024-10-29	0.020 to 0.023	mg/L
Cadmium	2024-04-23 to 2024-10-29	<0.0001	mg/L
Chromium	2024-04-23 to 2024-10-29	0.0001	mg/L
Fluoride	2024-04-23 to 2024-10-29	0.06	mg/L
Mercury	2024-04-23 to 2024-10-29	<0.05	ug/L
Nitrate as N	2024-01-23 to 2024-10-29	2.69 to 4.11	mg/L
Nitrite as N	2024-01-23 to 2024-10-29	<0.01	mg/L
Selenium	2024-04-23 to 2024-10-29	0.0002 to 0.0003	mg/L
Sodium	2024-04-23 to 2024-10-29	26.0 to 31.2	mg/L
Uranium	2024-04-23 to 2024-10-29	0.404 to 0.409	ug/L
Carlisle Well Treated FDC03R			
Antimony	2024-06-03 to 2024-10-29	0.0002	mg/L
Arsenic	2024-06-03 to 2024-10-29	0.0004	mg/L
Barium	2024-06-03 to 2024-10-29	0.0828 to 0.0838	mg/L
Boron	2024-06-03 to 2024-10-29	0.028 to 0.029	mg/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Cadmium	2024-06-03 to 2024-10-29	<0.0001	mg/L
Chromium	2024-06-03 to 2024-10-29	<0.0001	mg/L
Fluoride	2024-06-03 to 2024-10-29	0.07	mg/L
Mercury	2024-06-03 to 2024-10-29	<0.05	ug/L
Nitrate as N	2024-01-23 to 2024-10-29	0.25 to 0.33	mg/L
Nitrite as N	2024-01-23 to 2024-10-29	<0.01	mg/L
Selenium	2024-06-03 to 2024-10-29	<0.0001	mg/L
Sodium	2024-06-03 to 2024-10-29	56.9 to 58.3	mg/L
Uranium	2024-06-03 to 2024-10-29	0.682 to 0.713	ug/L
Carlisle Well Treated FDC05			
Antimony	2024-04-23 to 2024-10-29	<0.0001	mg/L
Arsenic	2024-04-23 to 2024-10-29	0.0007	mg/L
Barium	2024-04-23 to 2024-10-29	0.0748 to 0.0764	mg/L
Boron	2024-04-23 to 2024-10-29	0.026 to 0.027	mg/L
Cadmium	2024-04-23 to 2024-10-29	<0.0001	mg/L
Chromium	2024-04-23 to 2024-10-29	<0.0001	mg/L
Fluoride	2024-04-23 to 2024-10-29	0.08	mg/L
Mercury	2024-04-23 to 2024-10-29	<0.05	ug/L
Nitrate as N	2024-01-23 to 2024-10-29	<0.02 to 0.19	mg/L
Nitrite as N	2024-01-23 to 2024-10-29	<0.01	mg/L
Selenium	2024-04-23 to 2024-10-29	<0.0001	mg/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Sodium	2024-04-23 to 2024-10-29	51.8 to 52.2	mg/L
Uranium	2024-04-23 to 2024-10-29	0.409 to 0.430	ug/L

5.6 ORGANIC TESTING

SUMMARY OF ORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Carlisle Well Treated FDC01			
1,1-Dichloroethylene	2024-04-23 to 2024-10-29	<0.33	ug/L
1,2-Dichlorobenzene	2024-04-23 to 2024-10-29	<0.41	ug/L
1,2-Dichloroethane	2024-04-23 to 2024-10-29	<0.35	ug/L
1,4-Dichlorobenzene	2024-04-23 to 2024-10-29	<0.36	ug/L
2,3,4,6-Tetrachlorophenol	2024-04-23	<0.20	ug/L
2,4,6-Trichlorophenol	2024-04-23	<0.25	ug/L
2,4-D	2024-04-23	<0.19	ug/L
2,4-Dichlorophenol	2024-04-23	<0.15	ug/L
Alachlor	2024-04-23	<0.02	ug/L
Atrazine + Desethyl-atrazine	2024-04-23	<0.01	ug/L
Azinphos-methyl	2024-04-23	<0.05	ug/L
Benzene	2024-04-23 to 2024-10-29	<0.32	ug/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Benzo[a]pyrene	2024-04-23	<0.004	ug/L
Bromoxynil	2024-04-23	<0.33	ug/L
Carbaryl	2024-04-23	<0.05	ug/L
Carbofuran	2024-04-23	<0.01	ug/L
Carbon Tetrachloride	2024-04-23 to 2024-10-29	<0.20	ug/L
Chlorobenzene	2024-04-23 to 2024-10-29	<0.3	ug/L
Chlorpyrifos (Dursban)	2024-04-23	<0.02	ug/L
Diazinon	2024-04-23	<0.02	ug/L
Dicamba	2024-04-23	<0.20	ug/L
Dichloromethane	2024-04-23 to 2024-10-29	<0.50	ug/L
Diclofop-methyl	2024-04-23	<0.40	ug/L
Dimethoate	2024-04-23	<0.06	ug/L
Diquat	2024-04-23	<1	ug/L
Diuron	2024-04-23	<0.03	ug/L
Glyphosate	2024-04-23	<1	ug/L
Malathion	2024-04-23	<0.02	ug/L
MCPA	2024-04-23	<0.00012	mg/L
Metolachlor	2024-04-23	<0.01	ug/L
Metribuzin (Sencor)	2024-04-23	<0.02	ug/L
Paraquat	2024-04-23	<1	ug/L
PCBs Total	2024-04-23	<0.04	ug/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Pentachlorophenol	2024-04-23	<0.15	ug/L
Phorate	2024-04-23	<0.01	ug/L
Picloram	2024-04-23	<1	ug/L
Prometryne	2024-04-23	<0.03	ug/L
Simazine	2024-04-23	<0.01	ug/L
Terbufos	2024-04-23	<0.01	ug/L
Tetrachloroethylene	2024-04-23 to 2024-10-29	<0.35	ug/L
Triallate	2024-04-23	<0.01	ug/L
Trichloroethylene	2024-04-23 to 2024-10-29	<0.44	ug/L
Trifluralin	2024-04-23	<0.02	ug/L
Vinyl Chloride	2024-04-23 to 2024-10-29	<0.20	ug/L
Carlisle Well Treated FDC02			
1,1-Dichloroethylene	2024-04-23 to 2024-10-29	<0.33	ug/L
1,2-Dichlorobenzene	2024-04-23 to 2024-10-29	<0.41	ug/L
1,2-Dichloroethane	2024-04-23 to 2024-10-29	<0.35	ug/L
1,4-Dichlorobenzene	2024-04-23 to 2024-10-29	<0.36	ug/L
2,3,4,6-Tetrachlorophenol	2024-04-23	<0.20	ug/L
2,4,6-Trichlorophenol	2024-04-23	<0.25	ug/L
2,4-D	2024-04-23	<0.19	ug/L
2,4-Dichlorophenol	2024-04-23	<0.15	ug/L
Alachlor	2024-04-23	<0.02	ug/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Atrazine + Desethyl-atrazine	2024-04-23	<0.01	ug/L
Azinphos-methyl	2024-04-23	<0.05	ug/L
Benzene	2024-04-23 to 2024-10-29	<0.32	ug/L
Benzo[a]pyrene	2024-04-23	<0.004	ug/L
Bromoxynil	2024-04-23	<0.33	ug/L
Carbaryl	2024-04-23	<0.05	ug/L
Carbofuran	2024-04-23	<0.01	ug/L
Carbon Tetrachloride	2024-04-23 to 2024-10-29	<0.20	ug/L
Chlorobenzene	2024-04-23 to 2024-10-29	<0.3	ug/L
Chlorpyrifos (Dursban)	2024-04-23	<0.02	ug/L
Diazinon	2024-04-23	<0.02	ug/L
Dicamba	2024-04-23	<0.20	ug/L
Dichloromethane	2024-04-23 to 2024-10-29	<0.50	ug/L
Diclofop-methyl	2024-04-23	<0.40	ug/L
Dimethoate	2024-04-23	<0.06	ug/L
Diquat	2024-04-23	<1	ug/L
Diuron	2024-04-23	<0.03	ug/L
Glyphosate	2024-04-23	<1	ug/L
Malathion	2024-04-23	<0.02	ug/L
MCPA	2024-04-23	<0.00012	mg/L
Metolachlor	2024-04-23	<0.01	ug/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Metribuzin (Sencor)	2024-04-23	<0.02	ug/L
Paraquat	2024-04-23	<1	ug/L
PCBs Total	2024-04-23	<0.04	ug/L
Pentachlorophenol	2024-04-23	<0.15	ug/L
Phorate	2024-04-23	<0.01	ug/L
Picloram	2024-04-23	<1	ug/L
Prometryne	2024-04-23	<0.03	ug/L
Simazine	2024-04-23	<0.01	ug/L
Terbufos	2024-04-23	<0.01	ug/L
Tetrachloroethylene	2024-04-23 to 2024-10-29	<0.35	ug/L
Triallate	2024-04-23	<0.01	ug/L
Trichloroethylene	2024-04-23 to 2024-10-29	<0.44	ug/L
Trifluralin	2024-04-23	<0.02	ug/L
Vinyl Chloride	2024-04-23 to 2024-10-29	<0.20	ug/L
Carlisle Well Treated FDC03R			
1,1-Dichloroethylene	2024-06-03 to 2024-10-29	<0.33	ug/L
1,2-Dichlorobenzene	2024-06-03 to 2024-10-29	<0.41	ug/L
1,2-Dichloroethane	2024-06-03 to 2024-10-29	<0.35	ug/L
1,4-Dichlorobenzene	2024-06-03 to 2024-10-29	<0.36	ug/L
2,3,4,6-Tetrachlorophenol	2024-06-03	<0.20	ug/L
2,4,6-Trichlorophenol	2024-06-03	<0.25	ug/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
2,4-D	2024-06-03	<0.19	ug/L
2,4-Dichlorophenol	2024-06-03	<0.15	ug/L
Alachlor	2024-06-03	<0.02	ug/L
Atrazine + Desethyl-atrazine	2024-06-03	<0.01	ug/L
Azinphos-methyl	2024-06-03	<0.05	ug/L
Benzene	2024-06-03 to 2024-10-29	<0.32	ug/L
Benzo[a]pyrene	2024-06-03	<0.004	ug/L
Bromoxynil	2024-06-03	<0.33	ug/L
Carbaryl	2024-06-03	<0.05	ug/L
Carbofuran	2024-06-03	<0.01	ug/L
Carbon Tetrachloride	2024-06-03 to 2024-10-29	<0.20	ug/L
Chlorobenzene	2024-06-03 to 2024-10-29	<0.3	ug/L
Chlorpyrifos (Dursban)	2024-06-03	<0.02	ug/L
Diazinon	2024-06-03	<0.02	ug/L
Dicamba	2024-06-03	<0.20	ug/L
Dichloromethane	2024-06-03 to 2024-10-29	<0.50	ug/L
Diclofop-methyl	2024-06-03	<0.40	ug/L
Dimethoate	2024-06-03	<0.06	ug/L
Diquat	2024-06-03	<1	ug/L
Diuron	2024-06-03	<0.03	ug/L
Glyphosate	2024-06-03	<1	ug/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Malathion	2024-06-03	<0.02	ug/L
MCPA	2024-06-03	<0.00012	mg/L
Metolachlor	2024-06-03	<0.01	ug/L
Metribuzin (Sencor)	2024-06-03	<0.02	ug/L
Paraquat	2024-06-03	<1	ug/L
PCBs Total	2024-06-03	<0.04	ug/L
Pentachlorophenol	2024-06-03	<0.15	ug/L
Phorate	2024-06-03	<0.01	ug/L
Picloram	2024-06-03	<1	ug/L
Prometryne	2024-06-03	<0.03	ug/L
Simazine	2024-06-03	<0.01	ug/L
Terbufos	2024-06-03	<0.01	ug/L
Tetrachloroethylene	2024-06-03 to 2024-10-29	<0.35	ug/L
Triallate	2024-06-03	<0.01	ug/L
Trichloroethylene	2024-06-03 to 2024-10-29	<0.44	ug/L
Trifluralin	2024-06-03	<0.02	ug/L
Vinyl Chloride	2024-06-03 to 2024-10-29	<0.20	ug/L
Carlisle Well Treated FDC05			
1,1-Dichloroethylene	2024-04-23 to 2024-10-29	<0.33	ug/L
1,2-Dichlorobenzene	2024-04-23 to 2024-10-29	<0.41	ug/L
1,2-Dichloroethane	2024-04-23 to 2024-10-29	<0.35	ug/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
1,4-Dichlorobenzene	2024-04-23 to 2024-10-29	<0.36	ug/L
2,3,4,6-Tetrachlorophenol	2024-04-23	<0.20	ug/L
2,4,6-Trichlorophenol	2024-04-23	<0.25	ug/L
2,4-D	2024-04-23	<0.19	ug/L
2,4-Dichlorophenol	2024-04-23	<0.15	ug/L
Alachlor	2024-04-23	<0.02	ug/L
Atrazine + Desethyl-atrazine	2024-04-23	<0.01	ug/L
Azinphos-methyl	2024-04-23	<0.05	ug/L
Benzene	2024-04-23 to 2024-10-29	<0.32	ug/L
Benzo[a]pyrene	2024-04-23	<0.004	ug/L
Bromoxynil	2024-04-23	<0.33	ug/L
Carbaryl	2024-04-23	<0.05	ug/L
Carbofuran	2024-04-23	<0.01	ug/L
Carbon Tetrachloride	2024-04-23 to 2024-10-29	<0.20	ug/L
Chlorobenzene	2024-04-23 to 2024-10-29	<0.3	ug/L
Chlorpyrifos (Dursban)	2024-04-23	<0.02	ug/L
Diazinon	2024-04-23	<0.02	ug/L
Dicamba	2024-04-23	<0.20	ug/L
Dichloromethane	2024-04-23 to 2024-10-29	<0.50	ug/L
Diclofop-methyl	2024-04-23	<0.40	ug/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Dimethoate	2024-04-23	<0.06	ug/L
Diquat	2024-04-23	<1	ug/L
Diuron	2024-04-23	<0.03	ug/L
Glyphosate	2024-04-23	<1	ug/L
Malathion	2024-04-23	<0.02	ug/L
MCPA	2024-04-23	<0.00012	mg/L
Metolachlor	2024-04-23	<0.01	ug/L
Metribuzin (Sencor)	2024-04-23	<0.02	ug/L
Paraquat	2024-04-23	<1	ug/L
PCBs Total	2024-04-23	<0.04	ug/L
Pentachlorophenol	2024-04-23	<0.15	ug/L
Phorate	2024-04-23	<0.01	ug/L
Picloram	2024-04-23	<1	ug/L
Prometryne	2024-04-23	<0.03	ug/L
Simazine	2024-04-23	<0.01	ug/L
Terbufos	2024-04-23	<0.01	ug/L
Tetrachloroethylene	2024-04-23 to 2024-10-29	<0.35	ug/L
Triallate	2024-04-23	<0.01	ug/L
Trichloroethylene	2024-04-23 to 2024-10-29	<0.44	ug/L
Trifluralin	2024-04-23	<0.02	ug/L
Vinyl Chloride	2024-04-23 to 2024-10-29	<0.20	ug/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Distribution			
Haloacetic Acids*	Running annual average for the last four quarters.	10.7	ug/L
Total Trihalomethanes*	Running annual average for the last four quarters.	<5.3	ug/L
*The Maximum Acceptable Concentration for Trihalomethanes and Haloacetic Acids in the distribution system is based on a running average of the results from all sampling events in the past four quarters. This running average can be found in the result value range column.			

5.7 PARAMETERS EXCEEDING PRESCRIBED HALF-STANDARD

There were no Schedule 23 or 24 parameters that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards (O.Reg. 169/03).

6 LYNDEN DRINKING WATER SYSTEM

6.1 DEFINITIONS

AWQI: Adverse Water Quality Incident

CFU: Colony Forming Unit

MPN: Most Probable Number

HPC: Heterotrophic Plate Count

mg/L: milligrams per litre

mL: millilitre

N/A: Not Applicable

NTU: Nephelometric Turbidity Unit

ug/L: microgram per litre

P/A: Present/Absent

6.2 LEAD TESTING

Lynden DWS is exempt from sampling for lead in plumbing as per Schedule 15.1-5. (10) of O. Reg. 170/03. Relief is in place from taking residential and non-residential plumbing samples. Lead samples from the distribution system are collected every three years under the reduced schedule.

SUMMARY OF LEAD TESTING UNDER SCHEDULE 15.1 OF REGULATION 170/03 DURING THIS REPORTING PERIOD.

Parameter	Points Sampled	Samples Taken	Result Value Range	Unit of Measure
Distribution				
Alkalinity	2	2	103 to 111	mg/L
pH - Field	2	2	8.94 to 9.08	pH

6.3 MICROBIOLOGICAL TESTING

MICROBIOLOGICAL TESTING DONE UNDER SCHEDULE 10, 11, 12 AND 17, 18 OF REGULATION 170/03, DURING THIS REPORTING PERIOD.

Parameter	Sample Date(s)	Number of Samples	Result Value Range	Unit of Measure
Lynden Well Raw FDL03				
Escherichia coli	2024-01-03 to 2024-12-25	52	0	MPN/100mL
Total Coliform	2024-01-03 to 2024-12-25	52	0	MPN/100mL
Lynden Well Treated FDL03				
Escherichia coli	2024-01-03 to 2024-12-25	52	ALL ABSENT	P/A/100mL
Heterotrophic Plate Count	2024-01-03 to 2024-12-25	52	0 to 38	CFU/1mL
Total Coliform	2024-01-03 to 2024-12-25	52	ALL ABSENT	P/A/100mL

Parameter	Sample Date(s)	Number of Samples	Result Value Range	Unit of Measure
Distribution				
Escherichia coli	2024-01-03 to 2024-12-25	156	ALL ABSENT	P/A/100mL
Heterotrophic Plate Count	2024-01-03 to 2024-12-25	156	0 to 25	CFU/1mL
Total Coliform	2024-01-03 to 2024-12-25	156	ALL ABSENT	P/A/100mL

6.4 OPERATIONAL TESTING

OPERATIONAL TESTING DONE UNDER SCHEDULE 7, 8 OR 9 OF REGULATION 170/03 DURING THE PERIOD COVERED BY THIS ANNUAL REPORT.

NOTE: If results are obtained from continuous monitors, then 8760 is reported as the number of samples.

Parameter	Samples Taken	Result Value Range	Unit of Measure
Turbidity - Raw FDL03	52	0.28 to 1.45	NTU
Free Chlorine – Treated FDL03	8760	1.59 to 3.46	mg/L
Free Chlorine - Distribution	366	0.64 to 3.04	mg/L

6.5 INORGANIC TESTING

SUMMARY OF INORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Lynden Well Treated FDL03			
Antimony	2024-04-24 to 2024-10-30	<0.0001	mg/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Arsenic	2024-01-24 to 2024-10-30	0.0004	mg/L
Barium	2024-01-24 to 2024-10-30	0.393 to 0.439	mg/L
Boron	2024-04-24 to 2024-10-30	0.472 to 0.477	mg/L
Cadmium	2024-04-24 to 2024-10-30	<0.0001	mg/L
Chromium	2024-04-24 to 2024-10-30	<0.0001 to 0.0002	mg/L
Fluoride	2024-04-24 to 2024-10-30	0.68 to 0.71	mg/L
Mercury	2024-04-24 to 2024-10-30	<0.05	ug/L
Nitrate as N	2024-01-24 to 2024-10-30	<0.02 to 0.03	mg/L
Nitrite as N	2024-01-24 to 2024-10-30	<0.01	mg/L
Selenium	2024-04-24 to 2024-10-30	<0.0001	mg/L
Sodium	2024-04-24 to 2024-10-30	57.3 to 58.3	mg/L
Uranium	2024-04-24 to 2024-10-30	0.021 to 0.023	ug/L

6.6 ORGANIC TESTING

SUMMARY OF ORGANIC PARAMETERS REQUIRED BY REGULATION 170/03 AND TESTED DURING THIS REPORTING PERIOD.

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Lynden Well Treated FDL03			
1,1-Dichloroethylene	2024-04-24 to 2024-10-30	<0.33	ug/L
1,2-Dichlorobenzene	2024-04-24 to 2024-10-30	<0.41	ug/L
1,2-Dichloroethane	2024-04-24 to 2024-10-30	<0.35	ug/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
1,4-Dichlorobenzene	2024-04-24 to 2024-10-30	<0.36	ug/L
2,3,4,6-Tetrachlorophenol	2024-04-24	<0.20	ug/L
2,4,6-Trichlorophenol	2024-04-24	<0.25	ug/L
2,4-D	2024-04-24	<0.19	ug/L
2,4-Dichlorophenol	2024-04-24	<0.15	ug/L
Alachlor	2024-04-24	<0.02	ug/L
Atrazine + Desethyl-atrazine	2024-04-24	<0.01	ug/L
Azinphos-methyl	2024-04-24	<0.05	ug/L
Benzene	2024-04-24 to 2024-10-30	<0.32	ug/L
Benzo[a]pyrene	2024-04-24	<0.004	ug/L
Bromoxynil	2024-04-24	<0.33	ug/L
Carbaryl	2024-04-24	<0.05	ug/L
Carbofuran	2024-04-24	<0.01	ug/L
Carbon Tetrachloride	2024-04-24 to 2024-10-30	<0.20	ug/L
Chlorobenzene	2024-04-24 to 2024-10-30	<0.3	ug/L
Chlorpyrifos (Dursban)	2024-04-24	<0.02	ug/L
Diazinon	2024-04-24	<0.02	ug/L
Dicamba	2024-04-24	<0.20	ug/L
Dichloromethane	2024-04-24 to 2024-10-30	<0.50	ug/L
Diclofop-methyl	2024-04-24	<0.40	ug/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Dimethoate	2024-04-24	<0.06	ug/L
Diquat	2024-04-24	<1	ug/L
Diuron	2024-04-24	<0.03	ug/L
Glyphosate	2024-04-24	<1	ug/L
Malathion	2024-04-24	<0.02	ug/L
MCPA	2024-04-24	<0.00012	mg/L
Metolachlor	2024-04-24	<0.01	ug/L
Metribuzin (Sencor)	2024-04-24	<0.02	ug/L
Paraquat	2024-04-24	<1	ug/L
PCBs Total	2024-04-24	<0.04	ug/L
Pentachlorophenol	2024-04-24	<0.15	ug/L
Phorate	2024-04-24	<0.01	ug/L
Picloram	2024-04-24	<1	ug/L
Prometryne	2024-04-24	<0.03	ug/L
Simazine	2024-04-24	<0.01	ug/L
Terbufos	2024-04-24	<0.01	ug/L
Tetrachloroethylene	2024-04-24 to 2024-10-30	<0.35	ug/L
Triallate	2024-04-24	<0.01	ug/L
Trichloroethylene	2024-04-24 to 2024-10-30	<0.44	ug/L
Trifluralin	2024-04-24	<0.02	ug/L
Vinyl Chloride	2024-04-24 to 2024-10-30	<0.20	ug/L

Parameter	Sample Date(s)	Result Value Range	Unit of Measure
Distribution			
Haloacetic Acids*	Running annual average for the last four quarters	66.8	ug/L
Total Trihalomethanes*	Running annual average for the last four quarters	6.1	ug/L
*The Maximum Acceptable Concentration for Trihalomethanes and Haloacetic Acids in the distribution system is based on a running average of the results from all sampling events in the past four quarters. This running average can be found in the result value range column.			

6.7 PARAMETERS EXCEEDING PRESCRIBED HALF-STANDARD

There were no Schedule 23 or 24 parameters that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards (O.Reg. 169/03).