Attachment #1 to
Report PW-05-23

Drinking Water Systems

Flow summary report 2022

Published March 2023

Halton REGION

Table of Contents

List of Acronyms and Definitions

Adverse	Adverse water results are listed in Schedule 16, O. Reg. 170/03. Examples of adverse water results: • An analytical result that exceeds a health-based water quality standard (O. Reg. 169/03) • Any evidence that disinfection may not have been effective • Low chlorine residuals
CFU	colony forming units
CT	contact time – used in determining level of disinfection treatment
DWWP	Drinking Water Works Permit
EC	E. coli
F3R	Form, Fit, Function, Reliability
GUDI	groundwater under the direct influence of surface water
KPI	Key Performance Indicators
L/s	litres per second
L/m	litres per minute
m^3/d	cubic metres per day
MDWL	Municipal Drinking Water Licence
MECP	Ministry of the Environment, Conservation and Parks (Ontario)
mg/L	milligrams per litre
mL	millilitre
ML/d	megalitres (million litres) per day (1 ML = 1,000 m^3)
MOH	Medical Officer of Health
O. Reg.	Ontario Regulation
PA	Presence/Absence
PTTW	Permit to Take Water
Rated Capacity	Volume of treated water that meets all applicable Ontario drinking water quality regulations including the aesthetic water quality objectives and that may be made available by the water treatment plant for delivery to the drinking water system in any 24-hour period
RCM	Reliability Centered Maintenance
R.R.O.	Revised Regulations Ontario (1990)
SCADA	Supervisory Control and Data Acquisition
SDWA	*Safe Drinking Water Act*, 2002
TC	total coliform
WTP	water treatment plant

1 Executive Summary

Halton Region is committed to providing reliable access to clean, safe drinking water to residents in Burlington, Halton Hills, Milton and Oakville. Halton Region operates 11 drinking water systems that are governed by four municipal drinking water licences and associated drinking water works permits issued by the Ministry of the Environment, Conservation and Parks (MECP). Each year, a summary report for municipal drinking water systems is prepared and provided to Regional Council. The report addresses the regulatory requirements for Schedule 22 of the Drinking Water Systems Regulation (O. Reg. 170/03) under the *Safe Drinking Water Act*, 2002.

This report includes information about the drinking water systems approvals, flow rates of the water supplied during the reporting period, and a data comparison of the related capacity of each system.

Here are some key findings from the report:

- Halton Region's water treatment and distribution facilities demonstrated excellent operational performance in 2022, achieving an overall average 100 per cent inspection rating.
- Halton Region's water systems produced more than 67,071 megalitres (ML) of safe, clean drinking water in 2022. This is the average equivalent of 184 ML of treated water per day, which is nearly enough to fill 74 Olympic-sized swimming pools.
- Protecting the natural environment is a priority for the Region, and one of the ways we are doing this is by reducing the impact of climate change. Halton Region is currently working to maximize energy efficiencies and develop an improved maintenance program, which will help reduce greenhouse gas emissions generated through the water treatment process and ensure a reliable supply of drinking water for the future.
- The Region continued with the Partnership for Safe Water program building on momentum gained in 2020 when the Region was formally recognized for being the first Municipality in Canada to receive the Director's Awards from the American Water Works Association for outstanding commitment to high quality drinking water and treatment.
- The Region's Plant Maintenance "Reliability Centered Maintenance" Strategy continues to reduce water treatment asset risks through a combination of criticality analysis, tactical lifecycle asset management, adoption of advanced inspection technology and team based asset care activities.
- Over the past 4 years water plant assets have experienced a downward trend in failures and reactive costs, in fact, maintenance has been able to reinvest money that would have otherwise been spent on breakdown repairs and by doing so, directly contributed to budget performance of the treatment division and extended the useful life of plants assets with great success.

Through these programs and partnerships, Halton Region can continue to provide safe, clean and reliable drinking water to residents, now and into the future.

To learn more about the Region's drinking water, you can visit **halton.ca**

The structure of this report is as follows:

Section 2 lists legislation and regulations of significance to drinking water systems and outlines the reporting requirements of O. Reg. 170/03, Schedule 22.

Section 3 provides an overview of Halton's drinking water systems.

Section 4 provides a description of how data is compiled and analyzed for this report.

Sections 5 to 15 include descriptions of each drinking water system, flow data and summaries of adverse water quality incidents.

Section 16 summarizes the MECP drinking water system inspections.

Section 17 explains the reliability centered maintenance strategy and lists key performance indicators.

Section 18 includes the conclusions of the report.

2 Legislated Requirements

In Ontario, water taking, drinking water treatment and distribution are governed by a number of acts and regulations. The owner/operator of each waterworks is required to follow additional legally-binding requirements laid out in various licenses, permits and approvals. Individual approvals issued by the MECP are site-specific, meaning the conditions of operation are tailored to a facility's characteristics, circumstances and the local environment.

Under Schedule 22 of the Drinking Water Systems Regulation (O. Reg. 170/03), annual summary reports are required to be prepared and distributed to owners of both small and large municipal residential systems. The summary report must be submitted no later than March 31 to members of Municipal Council. The contents must list the requirements of the *Safe Drinking Water Act*, 2002, the regulations, the system's approval and any applicable system orders for the reporting period where legislative requirements were not met along with the duration of these events and the resulting corrective measures.

In addition, the report must include a summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly averages and maximum daily flows. The summary must be compared to the rated capacity provided in each system's approval. The reporting requirements are identified in Table 2-1.

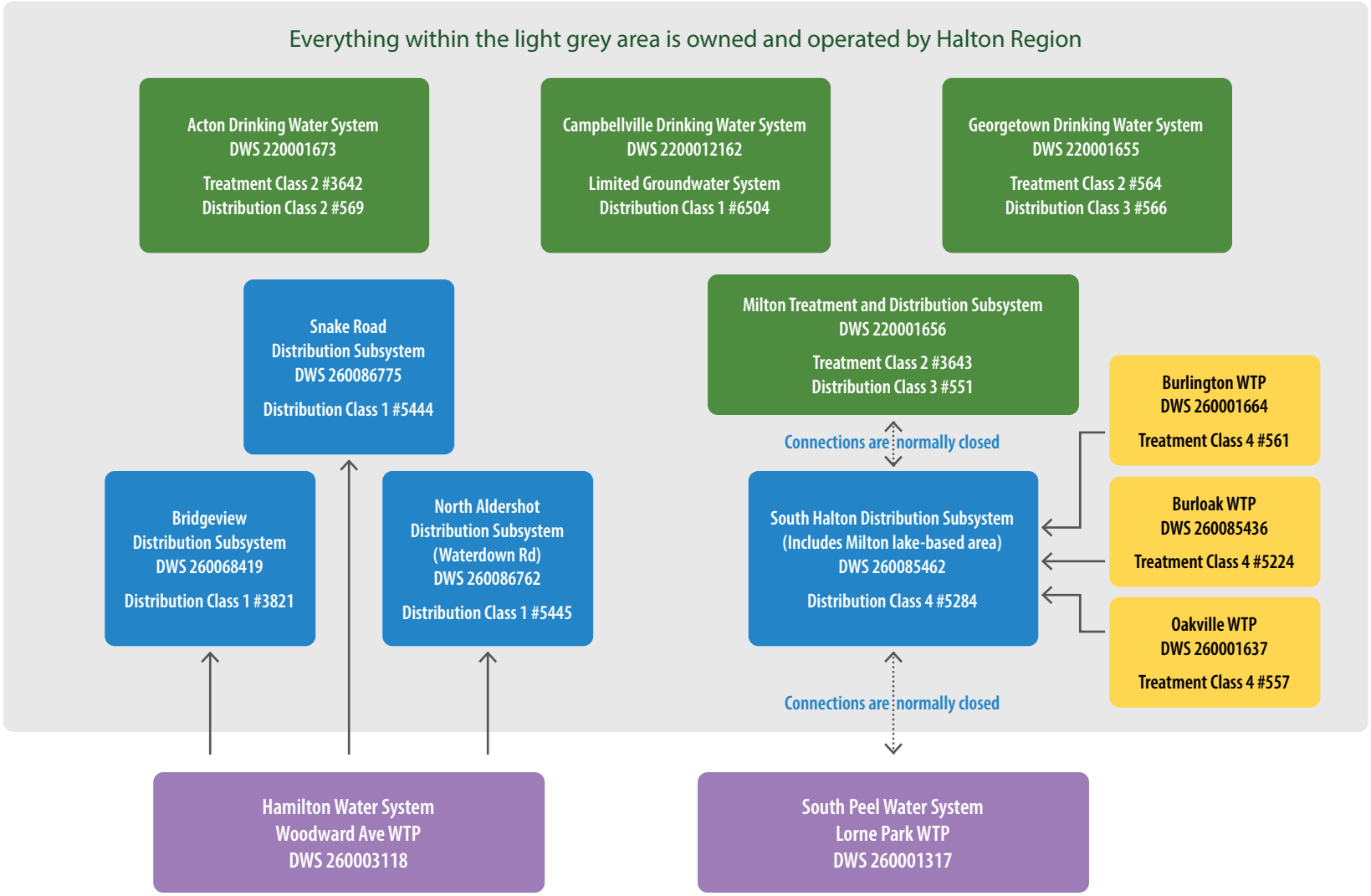
Table 2-1 Drinking Water System Annual Reports

Report Name	Description	Legislation or Regulation	Submitted to	Annual Due Date
Annual Flow Summary Report for Municipalities	• Summary of flows • Description of any failure to meet requirements of an Act, regulations or the system's approval	O. Reg. 170/03, Schedule 22	Regional Council; available to the public	March 31
Annual Water Quality Report	• Description of system • Water quality test results • Adverse test results and corrective action • Major expenses to repair, replace or install equipment	O. Reg. 170/03, Section 11	Posted on Halton's website	February 28
Water Taking and Transfer Report	• Electronic submission of water taking data	O. Reg. 387/04	MECP	March 31
Permit to Take Water Annual Report	• Reporting conditions set out in individual Permits to Take Water • Halton's groundwater systems only	Permits to Take Water issued under the *Ontario Water Resources Act*	MECP	March 31
Water Conservation Charges Report	• Names, addresses and water usage of industrial and commercial water customers which used 50,000 litres of water in a single day in the year	O. Reg. 450/07	MECP	March 31

3 Halton's Drinking Water Systems

Figure 1 shows Halton Region's operational drinking water systems.

Figure 1 Halton's Drinking Water Systems



4 Annual Water Data

Halton's Public Works Department manages all of Halton's drinking water treatment and distribution systems, including: surface water intakes; wells; reservoirs; elevated tanks; booster stations; and distribution systems. Staff's primary responsibilities are water taking, treatment and distribution in compliance with all applicable legislation and system approvals. Routine water quality testing and continuous monitoring of water quality and quantity is also conducted to ensure compliance.

A comprehensive maintenance program is in place that ensures continuous supply of safe and high-quality drinking water from reliable systems.

4.1 Water Quality Data

Raw and treated water is sampled and tested for chemical, physical and microbiological parameters in accordance with the requirements of O. Reg. 170/03 and individual system approvals. Sampling is also conducted in the distribution system primarily for bacteriological indicators and evidence of sustained chlorine residuals. Enhanced sampling programs are defined by Water Treatment Operations, System Operations and the Regional Laboratory for parameters beyond those mandated or, at a frequency greater than prescribed by the MECP. This level of water quality monitoring along with a proven "multi barrier" approach to water treatment helps protect public health and ensures public confidence in the water supply. As mandated, annual reports summarizing the water quality for each water system are posted on Halton's website for the public to review.

The majority of analysis is conducted by Halton's Regional Laboratory, with some specialized analyses contracted to other accredited laboratories. In accordance with Schedule 16 of O. Reg. 170/03, all notifications of adverse water quality incidents are provided to the Spills Action Centre and the Medical Officer of Health. Halton has an Adverse Water Quality Incidents Procedure in place that summarizes internal and external reporting requirements as well as ensuring that the appropriate corrective actions are implemented. A summary of notifications in 2022 for each system is provided in this report.

4.2 Flow Data

While water quality is of utmost priority, attention is also directed to flow measurement and data management. In Halton Region, continuous monitoring equipment is used for measuring flow, including the rate and volume of taking. The flow measuring devices are connected to the Supervisory Control and Data Acquisition (SCADA) system for monitoring, alarming and data storage. In addition, the devices are verified in accordance with the manufacturer's specifications, or at least once every year, to help ensure data reliability. The MECP is notified if the flow or volume exceeds a system approval or if there is a problem with any flow monitoring device.

This annual flow report is prepared through the retrieval of archived SCADA data and logbook entries. The archived data is then analyzed and used to compile a summary report. The raw water flows are compared to the Permits to Take Water (allowable volume of water to be taken). The treated water volumes are the amounts of water sent into the water distribution systems. These volumes are compared to the plant-rated capacities in each Municipal Drinking Water License. The reporting of treated water flows is required by the MECP "for the purpose of enabling the owner of the system to assess the capability of the system to meet existing and planned uses of the system" (O. Reg. 170/03, Schedule 22 (22-2(3)1)).

Halton Region's water systems produced just over 67,071 ML of drinking water in 2022. On average, Halton produced 184 ML of treated water per day in 2022 which is nearly enough to fill 74 Olympic-sized swimming pools with clean, safe drinking water.

5 Burlington Water Treatment Plant

5.1 Water System Description

The Burlington Water Treatment Plant (WTP) is located at 3249 Lakeshore Road in Burlington. The facility is a conventional filtration treatment plant with a process that consists of the sand ballasted clarification process (microsand-enhanced clarification), filtration, fluoridation, optional pH adjustment, ozonation (disinfection and taste and odour control) and chlorination (secondary disinfection). Seasonally, the water is chlorinated at the intake for zebra mussel control. The plant is controlled through a computerized SCADA system that is monitored 24 hours per day, seven days a week. The treated drinking water is pumped into the South Halton Water Distribution System.

Table 5-1 Burlington WTP General Information

Municipal Drinking Water Licence Drinking Water Works Permit	004-104 (South Halton) 004-204
Drinking Water System Number	220001664
Classification	
Class Certificate Number	Treatment Class 4 561
Service Population	n/a – see South Halton Distribution System
Permit to Take Water	
Number Expiry Date Water Taking Permitted	P-300-6148187785 November 12, 2031 291,000 m^3/d or 202,083 L/min. (equivalent)
Rated Capacity	263,000 m^3/d

5.2 2022 Flow Summary

A summary of the flows in 2022 is provided in the following table (5-2). At the Burlington WTP, some water is used in the chemical feed systems and for backwashing filters; thus, the raw water flow may be greater than the treated water flow. The treatment plants are designed to handle peak hour flows and, as such, a comparison of maximum and average daily volumes to permitted levels is not always the most accurate representation of available capacity. The data presented in Table 5-3 complies with the reporting requirements of the regulation (O. Reg.170/03, Schedule 22).

Table 5-2 Burlington WTP Flow Summary 2022

Month	Raw Water Flow m^3/d		Treated Water Flow m^3/d	
	Maximum Day	Average Day	Maximum Day	Average Day
January	81,925	66,536	71,007	57,203
February	87,361	70,356	76,617	60,428
March	74,820	64,484	67,509	57,677
April	74,406	65,881	67,206	59,615
May	118,397	80,817	108,329	73,120
June	148,901	106,278	135,182	95,931
July	136,703	117,345	123,320	105,410
August	124,102	102,172	110,232	91,371
September	107,197	85,457	96,618	77,413
October	86,638	72,524	78,331	66,190
November	70,062	62,575	66,231	57,117
December	71,134	63,436	65,604	58,961
Annual Average Day		**79,822**		**71,703**

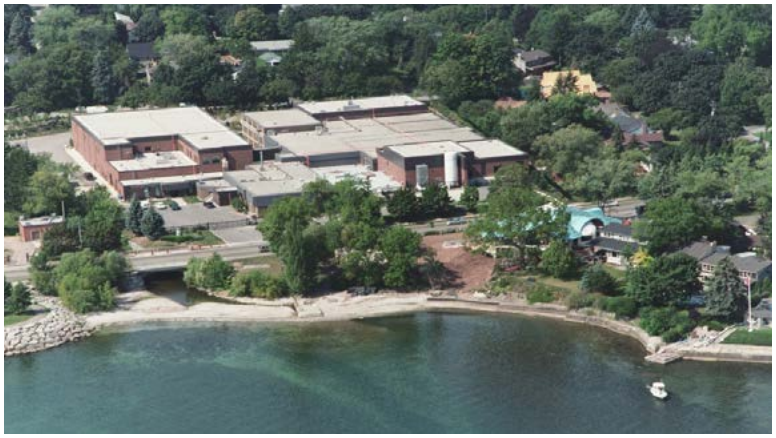
Note: The shaded blocks denote the annual maximum daily flows for 2022.

Table 5-3 Burlington WTP Flow Comparison to MDWL and PTTW

Burlington WTP	Raw Water		Treated Water	
	Maximum Day	Average Day	Maximum Day	Average Day
% PTTW	51%	27%		
% Rated Capacity			51%	27%

5.3 Adverse Test Results

In accordance with Schedule 16 of O. Reg. 170/03, notifications of adverse water quality incidents are provided to the Spills Action Centre and the Medical Officer of Health. In 2022, there were no adverse test results/incidents at the Burlington WTP.



Burlington WTP

6 Oakville Water Treatment Plant

6.1 Water System Description

The Oakville Water Treatment Plant (WTP) is located at 21 Kerr Street in Oakville. This facility is a conventional filtration treatment plant with a process that consists of the sand ballasted clarification process (microsand-enhanced clarification), filtration, fluoridation, ozonation (disinfection and taste and odour control) and chlorination (disinfection).

Seasonally, the water is chlorinated at the intake for zebra mussel control. The plant is controlled through a computerized SCADA system that is monitored 24 hours per day, seven days a week. The treated drinking water is pumped into the South Halton Water Distribution System.

Table 6-1 Oakville WTP General Information

Municipal Drinking Water Licence Drinking Water Works Permit	004-104 (South Halton) 004-204
Drinking Water System Number	220001637
Classification	
Class Certificate Number	Treatment Class 4 557
Service Population	n/a - see South Halton Distribution System
Permit to Take Water	
Number Expiry Date Water Taking Permitted	3760-AZ8PKN July 31, 2028 155,000 m^3/d or 107,639 L/min (equivalent)
Rated Capacity	109,000 m^3/d

6.2 2022 Flow Summary

A summary of the flows in 2022 is provided in the following table (6-2). At the Oakville WTP, some water is used in the chemical feed systems and for backwashing filters. Thus, the raw water flow is greater than the treated water flow. The treatment plants are designed to handle peak hour flows and, as such, a comparison of maximum and average daily volumes to permitted levels is not always the most accurate representation of available capacity. The data presented in Table 6-3 complies with the reporting requirements of the regulation (O. Reg.170/03, Schedule 22).

Table 6-2 Oakville WTP Flow Summary 2022

Month	Raw Water Flow m^3/d[1]		Treated Water Flow m^3/d	
	Maximum Day	Average Day	Maximum Day	Average Day
January	96,073	46,372	48,842	43,615
February	95,263	47,041	49,854	41,804
March	93,288	45,115	46,183	43,346
April	97,705	47,832	48,535	45,223
May	99,052	48,401	60,599	47,442
June	94,781	59,442	76,742	54,513
July	76,091	68,256	77,965	63,386
August	87,208	74,600	79,035	68,769
September	82,855	65,108	81,055	60,408
October	70,999	51,268	52,730	44,603
November	92,099	45,921	49,949	43,737
December	97,758	49,125	48,758	44,203
Annual Average Day		**54,040**		**50,088**

Note: The shaded blocks denote the annual maximum daily flows for 2022.

[1] During the course of a year the maximum raw flow may exceed the maximum treated flow due to facility shutdown and maintenance.

Table 6-3 Oakville WTP Flow Comparison to MDWL and PTTW

Oakville WTP	Raw Water		Treated Water	
	Maximum Day	Average Day	Maximum Day	Average Day
% PTTW	64%	35%		
% Rated Capacity			74%	46%

6.3 Adverse Test Results

In accordance with Schedule 16 of O. Reg. 170/03, notifications of adverse water quality incidents are provided to the Spills Action Centre and Medical Officer of Health. In 2022, there were no adverse test results/incidents at the Oakville WTP.

Oakville WTP

7 Burloak Water Treatment Plant

7.1 Water System Description

The Burloak Water Treatment Plant (WTP) is located at 3380 Rebecca Street, Oakville. This facility is a membrane filtration plant with a process that consists of flocculation, ultra-filtration (via membranes), optional ultra-violet irradiation, ozonation (disinfection and taste and odour control), fluoridation and chlorination (disinfection). Seasonally, the raw water intake is chlorinated for zebra mussel control. The plant is controlled through a computerized SCADA system that is monitored 24 hours per day, seven days per week. The treated drinking water is pumped into the South Halton Water Distribution System.

Table 7-1 Burloak WTP General Information

Municipal Drinking Water Licence Drinking Water Works Permit	004-104 (South Halton) 004-204
Drinking Water System Number	260085436
Classification	
Class Certificate Number	Treatment Class 4 5224
Service Population	n/a - see South Halton Distribution System
Permit to Take Water	
Number Expiry Date Water Taking Permitted	7500-A4ZM5N December 31, 2025 64,000 m^3/d or 88,889 L/min
Rated Capacity	55,000 m^3/d

7.2 2022 Flow Summary

A summary of the flows in 2022 is provided in the following table (7-2). At the Burloak WTP, some water is used in the chemical feed systems and for backwashing filters and subsequently the raw water flow is greater than the treated water flow. The treatment plants are designed to handle peak hour flows and, as such, a comparison of maximum and average daily volumes to permitted levels is not always the most accurate representation of available capacity. The data presented in Table 7-3 complies with the reporting requirements of the regulation (O. Reg.170/03, Schedule 22).

Table 7-2 Burloak WTP Flow Summary 2022

Month	Raw Water Flow m^3/d		Treated Water Flow m^3/d	
	Maximum Day	Average Day	Maximum Day	Average Day
January	49,268	42,545	44,250	37,752
February	52,538	43,483	47,615	38,679
March	48,772	41,922	43,725	37,279
April	48,719	38,794	44,202	34,102
May	53,255	44,471	47,886	39,962
June	56,832	47,345	51,340	42,431
July	49,453	43,382	45,502	39,213
August	52,244	42,184	48,045	38,431
September	50,851	43,399	45,805	39,539
October	50,781	40,765	46,605	36,703
November	39,759	37,740	35,024	33,719
December	47,193	37,906	42,628	33,621
Annual Average Day		**41,995**		**37,619**

Note: The shaded blocks denote the annual maximum daily flows for 2022.

Table 7-3 Burloak WTP Flow Comparison to MDWL and PTTW

Burloak WTP	Raw Water		Treated Water	
	Maximum Day	Average Day	Maximum Day	Average Day
% PTTW	89%	66%		
% Rated Capacity			93%	68%

7.3 Adverse Test Results

In accordance with Schedule 16 of O. Reg. 170/03, notifications of adverse water quality incidents are provided to the Spills Action Centre and Medical Officer of Health. In 2022, there were no adverse test results/incidents at the Burloak WTP.

Burloak WTP

8 South Halton Distribution Subsystem

8.1 Water System Description

The South Halton Distribution Subsystem is supplied by the Burlington, Oakville and Burloak WTP's. The South Halton Distribution Subsystem serves Burlington, Oakville and parts of Milton and Halton Hills, and includes 16 reservoirs/storage tanks: Appleby Line, Ashgrove, Bailie, Beaufort, Tyandaga, Brant, Headon, Washburn, Waterdown, Kitchen, McCraney, Glenashton, Moore, Burnhamthorpe Tower, Third Line Reservoir and the Milton Tower. As the South Halton System is distribution only, it does not require a Permit to Take Water. Flows into the distribution system are reported under the three water treatment plants, which provided the treated water in 2022.

Table 8-1 South Halton Distribution Subsystem General Information

Municipal Drinking Water Licence Drinking Water Works Permit	004-104 (South Halton) 004-204
Drinking Water System Number	260085462
Classification	
Class Certificate Number	Distribution Class 4 5284
Service Population	549,260

8.2 Adverse Test Results

In accordance with Schedule 16 of O. Reg. 170/03, notifications of adverse water quality incidents are provided to the Spills Action Centre and the Medical Officer of Health. In 2022, there were 4 adverse test results/incidents in the South Halton Distribution Subsystem as summarized in Table 8-2.

Table 8-2 Adverse Test Results and Actions – South Halton Distribution System

Date	Location	Adverse Condition	Corrective Action	Notice of Issue Resolution
February 28, 2022	Distribution	Lead = 80.1 ug/L	Resamples collected and results within acceptable limits	March 7, 2022
July 14, 2022	Distribution	PA confirmed Total Coliform Duplicate also PA confirmed Total Coliform	Resampled, results within acceptable limits	July 16, 2022
July 26, 2022	Distribution	Work completed by contractor. Reported as precautionary adverse until samples could confirm water quality in new hydrant extension.	Sampled, results within acceptable limits	July 29, 2022
December 1, 2022	Distribution	Total Coliforms = 32CFU/100 mL	Resamples collected and results within acceptable limits	December 2, 2022

9 Milton Treatment and Distribution Subsystem

9.1 Water System Description

The Town of Milton is supplied with both groundwater and surface water. Treated surface (Lake Ontario) water from South Halton is pumped to the Steeles Avenue Water Tower. Under normal operating conditions, lake water and groundwater do not mix in Milton's distribution system.

The groundwater system consists of two well fields: Kelso and Walkers Line. There are four wells in the Kelso well field that pump raw water into the Kelso Water Treatment Plant. The treatment includes greensand filters for manganese removal and chlorination for disinfection. The water is pumped to the Milton Reservoir. From there, the water flows by gravity into the distribution system. The Walkers Line well field consists of one well with water being disinfected with chlorine and pumped to the Milton Surge Tank. The water flows by gravity from the surge tank to the distribution system. Fluoride is not added to the Milton groundwater system. The system is controlled through a computerized SCADA system that is monitored 24 hours per day, seven days a week.

Table 9-1 Milton Treatment and Distribution Subsystem General Information

Municipal Drinking Water Licence Drinking Water Works Permit	004-104 (South Halton) 004-204	
Drinking Water System Number	220001646	
Classification		
Class Certificate Number	Treatment Class 2 3643	Distribution Class 3 551
Service Population	17,574	
Permit to Take Water		
Number Expiry Date	87-P-3046 n/a	

Table 9-1 Continued

Water Taking Permitted Kelso	
Kelso Wells 3, 4, 5 and 6 combined Max.	13,635 m^3/d
combined for up to 5 days/year	22,730 m^3/d
combined for up to 10 days/year	20,457 m^3/d
combined for up to 30 days/year	18,184 m^3/d
combined for up to 60 days/year	15,911 m^3/d
Walkers Line	
Walkers Line Well 1	2,618 m^3/d or 1818 L/min (equivalent)
Walkers Line Well 2	2,946 m^3/d or 2046 L/min (equivalent)
Max. from Walkers Line 1 and 2	3,180 m^3/d
Emergency, combined	5,240 m^3/d for up to 10 days/year
Rated Capacity	
Kelso WTP	22,670 m^3/d
Walkers Line	5,240 m^3/d

9.2 2022 Flow Summary

A summary of the flows in 2022 is provided in the following table (9-2). At the Walkers Line site, the treated water flow is the same as the raw water flow. At the Kelso WTP, some water is used for backwashing filters and subsequently the raw water flow is greater than the treated water flow. However, due to rounding of flow data, the average treated water may be slightly higher than the average raw water taking for this report. The treatment plants are designed to handle peak hour flows and, as such, a comparison of maximum and average daily volumes to permitted levels is not always the most accurate representation of available capacity. The data presented in Tables 9-3 and 9-4 complies with the reporting requirements of the regulation (O. Reg. 170/03, Schedule 22).

Table 9-2 Milton Treatment and Distribution Subsystem Summary 2022

Month	Milton Total Treated Flow m^3/d		Walkers Line m^3/d		Kelso Raw Water m^3/d		Kelso Treated m^3/d	
	Max. Day	Avg. Day	Max. Day	Avg. Day	Max. Day	Avg. Day	Max. Day	Avg. Day
January	7,145	5,845	772	717	6,538	5,176	6,405	5,127
February	7,006	5,776	776	711	6,369	5,105	6,245	5,065
March	7,452	5,771	789	368	7,371	5,408	7,115	5,403
April	6,842	5,883	351	320	6,838	5,529	6,509	5,563
May	7,909	6,413	1,034	603	6,910	5,628	7,213	5,810
June	11,520	7,973	768	685	10,795	6,951	10,879	7,288
July	10,113	8,452	1,090	688	9,227	7,269	9,583	7,764
August	9,341	7,814	708	537	8,614	6,837	8,666	7,277
September	8,776	6,920	542	480	7,769	6,247	8,344	6,440
October	7,830	6,145	553	455	7,887	5,740	7,347	5,691
November	7,429	5,801	558	503	7,087	5,271	6,930	5,297
December	7,576	6,103	857	663	7,140	5,446	6,943	5,440
Annual Average Day		**6,575**		**561**		**5,884**		**6,014**

Note: The shaded blocks denote the annual maximum daily flows for 2022.

The following tables (9-3 and 9-4) show the maximum day and average day raw water volumes for 2022 in comparison to the permitted water taking (PTTW) and the rated capacity in the MDWL.

Table 9-3 Kelso WTP Flow Comparison to MDWL and PTTW

Kelso WTP	**Raw Water**		**Treated Water**	
	Maximum Day	Average Day	Maximum Day	Average Day
% PTTW	81%	44%		
% Rated Capacity			48%	27%

Table 9-4 Walkers Line Flow Comparison to MDWL and PTTW

Walkers Line Well	Maximum Day Flow	Average Day Flow
% PTTW	34%	18%
% Rated Capacity	21%	11%

In 2022, the maximum flows taken and pumped into the treatment systems were not greater than the values specified in the MDWL and the PTTW.

9.3 Adverse Test Results

In accordance with Schedule 16 of O. Reg. 170/03, notifications of adverse water quality incidents are provided to the Spills Action Centre and the Medical Officer of Health. In 2022, there was 1 adverse test result/incident in the Milton Treatment and Distribution Subsystem as summarized in Table 9-5.

Table 9-5 Adverse Test Results and Actions – Milton Treatment and Distribution Subsystem

Date	Location	Adverse Condition	Corrective Action	Notice of Issue Resolution
February 7, 2022	Treated	Sodium = 47.7 mg/L	Resamples taken and results were comparable in value to the original sample(s). Reportable every 57 months.	February 9, 2022
February 7, 2022	Distribution	Sodium = 46.3 / Duplicate = 45.9 mg/L Sodium = 50.3 mg/L	Resamples taken and results were comparable in value to the original sample(s). Reportable every 57 months.	February 9, 2022

10 Georgetown Drinking Water System

10.1 Water System Description

The Georgetown Drinking Water System draws groundwater from three well fields. There are four wells in the Cedarvale well field, three wells in the Princess Anne well field and two wells in the Lindsay Court well field.

The Georgetown WTP treats water from the four Cedarvale Wells with greensand filtration, ultraviolet light for primary disinfection, fluoridation, and chlorination for secondary disinfection. Water from the Princess Anne and Lindsay Court Wells receive treatment at the well sites with chlorination for disinfection and fluoridation. Together, these three sources pump water into the distribution system that includes 22 Side Road Reservoir, Moore Park Booster Station, Todd Road Tower and the Norval Standpipe under a water distribution Class III Certificate (# 566).

The Georgetown system is controlled through a computerized SCADA system that is monitored 24 hours per day, seven days a week.

Table 10-1 Georgetown Drinking Water System General Information

Municipal Drinking Water Licence Drinking Water Works Permit	004-101 004-201	
Drinking Water System Number	220001655	
Classification		
Class	Treatment Class 2	Distribution Class 3
Certificate Number	564	566
Service Population	47,255	
Permit to Take Water		
Number	0736-CBMSHT	
Expiry Date	February 14 , 2027	

Table 10-1 Continued

Water Taking Permitted Cedarvale Well 1A	
Cedarvale Well 1A	2,618 m^3/d
Cedarvale Well 3A	3,931 m^3/d
Cedarvale Well 4	7,854 m^3/d
Cedarvale Well 4A	5,890 m^3/d
Maximum Daily (Cedarvale Well Field)	12,500 m3/d
Annual Avg. Daily (Cedarvale Wells)	6,972 m^3/d
Princess Anne Well 5	4,582 m^3/d
Princess Anne Well 6	13,090 m^3/d
Princess Anne Well 6B	13,090 m^3/d
Annual Average for all 3 PA Wells	6,800 m^3/d
Lindsay Court Well 9 and 9B (Combined)	6,545 m^3/d or 5210 L/min (max. rate)
Rated Capacity	
Georgetown WTP	13,046 m^3/d
Princess Anne Well 5	4,582 m^3/d
Princess Anne Well 6	13,080 m^3/d
Princess Anne Well 6B	13,080 m^3/d
Lindsay Court Well 9A and/9B	6,540 m^3/d

10.2 2022 Flow Summary

A summary of the flows in 2022 is provided in Table 10-2 on the following page. At the Princess Anne and Lindsay Court wells, the treated water flow is the same as the raw water flow. At the Georgetown WTP (Cedarvale wells), some water is used in the chemical feed systems and for backwashing filters. Thus, the raw water flow is greater than the treated water flow. The treatment plants are designed to handle peak hour flows and, as such, a comparison of maximum and average daily volumes to permitted levels is not always the most accurate representation of available capacity. The data presented in Tables 10-3 and 10-4 complies with the reporting requirements of the regulation (O. Reg. 170/03, Schedule 22).

Table 10-2 Georgetown Drinking Water System Flow Summary 2022[2]

Month	Georgetown System Total Treated Flow m^3/d (GWTP Treated, PA 5, PA 6, 6B, LC)		Princess Anne Wells 5,6 and 6B m^3/d		Princess Anne 5 m^3/d		Princess Anne 6 m^3/d		Princess Anne 6B m^3/d		Lindsay Court 9 and 9B m^3/d		Lindsay Court Well 9 m^3/d		Lindsay Court Well 9B m^3/d		Cedarvale Wells (Georgetown WTP) Total Raw Flow m^3/d		Georgetown WTP Treated m^3/d	
	Max. Day	Avg. Day	Max. Day	Avg. Day	Max. Day	Avg. Day	Max. Day	Avg. Day	Max. Day	Avg. Day	Max. Day	Avg. Day	Max. Day	Avg. Day	Max. Day	Avg. Day	Max. Day	Avg. Day	Max. Day	Avg. Day
January	13,928	13,101	8,493	5,904	1,769	915	5,137	2,497	6,170	2,492	3,890	3,407	3,890	1,937	3,889	1,471	4,178	3,946	3,934	3,790
February	16,779	13,324	8,921	6,266	2,834	1,493	5,245	2,265	7,716	2,508	4,004	3,266	3,882	1,558	4,004	1,707	4,080	3,989	3,939	3,792
March	14,633	13,108	7,141	5,695	2,523	1,872	6,071	2,183	4,379	1,640	3,903	3,657	3,903	1,669	3,891	1,988	4,061	3,914	3,925	3,755
April	13,634	13,014	7,698	5,693	2,642	2,013	6,056	1,877	3,858	1,803	3,896	3,509	3,893	1,693	3,896	1,816	4,147	4,017	3,936	3,812
May	18,724	15,163	9,503	6,991	2,632	1,232	9,503	3,352	7,918	2,407	4,456	3,779	3,891	1,774	4,456	2,005	6,134	4,762	5,744	4,394
June	24,104	17,669	12,146	7,472	3,875	1,278	12,146	4,417	10,410	1,777	5,722	4,630	0	0	5,722	4,630	7,914	6,262	6,652	5,567
July	21,780	18,643	10,655	7,669	3,305	1,171	10,655	4,890	6,464	1,608	6,033	4,984	6,033	3,921	4,762	1,063	7,368	6,843	6,765	5,990
August	19,885	16,565	8,992	6,709	3,888	1,599	8,480	5,056	553	53	5,186	4,646	5,186	4,171	3,884	475	6,912	5,844	6,035	5,211
September	16,365	14,759	8,574	7,001	2,307	283	8,112	5,984	7,616	735	4,874	3,935	4,874	3,604	2,164	331	4,081	3,971	3,938	3,823
October	14,637	13,419	7,273	5,689	189	8	7,273	5,356	2,495	325	4,868	3,956	4,868	3,916	748	40	4,069	3,921	3,904	3,775
November	13,958	13,126	5,528	4,128	3,480	1,562	5,258	1,738	3,190	829	4,317	2,910	4,317	2,904	42	6	7,603	6,382	7,364	6,088
December	13,807	13,169	6,013	4,532	3,451	1,629	3,116	1,283	5,509	1,620	3,895	3,021	3,895	3,018	41	4	7,603	5,920	7,364	5,615
Annual Average Day		**14,588**		**6,146**		**1,255**		**3,408**		**1,483**		**3,808**		**2,514**		**1,295**		**4,981**		**4,634**

Note: The shaded blocks denote the annual maximum daily flows for 2022.

[2] The use of variable frequency drive pumps, such as those used at both Princess Anne and the Lindsay Court Wells, allow for accurate and consistent flow rates. It is not uncommon to have the same maximum flow rate for several days over the course of the year. Flow meters measure to one decimal place and when rounded, as is the case for the Annual Flow Report, may contribute to similar flow values on several days.

The following tables (10-3 and 10-4) compare the maximum day and average day volumes for 2022 to the permitted water taking (PTTW) and the rated capacity.

Table 10-3 Georgetown WTP Flow Comparison to MDWL and PTTW

Georgetown WTP	Raw Water		Treated Water	
	Maximum Day	Average Day	Maximum Day	Average Day
% PTTW	63%	40%		
% Rated Capacity			56%	36%

Table 10-4 Princess Anne and Lindsay Court Well Flow Comparison to MDWL and PTTW[3]

Facility	Maximum Day Flow	Average Day Flow
Princess Anne Well 5		
% PTTW	85%	94% (Wells 5, 6 and 6B combined)
% Rated Capacity	85%	27%
Princess Anne Well 6		
% PTTW	93%	90% (Wells 5, 6 and 6B combined)
% Rated Capacity	93%	26%
Princess Anne Well 6B		
% PTTW	80%	90% (Wells 5, 6 and 6B combined)
% Rated Capacity	80%	11%
Lindsay Court Well 9		
% PTTW	92% (Wells 9 and 9B combined)	58%
% Rated Capacity	92%	58%
Lindsay Court Well 9B		
% PTTW	92% (Wells 9 and 9B combined)	20%
% Rated Capacity	87%	20%

[3] The current Georgetown PTTW contains specific conditions for water taking at the Princess Anne and Lindsay Court Well Fields. There is a combined maximum day water taking limit on the Lindsay Court Wells and a maximum annual average daily taking limit placed on the Princess Anne Wells. This has been reflected in the general information for the Georgetown Drinking Water System and the flow comparison chart.

In 2022, the maximum flows taken and pumped into the treatment systems were not greater than the values specified in the PTTW and the MDWL.

10.3 Adverse Test Results

In accordance with Schedule 16 of O. Reg. 170/03, notifications of adverse water quality incidents are provided to the Spills Action Centre and the Medical Officer of Health. In 2022, there was 1 adverse test result/incident in the Georgetown Drinking Water System as summarized in Table 10.5. The MECP allows for the reporting of multiple sodium exceedances under a single incident report.

Table 10-5 Adverse Test Results and Actions – Georgetown Drinking Water System

Date	Location	Adverse Condition	Corrective Action	Notice of Issue Resolution
January 31, 2022	Treated	Sodium = 81.3 mg/L Sodium = 54.4 mg/L Sodium = 52.7 mg/L Sodium = 52.9 mg/L Sodium = 34.9 mg/L	Resamples taken and results were comparable in value to the original sample(s). Reportable every 57 months.	February 4, 2022
January 31, 2022	Distribution	Sodium = 34.7 mg/L Sodium = 66.4 mg/L Sodium = 75.8 mg/L Sodium = 46.7 mg/L	Resamples taken and results were comparable in value to the original sample(s). Reportable every 57 months.	February 4, 2022

11 Acton Drinking Water System

11.1 Water System Description

The Acton Drinking Water System draws water from three well fields. There are two wells in each of the Davidson well field, the Fourth Line well field and the Prospect Park well field. All of the wells use ultraviolet (UV) light for primary disinfection with chlorination for secondary disinfection. Fluoride is added to the water from all three sources. Both the Davidson and Fourth Line well fields use preliminary and final cartridge filters.

The Prospect Park facility is equipped with greensand filters for the removal of manganese and iron from the water. Treated water from the three sites is pumped to the Churchill Reservoir and the Acton water distribution system. The Acton system is controlled through a computerized SCADA system that is monitored 24 hours per day, seven days a week.

Table 11-1 Acton Drinking Water System General Information

Municipal Drinking Water Licence Drinking Water Works Permit	004-102 004-202	
Drinking Water System Number	220001673	
Classification		
Class	Treatment Class 2	Distribution Class 2
Certificate Number	3642	569
Service Population	12,075	

Table 11-1 Continued

Permit to Take Water	
Number	6520-CB7STU
Expiry Date	December 31, 2031.
Water Taking Permitted	
Prospect Park Well 1	3,400 m^3/d
Prospect Park Well 2	3,400 m^3/d
Prospect Park Well 1 and 2 (Combined)	3,400 m^3/d
Davidson Well 1	1,250 m^3/d
Davidson Well 2	1,250 m^3/d
Fourth Line Well A	1,309 m^3/d
Fourth Line Well B	1,309 m^3/d
Fourth Line Well A and B (Combined)	1,711 m^3/d
Rated Capacity	
Prospect Park WTP	3,400 m^3/d
Davidson Wells 1 and 2	2,500 m^3/d
Fourth Line Wells (Wells A and B combined)	1,711 m^3/d

11.2 2022 Flow Summary

A summary of the flows in 2022 is provided in Table 11-2 on the following page. At the Prospect Park WTP, filter backwash water is withdrawn from the distribution system following the treated water flow meter; therefore, the metered treated water is the same as the raw water flow, but the actual volumes available to the distribution system are less than those shown.

At the Davidson and Fourth Line wells, the raw water flow is the same as the treated water flow to the distribution system. The data presented in Table 11-3 complies with the reporting requirements of the regulation (O. Reg. 170/03, Schedule 22).

Table 11-2 Acton Drinking Water System 2022[4]

Month	Total Flow Acton m^3/d		Davidson Wells m^3/d		4th Line Well A m^3/d		4th Line Well B m^3/d[4]		4th Line Wells A and B m^3/d		Prospect Park WTP Raw Water m^3/d		Prospect Park WTP m^3/d	
	Max. Day	Avg. Day	Max. Day	Avg. Day	Max. Day	Avg. Day	Max. Day	Avg. Day	Max. Day	Avg. Day	Max. Day	Avg. Day	Max. Day	Avg. Day
January	3,552	2,849	1,382	767	433	363	432	365	865	728	1,449	1,354	1,449	1,354
February	3,476	2,773	1,382	793	430	330	432	331	862	661	1,397	1,319	1,397	1,319
March	3,183	2,763	1,381	682	605	352	605	389	1,210	740	1,470	1,341	1,470	1,341
April	3,366	2,630	1,595	802	433	243	432	249	865	492	1,410	1,336	1,410	1,336
May	3,591	2,817	1,382	937	540	319	540	264	1,079	583	1,401	1,297	1,401	1,297
June	4,322	3,298	1,727	1,039	606	445	605	446	1,210	891	1,414	1,368	1,414	1,368
July	5,451	3,839	2,158	1,301	624	565	624	565	1,249	1,130	2,087	1,408	2,087	1,408
August	4,339	3,352	1,727	918	606	541	605	540	1,211	1,081	1,405	1,353	1,405	1,353
September	3,238	2,931	837	626	603	470	605	470	1,208	940	1,422	1,365	1,422	1,365
October	3,204	2,543	1,163	607	458	290	459	291	917	581	1,412	1,355	1,412	1,355
November	2,989	2,557	736	427	578	391	580	392	1,158	783	1,449	1,347	1,449	1,347
December	3,004	2,521	805	275	692	440	691	441	1,383	881	1,429	1,365	1,429	1,365
Annual Average Day		**2,906**		**765**		**396**		**395**		**791**		**1,350**		**1,350**

Note: The shaded blocks denote the annual maximum daily flows for 2022.

[4] The use of variable frequency drive pumps, such as those used at 4th Line Well B, allow for accurate and consistent flow rates. It is not uncommon to have the same maximum flow rate for several days over the course of the year. Flow meters measure to one decimal place and when rounded, as is the case for the Annual Flow Report, may contribute to similar flow values on several days.

Table 11-3 compares the maximum day and average day volumes for 2022 to the permitted water taking (PTTW) and the rated capacity.

Table 11-3 Acton Drinking Water System Flow Comparison to MDWL and PTTW[5]

Facility	Maximum Day Volume	Average Day Volume
Davidson Wells		
% PTTW	86%	31%
% Rated Capacity	86%	31%
Fourth Line Well A		
% PTTW	81% (Wells A and B combined)	30%
% Rated Capacity	81% (Wells A and B combined)	23%
Fourth Line Well B		
% PTTW	81% (Wells A and B combined)	30%
% Rated Capacity	81% (Wells A and B combined)	23%
Prospect Park		
% PTTW	61% (Wells 1 and 2 combined)	40%
% Rated Capacity	61% (Wells 1 and 2 combined)	40%

[5] The current Acton PTTW contains specific conditions for the Prospect Park and Fourth Line Well Fields. In addition to the water taking limits on the individual wells, there is also combined maximum day water taking limits stated for these sites. This has been reflected in the general information for the Acton Drinking Water System and the flow comparison chart.

11.3 Adverse Test Results

In accordance with Schedule 16 of O. Reg. 170/03, notifications of adverse water quality incidents are provided to the Spills Action Centre and Medical Officer of Health. In 2022, there was 1 adverse test result/incident in the Acton Drinking Water System.

Table 11-4 Adverse Test Results and Actions – Acton Drinking Water System

Date	Location	Adverse Condition	Corrective Action	Notice of Issue Resolution
January 31, 2022	Treated	Sodium = 47.8 mg/L	Resamples taken and results were comparable in value to the original sample(s. Reportable every 57 months.	February 4, 2022
January 31, 2022	Distribution	Sodium = 47.4 mg/L	Resamples taken and results were comparable in value to the original sample(s). Reportable every 57 months.	February 4, 2022

12 Campbellville Drinking Water System

12.1 Water System Description

The Campbellville Drinking Water System, located in the Town of Milton, services a residential development of approximately 35 households in the village of Campbellville. The supply consists of two wells and the water is disinfected with ultraviolet (UV) light and chlorination. Four pressure tanks provide a small amount of treated water storage and maintain pressure in the distribution system. The Campbellville system is controlled through a computerized SCADA system that is monitored 24 hours per day, seven days a week.

Table 12-1 Campbellville Drinking Water System General Information

Municipal Drinking Water Licence Drinking Water Works Permit	004-103 004-203
Drinking Water System Number	220012162
Classification	
Class Certificate Number	Limited Groundwater System Distribution Class 1 #6504
Service Population	140
Permit to Take Water	
Number Expiry Date	P-300-8039181501 June 30, 2029
Water Taking Permitted Campbellville Well 1 Campbellville Well 2A Total from both wells	524 m^3/d 524 m^3/d 524 m^3/d 524 m3/d
Rated Capacity	524 m^3/d

12.2 2022 Flow Summary

A summary of the flows in 2022 is provided in Table 12-2. In the Campbellville system, the treated water flow is the same as the raw water flow. The treatment plants are designed to handle peak hour flows and, as such, a comparison of maximum and average daily volumes to permitted levels is not the most accurate representation of available capacity. The data presented in Table 12-3 complies with the reporting requirements of the regulation (O. Reg. 170/03, Schedule 22).

Table 12-2 Campbellville Drinking Water System Flows 2022

Month	Campbellville Flow	
	Maximum Day	Average. Day
January	22	19
February	22	19
March	24	19
April	28	20
May	47	30
June	78	45
July	86	48
August	76	41
September	49	31
October	32	22
November	22	19
December	26	21
Annual Average Day		**28**

Note: The shaded blocks denote the annual maximum daily flows for 2022.

Table 12-3 Campbellville Flow Comparison to MDWL and PTTW

Campbellville Wells	Raw Water		Treated Water	
	Maximum Day	Average Day	Maximum Day	Average Day
% PTTW	16%	5%		
% Rated Capacity			16%	5%

12.3 Adverse Test Results

In accordance with Schedule 16 of O. Reg. 170/03, notifications of adverse water quality incidents are provided to the Spills Action Centre and Medical Officer of Health. In 2022, there was 1 adverse test result/incident in the Campbellville Drinking Water System as summarized in Table 12.4.

Table 12-4 Adverse Test Results and Actions – Campbellville Drinking Water System

Date	Location	Adverse Condition	Corrective Action	Notice of Issue Resolution
February 7, 2022	Treated	Sodium = 137 mg/L	Resamples taken and results were comparable in value to the original sample(s). Reportable every 57 months.	February 9, 2022
February 7, 2022	Distribution	Sodium = 135 mg/L	Resamples taken and results were comparable in value to the original sample(s). Reportable every 57 months.	February 9, 2022

13 Bridgeview Distribution Subsystem

13.1 Water System Description

The Bridgeview Distribution Subsystem is located at the west end of the City of Burlington, but it is not connected to the South Halton Water Distribution Subsystem. Water is supplied by the City of Hamilton through an interconnection to Hamilton's distribution system on Plains Road. There are approximately 70 homes and businesses in the Bridgeview system.

The City of Hamilton uses chloramination (a combination of chlorine and ammonia) for secondary disinfection in its drinking water system, and so the water in the Bridgeview Distribution Subsystem has a combined chlorine residual rather than a free chlorine residual.

In November 2018, the City of Hamilton implemented a new Corrosion Control Program (CCP), approved by the MECP by utilizing low concentrations of orthophosphate. A letter outlining Hamilton's CCP was delivered to all affected Halton residents and select members of Council ahead of the implementation date.

Table 13-1 Bridgeview Distribution Subsystem General Information

Municipal Drinking Water Licence Drinking Water Works Permit	004-104 (South Halton) 004-204
Drinking Water System Number	260068419
Classification	
Class Certificate Number	Distribution Class 1 3821
Service Population	230

13.2 2022 Flow Summary

The water flows in 2022 based on customer meter readings were as follows:

Total annual water consumption: 18,411 m^3
Average day consumption: 50 m^3

Since there is no flow limitation in the MDWL for this distribution system, a comparison of flow data with approvals is not required.

13.3 Adverse Test Results

In accordance with Schedule 16 of O. Reg. 170/03, notifications of adverse water quality incidents are provided to the Spills Action Centre and Medical Officer of Health. In 2022, there were no adverse test results/incidents in the Bridgeview Distribution Subsystem.

14 Snake Road Distribution Subsystem

14.1 Water System Description

The Snake Road Distribution Subsystem is located at the north end of the City of Burlington, but it is not connected to the South Halton Water Distribution Subsystem. Water is supplied by the City of Hamilton through an inter-connection to Hamilton's distribution system on Snake Road. There are approximately 24 homes and businesses in the Snake Road system.

The City of Hamilton uses chloramination (a combination of chlorine and ammonia) for secondary disinfection in its drinking water system, and so the water in the Snake Road Distribution Subsystem has a combined chlorine residual rather than a free chlorine residual.

In November 2018, the City of Hamilton implemented a new Corrosion Control Program (CCP), approved by the MECP by utilizing low concentrations of orthophosphate. A letter outlining Hamilton's CCP was delivered to all affected Halton residents and select members of Council ahead of the implementation date.

Table 14-1 Snake Road Distribution Subsystem General Information

Municipal Drinking Water Licence Drinking Water Works Permit	004-104 (South Halton) 004-204
Drinking Water System Number	260086775
Classification	
Class Certificate Number	Distribution Class 1 5444
Service Population	265

14.2 2022 Flow Summary

The water flows in 2022 based on customer meter readings were as follows:

Total annual water consumption: 17,604 m^3
Average day consumption: 48 m^3

Since there is no flow limitation in the MDWL for this distribution system, a comparison of flow data with approvals is not required.

14.3 Adverse Test Results

In accordance with Schedule 16 of O. Reg. 170/03, notifications of adverse water quality incidents are provided to the Spills Action Centre and Medical Officer of Health. In 2022, there were no adverse test results/incidents in the Snake Road Distribution Subsystem.

15 North Aldershot Distribution Subsystem

15.1 Water System Description

The North Aldershot Distribution Subsystem is located in the north end of the City of Burlington. The system is connected to the South Halton Water Distribution Subsystem; however, the connections are normally closed, thus isolating the two subsystems. Water is supplied by the City of Hamilton through an inter-connection to Hamilton's distribution system on Waterdown Road. There are approximately 105 homes and businesses in the North Aldershot system.

In November 2018, the City of Hamilton implemented a new Corrosion Control Program (CCP), approved by the MECP by utilizing low concentrations of orthophosphate. A letter outlining Hamilton's CCP was delivered to all affected Halton residents and select members of Council ahead of the implementation date.

Table 15-1 North Aldershot Distribution Subsystem General Information

Municipal Drinking Water Licence Drinking Water Works Permit	004-104 (South Halton) 004-204
Drinking Water System Number	260086762
Classification	
Class Certificate Number	Distribution Class 1 5445
Service Population	285

15.2 2022 Flow Summary

The water flows in 2022 based on customer meter readings were as follows:

Total annual water consumption: 31,487 m^3
Average day consumption: 86 m^3

Since there is no flow limitation in the MDWL for this distribution system, a comparison of flow data with approvals is not required.

15.3 Adverse Test Results

In accordance with Schedule 16 of O. Reg. 170/03, notifications of adverse water quality incidents are provided to the Spills Action Centre and Medical Officer of Health. In 2022, there was 1 adverse test results/incidents in the North Aldershot Distribution Subsystem as summarized in Table 15-2.

Table 15-2 Adverse Test Results and Actions – North Aldershot Distribution Subsystem

Date	Location	Adverse Condition	Corrective Action	Notice of Issue Resolution
September 6, 2022	Distribution	Low Chlorine residual in Distribution system	Resamples collected and results within acceptable limits	September 8, 2022

16 Drinking Water System Inspections

During the 2022 MECP inspection cycle, eleven drinking water system inspections were completed. Schedule 22-2(2) of O. Reg. 170/03 stipulates that any cases where the requirements of the SDWA were not met are to be listed in the Flow Summary Report along with the resulting corrective actions. There was were no occurrences of regulatory non-compliance identified in the Halton Region Drinking Water System inspections.

17 Reliability Centered Maintenance

The "reliability centered maintenance" strategy implemented by the treatment division continues to decrease water treatment asset risks through a combination of criticality analysis, tactical lifecycle asset management, reliability engineering, and advanced work planning and control activities. These efforts have resulted in a downward trend in failures over the past four years and have allowed maintenance to redirect resources from reactive work to proactive activities, thereby further increasing asset reliability.

The importance of effective maintenance and reliability practices cannot be overstated when it comes to ensuring the safe and high-quality production of water in treatment plants. In Canada, strict regulations are in place to guarantee the safety and quality of the water produced. The region of Halton, in particular, has emerged as a leader in this field of work, utilizing and expanding its maintenance and reliability functions to meet the rigorous requirements with great success.

In summary, the "reliability centered maintenance" strategy, combined with best practices in maintenance and reliability, enables Halton to meet strict regulations for water quality and safety, increase the reliability of assets, and ensure that residents and communities have access to safe and clean water, while also demonstrating a commitment to environmental sustainability.

2022 – Reliability Maintenance KPI's

% Complete of Scheduled (All Work Types)	% Scheduled of Total Complete (All Work Types)	% Proactive of Total Complete	% Water Quality PM Complete of Scheduled
91%	85%	96%	100%

Work Order Count Completed (All Work Types)	Total Scheduled Backlog Count	Total Backlog	Breakdown count as a per centage of all work types
4855	34	248	2.4%

18 Conclusions

Halton provides residents and businesses with reliable access to safe drinking water. To ensure the Region is meeting or bettering the requirements of the Safe Drinking Water Act, 2002 and other regulatory instruments, the MECP inspects each of the Region's drinking water systems annually. In order to maintain and demonstrate compliance, the Region has a robust SCADA system, professionally trained staff and regular reporting mechanisms which all fall within the scope of inspections. In 2022, no regulatory compliance issues related to water quality were identified. The Region continues to utilize the Partnership for Safe Water program as a framework for operations to continually improve and go beyond the regulatory requirements. The Region's commitment to high-quality drinking water and treatment was rewarded by the AWWA in 2020 when Halton became the first municipality in Canada to receive the coveted Director's Awards. The program tools include detailed and documented optimization processes that are implemented by our expert water treatment professionals allowing Halton to efficiently provide clean and safe drinking water for the communities we proudly serve.

The Water and Wastewater Treatment Division have built a "one team" culture in day-to-day operations, bringing together maintenance, engineering and operational staff to work as one. This approach aligns with the Partnership for Safe Water and optimization program capable plant concept. Teamwork within Halton has been the catalyst for providing safe, clean and reliable drinking water and excellent customer service to our residents and businesses and, with the partnership firmly implanted in our strategic planning, this will continue well into the future.

As required under O. Reg. 170/03, this report was prepared and presented to members of Municipal Council prior to March 31. Copies of the report are available on Halton's website at **halton.ca**.