Attachment #1 to Report PW-05-22

Drinking Water Systems

Flow summary report 2021

Published January 2022

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
CL_2	chlorine
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, any MECP orders and inspection findings, a summary of the quantities and 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 2021, achieving an overall average 100 per cent inspection rating.
- Halton Region's water systems produced more than 64,903 megalitres (ML) of safe, clean drinking water in 2021. This is the average equivalent of 178 ML of treated water per day, which is nearly enough to fill 71 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 3 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 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.

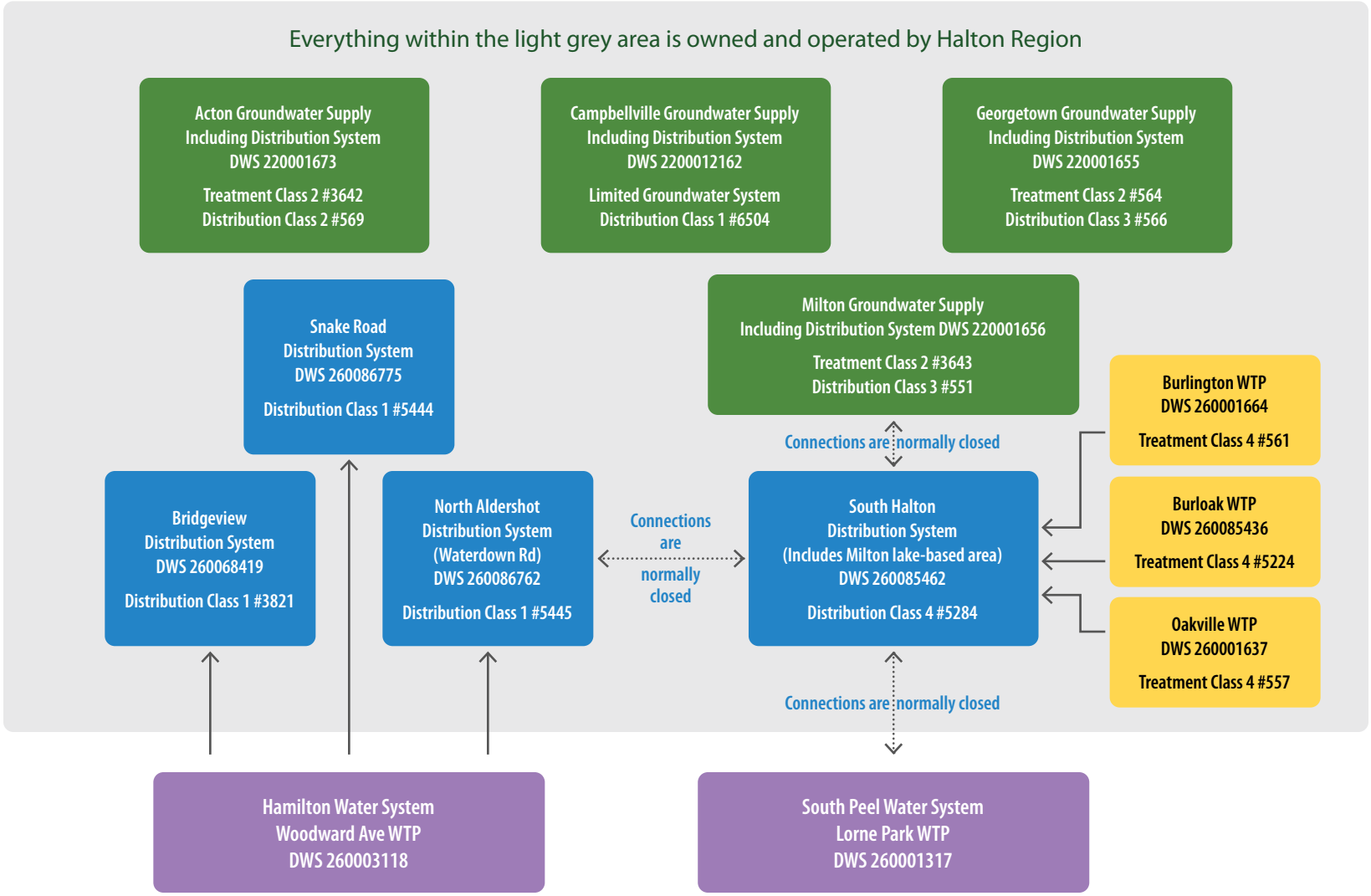
Table 2-1 Drinking Water System Annual Reports

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 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 2021 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 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 64,903 ML of drinking water in 2021. On average, Halton produced 178 ML of treated water per day in 2021 which is nearly enough to fill 71 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	 2581-8QSMHV January 31, 2022 (currently under MECP review, extension granted) 291,000 m^3/d or 202,083 L/min. (equivalent)
Rated Capacity	263,000 m^3/d

5.2 2021 Flow Summary

A summary of the flows in 2021 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 2021

Month	Raw Water Flow m^3/d		Treated Water Flow m^3/d	
	Maximum Day	Average Day	Maximum Day	Average Day
January	100,867	86,945	92,679	80,554
February	104,338	90,688	96,204	84,241
March	104,961	78,753	96,554	73,333
April	93,402	73,197	88,068	68,210
May	161,068	108,426	148,197	100,808
June	160,529	123,405	149,636	114,771
July	124,525	103,696	114,749	97,112
August	143,081	112,149	128,552	102,574
September	128,334	82,756	116,409	75,547
October	71,847	57,711	63,224	49,948
November	60,139	57,788	50,175	48,240
December	64,694	61,797	56,263	53,248
Annual Average Day		**86,443**		**79,049**

Note: The shaded blocks denote the annual maximum daily flows for 2021.

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	55%	30%		
% Rated Capacity			57%	30%

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 2021, there were 2 adverse test results/incidents at the Burlington WTP as summarized in Table 5.4.

Burlington WTP

Table 5-4 Adverse Test Results and Actions – Burlington WTP

Date	Location	Adverse Condition	Corrective Action	Notice of Issue Resolution
April 12, 2021	Burlington WTP	Sodium = 22.2 mg/L/ Duplicate = 22.1 mg/L (Reportable every 57 months)	Resamples collected and results within acceptable limits	April 15, 2021
August 25, 2021	Burlington WTP	Low primary disinfection due to seasonal water quality conditions. Reported as a precaution until the event could be investigated. The water was blended with fully treated water and no adverse water was directed to the end user.	Second ozone generator brought on line to ensure disinfection requirements are met.	August 27, 2021

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 2021 Flow Summary

A summary of the flows in 2021 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 2021

Month	Raw Water Flow m^3/d[1]		Treated Water Flow m^3/d	
	Maximum Day	Average Day	Maximum Day	Average Day
January	82,311	42,058	35,883	32,215
February	41,711	33,947	46,530	34,470
March	96,333	58,929	73,486	54,209
April	99,572	60,336	70,435	56,152
May	91,455	76,044	86,528	71,236
June	93,793	82,572	87,756	78,024
July	92,610	82,023	90,784	76,555
August	97,844	84,520	97,866	78,782
September	74,544	63,982	75,458	58,428
October	62,768	59,133	58,492	54,004
November	81,063	51,519	53,029	49,428
December	95,361	47,242	46,880	44,017
Annual Average Day		**61,859**		**57,293**

Note: The shaded blocks denote the annual maximum daily flows for 2021.

[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%	40%		
% Rated Capacity			90%	53%

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 2021, 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 2021 Flow Summary

A summary of the flows in 2021 is provided in the following table (7-2). It should be noted that the Burloak WTP was taken off line from mid-April until mid-August for membrane replacement. 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 2021

Month	Raw Water Flow m^3/d		Treated Water Flow m^3/d	
	Maximum Day	Average Day	Maximum Day	Average Day
January	30,967	24,127	26,632	19,976
February	32,862	21,356	28,385	17,636
March	19,458	12,206	15,644	9,620
April	19,548	14,234	15,690	11,520
May	0	0	0	0
June	0	0	0	0
July	0	0	0	0
August	38,943	12,855	35,092	9,527
September	51,252	36,592	46,993	32,640
October	46,726	41,262	42,887	37,059
November	50,704	42,805	45,707	38,049
December	49,530	42,103	44,629	37,376
Annual Average Day		**20,628**		**17,784**

Note: The shaded blocks denote the annual maximum daily flows for 2021.

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	80%	32%		
% Rated Capacity			85%	32%

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 2021, there were no adverse test results/incidents at the Burloak WTP.

Burloak WTP

8 South Halton Distribution System

8.1 Water System Description

The South Halton Distribution System is supplied by the Burlington, Oakville and Burloak WTP's. The South Halton Distribution System 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, Eighth Line, 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 2021.

Table 8-1 South Halton Distribution System 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	541,355

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 2021, there were 3 adverse test results/incidents in the South Halton Distribution System as summarized in Table 8-2.

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

Date	Location	Adverse Condition	Corrective Action	Notice of Issue Resolution
March 23, 2021	Distribution	Lead = 18.1 ug/L	Resamples collected and results within acceptable limits	March 29, 2021
June 10, 2021	Distribution	A confirmed Total Coliform Duplicate also PA confirmed Total Coliform	Flush and resampled, results within acceptable limits	June 14, 2021
December 28, 2021	Distribution	PA confirmed Total Coliform	Resamples collected and results within acceptable limits	December 30, 2021

9 Milton Groundwater Supply System

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 Steele's 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. From the surge tank, the water flows by gravity into 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 Groundwater System 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	17,720	
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 2021 Flow Summary

A summary of the flows in 2021 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 Groundwater System Flow Summary 2021

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	7,044	5,959	562	500	6,870	5,322	6,519	5,459
February	6,720	6,163	525	440	6,383	5,484	6,271	5,723
March	6,596	6,195	532	461	6,307	5,547	6,101	5,734
April	8,464	6,310	606	464	7,881	5,742	7,955	5,846
May	10,856	7,659	641	566	10,402	6,725	10,285	7,094
June	10,399	7,823	1,176	669	9,109	6,904	9,871	7,153
July	8,570	6,593	1,116	863	7,940	5,660	7,751	5,730
August	10,072	7,448	642	572	9,187	6,808	9,514	6,876
September	8,383	6,653	619	563	8,295	6,039	7,801	6,090
October	7,214	5,951	641	560	7,001	5,440	6,652	5,391
November	7,568	5,783	736	617	6,801	5,063	6,907	5,167
December	7,093	5,735	789	733	6,718	4,889	6,398	5,002
Annual Average Day		**6,523**		**584**		**5,802**		**5,939**

Note: The shaded blocks denote the annual maximum daily flows for 2021.

The following tables (9-3 and 9-4) show the maximum day and average day raw water volumes for 2021 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	76%	43%		
% Rated Capacity			45%	26%

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

Walkers Line Well	Maximum Day Flow	Average Day Flow
% PTTW	37%	18%
% Rated Capacity	22%	11%

In 2021, 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 2021, there were no adverse test results/incidents in the Milton Drinking Water System.

10 Georgetown Water Supply 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 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	47,594	
Permit to Take Water		
Number	4705-AFCJ82	
Expiry Date	December 31, 2021 (currently under MECP review, extension granted)	

Table 10-1 Continued

Water Taking Permitted Cedarvale	
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 2021 Flow Summary

A summary of the flows in 2021 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 2021[2]

Month	Georgetown System Total Treated Flow m^3/d (GWPP 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	16,385	13,353	4,661	3,366	2,887	558	3,838	1,471	3,542	1,337	6,113	3,660	3,881	1,810	3,885	1,850	6,739	6,615	6,497	6,327
February	14,411	13,145	10,047	5,629	3,357	2,136	8,915	1,672	7,515	1,820	3,896	3,630	3,893	1,948	3,896	1,683	6,653	4,075	6,486	3,886
March	14,472	13,122	5,131	3,813	3,890	3,130	3,040	430	3,001	253	4,744	3,802	4,744	1,461	4,327	2,341	6,271	5,765	6,091	5,507
April	14,491	12,963	8,079	3,863	3,195	1,485	6,423	2,046	3,430	332	4,744	3,503	4,744	1,843	4,737	1,659	6,116	5,871	5,961	5,597
May	20,254	15,930	10,384	6,528	3,890	1,742	9,299	2,491	6,825	2,296	6,032	3,945	6,032	2,105	4,299	1,841	6,508	5,730	6,237	5,457
June	19,814	16,539	10,400	7,451	2,796	1,540	7,108	3,321	8,007	2,589	6,033	5,099	6,033	3,467	4,308	1,607	5,542	4,211	5,087	4,014
July	17,398	14,413	8,532	6,215	3,697	1,652	7,705	2,106	7,383	2,457	5,479	4,376	5,479	2,344	4,308	2,032	4,082	3,978	3,953	3,822
August	21,135	17,088	11,119	7,954	3,888	856	9,750	2,405	11,045	4,693	5,607	4,906	5,607	3,909	4,307	996	7,344	4,567	6,460	4,228
September	15,502	13,888	11,189	7,022	1,347	588	4,467	658	10,126	5,776	5,169	3,946	5,169	2,324	3,888	1,622	4,141	3,065	3,914	2,920
October	13,650	12,926	6,104	5,677	1,522	1,049	4,907	2,342	5,946	2,287	3,914	3,475	3,914	1,940	3,888	1,535	4,156	3,990	3,908	3,773
November	13,530	13,069	7,239	5,796	1,298	901	4,997	2,256	4,859	2,640	3,891	3,460	3,891	1,768	3,884	1,693	4,140	3,970	4,005	3,813
December	14,254	13,267	6,819	5,968	1,420	901	5,680	2,257	6,734	2,810	3,894	3,517	3,886	1,987	3,894	1,530	4,335	3,980	4,075	3,783
Annual Average Day		**14,142**		**5,774**		**1,378**		**1,955**		**2,441**		**3,943**		**2,242**		**1,699**		**4,651**		**4,427**

Note: The shaded blocks denote the annual maximum daily flows for 2021.

[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 2021 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	59%	37%		
% Rated Capacity			50%	33%

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%	85% (Wells 5, 6 and 6B combined)
% Rated Capacity	85%	30%
Princess Anne Well 6		
% PTTW	75%	85% (Wells 5, 6 and 6B combined)
% Rated Capacity	75%	15%
Princess Anne Well 6B		
% PTTW	84%	85% (Wells 5, 6 and 6B combined)
% Rated Capacity	84%	19%
Lindsay Court Well 9		
% PTTW	93% (Wells 9 and 9B combined)	34%
% Rated Capacity	92%	34%
Lindsay Court Well 9B		
% PTTW	93% (Wells 9 and 9B combined)	26%
% Rated Capacity	72%	26%

[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 2021, 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 2021, there were no adverse test results/incidents in the Georgetown Water System.

11 Acton Water Supply 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 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	11,720	

Table 11-1 Continued

Permit to Take Water	
Number	3687-ABKHAP
Expiry Date	December 31, 2021 (currently under MECP review, extension granted)
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 2021 Flow Summary

A summary of the flows in 2021 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 Flow Summary 2021[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	3,409	2,525	1,076	368	776	412	778	413	1,554	825	1,537	1,332	1,537	1,332
February	3,773	2,557	1,380	596	753	298	755	332	1,507	630	1,835	1,332	1,835	1,332
March	3,813	2,637	1,382	601	606	339	605	346	1,208	685	1,527	1,351	1,527	1,351
April	3,837	2,612	1,381	566	604	356	605	357	1,208	714	1,603	1,333	1,603	1,333
May	4,068	3,131	1,729	805	776	493	778	494	1,554	987	1,650	1,339	1,650	1,339
June	4,416	3,254	1,727	803	778	575	778	577	1,555	1,152	1,529	1,299	1,529	1,299
July	4,045	2,986	1,425	681	776	476	778	477	1,554	953	1,511	1,352	1,511	1,352
August	4,668	3,653	2,073	1,245	690	533	691	534	1,381	1,067	1,427	1,341	1,427	1,341
September	3,783	2,942	1,698	670	689	464	691	464	1,380	928	1,433	1,344	1,433	1,344
October	3,746	2,805	1,037	546	689	478	691	479	1,381	957	1,401	1,303	1,401	1,303
November	3,714	2,752	1,527	750	430	330	432	331	862	662	1,457	1,340	1,457	1,340
December	3,317	2,716	1,255	707	430	345	432	347	862	692	1,400	1,317	1,400	1,317
Annual Average Day		**2,881**		**695**		**425**		**429**		**854**		**1,332**		**1,332**

Note: The shaded blocks denote the annual maximum daily flows for 2021.

[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 2021 to the permitted water taking (PTTW) and the rated capacity.

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

Facility	Maximum Day Volume	Average Day Volume
Davidson Wells		
% PTTW	83%	28%
% Rated Capacity	83%	28%
Fourth Line Well A		
% PTTW	91% (Wells A and B combined)	33%
% Rated Capacity	91% (Wells A and B combined)	25%
Fourth Line Well B		
% PTTW	91% (Wells A and B combined)	33%
% Rated Capacity	91% (Wells A and B combined)	25%
Prospect Park		
% PTTW	54% (Wells 1 and 2 combined)	39%
% Rated Capacity	54% (Wells 1 and 2 combined)	39%

[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 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 2021, there were no adverse test results/incidents in the Acton Drinking Water System.

12 Campbellville Water Supply System

12.1 Water System Description

The Campbellville Well Supply, 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 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 2021 Flow Summary

A summary of the flows in 2021 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 Water System Flows 2021

Month	Campbellville Flow	
	Maximum Day	Average. Day
January	23	20
February	21	19
March	33	21
April	35	22
May	51	32
June	57	34
July	35	25
August	65	36
September	34	26
October	43	22
November	26	20
December	24	17
Annual Average Day		**24**

Note: The shaded blocks denote the annual maximum daily flows for 2021.

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	12%	5%		
% Rated Capacity			12%	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 2021, there were no adverse test results/incidents in the Campbellville Drinking Water System.

13 Bridgeview Distribution System

13.1 Water System Description

The Bridgeview community distribution system is located at the west end of the City of Burlington, but it is not connected to the South Halton Water Distribution System. Water is supplied by the City of Hamilton through an inter-connection 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 system 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 System 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	220

13.2 2021 Flow Summary

The water flows in 2021 based on customer meter readings were as follows:

Total annual water consumption: 15,177 m^3
Average day consumption: 42 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 2021, there were no adverse test results/incidents in the Bridgeview Distribution System.

14 Snake Road Distribution System

14.1 Water System Description

The Snake Road distribution system is located at the north end of the City of Burlington, but it is not connected to the South Halton Water Distribution System. 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 system 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 System 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 2021 Flow Summary

The water flows in 2021 based on customer meter readings were as follows:

Total annual water consumption: 15,716 m^3
Average day consumption: 43 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 2021, there were no adverse test results/incidents in the Snake Road Distribution System.

15 North Aldershot Distribution System

15.1 Water System Description

The North Aldershot distribution system is located in the north end of the City of Burlington. The system is connected to the South Halton Water Distribution System; however, the connections are normally closed, thus isolating the two systems. 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 System 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	280

15.2 2021 Flow Summary

The water flows in 2021 based on customer meter readings were as follows:

Total annual water consumption: 33,976 m^3
Average day consumption: 93 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 2021, there were no adverse test results/incidents in the North Aldershot Distribution System.

16 Drinking Water System Inspections

During the 2021 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 one occurrence of regulatory non-compliance identified in the Halton Region Drinking Water System inspections.

South Halton Drinking Water System – Burloak

For the 2021 Burloak Water Treatment Plant MECP inspection, records could not confirm that the west discharge header flow meter had been checked and calibrated (if required) within the required twelve-month timeframe. The timing between flow meter verifications is a regulatory requirement in Municipal Drinking Water Licenses resulting in the administrative non-compliance. Staff provided previous and subsequent verification records to the inspector to demonstrate that the west header flow meter was operating as designed.

To prevent recurrence, and to the Ministry's satisfaction, a process solution was implemented whereby instrumentation technicians must upload any calibration or verification records on compliance instruments by end of each work day and maintenance planners are required to check the Systems Applications and Products (SAP) software the following work day to confirm task completion and ensure availability of these compliance records.

17 Reliability Centered Maintenance

The Treatment divisions **"Reliability Centered Maintenance"** Strategy continues to decrease water treatment asset risks through a combination of criticality analysis, tactical lifecycle asset management and team based asset care activities.

Key to the success of the Maintenance program are risk management approaches, namely; Asset Care Process, Equipment Change Management (F3R), Equipment Care Plan Optimizations (RCM), Maintainability Analysis and Refurbishment.

As a result, water treatment plant assets have experienced **a downward trend in failures** over the past 4 years, in fact, maintenance continue to reinvest resources that would have otherwise been consumed by reactive work into growing proactive work activities and by doing so **increased asset reliability**.

2021– 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
90%	91%	97%	100%

Work Order Count Completed (All Work Types)	Total Scheduled Backlog Count	Total Backlog	Breakdown count as a percentage of all work types
5401	48	367	3%

18 Conclusions

The report confirms that Halton residents and businesses continue to enjoy reliable access to safe drinking water, and the Region is meeting the requirements of the Safe Drinking Water Act, 2002. Compliance with regulatory requirements, Municipal Drinking Water Licences and Permits to Take Water continue to be monitored through MECP Inspections, the Region's SCADA system, professional staff and regular reporting mechanisms. In 2021, no regulatory compliance issues related to water quality were identified and the Region worked towards advancing its status in the Partnership for Safe Water. The Region was the first municipality in Canada to receive the Director's Awards from the American Water Works Association in 2020 for outstanding commitment to high quality drinking water and treatment. This voluntary program goes beyond regulatory requirements for safe drinking water through detailed and documented water treatment optimization to provide enhanced water quality for Halton residents.

The Water and Wastewater Treatment Division and Public Works Department have adopted a one-team culture effectively integrating operations with maintenance and engineering. This approach aligns with the Partnership for Safe Water and optimization program capable plant concept. Operational process control combines with facility design and asset maintenance to create infrastructure capable of achieving orbettering objectives and targets set by the regulatory bodies and the operating authority. The culture sits above strategic initiatives and tactical programs to ensure that Halton Region can sustain the provision of safe, clean and reliable drinking water to our residents and businesses and focus on continuously improving service delivery going forward.

In 2021, no regulatory compliance issues related to water quality were identified.

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**.