Appendix 1

2023 City of Brantford Water System

Annual Summary Report

CITY OF BRANTFORD

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2023 Annual Summary Report – Executive Summary

The City of Brantford is committed to providing our residents with a safe and adequate supply of drinking water that meets or surpasses applicable regulatory requirements in the Province of Ontario. The information in the Annual Summary Report is intended to inform the members of Council and the public about the current state of the Drinking Water System and to demonstrate the high quality of our drinking water.

The Brantford Water System is owned and operated by the Corporation of the City of Brantford. The raw water supply for the production of drinking water is withdrawn from the Grand River through the Holmedale Canal. The raw water is treated at the Holmedale Water Treatment Plant before it is distributed through the extensive underground water pipe network. The water treatment plant is a complex facility with the highest Class IV rating and is designed to produce up to 100 million liters per day (ML/d) of drinking water. There are three reservoirs in the network in addition to an in-plant reservoir, one booster pumping station and two elevated tanks that are used in the distribution system to equalize water demand, to reduce pressure fluctuations and to provide adequate reserves for firefighting, power outages and other emergencies.

The municipal drinking water should satisfy the provincial requirements of O. Reg. 170/03 under the Safe Drinking Water Act, 2002 and additional requirements outlined in the Municipal Drinking Water License. The drinking water was tested for various operational, biological and chemical (inorganic and organic) parameters using a certified lab and all the parameters were within the regulatory limits. In 2023, 1770 bacteriological samples were taken throughout the City and 14 sample results were adverse. Appropriate corrective actions were taken under the oversight of the Brant County Health Unit following provincial regulations.

The quantity of raw water taken under the Permit to Take Water and the treated water produced under the Municipal Drinking Water License were in compliance with the Provincial regulations.

The Ministry of Environment, Conservation and Parks (MECP) performs an annual inspection of the City's water treatment plant and the distribution system. Our Drinking Water System received a score of 96.5% in 2023. The City received 100% score over the past 6 years. The less than perfect score in 2023 was due to the non-compliance in keeping the paperwork up-to-date as required. Staff have been trained to prevent such errors from happening in the future.

A. Background

The information in the Annual Summary Report is intended to inform members of Council and the public about the current state of the Drinking Water System and demonstrate that high quality drinking water is continually supplied to consumers.

This report has been prepared in accordance with the terms and requirements set out in the Safe Drinking Water Act (2002), as Section 11 – Annual Reports and Schedule 22 – Summary Reports of Ontario Regulation 170/03. It covers the period from January 1st to December 31st, 2023.

The 2023 Annual Summary Report will be available to the public without charge, beginning March 31st, 2023. A copy of this report can be obtained via the Internet (www.brantford.ca) and at Brantford Customer Service by contacting (519) 759-4150.

B. Description of Drinking Water System

Table 1 City of Brantford Drinking Water System

Water System Element	Details
Drinking Water System Number	#220003564
Owner	The Corporation of the City of Brantford
Classification	Large Municipal Residential
Treatment	Class IV
Distribution	Class III
Raw Water Supply	Grand River (Holmedale Canal)
DWS Location	324 Grand River Ave.
Municipal Drinking Water License (MDWL)	063-101 Issue # 8, Issued: November 13, 2019
Drinking Water Works Permit (DWWP)	#063-201 Issue # 6, Issued: May 27th, 2022
Permit to Take Water	#2375-BLHMW5
Bulk Water Receiving Customer	The Corporation of the County of Brant Town of Cainsville Distribution System (Drinking Water System #: 260002616, Class I) which is owned and managed by the County of Brant.

The City of Brantford Water System is owned and operated by the Corporation of the City of Brantford. The Drinking Water System is a Large Municipal Residential System consisting of a Class IV Water Treatment Plant (Holmedale Water Treatment Plant) and a Class III Distribution System. (Drinking Water System Number: 220003564, Municipal Drinking Water License (MDWL) 063-101 Issue # 8, Issued on November 13th, 2019, Drinking Water Works Permit (DWWP) #063-201 Issue # 6, Issued on May 27th, 2022).

The Holmedale Water Treatment Plant is located at 324 Grand River Avenue in Brantford, Ontario. The City's raw water supply is drawn from the Grand River through the Holmedale Canal. The City is responsible for the overall management of the production and distribution of Brantford's drinking water. Specifically, this includes treatment of Grand River water, maintenance of the plant, distribution and metering systems, expansion of the network systems and meeting and/or exceeding the applicable regulatory requirements. The water treatment plant is designed to produce drinking water up to 100 million liters per day (ML/d). The volume of water permitted to take from the Grand River for drinking water supply is 260 million liters per day (ML/d) (Permit to Take Water #2375-BLHMW5 Issued on May 8th, 2017, expires on May 31st, 2027). The water treatment plant contains the following process units: screening, coagulation, sand-ballasted flocculation (John Meunier's Actiflo©), sedimentation, ozonation, biological filtration, UV disinfection, chlorination, chloramination and fluoridation.

Three reservoirs (in addition to an in-plant reservoir), one booster pumping station and two elevated tanks are used in the distribution system to equalize water demand, to reduce pressure fluctuations and to provide reserves for firefighting, power outages and other emergencies. A Residue Management Facility (RMF) treats the wastewater generated in the water production process for disposal in an environmentally sound manner. Wastewater treatment consists of concentrating the wastewater by three gravity settler thickeners and dewatering by two belt filter presses. Dewatered waste (sludge) is disposed at the Brantford Landfill.

The City of Brantford Water System sells water to the Town of Cainsville Distribution System (Drinking Water System #:260002616, Class I) which is owned and managed by the County of Brant. The Tutela Heights area annexed by the City in 2017 continues to be served by the County of Brant from their Mount Pleasant well water system. The City is planning to connect the Tutela Heights area to the City's water distribution system (disconnect from the Mount Pleasant well water system) by December 31, 2025.

C. List of Water Treatment Chemicals Used

Table 2 Water Treatment Chemicals

Chemical Name	Chemical Use
Polyaluminum chloride	Primary Coagulant
Flopam AN 934 PWG	Settling Aid
Microsand	Settling Aid
Liquid oxygen	Primary Chemical for Ozone Generation
Chlorine gas	Primary Disinfectant
Ammonia gas	Used in combination with free chlorine for secondary disinfection
Hydrofluosilicic Acid	Fluoridation
Sulfur dioxide gas	Dechlorination Chemical

D. Major Expenses

In order to maintain the water assets in good condition, the City evaluates the condition and performance of the assets periodically and develops a 10-year capital program. Some of the critical capital projects delivered in 2023 are listed below.

Table 3 Major Expenses

Description of the Project	Cost
New Polymer Dosing System	$1,066,215
SCADA System and Security Upgrades	$461,000
Travelling Screen Refurbishment	$282,246
Pump Refurbishments	$84,531
Water Operations Energy Audit	$43,882
Lead Grants Paid	$88,500
Total Expense	$2,026,374

E. Summary of Test Results Required Under O.Reg 170/03

i) Operational Testing Required Under Schedule 7

Appendix A summarizes the Operational Testing required under Schedule 7. Water quality tests were conducted at the required frequency and all results were within compliance limits in 2023.

ii) Bacteriological Testing Required Under Schedule 10

Table 4 summarizes the Bacteriological Testing required under Schedule 10. Bacteriological tests were conducted at the required frequency. Adverse results are summarized in Section F of this report. All corrective actions were taken as per provincial requirements and guidelines.

Table 4 Results from Bacteriological Testing Required Under Schedule 10

Source	Number of Samples	Range of Total Coliform (colonies per 100mL)	Range of E.Coli (colonies per 100mL)	Range of Background (colonies per 100mL)	Range of HPC (colonies per mL)	Number of Samples Tested for HPC	Percentage of Samples Tested for HPC
Raw	52	180-80000	2-1400	900-340000	23-5100	52	100%
Treated	55	0	0	0-1	0-4	54	98%
Distribution	1770	0-34	0	0-58	0-55	827	46.7%

*General bacteria population expressed as Background
**HPC – Heterotrophic Plate Count – General bacteria population expressed as colony counts on a heterotrophic plate count
Regulatory Limits for Treated and Distribution Samples: Total Coliform <1 colony/100mL, E. Coli <1 colony/100mL

iii) Summary of Inorganic Results Required Under Schedule 23

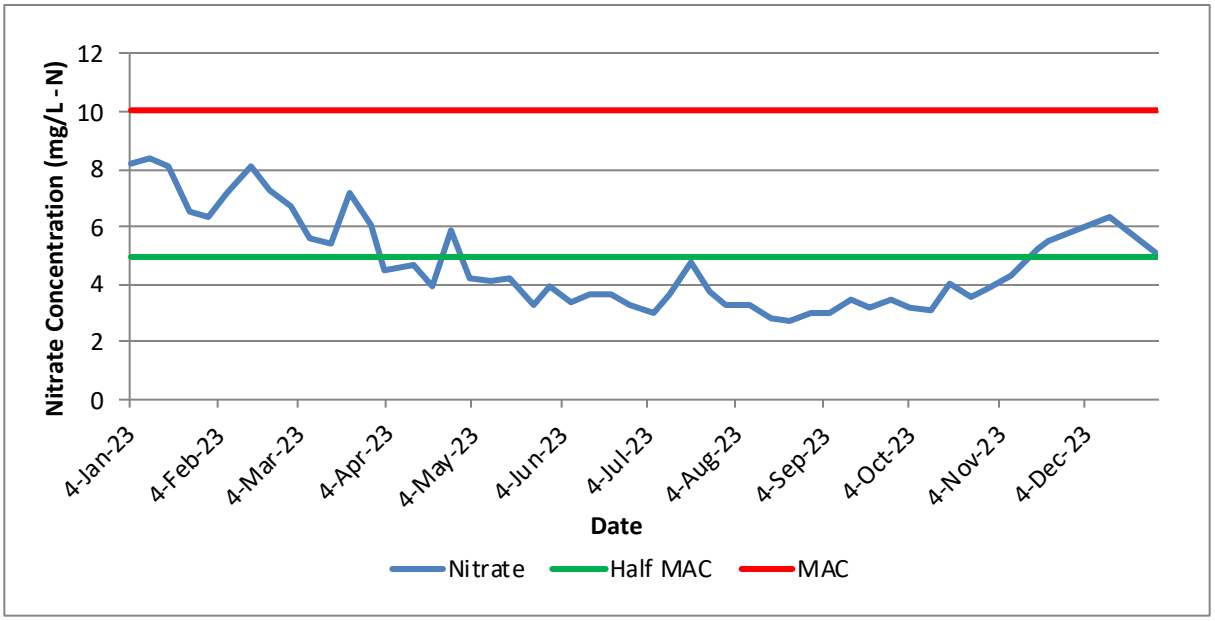
Appendix B summarizes the Inorganic parameter testing results required under Schedule 23; Samples were tested at the required frequency and all results where within compliance limits in 2023.

Nitrate

Following a gradual increase in quarterly nitrate sampling results that were over half of the Maximum Acceptable Concentration or MAC, (MAC-10 mg/L, half MAC-5mg/L), the City voluntarily increased Point of Entry (POE) to the distribution system sample collection frequency from quarterly to weekly starting in September 2022 and continued throughout 2023 to better understand the seasonal nitrate trends measured in the raw and treated water at the water treatment plant.

The 2023 weekly nitrate sampling data indicates that the nitrate concentration in the river exceeded half of the MAC for 18 weeks in 2023 most of which were between January and the end of March. The average nitrate concentration at the POE was 4.54 mg/L and the maximum was 8.38 mg/L.

Figure 1 Nitrate Concentration at the Point of Entry



Nitrate levels in the river tend to be high during the winter when biological activity is low and the nitrate in the river are not consumed. Nitrate in the Grand River is a result of the cumulative inputs from rural non-point sources, urban runoff and wastewater discharges upstream of the City of Brantford water treatment plant.[1]

No corrective actions are required by the City when a water quality parameter level is between half its MAC and the MAC. However, as a proactive measure, City staff reached out to the MECP and the GRCA and communicated this source water concern. The GRCA has installed a continuous monitoring probe for nitrate at the Brant Park monitoring station. They also plan to install another similar probe upstream of Brantford. The City staff is also exploring treatment options to reduce the nitrate concentration in the winter in case it exceeds the MAC of 10 mg/L in the future.

1 GRCA Board Report – Update on Water Quality in the Grand River p. 3/5

iv) Summary of Organic Results required under Schedule 24

Appendix C summarizes the Organic parameters testing results required under Schedule 24; Samples were tested at the required frequency and all results where within compliance limits in 2023.

v) Summary of the results of tests required under the Municipal Drinking Water License (Licence):

Under the City of Brantford Water System's Municipal Drinking Water License, several parameters are required to be tested at varying frequencies and locations throughout the water treatment process and distribution system. Parameters tested include Lead, N-Nitrosodimethylamine (NDMA), Bromate, Microcystin and Total Suspended Solids (TSS).

Health Related Parameter - Lead

Table 5 summarizes the lead samples tested before replacement and the regulatory lead sampling requirement detailed in the License. The distribution system lead sample result was representative of the drinking water with results well below the MAC of 10 µg/L, while the residential samples taken from homes supplied by lead water service pipes had variable results with some of the results exceeding the MAC.

The City's Lead Reduction Plan main strategy for mitigating lead in drinking water is replacing old lead water service pipes. After replacement, a lead sample is tested to assess the performance of this strategy. The results unequivocally demonstrate that replacing lead water services reduces the concentration of lead in the drinking water at the tap well below the provincial limit. It is to be noted that the City provides free funding of $1500 per water service to help with the cost of replacing lead water service on the private property. The City also offers a loan of up to $3,000 for eligible work.

Table 5 - Lead Sampling Results Summary

Sampling Locations	Number of Sampling Points Tested	Number of Sampling Points Required by MDWL	Minimum (µg/L)	Maximum (µg/L)	Average (µg/L)	pH	Alkalinity (mg/L as CaCO3)
Distribution	1	1	0.48	048	0.48	7.20	173
Non-residential	2	0	1.76	36.3	14.41	7.32	N/A*
Residential	138	20	0.02	240	6.80	7.44	N/A*
After Replacement	69	N/A*	0.02	6.00	0.83	7.41	N/A*

* N/A =Not Applicable

Health Related Parameter – Bromate

The monthly bromate testing at the POE is a requirement under the License. The results are summarized in Table 6. All of the results were below the MAC of 0.01 mg/L.

Table 6 Summary of Bromate Test Results

Month	Bromate (mg/l)	Within Regulatory Limit?
January	0.005*	Yes
February	0.005*	Yes
March	0.005*	Yes
April	0.005*	Yes
May	0.005*	Yes
June	0.006	Yes
July	0.005*	Yes
August	0.005*	Yes
September	0.005*	Yes
October	0.005*	Yes
November	0.005*	Yes
December	0.005*	Yes
Annual Average	0.005	Yes

*result was less than the method detection limit

Health Related Parameter – N-Nitrosodimethyamine (NDMA)

The quarterly NDMA testing from the distribution system is a requirement under the License. The results are summarized in Table 7 with the POE for comparison. All of the results were below the MAC of 0.009 µg/L.

Table 7 Summary of NDMA Test Results

Quarter	POE	Distribution	Within Regulatory Limit?
First	0.0009*	0.0018	Yes
Second	0.0009*	0.0013	Yes
Third	0.0009*	0.0017	Yes
Fourth	0.0009*	0.0009	Yes
Minimum	0.0009*	0.0013	Yes
Maximum	0.0009*	0.0018	Yes
Average	0.0009*	0.0016	Yes

*result was less than the method detection limit

Algae Management Plan – Microcystin

Microcystin testing frequency is weekly on raw water and monthly at the POE from June 1 until October 31st. All results measured in 2023 had a microcystin concentration lower than the method detection limit.

Environmental Discharge Parameter - RMF – Total Suspended Solids (TSS)

Under the City of Brantford Water System's License, the annual average concentration of TSS discharged from the RMF thickeners must be below 25 mg/L. Table 8 outlines the Monthly Average TSS for 2023. Each month was well below the 25 mg/L compliance limit with an annual average of 3.43 mg/L for 2023.

Table 8 Monthly Average TSS (mg/L)

Month	TSS (mg/l)	Within Regulatory Limit?
January	3.50	Yes
February	4.10	Yes
March	3.40	Yes
April	3.30	Yes
May	3.10	Yes
June	4.20	Yes
July	3.10	Yes
August	3.20	Yes
September	3.10	Yes
October	2.70	Yes
November	3.40	Yes
December	4.10	Yes
Annual Average	3.43	Yes

F. Summary of Reporting Adverse Test Results and Other Problems (Schedule 16)

i) Adverse Bacteriological or Combined Chlorine Residual Results and Corrective Actions Results

In 2023, out of the 1770 bacteriological samples tested throughout the City, 14 sample results were adverse in 10 different incidents. Corrective actions were taken as per Ontario Regulation 170/03 and under the direction of the Brant County Health Unit. Details of the adverse sample results and corrective actions to ensure safe drinking water quality are described below:

Table 9 Summary of Adverse Water Quality Incidents, Bacteriological or Combined Chlorine

Location	Date	Adverse Water Quality Indicator (AWQI)	Corrective Actions
Ontario St. Sample Stations	June 27th, 2023	Total Coliform 24 cfu1/100mL	BCHU declared a cautionary Boil Water Advisory. The sampling stations' discharge pipes were disinfected, flushed and resampled. All subsequent resamples passed. Improper station disinfection was found to be the cause of the adverse results. Staff were re-trained on proper disinfection techniques of sample stations.
Dufferin Park	July 11th, 2023	Total Coliform 1cfu/100mL	The sample collected following the installation of a new water service failed with 1 cfu/100mL. The water main was flushed and resampled and all subsequent resamples passed.
Tollgate Reservoir Inlet	July, 17th, 2023	Total Coliform 1 cfu/100mL	A routine sample failed on July 17th, 2023 with 1 cfu/100mL Resamples were collected and tested according to O. Reg 170/03 and all resamples passed.

Location	Date	Adverse Water Quality Indicator (AWQI)	Corrective Actions
King George Rd. Water Tower	July, 17th, 2023	Total Coliform 1 cfu/100mL	A routine sample failed on July 17th, 2023 with 1 cfu/100mL Resamples were collected and tested according to O. Reg 170/03 and all resamples passed.
Drummond St.	July 31st, 2023	Total Coliform 5 cfu /100mL	The sample collected following a final connection to a newly installed water main failed with 5 cfu/100mL. The water main was flushed and resampled and one of the resamples failed with 34 cfu/100mL. Both locations were resampled twice, 24h apart along with additional samples in the area following O. Reg. 170/03 and all subsequent resamples passed.
594 Colborne St. W. Hydrant	August 10-14th, 2023	Total Coliform 9-31 cfu /100mL	The sample collected following the installation of a new hydrant failed. Subsequent resamples confirmed contamination in the new water main and a Boil Water Advisory was issued. Once the source of contamination was removed, the water main was disinfected. Samples collected following disinfection passed and the Boil Water Advisory was lifted.
Park Rd. Reservoir - Inlet	August 14th, 2023	Total Coliform 1 cfu/100mL	A routine sample failed with 1 cfu/100mL. Resamples were collected and tested according to O. Reg 170/03 and all resamples passed.
Greenwich St. Sampling Station	August 15th, 2023	Total Coliform 1 cfu/100mL	A routine sample failed with 1 cfu/100mL. Resamples were collected and tested according to O. Reg 170/03 and all resamples passed.
Tollgate Reservoir Outlet	August 21st, 2023	Total Coliform 1 cfu/100mL	A routine sample failed with 1 cfu/100mL. Resamples were collected and tested according to O. Reg 170/03 and all resamples passed.
Francis St. Sampling Station	September 6th, 2023	Total Coliform 2 cfu/100mL	A routine sample failed with 2 cfu/100mL. Resamples were collected and tested according to O. Reg 170/03 and all resamples passed.

Bacteriological samples were collected until all results were negative and the drinking water was confirmed safe.
"cfu" stands for colony-forming unit which is a unit used to measure viable bacterial cell numbers.

ii) Adverse Chemical Results & Corrective Actions

Sodium

Samples collected from treated water & distribution system had an annual sodium average of 73.8 mg/L & 74.5 mg/L respectively. According to O.Reg 170/03, despite an aesthetic objective of 200 mg/L, any concentration above 20 mg/L is considered an adverse result. The City of Brantford Water System is required to report the results to the Ministry of Environment, Conservation and Parks (MECP) and the Brant County Health Unit (BCHU) once every 57 months. The sodium results were reported to both agencies in August 2022. Sodium concentration in the City's drinking water supply reflects the level found in the Grand River and cannot be removed by conventional water treatment methods.

iii) Non-Compliance Events with Provincial Regulations, Municipal Drinking Water License, Municipal Drinking Water Works Permit, and Other Official Documents

Two non-compliance incidents were identified during the MECP inspection in November 2023:

(1) One of the operators did not complete renewal of the required certification prior to its expiry (initially reported to the MECP prior to the inspection).

2) Form 1 document as required by the Drinking Water Works Permit was not in place prior to commissioning of a new watermain. The form was approved after commissioning of the water main.

Applicable SOPs were updated and staff were trained to prevent the above non-compliance incidents related to the paper work from happening again.

After reviewing the Drinking Water System, the MECP issued a score of 96.50% for the 2023 Brantford Drinking Water System Annual Inspection.

G. Holmedale Water Treatment Plant Flows

i) Drinking Water Flows

According to the City of Brantford Water System's Municipal Drinking Water License (Schedule C), the maximum daily volume of treated water that flows from the Holmedale Water Treatment Plant into the distribution system must not exceed 100 ML/d.

At the Holmedale Water Treatment Plant, the treated water flow is measured by continuous on-line flow meters and monitored and controlled via a Supervisor Control And Data Acquisition (SCADA) computer system. The daily average flow for 2023 was 33.50 ML/d.

Figure 2 outlines the monthly average daily flow and maximum total daily flow of treated water for the Holmedale Water Treatment Plant in 2023. The monthly average daily flow was calculated by averaging the total daily flows for a given month. The monthly maximum daily flow corresponds to the highest daily average flow for that month.

Figure 2 Drinking Water Flows (Million Liters per day or ML/day)

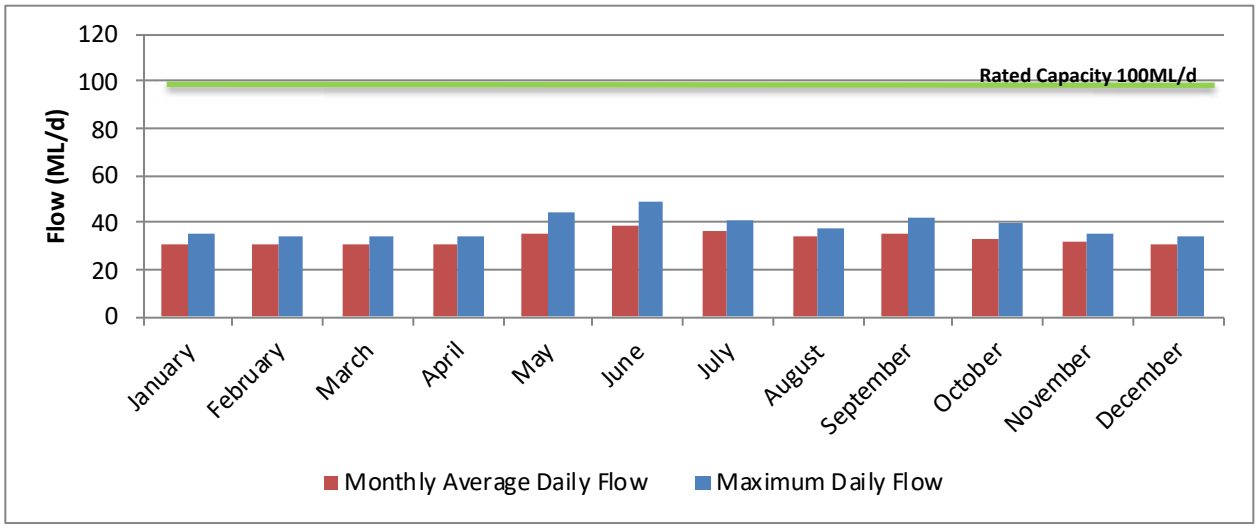


Figure 2 indicates that the monthly average daily flow and maximum total daily flow never exceeded the rated capacity in 2023. The highest monthly average daily flow was 38.44 ML/d, which occurred in June. The highest maximum daily flow was 48.96 ML/d, which also occurred in June.

ii) Grand River Flow Intake

The City of Brantford Water System's Permit to Take Water (#2375-BLHMW5) for the Water Treatment Plant allows the City of Brantford to withdraw up to 260 ML/d of raw water from the Grand River on a daily basis at a peak flow not to exceed 181,000 L/min. At the Holmedale Water Treatment Plant, the raw water flow is measured by continuous on-line flow meters and monitored and controlled via a SCADA computer system. The daily average raw water flow for 2023 was 38.49 ML/d.

Figure 3 outlines the monthly average daily flow, maximum daily flow and % Grand River flow taken for the Holmedale Water Treatment Plant in 2023. The monthly average daily flow was calculated by averaging the total daily flows for a given month. The monthly maximum daily flow corresponds to the highest daily average flow for that month. The City's Permit to Take Water requires monitoring of the water taking impact has on the Grand River. To ensure there are no negative effects to the Grand River, the City monitors the % of Grand River Flow Taken. The % Grand River Flow Taken is calculated by dividing the daily average flow taken from the Grand River by the Grand River flow measured at the Grand River Conservation Authority (GRCA) Brant Park monitoring station.

Figure 3 Raw Water Flows (million liters per day or ML/day)

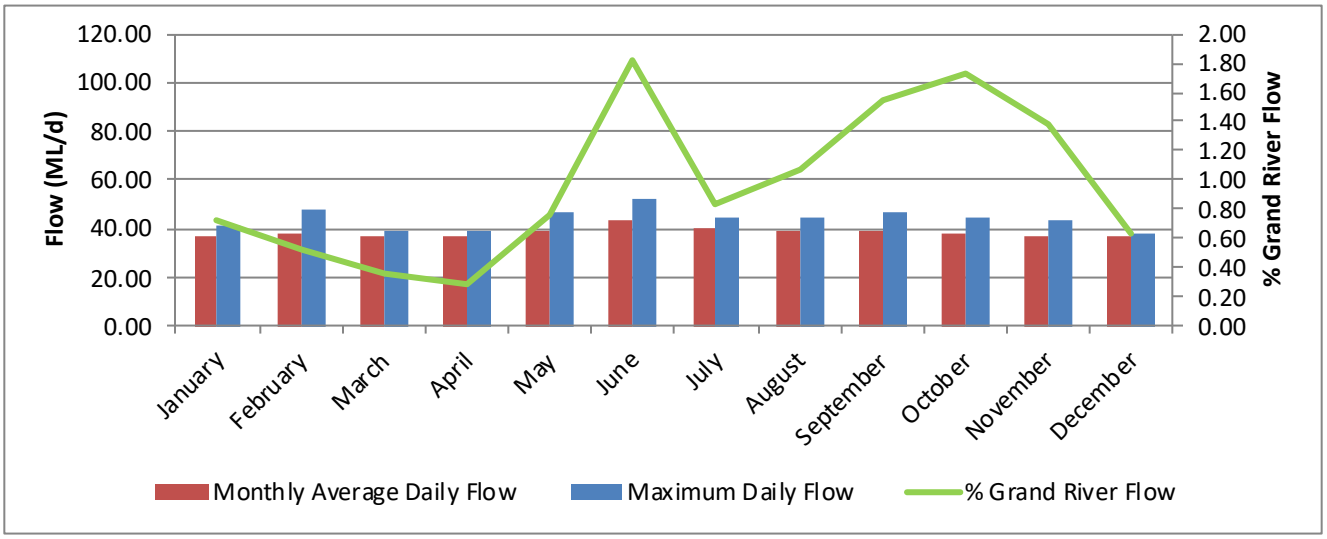


Figure 3 indicates that the highest monthly average daily flow was 43.10 ML/d which occurred in June and the highest maximum daily flow was 52.44 ML/d which also occurred in June. The maximum daily flow was well below the daily flow limit of 260 ML/d as outlined in the City's Permit to Take Water.

The peak percentage of river flow taken from the Grand River was at 1.81% in June followed by a second peak at 1.74% in October. The peak in June and October can be attributed to lower flows in the Grand River due to a very dry and warm summer and fall periods. There were no reported complaints to the City of Brantford as a result of its water taking activities.

Appendix A-Operational Parameter Summary

Table 10 Operational Parameter Summary- Water Treatment

Location	Parameter	Unit	MAC	O.Reg 170/03 Limit	Minimum	Maximum	Average	Within Regulatory Limit?
Grand River	Turbidity	NTU	N/A	N/A	2.99	15.42	7.24	NRL
Filter 1	Turbidity	NTU	N/A	less than 1.00	0.030	0.047	0.037	Yes
Filter 2	Turbidity	NTU	N/A	less than 1.00	0.027	0.049	0.037	Yes
Filter 3	Turbidity	NTU	N/A	less than 1.00	0.033	0.047	0.040	Yes
Filter 4	Turbidity	NTU	N/A	less than 1.00	0.036	0.052	0.043	Yes
Filter 5	Turbidity	NTU	N/A	less than 1.00	0.029	0.048	0.037	Yes
Filter 6	Turbidity	NTU	N/A	less than 1.00	0.034	0.053	0.043	Yes
Filter 7	Turbidity	NTU	N/A	less than 1.00	0.033	0.054	0.041	Yes
Filter 8	Turbidity	NTU	N/A	less than 1.00	0.036	0.054	0.046	Yes
CCC Effluent	Log Removal (Giardia)	N/A	N/A	more than 3.0	8.59	27.26	15.18	Yes
Brantford POE	Combined Chlorine	mg/L	3.00	N/A	2.49	2.62	2.56	Yes
Brantford POE	Turbidity	NTU	N/A	N/A	0.037	0.061	0.048	NRL
Brantford POE	Pressure	psi	N/A	more than 20	96.92	97.23	97.09	Yes
Brantford POE	Fluoride	mg/L	1.50	N/A	0.40	0.69	0.63	Yes

Definitions: **POE** - Point of Entry to the Distribution System (Treated Water)
CCC - Chlorine Contact Chambers
Log Removal – a shorthand term for $\log_{10}$ removal, used in reference to the physical-chemical treatment of water to remove, kill, or inactivate pathogenic organisms.
Combined Chlorine -Combined chlorine residual is the chlorine species that exists in water in chemical combination with ammonia or other organic nitrogen compounds.
MAC - Maximum Acceptable Concentration
NTU - Nephelometric Turbidity Units
N/A - Not Applicable
NRL - No Regulatory Limit

Table 11 Operational Parameter Summary – Water Distribution

Location	Parameter	Unit	MAC	O.Reg 170/03 Limit	Minimum	Maximum	Average	Within Regulatory Limit?
Tollgate Reservoir	Total Chlorine	mg/L	3.00	N/A	2.10	2.49	2.31	Yes
Park Rd. Reservoir	Total Chlorine	mg/L	3.00	N/A	1.93	2.59	2.28	Yes
Northwest Reservoir	Total Chlorine	mg/L	3.00	N/A	2.37	2.64	2.58	Yes
Albion St. Booster	Pressure	psi	N/A	more than 20	90.27	91.30	90.77	Yes
Tollgate Reservoir	Pressure	psi	N/A	more than 20	57.24	59.36	58.61	Yes
Park Rd. Reservoir	Pressure	psi	N/A	more than 20	78.41	79.36	78.95	Yes
Northwest Reservoir	Pressure	psi	N/A	more than 20	83.88	85.78	84.79	Yes
Bell Lane	Pressure	psi	N/A	more than 20	50.51	50.87	50.68	Yes
Fifth Ave.	Pressure	psi	N/A	more than 20	95.80	96.48	96.14	Yes
Lawren Harris	Pressure	psi	N/A	more than 20	64.44	64.91	64.71	Yes
St. Andrews	Pressure	psi	N/A	more than 20	91.78	93.81	92.82	Yes
Empey St.	Pressure	psi	N/A	more than 20	82.15	82.73	82.53	Yes

Definitions: **Combined Chlorine** - Combined chlorine residual is the chlorine species that exists in water in chemical combination with ammonia or other organic nitrogen compounds
MAC - Maximum Acceptable Concentration
PSI- Pounds per square inch
N/A - Not Applicable

Appendix B – Inorganic Parameter Summary

Table 12 Inorganic Parameter Summary

Parameter	Recent Sample	Unit of Measure	MAC	MDL	Treated Water	Within Regulatory Limit?
Bromate	9-August-23	mg/L	0.01	0.005	<MDL	Yes
Bromide	9-August-23	mg/L	N/A	0.001	0.025	NRL
Nitrite (as Nitrogen)	9-August-23	mg/L	1	0.003	<MDL	Yes
Nitrate (as Nitrogen)	9-August-23	mg/L	10	0.006	3.33	Yes
Antimony	9-August-23	ug/L	6	0.90	<MDL	Yes
Arsenic	9-August-23	ug/L	10	0.2	0.3	Yes
Barium	9-August-23	ug/L	1000	0.02	35.2	Yes
Boron	9-August-23	ug/L	5000	2	31	Yes
Cadmium	9-August-23	ug/L	5	0.003	0.004	Yes
Chromium	9-August-23	ug/L	50	0.03	0.12	Yes
Mercury	9-August-23	ug/L	1	0.01	<MDL	Yes
Sodium	9-August-23	mg/L	20	0.01	49.9	No
Selenium	9-August-23	ug/L	50	0.04	0.18	Yes
Uranium	9-August-23	ug/L	20	0.002	0.328	Yes

Definitions: **MAC** – Maximum Acceptable Concentration
MDL – Method Detection Limit
NRL - No Regulatory Limit

Appendix C – Organic Parameter Summary

Table 13 Organic Parameter Summary

Parameter	Recent Sample	Unit of Measure	MAC	MDL	Treated Water	Within Regulatory Limit?
1,1-Dichloroethylene	9-August-23	µg/L	14	0.33	< MDL	Yes
1,2-Dichlorobenzene	9-August-23	µg/L	200	0.41	< MDL	Yes
1,2-Dichloroethane	9-August-23	µg/L	5	0.35	< MDL	Yes
1,4-Dichlorobenzene	9-August-23	µg/L	5	0.36	< MDL	Yes
2,3,4,6-tetrachlorophenol	9-August-23	µg/L	100	0.2	< MDL	Yes
2,4,6-trichlorophenol	9-August-23	µg/L	5	0.25	< MDL	Yes
2,4-dichlorophenol	9-August-23	µg/L	900	0.15	< MDL	Yes
2,4-dichlorophenoxyacetic acid (2,4-D)	9-August-23	µg/L	100	0.19	< MDL	Yes
Alachlor	9-August-23	µg/L	5	0.02	< MDL	Yes
Atrazine	9-August-23	µg/L	N/A	0.01	0.02	NRL
Atrazine + N-dealkylated metabolites	9-August-23	µg/L	5	0.01	0.03	Yes
Azinphos-methyl	9-August-23	µg/L	20	0.05	< MDL	Yes
Benzene	9-August-23	µg/L	1	0.32	< MDL	Yes
Benzo(a)pyrene	9-August-23	µg/L	0.01	0.004	< MDL	Yes
Bromoacetic Acid	9-August-23	µg/L	N/A	2.9	< MDL	NRL
Bromodichloromethane	9-August-23	µg/L	N/A	0.26	14	NRL
Bromoform	9-August-23	µg/L	N/A	0.34	0.81	NRL
Bromoxynil	9-August-23	µg/L	5	0.33	< MDL	Yes
Carbaryl	9-August-23	µg/L	90	0.05	< MDL	Yes
Carbofuran	9-August-23	µg/L	90	0.01	< MDL	Yes
Carbon tetrachloride	9-August-23	µg/L	2	0.17	< MDL	Yes
Chloroacetic Acid	9-August-23	µg/L	N/A	4.7	< MDL	NRL
Chloroform	9-August-23	µg/L	N/A	0.29	19	NRL
Chlorpyrifos	9-August-23	µg/L	90	0.02	< MDL	Yes
Desethyl atrazine	9-August-23	µg/L	N/A	0.01	0.01	nrl
Diazinon	9-August-23	µg/L	20	0.02	< MDL	Yes
Dibromoacetic Acid	9-August-23	µg/L	N/A	20	2.8	NRL
Dichloromethane	9-August-23	µg/L	50	0.35	< MDL	Yes
Dicamba	9-August-23	µg/L	120	0.2	< MDL	Yes
Dichloroacetic Acid	9-August-23	µg/L	N/A	2.6	14.1	NRL

Appendix C – Organic Parameter Summary

Table 13 Organic Parameter Summary (continued)

Parameter	Recent Sample	Unit of Measure	MAC	MDL	Treated Water	Within Regulatory Limit?
Dichloromethane	9-August-23	µg/L	50	0.35	< MDL	Yes
Diclofop-methyl	9-August-23	µg/L	9	0.4	< MDL	Yes
Dimethoate	9-August-23	µg/L	20	0.06	< MDL	Yes
Diquat	9-August-23	µg/L	70	1	< MDL	Yes
Diuron	9-August-23	µg/L	150	0.03	< MDL	Yes
Geosmin	9-August-23	µg/L	N/A	3	< MDL	NRL
Glyphosate	9-August-23	µg/L	280	1	< MDL	Yes
Malathion	9-August-23	µg/L	190	0.02	< MDL	Yes
MCPA	9-August-23	µg/L	0.1	0.00012	< MDL	Yes
Metolachlor	9-August-23	µg/L	50	0.01	0.05	Yes
Metribuzin	9-August-23	µg/L	80	0.02	< MDL	Yes
MIB	9-August-23	µg/L	N/A	3	< MDL	NRL
Monochlorobenzene	9-August-23	µg/L	80	.30	< MDL	Yes
NDMA N-Nitrosodimethylamine	9-August-23	µg/L	0.009	0.0009	< MDL	Yes
Paraquat	9-August-23	µg/L	10	1	< MDL	Yes
Pentachlorophenol	9-August-23	µg/L	60	0.15	< MDL	Yes
Phorate	9-August-23	µg/L	2	0.01	< MDL	Yes
Picloram	9-August-23	µg/L	190	1	< MDL	Yes
Polychlorinated Biphenyls (PCBs) - Total	9-August-23	µg/L	3	0.04	< MDL	Yes
Prometryne	9-August-23	µg/L	1	0.03	< MDL	Yes
Simazine	9-August-23	µg/L	10	0.01	< MDL	Yes
Terbufos	9-August-23	µg/L	1	0.01	< MDL	Yes
Tetrachloroethylene	9-August-23	µg/L	30	0.35	< MDL	Yes
THMs (total)	9-August-23	µg/L	100	0.37	42	Yes
Total Haloacetic Acids (HAA5)	9-August-23	ng/L	80	5.3	27.9	Yes
Triallate	9-August-23	ng/L	230	0.01	< MDL	Yes
Trichloroacetic Acid	9-August-23	µg/L	N/A	5.3	11	NRL
Trichloroethylene	9-August-23	µg/L	5	0.44	< MDL	Yes
Trifluralin	9-August-23	µg/L	45	0.02	< MDL	Yes
Vinyl Chloride	9-August-23	µg/L	1	.17	< MDL	Yes

Definitions: MDL – Method Detection Limit **MAC** – Maximum Acceptable Concentration
NRL – No Regulatory Limit **N/A**– Not Available