

# 2021 City of Brantford Water System

Annual Summary Report



# Table of Contents

Executive Summary.....	3
A. Background .....	4
B. Description of Drinking Water System .....	4
C. List of Water Treatment Chemicals Used.....	5
D. Major Expenses Related to Drinking Water Quality.....	6
E. Summary of Reporting Adverse Test Results and Other Problems (Schedule 16) Adverse Water Quality Incidents .....	6
i. Adverse Bacteriological or Combined Chlorine Residual Results and Corrective Actions Results.....	6
ii. Adverse Chemical Results & Corrective Actions .....	8
iii. Non-Compliance Events With Provincial Regulations, Municipal Drinking Water License, Municipal Drinking Water Works Permit, And Other Official Documents .....	8
<b>F. Summary of Test Results Required Under O.Reg 170/03.....</b>	<b>8</b>
i. Operational Testing Required Under Schedule 7 .....	8
ii. Bacteriological Testing Required Under Schedule 10.....	8
iii. Summary of Inorganic Results Required Under Schedule 23 .....	8
iv. Summary of Organic Results required under Schedule 24.....	8
v. Summary of Additional Testing, Sampling or Reporting Required by an Order or Other Legal Instrument: RMF – Total Suspended Solids (TSS) .....	8
<b>G. Holmedale Water Treatment Plant Flows.....</b>	<b>9</b>
i. Drinking Water Flows.....	9
ii. Grand River Flow Intake .....	10
<b>H. MECP Annual Inspection.....</b>	<b>11</b>
<b>Appendix A.....</b>	<b>12</b>
<b>Appendix B.....</b>	<b>13</b>
<b>Appendix C.....</b>	<b>16</b>
<b>Appendix D .....</b>	<b>17</b>

# 2021 Annual Summary Report – Executive Summary

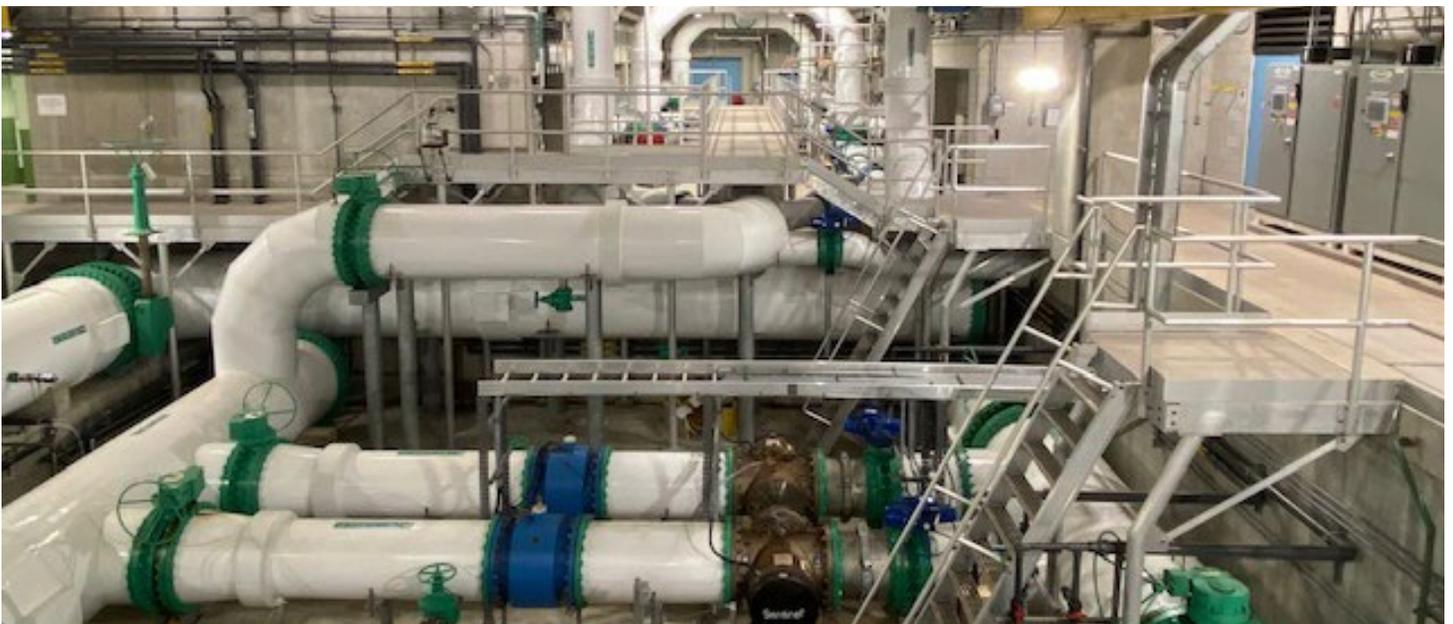
The City of Brantford is committed to providing our residents with safe and adequate supply of drinking water that meets or even surpasses applicable regulatory requirements in the Province of Ontario. The information in the Annual Summary Report is intended to inform the members of Council and the public 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 production of drinking water is drawn 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 water pipe network. The water treatment plant is a complex facility with Class IV rating and is designed to produce drinking water up to 100 million liters per day (ML/d). 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 adequate reserves for firefighting, power outages and other emergencies.

The municipal drinking water must satisfy the provincial requirements of O. Reg. 170/03 under the Safe Drinking Water Act, 2002. The drinking water was tested for various operational, biological, chemical (inorganic and organic) parameters using a certified lab and all the parameters were within the regulatory limits. In 2021, 1709 bacteriological samples were taken throughout the City of which 12 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 annual inspection of the City's water treatment plant and the distribution system. Our Drinking Water System received a perfect compliance score of 100% in 2021.



## 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, 2021.

The 2021 Annual Summary Report will be available to the public without charge, beginning March 23rd, 2022. A copy of this report can be obtained via the Internet ([www.brantford.ca](http://www.brantford.ca)) and at Brantford City Hall by contacting (519) 759-4150 Ext. 5539.

## B. Description of Drinking Water System

Table 1.0 City of Brantford Drinking Water System

Water System Element	Details
Drinking Water System	#220003564
Owner	The Corporation of the City of Brantford
Classification	Large Municipal Residential
Treatment	Class IV
Distribution	Class III
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 # 5, Issued: November 13, 2019
Permit to Take Water	# 2375-BLHMW5 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 November 13, 2019, Drinking Water Works Permit (DWWP) #063-201 Issue # 5, Issued: November 13, 2019).

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 distribution and metering 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 8, 2017, expires on May 31, 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 water distribution network system consists of 508 kms of pipes, 2801 hydrants and 8649 valves.

The City of Brantford Water System sells water to one other drinking water system, which is the Town of Cainsville Distribution System (Drinking Water System #: 260002616, Class I) which is owned and managed by the County of Brant.

### C. List of Water Treatment Chemicals Used

Table 2.0 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 Related to Drinking Water Quality

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 2021 related to drinking water quality are listed below.

Table 3.0- Major Expenses Related to Drinking Water Quality Description of the Project

Description of the Project	Cost
Emergency Shut Off to Chlorine System	\$125,800.00
SCADA System Upgrades/PLC Replacements	\$368,700.00
Analyzer Upgrades	\$157,925.00
Actiflo Roof Replacement	\$163,700.00
Park Road Upgrades (Sluice Gate Replacement, Pump Refurbishment, Actuator Install, Reservoir Cleaning)	\$76,750.00
Sample Stations and Installation	\$14,500
Lead Grants Paid	\$64,000
<b>Total Expense</b>	<b>\$971,375.00</b>

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

### i. Adverse Bacteriological or Combined Chlorine Residual Results and Corrective Actions Results

In 2021, 1709 bacteriological samples were taken throughout the City of which 12 sample results were adverse. Details of the adverse sample results and corrective actions taken to ensure safe drinking water quality are described in Table 4.0.



Table 4.0 Summary of Adverse Water Quality Incidents, Bacteriological or Combined Chlorine

Location	Date	Adverse Water Quality Indicator (AWQI)	Corrective Actions
Elkington St. Hydrant	April 27th and 28th 2021	Total Coliform 10 cfu/100mL 4 cfu/100mL	The final connection to a newly installed and disinfected watermain failed on April 27 and 28 with 10cfu/100mL and 4 cfu/100mL respectively. Proper corrective actions were taken according to O. Reg. 170/03 and all subsequent resamples passed.
Centennial Park Sample Station	June 22nd, 2021	8 AWQIs, Total Coliform ranged from 1-8 cfu/100mL	After the initial bacteriological failure on June 22nd, the sample station was resampled and tested as outlined in O. Reg. 170/03 and all samples passed.
(Herbert St. (2) Avondale St. (2) and Wellington St. (4) Sample Stations	July 5th-July 11th, 2021	8 AWQIs, Total Coliform ranged from 1-8 cfu/100mL	The routine samples from the week of July 5th had 3 failures from sampling stations that experienced an insect infestation. The pipes were disinfected with bleach and plugs were installed to keep the insects out. The sample stations were resampled and all samples passed.
Centennial Park Sample Station	August 24th, 2021	Total Coliform 2 cfu/100mL	After the initial bacteriological failure on August 24th, the sample station was resampled and tested as outlined in O. Reg. 170/03 and all samples passed.
Blowoff on Margueretta following final connection to St. Paul's Ave.	October 22nd, 2021	Total Coliform 5 cfu/100mL	After the initial bacteriological failure on October 22nd, the blowoff was resampled and tested as outlined in O. Reg. 170/03 and all samples passed.

The bacteriological results of all locations resampled were negative and the drinking water was confirmed safe.

**Note 1:** “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 66 mg/L and 63 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 last reported to both agencies in November 2017. Sodium concentration in our 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

No non-compliance events were reported in 2021.

## F. 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 2021.

### ii. Bacteriological Testing Required Under Schedule 10

Appendix B summarizes the Bacteriological Testing required under Schedule 10; Bacteriological tests were conducted at the required frequency. Adverse results are summarized in Section E of this report. All corrective actions were taken as per provincial requirements and guidelines. No further actions were required.

### iii. Summary of Inorganic Results Required Under Schedule 23

Appendix C summarizes the Inorganic Results required under Schedule 23; Samples were tested at the required frequency and all results were within compliance limits in 2021.

Two samples collected for nitrate on February 10th, 2021 from the POE (7.1 mg/L) and from the Distribution system (7.0 mg/L) were above half the maximum acceptable concentration (MAC) of 5 mg/L. These levels reflect those that were measured in raw water. No corrective actions are required when a water quality parameter is above half the MAC.

### iv. Summary of Organic Results required under Schedule 24

Appendix D summarizes the Organic Results required under Schedule 24; Samples were tested at the required frequency and all results were within compliance limits in 2021.

### v. Summary of Additional Testing, Sampling or Reporting Required by an Order or Other Legal Instrument: RMF – Total Suspended Solids (TSS)

Under the City of Brantford Water System's Municipal Drinking Water License, the annual average concentration of TSS discharged from the RMF thickeners must be below 25 mg/L. Table 5.0 outlines the Monthly Average TSS for 2021. Each month was well below the 25 mg/L compliance limit with an annual average of 3.0 mg/L for 2021.

Table 5.0: Monthly Average TSS

Month	TSS (mg/l)	Exceedance?
January	2.90	No
February	4.20	No
March	3.30	No
April	2.50	No
May	2.80	No
June	3.40	No
July	2.60	No
August	2.20	No
September	2.60	No
October	2.00	No
November	4.20	No
December	2.90	No
Annual Average	2.97	Not Applicable

## 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 2021 was 32.44 ML/d.

Figure 1.0 outlines the monthly average daily flow and maximum total daily flow of treated water for the Holmedale Water Treatment Plant in 2021. 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 1.0: Drinking Water Flows (million liters per day)

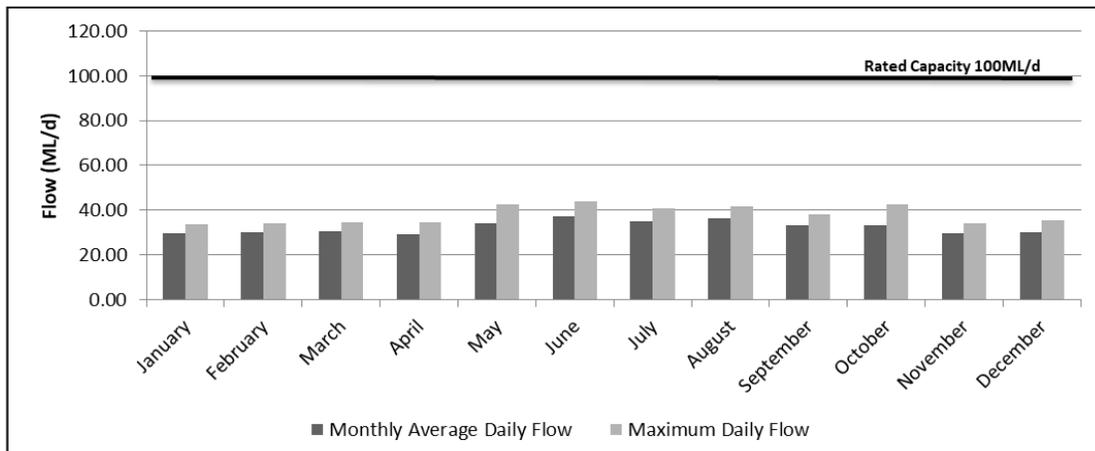


Figure 1.0 indicates that the monthly average daily flow and maximum total daily flow never exceeded the rated capacity in 2021. The highest monthly average daily flow was 37.34 ML/d, which occurred in June and the highest maximum daily flow was 43.90 ML/d, which also occurred in June.

## 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 2021 was 37.47 ML/d.

Figure 2.0 outlines the monthly average daily flow, maximum daily flow and % Grand River flow taken for the Holmedale Water Treatment Plant in 2021. 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 impacts the water taking 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 2.0: Raw Water Flows (million liters per day)

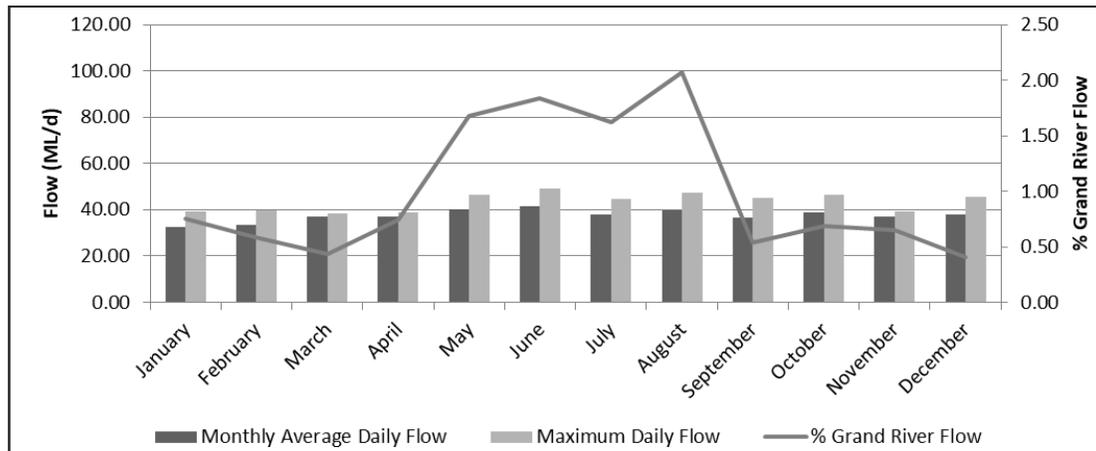


Figure 2.0 indicates that the highest monthly average daily flow was 41.49 ML/d which occurred in June and the highest maximum daily flow was 49.23 ML/d which also occurred in June. The maximum daily flow was well below the daily flow limit of 260 ML/d as outlined in the City's Permit to Take Water. The % of Grand River Flow taken from the Grand River peaked at 2.08 % in August. The peak in August can be attributed to lower flows in the Grand River due to a very dry and warm month. There were no reported complaints to the City of Brantford as a result of its water taking activities.

## H. MECP Annual Inspection

On December 6, 2021, after an extensive review of the Drinking Water System, the MECP issued a score of 100% for the 2021 Brantford Drinking Water System Annual Inspection. Table 6.0 summarizes the results from the annual MECP inspection report.

Table 6.0 Inspection Summary Rating Record

Inspection Module	Non-Compliance Rating
Source	0/0
Capacity Assessment	0/30
Treatment Processes	0/222
Operations Manuals	0/28
Logbooks	0/18
Certification and Training	0/42
Water Quality Monitoring	0/112
Reporting & Corrective Actions	0/70
<b>Total</b>	<b>0/658</b>
<b>Inspection Risk Rating</b>	<b>0.00%</b>
<b>Final Inspection Rating</b>	<b>100.00%</b>



# Appendix A

## City of Brantford Water System

### Operational Parameter Summary 2021

## Holmedale Water Treatment Plant

Location	Parameter	Unit	MAC	O.Reg 170/03 Limit	Minimum	Maximum	Average
Grand River	Turbidity	NTU	N/A	less than 1.00	1.75	9.69	6.83
Filter 1	Turbidity	NTU	N/A	less than 1.00	0.025	0.053	0.038
Filter 2	Turbidity	NTU	N/A	less than 1.00	0.023	0.046	0.036
Filter 3	Turbidity	NTU	N/A	less than 1.00	0.024	0.051	0.038
Filter 4	Turbidity	NTU	N/A	less than 1.00	0.025	0.052	0.041
Filter 5	Turbidity	NTU	N/A	less than 1.00	0.025	0.050	0.039
Filter 6	Turbidity	NTU	N/A	less than 1.00	0.032	0.059	0.047
Filter 7	Turbidity	NTU	N/A	less than 1.00	0.031	0.056	0.045
Filter 8	Turbidity	NTU	N/A	less than 1.00	0.027	0.055	0.043
CCC Effluent	Log Removal	N/A	N/A	more than 3.0	8.23	28.41	16.17
Brantford POE	Combined Chlorine	mg/L	3.00	Not Applicable	2.56	2.68	2.62
Brantford POE	Turbidity	NTU	N/A	Not Applicable	0.031	0.078	0.050
Brantford POE	Pressure	psi	N/A	more than 20	96.76	97.24	96.96
Brantford POE	Fluoride	mg/L	1.50	Not Applicable	0.64	0.70	0.67

## Distribution System

Location	Parameter	Unit	MAC	O.Reg 170/03 Limit	Minimum	Maximum	Average
Tollgate Reservoir	Total Chlorine	mg/L	3.00	Not Applicable	1.85	2.62	2.28
Park Rd. Reservoir	Total Chlorine	mg/L	3.00	Not Applicable	1.78	2.59	2.23
Northwest Reservoir	Total Chlorine	mg/L	3.00	Not Applicable	2.23	2.66	2.47
Albion St. Reservoir	Pressure	psi	N/A	more than 20	89.80	91.00	90.70
Tollgate Reservoir	Pressure	psi	N/A	more than 20	53.37	60.43	59.37
Park Rd. Reservoir	Pressure	psi	N/A	more than 20	76.69	79.40	78.87
Northwest Reservoir	Pressure	psi	N/A	more than 20	84.34	86.11	85.47
Bell Lane	Pressure	psi	N/A	more than 20	50.39	50.77	50.60
Fifth Ave.	Pressure	psi	N/A	more than 20	96.02	103.18	99.57
Lawren Harris	Pressure	psi	N/A	more than 20	64.47	65.33	64.89
St. Andrews	Pressure	psi	N/A	more than 20	75.19	93.53	91.08
Empey St.	Pressure	psi	N/A	more than 20	80.24	82.96	82.39

Definitions: POE - Point of Entry to the Distribution System (Treated Water)

CCC - Chlorine Contact Chambers

Log Removal – a shorthand term for log<sub>10</sub> 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



# Appendix B

## City of Brantford Water System

### Bacteriological Summary 2021

## Raw Water (Grand River)

### Coliform and e. Coli Levels

Month	Number of samples	Minimum Total Coliform (colonies per 100ml)	Maximum Total Coliform (colonies per 100ml)	Minimum Total E. coli (colonies per 100ml)	Maximum Total E. Coli (colonies per 100ml)
January	4	370	10100	12	120
February	4	150	360	8	10
March	6	460	14300	2	290
April	4	530	3300	6	30
May	5	640	2300	2	60
June	4	290	1700	50	180
July	4	800	3100	60	100
August	5	110	2200	37	220
September	6	600	4700	70	900
October	4	2300	5300	80	1000
November	5	360	3900	12	60
December	4	4400	135000	62	7000

### Heterotrophic Plate Count (HPC) Levels

Month	Number of samples	Minimum Total Background (colonies per 100ml)	Maximum Total Background (colonies per 100ml)	Minimum Total HPC (colonies per 1ml)	Maximum Total HPC (colonies per 1ml)
January	4	10000	12200	110	1350
February	4	900	2100	320	600
March	6	1000	29000	350	5000
April	4	2200	3700	280	1880
May	5	900	3100	750	3000
June	4	24000	5900	310	5200
July	4	5400	7000	400	1320
August	5	2100	4700	190	1280
September	6	2900	14000	260	1900
October	4	3900	14000	1870	4600
November	5	2200	6900	400	23000
December	4	3600	160000	370	5000



## Treated Water Coliform and e. Coli Levels

Month	Number of samples	Minimum Total Coliform (colonies per 100ml)	Maximum Total Coliform (colonies per 100ml)	Minimum Total E. coli (colonies per 100ml)	Maximum Total E. Coli (colonies per 100ml)
January	4	0	0	0	0
February	4	0	0	0	0
March	5	0	0	0	0
April	4	0	0	0	0
May	6	0	0	0	0
June	5	0	0	0	0
July	4	0	0	0	0
August	5	0	0	0	0
September	4	0	0	0	0
October	4	0	0	0	0
November	5	0	0	0	0
December	4	0	0	0	0

## Heterotrophic Plate Count (HPC) Levels

Month	Number of samples	Minimum Total Background (colonies per 100ml)	Maximum Total Background (colonies per 100ml)	Minimum Total HPC (colonies per 1ml)	Maximum Total HPC (colonies per 1ml)
January	4	0	0	4	3
February	4	0	0	4	2
March	6	0	0	5	1
April	4	0	0	4	4
May	5	0	0	6	28
June	4	0	0	5	2
July	4	0	1	4	2
August	5	0	0	5	3
September	6	0	3	4	1
October	4	0	0	4	2
November	5	0	0	5	1
December	4	0	0	4	1



## Distribution System Coliform and e. Coli Levels

Month	Number of samples	Minimum Total Coliform (colonies per 100ml)	Maximum Total Coliform (colonies per 100ml)	Minimum Total E. coli (colonies per 100ml)	Maximum Total E. Coli (colonies per 100ml)
January	117	0	0	0	0
February	122	0	0	0	0
March	144	0	0	0	0
April	136	0	10	0	0
May	160	0	0	0	0
June	167	0	6	0	0
July	171	0	8	0	0
August	160	0	2	0	0
September	126	0	0	0	0
October	127	0	5	0	0
November	160	0	0	0	0
December	119	0	0	0	0

## Heterotrophic Plate Count (HPC) Levels

Month	Number of samples	Minimum Total Background (colonies per 100ml)	Maximum Total Background (colonies per 100ml)	Number of samples	Percent of HPC	Minimum Total HPC (colonies per 1ml)	Maximum Total HPC (colonies per 1ml)
January	4	0	0	64	55%	0	6
February	4	0	0	64	53%	0	7
March	6	0	0	80	56%	0	7
April	4	0	3	62	46%	0	5
May	5	0	11	76	48%	0	2
June	4	0	41	73	44%	0	7
July	4	0	126	63	37%	0	10
August	5	0	130	80	50%	0	5
September	6	0	7	65	52%	0	3
October	4	0	29	61	48%	0	6
November	5	0	1	80	50%	0	4
December	4	0	1	58	44%	0	4

Regulatory Limits: Total Coliform - <1 colony /100ml

E.coli - <1 colony /100ml

\* - General bacteria population expressed as Background

\*\* HPC - Heterotrophic Plate Count - General bacteria population expressed as colony counts on a heterotrophic plate count



# Appendix C

## City of Brantford Water System

### Inorganic Parameter Summary 2021

## Treated Water

Parameter	Recent Sample	Unit of Measure	MAC	MDL	Treated Water	Within Regulatory Limit
Bromate	August 11, 2021	mg/L	0.01	0.005	< MDL	Yes
Bromide	August 11, 2021	mg/L	N/A	0.001	0.1	Yes
Nitrite (as Nitrogen)	August 11, 2021	mg/L	1	0.003	< MDL	Yes
Nitrite (as Nitrogen)	August 11, 2021	mg/L	10	0.006	2.8	Yes
Antimony	August 11, 2021	mg/L	6	0.90	0.09	Yes
Arsenic	August 11, 2021	mg/L	25	0.2	0.5	Yes
Barium	August 11, 2021	mg/L	1000	0.02	36.3	Yes
Boron	August 11, 2021	mg/L	5000	2	54	Yes
Cadmium	August 11, 2021	mg/L	5	0.003	0.008	Yes
Chromium	August 11, 2021	mg/L	50	0.08	0.27	Yes
Mercury	August 11, 2021	mg/L	1	0.01	< MDL	Yes
Sodium	August 11, 2021	mg/L	20	0.01	67.4	No
Selenium	August 11, 2021	mg/L	50	0.04	0.14	Yes
Uranium	August 11, 2021	mg/L	20	0.002	0.251	Yes

Definitions: MDL - Method Detection Limit  
 MAC - Maximum Acceptable Concentration

\* - refer to Section E. iii. Adverse Chemical Results & Corrective Actions of the Annual Summary Report



# Appendix D

## City of Brantford Water System

### Organic Parameter Summary 2021

## Treated Water

Parameter	Recent Sample	Unit of Measure	MAC	MDL	Treated Water	Within Regulatory Limit
Benzene	August 11, 2021	ug/L	1	0.032	< MDL	Yes
Carbon tetrachloride	August 11, 2021	ug/L	2	0.17	< MDL	Yes
1,2-Dichlorobenzene	August 11, 2021	ug/L	200	0.41	< MDL	Yes
1,4-Dichlorobenzene	August 11, 2021	ug/L	5	0.36	< MDL	Yes
1,1-Dichloroethylene	August 11, 2021	ug/L	14	0.33	< MDL	Yes
1,2-Dichloroethane	August 11, 2021	ug/L	5	0.35	< MDL	Yes
Dichloromethane	August 11, 2021	ug/L	50	0.35	< MDL	Yes
Monochlorobenzene	August 11, 2021	ug/L	80	0.3	< MDL	Yes
Tetrachloroethylene	August 11, 2021	ug/L	30	0.35	< MDL	Yes
Trichloroethylene	August 11, 2021	ug/L	5	0.44	< MDL	Yes
Vinyl Chloride	August 11, 2021	ug/L	1	0.17	< MDL	Yes
Polychlorinated Biphenyls (PCBs) - Total	August 11, 2021	ug/L	3	0.04	< MDL	yes
Benzo(a)pyrene	August 11, 2021	ug/L	0.01	0.004	< MDL	Yes
Alachlor	August 11, 2021	ug/L	5	0.02	< MDL	Yes
Atrazine + N-dealkylated metabolites	August 11, 2021	ug/L	5	0.01	0.11	Yes
Atrazine	August 11, 2021	ug/L	N/A	0.01	0.09	Not Applicable
Desethyl atrazine	August 11, 2021	ug/L	N/A	0.01	0.03	Not Applicable
Azinphos-methyl	August 11, 2021	ug/L	20	0.05	< MDL	Yes
Carbaryl	August 11, 2021	ug/L	90	0.05	< MDL	Yes
Carbofuran	August 11, 2021	ug/L	90	0.01	< MDL	Yes
Chlorpyrifos	August 11, 2021	ug/L	90	0.02	< MDL	Yes
Diazinon	August 11, 2021	ug/L	20	0.02	< MDL	Yes
Dimethoate	August 11, 2021	ug/L	20	0.06	< MDL	Yes
Diuron	August 11, 2021	ug/L	150	0.03	< MDL	Yes
Malathion	August 11, 2021	ug/L	150	0.02	< MDL	Yes
Metolachlor	August 11, 2021	ug/L	190	0.01	< MDL	Yes
Metribuzin	August 11, 2021	ug/L	50	0.02	< MDL	Yes
Phorate	August 11, 2021	ug/L	80	0.01	< MDL	Yes
Prometryne	August 11, 2021	ug/L	2	0.03	< MDL	Yes
Simazine	August 11, 2021	ug/L	1	0.01	< MDL	Yes
Terbufos	August 11, 2021	ug/L	10	0.01	< MDL	Yes



# Appendix D

## City of Brantford Water System

### Organic Parameter Summary 2021

## Treated Water

Parameter	Recent Sample	Unit of Measure	MAC	MDL	Treated Water	Within Regulatory Limit
Triallate	August 11, 2021	ug/L	1	0.01	< MDL	Yes
Trifluralin	August 11, 2021	ug/L	230	0.01	< MDL	Yes
2,4-dichlorophenoxyacetic acid (2,4-D)	August 11, 2021	ug/L	5	0.19	< MDL	Yes
Bromoxynil	August 11, 2021	ug/L	5	0.2	< MDL	Yes
Dicamba	August 11, 2021	ug/L	120	0.33	< MDL	Yes
Diclofop-methyl	August 11, 2021	ug/L	9	0.4	< MDL	Yes
MCPA	August 11, 2021	ug/L	100	0.00012	< MDL	Yes
Picloram	August 11, 2021	ug/L	190	1	< MDL	Yes
2,4-dichlorophenol	August 11, 2021	ug/L	900	0.15	< MDL	Yes
2,4,6-trichlorophenol	August 11, 2021	ug/L	5	0.25	< MDL	Yes
2,3,4,6-tetrachlorophenol	August 11, 2021	ug/L	100	0.2	< MDL	Yes
Pentachlorophenol	August 11, 2021	ug/L	60	0.15	< MDL	Yes
Haloacetic Acids	August 11, 2021	ug/L	80	5.3	16	Yes
THMs (total)	August 11, 2021	ug/L	100	0.37	55	Yes
NDMA N-Nitrosodimethylamine	August 11, 2021	ug/L	9	0.0008	0.0015	Yes
MIB	August 11, 2021	ug/L	N/A	3	< MDL	N/A
Geosmin	August 11, 2021	ug/L	N/A	3	< MDL	N/A
Diquat	August 11, 2021	ug/L	70	1	< MDL	Yes
Paraquat	August 11, 2021	ug/L	10	1	< MDL	Yes
Glyphosate	August 11, 2021	ug/L	280	1	< MDL	Yes

Definitions: <MDL - Method Detection Limit  
 MAC - Maximum Acceptable Concentration