Ontario

Drinking-Water Systems Regulation O. Reg. 170/03

Drinking-Water System Number:	**220000460**
Drinking-Water System Name:	**North Bay Water Drinking Water System**
Drinking-Water System Owner:	**The Corporation of the City of North Bay**
Drinking-Water System Category:	**Large Municipal Residential**
Period being reported:	**January 1, 2022 to December 31, 2022**

Complete if your Category is Large Municipal Residential or Small Municipal Residential

Does your Drinking-Water System serve more than 10,000 people? Yes [X] No [ ]

Is your annual report available to the public at no charge on a web site on the Internet?
Yes [X] No [ ]

Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.

The Corporation of the City of North Bay
P.O. Box 360
200 McIntyre Street East
North Bay, ON P1B 8H8

Complete for all other Categories.

Number of Designated Facilities served:

Did you provide a copy of your annual report to all Designated Facilities you serve?
Yes [ ] No [ ]

Number of Interested Authorities you report to:

Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility?
Yes [ ] No [ ]

Note: For the following tables below, additional rows or columns may be added or an appendix may be attached to the report

List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Drinking Water System Name	Drinking Water System Number
N/A	

Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?
Yes [ ] No [ ]

Indicate how you notified system users that your annual report is available and is free of charge.
[X] Public access/notice via the web
[X] Public access/notice via a newspaper

Describe your Drinking-Water System

The City of North Bay water treatment plant (WTP), water distribution facilities and water distribution piping system are owned and operated by the Corporation of the City of North Bay.
The City of North Bay Water Treatment System is classified as a "Large Municipal Residential" Drinking-Water System, Class 3 Water Treatment Plant and Class 4 Water Distribution System with the Drinking-Water System Number: 220000460. The WTP is located at 248 Lakeside Drive in North Bay and treats water from Trout Lake which is part of the Mattawa River watershed. The WTP services a population of approximately 54,000, the permit to take water permits water consumption up to 79,500 cubic meters per day.

The water distribution facilities consist of the following:

- **Ellendale Reservoir, High lift Pump Station & Re-chlorination Facility;**
- **CFB Standpipe;**
- **Canadore Pumping Station;**
- **Cedar Heights Booster pumping station;**
- **Judge Avenue Valve Chamber;**
- **Birches Road Standpipe and Re-chlorination Station; and**
- **Airport Road Standpipe, Booster Pumping Station and Re-chlorination Facility.**
- **Larocque Rd. Standpipe**

The membrane filtration water treatment plant has the design capacity of 79,500 cubic meters per day. The plant is a SCADA controlled membrane filtration system with ultraviolet and chlorine disinfection. The plant also doses fluoride, caustic for pH adjustment and Control Max for corrosion control prior to delivery to the distribution system.

The membrane filtration plant meets the Ontario Drinking Water Standards requirements for the removal/disinfection of 3-log Giardia Lambia, 2-log Cryptosporidium and 4-log Viruses. The membrane filtration Primary Barrier provides a 3- log Giardia removal, 2-log Cryptosporidium removal. The chlorine/UV disinfection Secondary Barrier provides for a 0.5 Giardia removal, 0.5-log Cryptosporidium removal and with chlorine addition gives a 4- log virus removal.

In general the North Bay WTP can be described as follows:

Intake

A 1200mm diameter 45 series polyethylene intake pipe, with a capacity of 80,000 cubic meters per day. The pipe, constructed in 1973, extends approximately 300 meters into Delaney Bay of Trout Lake and includes an intake structure consisting of a steel inlet bell mouth with fiber reinforced plastic (FRP) cage and is in approximately 21.5 meters of water at low water level.

Membrane Feed Pump Well/Prescreening

Two (2) parallel sub-surface well chambers with level monitoring containing, two (2) 6mm mesh manual prescreen in series, five (5) vertical turbine pumps (4 duty and one standby) each rated at 20 ML/d feeding the primary membrane system.

Membrane Feed Strainers

Five (5) 300 micron automatic membranes feed strainers (four duties and one standby).

Treatment Plant Process Areas

A building housing the following process components:

- **Primary and secondary membrane filtration system;**
- **Primary and secondary UV disinfection system;**
- **Two (2) chlorine contact tanks;**
- **split high lift pump well**
- **three (3) chemical storage and delivery rooms housing membrane cleaning and neutralization chemical systems, pre-chlorination system, primary disinfection chemical system, secondary chlorination chemical system, pH adjustment system, fluoride and corrosion control addition system.**

Also includes;

- **High lift pumping room;**
- **Generator room;**
- **Electrical room.**
- **Compressor/blower room**

Administration Area

Two floor administrative area including laboratory/control room, server room, multipurpose training room, offices, washrooms, women's and men's locker rooms, janitor room, building mechanical room and storage room.

Membrane Filtration

Eleven (11) pressurized primary membrane racks treating water from the membrane feed strainers, two(2) pressurized secondary membrane racks treating non-chemical backwash water from the primary membrane racks. The primary racks have a maximum production flow rate of 78.7 MLD based on raw water flow rate of 79.5 MLD, Ancillary systems including backwash pumps, instrument air for operating valves and integrity testing membranes, process blowers, and chemical cleaning and neutralization systems.

UV Disinfection Systems

Three (3) 600mm primary UV reactors (two duty and one standby) treating water from the eleven (11) pressurized primary membrane racks and two (2) secondary membrane racks. Each reactor contains medium pressure high intensity lamps housed in quartz sleeves; units equipped with self-cleaning mechanism and intensity sensors.

Chemical systems for:

Primary disinfection
Secondary (residual) disinfection
Fluoride Dosing
pH Adjustment
Corrosion Control
Membrane cleaning
Membrane cleaning solutions neutralization

Chlorine Contact Tank #1 and #2
Two (2) baffled chlorine contact tanks in series with capacities of 688 cubic meters in (tank #1) and 502 cubic meters (tank #2).

High Lift Pump Well #1 and #2
High lift pump well #1 has a capacity of approximately 240 cubic meters and is equipped with one (1) variable speed and two (2) constant speed vertical turbine high lift pumps each rated at 20 MLD. High lift pump well #2 has a capacity of approximately 240 cubic meters and is equipped with one (1) variable speed and one (1) constant speed vertical turbine high lift pump each rated at 20 MLD.

Generator Room
One (1) dual fuel generator set (NG/Diesel) with a rating of 2050KW, to provide power during peak hours and emergency situations.

Wastewater Disposal System
Primary Membrane Backwash Tank
Tank with a volume of approximately 310 cubic meters,
Two (2) membranes feed pumps supplying water to the Secondary Membrane System.

Secondary Waste Tank
Tank with a volume of approximately 130 cubic meters,
Two (2) pumps, one duty and one standby, to deliver water to the sanitary sewer.

Neutralization Tank #1 and #2
Two (2) tanks each with a volume of 150 cubic meters, pH and Chlorine Residual analyzers. Designed to dechlorinate and adjust pH to suitable levels for wastewater plant.

Sanitary Sewage Disposal
One sump with two (2) submersible pumps in the Administration Area and two (2) sumps and two (2) submersible pumps in the Process Area discharging to the sanitary sewer along Lakeside Drive

The treated water is pumped to the distribution system.

The water distribution facilities can be described as follows:

Ellendale Reservoir High lift Pumping Station and Re-chlorination Facility
The facility is a reinforced concrete at-grade, double cell, un-baffled, treated water reservoir, located at

the east end of Ellendale Drive. The reservoir has an approximate capacity of 18,200 cubic meters, with dimensions of 71 meters by 38 meters by 7 meters. The facility is equipped with a sodium hypochlorite re-chlorination system, on-line continuous water quality analyzer for free chlorine. Standby power is available with a generator to operate the facility during power outages.

Birch's Road Standpipe and Re-chlorination Station

The facility consists of one (1) 39 meter high, 19 meter diameter, 11,775 cubic meter capacity with a hydrostatic mixing system, the steel standpipe is located near the southwest corner of Birch's Road and Booth Road. The facility is equipped with a sodium hypochlorite re-chlorination system and on-line continuous water quality analyzer for free chlorine. A fixed 7.5kW, 120/240 Volt single phase diesel powered generator to power the re-chlorination and SCADA communications during prolonged power outages.

Larocque Rd. Standpipe

The facility consists of one (1) 22 meter high, 15meter diameter, and 4,000 cubic meter capacity glass fused to steel standpipe with a hydrostatic mixing system. The standpipe is located at the North end of the city on Larocque Rd. to provide water pressure to future development, along with the Canadore College and Nippissing University. There is a 10KW, 120/240V backup generator to maintain communication and SCADA controls during power outages.

Judge Avenue Valve Chamber

The facility consists of a valve and is located near the northeast corner of Judge Avenue and Lakeshore Drive. The facility is equipped with a fixed 7.5kW 120/240 Volt single phase, diesel powered generator to power the valve and SCADA communications during prolonged power outages. Valve control for pressure or tower level integrated with Birches Standpipe. The equipment for a re-chlorination station is located at the facility however not currently in use.

CFB Standpipe

The standpipe is a glass fused to steel un-baffled tank with an electric mixer inside, it is located on the Airport Standpipe property and shares all the buildings resources such as the PLC and standby generator. This Standpipe has a volume of 2,280m3 and supplies water to zone 3 and the Airport Standpipe. The piping at this facility allows this standpipe to also supply water for zone 5 during emergencies and maintenance activities.

Canadore Pumping Station

The facility is equipped with high lift pumps and pressurized cushion tanks to maintain pressure in the pressurized zone of the distribution system servicing Canadore College and Nipissing University. There is an on-line continuous water quality analyzer to monitor free chlorine residual and a 200kW, 347/600 Volt, 3 phase diesel generator to provide power and SCADA communications during prolonged power outages. Site is offline and on standby now that Cedar Heights is in operation.

Cedar Heights Booster Station
This Facility is equipped with two (2) 100 hp high lift pumps responsible for filling the Larocque Rd. Standpipe with a pressurized cushion tank to protect pressure surges in the grid. There is an on-line continuous water quality analyzer to monitor free chlorine residual and a 357kW, 347/600 Volt, 3 phase diesel generator to provide equipment power and SCADA communications during prolonged power outages.

Airport Standpipe, Booster Pumping Station
This 4,000 cubic meter water storage standpipe, booster pumping station and re-chlorination facility was constructed in 2009. With the standpipe, high lift pumps, pressurized cushion tanks and a 500kW back-up diesel generator. This system consists of a standpipe and a series of pumps to facilitate filling of the standpipe and providing pressure to the Airport Rd. and Carmichael Dr. area (Zone 5). Filling the standpipe utilizes three booster pumps (2 duty and 1 standby). The standpipe provides suction pressure for four booster pumps (3 duties and 1 standby) and two fire pumps to provide pressure for Zone 5. Zone 5 is equipped with four (4) pneumatic tanks to mitigate minor pressure fluctuations within the distribution system, and to provide some volume of available storage during power interruptions while the standby power system engages.

List all water treatment chemicals used over this reporting period

Sodium Hydroxide
Sodium Hypochlorite
HydroFluorosilicic Acid
Control Max

Were any significant expenses incurred to?

[X] Install required equipment
[X] Repair required equipment
[X] Replace required equipment

Please provide a brief description and a breakdown of monetary expenses incurred treatment and distribution of water to Major repair and replacement to ensure reliable the water system.

The major capital repairs and replacements include:

- **Purchased parts required to replace chlorine dosing lines at the water treatment plant**
- **Replaced VFD on High lift pump P12100 at the water treatment plant**
- **Replaced Chlorine Analyzer at Birch's Standpipe**
- **Replaced Chlorine Analyzer at Judge Valve Chamber**
- **Replaced Chlorine Analyzers at Airport Standpipe on Zone #3,#4 & #5**
- **Replaced all the modules on filter rack #1 due to age and rack issues**
- **Structural concrete repairs to floor at Judge Valve Chamber**
- **Concrete repairs and Electrical conduit run for Generator/ Electrical Upgrades at Ellendale Reservoir**
- **Installed 300m of 300mm water main on Aviation Lane Capital Project**
- **Replaced 250m of 200mm water main on Ivanhoe Dr., with new tie in and valves at intersections of Camelot Dr. and Rita Rd.**

- **Installed 325m of 400mm water main along with new residential services on Judge Ave. to replace the old 100mm watermain. This was to provide a secondary feed to Ferris for water supply.**
- **Installed 40 m of 200mm water main on Judge Ave. as Judge Valve chamber bypass along with new valves.**

Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
July 28, 2022	Lead Exceedance from Fire Hydrant 6-369	0.0136	mg/L	Contracted lab had taken a regulated lead sample from Hydrant 6-369 located on corner of Copeland St. and Cormack St. Results reported to the city by the lab on August 3, 2022 at 09:03. Oral notification provided to MOH and SAC as per regulation AWQI # 159397, then a resample taken on August 3, 2022 with a result of 0.0008 mg/L	August 3, 2022
September 15, 2022	Lead Exceedance Plumbing	0.029	mg/L	First sample from plumbing at 17 Southview Cr. was an exceedance. Reported to MOH and SAC as per regulations AWQI # 160176 on September 29, 2022. Re-sample taken September 30, 2022	September 30, 2022
September 30, 2022	Lead Exceedance Plumbing	0.019	mg/L	Re-sample from plumbing at 17 Southview Cr. was an exceedance. Reported to MOH and SAC as per regulations AWQI # 160335 on October 14, 2022. Results sent to homeowner through registered mail.	October 17, 2022
October 12, 2022	Lead Exceedance Plumbing	0.015	mg/L	First sample from plumbing at 208-2 Little Down Lane was an exceedance. Reported to MOH and SAC as per regulations AWQI # 160378 on October 20, 2022. Sample results received October 25, 2022 and mailed to residence with MOH guidance on October 27, 2022	October 27, 2022

Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period.

	Number of Samples	Range of E.coli (#)-(#)	Range of Total Coliform Results (#)-(#)	Number of samples Background Colony Counts	Range of Back-ground Colony Counts	Number of HPC Samples	Range of HPC Results (#)-(#)
Raw	52	0-18	0-129	52	2->200	N/A	N/A
Treated	52	0-0	0-0	52	0-0	52	0-6
Distribution Fixed Sites	364	0-0	0-0	364	0-1	104	0-4

	Number of Samples	Range of E.coli (#)-(#)	Range of Total Coliform Results (#)-(#)	Number of samples Background Colony Counts	Range of Back-ground Colony Counts	Number of HPC Samples	Range of HPC Results (#)-(#)
Distribution Random Sites	530	0-0	0-0	530	0-11	159	0-24

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.

POE Grab Samples	**Number of Grab Samples**	**Range of Results (min #)-(max #)**	**ODWQS/Operational Requirement**
Turbidity	**228**	**0.049 – 0.181 NTU**	**1.0 NTU max**
Chlorine	**293**	**0.73 – 1.88 mg/L**	**0.05 mg/L min.**
Fluoride (If the DWS provides fluoridation)	**203**	**0.0 – 0.93 mg/L**	**1.5 mg/L max**

Distribution Free Chlorine Grab Samples	**Number of Grab Samples**	**Range of Results (min #)-(max #)**	**ODWQS Requirement**
Chlorine Fixed Sites	**2951**	**0.24 – 3.44 mg/L**	**0.05mg/L min.**
Chlorine Random Sites	**530**	**0.09-1.31 mg/L**	**0.05 mg/L min.**

POE on-line Continuous Analyzers	**Number of Grab Samples**	**Range of Results (min #)-(max #)**	**ODWQS/Operational Requirement**
Turbidity	**8760**	**0.010 – 2.087NTU**	**5.0 NTU max**
Chlorine	**8760**	**0.76 – 3.39 mg/L**	**0.05 mg/L min.**
Fluoride (If the DWS provides fluoridation)	**8760**	**0.0 – 1.02mg/L**	**1.5 mg/L max**

Summary of Inorganic parameters tested during this reporting period or the most recent sample results

Parameter	Sample Date	**Result Value**	Unit of Measure	Exceedance
Antimony	**18 Jul 22**	**<0.0005**	**mg/L**	**no**
Arsenic	**18 Jul 22**	**<0.001**	**mg/L**	**no**
Barium	**18 Jul 22**	**0.01**	**mg/L**	**no**
Boron	**18 Jul 22**	**<0.01**	**mg/L**	**no**
Cadmium	**18 Jul 22**	**<0.0001**	**mg/L**	**no**
Chromium	**18 Jul 22**	**<0.001**	**mg/L**	**no**

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Mercury	**18 Jul 22**	**<0.0001**	**mg/L**	**no**
Selenium	**18 Jul 22**	**<0.001**	**mg/L**	**no**
Uranium	**18 Jul 22**	**<0.001**	**mg/L**	**no**
Sodium	**18 Jul 22**	**12.0**	**mg/L**	**no**
Fluoride	**18 Jul 22**	**0.70**	**mg/L**	**no**
Nitrite	**26 Jan 22** **6 Apr 22** **4 Jul 22** **3 Oct 22**	**<MDL** **<MDL** **0.17** **<MDL**	**mg/L** **mg/L** **mg/L** **mg/L**	**no**
Nitrate	**26 Jan 22** **6Apr 22** **4 Jul 22** **3 Oct 22**	**<MDL** **<MDL** **<0.10** **<MDL**	**mg/L** **mg/L** **mg/L** **mg/L**	**no**

*only for drinking water systems testing under Schedule 15.2; this includes large municipal non-residential systems, small municipal non-residential systems, non-municipal seasonal residential systems, large non-municipal non-residential systems, and small non-municipal non-residential systems

Summary of lead testing under Schedule 15.1 during this reporting period

(Applicable to the following drinking water systems; large municipal residential systems**,** small Municipal residential systems and non-municipal year-round residential systems)

	Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Unit of Measure	Number of Exceedances
Round 1 Dec 15 2021 to Apr 15 2022	**Plumbing**	**5**	**0.0001 – 0.002**	**mg/L**	**0**
	Distribution	**8**	**<0.0001 – 0.001**	**mg/L**	**0**
Round 2 June 15 2022 to Oct 15 2022	**Plumbing**	**45**	**<0.0001 – 0.029**	**mg/L**	**3**
	Distribution	**9**	**<0.001 –0.0136**	**mg/L**	**1**

Summary of Organic parameters sampled during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	**18 Jul 22**	**<0.0005**	**mg/L**	**no**
Atrazine + N-dealkylated metabolites	**18 Jul 22**	**<0.001**	**mg/L**	**no**
Azinphos-methyl	**18 Jul 22**	**<0.002**	**mg/L**	**no**
Benzene	**18 Jul 22**	**<0.0005**	**mg/L**	**no**
Benzo(a)pyrene	**18 Jul 22**	**<0.00001**	**mg/L**	**no**
Bromoxynil	**18 Jul 22**	**<0.0005**	**mg/L**	**no**
Carbaryl	**18 Jul 22**	**<0.005**	**mg/L**	**no**
Carbofuran	**18 Jul 22**	**<0.005**	**mg/L**	**no**
Carbon Tetrachloride	**18 Jul 22**	**<0.0002**	**mg/L**	**no**
Chlorpyrifos	**18 Jul 22**	**<0.001**	**mg/L**	**no**
Diazinon	**18 Jul 22**	**<0.001**	**mg/L**	**no**
Dicamba	**18 Jul 22**	**<0.001**	**mg/L**	**no**
1,2-Dichlorobenzene	**18 Jul 22**	**<0.0004**	**mg/L**	**no**
1,4-Dichlorobenzene	**18 Jul 22**	**<0.0004**	**mg/L**	**no**
1,2-Dichloroethane	**18 Jul 22**	**<0.0005**	**mg/L**	**no**
1,1-Dichloroethylene (vinylidene chloride)	**18 Jul 22**	**<0.0005**	**mg/L**	**no**
Dichloromethane	**18 Jul 22**	**<0.004**	**mg/L**	**no**
2-4 Dichlorophenol	**18 Jul 22**	**<0.001**	**mg/L**	**no**
2,4-Dichlorophenoxy acetic acid	**18 Jul 22**	**<0.001**	**mg/L**	**no**
Diclofop-methyl	**18 Jul 22**	**<0.0009**	**mg/L**	**no**
Dimethoate	**18 Jul 22**	**<0.0025**	**mg/L**	**no**
Diquat	**18 Jul 22**	**<0.005**	**mg/L**	**no**
Diuron	**18 Jul 22**	**<0.005**	**mg/L**	**no**
Glyphosate	**18 Jul 22**	**<0.01**	**mg/L**	**no**
Malathion	**18 Jul 22**	**<0.0005**	**mg/L**	**no**
Metolachlor	**18 Jul 22**	**<0.001**	**mg/L**	**no**
Metribuzin	**18 Jul 22**	**<0.005**	**mg/L**	**no**
Monochlorobenzene	**18 Jul 22**	**<0.0005**	**mg/L**	**no**
Paraquat	**18 Jul 22**	**<0.001**	**mg/L**	**no**
Pentachlorophenol	**18 Jul 22**	**<0.001**	**mg/L**	**no**
Phorate	**18 Jul 22**	**<0.0005**	**mg/L**	**no**
Picloram	**18 Jul 22**	**<0.005**	**mg/L**	**no**
Polychlorinated Biphenyls(PCB)	**18 Jul 22**	**<0.0001**	**mg/L**	**no**
Prometryne	**18 Jul 22**	**<0.00025**	**mg/L**	**no**
Simazine	**18 Jul 22**	**<0.001**	**mg/L**	**no**
THM (NOTE: show latest annual average)		**63.59**	**ug/L**	**no**
Terbufos	**18 Jul 22**	**<0.0004**	**mg/L**	**no**

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Tetrachloroethylene	**18 Jul 22**	**<0.0003**	**mg/L**	**no**
2,3,4,6-Tetrachlorophenol	**18 Jul 22**	**<0.001**	**mg/L**	**no**
Triallate	**18 Jul 22**	**<0.001**	**mg/L**	**no**
Trichloroethylene	**18 Jul 22**	**<0.0003**	**mg/L**	**no**
2,4,6-Trichlorophenol	**18 Jul 22**	**<0.0007**	**mg/L**	**no**
Trifluralin	**18 Jul 22**	**<0.001**	**mg/L**	**no**
Vinyl Chloride	**18 Jul 22**	**<0.0002**	**mg/L**	**no**
2 Methyl-4-Chlorophenoxyacetic acid (MCPA)	**18 Jul 22**	**<0.01**	**mg/L**	**no**

THM Dist. Sample Location Mid-Canada Line & Pinewood Park Sample Stations	1st Quarter Result Value	2nd Quarter Result Value	3rd Quarter Result Value	4th Quarter Result Value	Unit of Measure	Exceed-dance
Sample Period	**Jan. 5 – Mar. 7, 2022**	**Apr.4 – June 6, 2022**	**July 4 – Sept. 6, 2022**	**Oct. 3 – Dec. 5, 2022**	**mg/L**	
Bromodichloromethane (Average)	**0.0033 0.0031**	**0.0042 0.0033**	**0.0046 0.0050**	**0.0044 0.0047**	**mg/L**	
Bromoform(Average)	**<0.0005 <0.0005**	**<0.0005 <0.0005**	**<0.0005 <0.0005**	**<0.0004 <0.0004**	**mg/L**	
Chloroform(Average)	**0.08690 0.06697**	**0.08445 0.07413**	**0.08993 0.10778**	**0.07885 0.08610**	**mg/L**	
Dibromochloromethane (Average)	**<0.0005 <0.0005**	**<0.0005 <0.0005**	**<0.0005 <0.0005**	**<0.0003 <0.0003**	**mg/L**	
Total Trihalomethanes	**0.08017**	**0.08188**	**0.10378**	**0.08710**	**mg/L**	**No**
THM All Distribution sites (Averages)	**1st Quarter Result Value**	**2nd Quarter Result Value**	**3rd Quarter Result Value**	**4th Quarter Result Value**	**Unit of Measure**	**Exceed-dance**
Sample Period	**Jan. 5 – Mar. 7, 2022**	**Apr.4 – June 6, 2022**	**July 4, - Sep. 6, 2022**	**Oct. 3 – Dec. 5, 2022**	**mg/L**	
Bromodichloromethane	**0.0023**	**0.0022**	**0.0030**	**0.0027**	**mg/L**	
Bromoform	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0004**	**mg/L**	
Chloroform	**0.05668**	**0.04840**	**0.06773**	**0.05462**	**mg/L**	
Dibromochloromethane	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0003**	**mg/L**	
Total Trihalomethanes	**0.06246**	**0.05484**	**0.07645**	**0.06063**	**mg/L**	

THM Dist. Sample Location Mid-Canada Line & Pinewood Park Sample Stations	1st Quarter Result Value	2nd Quarter Result Value	3rd Quarter Result Value	4th Quarter Result Value	Unit of Measure	Exceed-dance
Total Trihalomethanes 4 Quarter Running Average (Random & Fixed Sites Included)				**0.06359**	**mg/L**	**No**

HAA Distribution Sample Locations Judge Valve & HLPS (Averages)	1st Quarter Result Value	2nd Quarter Result Value	3rd Quarter Result Value	4th Quarter Result Value	Unit of Measure	Exceed-dance
Sample Period	Jan 1 – Mar. 31, 2022	Apr.1 – June. 30, 2022	July 1, - Sep. 30, 2022	Oct. 1 – Dec. 31, 2022		
(Mono)Bromoacetic Acid	< 0.002 < 0.002	< 0.002 < 0.002	< 0.002 < 0.002	< 0.002 < 0.002	mg/L	
(Mono) Chloroacetic Acid	< 0.002 < 0.002	< 0.002 < 0.002	< 0.002 < 0.002	< 0.002 < 0.002	mg/L	
Dibromoacetic Acid	< 0.002 < 0.002	< 0.002 < 0.002	< 0.002 < 0.002	< 0.002 < 0.002	mg/L	
Dichloroacetic Acid	0.0109 0.0256	0.0198 0.0286	0.0253 0.0280	0.0240 0.0235	mg/L	
Trichloroacetic Acid	0.0121 0.0352	0.0232 0.0379	0.0360 0.0476	0.0352 0.0363	mg/L	
Avg.Total Haloacetic Acids	0.0419	0.0548	0.0685	0.0595	mg/L	
Total Haloacetic Acid Running Quarterly Average				0.0562	mg/L	No

Quarterly PFAS Sample (Range)	1st Quarter Result Value	2nd Quarter Result Value	3rd Quarter Result Value	4th Quarter Result Value	Unit of Measure	Exceed-dance
	Jan.18, 2022	April 11, 2022	July 11, 2022	October 11, 2022	ng/L	
Perfluorodecanoic Acid (PFDA)	<.42 - <1.0	<1.0	<1.0	<1.0	ng/L	

Quarterly PFAS Sample (Range)	1st Quarter Result Value	2nd Quarter Result Value	3rd Quarter Result Value	4th Quarter Result Value	Unit of Measure	Exceed -dance
Perfluorododecanoic Acid (PFDODA)	<.84 - <1.0	<1.0	<1.0	<1.0	ng/L	
Perfluorodecane Suldonic Acid (PFDS)	<.84 - <1.0	<1.0	<1.0	<1.0	ng/L	
Perfluoroheptanoic Acid 3 (PFHPA)	3.2 – 4.0	3.2	3.5	4.5	ng/L	
Perfluorohexanoic Acid (PFHXA)	6.1 – 7.0	6.0	6.1	7.4	ng/L	
Perfluorohexane Sulfonic Acid (PFHXS)	10.8 – 13.2	13.0	11.3	11.3	ng/L	
Perfluorononanoic Acid (PFNA)	1.0 – 1.5	<1.0	<1.0	<1.0	ng/L	
Perfluorooctanoic Acid (PFOA)	3.7 – 4.5	3.7	3.1	4.3	ng/L	
Perfluorooctane Sulfonic Acid (PFOS)	23.6 – 34.0	33.0	22.6	25.3	ng/L	
Perfluorooctane Sulfonamide (PFOSA)	<.42 - <1.0	<1.0	<1.0	<1.0	ng/L	
Perfluoroundecanoic Acid (PFUNA)	<.84 - <1.0	<1.0	<1.0	<1.0	ng/L	
Total Sum for Quarter	50.7 – 62.7	58.9	46.6	52.8	ng/L	No

**** Sample Ranges and Sums are representing Treated Samples at POE. ****

List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.

Parameter	Result Value	Unit of Measure	½ MAC VALUE	MAC VALUE	Date of Sample
THM	0.0751	mg/L	0.050	0.100	Jan.5,2022
THM	0.0621	mg/L	0.050	0.100	Jan.5,2022
THM	0.0611	mg/L	0.050	0.100	Jan.10,2022
THM	0.142	mg/L	0.050	0.100	Jan.10,2022
THM	0.127	mg/L	0.050	0.100	Jan.10,2022
THM	0.0572	mg/L	0.050	0.100	Jan.10,2022
THM	0.0530	mg/L	0.050	0.100	Jan.10,2022
THM	0.0581	mg/L	0.050	0.100	Jan.10,2022

Parameter	Result Value	Unit of Measure	½ MAC VALUE	MAC VALUE	Date of Sample
THM	0.0624	mg/L	0.050	0.100	Jan.10,2022
THM	0.0553	mg/L	0.050	0.100	Jan.10,2022
THM	0.0662	mg/L	0.050	0.100	Jan.10,2022
THM	0.0862	mg/L	0.050	0.100	Jan.10,2022
PFAS(Raw)	59.30	ng/L	35.00	70.00	Jan.18,2022
PFAS(Treated)	60.40	ng/L	35.00	70.00	Jan.18,2022
PFAS(Raw)	62.70	ng/L	35.00	70.00	Jan.18,2022
PFAS(Treated)	55.00	ng/L	35.00	70.00	Jan.18,2022
PFAS(Raw)	55.60	ng/L	35.00	70.00	Jan.18,2022
PFAS(Treated)	50.70	ng/L	35.00	70.00	Jan.18,2022
THM	0.0635	mg/L	0.050	0.100	Feb.14,2022
THM	0.0581	mg/L	0.050	0.100	Feb.14,2022
THM	0.0654	mg/L	0.050	0.100	Mar.7,2022
THM	0.0652	mg/L	0.050	0.100	Mar.7,2022
THM	0.101	mg/L	0.050	0.100	Mar.7,2022
THM	0.0856	mg/L	0.050	0.100	Mar.7,2022
THM	0.0767	mg/L	0.050	0.100	Mar.7,2022
THM	0.0593	mg/L	0.050	0.100	Mar.7,2022
THM	0.0588	mg/L	0.050	0.100	Mar.7,2022
THM	0.0719	mg/L	0.050	0.100	Mar.7,2022
THM	0.0601	mg/L	0.050	0.100	Mar.7,2022
THM	0.0763	mg/L	0.050	0.100	Mar.7,2022
HAA	0.0608	mg/L	0.040	0.080	Mar.7.2022
THM	0.0512	mg/L	0.050	0.100	Apr.4,2022
PFAS(Raw)	66.70	ng/L	35.00	70.00	Apr.22,2022
PFAS(Treated)	58.90	ng/L	35.00	70.00	Apr.22,2022
THM	0.0509	mg/L	0.050	0.100	May 2,2022
THM	0.0513	mg/L	0.050	0.100	May 2,2022
THM	0.0768	mg/L	0.050	0.100	May 2,2022
THM	0.0738	mg/L	0.050	0.100	May 2,2022
THM	0.0589	mg/L	0.050	0.100	May 2,2022
THM	0.0704	mg/L	0.050	0.100	May 2,2022
THM	0.0566	mg/L	0.050	0.100	May 2,2022
THM	0.0684	mg/L	0.050	0.100	May 2,2022
THM	0.0584	mg/L	0.050	0.100	June 6,2022
THM	0.0577	mg/L	0.050	0.100	June 6,2022
THM	0.103	mg/L	0.050	0.100	June 6,2022
THM	0.0896	mg/L	0.050	0.100	June 6,2022
THM	0.0682	mg/L	0.050	0.100	June 6,2022
THM	0.0707	mg/L	0.050	0.100	June 6,2022
THM	0.0584	mg/L	0.050	0.100	June 6,2022
THM	0.0624	mg/L	0.050	0.100	June 6,2022
THM	0.0630	mg/L	0.050	0.100	June 6,2022

Parameter	Result Value	Unit of Measure	½ MAC VALUE	MAC VALUE	Date of Sample
THM	0.100	mg/L	0.050	0.100	June 6,2022
THM	0.111	mg/L	0.050	0.100	June 6,2022
HAA	0.0665	mg/L	0.040	0.080	June 6,2022
HAA	0.0430	mg/L	0.040	0.080	June 6,2022
THM	0.0758	mg/L	0.050	0.100	July 4,2022
THM	0.0820	mg/L	0.050	0.100	July 4,2022
THM	0.0715	mg/L	0.050	0.100	July 4,2022
THM	0.0952	mg/L	0.050	0.100	July 4,2022
THM	0.118	mg/L	0.050	0.100	July 4,2022
THM	0.0780	mg/L	0.050	0.100	July 4,2022
THM	0.0671	mg/L	0.050	0.100	July 4,2022
THM	0.0705	mg/L	0.050	0.100	July 4,2022
THM	0.0536	mg/L	0.050	0.100	July 4,2022
THM	0.0751	mg/L	0.050	0.100	July 4,2022
THM	0.0963	mg/L	0.050	0.100	July 4,2022
THM	0.134	mg/L	0.050	0.100	July 4,2022
THM	0.128	mg/L	0.050	0.100	July 7,2022
THM	0.106	mg/L	0.050	0.100	July 7,2022
THM	0.0823	mg/L	0.050	0.100	July 7,2022
THM	0.0809	mg/L	0.050	0.100	July 7,2022
THM	0.0583	mg/L	0.050	0.100	July 7,2022
THM	0.0614	mg/L	0.050	0.100	July 7,2022
THM	0.0558	mg/L	0.050	0.100	July 7,2022
THM	0.0913	mg/L	0.050	0.100	July 7,2022
THM	0.131	mg/L	0.050	0.100	July 7,2022
THM	0.0762	mg/L	0.050	0.100	July 7,2022
PFAS(Raw)	91.90	ng/L	35.00	70.00	July 11,2022
PFAS(Treated)	46.60	ng/L	35.00	70.00	July 11,2022
Sodium	12.00	mg/L	10.00	20.00	July 18, 2022
THM	0.0694	mg/L	0.050	0.100	Aug.2,2022
THM	0.114	mg/L	0.050	0.100	Aug.2,2022
THM	0.0617	mg/L	0.050	0.100	Aug.2,2022
THM	0.0799	mg/L	0.050	0.100	Aug.2,2022
THM	0.0539	mg/L	0.050	0.100	Aug.2,2022
THM	0.117	mg/L	0.050	0.100	Aug.2,2022
THM	0.0777	mg/L	0.050	0.100	Aug.2,2022
THM	0.114	mg/L	0.050	0.100	Aug.2,2022
THM	0.0774	mg/L	0.050	0.100	Aug.2,2022
THM	0.0594	mg/L	0.050	0.100	Aug.2,2022
THM	0.0947	mg/L	0.050	0.100	Sep.6,2022
THM	0.0829	mg/L	0.050	0.100	Sep.6,2022
THM	0.0698	mg/L	0.050	0.100	Sep.6,2022
THM	0.0657	mg/L	0.050	0.100	Sep.6,2022

Parameter	Result Value	Unit of Measure	½ MAC VALUE	MAC VALUE	Date of Sample
THM	0.0630	mg/L	0.050	0.100	Sep.6,2022
THM	0.0667	mg/L	0.050	0.100	Sep.6,2022
THM	0.0763	mg/L	0.050	0.100	Sep.6,2022
HAA	0.0756	mg/L	0.040	0.080	Sep.6,2022
HAA	0.0613	mg/L	0.040	0.080	Sep.6,2022
THM	0.0532	mg/L	0.050	0.100	Oct.3,2022
THM	0.0728	mg/L	0.050	0.100	Oct.3,2022
THM	0.0599	mg/L	0.050	0.100	Oct.3,2022
THM	0.0525	mg/L	0.050	0.100	Oct.3,2022
THM	0.124	mg/L	0.050	0.100	Oct.3,2022
THM	0.0790	mg/L	0.050	0.100	Oct.3,2022
PFAS(Raw)	56.70	ng/L	35.00	70.00	Oct.11,2022
PFAS(Treated)	52.80	ng/L	35.00	70.00	Oct.11,2022
THM	0.0558	mg/L	0.050	0.100	Nov.7,2022
THM	0.0638	mg/L	0.050	0.100	Nov.7,2022
THM	0.0528	mg/L	0.050	0.100	Nov.7,2022
THM	0.0936	mg/L	0.050	0.100	Nov.7,2022
THM	0.0822	mg/L	0.050	0.100	Nov.7,2022
THM	0.0510	mg/L	0.050	0.100	Nov.7,2022
THM	0.103	mg/L	0.050	0.100	Nov.7,2022
THM	0.0673	mg/L	0.050	0.100	Dec.5,2022
THM	0.0936	mg/L	0.050	0.100	Dec.5,2022
THM	0.0913	mg/L	0.050	0.100	Dec.5,2022
THM	0.0756	mg/L	0.050	0.100	Dec.5,2022
THM	0.0592	mg/L	0.050	0.100	Dec.5,2022
THM	0.0600	mg/L	0.050	0.100	Dec.5,2022
THM	0.0602	mg/L	0.050	0.100	Dec.5,2022
THM	0.0618	mg/L	0.050	0.100	Dec.5,2022
THM	0.0832	mg/L	0.050	0.100	Dec.5,2022
THM	0.0553	mg/L	0.050	0.100	Dec.5,2022
HAA	0.0598	mg/L	0.040	0.080	Dec.5,2022
HAA	0.0592	mg/L	0.040	0.080	Dec.5,2022

PFAS limits are not regulated at this point, the 70ng/L is an interim advice value provided by MECP
***THM and HAA (MAC Limits) our calculated by Running Quarterly Averages ***