



Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Haileybury Drinking Water System

2020 ANNUAL/SUMMARY REPORT

Prepared by the Ontario Clean Water Agency
on behalf of the City of Temiskaming Shores



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INTRODUCTION

Municipalities throughout Ontario are required to comply with Ontario Regulation 170/03 made under the *Safe Drinking Water Act* (SDWA) since June 2003. The Act was passed following recommendations made by Commissioner O'Conner after the Walkerton Inquiry. The Act's purpose is to protect human health through the control and regulation of drinking-water systems. O. Reg. 170/03 regulates drinking water testing, use of licensed laboratories, treatment requirements and reporting requirements.

O. Reg. 170/03 requires the owner to produce an Annual Report, under Section 11. This report must include the following:

1. Description of system and chemical(s) used
2. Summary of any adverse water quality reports and corrective actions
3. Summary of all required testing
4. Description of any major expenses incurred to install, repair or replace equipment

This Annual Report must be completed by February 28 of each year.

The regulation also requires a Summary Report which must be presented and accepted by Council by March 31 of each year for the preceding calendar year reporting period.

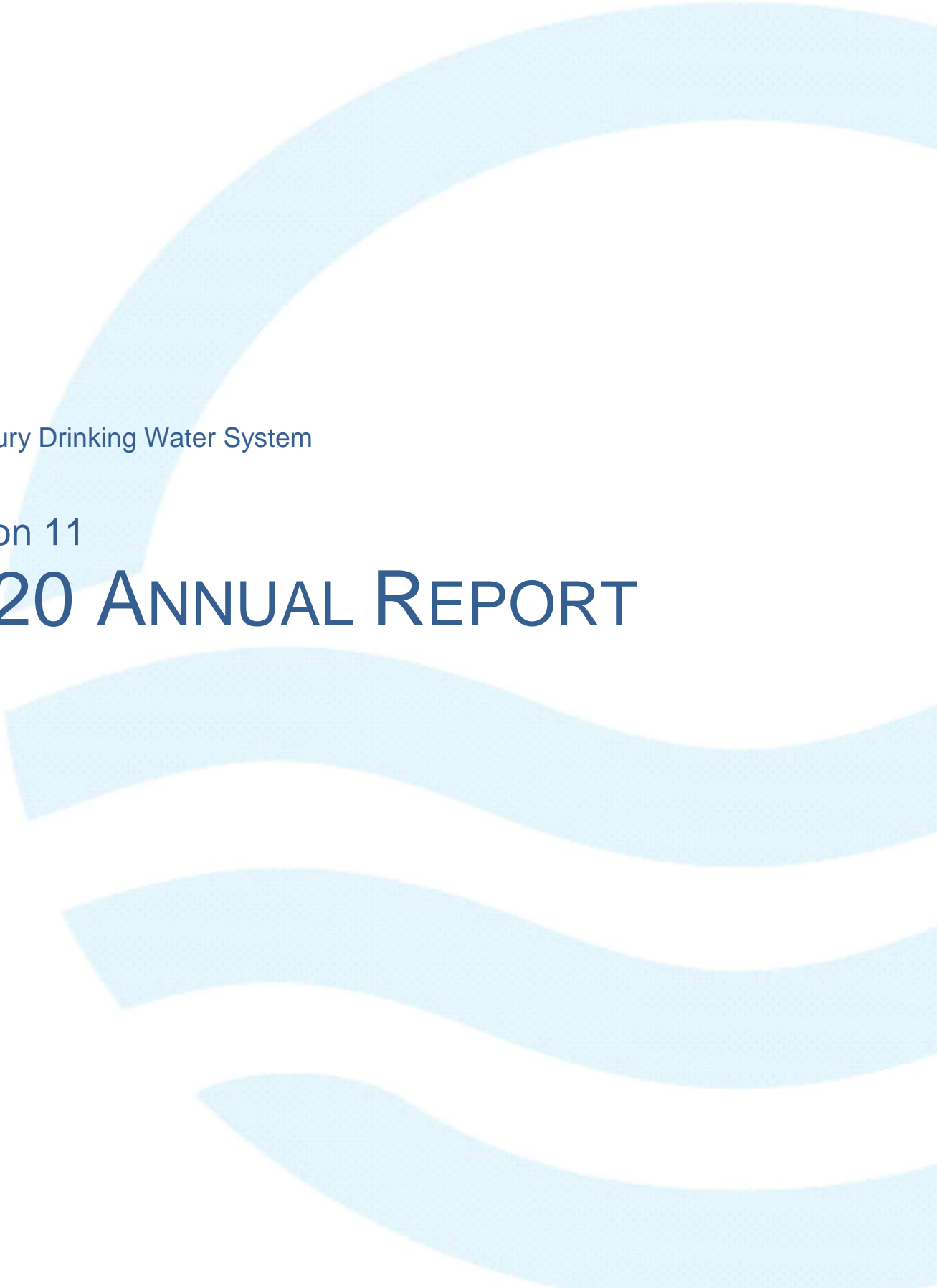
The report must list the requirements of the Act, its regulations, the system's Drinking Water Works Permit (DWWP), Municipal Drinking Water Licence (MDWL), Certificate of Approval (if applicable), and any regulatory requirement the system failed to meet during the reporting period. The report must also specify the duration of the failure, and for each failure referred to, describe the measures that were taken to correct the failure.

The *Safe Drinking Water Act*, 2002 and the drinking water regulations can be viewed at the following website: <http://www.e-laws.gov.on.ca>.

To enable the Owner to assess the rated capacity of their system to meet existing and future planned water uses, the following information is also required in the report.

1. A summary of the quantities and flow rates of water supplied during the reporting period, including the monthly average and the maximum daily flows.
2. A comparison of the summary to the rated capacity and flow rates approved in the systems approval, drinking water works permit or municipal drinking water licence or a written agreement if the system is receiving all its water from another system under an agreement.

The reports have been prepared by the Ontario Clean Water Agency (OCWA) on behalf of the Owner and presented to council as the 2020 Annual/Summary Report.



Haileybury Drinking Water System

Section 11

2020 ANNUAL REPORT



Section 11 - ANNUAL REPORT

1.0 INTRODUCTION

Drinking-Water System Name	Haileybury Drinking Water System
Drinking-Water System Number	210000309
Drinking-Water System Owner	The Corporation of the City of Temiskaming Shores
Drinking-Water System Category	Large Municipal, Residential System
Reporting Period	January 1, 2020 to December 31, 2020

Does your Drinking-Water System serve more than 10,000 people? No

Is your annual report available to the public at no charge on a web site on the Internet?

Yes at: <http://www.temiskamingshores.ca/en/index.asp>

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

City of Temiskaming Shores
325 Farr Drive, P.O. Box 2050
Haileybury, ON P0J 1K0

Drinking-Water Systems that receive drinking water from the Haileybury Drinking Water System

The Haileybury Drinking Water System provides all of its drinking water to the community of Haileybury within the City of Temiskaming Shores.

The Annual Report was not provided to any other Drinking Water System Owners

The Ontario Clean Water Agency prepared the 2020 Annual/Summary Report for the Haileybury Drinking Water System and provided a copy to the system owner; the City of Temiskaming Shores. The Haileybury Drinking Water System is a stand-alone system that does not receive water from or send water to another system.

Notification to system users that the Annual Report is available for viewing is accomplished through:

- Notice on the city’s Facebook page
- Notice via a Community Bulletin in the local newspaper



2.0 HAILEYBURY DRINKING WATER SYSTEM (DWS No. 210000309)

The Haileybury Drinking Water System is owned by the Corporation of the City of Temiskaming Shores and consists of a Class 3 water treatment subsystem and a Class 2 water distribution subsystem. It is a surface water system that services the communities of Haileybury and North Cobalt. The Ontario Clean Water Agency is the accredited operating authority and is designated as the Overall Responsible Operator for both the water treatment and water distribution facilities.

Raw Water Supply

The water treatment plant, located at 322 Browning Street obtains its raw water from Lake Temiskaming. A 197 m long, 450 mm diameter raw water intake pipe extends 168 m into the lake. The intake structure is an upturned bell inside a cribbed structure. The intake is approximately 12.5 m below the low recorded water level and 2 m above the lake bottom.

Water flows into the intake structure by gravity, through two removable inlet screens and is stored in the raw water wet well. The wet well contains a heated superstructure and has a storage volume of 37.2 m³. The low lift pumping station is equipped with three low lift duty pumps; all are vertical turbine pumps which operate on an alternating basis. A magnetic flow meter is located in the water treatment plant to monitor raw water flows. The raw water is also continuously monitored for pH, turbidity and temperature.

Water Treatment

Raw water is pumped to the water treatment building where it is injected with sodium carbonate (soda ash) for pH and alkalinity adjustment and aluminum sulphate for the coagulation/flocculation process. The process water undergoes rapid mixing, flows into two flocculation basins, where polymer is added as a coagulant aid and pH is continuously monitored. It is then directed to a settling tank for clarification. The process water flows through three dual media filters consisting of anthracite and silica sand. The filter system is equipped with an automated backwash sequence, filter-to-waste capabilities, air blower and an underdrain system. The backwash wastewater and the settled solids from the settling tank are discharged to the municipal sanitary system. On-line turbidity analyzers are used to monitor the turbidity off each filter.

After filtration, the process water is chlorinated and pH adjusted with soda ash before entering the dual celled clearwell. Three high lift pumps are located at the end of the clearwell, where a magnetic flow meter is used to measure flow on the discharge main. In a separate room, with outside access only, a gas chlorine system equipped with automatic switchover is used for post-filtration chlorination in the clearwell. The water leaving the clearwell is continuously monitored for flow, pH, turbidity and free chlorine residual as it is directed to an off-site reservoir.



Water Storage

The Niven Street reservoir is a baffled contact tank consisting of two reservoirs and one pumping chamber that provide sufficient chlorine contact time to meet CT requirements. The water in the reservoir is monitored for free chlorine residual and level to ensure primary disinfection is achieved. An ammonium sulphate dosing system is used to chloramine the treated water before being gravity fed or pumped to the distribution system by four high lift pumps equipped with variable frequency drives (VFDs). The water directed to the pressure zones are continuously monitored for pH, turbidity, pressure and total chlorine residual. The gravity fed zone is continuously monitored for flow and total chlorine residual.

Control System

The Haileybury Water Treatment System is controlled by a dedicated Programmable Logic Controller (PLC) and monitored through a Control System Supervisory Control and Data Acquisition (SCADA) system. All analyzing, monitoring and control module equipment information is routed through the SCADA system for operator monitoring and control. Control of equipment can be accomplished locally using the SCADA computer located at the Haileybury water treatment plant or remotely using operator computers and cell phones. Alarm capability and set point adjustment along with trend monitoring are also available through SCADA system controls.

Emergency Power

A 250 kW diesel generator is available at the water treatment plant and a 200 kW diesel engine generator is on hand at the reservoir for emergency purposes.

Distribution System

The Haileybury drinking water system is classified as a Large Municipal Residential Drinking Water System that provides water to a population of approximately 4,200 residents. The distribution system has approximately 1940 service connections and is comprised of various pipe materials including 4" - 12" cast iron with lead joints or ductile iron, 10" and 12" asbestos cement, and PVC with mechanical joints. There are several isolation valves to allow for the repair and maintenance of selected sections of the distribution system, one air relief valve and four pressure reducing valves. Approximately 174 fire hydrants are connected to the system to aid in fire protection.

The system consists of four pressure zones. Zone 1 is a gravity fed area in downtown Haileybury, Zone 2 is an intermediate pressure region located at higher elevations along the west side of Haileybury, Zone 3 is an controlled pressure system which is fed off of the high pressure system and is located in the central part of Haileybury and North Cobalt and Zone 4 is a high pressure zone in North Cobalt. The water distribution piping system is continuous between the four identified pressure zones; however the various zones are isolated from each other via closed valves.



3.0 LIST OF WATER TREATMENT CHEMICALS USED OVER THE REPORTING PERIOD

The following chemicals were used in the Haileybury Drinking Water System treatment process:

- Aluminum Sulphate (Alum) – Coagulation/Flocculation
- Ammonium Sulfate – Secondary Disinfection
- Chlorine Gas – Primary Disinfection
- Polyelectrolyte (Polymer) - Coagulant Aid
- Soda Ash – pH and Alkalinity Adjustment

All treatment chemicals meet AWWA and NSF/ANSI standards.

4.0 SIGNIFICANT EXPENSES INCURRED TO THE DRINKING WATER SYSTEM

OCWA is committed to maintaining the assets of the drinking water system and sustains a program of scheduled inspection and maintenance activities using a computerized Work Management System (WMS).

Significant expenses incurred in the drinking water system include the following:

- Purchased a clamp-on flow meter with 4-20 MA output in case of flow meter failure
- Cleaned out Filter No. 1 underdrain
- Replaced dessicant pack for turbimeter
- Replaced filter solenoid valves and purchased spare units
- Replaced chlorine gas leak detection sensors
- Replaced process pH probes
- Replaced load cells
- Replaced polymer tanks feed line
- Replaced polymer pump flow switches
- Replaced faulty ammonia sulphate reed switch
- Replaced chlorine feed line
- Installed oiler on air line for filters valves
- Purchased filter actuator rebuild kits

5.0 DETAILS ON NOTICES OF ADVERSE TEST RESULTS AND OTHER PROBLEMS REPORTED TO & SUBMITTED TO THE SPILLS ACTION CENTER

Based on information kept on record by OCWA, the Haileybury Drinking Water System was in full compliance in 2020 with no adverse water quality incidents reported to the Ministry's Spills Action Centre.

6.0 MICROBIOLOGICAL TESTING PERFORMED DURING THE REPORTING PERIOD

Summary of Microbiological Data

Sample Type	# of Samples (see Note 2)	Range of <i>E.coli</i> Results (min to max)	Range of Total Coliform Results (min to max)	# of HPC Samples	Range of HPC Results (min to max)
Raw	52	0 to 105	0 to > 1000/NDGOT	N/A	N/A
Treated	52	0 to 0	0 to 0	52	< 10 to > 2000*
Distribution	156	0 to 0	0 to 0	52	< 10 to 150

Maximum Acceptable Concentration (MAC) for *E. coli* = 0 Counts/100 mL

MAC for Total Coliforms = 0 Counts/100 mL

NDOGT = No Data, Overgrown with Target

"<" denotes less than the laboratory's method detection limit

">" denotes greater than the laboratory's method detection limit

Notes:

- One microbiological sample is collected and tested each week from the raw and treated water supply. A total of three microbiological samples are collected and tested each week from the Haileybury distribution system. At least 25% of the distribution samples must be tested for HPC bacteria.
- * High HPC count detected in a treated water sample collected on March 16th. Laboratory confirmed quality control data.

7.0 OPERATIONAL TESTING PERFORMED DURING THE REPORTING PERIOD

Continuous Monitoring in the Treatment Process

Parameter	# of Samples	Range of Results (min to max)	Unit of Measure	Standard
Turbidity (Filter 1)	8760	0.001 to 1.002*	NTU	≤ 1.0 (for >15 minutes)
Turbidity (Filter 2)	8760	0.000 to 1.001*	NTU	
Turbidity (Filter 3)	8760	0.022 to 1.001*	NTU	
Free Chlorine (Reservoir)	8760	0.82 to 2.28	mg/L	CT**

Notes:

- For continuous monitors 8760 is used as the number of samples.
- * Effective backwash procedures, including filter to waste and automatic filter shut down (callout and filter to waste) features are in place to ensure that the effluent turbidity requirements as described in the Filter Performance Criteria are met all times. Filters will backwash if turbidity reaches 0.7 NTU and will shut down and filter to waste at 1.0 NTU. The system performed as programmed and no high turbidity water was directed to the next phase of the process.
- ** CT is the concentration of chlorine in the water times the time of contact that the chlorine has with the water. It is used to demonstrate the level of disinfection treatment in the water. CT calculations are performed for the Haileybury water plant if the free chlorine residual level drops below 0.30 mg/L to ensure primary disinfection is achieved.

Summary of Chlorine Residual Data in the Distribution System

Parameter	No. of Samples	Range of Results (min to max)	Unit of Measure	Standard
Combined Chlorine Residual	369	0.10* to 1.81	mg/L	≥ 0.25 and < 3.0

Notes:



1. A total of seven operational checks for chlorine residual in the distribution system are collected each week. Four (4) samples are tested one day and three (3) on a second day. The sample sets are collected at least 48-hours apart and samples collected on the same day are from different locations.
2. *July 13 – One non-compliance occurred when a combined chlorine residual of 0.10 mg/L was tested in the distribution system falling below the required 0.25 mg/L (O. Regulation 170/03). Process adjustments made to resolve the issue.

Refer to *Appendix B* for a monthly summary of the above operational data.

Summary of Nitrate & Nitrite Data (sampled at the plant’s point of entry into the distribution every quarter)

Date of Sample	Nitrate Result	Nitrite Result	Unit of Measure	Exceedance
January 13	< 0.05	< 0.05	mg/L	No
April 14	0.20	< 0.05	mg/L	No
July 13	0.28	< 0.05	mg/L	No
October 5	0.14	< 0.05	mg/L	No

Maximum Allowable Concentration (MAC) for Nitrate = 10 mg/L
 MAC for Nitrite = 1 mg/L

Summary of Total Trihalomethane Data (sampled in the distribution system every quarter)

Date of Sample	THM Result	Unit of Measure	Running Average	Exceedance
January 13	37.6	ug/L		
April 14	17.8	ug/L		
July 13	69.9	ug/L	47.4	No
October 5	64.2	ug/L		

Maximum Allowable Concentration (MAC) for Total Trihalomethanes = 100 ug/L (Four Quarter Running Average)

Summary of Total Haloacetic Acid Data (sampled in the distribution system every quarter)

Date of Sample	Result Value	Unit of Measure	Running Average	Exceedance
January 13	34	ug/L		
April 14	23	ug/L		
July 13	41	ug/L	31.5	No
October 5	28	ug/L		

Maximum Allowable Concentration (MAC) for Total Haloacetic Acid = 80 ug/L (Four Quarter Running Average)

Summary of Most Recent Lead Data under Schedule 15.1

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

The Haileybury Drinking Water System qualified for the ‘Exemption from Plumbing Sampling’ as described in section 15.1-5 (9-10) of Ontario Regulation 170/03. The exemption applies to a drinking water system if; in two consecutive periods at reduced sampling, not more than 10% of all samples from plumbing exceed the maximum allowable concentration of 10 ug/L for lead. As

such, the system was required to test for total alkalinity and pH in three distribution samples collected during the periods of December 15 to April 15 (winter period) and June 15 to October 15 (summer period). This testing is required in every 12-month period with lead testing in every third 12-month period.

Two rounds of alkalinity and pH testing were carried out on April 14th and September 23rd of 2020. Results are summarized in the table below.

Lead Data (sampled in the distribution system)

Date of Sample	# of Samples	Field pH (min to max)	Field Temperature (°C) (min to max)	Alkalinity (mg/L) (min to max)	Lead (ug/L) (min to max)
April 14	3	6.89 to 7.70	4.1 to 6.5	35 to 38	N/A
September 23	3	6.8 to 6.9	15 to 15	32 to 34	N/A

Note: Next lead sampling scheduled for 2021

Most Recent Schedule 23 Inorganic Data Tested at the Water Treatment Plant

Parameter	Result Value	Unit of Measure	MAC	MAC Exceedance	½ MAC Exceedance
Antimony	< 0.5	ug/L	6	No	No
Arsenic	< 1.0	ug/L	10	No	No
Barium	8.0	ug/L	1000	No	No
Boron	4.0	ug/L	5000	No	No
Cadmium	< 0.1	ug/L	5	No	No
Chromium	< 1.0	ug/L	50	No	No
Mercury	< 0.1	ug/L	1	No	No
Selenium	0.3	ug/L	50	No	No
Uranium	< 1.0	ug/L	20	No	No

Note: Sample required every 12 months (sample date = October 5, 2020)

Most Recent Schedule 24 Organic Data Tested at the Water Treatment Plant

Parameter	Result Value	Unit of Measure	Standard	MAC Exceedance	½ MAC Exceedance
Alachlor	< 0.267	ug/L	5	No	No
Atrazine + N-dealkylated metabolites	< 0.5	ug/L	5	No	No
Azinphos-methyl	< 0.2	ug/L	20	No	No
Benzene	< 0.1	ug/L	1	No	No
Benzo(a)pyrene	< 0.01	ug/L	0.01	No	No
Bromoxynil	< 0.091	ug/L	5	No	No
Carbaryl	< 1.0	ug/L	90	No	No
Carbofuran	< 2.0	ug/L	90	No	No
Carbon Tetrachloride	< 0.2	ug/L	2	No	No
Chlorpyrifos	< 0.2	ug/L	90	No	No
Diazinon	< 0.2	ug/L	20	No	No



Most Recent Schedule 24 Organic Data Tested at the Water Treatment Plant

Parameter	Result Value	Unit of Measure	Standard	MAC Exceedance	½ MAC Exceedance
Dicamba	< 0.079	ug/L	120	No	No
1,2-Dichlorobenzene	< 0.3	ug/L	200	No	No
1,4-Dichlorobenzene	< 0.3	ug/L	5	No	No
1,2-Dichloroethane	< 0.3	ug/L	5	No	No
1,1-Dichloroethylene (vinylidene chloride)	< 0.3	ug/L	14	No	No
Dichloromethane	< 1.0	ug/L	50	No	No
2-4 Dichlorophenol	< 0.2	ug/L	900	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	< 0.34	ug/L	100	No	No
Diclofop-methyl	< 0.113	ug/L	9	No	No
Dimethoate	< 0.2	ug/L	20	No	No
Diquat	< 0.2	ug/L	70	No	No
Diuron	< 6.0	ug/L	150	No	No
Glyphosate	< 20.0	ug/L	280	No	No
Malathion	< 0.2	ug/L	190	No	No
Metolachlor	< 0.133	ug/L	50	No	No
Metribuzin	< 0.133	ug/L	80	No	No
Monochlorobenzene	< 0.5	ug/L	80	No	No
Paraquat	< 0.2	ug/L	10	No	No
Polychlorinated Biphenyls (PCBs)	< 0.06	ug/L	3	No	No
Pentachlorophenol	< 0.3	ug/L	60	No	No
Phorate	< 0.133	ug/L	2	No	No
Picloram	< 0.079	ug/L	190	No	No
Prometryne	< 0.067	ug/L	1	No	No
Simazine	< 0.2	ug/L	10	No	No
Terbufos	< 0.133	ug/L	1	No	No
Tetrachloroethylene	< 0.3	ug/L	10	No	No
2,3,4,6-Tetrachlorophenol	< 0.2	ug/L	100	No	No
Triallate	< 0.133	ug/L	230	No	No
Trichloroethylene	< 0.2	ug/L	5	No	No
2,4,6-Trichlorophenol	< 0.2	ug/L	5	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA)	< 5.66	ug/L	100	No	No
Trifluralin	< 0.133	ug/L	45	No	No
Vinyl Chloride	< 0.1	ug/L	1	No	No

Note: Sample required every 12 months (sample date = October 5, 2020)

Inorganic or Organic Parameter(s) that Exceeded Half the Standard Prescribed in Schedule 2 of Ontario Drinking Water Quality Standards

No inorganic or organic parameter(s) listed in Schedule 23 and 24 of Ontario Regulation 170/03 exceeded half the standard found in Schedule 2 of the Ontario Drinking Water Standard (O. Reg.169/03) during the reporting period.

Most Recent Sodium Data Sampled at the Water Treatment Plant

Date of Sample	Number of Samples	Result Value	Unit of Measure	MAC	Exceedance
October 10, 2017	1	23.9	mg/L	20	Yes
October 18, 2017 (resample)	1	21.0	mg/L	20	Yes

Note: Sample required every 60 months. Next sampling scheduled for October 2022.

The aesthetic objective for sodium in drinking water is 200 mg/L at which it can be detected by a salty taste. It is required that the local Medical Officer of Health be notified when the concentration exceeds 20 mg/L so that persons on sodium restricted diets can be notified by their physicians. The adverse sodium result was reported to the Ministry’s SAC and the Timiskaming Health Unit on October 16, 2017 as required under Schedule 16 of O. Reg. 170/03 (AWQI# 137331).

Most Recent Fluoride Data Sampled at the Water Treatment Plant

Date of Sample	Number of Samples	Result Value	Unit of Measure	MAC	Exceedance
October 10, 2017	1	0.1	mg/L	1.5	No

Note: Sample required every 60 months. Next sampling scheduled for October 2022.

Additional Testing Performed in Accordance with a Legal Instrument.

No additional regulatory sampling and testing was required for the Haileybury Drinking Water System during the 2020 reporting period.



Haileybury Drinking Water System

Schedule 22

2020 SUMMARY REPORT FOR MUNICIPALITIES

Schedule 22 - SUMMARY REPORTS for MUNICIPALITIES

1.0 INTRODUCTION

Drinking-Water System Name	Haileybury Drinking Water System
Municipal Drinking Water Licence (MDWL)	218-102-2 (issued August 15, 2016)
Drinking Water Works Permit (DWWP)	218-202-5 (issued August 15, 2016)
Permit to Take Water (PTTW)	6133-82TLT7 (expired February 21, 2020) P-300-1067513491 (issued February 13, 2020)
Reporting Period	January 1, 2020 to December 31, 2020

2.0 REQUIREMENTS THE SYSTEM FAILED TO MEET

According to information kept on record by OCWA, the Haileybury Drinking Water System failed to meet the following requirements during the 2020 reporting period:

Drinking Water Legislation	Requirement(s) the System Failed to Meet	Duration	Corrective Action(s)	Status
Section 1-2(2)3 and 4 of Schedule 1 to O. Reg. 170/03	The system failed to meet the design requirements of the chlorination system. Chlorine residual testing performed in the distribution system on July 13 th at 639 Rorke Avenue failed to meet the regulatory limit identified O. Regulation 170/03. A total chlorine residual (TCR) of 0.51 mg/L and a free chlorine residual (FCR) of 0.41 mg/L resulted in a combined residual (CCR) of 0.10 mg/L falling below the required 0.25 mg/L.	July 13, 2020 At 11:05 AM	The ammonia dosage was increased and process was verified to ensure appropriate mixing in the chamber to allow for proper chloramination. The residual was re-sampled and tested on July 20 th at 10:30 AM and gave a CCR result of 0.36 mg/L (TCR = 0.41 and FCR = 0.05).	Complete

3.0 SUMMARY OF QUANTITIES & FLOW RATES

Flow Monitoring

Municipal Drinking Water Licence (MDWL) #218-102 requires the owner to install a sufficient number of flow measuring devices to permit the continuous measurement and recording of:

- the flow rate and daily volume of water conveyed from the treatment system to the distribution system, and
- the flow rate and daily volume of water conveyed into the treatment system.

The flow monitoring equipment identified in the MDWL is present and operating as required. These flow meters are calibrated on an annual basis as specified in the manufacturers' instructions.

Water Usage

The following Water Usage Tables summarize the quantities and flow rates of water taken and produced during the 2020 reporting period, including average monthly volumes, maximum monthly volumes, total monthly volumes and maximum flow rates.

Raw Water

2020 - Monthly Summary of Water Takings from the Source (Lake Temiskaming)

Regulated by Permit to Take Water (PTTW) #P-300-1067513491, effective February 13, 2020

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m ³)	78817	73584	79782	72868	78253	84908	82083	77970	72732	74601	69933	73353	918884
Average Volume (m ³ /d)	2543	2537	2574	2429	2524	2830	2648	2515	2424	2406	2331	2366	2511
Maximum Volume (m ³ /d)	3356	2642	2993	2783	3069	3788	3427	2957	3037	2706	2574	3015	3788
PTTW - Maximum Allowable Volume (m ³ /day)	6816	6816	6816	6816	6816	6816	6816	6816	6816	6816	6816	6816	6816
Maximum Flow Rate (L/min)	4724	4713	4585	4278	4681	4721	4718	4692	4696	4612	4609	4585	4724
PTTW - Maximum Allowable Flow Rate (L/min)	4733	4733	4733	4733	4733	4733	4733	4733	4733	4733	4733	4733	4733

The system's Permit to Take Water #P-300-1067513491 allows the municipality to withdraw a maximum volume of 6816 cubic meters from Lake Temiskaming each day at a maximum flow rate of 4733 L/minute. A review of the raw water flow data indicates that the system did not exceed the maximum allowable volume or maximum flow rate during the reporting period.

Treated Water

2020 - Monthly Summary of Treated Water Supplied to the Distribution System

Regulated by Municipal Drinking Water Licence (MDWL) #218-102 - Issue 2, issued August 15, 2016

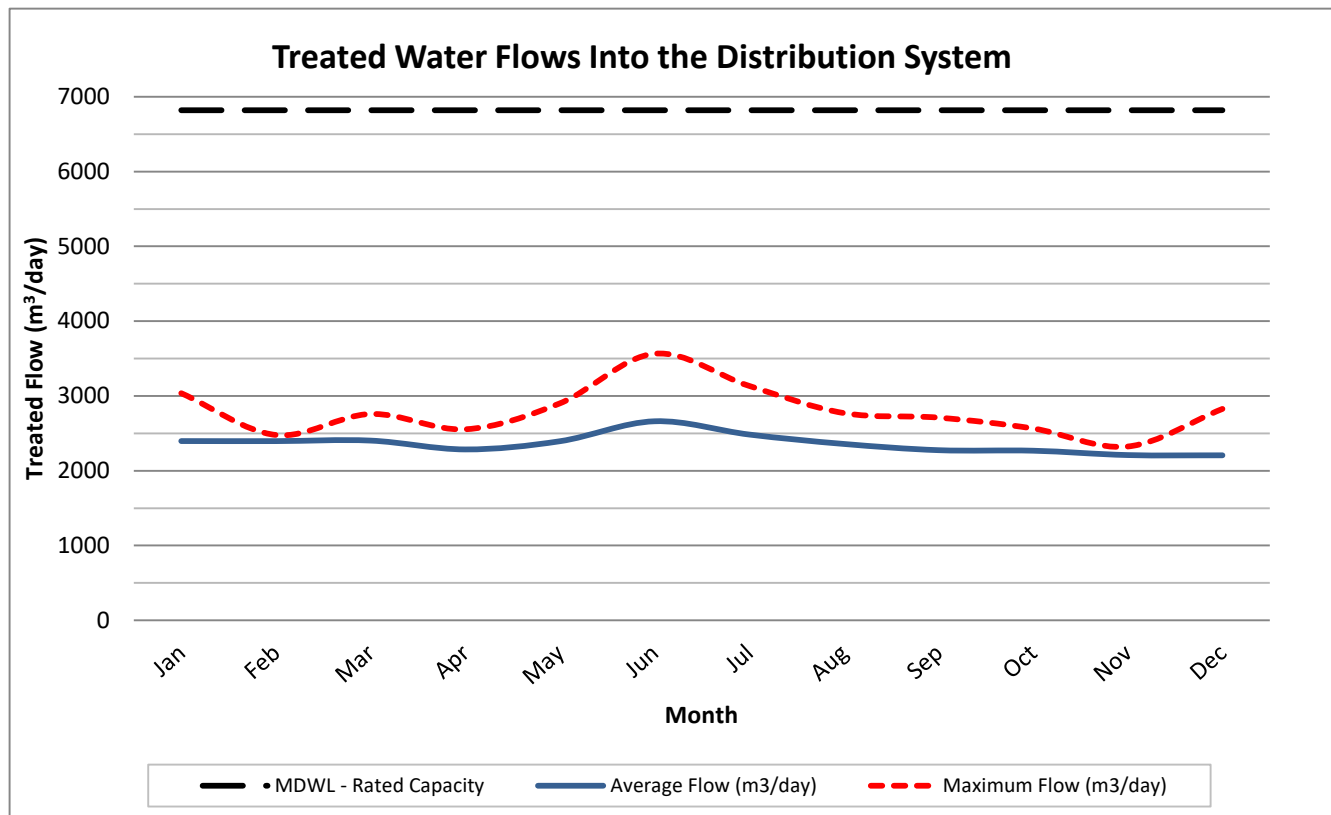
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m ³)	74301	69487	74500	68552	74233	79844	77008	73106	68248	70308	66286	68396	864268
Average Volume (m ³ /d)	2397	2396	2403	2285	2395	2661	2484	2358	2275	2268	2210	2206	2362
Maximum Volume (m ³ /d)	3037	2478	2759	2554	2901	3565	3135	2771	2710	2565	2324	2827	3565
MDWL - Rated Capacity (m ³ /day)	6820	6820	6820	6820	6820	6820	6820	6820	6820	6820	6820	6820	6820

Schedule C, Section 1.0 (1.1) of MDWL No. 218-102 states that the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed 6820 m³/day. The Haileybury DWS complied with this limit having a recorded maximum volume of 3565 m³/day on June 18th, which represents 52.3% of the rated capacity.

Figure 1 compares the average and maximum flow rates into the distribution system to the approved rated capacity of the system as identified in the MDWL.

Figure 1: 2020 - Comparison of Treated Water Flows to the Rated Capacity

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Flow (m ³ /day)	2397	2396	2403	2285	2395	2661	2484	2358	2275	2268	2210	2206
Maximum Flow (m ³ /day)	3037	2478	2759	2554	2901	3565	3135	2771	2710	2565	2324	2827
MDWL - Rated Capacity	6820	6820	6820	6820	6820	6820	6820	6820	6820	6820	6820	6820
% Rated Capacity	45	36	40	37	43	52	46	41	40	38	34	41



Summary of System Performance

The following information is provided to enable the Owner to assess the capability of the system to meet existing and future water usage needs:

Rated Capacity of the Plant (MDWL)	6820 m ³ /day	
Average Daily Flow for 2020	2362m ³ /day	34.6 % of the rated capacity
Maximum Daily Flow for 2020	3565 m ³ /day	52.3 % of the rated capacity
Total Treated Water Produced in 2020	864,268 m ³	

Historical Flows

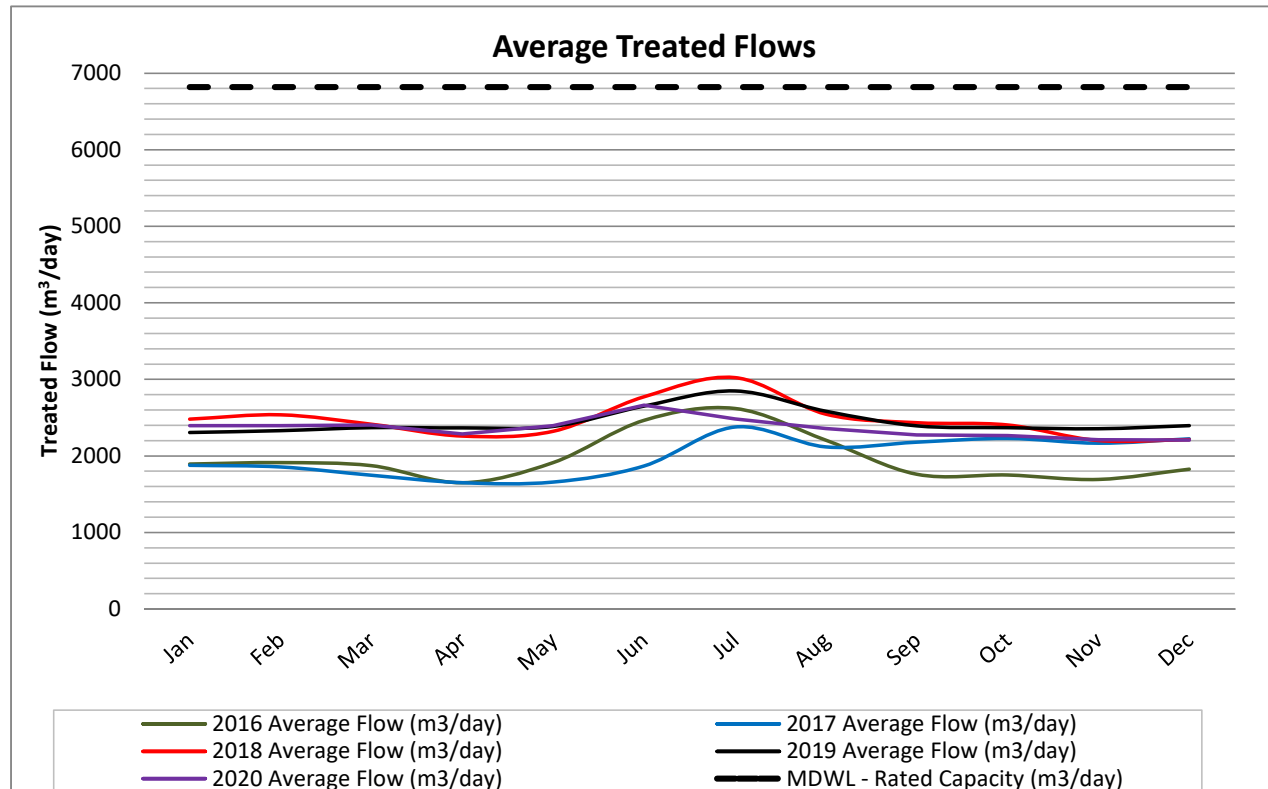
Haileybury Water Treatment Plant – Flow Comparison

Year	Maximum Treated Flow (m³/d)	Average Daily Flow (m³/d)	Average Day % of Rated Capacity (6820 m³/d)
2020	3565	2362	34.6%
2019	2446	3486	51.1%
2018	4220	2467	36.2%
2017	2722	1996	29.3%
2016	3446	1964	28.8%

Figure 2 compares the average treated water flows from 2016 to 2020.

Figure 2 - Historical Water Usage Trends (2016 to 2020)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016 Average Flow (m ³ /day)	1894	1913	1873	1650	1913	2465	2620	2206	1761	1751	1693	1827
2017 Average Flow (m ³ /day)	1878	1856	1748	1650	1659	1869	2378	2118	2180	2229	2166	2223
2018 Average Flow (m ³ /day)	2481	2537	2414	2259	2322	2773	3023	2546	2434	2405	2201	2213
2019 Average Flow (m ³ /day)	2306	2330	2369	2367	2386	2651	2849	2584	2393	2369	2355	2396
2020 Average Flow (m ³ /day)	2397	2396	2403	2285	2395	2661	2484	2358	2275	2268	2210	2206
MDWL - Rated Capacity (m ³ /day)	6820	6820	6820	6820	6820	6820	6820	6820	6820	6820	6820	6820





CONCLUSION

The water quality data collected in 2020 demonstrates that the Haileybury drinking water system provided high quality drinking water to its users having only one minor non-compliance during the reporting period. The system provides chloramination as secondary disinfection and failed to meet the regulatory limit for combined chlorine residual one day during the reporting period, but met the regulatory limit for free chlorine during that time.

The Haileybury Drinking Water System was able to operate in accordance with the terms and conditions of the Permit to Take Water and in accordance with the rated capacity of the licence while meeting the community's demand for water use.



APPENDIX A

Monthly Summary of Microbiological
Test Results

**HAILEYBURY DRINKING WATER SYSTEM
2020 SUMMARY OF MICROBIOLOGICAL TEST RESULTS**

Facility Works Number: 210000309
 Municipality: City of Temiskaming Shores
 Facility Owner:
 Facility Classification: Class 3 Water Treatment

RAW WATER	01/2020	02/2020	03/2020	04/2020	05/2020	06/2020	07/2020	08/2020	09/2020	10/2020	11/2020	12/2020	Total	Avg	Max	Min
Lake Timiskaming / Total Coliform: TC - cfu/100mL													52			
Count Lab	4	4	5	4	4	5	4	5	4	4	5	4				
Max Lab	46	74	86	740 ^{NDOGT}	415	460	28 ^{NDOGT}	56	42	> 1000	860	142			>	1000
Mean Lab	25.5	43	39.2	483.333	229.25	156.4	18	15.8	21	> 362.25	502	76			>	164.918
Min Lab	6	20	8	355	50	52	8	0	8	> 114	335	32				0
Lake Timiskaming / E. Coli: EC - cfu/100mL													52			
Count Lab	4	4	5	4	4	5	4	5	4	4	5	4				
Max Lab	4	< 14	< 6	15	< 15	5	12	< 2	10	105	34	< 10				105
Mean Lab	< 2.5	< 5	< 3.2	9.667	< 6.25	< 2.6	< 5.333	< 1.6	5.25	33.5	13.8	< 4.75			<	7.6
Min Lab	< 2	< 2	< 2	6	< 2	< 2	< 2	0	2	5	6	< 2				0
TREATED WATER																
Treated Water / Total Coliform: TC - cfu/100mL													52			
Count Lab	4	4	5	4	4	5	4	5	4	4	5	4				
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Treated Water / E. Coli: EC - cfu/100mL													52			
Count Lab	4	4	5	4	4	5	4	5	4	4	5	4				
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Treated Water / HPC - cfu/mL													52			
Count Lab	4	4	5	4	4	5	4	5	4	4	5	4				
Max Lab	< 10	< 10	> 2000	< 10	< 10	120	640	70	< 60	< 230	< 30	< 30			>	2000
Mean Lab	< 10	< 10	> 408	< 10	< 10	34	< 190	< 22	< 25	< 72.5	< 14	< 17.5			>	72.5
Min Lab	< 10	< 10	> 10	< 10	< 10	10	< 10	< 10	< 10	< 10	< 10	< 10				< 10
DISTRIBUTION WATER																
1st Bacti/Residual / Total Coliform: TC - cfu/100mL													52			
Count Lab	4	4	5	4	4	5	4	5	4	4	5	4				
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
1st Bacti/Residual / E. Coli - cfu/100mL													52			
Count Lab	4	4	5	4	4	5	4	5	4	4	5	4				
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
2nd Bacti/Residual / Total Coliform: TC - cfu/100mL													52			
Count Lab	4	4	5	4	4	5	4	5	4	4	5	4				
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
2nd Bacti/Residual / E. Coli - cfu/100mL													52			
Count Lab	4	4	5	4	4	5	4	5	4	4	5	4				
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
2nd Bacti/Residual / HPC - cfu/mL													52			
Count Lab	4	4	5	4	4	5	4	5	4	4	5	4				
Max Lab	30	< 10	< 10	< 10	< 10	< 20	150	60	< 10	< 10	< 30	60				150
Mean Lab	< 15	< 10	< 10	< 10	< 10	< 12	< 45	< 20	< 10	< 10	< 14	< 25			<	15.769
Min Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10				< 10
3rd Bacti/Residual / Total Coliform: TC - cfu/100mL													52			
Count Lab	4	4	5	4	4	5	4	5	4	4	5	4				
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
3rd Bacti/Residual / E. Coli - cfu/100mL													52			
Count Lab	4	4	5	4	4	5	4	5	4	4	5	4				
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0

NOTES:
 NDOGT = No Data, Overgrown with Target
 *High HPC count detected in a treated water sample collected on March 16th. Laboratory confirmed quality control data.



APPENDIX B

Monthly Summary of Operational Data

**HAILEYBURY DRINKING WATER SYSTEM
2020 SUMMARY OF OPERATIONAL RESULTS**

Facility Works Number: 21000309
 Facility Owner: Municipality: City of Temiskaming Shores
 Facility Classification: Class 3 Water Treatment

FILTERED WATER																
	01/2020	02/2020	03/2020	04/2020	05/2020	06/2020	07/2020	08/2020	09/2020	10/2020	11/2020	12/2020	Total	Avg	Max	Min
Filter #1 / Turbidity (1 NTU) - NTU																
Max OL	0.461	0.97	0.74	0.22	0.57	0.83	0.35	0.9	0.794	0.685	0.92	1.002			1.002	
Mean OL	0.038	0.073	0.056	0.039	0.064	0.05	0.046	0.038	0.041	0.041	0.055	0.062		0.05		
Min OL	0.024	0.022	0.02	0.02	0.03	0.029	0.027	0.02	0.027	0.001	0.035	0.03				0.001
Filter #2 / Turbidity (1 NTU) - NTU																
Max OL	0.296	0.57	0.53	0.48	0.31	0.295	0.72	0.56	0.463	0.29	0.32	1.001			1.001	
Mean OL	0.03	0.028	0.028	0.038	0.06	0.049	0.053	0.052	0.052	0.048	0.056	0.054		0.046		
Min OL	0.023	0.02	0.02	0.02	0.03	0.03	0.03	0.036	0.035	0.00	0.037	0.025				0.00
Filter #3 / Turbidity (1 NTU) - NTU																
Max OL	0.513	0.67	0.99	0.3	0.64	0.383	0.87	0.204	0.741	0.499	0.859	1.001			1.001	
Mean OL	0.032	0.033	0.068	0.04	0.061	0.053	0.054	0.046	0.05	0.048	0.05	0.057		0.049		
Min OL	0.022	0.026	0.03	0.03	0.037	0.029	0.029	0.03	0.036	0.033	0.033	0.03				0.022
TREATED WATER																
Reservoir / Cl Residual: Free (0.3 mg/L) - mg/L																
Max OL	1.89	2.28	2.09	1.79	1.6	1.4	1.88	2.14	2.18	2.02	2.07	2.07			2.28	
Mean OL	1.741	1.796	1.789	1.539	1.363	1.27	1.247	1.788	1.919	1.815	1.885	1.752		1.659		
Min OL	1.48	1.33	1.54	1.27	1.12	1.1	0.82	1.44	1.6	1.51	1.52	1.46				0.82
DISTRIBUTION WATER																
1st Bacti/Residual / Cl Residual: Combined - mg/L																
Count IH	9	8	9	9	8	9	9	9	9	9	9	9	106			
Max IH	1.8	1.76	1.75	1.64	1.4	1.37	1.44	1.43	1.6	2.07	1.82	2.02			2.07	
Mean IH	1.437	1.543	1.419	1.303	1.193	0.937	0.874	0.879	1.057	1.316	1.388	1.559		1.24		
Min IH	0.9	1.19	0.97	0.94	0.87	0.44	0.44	0.5	0.35	0.55	0.39	1.19				0.35
2nd Bacti/Residual / Cl Residual: Combined - mg/L																
Count IH	9	8	9	9	8	9	9	9	8	9	9	9	105			
Max IH	1.81	1.89	1.71	1.65	1.52	1.51	1.47	1.81	1.69	1.7	1.88	1.94			1.94	
Mean IH	1.488	1.449	1.451	1.402	1.366	1.089	0.721	1.049	1.29	0.984	1.544	1.657		1.29		
Min IH	1.06	0.94	0.57	1.13	1.13	0.43	0.35	0.35	0.72	0.29	0.72	1.25				0.29
3rd Bacti/Residual / Cl Residual: Combined - mg/L																
Count IH	9	8	9	9	8	9	9	9	8	9	9	9	105			
Max IH	1.86	1.89	1.8	1.64	1.46	1.66	1.32	1.51	1.67	1.56	1.81	1.79			1.89	
Mean IH	1.474	1.455	1.368	1.154	1.17	0.928	0.638	0.758	0.996	1.106	1.326	1.206		1.129		
Min IH	0.94	0.62	0.85	0.92	1.01	0.38	0.42	0.37	0.49	0.51	0.54	0.88				0.37
4th Residual / Cl Residual: Combined - mg/L																
Count IH	4	4	5	4	4	5	5	5	4	4	5	4	53			
Max IH	1.8	1.21	1.76	1.38	1.12	1.35	1.23	1.01	1.52	1.08	1.81	1.6			1.81	
Mean IH	1.253	1.06	1.154	1.158	1.038	1.088	0.664	0.688	0.935	0.835	1.318	1.24		1.031		
Min IH	1.01	0.94	0.83	0.95	0.89	0.65	0.10	0.56	0.69	0.44	0.83	0.91				0.10

NOTES:

1. Filters will backwash if turbidity reaches 0.7 NTU and will shut down (callout and filter to waste) at 1.0 NTU. In 2020, the filters shut down during all high turbidity events.
2. CT is the concentration of chlorine in the water times the time of contact that the chlorine has with the water. It is used to demonstrate the level of disinfection treatment in the water. CT calculations are performed for the Haileybury water plant if the free chlorine residual level drops below 0.30 mg/L to ensure primary disinfection is achieved
3. July 13 - One non-compliance occurred when a combined chlorine residual of 0.10 mg/L was tested in the distribuion system falling below the required 0.25 mg/L as per O. Regulation 170/03.