



Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Haileybury Drinking Water System

2018 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 2018 Annual/Summary Report.



Haileybury Drinking Water System

Section 11

2018 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, 2018 to December 31, 2018

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 2018 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:

- Public access/notice via the web
- Public access/notice via City’s Facebook page
- Public access/notice via a community bulletin
- Public access/notice via a 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 Town of Haileybury. 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.

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 then 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.

Water Storage and Pumping Capabilities

The water is then directed from the clearwell to an off-site reservoir. 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. 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).

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.

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:



Water Treatment Plant

- Replaced defective treated water clearwell turbidity analyzer with a new unit.
- Replaced faulty chlorine cylinder load cells
- Replaced clearwell ventilation blower motor
- Replaced corrupt paperless chart recorder and re-programmed to allow for data transfer into OCWA's Wonderware and data management system (WISKI).
- PLC radio repair
- Replaced faulty mud valve arm in #2 settling tank

Niven Street Pumping Station

- Major upgrades at the reservoir were done to remove the sluice gate between Reservoir 2 and the high lift pumps chamber and Install a new flow meter. Additional hardware for SCADA was also installed. This work was part of the North Cobalt stabilization project which was to create a dedicated feed line to North Cobalt. Work was completed in July.
- Commissioned new 50 hp high lift pump,
- Replaced UPS.

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, two (2) adverse water quality incidents were reported to the MOE's Spills Action Centre.

AWQI No. 138821 – Loss of Free Chlorine Residual Monitoring at the Reservoir, February 28, 2018: The free chlorine analyzer at the Haileybury reservoir lost power due to UPS failure, causing a false reading of zero for approximately 1 hour (0947 to 1050 hrs). The alarm/call-out system was not triggered. This issue was investigated and it was discovered that alarms were not set up properly. This was addressed immediately and the battery in the UPS was replaced.

The Haileybury WTP clearwell feeds the reservoir which is equipped with a Free Chlorine Residual analyzer; the chlorine residual remained at normal levels during this time. Also, ammonium is added at the reservoir to provide a total chlorine residual in the distribution system and the analyzer monitoring the Total Chlorine Residual leaving the reservoir was maintained at normal operating levels.

The incident was reported to the local Health Unit and the Ministry's Spills Action Center (SAC) on February 28th and the issue was resolved on March 2nd.

AWQI No. 140685 – Boil Water Advisory (BWA) for Planned Upgrade at the Reservoir, July 18 & 19, 2018: The entire Haileybury distribution system lost pressure for approximately 8 hours on Tuesday, July 17th from 10:00 pm to July 18th at 6:00 am when planned work was done at the Niven Street Reservoir. The Health Unit issued a BWA for July 18th.

After the work was completed, the distribution system was filled and flushed and bacteriological samples were strategically collected throughout the system. Two sets of eight samples were collected in the distribution system including one at the reservoir. The Health Unit lifted the BWA on Friday, July 20th at approximately 5:15 pm once receiving the lab reports showing acceptable microbiological results.

6.0 MICROBIOLOGICAL TESTING PERFORMED DURING THE REPORTING PERIOD

Summary of Microbiological Data

Sample Type	# of Samples (see Note 2)	Range of E.coli Results (min to max)	Range of Total Coliform Results (min to max)	# of HPC Samples	Range of HPC Results (min to max)
Raw	51	4 to 645	<2 to 22	N/A	N/A
Treated	53	0 to 0	0 to 0	53	< 10 to 40
Distribution	153	0 to 0	0 to 0	52	< 10 to 60

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

MAC for Total Coliforms = 0 Counts/100 mL

"<" denotes less 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.
- Weekly bacteriological samples were collected but not tested for the week of January 8th due to shipping issues. Refer to Section 2 – *Requirements the System Failed to Meet* on page 13 for details.

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	0.029 to 1.00 ^{Note 1}	NTU	≤ 1.0 (for >15 minutes)
Turbidity (Filter 2)	8760	0.026 to 1.00 ^{Note 1}	NTU	
Turbidity (Filter 3)	8760	0.023 to 1.00 ^{Note 1}	NTU	
Free Chlorine (Reservoir)	8760	0.1 ^{Note 2} to 3.43	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 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 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 0.20 mg/L to ensure primary disinfection is achieved.

July 13 - The free chlorine residual dropped to 0.1 mg/L when switching reservoirs in preparation for the upgrade work. CT was calculated and passed.



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	380	0.19 ^{Note 2} to 2.00	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. Additional chlorine residuals were collected after the reservoir upgrades were complete in July. Three low combined residuals were documented, but the free chlorine residuals were acceptable. A boil water advisory (BWA) was issued by the Health Unit during this time and the event was reported to SAC as an adverse water quality incident.

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

Summary of Nitrate & Nitrite Data (sampled at the water treatment plant every quarter)

Date of Sample	Nitrate Result	Nitrite Result	Unit of Measure	Exceedance
January 22	0.30	<0.03	mg/L	No
April 9	0.33	<0.03	mg/L	No
July 9	0.30	<0.03	mg/L	No
October 9	0.24	0.143	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	Result Value	Unit of Measure	Quarter Average	Running Annual Average	Exceedance
January 22	51.9	ug/L	51.9	71.5	No
April 9	47.7	ug/L	65.9		
June 11	84.1	ug/L			
July 9	96.3	ug/L	96.3		
October 9	71.9	ug/L	71.9		

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

Haloacetic Acid (HAAs) Sampling and Testing Required under Schedule 13-6.1

New sampling requirements for Haloacetic Acids (HAAs) came into effect on January 1st, 2017. At least one distribution must sample taken in each calendar quarter, from a point in the drinking water system’s distribution system, or plumbing that is likely to have an elevated potential for the formation of HAAs.

The maximum allowable concentration (MAC) of 80 ug/L is effective January 1st, 2020 and is based on a running annual average of quarterly results (similar to THMs). Results that exceed

the MAC must be reported as an adverse water quality incident (AWQI) starting January 1st, 2020. HAA results for 2018 are summarized below:

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

Date of Sample	Result Value	Unit of Measure	Quarter Average	Running Annual Average	Exceedance
January 22	34.7	ug/L	34.7		
April 9	36.9	ug/L	56.9		
June 11	76.8	ug/L		55.1	N/A
July 9	74	ug/L	74		
October 9	55	ug/L	55		

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.

In 2018, the Haileybury Drinking Water System completed a 12-month period of the lead testing. Two rounds of lead, alkalinity and pH testing were conducted on April 4th and October 10th. 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 4	3	6.30 to 6.90	1.1 to 1.4	26.7 to 27	< 0.1 to < 0.1
October 10	3	6.56 to 7.49	13.4 to 15.1	35 to 37	< 0.1 to 0.20

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	0.7	ug/L	6	No	No
Arsenic	< 1	ug/L	10	No	No
Barium	8	ug/L	1000	No	No
Boron	5	ug/L	5000	No	No

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

Parameter	Result Value	Unit of Measure	MAC	MAC Exceedance	½ MAC Exceedance
Cadmium	< 0.1	ug/L	5	No	No
Chromium	< 1	ug/L	50	No	No
Mercury	< 0.1	ug/L	1	No	No
Selenium	< 1	ug/L	50	No	No
Uranium	< 1	ug/L	20	No	No

Note: Sample required every 12 months (sample date = October 9, 2018)

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	< 0.23	ug/L	5	No	No
Atrazine + N-dealkylated metabolites	< 0.5	ug/L	5	No	No
Azinphos-methyl	< 0.173	ug/L	20	No	No
Benzene	< 0.1	ug/L	1	No	No
Benzo(a)pyrene	< 0.005	ug/L	0.01	No	No
Bromoxynil	< 0.109	ug/L	5	No	No
Carbaryl	< 1	ug/L	90	No	No
Carbofuran	< 1	ug/L	90	No	No
Carbon Tetrachloride	< 0.2	ug/L	2	No	No
Chlorpyrifos	< 0.173	ug/L	90	No	No
Diazinon	< 0.173	ug/L	20	No	No
Dicamba	< 0.0953	ug/L	120	No	No
1,2-Dichlorobenzene	< 0.2	ug/L	200	No	No
1,4-Dichlorobenzene	< 0.3	ug/L	5	No	No
1,2-Dichloroethane	< 0.2	ug/L	5	No	No
1,1-Dichloroethylene (vinylidene chloride)	< 0.3	ug/L	14	No	No
Dichloromethane	< 1	ug/L	50	No	No
2,4-Dichlorophenol	< 0.2	ug/L	900	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	< 0.408	ug/L	100	No	No
Diclofop-methyl	< 0.136	ug/L	9	No	No
Dimethoate	< 0.173	ug/L	20	No	No
Diquat	< 0.7	ug/L	70	No	No
Diuron	< 6	ug/L	150	No	No
Glyphosate	< 20	ug/L	280	No	No
MCPA	< 6.81	ug/L	100	No	No
Malathion	< 0.173	ug/L	190	No	No
Metolachlor	< 0.115	ug/L	50	No	No
Metribuzin	< 0.115	ug/L	80	No	No
Monochlorobenzene	< 0.5	ug/L	80	No	No
Paraquat	< 0.3	ug/L	10	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
Pentachlorophenol	< 0.3	ug/L	60	No	No
Phorate	< 0.115	ug/L	2	No	No
Picloram	< 0.0953	ug/L	190	No	No
Polychlorinated Biphenyls (PCBs)	< 0.06	ug/L	3	No	No
Prometryne	< 0.0576	ug/L	1	No	No
Simazine	< 0.173	ug/L	10	No	No
Terbufos	< 0.115	ug/L	1	No	No
Tetrachloroethylene	< 0.3	ug/L	10	No	No
2,3,4,6-Tetrachlorophenol	< 0.3	ug/L	100	No	No
Triallate	< 0.115	ug/L	230	No	No
Trichloroethylene	< 0.3	ug/L	5	No	No
2,4,6-Trichlorophenol	< 0.2	ug/L	5	No	No
Trifluralin	< 0.115	ug/L	45	No	No
Vinyl Chloride	< 0.1	ug/L	1	No	No

Note: Sample required every 12 months (sample date = *October 9, 2018*)

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 sampling and testing was required for the Haileybury Drinking Water System during the 2018 reporting year.



Haileybury Drinking Water System

Schedule 22

2018 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)	6133-82TL7 (issued February 22, 2010)
Reporting Period	January 1, 2018 to December 31, 2018

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 2018 reporting period:

Drinking Water Legislation	Requirement(s) the System Failed to Meet	Duration	Corrective Action(s)	Status
Section 10-2(1a), 10-3 and 10-4 of O. Reg. 170/03	<p><u>Untested samples</u> - Bacteriological samples (raw, treated and 3 distribution samples) were collected on Tuesday, January 9, 2018. They were dropped off at courier service (Fast Freight) on Tuesday at 4:00 pm. Fast Freight delivered the samples on Wednesday January 10th. These samples were placed into the drop box at Testmark Laboratories in Kirkland Lake by 8:00 am. The trigger for the Lab is a delivery slip in the door to the lab to advise of the pending samples in the drop box. Fast Freight due to some technical difficulties did not fill out the slip, therefore having the samples go unnoticed.</p> <p>During the next delivery to the lab, Fast Freight noticed the coolers in the box and picked them up, but did not notify OCWA. The samples remained with Fast Freight until Friday, January 19th, when OCWA's Senior Operations Manager spoke with Fast Freight to discover that there were 2 sealed coolers full of samples that belonged to OCWA. The coolers were brought back to OCWA to discover that Haileybury</p>	January 9 th to January 19 th	<p>OCWA's Senior Operations Manager spoke with Fast Freight to inform them of the importance of the samples and that any time they discover an un-opened package that OCWA is to be notified immediately. Fast Freight is going to train drivers of this incident and put in place barriers so that this issue does not happen again.</p> <p>The lab is also putting steps in place to ensure that this does not re-occur. They will check the drop box daily to ensure no samples are missed.</p>	Complete

Drinking Water Legislation	Requirement(s) the System Failed to Meet	Duration	Corrective Action(s)	Status
	water samples were in it. Samples were past hold time and not tested.			
Section 6-5(1)2 of Schedule 6 to O. Reg. 170/03 and Section 6-5(1)5 of Schedule 6 to O. Reg. 170/03	The continuous monitoring equipment was not recording the minimum, maximum and mean results of tests for free chlorine residual at least every 5 minutes and did not record the result of every test that causes an alarm to sound. and The continuous monitoring equipment did not operate as designed and did not sound an alarm immediately when the equipment lost power. The free chlorine analyzer at the Haileybury reservoir lost power due to UPS failure, causing a false reading of zero for approximately 1 hour (0947 to 1050 hrs). The alarm/call-out system was not triggered.	February 28 th from 0947 to 1050 hours	This issue with the alarms was investigated and it was discovered they were not set up properly. This was addressed immediately. The battery in the UPS was replaced. The Haileybury WTP clearwell feeds the reservoir which is equipped with a free chlorine residual analyzer; the chlorine residual remained at normal levels. Also, ammonium is added at the reservoir to provide a total chlorine residual in the distribution system and the analyzer monitoring the total chlorine residual leaving the reservoir maintained normal operating levels.	Complete

It should also be mentioned that, one (1) additional adverse water quality incident was reported to the Ministry’s Spills Action Center. Refer to Section 5.0 – *Details on Notices of Adverse Test Results and Other Problems Reported to & Submitted to the Spills Actions Center* on page 6 of this report for details.

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 2018 reporting period, including average monthly volumes, maximum monthly volumes, total monthly volumes and maximum flow rates.

Raw Water

2018 - Monthly Summary of Water Takings from the Source (Lake Temiskaming)

Regulated by Permit to Take Water (PTTW) #6133-82TLT7, issued February 22, 2010

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m ³)	84344	78010	82127	74578	79791	91802	102241	84433	76327	79567	70029	73096	976345
Average Volume (m ³ /d)	2721	2786	2649	2486	2574	3060	3298	2724	2544	2567	2334	2358	2675
Maximum Volume (m ³ /d)	2996	3402	3119	2769	3645	3817	4427	3123	2821	2835	2555	2533	4427
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)	3816	3624	3702	3294	4422	4014	4671	4681	4720	4339	4719	4720	4720
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 #6133-82TLT7 allows the municipality to withdraw a maximum volume of 6816 cubic meters from the Lake Temiskaming each day. A review of the raw water flow data indicates that the system never exceeded this allowable limit having a maximum volume of 4427 m³ on July 19th. The Permit also allows a maximum flow rate of 4733 L/minute. At no point during the reporting period did the system exceed this rate having a maximum recorded flow of 4720 L/minute on September 28th.

Treated Water

2018 - 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

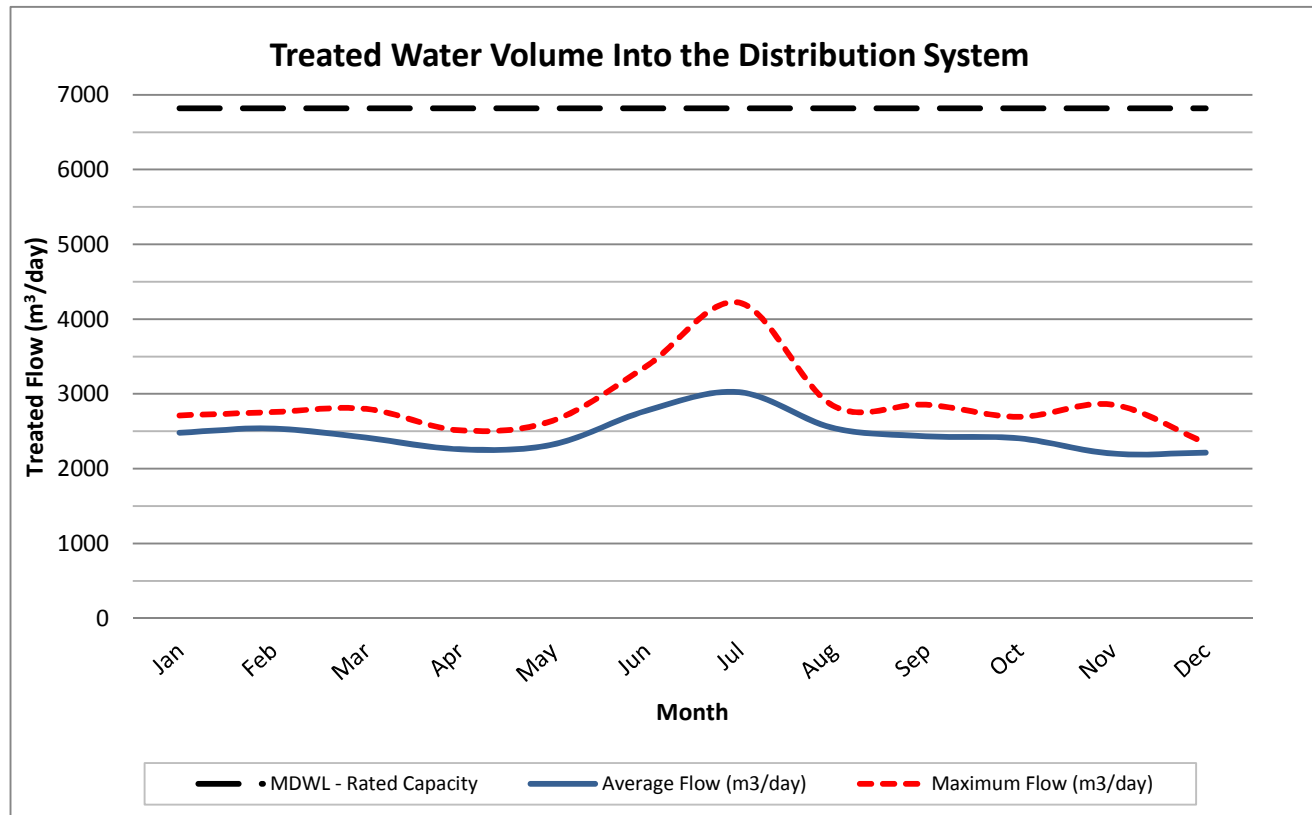
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m ³)	76897	71040	74834	67783	71979	83181	93720	78923	73021	74542	66032	68611	900565
Average Volume (m ³ /d)	2481	2537	2414	2259	2322	2773	3023	2546	2434	2405	2201	2213	2467
Maximum Volume (m ³ /d)	2712	2757	2799	2512	2641	3366	4220	2846	2856	2693	2856	2344	4220
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 4220 m³/day on July 19th, which represents 61.9% of the rated capacity.

The following table and graph compare 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: 2018 - Monthly Volume of Treated Water into the Distribution System

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Flow (m ³ /day)	2481	2537	2414	2259	2322	2773	3023	2546	2434	2405	2201	2213
Maximum Flow (m ³ /day)	2712	2757	2799	2512	2641	3366	4220	2846	2856	2693	2856	2344
MDWL - Rated Capacity	6820	6820	6820	6820	6820	6820	6820	6820	6820	6820	6820	6820
% Rated Capacity	40	40	41	37	39	49	62	42	42	39	42	34





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 2018	2467m ³ /day	36.2 % of the rated capacity
Maximum Daily Flow for 2018	4220 m ³ /day	61.9 % of the rated capacity
Total Treated Water Produced in 2018	900,565 m ³	

CONCLUSION

The Haileybury Drinking Water System complied with the terms and conditions outlined in its site specific drinking water works permit and municipal drinking water licence having no incidents of non-compliance during the reporting period.

The 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.

The system addressed the following non-compliance with Ontario Regulation 170/03.

1. Weekly bacteriological samples were collected but not tested for the week of January 8th due to shipping/receiving issues. The courier service is going to train drivers of this incident and put in place barriers so that this issue does not happen again.

The laboratory is also putting steps in place to ensure that this does not re-occur. They will check the drop box daily to ensure no samples are missed.

2. The continuous monitoring equipment was not recording free chlorine residual results at least every 5 minutes and did not record the result of every test that causes an alarm to sound. The free chlorine analyzer at the Haileybury reservoir lost power due to UPS failure, causing a false reading of zero for approximately 1 hour on February 8th.

The battery in the UPS was replaced.

3. The continuous monitoring equipment did not operate as designed and did not sound an alarm immediately when the equipment lost power. The alarm/call-out system was not triggered when the free chlorine analyzer lose power for approximately 1 hour on February 8th.

The alarms were not set up properly. This was addressed immediately.

One adverse water quality incident (AWQI) was reported in July when the entire distribution system lost pressure for approximately 8 hours to allow planned upgrades at the Niven Street Reservoir.



APPENDIX A

Monthly Summary of Microbiological
Test Results

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

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

RAW WATER	01/2018	02/2018	03/2018	04/2018	05/2018	06/2018	07/2018	08/2018	09/2018	10/2018	11/2018	12/2018	Total	Avg	Max	Min
Lake Timiskaming / Total Coliform: TC - cfu/100mL																
Count Lab	4	4	4	5	4	4	5	4	4	5	4	4	51			
Max Lab	92	36	28	90	335	645	245	60	26	284	156	80			645	
Mean Lab	81	25.5	16	48	168.667	286.25	73.75	28.5	21	137	132	57.5		87.915		
Min Lab	74	8	4	6	56	70	4	4	16	12	104	44				4
Lake Timiskaming / E. Coli: EC - cfu/100mL																
Count Lab	4	4	4	5	4	4	5	4	4	5	4	4	51			
Max Lab	< 4	< 2	< 2	< 2	< 6	< 8	< 2	< 20	< 10	22	< 2	< 2			22	
Mean Lab	< 2.5	< 2	< 2	< 2	< 4	< 5	< 2	< 8	< 5	10	< 2	< 2	<	3.872		
Min Lab	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	4	< 2	< 2				2
TREATED WATER																
Treated Water / Total Coliform: TC - cfu/100mL																
Count Lab	4	4	4	5	4	4	7	4	4	5	4	4	53			
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																
Count Lab	4	4	4	5	4	4	7	4	4	5	4	4	53			
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																
Count Lab	4	4	4	5	4	4	7	4	4	5	4	4	53			
Max Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 40	< 10	< 10	< 10	< 10	< 10			40	
Mean Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 14.286	< 10	< 10	< 10	< 10	< 10	<	10.566		
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																
Count Lab	4	4	4	5	4	4	5	4	4	5	4	4	51			
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																
Count Lab	4	4	4	5	4	4	5	4	4	5	4	4	51			
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																
Count Lab	4	4	4	5	4	4	5	4	4	5	4	4	51			
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																
Count Lab	4	4	4	5	4	4	5	4	4	5	4	4	51			
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																
Count Lab	4	4	4	5	4	4	5	4	4	5	4	4	51			
Max Lab	< 10	< 10	< 30	< 10	< 60	< 10	< 10	< 10	< 10	< 10	< 10	< 10			60	
Mean Lab	< 10	< 10	< 15	< 10	< 22.5	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<	11.373		
Min Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10				10
3rd Bacti/Residual / Total Coliform: TC - cfu/100mL																
Count Lab	4	4	4	5	4	4	5	4	4	5	4	4	51			
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																
Count Lab	4	4	4	5	4	4	5	4	4	5	4	4	51			
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 / HPC - cfu/mL																
Count Lab	0	0	0	0	0	0	0	0	1	0	0	0	1			
Max Lab									< 10						10	
Mean Lab									< 10				<	10		
Min Lab									< 10							10

NOTES:
 January 8th - weekly bacteriological samples were collected but not tested this week due to shipping issues. Refer to Section 2 of the Summary Report for details.



APPENDIX B

Monthly Summary of Operational Data

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

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

FILTERED WATER	01/2018	02/2018	03/2018	04/2018	05/2018	06/2018	07/2018	08/2018	09/2018	10/2018	11/2018	12/2018	Total	Avg	Max	Min
Filter #1 / Turbidity (1 NTU) - NTU																
Max OL	0.31	0.321	1.002	1.002	1.002	0.392	1.00	0.3	1.00	1.003	0.458	0.79			1.003	
Mean OL	0.044	0.044	0.044	0.044	0.067	0.077	0.065	0.059	0.071	0.09	0.08	0.07		0.063		
Min OL	0.031	0.031	0.035	0.029	0.034	0.044	0.04	0.04	0.04	0.037	0.048	0.045				0.029
Filter #2 / Turbidity (1 NTU) - NTU																
Max OL	0.299	0.277	0.733	1.001	0.331	0.456	0.7	0.62	1.00	1.002	0.41	0.547			1.002	
Mean OL	0.037	0.036	0.034	0.035	0.054	0.065	0.058	0.057	0.064	0.076	0.061	0.049		0.052		
Min OL	0.027	0.026	0.027	0.027	0.03	0.036	0.036	0.04	0.04	0.036	0.04	0.03				0.026
Filter #3 / Turbidity (1 NTU) - NTU																
Max OL	1.001	0.796	0.392	1.001	0.713	0.523	0.91	1.00	1.00	1.001	0.55	0.55			1.001	
Mean OL	0.037	0.034	0.034	0.036	0.059	0.07	0.056	0.054	0.068	0.071	0.064	0.052		0.053		
Min OL	0.023	0.025	0.027	0.028	0.03	0.04	0.03	0.03	0.03	0.03	0.039	0.03				0.023
TREATED WATER	01/2018	02/2018	03/2018	04/2018	05/2018	06/2018	07/2018	08/2018	09/2018	10/2018	11/2018	12/2018	Total	Avg	Max	Min
Reservoir / CI Residual: Free (0.2 mg/L) - mg/L																
Max OL	1.66	3.21	2.24	2.15	2.34	1.46	3.43	2.11	1.88	2.17	2.08	1.97			3.43	
Mean OL	1.535	2.146	1.945	1.934	1.655	1.246	1.478	1.491	1.462	1.612	1.693	1.756		1.663		
Min OL	1.33	1.55	1.57	1.38	1.37	0.89	0.1	0.61	0.99	1.21	1.3	1.42				0.1
DISTRIBUTION WATER	01/2018	02/2018	03/2018	04/2018	05/2018	06/2018	07/2018	08/2018	09/2018	10/2018	11/2018	12/2018	Total	Avg	Max	Min
1st Bacti/Residual / CI Residual: Combined - mg/L																
Count IH	9	8	9	9	9	8	12	9	8	9	9	10	109			
Total IH	12.45	10.54	11.68	15.73	14.42	9.41	9.93	11.15	7.18	9.85	10.86	11.3	134.5			
Max IH	1.56	1.78	1.52	2.00	1.86	1.45	1.5	1.57	1.22	1.56	1.51	1.84			2.00	
Mean IH	1.383	1.318	1.298	1.748	1.602	1.176	0.828	1.239	0.898	1.094	1.207	1.13		1.234		
Min IH	1.03	0.77	0.88	1.38	1.3	0.96	0.19	0.42	0.4	0.29	0.54	0.46				0.19
2nd Bacti/Residual / CI Residual: Combined - mg/L																
Count IH	9	8	9	9	9	8	12	9	8	9	9	10	109			
Total IH	12.3	8.78	11.61	14.19	12.97	9.98	7.79	6.56	7.41	11.1	6.37	10.9	119.96			
Max IH	1.61	1.45	1.82	1.93	1.81	1.41	1.16	1.38	1.44	1.57	1.55	1.57			1.93	
Mean IH	1.367	1.098	1.29	1.577	1.441	1.248	0.649	0.729	0.926	1.233	0.708	1.09		1.101		
Min IH	0.93	0.84	0.77	1.42	0.55	0.95	0.25	0.43	0.47	0.46	0.26	0.33				0.25
3rd Bacti/Residual / CI Residual: Combined - mg/L																
Count IH	9	8	9	9	9	8	12	9	8	9	9	10	109			
Total IH	12.63	9.12	11.27	14.84	13.12	10.26	7.49	8.98	8.31	7.81	8.53	7.54	119.9			
Max IH	1.8	1.61	1.63	1.95	1.78	1.52	1.09	1.32	1.34	1.61	1.55	1.32			1.95	
Mean IH	1.403	1.14	1.252	1.649	1.458	1.282	0.624	0.998	1.039	0.868	0.948	0.754		1.1		
Min IH	0.92	0.56	0.77	1.37	1.03	1.03	0.25	0.25	0.37	0.34	0.28	0.31				0.25
4th Residual / CI Residual: Combined - mg/L																
Count IH	5	3	4	5	4	4	7	4	4	4	4	5	53			
Total IH	5.15	3.34	3.95	6.97	5.17	4.76	4.7	4.21	2.69	1.73	4.01	4.36	51.04			
Max IH	1.18	1.3	1.22	1.96	1.41	1.25	1.08	1.4	1.05	0.6	1.36	1.33			1.96	
Mean IH	1.03	1.113	0.988	1.394	1.293	1.19	0.671	1.053	0.673	0.433	1.003	0.872		0.963		
Min IH	0.83	1	0.81	0.49	1.2	1.1	0.24	0.92	0.35	0.29	0.4	0.3				0.24

- NOTES:**
- The Haileybury water treatment process will backwash if the filter effluent turbidity reaches 0.7 NTU and will automatically shut down if the turbidity reaches 1.0 NTU. In 2018, The system performed as programmed and no high turbidity water was directed to the next phase of the process.
 - July 13 - The free chlorine residual dropped to 0.1 mg/L when switching reservoirs in preparation for the upgrade work. CT was calculated and passed.
 - Additional chlorine residuals were collected after the reservoir upgrades were complete in July. Three low combined residuals were documented, but the free chlorine residuals were acceptable. A BWA was issued by the Health Unit during this time and the event was reported to SAC as an adverse water quality incident.