



Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Englehart Drinking Water System

2018 ANNUAL/SUMMARY REPORT



Prepared by the Ontario Clean Water Agency
on behalf of the Town of Englehart

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INTRODUCTION

Municipalities throughout Ontario have been required to comply with Ontario Regulation 170/03 made under the *Safe Drinking Water Act* (SDWA) since June 2003. The Act was enacted 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.

Section 11 of Regulation 170/03 requires the owner to produce an Annual Report. This report must include the following:

1. Description of system & 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 28th of each year.

Schedule 22 of the regulation also requires a Summary Report which must be presented & accepted by Council by March 31st of each year for the preceding calendar year.

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.



Englehart Drinking Water System

Section 11

2018 ANNUAL REPORT



Section 11 - ANNUAL REPORT

1.0 INTRODUCTION

Drinking-Water System Name: Englehart Drinking Water System
Drinking-Water System No.: 220000353
Drinking-Water System Owner: The Corporation of the Town of Englehart
Drinking-Water System Category: Large Municipal, Residential System
Period being reported: 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.engehart.ca/>

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

Englehart Town Office
61 Fifth Avenue
Englehart, Ontario P0J 1H0

Drinking Water Systems that receive drinking water from the Englehart Drinking Water System

The Englehart Drinking Water System provided drinking water to the Town of Englehart and five neighbouring distribution systems:

- | | |
|------------------------|------------------|
| 1. Bradley Subdivision | DWS #: 260069927 |
| 2. First St North | DWS #: 260078871 |
| 3. Kap-kig-iwan Road | DWS #: 260078650 |
| 4. Bryans' Road | DWS #: 260080574 |
| 5. Brown's Road | DWS #: 260078663 |

The Annual Report was provided to all Drinking Water System owners that are connected to the Englehart Drinking Water System.

The Ontario Clean Water Agency prepared the 2018 Annual/Summary Report for the Englehart Drinking Water System and provided a copy to the system owner; the Town of Englehart. A copy was also provided to the Municipality of Charlton and Dack (Bradley Subdivision) and the following list of representatives for the remaining private lines:



- | | | |
|----|----------------------|-------------------|
| 1. | Ms. Cindy Kirkbride | First St North |
| 2. | Mr. Len Fisher | Kap-kig-iwan Road |
| 3. | Ms. Marie Bryan | Bryans' Road |
| 4. | Mr. Daryl Rowlandson | Brown's Road |

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

- A notice inserted with Water Bill

2.0 DESCRIPTION OF THE DRINKING WATER SYSTEM (DWS No. 220000353)

The Englehart Drinking Water System is owned by the Corporation of the Town of Englehart and consists of a Class 1 water treatment subsystem and a Class 1 water distribution subsystem. 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. It is a communal ground water well supply that services the Town of Englehart and five neighbouring distribution systems.

Raw Water Supply

The water treatment plant is located on 56 First Street in Ewanturel Township in the district of Timiskaming and is supplied by two deep-drilled wells; Well No. 2 and Well No. 3.

Well No. 2 is located in a separate well house situated approximately 40 meters south of the treatment plant (approximately 52 m east of 1st Street and 15 m north of 6th Avenue). The well is drilled to a depth of 89.3 meters and consists of a stainless steel intake screen and a 400 mm diameter steel casing which reduces to a 200 mm diameter steel casing. It is equipped with vertical turbine pump and fixed-rate control system to pump at the maximum rate of 15.15 L/second. It includes a magnetic flow meter and pump-to-waste provisions.

Well No. 3 is located in a separate well house situated approximately 20 meters east of the treatment plant (approximately 75 m east of 1st Street and 53 m north of 6th Avenue). The well is drilled to a depth of 90.5 meters and consists of stainless steel intake screen and a 300 mm diameter casing that later reduces to a 150 mm diameter steel casing. It is equipped with vertical turbine pump and fixed-rate control system to pump at the maximum rate of 18.9 L/second. It also includes a magnetic flow meter and pump-to-waste provisions.

Water Treatment

The production wells feed the main water treatment plant that has a maximum rated capacity of 2488 cubic meters per day (m³/d).



The process consists of a Filtronics Electromedia iron and manganese removal/pressure filtration system rated at 2998 m³/d. It consists of two reaction vessels; one for sodium hypochlorite and one for sodium bisulphite (which is currently not in use) and one filter tank. Sodium hypochlorite is injected into the low lift pumping station prior to the reaction vessels. It is used as an oxidant for iron and manganese removal and as a disinfectant. Primary disinfection is achieved in the filter system and a 210 foot, 8 inch diameter contact pipe and is continuously monitored using a free chlorine residual analyzer. The system is also equipped with a turbidity analyzer, backwash flow meter and a filter backwash pump. The backwash residue discharges to the sanitary sewer. A treated water flow meter is located on the common header just downstream of the pressure filter system.

The sodium hypochlorite feed system consists of two (2) chemical storage tanks with spill containment and two (2) flow paced chemical metering pumps with automatic backup/switch over.

Water Storage and Pumping Capabilities

The reservoir consists of a twin cell underground clear well with a 3 meter depth and an overall storage volume 1360 m³. Ammonia sulphate is added before entering the clearwell to produce a combined residual before entering the distribution system. The ammonia sulphate system consists of one 730 liter chemical tank with spill containment and two metering pumps (one duty and one shelf spare).

Each cell is vented and is accessible by an access hatch with ladder. A butterfly valve provides isolation of each cell if required. Two vertical turbine high lift pumps equipped with variable frequency drives (VFDs) direct water into the distribution system, each at a maximum rate of 37.8 L/second. A distribution water flow meter and a continuous total chlorine analyzer are installed on the high lift discharge header.

Emergency Power

A 100 kW diesel generator is located outside the water treatment building and can maintain all aspects of the operation during a power outage.

Distribution System

The Englehart Drinking Water System is classified as a Large Municipal Residential Drinking Water System and serves an estimated population of 1700 residents. Information regarding the age of the distribution system indicated that it was originally installed in 1914. The water mains consists primarily of 12, 10, 8, and 6 inch diameter ductile iron constructed pipe with approximately 50 fire hydrants connected to the system to aid in fire protection. Over the past few years, the Town has replaced several sections of watermains with new PVC DR18 piping of the same diameter. Residential service connections consist of 1/2, 5/8, and 3/4 inch copper tubing. There are no off site water storage facilities in the system. Additionally, the distribution system does not receive water from other sources but it provides drinking-water to five



neighbouring regulated drinking water systems (one small municipal residential system and four non-municipal year-round residential systems) as listed below:

Distribution System	DWS #	Owner/Operating Authority	# of Service Connections
Town of Englehart	220000353	Town of Englehart	750
Bradley Subdivision	260069927	Municipality of Charlton & Dack	49
First St North	260078871	Ms. Cindy Kirkbride	9
Kap-kig-iwan Road	260078650	Mr. Len Fisher	8
Bryan’s Road	260080574	Ms. Marie Bryan	13
Brown’s Road	260078663	Mr. Daryl Rowlandson	12

Note:

A Water Supply Agreement between the Corporation of the Town of Englehart and the Corporation of the Municipality of Charlton and Dack came into effect on August 3, 2016. The terms of the agreement allow the Town of Englehart to monitor and sample the Bradley Subdivision System as part of the Englehart System except for lead sampling and testing under Ontario Regulation 170/03, Section 15.1.

3.0 LIST OF WATER TREATMENT CHEMICALS USED OVER THE REPORTING PERIOD

The following chemicals were used in the treatment process at the Englehart Water Treatment Plant.

- Sodium Hypochlorite - Disinfection
- Ammonium Sulphate - Chloramination
- Sodium Bisulphite - available at the plant, but is currently not in use.

All treatment chemicals meet AWWA and NSF/ANSI standards.

4.0 SIGNIFICANT EXPENSES INCURRED IN THE DRINKING WATER SYSTEM

OCWA is committed to maintaining the assets of the drinking water system and maintains 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 Englehart water treatment plant underwent an electrical conversion from 240V 3-phase to 600V 3-phase volts. This work resulted in the following :



- changing all of the 3 phase pump motors which includes 2 high lift pumps (#1 & #2), 2 well pumps (#2 & #3) and the backwash pump,
 - changing components (wiring and hardware) in the MCC panels
 - installing variable frequency drive (VFD) units on high lift pump #1 and #2
- Installed a new industrial dehumidifier,
 - Replaced the free chlorine compliance analyzer with a Prominent free chlorine residual analyzer installed with a Resistance thermometer and a Prominent pH sensor.

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 Englehart Drinking Water System was in full compliance in 2018 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	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 (Well No. 2)	52	0 to 0	0 to 2	0	N/A
Raw (Well No. 3)	52	0 to 0	0 to 0	0	N/A
Treated	52	0 to 0	0 to 0	52	< 10 to <10
Distribution	156	0 to 0	0 to 0	52	< 10 to 100

Maximum Allowable 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 (each well) and treated water supply. A total of three microbiological samples are collected and tested each week from the Englehart distribution system which includes one sample from the Bradley Subdivision. At least 25% of the distribution samples must be tested for HPC bacteria.

Refer to *Appendix A* for a monthly summary of microbiological test results.

7.0 OPERATIONAL TESTING PERFORMED DURING THE REPORTING PERIOD

Summary of Raw Water Turbidity Data

Parameter	# of Samples	Range of Results (min to max)	Unit of Measure
Turbidity (Well No. 2)	13	0.32 to 3.67	NTU



Summary of Raw Water Turbidity Data

Parameter	# of Samples	Range of Results (min to max)	Unit of Measure
Turbidity (Well No. 3)	13	0.34 to 7.00	NTU

Note: Samples required once every month.

Continuous Monitoring in the Treatment Process

Parameter	# of Samples	Range of Results (min to max)	Unit of Measure	Standard
Free Chlorine Residual	8760	0.85 to 4.99	mg/L	CT**

Notes: For continuous monitors 8760 is used as the number of samples.

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 Englehart water plant if the free chlorine residual level drops below 0.85 mg/L to ensure primary disinfection is achieved.

Summary of Chlorine Residual Data in the Distribution System

Parameter	# of Samples	Range of Results (min to max)	Unit of Measure	Standard
Combined Chlorine Residual	364	0.99 to 2.13	mg/L	≥ 0.25 and <3.0

Note: 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.

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 Value	Nitrite Result Value	Unit of Measure	Exceedance
January 15	0.22	< 0.03	mg/L	No
April 3	0.22	< 0.03	mg/L	No
July 3	0.14	< 0.03	mg/L	No
October 11	< 0.20	< 0.008	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	Running Average	Exceedance
January 15	36.8	ug/L	35.4	No
April 3	36.5	ug/L		
July 3	31.8	ug/L		
October 11	36.5	ug/L		

Maximum Allowable Concentration (MAC) for Total Trihalomethanes = 100 ug/L (Running Annual 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)

Date of Sample	Result Value	Unit of Measure	Running Average	Exceedance
January 15	< 8	ug/L	16.1	N/A
April 3	31.4	ug/L		
July 3	14.1	ug/L		
October 11	11	ug/L		

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 Englehart Drinking Water System was eligible to follow the “Exemption from Plumbing Sampling” as described in section 15.1-5(9) and 15.1-5(10) of Schedule 15.1 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 (MAC) of 10 ug/L for lead. As such, the system was required to test for total alkalinity and pH in two distribution sample 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 5th and October 11th of 2018.



Results are summarized in the table below.

Summary of 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 5	2	7.52 to 7.55	4.3 to 5.1	238 to 2.40	N/A
October 11	2	7.61 to 7.76	9.7 to 11.6	256 to 258	N/A

Note: Next lead sampling scheduled for 2020

The Bradley Subdivision Distribution System was also eligible to follow the “Exemption from Plumbing Sampling” as described in section 15.1-5(9) and 15.1-5(10) of Schedule 15.1 of Ontario Regulation 170/03 and in 2018 completed its two rounds of alkalinity and pH testing on April 5th and October 30th. There was a sampling error in October which resulted in the samples being collected outside the sample period. Results are summarized in the table below.

Summary of Lead Data (sampled in the distribution system)

Date of Sample	# of Samples	Field pH	Field Temperature (°C)	Alkalinity (mg/L)	Lead (ug/L)
April 5	1	7.5	5.2	239	N/A
October 30	1	7.24	7.9	251	< 0.1

Note: Next lead sampling scheduled for 2020

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	ug/L	10	No	No
Barium	401	ug/L	1000	No	No
Boron	246	ug/L	5000	No	No
Cadmium	< 1.0	ug/L	5	No	No
Chromium	1.8	ug/L	50	No	No
Mercury	< 0.01	ug/L	1	No	No
Selenium	< 1	ug/L	50	No	No
Uranium	< 1	ug/L	20	No	No

Note: Sample required every 36 months (sample date = October 2, 2017). Next sampling scheduled for October 2020

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

Parameter	Result Value	Unit of Measure	MAC	MAC Exceedance	½ MAC Exceedance
Alachlor	< 0.2	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



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

Parameter	Result Value	Unit of Measure	MAC	MAC Exceedance	½ MAC Exceedance
Benzo(a)pyrene	< 0.005	ug/L	0.01	No	No
Bromoxynil	< 0.09	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	< 0.2	ug/L	90	No	No
Diazinon	< 0.2	ug/L	20	No	No
Dicamba	< 0.08	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)	< 0.08	ug/L	100	No	No
Diclofop-methyl	< 0.08	ug/L	9	No	No
Dimethoate	< 0.2	ug/L	20	No	No
Diquat	< 0.6	ug/L	70	No	No
Diuron	< 6	ug/L	150	No	No
Glyphosate	< 20	ug/L	280	No	No
MCPA	< 10	ug/L	100	No	No
Malathion	< 0.2	ug/L	190	No	No
Methoxychlor		ug/L	900	No	No
Metolachlor	< 0.1	ug/L	50	No	No
Metribuzin	< 0.1	ug/L	80	No	No
Monochlorobenzene	< 0.5	ug/L	80	No	No
Paraquat	< 0.3	ug/L	10	No	No
Pentachlorophenol	< 0.3	ug/L	60	No	No
Phorate	< 0.1	ug/L	2	No	No
Picloram	< 0.08	ug/L	190	No	No
Polychlorinated Biphenyls (PCB)	< 0.06	ug/L	3	No	No
Prometryne	< 0.06	ug/L	1	No	No
Simazine	< 0.2	ug/L	10	No	No
Terbufos	< 0.1	ug/L	1	No	No
Tetrachloroethylene	< 0.3	ug/L	30	No	No
2,3,4,6-Tetrachlorophenol	< 0.3	ug/L	100	No	No
Triallate	< 0.1	ug/L	230	No	No
Trichloroethylene	< 0.2	ug/L	10	No	No
2,4,6-Trichlorophenol	< 0.2	ug/L	5	No	No



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

Parameter	Result Value	Unit of Measure	MAC	MAC Exceedance	½ MAC Exceedance
Trifluralin	< 0.1	ug/L	45	No	No
Vinyl Chloride	< 0.1	ug/L	1	No	No

Note: Sample required every 36 months (sample date = October 2, 2017). Next sampling scheduled for October 2020

Inorganic or Organic Test Results that Exceeded Half the Standard Prescribed in Schedule 2 of the 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	# of Samples	Result Value	Unit of Measure	Standard	Exceedance
October 7, 2015	1	56.9	mg/L	20	Yes
October 16, 2015 (resample)	1	52.8	mg/L	20	Yes

Note: Sample required every 60 months. Next sampling scheduled for October 2020

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 Ministry’s SAC and the Timiskaming Health Unit on October 15, 2015 as required under Schedule 16 of O. Reg. 170/03 (AWQI# 126909).

Most Recent Fluoride Data Sampled at the Water Treatment Plant

Date of Sample	# of Samples	Result Value	Unit of Measure	Standard	Exceedance
October 7, 2015	1	0.44	mg/L	1.5	No

Note: Sample required every 60 months. Next sampling scheduled for October 2020

Additional Testing Performed in Accordance with an Approval, Order or Legal Instrument

No additional sampling and testing was required for the Englehart Drinking Water System during the 2018 reporting period.



Englehart Drinking Water System

Schedule 22

2018 SUMMARY REPORT

FOR MUNICIPALITIES



Schedule 22 - SUMMARY REPORTS FOR MUNICIPALITIES

1.0 INTRODUCTION

Drinking-Water System Name:	Englehart Drinking Water System
Municipal Drinking Water Licence (MDWL) No.:	209-101-3 (issued May 19, 2016)
Drinking Water Work Permit (DWWP) No.:	209-201-2 (issued May 19, 2016)
Permit to Take Water (PTTW) No.:	4742-854PPE (issued May 21, 2010)
Period being reported:	January 1, 2018 to December 31, 2018

2.0 REQUIREMENTS THE SYSTEM FAILED TO MEET

According to information kept on record by OCWA, the Bradley Subdivision distribution 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
O. Reg. 170/03 Schedule 15.1, Section 15.1-5(10)	Bradley Subdivision - The alkalinity and pH samples as part of the lead sampling program in O. Reg. 170/03 are to be collected from December 15 th to April 15 th and from June 15 th to October 15 th . In October, the samples were collected late on October 30 th rather than by October 15 th .	October 15 th to 30 th	Normally this sampling is done in conjunction with flushing, but the sampling time will be changed from April and October to March and September of each year to prevent any missed or late samples.	Complete

3.0 SUMMARY OF FLOWS AND COMPARISON TO REGULATORY LIMITS

Flow Monitoring

MDWL No. 209-101 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 treated water that flows from the treatment subsystem the distribution system, and
- the flow rate and daily volume of water that flows into the treatment subsystem.

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.



The following water usage tables summarize the quantities and flow rates of water taken and produced during the 2018 reporting period, including total monthly volumes, average monthly volumes, maximum monthly volumes, and maximum flow rates.

Water Usage

Raw Water

2018 - Monthly Summary of Water Takings from the Source (Well No. 2 and Well No. 3)

Regulated by Permit to Take Water (PTTW) #4742-854PPE issued May 21, 2010

Well No. 2

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m ³)	5913	6114	6495	8038	6816	6916	7655	7871	6090	5723	6072	6215	79918
Average Volume (m ³ /d)	191	218	210	268	220	231	247	254	203	185	202	200	219
Maximum Volume (m ³ /d)	297	263	320	336	267	276	334	452	249	248	284	389	452
PTTW - Maximum Allowable Volume (m ³ /day)	1205	1205	1205	1205	1205	1205	1205	1205	1205	1205	1205	1205	1205
Maximum Flow Rate (L/min)	838	900	844	858	900	900	869	900	659	649	900	900	900
PTTW - Maximum Allowable Flow Rate (L/min)	909	909	909	909	909	909	909	909	909	909	909	909	909

Well No. 3

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m ³)	16930	18045	19779	24518	20877	21042	23241	23914	18536	17533	18986	19401	242802
Average Volume (m ³ /d)	546	644	638	817	673	701	750	771	618	566	633	626	665
Maximum Volume (m ³ /d)	851	765	982	1027	823	840	1020	1365	760	764	884	1222	1365
PTTW - Maximum Allowable Volume (m ³ /day)	1591	1591	1591	1591	1591	1591	1591	1591	1591	1591	1591	1591	1591
Maximum Flow Rate (L/min)	1187	1500	1385	1361	1214	1282	1371	1347	1256	1285	1295	1463	1500
PTTW - Maximum Allowable Flow Rate (L/min)	1727	1727	1727	1727	1727	1727	1727	1727	1727	1727	1727	1727	1727

Combined Water Taking (Well No. 2 and Well No. 3)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m ³)	22843	24159	26274	32556	27693	27958	30891	31785	24626	23256	25058	25616	322715
Average Volume (m ³ /d)	737	863	848	1085	893	932	996	1025	821	750	835	826	884
Maximum Volume (m ³ /d)	1148	1028	1302	1363	1090	1116	1354	1817	1009	1012	1168	1611	1817
PTTW - Maximum Allowable Volume (m ³ /day)	2796	2796	2796	2796	2796	2796	2796	2796	2796	2796	2796	2796	2796

The system’s Permit to Take Water #4742-854PPE allows the Town to withdraw water at the following rates:



Well No. 2:	1204.69 m ³ /day / 909 L/minute
Well No. 3	1591.10 m ³ /day / 1727 L/minute
Total Combined Daily Volume:	2795.79 m ³ /day

A review of the raw water flow data indicates that the total daily volume of water taken from each well never exceeded the allowable limits. The maximum water taking from Well No. 2 was 452 m³ and from Well No. 3 was 1365 m³ on August 13th. The maximum combined volume measured was 1817 m³ also on August 13th.

Well No. 2 and Well No. 3 operated within their allowable flow rates having maximum flow rates of 900 and 1500 L/minute respectively.

Treated Water

2018 - Monthly Summary of Treated Water Supplied to the Distribution System

Regulated by Municipal Drinking Water Licence (MDWL) #209-101 - Issue 3, dated May 19, 2016

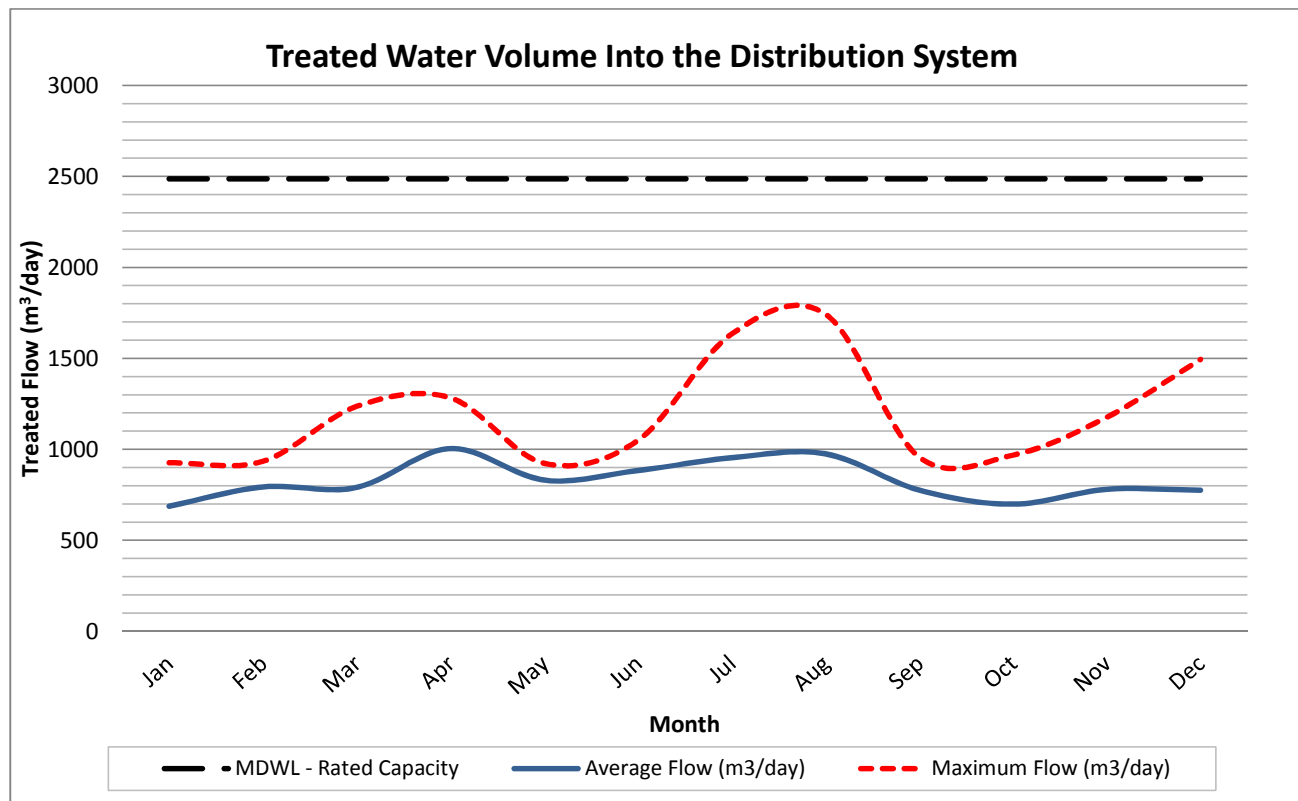
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m ³)	21327	22243	24532	30152	25791	26533	29598	30256	23300	21692	23435	24054	302913
Average Volume (m ³ /d)	688	794	791	1005	832	884	955	976	777	700	781	776	830
Maximum Volume (m ³ /d)	927	935	1237	1284	924	1050	1635	1744	958	969	1177	1495	1744
MDWL/C of A - Rated Capacity (m ³ /day)	2488	2488	2488	2488	2488	2488	2488	2488	2488	2488	2488	2488	2488

Schedule C, Section 1.0 (1.1) of MDWL No. 209-101 states that the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed 2488 m³/day. The Englehart DWS complied with this limit having a recorded maximum volume of 1744 m³/day on August 13th, which represents 70.1% of the rated capacity.

The following table and graph (Figure 1) compares the average and maximum flow rates into the distribution system to the rated capacity of the system 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)	688	794	791	1005	832	884	955	976	777	700	781	776
Maximum Flow (m ³ /day)	927	935	1237	1284	924	1050	1635	1744	958	969	1177	1495
MDWL - Rated Capacity	2488	2488	2488	2488	2488	2488	2488	2488	2488	2488	2488	2488
% Rated Capacity	37	38	50	52	37	42	66	70	39	39	47	60





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

Summary of System Performance

Rated Capacity of the Plant (MDWL)	2,488 m ³ /day	
Average Daily Flow for 2018	830 m ³ /day	33.4 % of the rated capacity
Maximum Daily Flow for 2018	1744 m ³ /day	70.1 % of the rated capacity
Total Treated Water Produced in 2018	302,913 m ³	

CONCLUSION

The Englehart Drinking Water System operated well in 2018 complying with the regulatory requirements of the Safe Drinking Water Act and its Regulations and meeting 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 within the water taking limits of the permit 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

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

Facility Works Number: 220000353
 Facility Owner: The Town of Englehart
 Facility Classification: Class 1 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
Well 2 / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	2	1	0	0	0			2	
Mean Lab	0	0	0	0	0	0	0	0.5	0.25	0	0	0		0.058		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Well 2 / E. Coli: EC - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	4	5	4	4	52			
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
Well 3 / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	4	5	4	4	52			
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
Well 3 / E. Coli: EC - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	4	5	4	4	52			
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																
Treated Water (POE) / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	4	5	4	4	52			
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 (POE) / E. Coli: EC - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	4	5	4	4	52			
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 (POE) / HPC - cfu/mL																
Count Lab	5	4	4	5	4	4	5	4	4	5	4	4	52			
Max Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10		< 10		
Mean Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10		< 10		
Min Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10				< 10
DISTRIBUTION WATER																
E-3 (Bacti) / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	4	5	4	4	52			
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
E-3 (Bacti) / E. Coli - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	4	5	4	4	52			
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
E-3 (Bacti) / HPC - cfu/mL																
Count Lab	2	1	1	2	1	2	1	1	2	2	3	1	19			
Max Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10		< 10		
Mean Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10		< 10		
Min Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10				< 10
E-4 (Bacti) / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	4	5	4	4	52			
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
E-4 (Bacti) / E. Coli - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	4	5	4	4	52			
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
E-4 (Bacti) / HPC - cfu/mL																
Count Lab	1	2	1	2	1	1	2	2	1	2	1	2	18			
Max Lab	10	< 10	< 10	< 10	30	10	< 10	80	100	< 10	< 10	20			100	
Mean Lab	10	< 10	< 10	< 10	30	10	< 10	65	100	< 10	< 10	< 15		< 22.778		
Min Lab	10	< 10	< 10	< 10	30	10	< 10	50	100	< 10	< 10	< 10				< 10
E-5 (Bacti) / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	4	5	4	4	52			
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
E-5 (Bacti) / E. Coli - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	4	5	4	4	52			
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
E-5 (Bacti) / HPC - cfu/mL																
Count Lab	2	1	2	1	2	1	2	1	1	1	0	1	15			
Max Lab	< 10	< 10	< 10	10	< 10	< 10	< 10	10	10	< 10	< 10	< 10		< 10		
Mean Lab	< 10	< 10	< 10	10	< 10	< 10	< 10	10	10	< 10	< 10	< 10		< 10		
Min Lab	< 10	< 10	< 10	10	< 10	< 10	< 10	10	10	< 10	< 10	< 10				< 10



APPENDIX B

Monthly Summary of Operational Data

**ENGLEHART DRINKING WATER SYSTEM
SUMMARY OF OPERATIONAL TEST RESULTS**

Facility Works Number: **220000353**
 Facility Owner: **The Town of Englehart**
 Facility Classification: **Class 1 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
Well 2 / Turbidity - NTU																
Count IH	1	1	1	1	1	1	1	1	1	1	1	2	13			
Total IH	0.44	3.67	0.594	3.53	2.33	0.32	0.75	2.15	1.34	1.5	1.89	1.38	19.894			
Max IH	0.44	3.67	0.594	3.53	2.33	0.32	0.75	2.15	1.34	1.5	1.89	0.7			3.67	
Mean IH	0.44	3.67	0.594	3.53	2.33	0.32	0.75	2.15	1.34	1.5	1.89	0.69		1.53		
Min IH	0.44	3.67	0.594	3.53	2.33	0.32	0.75	2.15	1.34	1.5	1.89	0.68				0.32
Well 3 / Turbidity - NTU																
Count IH	1	1	1	1	1	1	1	1	1	1	1	2	13			
Total IH	0.61	1.19	1.05	7.00	1.51	0.34	0.91	1.46	1.46	1.77	2.55	0.86	20.71			
Max IH	0.61	1.19	1.05	7.00	1.51	0.34	0.91	1.46	1.46	1.77	2.55	0.47			7.00	
Mean IH	0.61	1.19	1.05	7.00	1.51	0.34	0.91	1.46	1.46	1.77	2.55	0.43		1.593		
Min IH	0.61	1.19	1.05	7.00	1.51	0.34	0.91	1.46	1.46	1.77	2.55	0.39				0.34
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
Pressure Filter / CI Residual: Free-CT (0.85 mg/L) - mg/L																
Max OL	4.973	4.972	4.971	4.972	4.97	4.97	4.967	4.967	4.968	4.968	4.968	4.999			4.999	
Mean OL	2.06	2.18	2.067	2.054	1.558	1.542	1.499	1.574	1.761	1.869	2.058	2.575		1.9		
Min OL	0.98	1.02	0.9	1.38	1.15	1.19	0.85	0.85	0.93	1.13	1.34	1.11				0.85
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
Residual No. 1 / CI Residual: Combined - mg/L																
Count IH	10	8	8	9	9	8	9	9	8	10	8	8	104			
Total IH	16.42	13.84	14.07	15.94	15.49	11.82	13.98	11.4	10.5	13.94	13.38	12.91	163.69			
Max IH	1.85	1.85	1.94	1.99	1.95	1.67	1.63	1.47	1.53	1.72	1.88	1.96			1.99	
Mean IH	1.642	1.73	1.759	1.771	1.721	1.478	1.553	1.267	1.313	1.394	1.672	1.614		1.574		
Min IH	1.5	1.6	1.59	1.62	1.53	1.25	1.49	1.1	1.09	1.04	1.48	1.3				1.04
Residual No. 2 / CI Residual: Combined - mg/L																
Count IH	10	8	8	9	9	8	9	9	8	10	8	8	104			
Total IH	17.45	13.64	14.53	16.47	15.38	11.94	14.2	12.73	10.45	15.58	13.14	13.17	168.68			
Max IH	1.85	1.85	1.95	2.13	2.08	1.68	1.78	1.58	1.58	1.75	1.91	2.01			2.13	
Mean IH	1.745	1.705	1.816	1.83	1.709	1.493	1.578	1.414	1.306	1.558	1.642	1.646		1.622		
Min IH	1.63	1.52	1.59	1.68	1.56	1.14	1.43	1.22	0.99	1.3	1.3	1.44				0.99
Residual No. 3 / CI Residual: Combined - mg/L																
Count IH	10	8	8	9	9	8	9	9	8	10	8	8	104			
Total IH	15.29	13.49	13.98	15.24	14.38	11.73	14.66	12.51	11.42	15.93	12.88	12.45	163.96			
Max IH	1.73	1.79	1.96	1.95	1.94	1.66	1.86	1.61	1.72	1.72	2.00	1.82			2.00	
Mean IH	1.529	1.686	1.748	1.693	1.598	1.466	1.629	1.39	1.428	1.593	1.61	1.556		1.577		
Min IH	1.21	1.62	1.53	1.47	1.4	1.27	1.37	1.12	1.14	1.43	1.2	1.24				1.12
Residual No. 4 / CI Residual: Combined - mg/L																
Count IH	5	4	4	5	4	4	5	4	4	5	4	4	52			
Total IH	8.53	7.02	7.5	8.95	6.23	6.05	7.25	5.98	4.98	7.88	6.06	6.27	82.7			
Max IH	1.84	1.87	2.03	1.99	1.68	1.6	1.63	1.67	1.38	1.89	1.68	1.72			2.03	
Mean IH	1.706	1.755	1.875	1.79	1.558	1.513	1.45	1.495	1.245	1.576	1.515	1.568		1.59		
Min IH	1.57	1.7	1.68	1.53	1.42	1.45	1.2	1.22	1.08	1.42	1.38	1.43				1.08