



Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Charlton Drinking Water System

2014 ANNUAL/SUMMARY REPORT

Prepared by the Ontario Clean Water Agency
on behalf of the Municipality of Charlton and Dack



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EXECUTIVE SUMMARY

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.

Section 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 Provincial Officer Order 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 report also includes a review of inspection and audit findings, operational highlights and recommendations for 2015.

The reports have been prepared by the Ontario Clean Water Agency (OCWA) on behalf of the Owner and presented to council as the 2014 Annual/Summary Report.



REVIEW AND HIGHLIGHTS OF 2014

The Charlton drinking water system (DWS) provided safe and reliable drinking water to the community of Charlton while meeting, exceeding, and continually improving on legal, operational, and quality management system requirements.

The Ontario Clean Water Agency is the accredited operating authority for the Charlton DWS having met the quality management system requirements of the SDWA. OCWA operators, certified by the Province of Ontario through the Ministry of the Environment (MOE) operated and maintained the system to ensure compliance with regulatory requirements and to ensure the production and delivery of high quality drinking water to consumers.

Inspections and Audits

The MOE performed a focused inspection on June 10, 2014. The inspection included a physical assessment of the water treatment plant and a document review for the period of June 11, 2013 to June 9, 2014. The system scored an inspection rating of 100 per cent having no non-compliance issues identified in the report, however one best practice item was recommended.

1. The intake chamber located on the shore of the Englehart River contained a substantial amount of water during the time of the inspection. It is presumed that this area has been designed to allow access to the intake pipes for maintenance and repairs. Water collecting in the area, even if only during and following rain events, would prevent operators from being able to safely access equipment for maintenance and repairs.

It is recommended that regular visual inspections are made of the intake chamber and that any water collecting within the well is pumped out to ensure operators can access pipes and pumps in a safe and timely manner to conduct maintenance and repairs. Monthly checks are being performed to ensure safe to access if required.

A Quality and Environmental Management System (QEMS) has been implemented for the Charlton drinking water system. The provincially mandated Drinking Water Quality Management Standard (DWQMS) requires municipalities to develop and maintain a quality management system to ensure consistent water quality now and into the future. SAI Global conducted a surveillance (desk-top) audit of the system and processes associated with the QEMS to ensure implementation of the Operational Plan and procedures and conformance to the standard. The Audit Report dated June 2, 2014 identified two (2) opportunities for improvement (OFIs):

1. *Communications* - Consider describing the locations in which the Operational Plan is available to the public (this will be updated in the next revision of the Plan).
2. *Emergency Management* - Consider whether the mandatory Critical Shortage of Staff emergency situation is applicable to the Charlton/Bradley systems. The CP has been reviewed and is deemed to be applicable to both the Charlton DWS and Bradley SD distribution system. Resolved.



Water Usage

The Charlton water treatment plant is rated to produce 561 cubic meters of water per day as specified in the system’s Municipal Drinking Water Licence 271-101. The following information is presented to quickly assess the capability of the system to meet existing and future water usage needs:

Rated Capacity of the Plant (MDWL)	561 m³/day	
Average Daily Flow for 2014	74.5 m³/day	13.3 % of the rated capacity
Maximum Daily Flow for 2014	159 m³/day	28.3 % of the rated capacity
Total Treated Water Produced in 2014	27,1806 m³	

More detailed information on water usage is available on pages 14 to 16 of this report.

Operational Highlights

The Municipality of Charlton and Dack approved the following items listed in the 2014 capital letter.

CAPITAL ITEM	STATUS
New pre-soda pump	Complete
New flash mixer	Complete
Back up air compressor for valve controls	Complete
Sludge Haulage – 4 loads per year	Complete (Jan., May, Jul. & Sept.)
Bradley SD – repair broken blow-offs*	Complete

Other highlights include:

January The Charlton water treatment plant’s remote monitoring system (outpost) was changed from a dial-up connection to a high speed internet connection to allow for faster retrieval of data.

Calibration points were installed on pressure transmitters to allow for annual checks which ensures the devices are working correctly and measuring accurately.

April Low flows into the water treatment plant caused operators to suspect a restriction in the raw water feed line. The line was back flushed and inspected with a camera and flows improved slightly. Further investigation pointed to the low lift pumps which were pulled for inspection. Pump replacement is recommended due to the age of the pumps.

May The distribution system was flushed on May 27th to remove deposits, encrustations, sediments and other materials which can cause taste, odour, turbidity and other water quality problems.



June An input card for the plant’s Programmable Logic Controller (PLC) was replaced in response to high turbidity issues and plant shut downs.

The municipality installed a new water service from the main line to Lakeshore Avenue Lots 120 & 121 and to Robert Street Lots 32 & 33.

July The uninterrupted power supply (UPS) for the PLC was replaced to ensure power to all the necessary equipment during a power interruption.

September The plant was emptied and cleaned on September 9th to ensure optimum operation.

The distribution system was flushed on September 23rd and 24th.

The stairs at the water plant were repaired to ensure safe access into the plant.

December A heater was located in the sludge pit to prevent ice formation.

Recommended Capital Works for 2015

Capital Item	Comments
Sludge Haulage	4 loads per year
Installation of Smoke Detectors	Smoke could indicate major issues with electrical components
New Poly Pump	Poly Pump is old and requires replacing
Spare Parts Kits for Ammonia pump	To ensure continual operation
Spare Parts Kit for Post-Hypochlorite pump	To ensure continual operation
Spare Parts Kit for Alum pump	To ensure continual operation
Peristaltic Pump Head	Spare is needed



Charlton Drinking Water System

Section 11

2014 ANNUAL REPORT



Section 11

ANNUAL REPORT

1.0 INTRODUCTION

Drinking-Water System Name:	CHARLTON DRINKING WATER SYSTEM
Drinking-Water System No.:	220005768
Drinking-Water System Owner:	The Corporation of the Municipality of Charlton and Dack
Drinking-Water System Category:	Large Municipal, Residential System
Period being reported:	January 1, 2014 to December 31, 2014

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? No

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

Municipality of Charlton & Dack
#287237 Spruce Grove Road
Englehart ON P0J 1H0

Drinking Water Systems that receive drinking water from the Charlton Drinking Water System:

The Charlton Drinking Water System provides all drinking water to the community of Charlton.

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

The Ontario Clean Water Agency prepared the 2014 Annual/Summary Report for the Charlton Drinking Water System and provided a copy to the system owner; the Municipality of Charlton & Dack. The Charlton 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:

- A notice which will be posted on Charlton and Dack's Community Bulletin (CJBB radio)
- Discussions during public council meetings.



2.0 DESCRIPTION OF THE DRINKING WATER SYSTEM

The Charlton Drinking Water System is owned by the Corporation of the Municipality of Charlton and Dack and consists of a Class 3 water treatment subsystem and a Class 1 water distribution subsystem. The Ontario Clean Water Agency is designated as the Overall Responsible Operator for both the water treatment and water distribution facilities. It is a standalone system that is not connected to any other drinking water system.

Description of the Charlton Drinking Water System (DWS# 220005768)

Raw Water Supply

The water treatment plant is located on the west bank of the Englehart River on Bay Street in the Town of Charlton. The raw water intake system consists of an 83 m long, 200 mm diameter pipe that extends approximately 70 meters into the Englehart River. The pipe is equipped with a vertical intake riser, with manual height adjustment and perforated with 150 mm diameter holes which are covered with 20 mm diameter high density polyethylene mesh. A sand bag weighted drum secures the pipe to the river bed. The intake pipe supplies a 13.6 cubic meter low lift pumping station equipped with three submersible pumps each rated at 3.25 litres per second (L/s). The maximum rated capacity of the plant is 561 m³/day.

Water Treatment

The treatment process consists of chemically assisted filtration using a single train “*Ecodyne Monoplant*” package treatment system housed in a 15 m by 16 m building. The process involves pH adjustment with soda ash, flash mixing/coagulation with alum, flocculation with the assistance of polymer, upflow clarification using settling tubes, pre-chlorination using sodium hypochlorite and dual media filtration through two sand and anthracite filters. As the water exits the common filter underdrain the water is post-chlorinated using sodium hypochlorite.

Water Storage and Pumping Capabilities

The filtered water enters a 133 m³ chlorine contact chamber then flows to a 227 m³ clearwell. Ammonium sulphate is added at the discharge of the chlorine contact tank to produce a combined chlorine residual before entering the distribution system.

There are three high lift pumps each rated at 4.85 L/s that can direct water to the distribution system. High lift pump #1 is not in service because it is located in the chlorine contact tank. Water pumped from this location does not meet chlorine contact time (CT) requirements. A hydro-pneumatic tank having a volume of 1500 L provides pressure to the distribution system. The treated water is monitored for total and free chlorine residual using continuous on-line analyzers. An on-line turbidimeter is used to monitor the turbidity off the filters.

Waste Management

Residue management consists of one 50 cubic meter wastewater/backwash surge tank, equipped with a sludge pump rated at 5.1 L/s and a 29.7 cubic meter settling tank with a sludge pump that transfers sludge to a tanker truck for disposal. The supernatant is discharged by an



effluent weir to the Englehart River. Composite samples of the effluent are collected using an autosampler.

Emergency Power

An 80 kW standby diesel generator set is available on-site to provide power to the water treatment facility during power failures.

Distribution System

The Charlton Water Supply System is classified as a Large Municipal Residential Drinking Water System which serves a population of approximately 250 residents through an estimated 110 service connections. The distribution system is comprised of 6" PVC-constructed ("Blue Brute") lines which were approved for installation in 1988. Other than the clearwell in the water plant, there is no off-site water storage facility associated with the system.

3.0 LIST OF WATER TREATMENT CHEMICALS USED OVER THE REPORTING PERIOD

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

- Sodium Hypochlorite – Disinfection
- Ammonium Sulphate – Chloramination
- Sodium Carbonate (Soda Ash) - pH Adjustment
- Alum (Aluminum Sulphate) - Coagulation/Flocculation
- Poly Electrolyte - Coagulant Aid

4.0 SIGNIFICANT EXPENSES INCURRED IN THE DRINKING WATER SYSTEM

Refer to the section titled "Review and Highlights of 2014 (Operational Highlights)" for details on significant expenses incurred in the drinking water system in 2014.

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). All routine maintenance activities conducted at the water treatment plant were accomplished in 2014.

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, no adverse water quality incidents were reported to the MOE's Spills Action Centre in 2014.



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 (River)	52	<2 to 36	<2 to 300	0	N/A
Treated	52	<1 to <1	<1 to <1	52	<10 to 200
Distribution	104	<1 to <1	<1 to <1	52	<10 to 10

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

MAC for Total Coliforms = 0 Counts/100 mL

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

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
Turbidity*	8760	0.00 to 1.99	NTU
Free Chlorine	8760	0.790 to 3.20	mg/L
Total Chlorine	8760	0.511 to 3.42	mg/L

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

* The Charlton water treatment process automatically shuts down if the filter effluent turbidity reaches 0.8 NTU after 72 seconds.

The turbidity analyzer is equipped with a power failure alarm and analyzer warnings if the unit loses power or malfunctions and the signal drops to zero.

Summary of Chlorine Residual Data in the Distribution System

Parameter	# of Samples	Range of Results (min to max)	Unit of Measure	Standard
Combined Chlorine	364	0.32 to 2.10	mg/L	<0.05

Note: A total of seven operational checks for chlorine residual in the distribution system are collected each week. Four (4) samples were tested one day and three (3) on a second day. The sample sets were 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)

Date of Sample	Nitrate Result Value	Nitrite Result Value	Unit of Measure	Exceedance
January 9	<0.1	<0.05	mg/L	No
April 3	0.16	<0.05	mg/L	No
July 3	<0.1	<0.05	mg/L	No
October 9	<0.1	<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)

Date of Sample	Result Value	Unit of Measure	Running Average	Exceedance
January 9	75.5	ug/L	63.3	No
April 3	46.3	ug/L		
July 3	48.7	ug/L		
October 9	94.5	ug/L		

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

Summary of Most Recent Lead Data

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

The Charlton 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 one 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.

In 2014, the Charlton Drinking Water System completed its third 12-month period of the lead testing. Two rounds of lead, alkalinity and pH testing were conducted on April 10th and September 23rd. Results are summarized in the table below.

Summary of Lead, pH & Alkalinity Data (sampled in the distribution system)

Date of Sample	# of Samples	pH Results	Alkalinity Results (mg/L)	Lead Results (ug/L)
April 10	1	6.80	72.2	0.11
September 23	1	6.80	82.1	0.20

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

Parameter	Result Value	Unit of Measure	Standard	Exceedance
Antimony	<0.5	ug/L	6	No
Arsenic	<1.0	ug/L	25	No
Barium	12.9	ug/L	1000	No
Boron	5.7	ug/L	5000	No
Cadmium	<0.1	ug/L	5	No
Chromium	1.3	ug/L	50	No
Mercury	<0.1	ug/L	1	No
Selenium	<1.0	ug/L	10	No
Uranium	<1.0	ug/L	20	No

Note: Sample required every 12 months (sample date = October 9, 2014)



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

Parameter	Result Value	Unit of Measure	Standard	Exceedance
Alachlor	<0.50	ug/L	5	No
Aldicarb	<0.60	ug/L	9	No
Aldrin + Dieldrin	<0.004	ug/L	0.7	No
Atrazine + N-dealkylated metabolites	<0.9	ug/L	5	No
Azinphos-methyl	<0.40	ug/L	20	No
Bendiocarb	<1.0	ug/L	40	No
Benzene	<0.20	ug/L	5	No
Benzo(a)pyrene	<0.005	ug/L	0.01	No
Bromoxynil	<0.60	ug/L	5	No
Carbaryl	<1.0	ug/L	90	No
Carbofuran	<1.0	ug/L	90	No
Carbon Tetrachloride	<0.20	ug/L	5	No
Chlordane (Total)	<0.004	ug/L	7	No
Chlorpyrifos	<0.40	ug/L	90	No
Cyaznifin	<0.40	ug/L	10	No
Diazinon	<0.40	ug/L	20	No
Dicamba	<0.20	ug/L	120	No
1,2-Dichlorobenzene	<0.20	ug/L	200	No
1,4-Dichlorobenzene	<0.20	ug/L	5	No
Dichlorodiphenyl trichloroethane (DDT) + metabolites	<0.005	ug/L	30	No
1,2-Dichloroethane	<0.20	ug/L	5	No
1,1-Dichloroethylene (vinylidene chloride)	<0.20	ug/L	14	No
Dichloromethane	<1.0	ug/L	50	No
2,4-Dichlorophenol	<0.60	ug/L	900	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	<0.20	ug/L	100	No
Diclofop-methyl	<0.20	ug/L	9	No
Dimethoate	<0.40	ug/L	20	No
Dinoseb	<0.06	ug/L	10	No
Diquat	<7.0	ug/L	70	No
Diuron	<6.0	ug/L	150	No
Glyphosate	<20	ug/L	280	No
Heptachlor + Heptachlor Epoxide	<0.004	ug/L	3	No
Lindane (Total)	<0.001	ug/L	4	No
Malathion	<0.40	ug/L	190	No
Methoxychlor	<0.001	ug/L	900	No
Metolachlor	<0.20	ug/L	50	No
Metribuzin	<0.20	ug/L	80	No
Monochlorobenzene	<0.20	ug/L	80	No
Paraquat	<1.0	ug/L	10	No



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

Parameter	Result Value	Unit of Measure	Standard	Exceedance
Parathion	<0.20	ug/L	50	No
Pentachlorophenol	<0.60	ug/L	60	No
Phorate	<0.40	ug/L	2	No
Picloram	<0.06	ug/L	190	No
Polychlorinated Biphenyls (PCB)	<0.05	ug/L	3	No
Prometryne	<0.20	ug/L	1	No
Simazine	<0.40	ug/L	10	No
Temephos	<20	ug/L	280	No
Terbufos	<0.20	ug/L	1	No
Tetrachloroethylene	<0.20	ug/L	30	No
2,3,4,6-Tetrachlorophenol	<0.6	ug/L	100	No
Triallate	<0.20	ug/L	230	No
Trichloroethylene	<0.20	ug/L	50	No
2,4,6-Trichlorophenol	<0.60	ug/L	5	No
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	<0.06	ug/L	280	No
Trifluralin	<0.20	ug/L	45	No
Vinyl Chloride	<0.20	ug/L	2	No

Note: Sample required every 12 months (sample date = October 9, 2014).

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 18, 2010	1	21.6	mg/L	20	Yes
October 26, 2010 (re-sample)	1	16.5			

Note: Sample required every 60 months. Next sampling scheduled for October 2015

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 MOE SAC and the Timiskaming Health Unit on October 25, 2010 as required under Schedule 16 of O. Reg. 170/03 (AWQI# 98813).



Most Recent Fluoride Data Sampled at the Water Treatment Plant

Date of Sample	# of Samples	Result Value	Unit of Measure	Standard	Exceedance
October 18, 2010	1	<0.1	mg/L	1.5	No

Note: Sample required every 60 months. Next sampling scheduled for October 2015

Summary of Additional Testing Performed in Accordance with a Legal Instrument.

Condition 1.5 of Schedule C to Municipal Drinking Water Licence (MDWL) #271-101 requires that the annual average concentration of total suspended solids (TSS) from the effluent discharged to the Englehart River not exceed 25 mg/L. Further, Condition 4.4 of Schedule C to the MDWL requires that composite samples are collected every month.

The Charlton water treatment plant did not exceed this limit in 2014.

Summary of Total Suspended Solids Data from the Effluent Discharge

Date of Sample	# of Samples	Result Value	Unit of Measure	Annual Average	Limit
January 13	1	23.6	mg/L	21	25
February 3	1	22.0			
March 3	1	22.0			
April 7	1	24.5			
May 20	1	18.0			
June 2	1	12.0			
July 24	1	8.5			
August 5	1	24.5			
September 2 & 9	2	31.0 & 20.5			
October 6	1	26.5			
November 3	1	23.0			
December 22	1	17.0			



Charlton Drinking Water System

Schedule 22

2014 SUMMARY REPORT

FOR MUNICIPALITIES



Schedule 22

SUMMARY REPORTS FOR MUNICIPALITIES

1.0 INTRODUCTION

Drinking-Water System Name:	CHARLTON DRINKING WATER SYSTEM
Municipal Drinking Water Licence (MDWL) No.:	271-101 (issued March 11, 2011)
Drinking Water Work Permit (DWWP) No.:	271-201 (issued March 3, 2011)
Permit to Take Water (PTTW) No.:	5485-6UJNT7 (issued October 13, 2006)
Period being reported:	January 1, 2014 to December 31, 2014

2.0 REQUIREMENTS THE SYSTEM FAILED TO MEET

According to information kept on record by OCWA, the Charlton Drinking Water System has complied with all the requirements set out in the system’s MDWL, its DWWP, the Act and its Regulations.

3.0 SUMMARY OF QUANTITIES & FLOW RATES

The following water usage tables summarize the quantities and flow rates of water taken and produced during the 2014 reporting period, including total monthly volumes, average monthly volumes, maximum monthly volumes, and maximum flow rates.

Raw Water Usage

2014 - Monthly Summary of Water Takings from the Source (Englehart River)

Governed by Permit to Take Water (PTTW) #5485-6UJNT7, issued October 13, 2006

	<i>Jan</i>	<i>Feb</i>	<i>Mar</i>	<i>Apr</i>	<i>May</i>	<i>Jun</i>	<i>Jul</i>	<i>Aug</i>	<i>Sep</i>	<i>Oct</i>	<i>Nov</i>	<i>Dec</i>	<i>Year to Date</i>
<i>Total Volume (m³)</i>	2198	1963	1856	1885	2232	3364	3330	2811	2599	2533	2942	3164	30877
<i>Average Volume (m³/d)</i>	71	70	60	63	72	112	107	91	87	82	98	102	85
<i>Maximum Volume (m³/d)</i>	115	88	100	93	144	195	190	120	129	98	120	123	195
<i>PTTW - Maximum Allowable Volume (m³ /day)</i>	842	842	842	842	842	842	842	842	842	842	842	842	842
<i>Maximum Flow Rate (L/min)</i>	312	184	179	390	190	215	201	184	216	184	197	209	390
<i>PTTW - Maximum Allowable Flow Rate (L/min)</i>	585	585	585	585	585	585	585	585	585	585	585	585	585



Treated Water Usage

2014 - Monthly Summary of Treated Water Supplied to the Distribution System

Governed by Municipal Drinking Water Licence (MDWL) #271-101, issued March 11, 2011

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m ³)	1996	1825	1742	1585	1946	2973	2906	2497	2216	2223	2552	2719	27180
Average Volume (m ³ /d)	64	65	56	53	63	99	94	81	74	72	85	88	74
Maximum Volume (m ³ /d)	107	79	91	70	98	159	150	97	102	81	96	94	159
MDWL - Rated Capacity (m ³ /day)	561	561	561	561	561	561	561	561	561	561	561	561	561

Flow Monitoring

MDWL No. 271-101 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 to 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.

Comparison of the Flow Summary to the Rated Capacity & Flow Rates Allowed in the Systems Permit & Licence

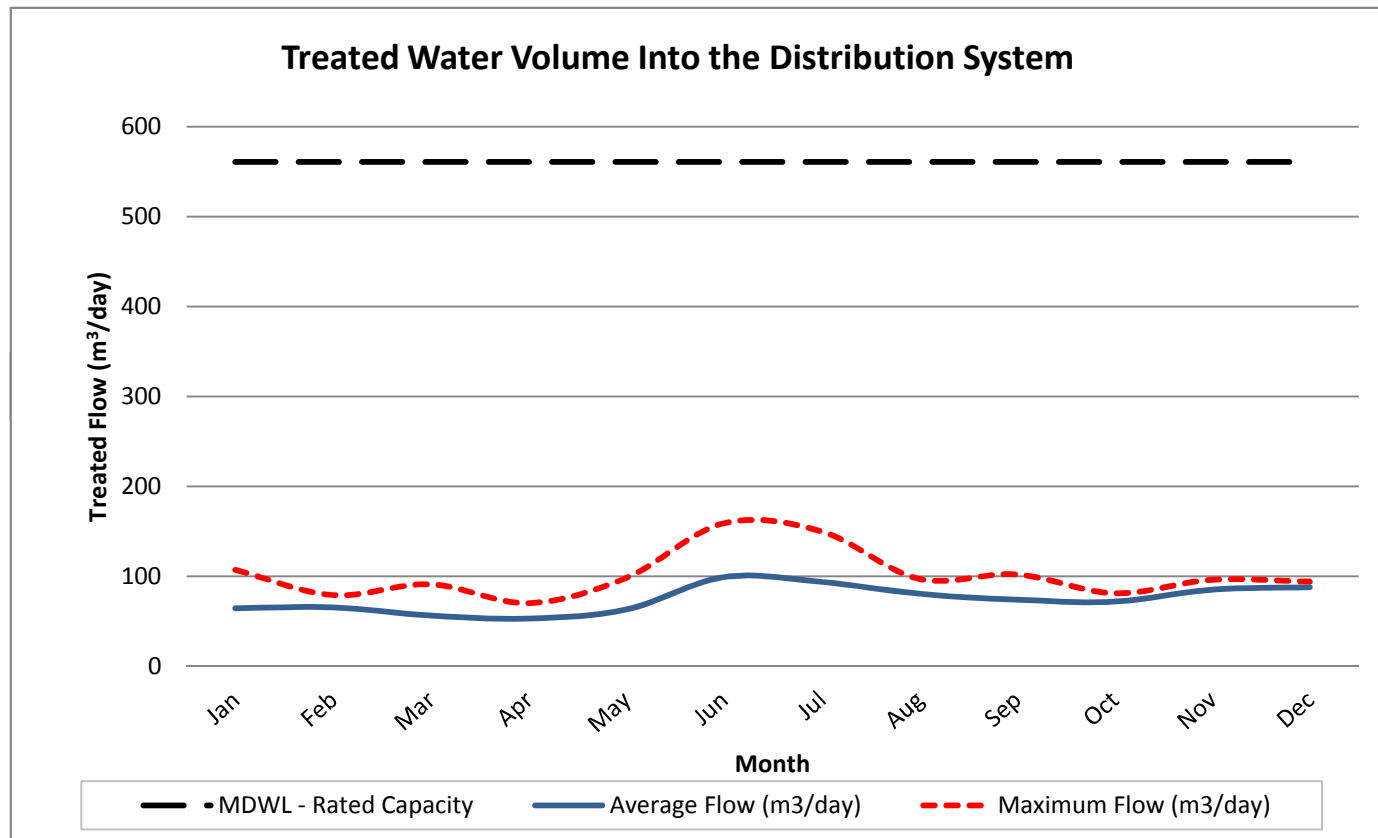
The system’s Permit to Take Water #5485-6UJNT7, allows the Municipality to withdraw a maximum volume of 842.4 cubic meters from the Englehart River per day. A review of the raw water flow data indicates that the maximum volume taken was 195 m³ on June 28th. The Permit also allows a maximum flow rate of 585 L/minute. At no point during the reporting period did the system exceed this rate having a maximum recorded flow of 390 L/minute on April 4, 2014.

Schedule C, Section 1.1 of MDWL No. 271-101 states that the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed a maximum flow rate of 561 m³ on any calendar day. The Charlton DWS complied with this limit having a recorded maximum volume of 159 m³/day on June 28, 2014.

Figure 1 compares the average and maximum treated flow rates to the rated capacity of the system identified in the MDWL. This information enables the Owner to assess the system’s existing and future planned water usage needs.

Figure 1: 2014 - Daily 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)	64	65	56	53	63	99	94	81	74	72	85	88
Maximum Flow (m ³ /day)	107	79	91	70	98	159	150	97	102	81	96	94
MDWL - Rated Capacity	561	561	561	561	561	561	561	561	561	561	561	561
% Rated Capacity	19	14	16	12	17	28	27	17	18	14	17	17





4.0 CONCLUSION

The Charlton Drinking Water System complied with the regulatory requirements of the Safe Drinking Water Act and its Regulations and met 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



**Ontario Clean Water Agency
Monthly Process Data Report**

Municipality: Town of Charlton
 Facility: [5049] - Charlton Water Treatment Plant
 Works: [220005768] - Charlton Water Treatment Plant
 Classification: Class 1 Water Distribution, Class 3 Water Treatment
 Water Source: Englehart River

Period: 01/01/2014 to 12/31/2014
 Serviced Population: 250
 Total Design Capacity(m³/day): 561.0

	Jan/2014	Feb/2014	Mar/2014	Apr/2014	May/2014	Jun/2014	Jul/2014	Aug/2014	Sep/2014	Oct/2014	Nov/2014	Dec/2014	<-- Summary -->
Distribution System\Microbiological - Distribution System													
E. Coli Samples (# collected)													
Sum	8.0	8.0	10.0	8.0	8.0	10.0	8.0	8.0	10.0	8.0	8.0	10.0	104.0
E. Coli (cfu/100 mL): Maximum													
Max	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
E. Coli (cfu/100 mL): Minimum													
Min	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
HPC Samples (# collected)													
Sum	4.0	4.0	5.0	4.0	4.0	5.0	4.0	4.0	5.0	4.0	4.0	5.0	52.0
HPC (cfu/mL): Maximum													
Max	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
HPC (cfu/mL): Minimum													
Min	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0

Note: ? Calculation not verifiable. At least one result reported as < and at least one result reported >.



APPENDIX B

Monthly Summary of Operational Data



Ontario Clean Water Agency Monthly Process Data Report

Municipality: Town of Charlton
 Facility: [5049] - Charlton Water Treatment Plant
 Works: [220005768] - Charlton Water Treatment Plant
 Classification: Class 1 Water Distribution, Class 3 Water Treatment
 Water Source: Englehart River

Period: 01/01/2014 to 12/31/2014
 Serviced Population: 250
 Total Design Capacity(m³/day): 561.0

	Jan/2014	Feb/2014	Mar/2014	Apr/2014	May/2014	Jun/2014	Jul/2014	Aug/2014	Sep/2014	Oct/2014	Nov/2014	Dec/2014	<-- Summary -->
Treated Water\Health - Treated Water													
Turbidity: Minimum (NTU)													
Min	0	0.038	0.032	0.037	0.035	0	0	0.015	0.034	0.045	0.037	0.03	0
Turbidity: Maximum (NTU)													
Max	1.52	0.986	1.999	0.935	0.827	0.831	0.331	0.292	0.79	0.575	0.91	0.688	1.999
Turbidity: Mean (NTU)													
Avg	0.082	0.066	0.076	0.072	0.057	0.054	0.053	0.048	0.054	0.08	0.07	0.052	0.063
Cl Residual: Free Min. (mg/L)													
Min	1.106	1.434	1.066	0.979	1.113	0.793	0.79	1.066	1.107	1.233	1.57	1.574	0.79
Cl Residual: Free Max. (mg/L)													
Max	3.201	2.216	2.147	2.408	2.71	1.877	2.755	2.263	1.818	2.586	2.633	2.784	3.201
Cl Residual: Free Mean (mg/L)													
Avg	1.614	1.726	1.75	1.81	1.749	1.184	1.577	1.607	1.418	1.705	1.996	2.007	1.679
Cl Residual: Total Min. (mg/L)													
Min	1.004	1.108	1.061	0.511	0.957	0.708	0.858	1.163	0.856	1.358	1.21	1.059	0.511
Cl Residual: Total Max. (mg/L)													
Max	2.469	2.413	2.415	2.47	2.264	3.419	2.063	1.967	1.816	2.013	2.312	2.366	3.419
Cl Residual: Total Mean (mg/L)													
Avg	1.76	1.864	1.857	1.731	1.752	1.272	1.651	1.574	1.334	1.717	1.945	1.716	1.681
Distribution System\Health - Distribution System													
Cl Res. Dist Samples (# collected)													
Cnt	9.0	8.0	9.0	8.0	9.0	9.0	9.0	8.0	9.0	9.0	8.0	9.0	104.0
Cl Residual: Combined Max (mg/L)													
Max	1.8	1.88	2.04	1.96	2.01	1.48	1.87	1.72	1.87	1.88	2.1	1.94	2.1
Cl Residual: Combined Min. (mg/L)													
Min	0.35	0.4	1.02	0.91	0.99	0.32	0.72	0.44	0.34	0.57	0.34	1.09	0.32
Cl Residual: Combined Mean (mg/L)													
Avg	1.436	1.608	1.711	1.623	1.464	1.1	1.421	1.181	1.107	1.399	1.626	1.592	1.436
Backwash\Settling Pond - Discharge to River													
Suspended Solids (mg/L)													
Avg	23.6	22.0	22.0	24.5	18.0	12.0	8.5	24.0	25.75	26.5	23.0	17.0	20.969
Cnt	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	1.0	1.0	1.0	13.0
Max	23.6	22.0	22.0	24.5	18.0	12.0	8.5	24.0	31.0	26.5	23.0	17.0	31.0
Min	23.6	22.0	22.0	24.5	18.0	12.0	8.5	24.0	20.5	26.5	23.0	17.0	8.5

Note: ? Calculation not verifiable. At least one result reported as < and at least one result reported >.