Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Bradley Subdivision Distribution System

2014 Annual/Summary Report

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

TABLE OF CONTENTS

LIST OF APPENDICES

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 and operational highlights.

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 Englehart drinking water system (DWS) supplied safe and reliable drinking water to the residents of the Bradley Subdivision while meeting, exceeding, and continually improving on legal, operational, and quality management system requirements.

OCWA operators, certified by the Province of Ontario through the Ministry of the Environment (MOE) performed water sampling and testing, monitored test results to ensure compliance with regulatory requirements and conducted distribution flushing to ensure the delivery of high quality drinking water to the consumers.

Inspections and Audits

The MOE performed a focused inspection on July 28, 2014 which included a document review for the period of July 9, 2013 to July 27, 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. There is one operational fire hydrant and two damaged blow-off valves within this distribution system. When conducting spring and fall flushing, the single hydrant located ahead of the blow-off valves does not provide any flushing flows through the dead end distribution pipes that service the majority of the Bradley Subdivision residents.

   The owner should repair the two broken blow-off valves located at the ends of Christopher and Michael Street to permit flushing of the Bradley Subdivision Distribution System. The repairs were completed in September of 2014.

A Quality and Environmental Management System (QEMS) has been implemented for the Bradley Subdivision distribution 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 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 addressed 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.

Operational Highlights

Broken blow-off valves located at the ends of Christopher and Michael Street were repaired in September to allow proper flushing of the Bradley Subdivision Distribution System.

The Englehart Drinking Water System, the donor system which supplies potable water to the Bradley Subdivision operated well in 2014; but elevated TTHM levels continue to be an issue in the distribution system. TTHMs are formed when natural organic matter such as total organic carbon (TOC) in water reacts with some chemicals used for disinfection such as sodium hypochlorite.

OCWA, on behalf of the Town submitted a Chloramination proposal to MOECC's Director of Approvals in September 2014. The objective of this chloramination pilot is to reduce trihalomethanes and to determine the effectiveness of using chloramination as secondary disinfection. The proposal was approved on December 2, 2014 and implementation is planned for March 2015.

Bradley Subdivision Distribution System

Section 11

2014 Annual Report

Section 11

ANNUAL REPORT

1.0 INTRODUCTION

Drinking-Water System Name:	**BRADLEY SUBDIVISION DISTRIBUTION SYSTEM**
Drinking-Water System No.:	260069927
Drinking-Water System Owner:	The Corporation of the Municipality of Charlton & Dack
Drinking-Water System Category:	Small 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 Bradley Subdivision Distribution System

The Bradley Subdivision does not provide drinking water to any other system.

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 Bradley Subdivision Distribution System and provided a copy to the system owner; the Municipality of Charlton and Dack as well as to the system's donor; the Town of Englehart.

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

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

2.0 DESCRIPTION OF THE DRINKING WATER SYSTEM

The Bradley Subdivision distribution system is a standalone system that consists of approximately 1370 meters of distribution water mains. It was constructed in the early 1980's by a private developer, but is currently owned by the Corporation of the Municipality of Charlton and Dack. The Ontario Clean Water Agency (OCWA) assumed operational responsibility on March 23, 2010.

Based on the number of residential service connections (17), the Bradley Subdivision Distribution System is classified as a small municipal residential drinking water system.

The water mains and appurtenances that comprise this water distribution system are described as follows:

- 6 inch PVC constructed water main located on the Old Ferguson Highway that connects to the Englehart Well Supply in the vicinity of Fifth Avenue, in front of the Grant Forest Products complex;

- 1½ inch PVC constructed water main connected to the 6 inch main, extending west along Highway 560 to service the residences in that area;

- 2 inch PVC constructed water main that connects to the 6 inch water main at Old Ferguson Highway, extending west down Christopher Street and north on Michael Street;

- a single fire hydrant located at the junction of Old Ferguson Highway and Christopher Street;

The system connects to and receives all water from the drinking water system owned by the Town of Englehart (Drinking Water System DWS # 220000353). It is a communal ground water well supply that services the Town of Englehart and six (6) neighbouring distribution systems. The Englehart water treatment plant is operated by the Ontario Clean Water Agency and the distribution system is operated by the Town of Englehart's Public Works department. The water treatment facility has a maximum rated capacity of 45.4 liters per second or 2,488 cubic meters per day. It is located on 56 First Street in Evanturel Township in the district of Timiskaming.

The Englehart water system consists of two deep-drilled wells that feed the main treatment building that houses the pressure filtration system, chlorination system, pump station and reservoir. A newly installed 150 kW diesel generator is in place and has the capacity to maintain all aspects of the operation during power outages.

More details on the Englehart Drinking Water System are available in the system's 2014 Annual/Summary Report which can be viewed at the Charlton & Dack Municipal Complex or the Englehart Town Office.

3.0 LIST OF WATER TREATMENT CHEMICALS USED OVER THE REPORTING PERIOD

No chemicals are used in the Bradley Subdivision, however sodium hypochlorite is used as a disinfectant at the Englehart Water Treatment Plant.

4.0 SIGNIFICANT EXPENSES INCURRED IN THE DRINKING WATER SYSTEM

Two broken blow-off valves located at the ends of Christopher and Michael Street were repaired to allow for proper distribution maintenance of the Bradley Subdivision Distribution System.

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, four (4) adverse water quality incidents were reported to the MOE's Spills Action Centre.

MOE AWQI #	115768
Parameter	Total Trihalomethanes (TTHMs)
Sample Date/Location	January 9, 2014 at 1540 hours at 12 Christopher Street
Result	127 ug/L (single sample result); 123.75 ug/L (running annual average)
Maximum Allowable Limit	100 ug/L (running annual average)
Corrective Actions	The exceedance was reported to the MOE's Spills Action Centre and the Timiskaming Health Unit on January 16th. A re-sample was collected on January 16th at 12 Christopher Street (result = 131 ug/L). The local health unit was notified of the result and no further instructions were provided. The issue was resolved on January 27, 2014.

MOE AWQI #	116752
Parameter	Total Trihalomethanes (TTHMs)
Sample Date/Location	April 3, 2014 at 1518 hours at 12 Christopher Street
Result	141 ug/L (single sample result); 130.25 ug/L (running annual average)
Maximum Allowable Limit	100 ug/L (running annual average)
Corrective Actions	The exceedance was reported to the MOE's Spills Action Centre and the Timiskaming Health Unit on April 9th. A re-sample was collected on April 10th at 12 Christopher Street (result = 133 ug/L). The local health unit was notified of the result and no further instructions were provided. The issue was resolved on April 17, 2014.

MOE AWQI #	118602
Parameter	Total Trihalomethanes (TTHMs)
Sample Date/Location	July 3, 2014 at 1440 hours at 12 Christopher Street
Result	88.7 ug/L (single sample result); 118.68 ug/L (running annual average)
Maximum Allowable Limit	100 ug/L (running annual average)
Corrective Actions	The exceedance was reported to the MOE's Spills Action Centre and the Timiskaming Health Unit on July 7th. A re-sample was collected on July 8th at 12 Christopher Street (result = 118 ug/L). The local health unit was notified of the result and no further instructions were provided. The issue was resolved on July 15, 2014.

MOE AWQI #	120984
Parameter	Total Trihalomethanes (TTHMs)
Sample Date/Location	October 9, 2014 at 1447 hours at 12 Christopher Street
Result	143 ug/L (single sample result); 124.92 ug/L (running annual average)
Maximum Allowable Limit	100 ug/L (running annual average)
Corrective Actions	The exceedance was reported to the MOE's Spills Action Centre and the Timiskaming Health Unit on October 14th. A re-sample was collected on October 15th at 12 Christopher Street (result = 99.5 ug/L). The local health unit was notified of the result and no further instructions were provided. The issue was resolved on October 22, 2014.

6.0 MICROBIOLOGICAL TESTING PERFORMED DURING THE REPORTING PERIOD

Summary of Microbiological Data

Sample Type	# of Samples	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)*
Distribution	26	<1 to <1	<1 to <1	26	<10 to 10

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

Note: Bacteriological samples are collected and tested as described in Schedule 11-2 of Ontario Regulation 170/03. At least one distribution sample was taken every two weeks and tested for *E. coli*, Total Coliforms and general bacteria population expressed as colony counts on a heterotrophic plate count (HPC).

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

7.0 OPERATIONAL TESTING PERFORMED DURING THE REPORTING PERIOD

Summary of Chlorine Residual Data in the Distribution System

Parameter	# of Samples	Range of Results *(min to max)*	Unit of Measure	Standard
Free Chlorine Residual	104	0.07 to 1.10	mg/L	<0.05

Note: A total of two (2) operational checks for chlorine residual in the distribution system were taken each week. The samples were collected at least 48 hours apart.

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

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

Date of Sample	Result Value	Unit of Measure	Running Average	Exceedance
January 9	127	ug/L	124.9	Yes
January 17 (resample)	131			
April 3	141			
April 10 (resample)	133			
July 3	88.7			
July 8 (resample)	118			
October 9	143			
October 15 (resample)	99.5			

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

Note: Results from re-samples taken specifically for corrective action purposes are not used to calculate the running annual average and are not used to determine routine compliance to the Ontario Drinking Water Quality Standard

For further details on the adverse TTHM incidents, refer to Section 5.0 of this report.

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 Bradley Subdivision Distribution 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 Bradley Subdivision Distribution 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 18th. 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	6.70	230	<0.1
September 18	1	7.87	231	<0.1

Inorganic or Organic Test Results that Exceeded Half the Standard Prescribed in Schedule 2 of the Ontario Drinking Water Quality Standards.

This section is not applicable to the Bradley Subdivision Distribution System. Inorganic (Schedule 24) and Organic (Schedule 23) parameters are tested on treated water entering a distribution system.

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

No additional sampling and testing was required for the Bradley Subdivision Distribution System during the 2014 reporting period.

Bradley Subdivision Distribution System

Schedule 22

2014 SUMMARY REPORT

FOR MUNICIPALITIES

Schedule 22

SUMMARY REPORTS FOR MUNICIPALITIES

1.0 INTRODUCTION

Drinking-Water System Name:	**BRADLEY SUBDIVISION DISTRIBUTION SYSTEM**
Municipal Drinking Water Licence (MDWL) No.:	271-102 (issued March 11, 2011)
Drinking Water Work Permit (DWWP) No.:	271-202 (issued March 3, 2011)
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 Bradley Subdivision Distribution System has complied with all the requirements set out in the system's MDWL, its DWWP, the Act and its Regulations.

However, it should be noted that, four (4) water sample results exceeded the Total Trihalomethane (TTHM) maximum allowable concentration of the Ontario Drinking Water Quality Standard during the reporting period. Refer to Section 5.0 - DETAILS ON NOTICES OF ADVERSE TEST RESULTS AND OTHER PROBLEMS REPORTED TO & SUBMITTED TO THE SPILLS ACTION CENTER on page 7 of this report.

3.0 SUMMARY OF QUANTITIES & FLOW RATES

The water volumes and flow rates supplied to the Bradley Subdivision Distribution System are unknown. The Bradley Subdivision Distribution System is connected to and receives all water from the Englehart Drinking Water System.

Further details on the Englehart Drinking Water System are available in the 2014 Annual/Summary Report which can be viewed at the Charlton & Dack Municipal Complex or the Englehart Municipal Office.

4.0 CONCLUSION

The Bradley Subdivision Distribution 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 licence and permit having no incidents of non-compliance during the reporting period.

Four (4) adverse Total Trihalomethane results were reported to the MOE's Spills Action Centre in 2014. Elevated TTHMs has been an ongoing issue in the distribution system and in response to these elevated results, the MOECC's Approvals and Licencing Department approved a process

change in the donor's treatment system. Chloramination will be implemented at the Englehart water plant. Chloramination is widely practiced and has a long history of being effective in maintaining a long-lasting disinfection residual. It does not lead to the formation of TTHMs and it has also been successful in replacing chlorination in many municipalities that have high TTHM problems.

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: [260069927] - Bradley Subdivision Distribution System
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(m^3/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													
TC Samples (# collected)													
Sum	2.0	2.0	3.0	2.0	2.0	2.0	2.0	2.0	3.0	2.0	2.0	2.0	26.0
TC (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
TC (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
E. Coli Samples (# collected)													
Sum	2.0	2.0	3.0	2.0	2.0	2.0	2.0	2.0	3.0	2.0	2.0	2.0	26.0
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	2.0	2.0	3.0	2.0	2.0	2.0	2.0	2.0	3.0	2.0	2.0	2.0	26.0
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 Chlorine Residual Data

Ontario Clean Water Agency
Monthly Process Data Report

Municipality: Town of Charlton
Facility: [5049] - Charlton Water Treatment Plant
Works: [260069927] - Bradley Subdivision Distribution System
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\Health - Distribution													
Cl Res. Dist Samples (# collected)													
Sum	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 Res. in Dist.: Free Min. (mg/L)													
Min	0.11	0.07	0.1	0.14	0.25	0.25	0.11	0.15	0.12	0.25	0.27	0.2	0.07
Cl Res. in Dist.: Free Max. (mg/L)													
Max	0.43	0.14	0.39	0.52	0.73	0.73	0.81	0.74	1.1	0.54	0.62	0.92	1.1
Cl Residual: Free Mean (mg/L)													
Avg	0.221	0.118	0.163	0.313	0.422	0.536	0.431	0.426	0.442	0.42	0.439	0.516	0.372

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