



**Ontario Clean Water Agency**  
**Agence Ontarienne Des Eaux**

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March 27, 2017

Mayor Renald Beaulieu and Council  
The Corporation of the Municipality of Greenstone  
P.O. Box 70  
GERALDTON, Ontario  
POT 1M0

**Re: 2016 Annual Summary Report for the Beardmore Drinking-Water System**  
**2016 Annual Summary Report for the Caramat Drinking-Water System**  
**2016 Annual Summary Report for the Geraldton Drinking-Water System**  
**2016 Annual Summary Report for the Longlac Drinking-Water System**  
**2016 Annual Summary Report for the Nakina Drinking-Water System**

Ontario's Drinking-Water Systems Regulation (O.Reg.170/03), made under the *Safe Drinking Water Act, 2002*, requires that the owner of a drinking water system prepare an annual summary for municipalities on the operation of the system and the quality of its water.

The annual summary must cover the period of January 1<sup>st</sup> to December 31<sup>st</sup> in a year and must *be prepared not later than March 31<sup>st</sup>* of the following year. Pursuant to the legislative requirements, enclosed for your records is the 2016 Annual Summary for the Greenstone Drinking-Water Systems.

Pursuant to the legislative requirements, *Schedule 22 Summary Reports for Municipalities*, the annual summary must:

- (a) list the requirements of the Act, the regulations, the system's approval, drinking water works permit, municipal drinking water licence, and any orders applicable to the system that were not met at any time during the period covered by the report; and,
- (b) for each requirement referred to in clause (a) that was not met, specify the duration of the failure and the measures that were taken to correct the failure."

- O. Reg. 170/03 s. 22 (2)

"The report must also include the following information for the purpose of enabling the owner of the system to assess the rated capability of their system to meet existing and planned uses of the system:

1. A summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows.
2. A comparison of the summary referred to in paragraph 1 to the rated capacity and flow rates approved in the system's approval, drinking water works permit or municipal drinking water licence, or if the system is receiving all of its water from another system under an

agreement pursuant to subsection 5 (4), to the flow rates specified in the written agreement.”

-O. Reg. 170/03 s. 22 (3)

In addition, Section 12 (1) - 4 - gives the direction that a copy of the annual summary for the system is given, without charge, to every person who requests a copy and be made available for inspection by any member of the public during normal business hours. The reports should be made available at the office of the municipality, or at a location that is accessible to the users of the water system.

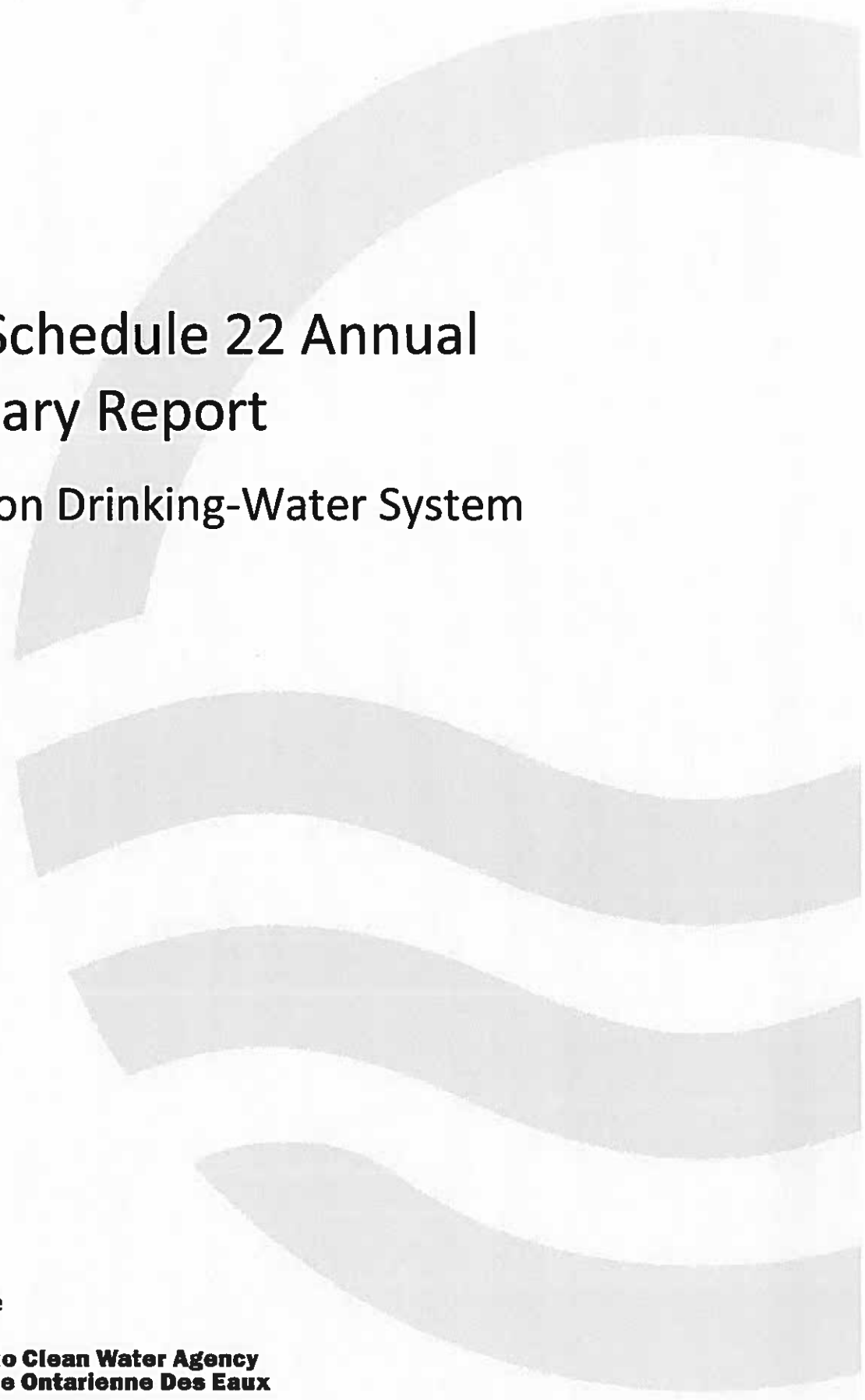
These reports were prepared by the Ontario Clean Water Agency on behalf of the Corporation of the Municipality of Greenstone and are based on information kept on record by OCWA at each specific water treatment plant. The report covers the period January 1<sup>st</sup> through to December 31<sup>st</sup> 2016.

Yours truly,



Bradley McMahon  
Senior Operations Manager  
Northwestern Ontario Hub

Copy to: Mark Wright - CAO  
Brian Aaltonen – Director of Public Services  
Operations Staff – Beardmore WTP  
Operations Staff – Caramat WTP  
Operations Staff – Geraldton WTP  
Operations Staff – Longlac WTP  
Operations Staff – Nakina WS



# 2016 Schedule 22 Annual Summary Report

## Geraldton Drinking-Water System

March 2017

Prepared by the



**Ontario Clean Water Agency**  
**Agence Ontarienne Des Eaux**

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## **SECTION 1: INTRODUCTION**

This report is a summary of water quality information for the Geraldton Drinking-Water System, published in accordance with Schedule 22 of Ontario's Drinking-Water Systems Regulation for the reporting period of January 1<sup>st</sup> to December 31<sup>st</sup> 2016. The Geraldton Drinking-Water System is categorized as a Large Municipal Residential Drinking Water System.

This report is prepared by The Ontario Clean Water Agency on behalf of the Corporation of the Municipality of Greenstone – Geraldton Ward. A copy of the Summary Report is to be provided to the members of the municipal council by March 31<sup>st</sup> 2017.

## **SECTION 2: WHAT DOES THE REPORT CONTAIN**

"The report must,

- (a) list the requirements of the Act, the regulations, the system's approval, drinking water works permit, municipal drinking water licence, and any orders applicable to the system that were not met at any time during the period covered by the report; and,
- (b) for each requirement referred to in clause (a) that was not met, specify the duration of the failure and the measures that were taken to correct the failure."

- O. Reg. 170/03 s. 22 (2)

"The report must also include the following information for the purpose of enabling the owner of the system to assess the rated capability of their system to meet existing and planned uses of the system:

1. A summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows.
2. A comparison of the summary referred to in paragraph 1 to the rated capacity and flow rates approved in the system's approval, drinking water works permit or municipal drinking water licence, or if the system is receiving all of its water from another system under an agreement pursuant to subsection 5 (4), to the flow rates specified in the written agreement."

-O. Reg. 170/03 s. 22 (3)

### SECTION 3: DAILY FLOW RATES

In accordance with the *Municipal Drinking Water Licence 225-104 Schedule C: System – Specific Conditions 1.0 Performance Limits*, the Geraldton drinking water system shall not be operated to exceed the rated capacity for maximum flow rate from the treatment subsystem to the distribution system of 6045 m<sup>3</sup> / day.

The drinking water system may be operated temporarily at a rate above the rated capacity where necessary for:

- (i) the purposes of fighting a large fire or,
- (ii) the maintenance of the drinking-water system

In 2016, the average monthly raw flow rate was 44719.33 m<sup>3</sup>; the average raw daily flow rate was 1467.57 m<sup>3</sup>, with a maximum raw daily flow rate of 2516.00 m<sup>3</sup>.

In 2016, the average monthly treated flow rate was 38520.00 m<sup>3</sup>; the average daily treated flow was 1264.31 m<sup>3</sup> and the maximum daily treated flow for the year was 3168.00 m<sup>3</sup>; this represents 52.4 % of the allowable daily volume.

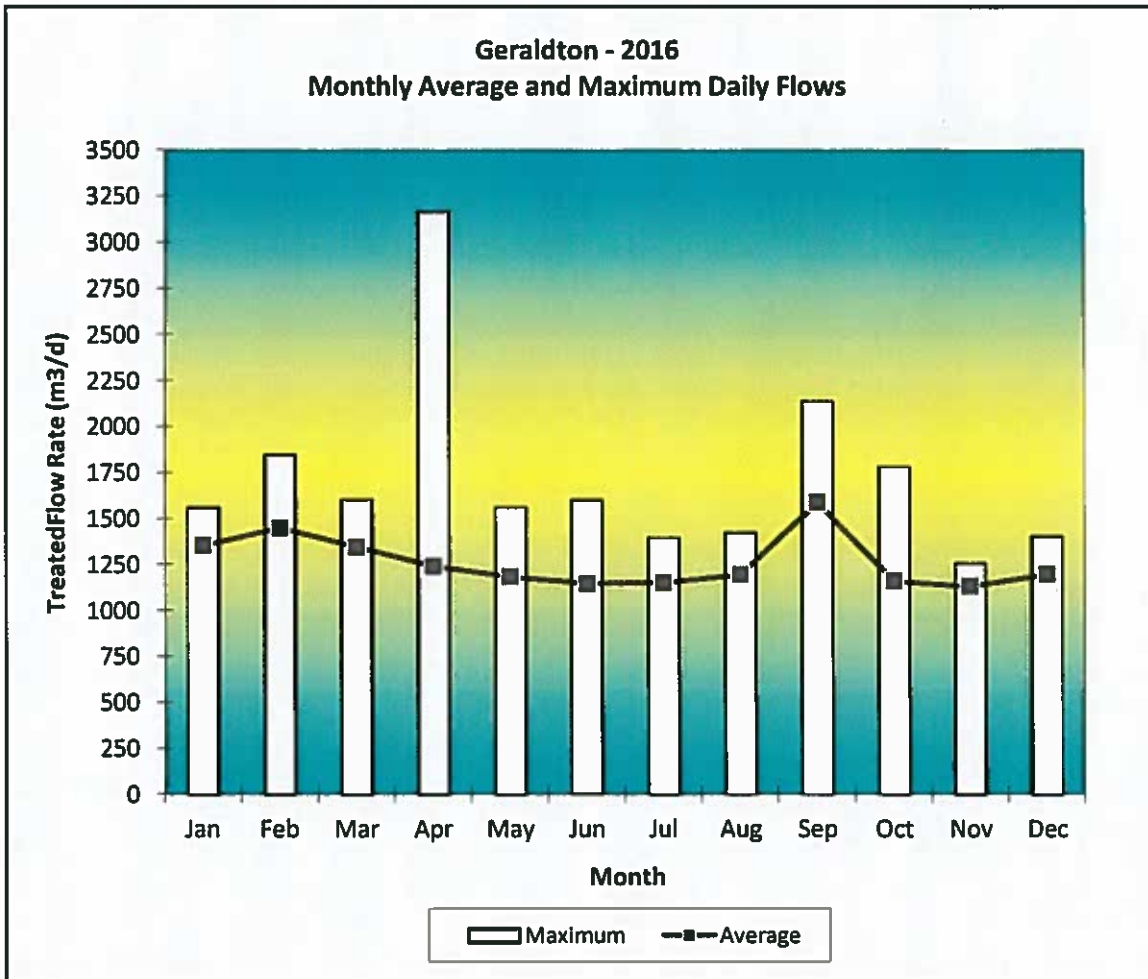
A summary of raw and treated flows, including maximum raw flow into the treatment system as well as treated average, maximum and total flow rates are included in the tables below.

The quantity of raw water supplied during the reporting period did not exceed the terms and conditions of the *Permit to Take Water* nor did the treated flows directed to the distribution system exceed the rated capacity for this system.

**Monthly Raw & Treated Flow Rates for 2016**

<b>Month</b>	<b>Average Daily Raw Flow Rate (m<sup>3</sup>/d)</b>	<b>Maximum Daily Raw Flow Rate (m<sup>3</sup>/d)</b>	<b>Average Daily Treated Flow Rate (m<sup>3</sup>/d)</b>	<b>Maximum Daily Treated Flow Rate (m<sup>3</sup>/d)</b>	<b>Total Monthly Treated Flow Rate (m<sup>3</sup>/ month)</b>
January	1558.39	1836.00	1353.32	1561.00	41953.00
February	1721.21	2232.00	1448.52	1849.00	343167.00
March	1542.77	1774.00	1345.45	1605.00	41709.00
April	1384.77	1569.00	1240.33	3168.00	37210.00
May	1368.55	1832.00	1182.58	1564.00	36660.00
June	1335.93	1729.00	1145.90	1600.00	34377.00
July	1326.26	1714.00	1148.74	1395.00	35611.00
August	1418.97	1658.00	1192.90	1424.00	36980.00
September	1803.83	2516.00	1587.23	2137.00	47617.00
October	1357.26	1864.00	1158.90	1781.00	35926.00
November	1336.37	1550.00	1130.93	1257.00	33928.00
December	1456.52	1707.00	1196.94	1402.00	37105.00
	<b>2016 Total Treated Flows (m<sup>3</sup>)</b>			<b>462243.00</b>	

## Comparison of Treated Monthly Average and Maximum Flows for 2016



### SECTION 4: SYSTEM FAILURES AND CORRECTIONS:

The Ministry of Environment conducted an *unannounced inspection* of the Geraldton Drinking-Water System on February 10, 11 and 12 2016. A summary of the findings and status of all *Non-Compliance with Regulatory Requirements and Actions Required* are outlined below.



<u>Item</u>	<u>Non-Compliance Identified</u>	<u>Compliance Date</u>	<u>Action Being Taken to Address Item</u>	<u>Status</u>
1	<p><b>Flow measuring devices were not calibrated or verified in accordance with the requirements of a Permit and Licence or Approval issued under Part V of the SDWA.</b>  The flow meters were verified on July 14, 2015.  The meters were verified with a reference instrument that had last been calibrated on December 7, 2013.  Reference instruments used to confirm the verification of other meters also need to be routinely calibrated.  <b>Action(s) Required:</b> A new reference instrument has since been purchased and the instrumentation technician confirmed that the reference instrument is now to be calibrated on an annual basis.</p>	No Date Specified	New reference meter purchased and to be annually calibrated	Complete
2	<p><b>Records did not indicate that the treatment equipment was operated in a manner that achieved the design capabilities required under Ontario Regulation 170/03 or a Permit, Licence or Approval issued under Part V of the SDWA at all times that water was being supplied to consumers.</b>  <b>CHLORINATOR FAILURE</b>  On October 5 and 6, 2015, low residuals in the Clearwell was the result of a failure of the chlorination system to provide the chlorine gas required for disinfection while the treatment process was producing water that was directed to the Clearwell.  Non-compliance with this question is not a reflection on how certified operators operated the plant.  Section 1-2. (2) 1. of the Drinking Water System Regulation requires that water treatment equipment is in operation whenever water is being supplied. Unfortunately the problem with the failure of the chlorination system could not be detected until the chlorine levels in the Clearwell had dropped to a level causing a low level chlorine residual to alarm in the water exiting the Clearwell. Once the operators were aware of the problem the lines on the chlorinator were changed and the problem was resolved. The operators purged the Clearwell of water by backwashing filters and wasting water through a hydrant outside the water treatment plant.  <b>Action(s) Required:</b> The Municipality of Greenstone and OCWA should consider installing a chlorine residual analyzer to monitor the chlorine residual prior to the Clearwell. This is not a mandatory requirement but a measure that has been adopted in other treatment plants to ensure that problems with the gas chlorination system are quickly detected.recommended.</p>	Not Specified	Investigating the option of installing additional analyzer to indicate chlorine presence before the clearwell.	In Process
3	<p><b>Up-to-date plans for the drinking-water system were not available in accordance with the Permit and Licence issued under Part V of the SDWA.</b>  Up-to-date process flow diagrams, process and instrumentation diagrams and record drawings and diagrams are a requirement of the Municipal Drinking Water Licence. A "Geraldton WTP P&amp;ID" was recently updated. The new P&amp;ID is dated March 12, 2015.  Alterations and programming of the filter-to-waste modifications were completed in 2014. The Municipality of Greenstone must ensure that all required diagrams are in place. Record drawings have not been updated with the filter-to-waste modification to the filtration processes.  <b>Action(s) Required:</b> By July 4, 2016, the Municipality of Greenstone</p>	July 4 2016	Reviewing the existing documentation and will update as required.	Complete

<u>Item</u>	<u>Non-Compliance Identified</u>	<u>Compliance Date</u>	<u>Action Being Taken to Address Item</u>	<u>Status</u>
	shall provide to the undersigned inspector a copy of the updated record drawing for the Geraldton water treatment plant.			
4	<p><b>The operations and maintenance manuals did not meet the requirements of the Permit and Licence or Approval issued under Part V of the SDWA.</b></p> <p>The previous past two inspections have noted some shortcomings or errors in Standard Operating Procedures (SOP). Two years ago it had also been identified that OCWA was planning a review of the SOP's and operations manual for the Geraldton Drinking Water System. Although a couple of new procedures have been created in the past couple of years, revisions and updating of procedures has not kept-up with changes at the water treatment plant. Aside for updates, some of the procedures are very minimal and do not provide the operators with information that could ensure better operation of the drinking water system and facilitate compliance. A review of the SOP's that are currently available to the staff show that many of the SOP's have not been updated. For example, the "Filter Backwashing" SOP, dated July 26, 2011, has not been updated since filter-to-waste was added and since the settling tubes and media were replaced. The procedure does not mention anything about the filter-to-waste cycle and contains out-dated information in the "Procedure" section of the SOP. The SOP identifies that air is injected and Operators have communicated that this is no longer part of the procedure.</p> <p><b>Action(s) Required:</b> By July 4, 2016, the Municipality of Greenstone shall provide the undersigned inspector with a report on the progress of updating Standard Operating Procedures.</p>	July 4 2016	The SOP's are being reviewed and will be revised as required.	Complete
5	<p><b>All For every required operational test and every required sample, a record was not made of the date, time, location, name of the person conducting the test and result of the test.</b></p> <p>A signature or initials are not always recorded along with the chlorine residuals that are measured in the distribution system. For example, this occurred on February 5, 12, and 27, 2015.</p> <p>The "Chain of Custody" for the samples submitted to the lab for analysis has a record of the free chlorine residuals and the time the residuals were measured. On a few occasions the free residual was not recorded on the Chain of Custody. On October 19, 2015, and November 9, 2015, the residuals for the treated water samples are not recorded on the forms. A record of free chlorine residual is recorded on the "Geraldton Water Treatment Plant Daily Rounds" sheet but are for a different time. No residual was recorded for the sample collected at the Medical Clinic on July 6, 2015.</p> <p><b>Action(s) Required:</b> This requirement was reviewed with the OIC at the time of the inspection. No further action is required unless the operating authority feels it is warranted.</p>	Not Specified	Discussed with the operators. Will identify process to ensure the residuals are consistently documented.	Complete
6	<p><b>All microbiological water quality monitoring requirements for distribution samples were not being met.</b></p> <p>A review of microbiological sampling in the distribution system finds that for the month of October 2015, a total of 12 samples were collected and analyzed for E. coli and total coliforms. However, only one sample was analyzed for heterotrophic plate count, HPC.</p> <p><b>Action(s) Required:</b></p>	Not Specified	Miscommunication (settled)	Complete

<u>Item</u>	<u>Non-Compliance Identified</u>	<u>Compliance Date</u>	<u>Action Being Taken to Address Item</u>	<u>Status</u>
	The operating authority should assess whether there are any measures that need to be taken to ensure that all of the required bacteriological analysis is completed.			
7	<p><b>All specified corrective actions (as per Schedule 17) were not taken to address adverse conditions.</b></p> <p>Total coliforms were detected on two occasions and reported as AWQI's: #125282 on July 28, 2015, and #125308 on July 29, 2015. The second AWQI was on the sample collected as part of the corrective actions.</p> <p>The corrective actions required for the presence of total coliforms is to "resample and test". This is found in the Drinking Water Systems Regulation, O. Reg. 170/03, Schedule 17, Section 17-6. "Resample and test" is defined in Section 1. (1) of the Drinking Water Systems Regulation and means, "(a) with respect to corrective action that arises from the test of a water sample for a microbiological parameter, (i) take a set of water samples, at approximately the same time, with,</p> <p>(A) at least one sample from the same location as the sample that gave rise to the corrective action,</p> <p>(B) at least one sample from a location that is a significant distance upstream from the location described in sub-subclause (A), if that is reasonable possible, and</p> <p>(C) at least one sample from a location that is a significant distance downstream from the location described in sub-subclause (A), if that is reasonably possible, and</p> <p>(ii) conduct, on the samples taken under subclause (i), the same test that gave rise to the corrective action."</p> <p>For AWQI's #125282 and #125308, only one sample, at the location that gave rise to the AWQI, was collected. Upstream and downstream samples were not collected and analyzed for total coliforms.</p> <p><b>Action(s) Required:</b></p> <p>Total coliforms were detected in a sample collected from the distribution system and reported as AWQI #126795 on October 8, 2015. The corrective actions that were taken to resolve this incident included collecting a sample from the site that had contained total coliforms as well as from two additional sampling locations. The undersigned inspector assumes that these locations were up and down stream from the site of the adverse sample.</p>	June 30 2015	Review with the operators the definition of resample as defined in 170. Will include the definition of resample in adverse sampling SOP.	Complete
8	<p><b>All changes to the system registration information were not provided within ten (10) days of the change.</b></p> <p>The contact listed for the facility is a former OCWA employee who has retired.</p> <p><b>Action(s) Required:</b></p> <p>The Municipality of Greenstone must update the contact information and forward the undersigned inspector an email notification upon completion of this task.</p>	Not Specified	The DWIS has been updated.	Complete

A Summary of Best Practice Issues and Recommendations identified during the inspection period was provided to the owner and operating authority for their consideration. The final 2015 inspection rating record for the Geraldton Drinking-Water System was 86.47%.

**SECTION 5: CONCLUSION**

In the reporting year of 2016, there were nineteen adverse water quality incident (AWQI) reports filed as summarized below.

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
17-Feb-16	Other Observation - Low pressure due to water break repair Main St and Benner. 4 homes and 1 business			Repair, Flush, Collect 2 bacteriological samples	25-Feb-16
7-Mar-16	Other Observation - Low pressure due to water break repair Main St 1 business			Repair, Flush, Collect 2 bacteriological samples	14-Mar-16
31-Mar-16	Microbiological - TC present in Distribution sample - Dans General Store	Present		Flush and Resample	11-Apr-16
21-Apr-16	Other Observation - Low pressure due to water break repair 8 residences and 1 business			Repair, Flush, Collect 2 bacteriological samples	28-Apr-16
10-May-16	Other Observation - Low pressure due to water break repair 1 residence and 2 business			Repair, Flush, Collect 2 bacteriological samples	16-May-16
29-Jun-16	Other Observation - Low pressure due to water repair 3 residence and 3 business			Repair, Flush, Collect 2 bacteriological samples	12-Jul-16
10-Aug-16	Other Observation - Low pressure due to water repair 9 residence and Family Resource Center			Repair, Flush, Collect 2 bacteriological samples	18-Aug-16
16-Aug-16	Other Observation - Low pressure due to water repair 3 residence, 1 apartment building and Community Living Office			Repair, Flush, Collect 2 bacteriological samples	19-Aug-16
16-Sep-16	Other Observation - Low pressure due to water break repair 1 business and 4 apartments			Repair, Flush, Collect 2 bacteriological samples	25-Oct-16
16-Sep-16	Other Observation - Low pressure due to water main relining at 1 business. Business request temp untested connection.			, Collect 2 bacteriological samples	22-Sep-16

The inspection found the plant to be producing good quality water. The treated water samples at the plant were shown to be free of bacteriological contaminants and met the Ontario Drinking Water Quality Standards. The distribution system had one samples containing Total Coliform. The resamples at this location was free of bacteriological contaminants.

For the operating year of 2016, the Geraldton Drinking-Water System was able to meet the demand of water use within the town without exceeding the Municipal Drinking Water Licence and Permit to Take Water.