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January 22, 2019

The Corporation of the Township of Alnwick/Haldimand  
10836 County Road 2  
Grafton, Ontario K0K 2G0

Attention: Robin Van De Moosdyk

**RE: Grafton Drinking Water System (220009158)  
Drinking Water Inspection Report 1-ID49A**  
**File: SI NO HL ED 540**

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Please find attached the Ministry of the Environment's inspection report for the above facility. The report details the findings of the inspection that began on December 11, 2018.

In the inspection report, any "*Actions Required*" are linked to incidents of non-compliance with regulatory requirements contained within the Act, a regulation, or site-specific approvals, licenses, permits, orders or instructions. Such violations could result in the issuance of mandatory abatement instruments including Orders, tickets, penalties, or referrals to the ministry's Investigations and Enforcement Branch.

*"Recommended Actions"* convey information that the owner or operating authority should consider implementing in order to advance efforts already in place to address such issues as emergency preparedness, the availability of information to consumers, and conformance with existing and emerging industrial standards. Please note that items which appear as recommended actions do not, in themselves, constitute violations.

Section 19 of the Safe Drinking Water Act (Standard of Care) creates a number of obligations for individuals who exercise decision-making authority over municipal drinking water systems. Please be aware that the Ministry has encouraged such individuals, particularly municipal councillors, to take steps to be better informed about the drinking water systems over which they have decision-making authority. These steps could include asking for a copy of this inspection report and a review of its findings. Further information about Section 19 can be found in "*Taking Care of Your Drinking Water: A guide for members of municipal council*" found under "Resources" on the Drinking Water Ontario website at [www.ontario.ca/drinkingwater](http://www.ontario.ca/drinkingwater).

I would like to thank the staff for the assistance afforded to me during this compliance assessment. If you have any questions or concerns please contact myself or Jacqueline Fuller, Water Compliance Supervisor, at 705-755-4328.

Yours truly,



*Brittney Wielgos*

Water Inspector

Ministry of the Environment, Conservation and Parks

Drinking Water and Environmental Compliance Division

300 Water Street, 2nd Floor South

Peterborough, ON K9J 3C7

705-755-4329

cc:

Larry Spyrka, Manager of Water Systems, Lakefront Utility Services Inc.

Dr. Lynn Noseworthy, Medical Officer of Health, Haliburton, Kawartha, Pine Ridge District Health Unit

Glenda Rogers, General Manager, Lower Trent Conservation

Jacqueline Fuller, Supervisor, Peterborough District Office, MECP



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# Ontario

Ministry of the Environment, Conservation and Parks

## GRAFTON DRINKING WATER SYSTEM

### Inspection Report

<b>Site Number:</b>	220009158
<b>Inspection Number:</b>	1-ID49A
<b>Date of Inspection:</b>	Dec 11, 2018
<b>Inspected By:</b>	Brittney Wielgos

**OWNER INFORMATION:**

<b>Company Name:</b>	ALNWICK/HALDIMAND, THE CORPORATION OF THE TOWNSHIP OF		
<b>Street Number:</b>	10836	<b>Unit Identifier:</b>	
<b>Street Name:</b>	COUNTY ROAD 2 Rd		
<b>City:</b>	GRAFTON		
<b>Province:</b>	ON	<b>Postal Code:</b>	K0K 2G0

**CONTACT INFORMATION**

<b>Type:</b>	Owner	<b>Name:</b>	Robin Van De Moosdyk
<b>Phone:</b>	(905) 349-2822 x32	<b>Fax:</b>	(905) 349-3259
<b>Email:</b>	rvandemoosdyk@alnwickhaldimand.ca		
<b>Title:</b>	CAO/Municipal Clerk		

<b>Type:</b>	Operating Authority	<b>Name:</b>	Larry Spyrka
<b>Phone:</b>	(905) 372-2193 xt5238	<b>Fax:</b>	(905) 372-2581
<b>Email:</b>	lspyrka@lusi.on.ca		
<b>Title:</b>	Manager of Water Systems		

<b>Type:</b>	Operating Authority	<b>Name:</b>	Sarah Whitton
<b>Phone:</b>	(905) 372-2193	<b>Fax:</b>	
<b>Email:</b>	swhitton@lusi.on.ca		
<b>Title:</b>	Water Compliance Coordinator		

**INSPECTION DETAILS:**

<b>Site Name:</b>	GRAFTON DRINKING WATER SYSTEM
<b>Site Address:</b>	434 Edwardson Rd W 434, EDWARDSON ROAD, GRAFTON ON K0K 2G0
<b>County/District:</b>	Alnwick/Haldimand
<b>MECP District/Area Office:</b>	Peterborough District
<b>Health Unit:</b>	HALIBURTON, KAWARTHA, PINE RIDGE DISTRICT HEALTH UNIT
<b>Conservation Authority:</b>	Lower Trent Conservation
<b>MNR Office:</b>	
<b>Category:</b>	Large Municipal Residential
<b>Site Number:</b>	220009158
<b>Inspection Type:</b>	Announced
<b>Inspection Number:</b>	1-ID49A
<b>Date of Inspection:</b>	Dec 11, 2018
<b>Date of Previous Inspection:</b>	Sep 19, 2017

**COMPONENTS DESCRIPTION**

<b>Site (Name):</b>	MOE DWS Mapping	<b>Sub Type:</b>	Other
<b>Type:</b>	DWS Mapping Point		

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**Site (Name):** RAW WATER – PRODUCTION WELL #1 (EAST WELL)  
**Type:** Source **Sub Type:** Ground Water

**Comments:**  
The production Well #1 is located in Lots 22 and 23, Concession 1, Township of Haldimand. The well is situated approximately 15 m northwest of the water treatment and storage works and 60 metres south of Cranberry Lake. The well is equipped with a 150 mm submersible pump having a rated capacity of 14.5 L/s at a total dynamic head (TDH) of 69 m, 200 mm diameter pitless adaptor and a 100 mm raw watermain connected to the raw water header in the treatment building.

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**Site (Name):** RAW WATER - PRODUCTION WELL #2 (WEST WELL)  
**Type:** Source **Sub Type:** Ground Water

**Comments:**  
The production Well #2 is located in Lots 22 and 23, Concession 1, Township of Haldimand. The well is situated approximately 100 m west of the production Well #1 and 40 metres south of Cranberry Lake. The well is equipped with a 250 mm diameter pitless adaptor, 150 mm submersible pump having a rated capacity of 14.5 L/s at a TDH of 75 m and a 100 mm raw watermain connected to the raw water header in the treatment building.

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**Site (Name):** TREATED WATER - TREATMENT FACILITY  
**Type:** Treated Water POE **Sub Type:** Treatment Facility

**Comments:**  
A treatment, storage and high lift pumping station facility located approximately 190 m west of County Road 23 and north of Edwardson Street on Lot 22, Concession 1, Township of Alwrick/Haldimand. Water is supplied to the treatment facility via the submersible pumps where sodium hypochlorite is added for primary disinfection. Sodium silicate is then injected for iron and manganese sequestering. The water then goes to the chlorine contact tank prior to being pumped into the distribution system. There is a continuous online chlorine analyzer to verify that primary disinfection has been achieved as treated water leaves the plant.

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**Site (Name):** DISTRIBUTION WATER  
**Type:** Other **Sub Type:** Other

**Comments:**  
The water distribution system was constructed in 1995 and consists of approximately 13 kilometers of plastic PVC watermain ranging from 150 mm to 300 mm in diameter.

There are 113 hydrants on the system. All water services are metered and required to be protected by a backflow device and pressure reducing valve. There are 286 service connections associated with this system.

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## INSPECTION SUMMARY:

### Introduction

- **The primary focus of this inspection is to confirm compliance with Ministry of the Environment, Conservation and Parks (MECP) legislation as well as evaluating conformance with ministry drinking water policies and guidelines during the inspection period. The ministry utilizes a comprehensive, multi-barrier approach in the inspection of water systems that focuses on the source, treatment, and distribution components as well as management practices.**

**This drinking water system is subject to the legislative requirements of the Safe Drinking Water Act, 2002 (SDWA) and regulations made therein, including Ontario Regulation 170/03, "Drinking Water Systems" (O.Reg. 170/03). This inspection has been conducted pursuant to Section 81 of the SDWA.**

**This inspection report does not suggest that all applicable legislation and regulations were evaluated. It remains the responsibility of the owner to ensure compliance with all applicable legislative and regulatory requirements.**

On December 11, 2018, Provincial Officer Brittney Wielgos began an announced detailed inspection of the Grafton Drinking Water System.

The Grafton Drinking Water System (the System) is owned by the Corporation of the Township of Alnwick/Haldimand and operated by Lakefront Utility Services Inc. (LUSI). The water treatment plant is located in the Hamlet of Grafton at 434 Edwardson Road, Lot 24, Concession 1 in the Township of Alnwick/Haldimand, County of Northumberland.

The System has a rated capacity of 1,253 cubic meters per day (m<sup>3</sup>/day). The Grafton Water Distribution and Supply is classified as a Class 3 Water Distribution and Supply Subsystem.

The System delivers treated water through approximately thirteen (13) kilometers of watermains ranging in diameter sizes from 150 mm to 300 mm in four (4) pressure zones. Source water is provided by two (2) secure ground water wells. The System provides potable water to a population of approximately 1,000.

The inspection included a compliance assessment of applicable Ministry of Environment, Conservation and Parks (MECP) legislation, an inspection of the procedures used within the treatment and distribution system, and a review of records.

Records reviewed in conjunction with this inspection include:

- Drinking Water Works Licence No. 238-101 Issue Number 2 (The Licence); and,
- Drinking Water Works Permit No. 238-201 Issue Number 2 (The Permit)

This inspection was conducted pursuant to section 81 of the Safe Drinking Water Act in order to assess compliance with the requirements of Ontario Regulation 170/03. The drinking water inspection included: physical inspections of the equipment and facilities; interviews with operating authority staff; and, a review of relevant documents from the period of September 19, 2017 to December 11, 2018 (hereafter referred to as the "inspection review period").

### Source

- **The owner was maintaining the production well(s) in a manner sufficient to prevent entry into the well of surface water and other foreign materials.**

### Source

Source water for the Grafton Drinking Water System is obtained from two (2) groundwater wells identified as well No. PW1 and PW2. Both wells are located at 434 Edwardson Road, Grafton. PW2 is used as the primary production well and PW1 is used for back-up purposes only as it is influenced by a natural source of ammonia.

LUSI performs monthly inspections of the production wells, as described in procedure W06 'Well Inspection and Maintenance'. Most recently a visual inspection as performed on November 15, 2018.

There were no concerns identified following a visual inspection of the casing and the immediate area around each well. Furthermore, no concerns were detected following the review of the raw water quality data for the inspection review period.

- **The owner was maintaining the municipal wells not being used as a raw water supply in a manner to prevent the entry of surface water and other foreign materials.**

The System contains three (3) monitoring wells located upgradient of Highway 401 and approximately halfway between the Closed Grafton Landfill and Production Wells No. PW1 and PW2; one test well near the production wells; six (6) local wells and three (3) Closed Grafton Landfill monitoring well nests.

As described in procedure W06 'Well Inspection and Maintenance', the 3 monitoring wells are under the jurisdiction of Geo Kamp Limited, who have been retained to fulfill all of the annual requirements contained in the Permit to Take Water (PTTW) No. 5086-9BM4A to complete the Production Well Monitoring Program. Geo Kamp performs visual inspections of the monitoring wells on a quarterly basis, when water level measurements are taken, as well as annually, during sample collection for water quality analysis.

A review of the Hamlet of Grafton Production Well Monitoring Program 2017 Annual Report, dated January 31, 2018, prepared by Geo Kamp Limited, indicates the concentrations are below the trigger level for all samples collected in 2017.

- **Measures were in place to protect the groundwater and/or GUDI source in accordance with any the Municipal Drinking Water Licence and Drinking Water Works Permit issued under Part V of the SDWA.**

Condition 16.2.8, 16.2.9 and 16.2.10 of the Municipal Drinking Water Licence 238-101 requires an inspection schedule, maintenance procedure and remedial action plan for all wells associated with the drinking water system.

LUSI utilizes W06 'Well Inspection and Maintenance' procedure which outlines the inspection and maintenance of the Grafton Water System production and monitoring wells. LUSI performs monthly visual inspection of the production wells and internal inspection are conducted every ten (10) years or when one of the well pumps and/or check valves fail, require removal and/or replacement. A work order is generated for the monthly well inspection through a maintenance management system called Track Pro.

As described earlier, Geo Kamp Limited visually inspects the monitoring wells and fulfills the annual requirements contained in the PTTW to complete the Production Well Monitoring Program.

Completed work orders of the well inspections were reviewed during the inspection.

- **Trends in source water quality were being monitored.**

### Permit To Take Water

- **The owner was in compliance with all conditions of the PTTW.**



### Permit To Take Water

A Permit to Take Water (PTTW), number # 5086-9BPM4A, was issued for the Corporation of the Township of Alnwick/Haldimand. For the purpose of this inspection, the Term and Conditions pertaining to the Grafton Drinking Water System were assessed. The permit expires on September 30, 2023. There are two (2) production sources in the Grafton Drinking Water System, both are listed in their PTTW.

The permitted maximum flow rate for the two (2) production wells are as follows:

PW1 - 870 L/minute (14.5 L/sec) and 1252.8 m<sup>3</sup>/day  
PW2 - 870 L/minute (14.5 L/sec) and 1252.8 m<sup>3</sup>/day

Review of records indicate the daily flow limits were met.

### Capacity Assessment

- **There was sufficient monitoring of flow as required by the Municipal Drinking Water Licence or Drinking Water Works Permit issued under Part V of the SDWA.**

At the time of the inspection sufficient flow meters were installed to permit the continuous measurement of the flow rates and daily volume of treated water that flows from the treatment subsystem into the distribution system in accordance with Condition 2 of Schedule C of the Licence.

- **The flow measuring devices were calibrated or verified in accordance with the requirements of the Municipal Drinking Water Licence issued under Part V of the SDWA.**

Calibration records for the flow meters were reviewed for the inspection period. The flow meters are being calibrated at least every year in accordance with the Condition 3.0 of Schedule C of the Licence.

- **The owner was in compliance with the conditions associated with maximum flow rate or the rated capacity conditions in the Municipal Drinking Water Licence issued under Part V of the SDWA.**

Condition 1.1 of Schedule C of the Licence requires that the System not be operated to exceed the rated capacity of:

Grafton Pumphouse: 1,253 m<sup>3</sup>/day

The rated capacity was not exceeded during the inspection review period.

- **Appropriate records of flows and any capacity exceedances were made in accordance with the Municipal Drinking Water Licence issued under Part V of the SDWA.**

### Treatment Processes

- **The owner had ensured that all equipment was installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit.**

The Drinking Water Works Permit Number 238-201 outlines the equipment installed throughout the Grafton Water Supply Plant which includes the ground water supply, pumphouse and on-site storage.

During the physical inspection, a comparison between the equipment described in the permit and the equipment installed on site was performed.

- **The owner/operating authority was in compliance with the requirement to prepare Form 2 documents as required by their Drinking Water Works Permit during the inspection period.**

Form 2 documents reviewed suggests that the documents were prepared in accordance with the Drinking Water

### Treatment Processes

Works Permit.

- **Records indicated that the treatment equipment was operated in a manner that achieved the design capabilities required under Ontario Regulation 170/03 or a Drinking Water Works Permit and/or Municipal Drinking Water Licence issued under Part V of the SDWA at all times that water was being supplied to consumers.**

Section 1-3 of Schedule 1 of O. Reg. 170/03 states that the Owner of a drinking water system that obtains water from a raw water supply that is ground water shall ensure provision of water treatment equipment that is designed to be capable of achieving, at all times, primary disinfection in accordance with the Ministry's Procedure for Disinfection of Drinking Water in Ontario, including at least 99 per cent removal or inactivation of viruses by the time water enters the distribution system.

The System consists of two (2) wells each equipped with a submersible pump. The well water is pumped from one of the two wells to the raw water header in the treatment building. Treatment consists of chlorination for disinfection purposes and the addition of sodium silicate for iron sequestering.

Contact time is achieved via two (2) interconnected underground clearwells, each well is 525 m<sup>3</sup>, followed by two (2) 125m<sup>3</sup> pumping wells. The online free chlorine analyser measure the effluent free chlorine and will alarm at a high free chlorine level of 2.15 mg/L and a low free chlorine level of 0.6 mg/L.

A review of records indicates that treatment equipment was operated in accordance with the design capabilities during the inspection review period.

- **Records confirmed that the water treatment equipment which provides chlorination or chloramination for secondary disinfection purposes was operated so that at all times and all locations in the distribution system the chlorine residual was never less than 0.05 mg/l free or 0.25 mg/l combined.**

A review of free chlorine residual grab samples taken from the Grafton distribution system indicate that the free chlorine residual was greater than 0.05 mg/L at all times during the inspection review period. The minimum free chlorine residual measured during the inspection review period was 0.82 mg/L.

- **The owner had evidence indicating that all chemicals and materials that come in contact with water within the drinking water system met the AWWA and ANSI standards in accordance with the Municipal Drinking Water Licence and Drinking Water Works Permit issued under Part V of the SDWA.**

LUSI utilises a purchases procedure referenced as P08 - Essential Supplies and Services which outlines the process for purchasing items for the System. The procedure identifies all essential suppliers and service providers are required to sign a 'Notice to Essential Suppliers and Service Providers' memo outlining the requirements for all chemicals and components to meet ANSI/NSF standards. Furthermore, the procedure states that all purchased products shall be verified prior use or application.

LUSI provided manufacture ANSI/NSF certification for all chemicals used during the inspection review period.

- **Up-to-date plans for the drinking-water system were kept in a place, or made available in such a manner, that they could be readily viewed by all persons responsible for all or part of the operation of the drinking water system in accordance with the Drinking Water Works Permit and Municipal Drinking Water Licence issued under Part V of the SDWA.**

At the time of the inspection plans and drawings were last updated August 2010 and available for review.

### Treatment Process Monitoring

- **Primary disinfection chlorine monitoring was conducted at a location approved by Municipal Drinking**

### Treatment Process Monitoring

**Water Licence and/or Drinking Water Works Permit issued under Part V of the SDWA, or at/near a location where the intended CT has just been achieved.**

The System is equipped with three (3) online continuous analysers to monitor chlorine. The inlet analyser is used to ensure that sodium hypochlorite is being dosed and has a high alarm set to 2.35 mg/L and a low alarm set to 0.75 mg/L; the outlet analyser monitors primary disinfection and has a high alarm set point at 2.1 mg/L and a low set at 0.7 mg/L; the secondary outlet analyser is used as back-up and monitors treated water before it enters the distribution system, it has a high alarm of 1.95 mg/L and a low alarm of 0.75 mg/L.

- **Operators were aware of the operational criteria necessary to achieve primary disinfection within the drinking water system.**

LUSI operators utilize procedure W05 "Chlorine Contact Time" which describes how the System achieves CT under normal operating conditions and under worst case scenario.

Process readings used to calculate CT are recorded through SCADA, including plant influent and effluent flows and chlorine residuals. The primary chlorine residual analyzer monitors the inlet clear well, while the post chlorine analyzer monitors the discharge header.

Additionally, LUSI has developed a 'Chlorine Contact Time - Calculation Procedure' with data required to calculate CT under worst case scenario.

- **The secondary disinfectant residual was measured as required for the distribution system.**

Section 7-2 (3) of Schedule 7 of O.Reg.170/03 requires the owner of a large municipal residential system that provides secondary disinfection and the operating authority for the system shall ensure that at least seven distribution samples are taken each week in accordance with subsection (4) and are tested immediately for, (a) free chlorine residual, if the system provides chlorination and does not provide chloramination; or (b) combined chlorine residual, if the system provides chloramination.

Unless one sample is collected each day of the week, four (4) of the samples must be taken on one day of the week and three (3) of the samples are to be taken on a second day of the week, at least 48 hours after the last sample was taken on the previous day in the same week.

LUSI operators collect one chlorine residual each day from the distribution system and record it on form FR401 "Daily Operational Checks". Additionally, at least three (3) chlorine residual samples from the distribution system each week while conducting routine distribution microbiological.

- **Operators were examining continuous monitoring test results and they were examining the results within 72 hours of the test.**

The System is inspected on a daily basis by a licenced operator to monitor the process, perform operational duties, maintenance and respond to customer concerns as described in procedure P06 "Personnel Coverage". The Township has installed a SCADA system that continuously monitors process parameters. Daily checks include reviewing the previous 24 hour SCADA trending.

The SCADA system is equipped with an auto-dialler that has been programmed to contact the answering service or LUSI personnel whenever conditions deviate from the program setting.

- **Samples for chlorine residual analysis were tested using an acceptable portable device.**
- **All continuous monitoring equipment utilized for sampling and testing required by O. Reg.170/03, or Municipal Drinking Water Licence or Drinking Water Works Permit or order, were equipped with alarms or**

### Treatment Process Monitoring

#### **shut-off mechanisms that satisfy the standards described in Schedule 6.**

At the time of the inspection, the continuous monitoring equipment utilized for sampling and testing of chlorine were set with the following alarm set points.

#### Minimum Alarm Set Points:

Inlet analyser - Low: 0.75 mg/L; Low-Low: 0.7 mg/L  
Outlet Analyser - Low: 0.7 mg/L; Low-Low: 0.6mg/L  
Secondary outlet - Low: 0.75 mg/L; Low-Low: 0.7 mg/L

#### Maximum Alarm Set Points:

Inlet analyser - High: 2.35 mg/L; High-High: 2.4 mg/L  
Outlet Analyser- High: 2.1mg/L; High-High: 2.15 mg/L  
Secondary outlet - High: 1.95 mg/L; High-High: 2.0 mg/L

The inlet analyser is used to ensure sodium hypochlorite is being properly dosed; the outlet analyser is used for primary disinfection purpose and the secondary outlet analyser is for maintenance.

- **Continuous monitoring equipment that was being utilized to fulfill O. Reg. 170/03 requirements was performing tests for the parameters with at least the minimum frequency specified in the Table in Schedule 6 of O. Reg. 170/03 and recording data with the prescribed format.**
- **All continuous analysers were calibrated, maintained, and operated, in accordance with the manufacturer's instructions or the regulation.**

### Distribution System

- **There is a backflow prevention program, policy and/or bylaw in place.**

The Township of Alnwick/Haldimand utilizes By-Law number 40-2013 to regulate cross-connection and backflow prevention in private plumbing systems as required to protect the drinking water supply and distribution system from contamination. The By-law applies to existing and future industrial, commercial, institutional and multi-residential buildings and structures.

The Bylaw requires the annual testing of the backflow prevention device by a certified tester to demonstrate that the backflow prevention device is in good working condition.

Additionally, the By-law applies where a condition exists in any new or existing building or structure that may be hazardous or detrimental to the potable water supply.

- **The owner did not have a program or maintained a schedule for routine cleanout, inspection and maintenance of reservoirs and elevated storage tanks within the distribution system.**

The Grafton Drinking Water System consists of two (2) interconnected underground clearwells. According to the Grafton Waterworks Operations Manual Section F.10.110, a yearly maintenance schedule is necessary to make a visual inspection of the integrity of the concrete surface and to cleanout the precipitate form the bottom of the clearwell.

The last inspection of the clear well was completed in April 2014. Currently, LUSI does not have an inspection schedule for the visual inspection or routine cleanout of the clearwells.

- **Existing parts of the distribution system that are taken out of service for inspection, repair or other activities that may lead to contamination, and all new parts of the distribution system that come in contact**

## Distribution System

with drinking water, were disinfected in accordance with Schedule B, Condition 2.3 of the Drinking Water Works Permit, or an equivalent procedure (i.e. the Watermain Disinfection Procedure).

Condition 2.3 of the Permit requires all parts of the system in contact with drinking water which are added, modified, replaced, extended, or taken out of service for inspection, repair or other activities that may lead to contamination, be disinfected before being put into service in accordance with the provisions of the AWWA C651 - Standard for Disinfecting Watermains, or an equivalent procedure.

LUSI utilizes emergency response procedure ERP 06 "Distribution System Failure" to identify and respond to any distribution system malfunctions that may occur. The procedure reference AWWA Standard and the MECP Watermain Disinfection Procedure.

- **The owner had implemented a program for the flushing of watermains as per industry standards.**

LUSI has implemented an annual flushing program, last completed in June 2018 and utilize SOP-HYD-007 'Annual Flushing'. Areas known to have older mains are directionally flushed to achieve optimal results.

Hydrant flushing records were provided for review Operators identify the hydrant asset number and record the follow: date; location; start/stop time; turbidity; free chlorine; operator performing the flushing and any comments regarding the condition or the accessibility of the hydrant. Furthermore, all hydrants have been flow tested and colour coded based on fire flows as per NFPA.

- **Records confirmed that disinfectant residuals were routinely checked at the extremities and "dead ends" of the distribution system.**

During annual flushing, the distribution system is flushed and disinfectant residuals are monitored and recorded at dead end extremities.

- **A program was in place for inspecting and exercising valves.**

LUSI has developed and implemented a valve exercise program on a three (3) year rotational basis.

- **There was a program in place for inspecting and operating hydrants.**

Hydrant inspection and maintenance is performed during annual flushing.

- **There was a by-law or policy in place limiting access to hydrants.**

The Town of Alnwick/Haldimand enforces By-Law No.40-2013 to enforce hydrant use and maintenance.

Section 6.0 of By-Law No.40-2013 requires that no person, except for the certified operators of the Operating Authority shall operate a hydrant, except in an emergency when the Authorized Personnel of the Township of Alnwick/Haldimand Fire Department shall have the right to operate a hydrant.

- **The owner was able to maintain proper pressures in the distribution system and pressure was monitored to alert the operator of conditions which may lead to loss of pressure below the value under which the system is designed to operate.**

The water distribution system consists of approximately 13 kilometers of watermains ranging in diameter from 150 mm to 300 mm. The distribution system is separated into four (4) pressure zones, each with its own pressure-reducing valves to maintain the pressure between 40-90 psi.

Furthermore, the System is equipped with two (2) magnetic flow meters to record the influent flows from the wells and plant effluent flows. Pressure is monitored in SCADA at the plant effluent, LUSI utilizes procedure CRP02 - System pressure to respond to system pressure alarms.

### Distribution System

System pressure critical limit alarms:  
Low Alarm: 210 KPa (30 psi)  
High Alarm: 515 KPa (75 psi)

### Operations Manuals

- **Operators and maintenance personnel had ready access to operations and maintenance manuals.**
- **The operations and maintenance manuals contained plans, drawings and process descriptions sufficient for the safe and efficient operation of the system.**
- **The operations and maintenance manuals met the requirements of the Drinking Water Works Permit and Municipal Drinking Water Licence issued under Part V of the SDWA.**

### Logbooks

- **Logbooks were properly maintained and contained the required information.**

The System is inspected daily by an operator. During each visit the operator inspects all treatment processes, reviews trending, performs daily sampling and ensures all equipment is in proper operation. All site visits are documented on the daily operational log sheets and in the facility logbook and include details such as the operators first and last name; check for OIC; shift period; time of activity and details of operational activities.

- **Records or other record keeping mechanisms confirmed that operational testing not performed by continuous monitoring equipment was being done by a certified operator, water quality analyst, or person who suffices the requirements of O. Reg. 170/03 7-5.**

Based on the review of records during the inspection review period, it appears that only certified operators performed operational tests.

- **For every required operational test and every required sample, a record was made of the date, time, location, name of the person conducting the test and result of the test.**
- **The operator-in-charge ensured that records were maintained of all adjustments made to the processes within his or her responsibility.**
- **Logs or other record keeping mechanisms were available for at least five (5) years.**

### Contingency/Emergency Planning

- **Spill containment was provided for process chemicals and/or standby power generator fuel.**
- **Clean-up equipment and materials were in place for the clean up of spills.**
- **Standby power generators were tested under normal load conditions.**

The Grafton well pumphouse is equipped with a standby diesel engine driven generator set rated at 235 kW/ 294 kVA with two (2) fuel storage tanks and spill containment. The generator is tested on a monthly basis.

### Security

### Security

- **All storage facilities were completely covered and secure.**

The System has two (2) interconnected underground clearwells located at the treatment plant. The clearwells are equipped with secure access hatches.

- **Air vents and overflows associated with reservoirs and elevated storage structures were equipped with screens.**
- **The owner had provided security measures to protect components of the drinking water system.**

### Consumer Relations

- **The owner and/or operating authority undertook efforts to promote water conservation and reduce water losses in their system.**

The Township of Alnwick/Haldimand enforces By-Law No. 40-2013 to regulate the supply and use of water within the Township.

The By-law describes no personal discharge or permit the discharge of water upon land between the hours of 5:00 am and 8:00 am and between the hours of 7:00 pm and 10:00 pm for the months of June, July and August. The By-law outlines an even numbered address may use water outdoors on even numbered days and an odd numbered address may use water outdoors only on odd numbered days during the months of June, July and August.

### Certification and Training

- **The overall responsible operator had been designated for each subsystem.**

Subsection 23(1) of O. Reg. 128/04 "Certification of Drinking-Water System Operators and Water Quality Analysts" states that a municipal residential drinking water system must have a designated overall responsible operator (ORO). The ORO shall be an operator who holds a certificate for that type of subsystem (e.g. water distribution subsystem) and that is of the same class or higher than the class of that subsystem.

LUSI established procedure P30 "Overall Responsible Operator" to ensure that the designation of the Overall Responsible Operator (ORO) is clearly defined and documented. LUSI appoints the Manager of Water Systems as the ORO for the Grafton Drinking Water System. Operators identify the ORO in the logbook each day of the year during daily system checks.

The Grafton Drinking Water System is a Water Distribution and Supply Subsystem Class 3. During the inspection review period, Larry Spyrka, Manager of Water Systems possessed a Water Distribution and Supply Subsystem Class 3 certification that expires on May 3, 2020 and a Water Treatment Subsystem Class 3 certificate that expires on October 31, 2020.

During the inspection review period, the ORO and alternates possessed the appropriate operator certificates to serve in this capacity.

- **Operators in charge had been designated for all subsystems which comprised the drinking-water system.**

LUSI designates all operators with the exception of Operators in Training as Operator in Charge (OIC). The OIC is identified each day in the daily logbook.

- **All activities that were undertaken by uncertified persons in the DW subsystems were overseen by persons having the prescribed qualifications.**

### Certification and Training

- All operators possessed the required certification.
- Only certified operators made adjustments to the treatment equipment.
- An adequately licenced operator was designated to act in place of the overall responsible operator when the overall responsible operator was unable to act.

### Water Quality Monitoring

- **All microbiological water quality monitoring requirements for raw water samples were being met.**

Section 10-4 of Schedule 10 of O.Reg.170/03 requires the owner or operating authority of the drinking water system shall ensure that a water sample is taken at least once every week from the drinking water system's raw water, before any treatment is applied to the water and is tested for E.coli and total coliforms.

Raw water samples are collected weekly from well No. PW1 and PW2.

- **All microbiological water quality monitoring requirements for distribution samples were being met.**

Schedule 10, Section 10-2 of O.Reg.170/03 indicates that at least eight distribution samples plus one additional distribution sample for every 1,000 people served by the system are to be taken each month with at least one sample being taken each week.

The population served, based on service connections, is 1000, indicating nine (9) samples are to be taken each month and tested for E.coli and total coliform, with at least 25% of those also being tested for heterotrophic plate count (HPC).

Distribution sample results reviewed for the inspection review period indicated that three (3) samples were collected each week.

- **All microbiological water quality monitoring requirements for treated samples were being met.**

Section 10-3 of Schedule 10 of O. Reg. 170/03 requires that the Owner of a drinking water system and the Operating Authority for the system ensure that a water sample is taken at least once every week and tested for E. coli, total coliforms and general bacteria population expressed as colony counts on a heterotrophic plate count.

A review of sample records provided during the inspection period indicates that one treated water sample was collected from the System each week.

- **All inorganic water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

Section 13-2 (1) of Schedule 13 of O. Reg. 170/03 states that the owner of a large municipal drinking water system and the operating authority for the system shall ensure that at least one water sample is taken every 36 months, if the system obtains water from a raw water supply that is ground water. The owner shall ensure that each of the samples taken is tested for every parameter set out in Schedule 23.

Samples for Schedule 23 inorganic parameters were analyzed on January 7, 2016.

- **All organic water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

Section 13-4 (1) of Schedule 13 of O. Reg. 170/03 states that the owner of a large municipal drinking water system



### Water Quality Monitoring

and the operating authority for the system shall ensure that at least one water sample is taken every 36 months, if the system obtains water from a raw water supply that is ground water. The owner shall ensure that each of the samples taken is tested for every parameter set out in Schedule 24.

Samples for Schedule 24 organic parameters were analyzed on January 5, 2016.

- **All haloacetic acid water quality monitoring requirements prescribed by legislation are being conducted within the required frequency and at the required location.**

Schedule 13-11 of O. Reg. 170/03 requires the owner of a drinking water system that provides chlorination or chloramination and the operating authority for the system shall ensure that at least one distribution sample is taken in each calendar quarter, from a point in the drinking water system's distribution system, or plumbing that is connected to the drinking water system, that is likely to have an elevated potential for the formation of haloacetic acids.

Results provided by LUSI indicate that sampling was conducted every three months as required.

- **All trihalomethane water quality monitoring requirements prescribed by legislation were conducted within the required frequency and at the required location.**

Section 13-6 of Schedule 13 of O. Reg. 170/03 requires that the owner of a drinking water system that provides chlorination and the operating authority for the system ensure that at least one distribution sample is taken every three months, from a point in the drinking water system's distribution system, or plumbing that is connected to the drinking water system, that is likely to have an elevated potential for the formation of trihalomethanes. Each sample shall be tested for trihalomethanes.

Results provided by LUSI indicate that sampling was conducted every three months as required.

- **All nitrate/nitrite water quality monitoring requirements prescribed by legislation were conducted within the required frequency for the DWS.**

Section 13-7 of Schedule 13 of O. Reg. 170/03 requires that the owner of a drinking water system and the operating authority for the system ensure that at least one water sample is taken every three months and tested for nitrate and nitrite.

Results provided by LUSI indicate that sampling was conducted a minimum of every three months.

- **All sodium water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

Section 13-8 of Schedule 13 of O. Reg. 170/03 requires that the owner of a drinking water system and the operating authority for the system ensure that at least one water sample is taken every 60 months and tested for sodium.

Results provided by LUSI indicate that sampling was last completed January 26, 2015.

- **All fluoride water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

Section 13-9 of Schedule 13 of O. Reg. 170/03 requires that the owner of a drinking water system and the operating authority for the system ensure that at least one water sample is taken every 60 months and tested for fluoride.

Results provided by the LUSI indicate that sampling was last completed January 26, 2015.

### Water Quality Monitoring

- The owner ensured that water samples were taken at the prescribed location.
- All water quality monitoring requirements imposed by the Municipal Drinking Water Licence and Drinking Water Works Permit were being met.
- All sampling requirements for lead prescribed by schedule 15.1 of O. Reg. 170/03 were being met.

In February 2017, the Township of Alnwick/Haldimand qualified for reduced sampling as per section 15.1-5 of Schedule 15 of O.Reg.170/03.

Under the reduced sampling schedule, the Township was required to test ten (10) residential, one (1) non-residential and two (2) distribution sampling point for lead under O.Reg.170/03 during the periods from December 15 to April 5 (WINTER) and June 15 to October 15 (SUMMER) in every third 12-month period.

LUSI completed the required sampling in the SUMMER 2017 sampling period and the WINTER 2017/2018 period. Review of analytical data indicates that not more than 10% of plumbing exceed 10 µg/L in each period, therefore the System is exempt from the plumbing requirements as described in section 15.1-9 of Schedule 15 of O.Reg.170/03.

The System is required to test for alkalinity and for pH during the WINTER and SUMMER periods in every 12-month period. Furthermore, the System is required to test for lead during each of the periods in every third 12-month period. The next sampling period for lead is SUMMER 2020.

- Records confirmed that chlorine residual tests were being conducted at the same time and at the same location that microbiological samples were obtained.
- Turbidity was being tested at least once every month from each well that is supplying water to the system.
- The drinking water system owner submitted written notices to the Director that identified the laboratories that were conducting tests for parameters required by legislation, Order, Drinking Water Works Permit or Municipal Drinking Water Licence.

LUSI has submitted the appropriate Lab Services Notification to the Ministry and uses SGS Environmental Services - Lakefield.

- The owner indicated that the required records are kept and will be kept for the required time period.

LUSI utilizes procedure P02 - Record Control to establish retention periods for records pertaining to the Grafton Drinking Water System. All records are stored for the required retention time.

### Water Quality Assessment

- Records showed that all water sample results taken during the inspection review period did not exceed the values of tables 1, 2 and 3 of the Ontario Drinking Water Quality Standards (O.Reg. 169/03).

### Reporting & Corrective Actions

- Where required continuous monitoring equipment used for the monitoring of chlorine residual and/or turbidity triggered an alarm or an automatic shut-off, a qualified person responded in a timely manner and took appropriate actions.

A review of continuous monitoring records and logbooks suggest that when an alarm or automatic shut-off devices

### Reporting & Corrective Actions

was triggered that a certified operator responded and took appropriate actions.

- **The Annual Report containing the required information was prepared by February 28th of the following year.**
- **Summary Reports for municipal council were completed on time, included the required content, and were distributed in accordance with the regulatory requirements.**

Schedule 22 of O.Reg.170/03 requires the owner of a drinking water system to ensure that, not later than March 31 of each year, a report is prepared for the preceding calendar year and is given to members of the municipal council.

The Summary Report was dated March 2018 and prepared in accordance with Schedule 22 of O.Reg.170/03 a digital copy was provided to the Mayor and Council of the Township of Alnwick/Haldimand on March 9, 2018. The Corporation of the Township of Alnwick/Haldimand Grafton Communal Water Committee accepted and approved the 2017 Summary Report on April 18, 2018.

- **All changes to the system registration information were not provided within ten (10) days of the change.**

Subsection 10.1(3) of O.Reg.170/03 states if there is any change to the information given to the Director under subsection (1) or (2), the owner of the drinking-water system shall give the Director written notice of the change within 10 days of the change.

At the time of this inspection, the information previously submitted to the Ministry was reviewed with the operators and the Water Compliance Coordinator was found to be out of date. On December 11, 2018, following the physical inspection, the Water Compliance Coordinator submitted an updated drinking water system profile to reflect the new owner and contact information.

### Other Inspection Findings

- **The following items are noted as being relevant to the Drinking Water System:**

During the inspection, a number of minor discrepancies were identified between the most recently issued Permit 238-201 and the operations, standard operating procedures (SOP's) and maintenance manuals.

LUSI is strongly encouraged to review all operations manuals and SOP's for the System on a rotational basis and in conjunction with the Licence renewal. Manuals should be reviewed for accuracy and to ensure they are current and reflect any changes in the system.

## NON-COMPLIANCE WITH REGULATORY REQUIREMENTS AND ACTIONS REQUIRED

This section provides a summary of all non-compliance with regulatory requirements identified during the inspection period, as well as actions required to address these issues. Further details pertaining to these items can be found in the body of the inspection report.

**1. All changes to the system registration information were not provided within ten (10) days of the change.**

Subsection 10.1(3) of O.Reg.170/03 states if there is any change to the information given to the Director under subsection (1) or (2), the owner of the drinking-water system shall give the Director written notice of the change within 10 days of the change.

At the time of this inspection, the information previously submitted to the Ministry was reviewed with the operators and the Water Compliance Coordinator was found to be out of date. On December 11, 2018, following the physical inspection, the Water Compliance Coordinator submitted an updated drinking water system profile to reflect the new owner and contact information.

**Action(s) Required:**

The owner/operating authority should verify that the system profile information in the Ministry's Drinking Water Information System (DWIS) is accurate and up to date and ensure that all changes to profile information are submitted to the DWIS Registration Group within 10 days of the change.

## SUMMARY OF RECOMMENDATIONS AND BEST PRACTICE ISSUES

This section provides a summary of all recommendations and best practice issues identified during the inspection period. Details pertaining to these items can be found in the body of the inspection report. In the interest of continuous improvement in the interim, it is recommended that owners and operators develop an awareness of the following issues and consider measures to address them.

**1. The owner did not have a program or maintained a schedule for routine cleanout, inspection and maintenance of reservoirs and elevated storage tanks within the distribution system.**

The Grafton Drinking Water System consists of two (2) interconnected underground clearwells. According to the Grafton Waterworks Operations Manual Section F.10.110, a yearly maintenance schedule is necessary to make a visual inspection of the integrity of the concrete surface and to cleanout the precipitate form the bottom of the clearwell.

The last inspection of the clear well was completed in April 2014. Currently, LUSI does not have an inspection schedule for the visual inspection or routine cleanout of the clearwells.

**Recommendation:**

As a best industry practice, storage facilities should be regularly inspected and maintained to minimize the potential for water quality issues to develop and to maximize the service life of the facility.

LUSI is encouraged to develop a program and maintenance schedule, as described in the Grafton Waterworks Operations Manual, for the inspection of the clearwells.

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**SIGNATURES**

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Inspected By:  
Brittney Wielgos


Signature: (Provincial Officer)  


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Reviewed & Approved By:  
Jackie Fuller

Signature: (Supervisor)

Review & Approval Date:

  
Jan 22/19

Note: This inspection does not in any way suggest that there is or has been compliance with applicable legislation and regulations as they apply or may apply to this facility. It is, and remains, the responsibility of the owner and/or operating authority to ensure compliance with all applicable legislative and regulatory requirements.



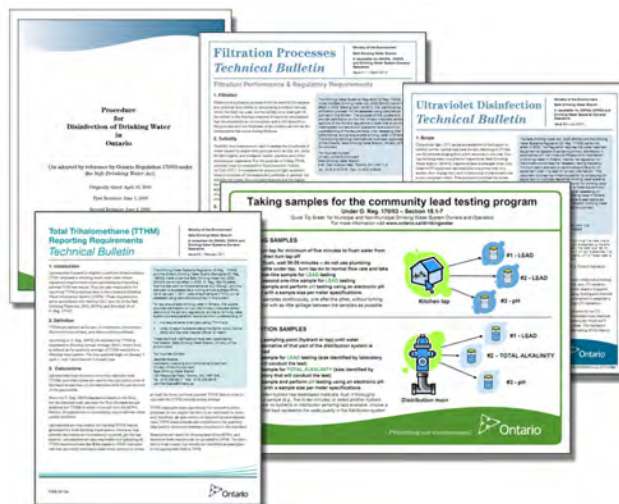
**APPENDIX A**  
**STAKEHOLDER APPENDIX**

# Key Reference and Guidance Material for Municipal Residential Drinking Water Systems

Many useful materials are available to help you operate your drinking water system. Below is a list of key materials owners and operators of municipal residential drinking water systems frequently use.

To access these materials online click on their titles in the table below or use your web browser to search for their titles. Contact the Public Information Centre if you need assistance or have questions at 1-800-565-4923/416-325-4000 or [picemail.moe@ontario.ca](mailto:picemail.moe@ontario.ca).

For more information on Ontario's drinking water visit [www.ontario.ca/drinkingwater](http://www.ontario.ca/drinkingwater) and email [drinking.water@ontario.ca](mailto:drinking.water@ontario.ca) to subscribe to drinking water news.



PUBLICATION TITLE	PUBLICATION NUMBER
Taking Care of Your Drinking Water: A Guide for Members of Municipal Councils	7889e01
FORMS: Drinking Water System Profile Information, Laboratory Services Notification, Adverse Test Result Notification Form	7419e, 5387e, 4444e
Procedure for Disinfection of Drinking Water in Ontario	4448e01
Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids	7152e
Total Trihalomethane (TTHM) Reporting Requirements Technical Bulletin (February 2011)	8215e
Filtration Processes Technical Bulletin	7467
Ultraviolet Disinfection Technical Bulletin	7685
Guide for Applying for Drinking Water Works Permit Amendments, Licence Amendments, Licence Renewals and New System Applications	7014e01
Certification Guide for Operators and Water Quality Analysts	
Guide to Drinking Water Operator Training Requirements	9802e
Taking Samples for the Community Lead Testing Program	6560e01
Community Sampling and Testing for Lead: Standard and Reduced Sampling and Eligibility for Exemption	7423e
Guide: Requesting Regulatory Relief from Lead Sampling Requirements	6610
Drinking Water System Contact List	7128e
Technical Support Document for Ontario Drinking Water Quality Standards	4449e01

[ontario.ca/drinkingwater](http://ontario.ca/drinkingwater)



# Principaux guides et documents de référence sur les réseaux résidentiels municipaux d'eau potable

De nombreux documents utiles peuvent vous aider à exploiter votre réseau d'eau potable. Vous trouverez ci-après une liste de documents que les propriétaires et exploitants de réseaux résidentiels municipaux d'eau potable utilisent fréquemment.

Pour accéder à ces documents en ligne, cliquez sur leur titre dans le tableau ci-dessous ou faites une recherche à l'aide de votre navigateur Web. Communiquez avec le Centre d'information au public au 1 800 565-4923 ou au 416 325-4000, ou encore à [picemail.moe@ontario.ca](mailto:picemail.moe@ontario.ca) si vous avez des questions ou besoin d'aide.



Pour plus de renseignements sur l'eau potable en Ontario, consultez le site [www.ontario.ca/eaupotable](http://www.ontario.ca/eaupotable) ou envoyez un courriel à [drinking.water@ontario.ca](mailto:drinking.water@ontario.ca) pour suivre l'information sur l'eau potable.

TITRE DE LA PUBLICATION	NUMÉRO DE PUBLICATION
Prendre soin de votre eau potable – Un guide destiné aux membres des conseils municipaux	7889f01
Renseignements sur le profil du réseau d'eau potable, Avis de demande de services de laboratoire, Formulaire de communication de résultats d'analyse insatisfaisants et du règlement des problèmes	7419f, 5387f, 4444f
Marche à suivre pour désinfecter l'eau potable en Ontario	4448f01
Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids (en anglais seulement)	7152e
Total Trihalomethane (TTHM) Reporting Requirements: Technical Bulletin (février 2011) (en anglais seulement)	8215e
Filtration Processes Technical Bulletin (en anglais seulement)	7467
Ultraviolet Disinfection Technical Bulletin (en anglais seulement)	7685
Guide de présentation d'une demande de modification du permis d'aménagement de station de production d'eau potable, de modification du permis de réseau municipal d'eau potable, de renouvellement du permis de réseau municipal d'eau potable et de permis pour un nouveau réseau	7014f01
Guide sur l'accréditation des exploitants de réseaux d'eau potable et des analystes de la qualité de l'eau de réseaux d'eau potable	
Guide sur les exigences relatives à la formation des exploitants de réseaux d'eau potable	9802f
Prélèvement d'échantillons dans le cadre du programme d'analyse de la teneur en plomb de l'eau dans les collectivités	6560f01
Échantillonnage et analyse du plomb dans les collectivités : échantillonnage normalisé ou réduit et admissibilité à l'exemption	7423f
Guide: Requesting Regulatory Relief from Lead Sampling Requirements (en anglais seulement)	6610
Liste des personnes-ressources du réseau d'eau potable	7128f
Document d'aide technique pour les normes, directives et objectifs associés à la qualité de l'eau potable en Ontario	4449f01

[ontario.ca/eaupotable](http://ontario.ca/eaupotable)



**APPENDIX B**  
**INSPECTION RATING RECORD**

**Ministry of the Environment - Inspection Summary Rating Record (Reporting Year - 2018-2019)**

<b>DWS Name:</b>	GRAFTON DRINKING WATER SYSTEM
<b>DWS Number:</b>	220009158
<b>DWS Owner:</b>	Alnwick/Haldimand, The Corporation Of The Township Of
<b>Municipal Location:</b>	Alnwick/Haldimand

**Regulation:** O.REG 170/03  
**Category:** Large Municipal Residential System  
**Type Of Inspection:** Detailed  
**Inspection Date:** December 11, 2018  
**Ministry Office:** Peterborough District

**Maximum Question Rating:** 629

Inspection Module	Non-Compliance Rating
Source	0 / 40
Permit To Take Water	0 / 12
Capacity Assessment	0 / 42
Treatment Processes	0 / 72
Distribution System	0 / 21
Operations Manuals	0 / 42
Logbooks	0 / 30
Certification and Training	0 / 57
Water Quality Monitoring	0 / 160
Reporting & Corrective Actions	4 / 33
Treatment Process Monitoring	0 / 120
<b>TOTAL</b>	<b>4 / 629</b>

<b>Inspection Risk Rating</b>	<b>0.64%</b>
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<b>FINAL INSPECTION RATING:</b>	<b>99.36%</b>
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**Ministry of the Environment - Detailed Inspection Rating Record (Reporting Year - 2018-2019)**

<b>DWS Name:</b>	GRAFTON DRINKING WATER SYSTEM
<b>DWS Number:</b>	220009158
<b>DWS Owner:</b>	Alnwick/Haldimand, The Corporation Of The Township Of
<b>Municipal Location:</b>	Alnwick/Haldimand
<b>Regulation:</b>	O.REG 170/03
<b>Category:</b>	Large Municipal Residential System
<b>Type Of Inspection:</b>	Detailed
<b>Inspection Date:</b>	December 11, 2018
<b>Ministry Office:</b>	Peterborough District

Non-compliant Question(s)	Question Rating
<b>Reporting &amp; Corrective Actions</b>	
Have all changes to the system registration information been provided to the Ministry within ten (10) days of the change?	4
<b>TOTAL QUESTION RATING</b>	<b>4</b>

**Maximum Question Rating: 629**

<b>Inspection Risk Rating</b>	<b>0.64%</b>
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<b>FINAL INSPECTION RATING:</b>	<b>99.36%</b>
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