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**Ministère de l'Environnement, de la Protection de la nature et des Parcs**
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*2e étage, Tour Sud*
*Peterborough (Ontario) K9J 3C7*
Tél: 705 755-4300
558-0595230,

Ontario

January 13, 2020

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

Attention: Robin Van De Moosydk, CAO/Municipal Clerk

**RE: Grafton Drinking Water System (220009158)**
**Drinking Water Inspection Report 1-L4EYU**
**File: SI NO AL 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 November 28, 2019.

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 Environmental and Enforcement Compliance Office.

*"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.

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 705-768-0436.

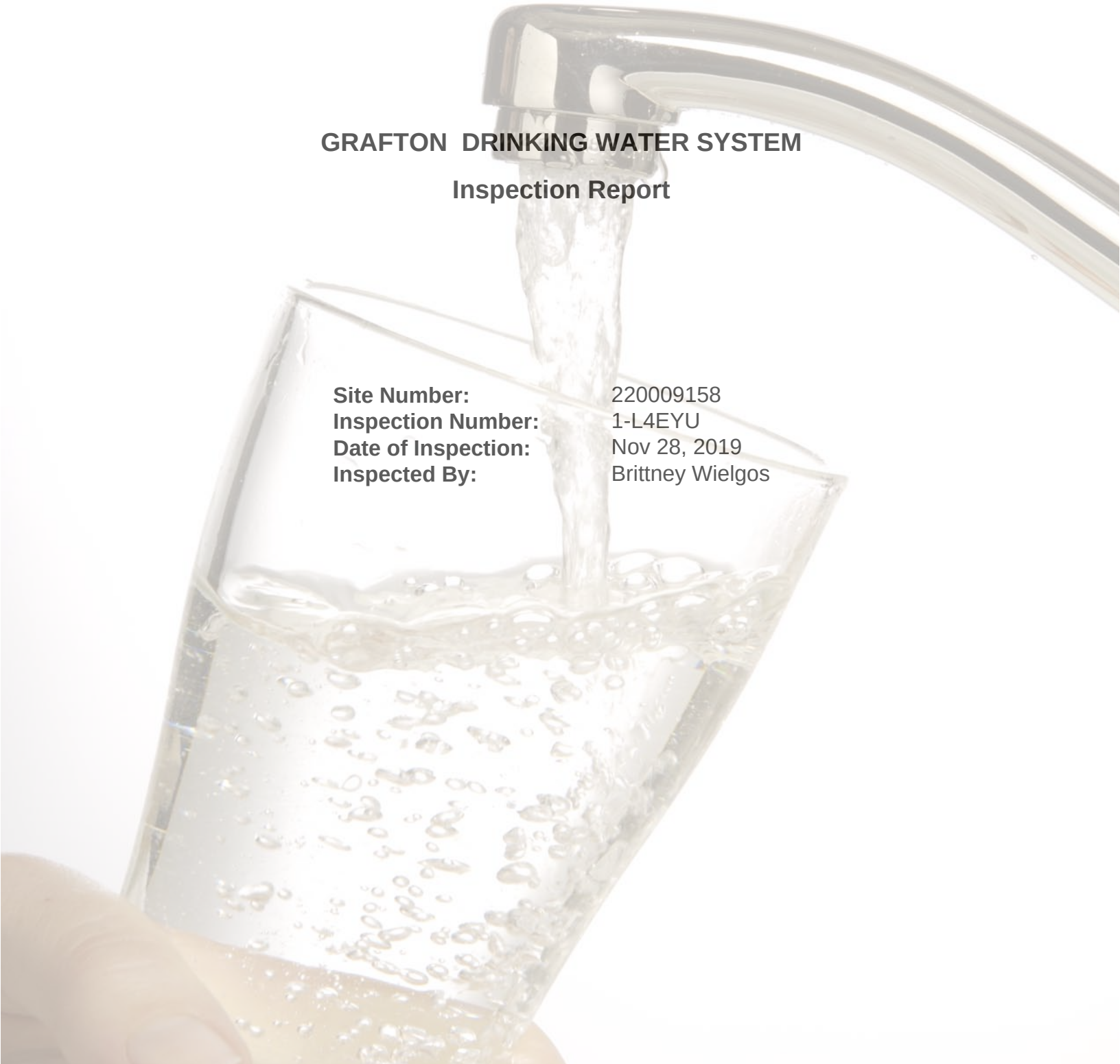
Yours truly,

*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
705-768-8195

cc:
Larry Spyrka, Manager of Water System, Lakefront Utility Services
Shawn Bolender, Water Systems Supervisor, Lakefront Utility Services
Sarah Whitton, Water Compliance Coordinator, Lakefront Utility Services
Dr. Lynn Noseworthy, Medical Officer of Health, Haliburton, Kawartha, Pine Ridge District Health Unit
Rhonda Bateman, CAO/Secretary – Treasurer, Lower Trent Conservation Authority
Jacqueline Fuller, Water Compliance Supervisor, Peterborough District Office, MECP

Ontario

## Ministry of the Environment, Conservation and Parks



# GRAFTON DRINKING WATER SYSTEM

## Inspection Report

| | |
|---|---|
| **Site Number:** | 220009158 |
| **Inspection Number:** | 1-L4EYU |
| **Date of Inspection:** | Nov 28, 2019 |
| **Inspected By:** | Brittney Wielgos |

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## OWNER INFORMATION:

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

### CONTACT INFORMATION

| | | | |
|---|---|---|---|
| **Type:** | Operating Authority | **Name:** | Shawn Bolender |
| **Phone:** | (905) 372-2193 x5239 | **Fax:** | (905) 372-2581 |
| **Email:** | sbolenderlusi.on.ca | | |
| **Title:** | Water Systems Supervisor | | |

| | | | |
|---|---|---|---|
| **Type:** | Operating Authority | **Name:** | Larry Spyrka |
| **Phone:** | (905) 372-2193 x5238 | **Fax:** | (905) 372-2581 |
| **Email:** | lspyrka@lusi.on.ca | | |
| **Title:** | Manager of Water Systems | | |

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

| | | | |
|---|---|---|---|
| **Type:** | Operating Authority | **Name:** | Sarah Whitton |
| **Phone:** | (905) 372-2193 x5228 | **Fax:** | (905) 372-2193 x5239 |
| **Email:** | swhitton@lusi.on.ca | | |
| **Title:** | Water Compliance Coordinator | | |

## INSPECTION DETAILS:

| | |
|---|---|
| **Site Name:** | GRAFTON DRINKING WATER SYSTEM |
| **Site Address:** | 434, EDWARDSON ROAD, GRAFTON |
| **County/District:** | ALNWICK/HALDIMAND |
| **MECP District/Area Office:** | Peterborough District |
| **Health Unit:** | HALIBURTON, KAWARTHA, PINE RIDGE DISTRICT HEALTH UNIT |
| **Conservation Authority:** | Lower Trent Conservation |
| **MNR Office:** | |
| **Category:** | Large Municipal Residential |
| **Site Number:** | 220009158 |
| **Inspection Type:** | Announced |
| **Inspection Number:** | 1-L4EYU |
| **Date of Inspection:** | Nov 28, 2019 |
| **Date of Previous Inspection:** | Dec 11, 2018 |

### COMPONENTS DESCRIPTION

**Site (Name):** MOE DWS Mapping
**Type:** DWS Mapping Point **Sub Type:** Other

**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.

**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.

**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 Alnwick/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.

**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.

# 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 related 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 report is based on a "focused" inspection of the system. Although the inspection involved fewer activities than those normally undertaken in a detailed inspection, it contained critical elements required to assess key compliance issues. This system was chosen for a focused inspection because the system's performance met the ministry's criteria, most importantly that there were no deficiencies as identified in O.Reg. 172/03 over the past 3 years. The undertaking of a focused inspection at this drinking water system does not ensure that a similar type of inspection will be conducted at any point in the future.**

  **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 November 28, 2019, 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 ($m^3$/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

**Introduction**

period of December 11, 2018 to November 28, 2019 (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 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, generated by TrackPro Calibration and Maintenance work order system, as described in procedure W06 'Well Inspection and Maintenance'. Most recently a visual inspection as performed on November 7, 2019 and December 4, 2019.

  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.

- **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.

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

**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 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 Drinking Water System: 1,253 $m^3$/day

  The rated capacity was not exceeded during the inspection review period. The maximum treated flow for the inspection review period was 729.6 $m^3$/day in July 2019.

**Treatment Processes**

**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 238-201 outlines the equipment installed throughout the Grafton Drinking Water System, which includes the pumphouse; two interconnected underground clear wells and two high lift pump wells.

  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.**

  During the review period, two (2) Form 2 - Record of Minor Modifications or Replacements to the Drinking Water System were prepared, dated June 21, 2019 and September 9, 2019.

  One Form 2 document describes the valve replacement of high lift pump #2. The other Form 2 document describes the replacement of a pressure reducing valve at Station Street.

  The Form 2 documents reviewed were prepared in accordance with the Drinking Water 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 $m^3$, followed by two (2) 125$m^3$ 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 0.85 mg/L observed in August 2019 at Grafton Public School.

- **Where an activity has occurred that could introduce contamination, all parts of the drinking water system were not disinfected in accordance with Schedule B, Condition 2.3 of the Drinking Water Works Permit.**

  Condition 2.3 of the Permit requires all parts of the system in contact with drinking water which are added, modified,

**Treatment Processes**

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.

On November 20, 2019, LUSI retained the services of IWS to replace the pump in Well #2. On November 20, 2019, Well #2 was taken offline while the pump was being replaced; the well was chlorinated and left for 12 hours.

The AWWA C654 - Standards for Disinfection of Wells requires a minimum of two water samples to be taken and tested for the presence of coliform, in accordance with Standard Methods for the Examination of Water and Wastewater.

The required samples were not collected prior to the well being placed back in service.

**Treatment Process Monitoring**

- **Primary disinfection chlorine monitoring was conducted at a location approved by Municipal Drinking 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 0.7 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 0.7 mg/L.

- **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.

- **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.**

  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.

**Operations 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**

- **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.

**Security**

- **The owner had provided security measures to protect components of the drinking water system.**

**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"

**Certification and Training**

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 31, 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 operators possessed the required certification.**

- **Only certified operators made adjustments to the treatment equipment.**

  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.

**Water Quality Monitoring**

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

- **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

**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 23.

Samples for Schedule 23 inorganic parameters were analyzed on January 7, 2019.

- **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 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 7, 2019.

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

  Schedule 13-6.1 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 September 16, 2019.

**Water Quality Monitoring**

- **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 September 16, 2019.

- **Records confirmed that chlorine residual tests were being conducted at the same time and at the same location that microbiological samples were obtained.**

**Water Quality Assessment**

- **Records did not show 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).**

  During the inspection review period, there was one occurrence on November 11, 2019, where total coliforms were detected in the distribution system. The microbiological standard for total coliforms in Schedule 1 of O.Reg.169/03 is not-detectable. Resamples were collected on November 14, 2019 and the system was flushed and met the Ontario Drinking Water Quality Standards (ODWQS).

**Reporting & Corrective Actions**

- **Corrective actions (as per Schedule 17) had been taken to address adverse conditions, including any other steps that were directed by the Medical Officer of Health.**

- **All required notifications of adverse water quality incidents were immediately provided as per O. Reg. 170/03 16-6.**

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

## 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. Where an activity has occurred that could introduce contamination, all parts of the drinking water system were not disinfected in accordance with Schedule B, Condition 2.3 of the Drinking Water Works Permit.**

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.

On November 20, 2019, LUSI retained the services of IWS to replace the pump in Well #2. On November 20, 2019, Well #2 was taken offline while the pump was being replaced; the well was chlorinated and left for 12 hours.

The AWWA C654 - Standards for Disinfection of Wells requires a minimum of two water samples to be taken and tested for the presence of coliform, in accordance with Standard Methods for the Examination of Water and Wastewater.

The required samples were not collected prior to the well being placed back in service.

**Action(s) Required:**

On January 7, 2020, LUSI provided a copy of a new standard operating procedure titled 'SOP-GRFTWTP-Well Inspection, Maintenance and Refurbishment' to the undersigned Provincial Officer.

The procedure outlines the above ground and internal inspection of a well; the repair or replacement of any portion of the well structure; and disinfection and bacteriological testing, as required by Schedule B section 16.2.9 of the MDWL 238-101 and in accordance with AWWA C654 - Standard for Disinfection of Wells.

LUSI staff participated in a meeting to review the new SOP on January 7, 2020.

No further action is required.

## 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.**

**Not Applicable**

## SIGNATURES

Inspected By:

Brittney Wielgos

Signature: (Provincial Officer)

B Wielgos

Reviewed & Approved By:

Jackie Fuller

Signature: (Supervisor)

Review & Approval Date: Jan 13/20

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.

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# 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 Ministry if you need assistance or have questions at 1-866-793-2588 or waterforms@ontario.ca.

For more information on Ontario's drinking water visit www.ontario.ca/drinkingwater

| PUBLICATION TITLE | PUBLICATION NUMBER |
|---|---|
| **FORMS:**<br>Drinking Water System Profile Information<br>Laboratory Services Notification<br>Adverse Test Result Notification | <br>012-2149E<br>012-2148E<br>012-4444E |
| Taking Care of Your Drinking Water: A Guide for Members of Municipal Councils | Website |
| Procedure for Disinfection of Drinking Water in Ontario | Website |
| Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids | Website |
| Filtration Processes Technical Bulletin | Website |
| Ultraviolet Disinfection Technical Bulletin | Website |
| Guide for Applying for Drinking Water Works Permit Amendments, & License Amendments | Website |
| Certification Guide for Operators and Water Quality Analysts | Website |
| Guide to Drinking Water Operator Training Requirements | 9802E |
| Community Sampling and Testing for Lead: Standard and Reduced Sampling and Eligibility for Exemption | Website |
| Drinking Water System Contact List | 7128E01 |
| Ontario's Drinking Water Quality Management Standard - Pocket Guide | Website |
| Watermain Disinfection Procedure | Website |
| List of Licensed Laboratories | Website |



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# 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 ministère au 1-866-793-2588, ou encore à waterforms@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

| TITRE DE LA PUBLICATION | NUMÉRO DE PUBLICATION |
|---|---|
| Renseignements sur le profil du réseau d'eau potable<br>Avis de demande de services de laboratoire<br>Avis de résultats d'analyse insatisfaisants et de règlement des problèmes | 012-2149F<br>012-2148F<br>012-4444F |
| Prendre soin de votre eau potable - Un guide destiné aux membres des conseils municipaux | Site Web |
| Marche à suivre pour désinfecter l'eau portable en Ontario | Site Web |
| Stratégies pour minimiser les trihalométhanes et les acides haloacétiques de sous-produits de désinfection | Site Web |
| Filtration Processes Technical Bulletin (en anglais seulement) | Site Web |
| Ultraviolet Disinfection Technical Bulletin (en anglais seulement) | Site Web |
| Guide de présentation d'une demande de modification du permis d'aménagement de station de production d'eau potable | Site Web |
| 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 | Site Web |
| Guide sur les exigences relatives à la formation des exploitants de réseaux d'eau potable | 9802F |
| Échantillonnage et analyse du plomb dans les collectivités : échantillonnage normalisé ou réduit et admissibilité à l'exemption | Site Web |
| Liste des personnes-ressources du réseau d'eau potable | Site Web |
| L'eau potable en Ontario - Norme de gestion de la qualité - Guide de poche | Site Web |
| Procédure de désinfection des conduites principales | Site Web |
| Laboratoires autorisés | Site Web |



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# APPENDIX B

# INSPECTION RATING RECORD

**Ministry of the Environment - Inspection Summary Rating Record (Reporting Year - 2019-2020)**

| | |
|---|---|
| **DWS Name:** | GRAFTON DRINKING WATER SYSTEM |
| **DWS Number:** | 220009158 |
| **DWS Owner:** | Alnwick/Haldimand, The Corporation Of The Township Of |
| **Municipal Location:** | Alnwick/Haldimand |
| **Regulation:** | O.REG 170/03 |
| **Category:** | Large Municipal Residential System |
| **Type Of Inspection:** | Focused |
| **Inspection Date:** | November 28, 2019 |
| **Ministry Office:** | Peterborough District |

**Maximum Question Rating:** 499

| Inspection Module | Non-Compliance Rating |
|---|---|
| Source | 0 / 14 |
| Capacity Assessment | 0 / 30 |
| Treatment Processes | 21 / 81 |
| Operations Manuals | 0 / 28 |
| Logbooks | 0 / 14 |
| Certification and Training | 0 / 42 |
| Water Quality Monitoring | 0 / 112 |
| Reporting & Corrective Actions | 0 / 66 |
| Treatment Process Monitoring | 0 / 112 |
| **TOTAL** | **21 / 499** |

| | |
|---|---|
| **Inspection Risk Rating** | **4.21%** |

| | |
|---|---|
| **FINAL INSPECTION RATING:** | **95.79%** |

**Inspection Rating Record Generated On 13-JAN-20 (Inspection ID: 1-L4EYU).**

**Ministry of the Environment - Detailed Inspection Rating Record (Reporting Year - 2019-2020)**

| | |
|---|---|
| **DWS Name:** | GRAFTON DRINKING WATER SYSTEM |
| **DWS Number:** | 220009158 |
| **DWS Owner:** | Alnwick/Haldimand, The Corporation Of The Township Of |
| **Municipal Location:** | Alnwick/Haldimand |
| **Regulation:** | O.REG 170/03 |
| **Category:** | Large Municipal Residential System |
| **Type Of Inspection:** | Focused |
| **Inspection Date:** | November 28, 2019 |
| **Ministry Office:** | Peterborough District |

| Non-compliant Question(s) | Question Rating |
|---|---|
| **Treatment Processes** | |
| Are all parts of the drinking water system, including new, or where an activity has occurred that could introduce contamination (e.g: that are taken out of service for inspection, repair), disinfected in accordance with a procedure listed in Schedule B, Condition 2.3 of the Drinking Water Works Permit? | 21 |
| **TOTAL QUESTION RATING** | 21 |

**Maximum Question Rating:** 499

| | |
|---|---|
| **Inspection Risk Rating** | **4.21%** |
| **FINAL INSPECTION RATING:** | **95.79%** |

**Inspection Rating Record Generated On 13-JAN-20 (Inspection ID: 1-L4EYU).**

# APPLICATION OF THE RISK METHODOLOGY USED FOR MEASURING MUNICIPAL RESIDENTIAL DRINKING WATER SYSTEM INSPECTION RESULTS

The Ministry of the Environment (MOE) has a rigorous and comprehensive inspection program for municipal residential drinking water systems (MRDWS). Its objective is to determine the compliance of MRDWS with requirements under the Safe Drinking Water Act and associated regulations. It is the responsibility of the municipal residential drinking water system owner to ensure their drinking water systems are in compliance with all applicable legal requirements.

This document describes the risk rating methodology, which has been applied to the findings of the Ministry's MRDWS inspection results since fiscal year 2008-09. The primary goals of this assessment are to encourage ongoing improvement of these systems and to establish a way to measure this progress.

MOE reviews the risk rating methodology every three years.

The Ministry's Municipal Residential Drinking Water Inspection Protocol contains up to 14 inspection modules and consists of approximately 120 regulatory questions. Those protocol questions are also linked to definitive guidance that ministry inspectors use when conducting MRDWS inspections. The questions address a wide range of regulatory issues, from administrative procedures



PIBS 6797e

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to drinking water quality monitoring. Additionally, the inspection protocol contains a number of non-regulatory questions.

A team of drinking water specialists in the ministry have assessed each of the inspection protocol regulatory questions to determine the risk (not complying with the regulation) to the delivery of safe drinking water. This assessment was based on established provincial risk assessment principles, with each question receiving a risk rating referred to as the Question Risk Rating. Based on the number of areas where a system is deemed to be non-compliant during the inspection, and the significance of these areas to administrative, environmental, and health consequences, a risk-based inspection rating is calculated by the ministry for each drinking water system.

It is important to be aware that an inspection rating that is less than 100 per cent does not mean that the drinking water from the system is unsafe. It shows areas where a system's operation can improve. To that end, the ministry works with owners and operators of systems to make sure they know what they need to do to achieve full compliance.

The inspection rating reflects the inspection results of the specific drinking water system for the reporting year. Since the methodology is applied consistently over a period of years, it serves as a comparative measure both provincially and in relation to the individual system. Both the drinking water system and the public are able to track the performance over time, which encourages continuous improvement and allows systems to identify specific areas requiring attention.

The ministry's annual inspection program is an important aspect of our drinking water safety net. The ministry and its partners share a common commitment to excellence and we continue to work toward the goal of 100 per cent regulatory compliance.

## Determining Potential to Compromise the Delivery of Safe Water

The risk management approach used for MRDWS is aligned with the Government of Ontario's Risk Management Framework. Risk management is a systematic approach to identifying potential hazards; understanding the likelihood and consequences of the hazards; and taking steps to reduce their risk if necessary and as appropriate.

The Risk Management Framework provides a formula to be used in the determination of risk:

**RISK = LIKELIHOOD × CONSEQUENCE**
(of the consequence)

Every regulatory question in the inspection protocol possesses a likelihood value (L) for an assigned consequence value (C) as described in **Table 1** and **Table 2**.

**TABLE 1:**

| Likelihood of Consequence Occurring | Likelihood Value |
|---|---|
| 0% - 0.99% (Possible but Highly Unlikely) | L = 0 |
| 1 – 10% (Unlikely) | L = 1 |
| 11 – 49% (Possible) | L = 2 |
| 50 – 89% (Likely) | L = 3 |
| 90 – 100% (Almost Certain) | L = 4 |

**TABLE 2:**

| Consequence | Consequence Value |
|---|---|
| Medium Administrative Consequence | C = 1 |
| Major Administrative Consequence | C = 2 |
| Minor Environmental Consequence | C = 3 |
| Minor Health Consequence | C = 4 |
| Medium Environmental Consequence | C = 5 |
| Major Environmental Consequence | C = 6 |
| Medium Health Consequence | C = 7 |
| Major Health Consequence | C = 8 |

The consequence values (0 through 8) are selected to align with other risk-based programs and projects currently under development or in use within the ministry as outlined in **Table 2**.

The Question Risk Rating for each regulatory inspection question is derived from an evaluation of every identified consequence and its corresponding likelihood of occurrence:

- All levels of consequence are evaluated for their potential to occur
- Greatest of all the combinations is selected.

The Question Risk Rating quantifies the risk of non-compliance of each question relative to the others. Questions with higher values are those with a potentially more significant impact on drinking water safety and a higher likelihood of occurrence. The highest possible value would be 32 (4×8) and the lowest would be 0 (0×1).

**Table 3** presents a sample question showing the risk rating determination process.

**TABLE 3:**

| **Does the Operator in Charge ensure that the equipment and processes are monitored, inspected and evaluated?** | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Risk = Likelihood × Consequence** | | | | | | | |
| C=1 | C=2 | C=3 | C=4 | C=5 | C=6 | C=7 | C=8 |
| **Medium** Administrative Consequence | **Major** Administrative Consequence | **Minor** Environmental Consequence | **Minor** Health Consequence | **Medium** Environmental Consequence | **Major** Environmental Consequence | **Medium** Health Consequence | **Major** Health Consequence |
| L=4 (Almost Certain) | L=1 (Unlikely | L=2 (Possible) | L=3 (Likely) | L=3 (Likely) | L=1 (Unlikely | L=3 (Likely) | L=2 (Possible) |
| **R=4** | **R=2** | **R=6** | **R=12** | **R=15** | **R=6** | **R=21** | **R=16** |

## Application of the Methodology to Inspection Results

Based on the results of a MRDWS inspection, an overall inspection risk rating is calculated. During an inspection, inspectors answer the questions that relate to regulatory compliance and input their responses as "yes", "no" or "not applicable" into the Ministry's Laboratory and Waterworks Inspection System (LWIS) database. A "no" response indicates non-compliance. The maximum number of regulatory questions asked by an inspector varies by: system (i.e., distribution, stand-alone), type of inspection (i.e., focused, detailed), and source type (i.e., groundwater, surface water).

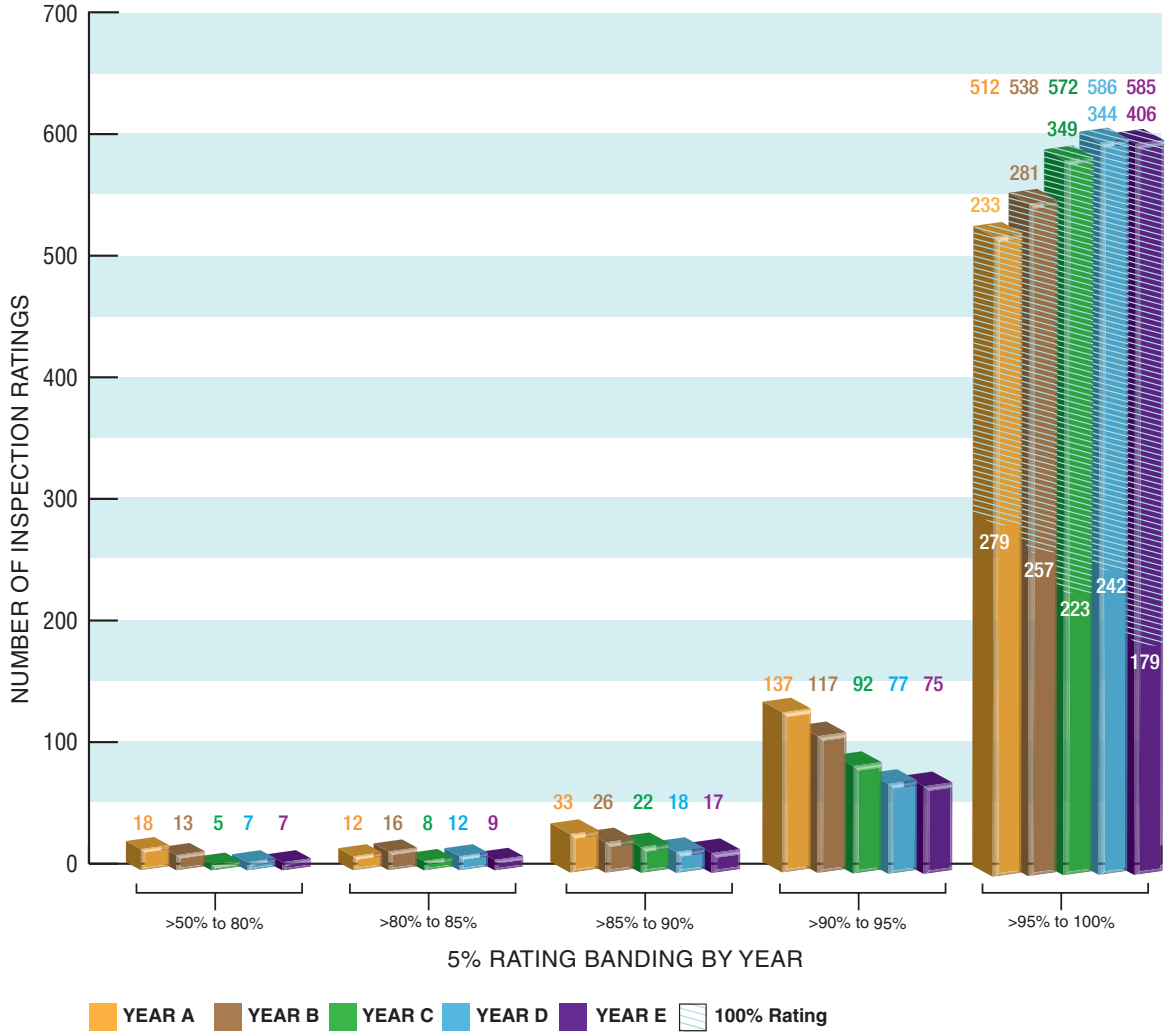
The risk ratings of all non-compliant answers are summed and divided by the sum of the risk ratings of all questions asked (maximum question rating). The resulting inspection risk rating (as a percentage) is subtracted from 100 per cent to arrive at the final inspection rating.

## Application of the Methodology for Public Reporting

The individual MRDWS Total Inspection Ratings are published with the ministry's Chief Drinking Water Inspector's Annual Report.

**Figure 1** presents the distribution of MRDWS ratings for a sample of annual inspections. Individual drinking water systems can compare against all the other inspected facilities over a period of inspection years.

**Figure 1: Year Over Year Distribution of MRDWS Ratings**




## Reporting Results to MRDWS Owners/Operators

A summary of inspection findings for each system is generated in the form of an Inspection Rating Record (IRR). The findings are grouped into the 14 possible modules of the inspection protocol, which would provide the system owner/operator with information on the areas where they need to improve. The 14 modules are:

1. Source
2. Permit to Take Water
3. Capacity Assessment
4. Treatment Processes
5. Process Wastewater
6. Distribution System
7. Operations Manuals
8. Logbooks
9. Contingency and Emergency Planning
10. Consumer Relations
11. Certification and Training
12. Water Quality Monitoring
13. Reporting, Notification and Corrective Actions
14. Other Inspection Findings

For further information, please visit **www.ontario.ca/drinkingwater**