

Ministry of the Environment,
Conservation and Parks

Ministère de l'Environnement, de
la Protection de la nature et des Parcs

Barrie District

District de Barrie

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January 10, 2020

Attention: John Pinsent Chief Administrative Officer
Re: 2019 Drinking Water Inspection Report
Davy Drive Subdivision Drinking Water System

Please find enclosed the Ministry of the Environment, Conservation and Parks Inspection Report for Davy Drive Subdivision Drinking Water System (Water Works # 220007141). The physical inspection process took place on November 21, 2019.

The primary focus of this inspection is to confirm compliance with Ministry of the Environment, Conservation and Parks legislation and authorizing documents, as well as evaluating conformance with Ministry drinking water-related policies and guidelines during the inspection review period.

One issue of non-compliance was identified in the inspection, required actions are discussed on page 17 of the report. No Provincial Officer's Orders were issued in conjunction with this inspection.

In order to measure individual inspection results, the Ministry has established an inspection compliance risk framework based on the principles of the Inspection, Investigation and Enforcement Secretariat and advice of internal/external risk experts. The Inspection Summary Rating Record (IRR), included as Appendix A of this inspection report, provides the Ministry, the system owner and the local Public Health Units with a summarized quantitative measure of the drinking water system's annual inspection and regulated water quality testing performance. If you have any questions or concerns regarding the rating, please contact Sheri Broeckel, Drinking Water Supervisor at (705) 739-6386.

If you have any questions regarding the inspection report, please feel free to contact the undersigned at (705) 716-5655 or laura.kent@ontario.ca.

Sincerely,



Laura Greidanus
Provincial Officer

Drinking Water Inspection Program, Safe Drinking Water Branch
Barrie District Office, Ministry of the Environment Conservation and Parks

CC Medical Officer of Health, Simcoe Muskoka District Health Unit
Manager of Environmental Services, Township of Ramara
Barrie District Office File, Ministry of the Environment, Conservation and Parks



Ministry of the Environment, Conservation and Parks

**DAVY DRIVE SUBDIVISION DRINKING WATER SYSTEM
Inspection Report**

Site Number:	220007141
Inspection Number:	1-KYBWN
Date of Inspection:	Nov 21, 2019
Inspected By:	Laura Mary Greidanus

OWNER INFORMATION:

Company Name:	RAMARA, THE CORPORATION OF THE TOWNSHIP OF	Unit Identifier:	
Street Number:	2297		
Street Name:	HIGHWAY 12 Hwy		
City:	BRECHIN	Postal Code:	L0K 1B0
Province:	ON		

CONTACT INFORMATION

Type:	Owner	Name:	John Pinsent
Phone:	(705) 484-5374 x222	Fax:	(705) 484-0441
Email:	jpinsent@ramara.ca		
Title:	Cheif Administrative Officer		

Type:	Operating Authority	Name:	David Readman
Phone:	(705) 238-9092	Fax:	(705) 484-0885
Email:	dreadman@ramara.ca		
Title:	Manager of Environmental Services		

INSPECTION DETAILS:

Site Name:	DAVY DRIVE SUBDIVISION DRINKING WATER SYSTEM
Site Address:	7230 DAVY Drive RAMARA ON L0K 2B0
County/District:	RAMARA
MECP District/Area Office:	Barrie District
Health Unit:	SIMCOE MUSKOKA DISTRICT HEALTH UNIT
Conservation Authority:	
MNR Office:	
Category:	Small Municipal Residential
Site Number:	220007141
Inspection Type:	Announced
Inspection Number:	1-KYBWN
Date of Inspection:	Nov 21, 2019
Date of Previous Inspection:	Nov 15, 2018

COMPONENTS DESCRIPTION

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

Site (Name):	WELL 1 RAW	Sub Type:	Ground
Type:	Source		

Comments:

Davy Drive production Well #1 (Well ID No. 4604569) is located within the pumphouse and is equipped with a Goulds ¾ HP submersible pump at a depth of 61 m with a rated capacity of 31.5 L/min (45 m3/d). The pumphouse and well are located within an estate subdivision approximately 200 metres from the Black River. The contour of the

immediately adjacent properties is such that surface water would be directed away from the pumphouse. According to the Hydrogeological report prepared by Dixon Hydrogeology in April, 2001 and appended within the First Engineer's Report, Well #1 was constructed in 1970 by Snider Drilling of Craighurst (License No. 4816). The well was constructed in granitic bedrock using an air percussion drilling rig to a depth of 74.7 metres below ground level, with 3.4 metres of casing in the rock and the remainder of the well bore constructed without casing. In October 2000 the well was sleeved with a 127 millimetre diameter casing by Baldwin Well Drilling to 6.7 metres and the annulus was grouted with bentonite. The sleeving procedure was used to stop the trickling of shallow groundwater into the well, which was thought to have been responsible for periodic total coliform bacteria being detected in the raw water. Following rehabilitation of the well, testing indicated a maximum well yield of 23 L/min. The 50 mm diameter discharge line connected to the well pump header within the pumphouse is equipped with a manually operated valve used to restrict the flow to 23 L/min.

The above grade connection is made by a pitless adaptor, making the well more accessible for inspection. The well cap is aluminum, bolted and locked to the casing, screened, sealed and vermin proof. The casing extends approximately 40 cm above the floor of the pumphouse.

The Golder Associates report prepared June 9, 2011 to investigate the potential of the Davy Drive supply wells being groundwater under the direct influence of surface water (GUDI) concluded that Well 1 had a low risk of being under the direct influence of surface water and that it should be considered as potentially GUDI.

Site (Name): WELL 2 RAW
Type: Source **Sub Type:** Ground
Comments:

Davy Drive production Well #2 (Well ID No. 5731001) is located approximately 30 metres west of the pumphouse and is equipped with a 1.5 HP Berkeley submersible pump at a depth of 61 m with a rated capacity of 23 L/min (33 m3/d). The well is situated within an estate subdivision approximately 200 metres from the Black River. The contour of the immediately adjacent properties is such that surface water would be directed away from the well head. According to the Hydrogeological report prepared by Dixon Hydrogeology in April, 2001 and appended within the First Engineer's Report, Well #2 was constructed in 1995 by Baldwin Well Drilling of Kirkfield (License No. 1312). The well was constructed in granitic bedrock using an air percussion drilling rig to a depth of 76.2 metres below ground level, with 6.7 metres of 152 millimetre diameter casing grouted into the bedrock.

The below grade connection is made with a pitless adaptor with a 50 millimetre diameter discharge line connected to the well pump header in the pumphouse. The well cap is aluminum, bolted and locked to the casing, screened, sealed and vermin proof with the casing extending approximately 60 centimetres above grade.

The Golder Associates report prepared June 9, 2011 to investigate the potential of the Davy Drive supply wells being groundwater under the direct influence of surface water (GUDI) concluded that Well 2 had a low risk of being under the direct influence of surface water and that it should be considered as potentially GUDI.

Site (Name): WELL 3 RAW
Type: Source **Sub Type:** GUDI w/o Effective Insitu
Comments:

Davy Drive production Well #3 (Well ID No. 5737806) is located approximately 60 metres north of the pumphouse and is equipped with a 1.0 HP Goulds submersible pump at a depth of 60 m with a rated capacity of 65 L/min (93.6 m3/d). The well is situated within an estate subdivision approximately 200 metres from the Black River. The contour of the immediately adjacent properties is such that surface water would be directed away from the well head. According to the "Construction and Testing of Well 3" report prepared by Dixon Hydrogeology in April, 2003, Well #3 was constructed in 2002 by Baldwin Well Drilling of Kirkfield (License No. 1312). The well was constructed in granitic bedrock using an air rotary drilling rig to a depth of 60 metres below ground level, with 9.1 metres of 152 millimetre diameter casing grouted into the bedrock.

The below grade connection is made with a pitless adaptor with a 50 millimetre diameter discharge line connected to the well pump header in the pumphouse. The well cap is aluminum, bolted and locked to the casing, screened, sealed and vermin proof with the casing extending approximately 40 centimetres above grade.

The Golder Associates report prepared June 9, 2011 to investigate the potential of the Davy Drive supply wells being

groundwater under the direct influence of surface water (GUDI) concluded that Well 3 had a moderate risk of being under the direct influence of surface water and that it should be considered as potentially GUDI.

Site (Name): WELL 4 RAW
Type: Source **Sub Type:** GUDI w/o Effective Insitu

Comments:

Davy Drive production Well #4 (Well ID No. 7046944 Well Tag No. A039445) is located approximately 80 metres north of the pumphouse. It was constructed in December 2006 by Carl Baldwin Well Drilling. The well was constructed in granite using the air percussion drilling method. The depth of the well is 30.48 metres below ground level. The 152 mm diameter steel casing is grouted using neat cement slurry to a depth of 6.09 metres. The well is equipped with a 1.5 HP Goulds submersible pump at a depth of 30 m and a rated capacity of 75 L/min (108 m³/d), with a 50 millimetre diameter discharge line connected to the well pump header. The Golder Associates report prepared June 9, 2011 to investigate the potential of the Davy Drive supply wells being groundwater under the direct influence of surface water (GUDI) concluded that Well 4 had a low risk of being under the direct influence of surface water and that it should be considered as potentially GUDI.

Site (Name): PUMPHOUSE TREATED
Type: Treated Water POE **Sub Type:** Pumphouse

Comments:

Raw water from Wells #2, #3, and #4 enter the pumphouse through separate 50 millimetre raw water headers. Well #1 is situated within the pumphouse so raw water is conveyed directly from the casing through an above grade pitless adaptor into a 50 millimetre pipe and into the treatment train.

Each raw water header is equipped with an ABB magnetic flow meter used for measuring raw water flows and a smooth-bore raw water sample tap and pressure gage. After passing through the flow meters, the raw water then combines into a single header where it passes through another flow meter that controls the flow paced sodium hypochlorite injection system. One 450 litre pressure tank maintains pressure when the well pumps are not running. In order to improve treatability of the raw water, an iron and manganese removal system has been installed. The raw water passes two sodium hypochlorite injection points, supplied by two chemical metering pumps (manual duty and standby). At this stage, the sodium hypochlorite is pre-treatment used to oxidize iron in the raw water. The system also consists of a 60 litre solution tank in a secondary containment basin, two potassium permanganate metering pumps (one duty, one stand-by) complete with 4-20 mA control, automatic switchover and contact outputs for alarm notification of duty pump failure, and two feed lines discharging into the combined raw water header upstream of an in-line mixer.

After being dosed with sodium hypochlorite and potassium permanganate, the water enters two automatic green sand filters, each capable of treating the entire design flow, each complete with diaphragm control/isolation valves, check valves and inspection portals.

The filter system is also equipped with one backwash pump and a 13,500 litre concrete backwash waste holding tank that discharges supernatant to a ditch east of the pumphouse. Backwash cycles are initiated manually, typically once per week for each filter, or more if required. From the green sand filters, water passes through one of two parallel trains of cartridge filters and UV inactivation units. Each train consists of a Pentek Big Blue cartridge filter housing equipped with a Pentek Big Blue 25-1 micron nominal cartridge filter, a Harmsco WaterBetter cartridge filter housing equipped with a Harmsco Ploy-Pleat 1 micron absolute cartridge filter, continuous turbidity analyser, and a UV Pure Hallett 30-1.5 ultraviolet disinfection unit. Both UV units are equipped with a flow control valve and a powered-open solenoid valve that will automatically close in the event of UV system failure, or general power failure. Should both UV systems fail, the well pumps in operation will also shut-down and remain locked out until the alarm condition has been rectified and manually reset. Treated water from the standpipe is recirculated through the UV units when the wells are not producing water to prevent overheating.

From the UV units, the treated water flows past two sodium hypochlorite injection points. The sodium hypochlorite disinfection system consists of one 60 litre chemical storage tank with secondary containment and two chemical metering pumps (one duty, one stand-by) complete with 4-20 mA control, automatic switchover and contact outputs

for alarm notification of duty pump failure, and two feed lines discharging into the treated water line. After being dosed, the water goes to a 43 m³ glass-fused-to-steel storage standpipe with a level sensor. Before discharging to the distribution system, the treated water passes through an ABB magnetic flow meter. In addition, the pumphouse is equipped with continuous chlorine residual and turbidity analysers powered by an uninterruptible power supply, as well as a smooth bore treated water sampling tap which are fed water from a point after the contact time and prior to leaving the pumphouse. The pumphouse is also wired with a 24 hour alarm system which continuously monitors illegal entry, power interruptions, low temperature and low pressure as well as treated water quality for turbidity, free available chlorine residuals and UV intensity and transmittance. Two highlift pumps, each rated to deliver 0.88 Litres per second of water at 49 m Total Dynamic Head discharge water into the Davy Drive distribution system. A 20 kW propane powered emergency generator set is installed and capable of operating the entire facility in the event of a power outage.

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

Comments:

The Davy Drive water supply system is designed to service 42 residential lots when fully developed. There were approximately 34 lots developed at the time of inspection and the system is categorized as a Small Municipal Residential system as defined by Ontario Regulation 170/03.

The distribution system is comprised of 50 millimetre poly-vinyl chloride water main, isolation valves, two blow-offs and two designated sampling stations.

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.

The Davy Drive Subdivision Drinking Water System is owned and operated by the Corporation of the Township of Ramara. The Davy Drive Subdivision Drinking Water System is categorized as a small municipal residential drinking water system, as defined by Ontario Regulation 170/03 and operates under DWS number 220007141. The Davy Drive Subdivision Drinking Water System consists of 4 wells, treatment equipment, two distribution sample points and two blow offs, one at each end of the distribution system. The supply wells are considered to have the potential to be ground water under the direct influence of surface water (GUDI). Treatment is provided by UV inactivation and chlorination for primary disinfection, after filtration. Chlorination is provided for secondary disinfection. There is a standpipe that can provide contact time if chlorination is needed as the only source of primary disinfection, if the UV units are not functioning. Raw water from the four wells is injected with sodium hypochlorite and potassium permanganate prior to passing through two greensand filters to remove the oxidized iron and manganese. Water then flows through cartridge filters, including a one micron absolute filter before being dosed by UV light. Both of the UV units are equipped with a solenoid valve which will stop the flow of water in the event of a power failure, malfunction or the required dosage not being delivered by the UV units. Water is then injected with sodium hypochlorite prior to the 43 cubic metre storage standpipe. Two high lift pumps discharge water to the distribution system. There are no storage structures within the distribution system. The distribution system consists of 50 mm diameter polyethylene watermain.

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 and Ministry control documents. The drinking water inspection included: physical inspections of the treatment equipment and facility; interview with Township of Ramara staff; and a review of relevant documents and data from the period of November 15, 2018 to November 21, 2019 (hereafter referred to as the "inspection review period"). The previous inspection of the Davy Drive Subdivision Drinking Water System was conducted on November 15, 2018.

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

Subsection 1-2. (1) 1. of Schedule 1 of Ontario Regulation 170/03 requires that the owner of a drinking water system shall ensure that any well that serves as an entry point of raw water supply is constructed and maintained to prevent surface water and other foreign materials from entering the well.

There are four supply wells for the Davy Drive Subdivision Drinking Water System. Each of the wells has a secure cap and screened vent. The wells are locked and notices posted that the area is a well head protection zone. The Operating Authority performs regular maintenance and inspection of the wells. The supply wells have been identified as being potentially groundwater under the direct influence of surface water (GUDI). Filtration and UV inactivation were installed to address the GUDI potential.

- **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 of Schedule B of Municipal Drinking Water Licence 147-106 Issue Number 3 requires an inspection schedule for all wells associated with the drinking water system, including all production wells, standby wells, test wells and monitoring wells.

Condition 16.2.9 of Schedule B of Municipal Drinking Water Licence 147-106 Issue Number 3 requires well inspection and maintenance procedures for the entire well structure of each well including all above and below grade well components.

Condition 16.2.10 of Schedule B of Municipal Drinking Water Licence 147-106 Issue Number 3 requires remedial action plans for situations where an inspection indicates non-compliance with respect to regulatory requirements and/or risk to raw well water quality.

The Operating Authority has developed a Well Inspection, Maintenance and Monitoring Plan. The Plan outlines the activities to be performed on a weekly, monthly, yearly and 5-year inspection schedule for the four production wells supplying water for the Davy Drive Subdivision drinking water system. The inspection schedule includes both above and below grade well components, as well as comparison of well level monitoring data and calibration of the flow meters. The Plan includes a list of conditions that may indicate a problem with the well casing or structure.

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.**

Condition 2.1 of Schedule C of Municipal Drinking Water Licence 147-106 Issue Number 3 requires that for each treatment subsystem, continuous flow measurement and recording shall be undertaken for the flow rate and daily volume of treated water that flows from the treatment subsystem to the distribution system, and the flow rate and daily volume of water that flows into the treatment subsystem.

There is a magnetic flow meter installed on each of the four raw water lines, as well as on the combined raw water header, and a magnetic flow meter installed on the distribution header. Each of the flow meters provides a 4-20 mA signal. Raw and treated water flows are continuously recorded on the SCADA system. Daily log print outs include the 24 hour flows and the amount of flow since midnight (the printout occurs at approximately 6:00 am) from each of the raw water wells, the total raw water flow and the volume entering the distribution system. The minimum, maximum and average flows are also recorded.

- **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.**

Table 1 of Schedule C of Municipal Drinking Water Licence 147-106 Issue Number 3 states that the rated capacity for the Davy Drive Water Works is 75.69 m3/day. There is not a maximum flow rate specified in the Municipal Drinking Water Licence. The rated capacity for the Davy Drive Subdivision Drinking Water System was not exceeded during the inspection review period.

Treatment Processes

- **The owner had ensured that all equipment was installed in accordance with Schedule A and Schedule C of**

Treatment Processes

the Drinking Water Works Permit.

During the inspection installed equipment appeared to meet the description contained in Schedule A of Drinking Water Works Permit 147-206 Issue Number 4. There is not a Schedule C associated with the Permit.

- **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 inspection review period four Form 2s were completed. Forms were completed for replacing the Well 2 start capacitor, filter 1 actuated valve seat and seal, replacement of the two sample stations and replacement of a UV lockout solenoid.

There is a document posted in the pumphouse that outlines when a Form 2 is required to be completed for Operator reference.

- **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.**

Primary disinfection for the Davy Drive Subdivision Drinking Water System is achieved by cartridge filtration, UV inactivation and sodium hypochlorite injection. Sodium hypochlorite is also used for secondary disinfection. Chlorination and filtration may be able to be used for all primary disinfection requirements, however Schedule E of Municipal Drinking Water Licence 147-106 Issue Number 3 indicates that the cartridge filters are being credited with 2 log Giardia removal and 3 log is required. The UV units are credited with 3 log removal for Giardia Cysts. An engineer would need to verify that the Giardia removal was adequate with only the filtration and chlorination if the Operating Authority decides to pursue the removal of the UV units, or having them only as a backup in the event that the standpipe were offline.

Each of the four wells are equipped with a submersible pump that directs raw water to the pumphouse. A flow meter and pressure gage are installed on each of the raw water lines. A pressure tank is installed on the raw water line. Raw water is injected with sodium hypochlorite for iron oxidation and with potassium permanganate for iron and manganese oxidation. Water passes through two greensand filters which filter the oxidized iron and manganese. The filters are manually put into backwash approximately once per week for each filter, or more if required. Backwashing is done with treated water. Water then passes through one of two trains of two cartridge filters. The first filter is rated from 25 to one micron, the second filter is a one micron absolute filter. A turbidimeter is installed on each of the filter effluent lines. Water is then directed through one of two UV Hallett 30-1.5 inactivation units, complete with solenoid valves that will stop the flow of water in the event that the unit malfunctions or ceases to provide the required dosage. Water is cycled from the standpipe through the UV units when the well pumps are not operating to prevent the units from overheating. Water is then injected with sodium hypochlorite and sent to the 43 m³ standpipe. Two highlift pumps discharge treated water to the distribution system.

In efforts to ensure minimum treatment is provided at all times, a series of fail safes have been incorporated into the SCADA system. Internal alarms based on the sensors will close the solenoid valve for the UV units if the required dosage is not being provided. Daily logsheets include the minimum, maximum and average UV intensity and transmittance for each of the UV units. During wiper blade cycles the values from the sensors are frozen. The UV dosage is calculated with an assumed UV transmittance of 75%. From the beginning of the inspection review period until UV 1 was replaced on November 20, 2018 there were multiple instances each day of the UV transmittance being below 75%. The Operating Authority received multiple alarms. UV 2 was functioning during this time. The problem was identified and the unit was replaced. Operators are able to check the SCADA data remotely with their cell phones, and will respond if an alarm does not clear in a few minutes, or verify that the other UV unit is operating.

The Procedure for Disinfection of Drinking Water in Ontario indicates that in order for cartridge filters to claim the 2.0 log cryptosporidium oocyst removal credit, the cartridge bag filters should normally meet the performance criterion for filtered water turbidity of less than or equal to 0.2 NTU in 95% of the measurements each month.

Treatment Processes

Where it can be shown that turbidity results from the presence of inorganic particles of a size less than 2 microns, higher turbidity may be acceptable. Water passes through one micron absolute filters at the Davy Drive Subdivision Drinking Water System. The Operations Manual for the Davy Drive Drinking Water System indicates that the filtered water turbidity is required to be less than or equal to 0.2 NTU in 95% of the readings each month. The daily logsheet includes the percentage of turbidity values below 0.2 NTU. Each filter train met the performance criterion of filtered water turbidity of less than or equal to 0.2 NTU in at least 95% of the measurements each month during the inspection review period.

Schedule E of Municipal Drinking Water Licence 147-106 Issue Number 3 indicates that the UV disinfection also provides two log removal for cryptosporidium oocysts and three log removal/inactivation for giardia cysts. As such the cartridge filters are not required to meet the log removal requirements as required by Schedule 1 of Ontario Regulation 170/03. Effective filtration is necessary for the UV units to be effective.

Redundancies in the configuration of the treatment system allows for maintenance activities to be performed on components without interrupting the supply of water.

During the inspection review period, operators responded to all alarms or verified through checking the SCADA system on their phone that the alarm had cleared or the flow of water was stopped.

- **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.**

Section 1-2. (2) 4. of Schedule 1 of Ontario Regulation 170/03 requires that if the drinking water system's water treatment equipment provides chlorination or chloramination for secondary disinfection, the equipment is operated so that, at all times and at all locations within the distribution system, the free chlorine residual is never less than 0.05 mg/L, if the drinking water system provides chlorination and does not provide chloramination.

During the inspection review period, there were no free chlorine residuals measured below 0.05 mg/L. The lowest recorded distribution free chlorine reading during the inspection review period was 0.57 mg/L.

At the time of inspection a free chlorine residual of 1.45 mg/L was measured at Sample Station #1.

- **Where an activity has occurred that could introduce contamination, all parts of the drinking water system were disinfected in accordance with Schedule B, Condition 2.3 of the Drinking Water Works Permit.**

Condition 2.3 of Schedule B of Drinking Water Works Permit 147-206 Issue Number 4 states that all parts of the drinking water system in contact with drinking water which are:

2.3.1 Added, modified, replaced, extended; or

2.3.2 Taken out of service for inspection, repair or other activities that may lead to contamination, shall be disinfected before being put into service in accordance with a procedure approved by the Director or in accordance with the applicable provisions of the following documents:

- a) The ministry's Watermain Disinfection Procedure, effective January 29, 2017;
- b) AWWA C652 – Standard for Disinfection of Water Storage Facilities;
- c) AWWA C653 – Standard for Disinfection of Water Treatment Plants; and
- d) AWWA C654 - Standard for Disinfection of Wells.

The Davy Drive Water Works Contingency and Emergency Plan, which was updated in January 2019, references the most recent version of ANSI/AWWA C651 Standard for Disinfecting Water Mains where required. The ministry's Watermain Disinfection Procedure is appended in the Contingency Plan. The ministry Procedure references the ANSI/AWWA C651 document.

The Operating Authority is developing a procedure to be included in the Operations Manual for cleaning of the standpipe. The procedure will be complete prior to a clean out occurring.

- **The primary disinfection equipment was equipped with alarms or shut-off mechanisms that satisfied the standards described in Section 1-6 (1) of Schedule 1 of Ontario Regulation 170/03.**

Subsection 1-6. (1) of Schedule 1 of Ontario Regulation 170/03 requires that if primary disinfection equipment that does not use chlorination or chloramination is provided by a drinking water system, the owner of the system and the

Treatment Processes

operating authority for the system shall ensure that the disinfection equipment is designed and operated in accordance with the standards described in subsection (2), or that,

(a) the disinfection equipment has a feature that ensures that no water is directed to users of water treated by the equipment in the event that the equipment malfunctions, loses power or ceases to provide the appropriate level of disinfection; and

(b) if the disinfection equipment malfunctions, loses power or ceases to provide the appropriate level of disinfection, a certified operator takes appropriate action at the location where the equipment is installed before water is again directed to users of water treated by the equipment.

The two Hallet 30-1.5 units installed at the Davy Drive Subdivision Drinking Water System are each equipped with a solenoid valve that will shut down the supply of water in the event that the UV intensity or transmittance drops below that required for primary disinfection. An alarm is also sent to the on-call Operator who is able to check the system remotely with his phone. Operators attend the site in the event of an alarm or acknowledge the alarm remotely. The standpipe provides approximately 1.5 days of storage.

For five days at the beginning of the inspection review period the UV transmittance was measuring below 75% multiple times each day for UV 1. UV 2 was functioning properly. UV 1 was sending multiple alarms. Not all of the alarms were recorded on the daily logsheets. The Operating Authority investigated the cause of the low transmittance readings and replaced the unit on November 20, 2018. Alarms were of short duration and no apparent pattern. The solenoid valve would close in the event of the dosage dropping below that required for primary disinfection. The Operating Authority regularly tests the solenoid valves to ensure they are functioning properly. During the inspection review period the rubber for the UV 2 solenoid and the solenoid nipple were replaced in December 2018. The solenoid valve for UV 2 was replaced in February 2019.

The Operating Authority could consider having the UV transmittance and intensity values highlight on the daily logsheets in the event that they are below the alarm set points.

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.**

Schedule E of Municipal Drinking Water Licence 147-106 Issue Number 3 indicates that 2+ log removal/inactivation credits are achieved by chlorination in the standpipe. A continuous chlorine analyser is fed sample water after the standpipe, prior to entering the distribution system. The chlorine analyser is equipped with alarm capabilities for high and low levels, as indicated in the Instrument and Control section of Schedule A of Drinking Water Works Permit 147-206 issue Number 4.

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

Subsection 7-2 (5) of Schedule 7 of Ontario Regulation 170/03 requires that the owner of a small municipal residential system that provides secondary disinfection and the operating authority for the system shall ensure that at least two distribution samples are taken each week in accordance with subsection (6) and are tested immediately for free chlorine residual, if the system provides chlorination and does not provide chloramination.

Subsection (6) states that at least one of the distribution samples referred to in subsection (5) must be taken at least 48 hours after, and during the same week as, one of the other distribution samples referred to in subsection (5).

During the inspection review period distribution free chlorine residual was measured at least twice a week with at least 48 hours between samples taken in each week.

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

Subsection 6-5. (1) 3. of Schedule 6 of Ontario Regulation 170/03 requires that test results recorded under paragraph 1 or 2 for parameters contained in the Table in Schedule 6 must be examined, within 72 hours after the tests are conducted by a certified operator, in the case of, a small municipal residential system, such as the Davy

Treatment Process Monitoring

Drive Subdivision Drinking Water System.

Operators review test results from continuous analysers within 72 hours of the results. Data is typically reviewed each day. Operators are able to check data remotely and can log their review and notes electronically.

- **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 shut-off mechanisms that satisfy the standards described in Schedule 6.**
- **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.**
- **The owner and operating authority ensured that the primary disinfection equipment had a recording device that continuously recorded the performance of the disinfection equipment.**

Both of the UV units continuously record transmittance and intensity on the SCADA system. The daily log printouts include the minimum, maximum and average intensity and transmittance for each of the UV units. Operators are able to view the data remotely.

- **All continuous analysers were calibrated, maintained, and operated, in accordance with the manufacturer's instructions or the regulation.**

During the inspection review period Operators compared the chlorine residual readings from the continuous analyser with the hand held colorimeter multiple times each week and made adjustments to the continuous analyser where appropriate.

The Davy Drive Operations Manual indicates that the chlorine analyser should be checked weekly against hand held test equipment to verify the accuracy, and the alarming tested. Operators are to recalibrate the analyser as needed as per the manufacturer's recommendations or when results obtained from hand held and analyser differ by more than 0.2 mg/L. The Manual also states that the probe should be replaced every year or as needed as per manufacturer's recommendations.

The analysers were calibrated by Metcon on January 21 and 22, 2019. The chlorine probe was calibrated on December 21, 2018, July 3, 2019 and October 2, 2019. The pH probe was replaced and calibrated on October 25, 2019. The final turbidity analyser was calibrated on November 26, 2018, May 9, 2019 and November 14, 2019. On August 8, 2019 the chlorine probe electrolyte was replaced. Regular maintenance and cleaning was performed throughout the inspection review period.

- **All UV sensors were not checked and calibrated as required.**

Schedule E of Municipal Drinking Water Licence 147-106 Issue Number 3 states that Duty UV sensors shall:

1. be checked on at least a monthly basis against a reference UV sensor;
2. when comparing a duty UV sensor to a reference UV sensor, the calibration ratio (intensity measured with the duty UV sensor/intensity measured with the reference UV sensor) shall be less than or equal to 1.2;
3. if the calibration ratio is greater than 1.2, the duty UV sensor shall be replaced with a calibrated UV sensor or a UV sensor correction factor shall be applied while the problem with the UV sensor is being resolved;
4. reference UV sensors shall be checked against a Master Reference Assembly at a minimum frequency of once every three years or on a more frequent basis depending upon the recommendations of the equipment manufacturer.

Municipal Drinking Water Licences that have been issued more recently state that the sensors are to be checked monthly or as per the recommendations of the equipment manufacturer.

The Manufacturer or the UV units installed for the Davy Drive Well Supply provided documentation which recommends an annual sensor check. The document notes that if there is drift of the sensors it is only downwards and would result in the units alarming prematurely.

During the inspection review period, on January 19, 2019 the UV sensors were checked against the calibration unit.

Treatment Process Monitoring

The Operating Authority keeps a sensor onsite for the sole purpose of being used to check against the installed sensors.

The Operating Authority has not had the sensors checked against a Master Reference Assembly by the manufacturer.

Operations Manuals

- **The operations and maintenance manuals contained plans, drawings and process descriptions sufficient for the safe and efficient operation of the system.**

In January 2019 the Operating Authority undertook a review and performed revisions of the Operations and Maintenance Manuals for the Davy Drive Water Works. The revisions were performed to ensure that the procedures and information contained in the Manuals accurately reflected the activities performed by Operators and the installed equipment. Previously an engineering company authored the Operations Manuals. The Manual indicates that all adjustments or works undertaken on the system are to be incorporated into the Manual prior to work being completed and that the Operating Authority and all Operators are to review the documents annually to ensure accuracy and familiarity with the content.

- **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.**

Section 16.2 of Schedule B of Municipal Drinking Water Licence 147-106 Issue Number 3 requires that the operations and maintenance manual or manuals, shall include at a minimum:

- 16.2.1 The requirements of this licence and associated procedures;
- 16.2.2 The requirements of the drinking water works permit for the drinking water system;
- 16.2.3 A description of the processes used to achieve primary and secondary disinfection within the drinking water system, including where applicable:
 - a) A copy of the CT calculations that were used as the basis for primary disinfection under worst case operating conditions; and
 - b) The validated operating conditions for UV disinfection equipment, including a copy of the validation certificate;
- 16.2.4 Procedures for monitoring and recording the in-process parameters necessary for the control of any treatment subsystem and for assessing the performance of the drinking water system;
- 16.2.5 Procedures for the operation and maintenance of monitoring equipment;
- 16.2.6 Contingency plans and procedures for the provision of adequate equipment and material to deal with emergencies, upset conditions and equipment breakdown;
- 16.2.7 Procedures for dealing with complaints related to the drinking water system, including the recording of the nature of the complaint and any investigation and corrective action taken in respect of the complaint;
- 16.2.8 An inspection schedule for all wells associated with the drinking water system, including all production wells, standby wells, test wells and monitoring wells;
- 16.2.9 Well inspection and maintenance procedures for the entire well structure of each well including all above and below grade well components; and
- 16.2.10 Remedial action plans for situations where an inspection indicates non-compliance with respect to regulatory requirements and/or risk to raw well water quality.
- 16.3 Procedures necessary for the operation and maintenance of any alterations to the drinking water system shall be incorporated into the operations and maintenance manual or manuals prior to those alterations coming into operation.

The Davy Drive Water Works Operations and Maintenance manual meets the requirements of the Municipal Drinking Water Licence. Since the time of inspection the CT calculation worksheet has been updated to reflect how CT is to be calculated to achieve the two log virus removal credit required by the Municipal Drinking Water Licence. The sheet also states the CT value that would be required in the event of both UV inactivation units failing. The updated CT procedure accurately reflects the log removal credits stipulated in Schedule E of Municipal Drinking Water Licence 147-106 Issue Number 3. The previous CT calculation worksheet developed by an outside consultant did not reflect the need for log removal credits by chlorination. Though it did indicate how CT could be

Operations Manuals

calculated for chlorine disinfection.

In January 2019 the Operating Authority updated the Davy Drive Operations Manuals. A procedure is being developed for the cleaning of the standpipe.

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.**

Security

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

The pumphouse which houses the treatment equipment and Well 1 for the Davy Drive Subdivision Drinking Water System is locked and alarmed for forced entry. The pumphouse property is fenced. The three wells located outside and the sample stations are kept locked. There are no other storage structures within the distribution system.

Certification and Training

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

The Davy Drive Subdivision Drinking Water System is comprised of a Water Distribution Class I and Water Treatment Class II subsystem. The treatment system was reclassified in April 2019 to a Class II. The Overall Responsible Operator is designated for both of the subsystems.

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

The Davy Drive Subdivision Drinking Water System is comprised of a Water Distribution Class I and Water Treatment Class II subsystem. The treatment system was reclassified in April 2019 to a Class II. The Operators In Charge are designated for both of the subsystems.

- **All operators possessed the required certification.**
- **Only certified operators made adjustments to the treatment equipment.**

Water Quality Monitoring

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

Section 11-2 of Schedule 11 of Ontario Regulation 170/03 requires that the owner of a drinking water system and the operating authority for the system ensure that at least one distribution sample is taken every two weeks, if the system provides treatment equipment in accordance with Schedule 1 or 2 and the equipment is operated in accordance with that Schedule, and ensure that each of the samples taken is tested for Escherichia coli, total coliforms and general bacteria population expressed as colony counts on a heterotrophic plate count (HPC) if secondary disinfection is provided.

During the inspection review period, the requirements of section 11-2 of Schedule 11 were exceeded. Each week two distribution samples were collected from the Davy Drive Subdivision Drinking Water System. In addition, a treated water sample was collected each week though not required.

All samples were tested for the required parameters.

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

Water Quality Monitoring

required frequency.

Subsection 13-2 (3) of Schedule 13 of Ontario Regulation 170/03 requires that the owner of a small municipal residential system and the operating authority for the system shall ensure that, at least one water sample is taken every 60 months and tested for every parameter set out in Schedule 23.

During the inspection review period treated water samples were tested for all Schedule 23 parameters on August 21, 2019. Prior to that treated water samples were tested for all Schedule 23 parameters on August 16, 2016.

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

Subsection 13-4 (3) of Schedule 13 of Ontario Regulation 170/03 requires that the owner of a small municipal residential system and the operating authority for the system shall ensure that, at least one water sample is taken every 60 months and tested for every parameter set out in Schedule 24.

During the inspection review period treated water samples were tested for all Schedule 24 parameters on August 21, 2019. Prior to that treated water samples were tested for all Schedule 24 parameters on August 16, 2016.

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

Section 13-6.1 of Schedule 13 of Ontario Regulation 170/03 requires that 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 (HAA), and have the samples tested for haloacetic acids.

The requirement to sample for HAA came into effect on January 1, 2017. The standard for HAA as a reportable limit comes into effect on January 1, 2020.

During the inspection review period a sample was collected from the Davy Drive Subdivision distribution system in November 2018, February 2019, May 2019 and August 2019 and tested for HAA as required. The average of the HAA samples taken during the inspection review period was 63.58 ug/L.

- **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 Ontario Regulation 170/03 requires that 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 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 (THMs). The samples are to be tested for THMs.

During the inspection review period distribution samples were collected and tested for THMs in the Davy Drive Subdivision distribution system in November 2018, February 2019, May 2019 and August 2019. The average for THMs during the inspection review period was 68 ug/L.

- **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 Ontario Regulation 170/03 requires that the owner of a drinking water system and the operating authority for the system shall ensure that at least one water sample is taken every three months and tested for nitrate and nitrite.

During the inspection review period samples tested for nitrate and nitrite were collected from the treated water point of entry for Davy Drive Subdivision Drinking Water System in November 2018, February 2019, May 2019 and August 2019 as required.

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

Water Quality Monitoring

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

Section 6-1.1 (7) of Schedule 6 of Ontario Regulation 170/03 states that if this Regulation requires at least one water sample to be taken every 60 months and tested for a parameter, the owner of the drinking water system and the operating authority for the system shall ensure that at least one sample that is taken during a 60-month period for the purpose of being tested for that parameter is taken not more than 90 days before or after the fifth anniversary of the day a sample was taken for that purpose in the previous 60-month period.

The most recent treated water sample tested for sodium was collected on August 25, 2015 from the Davy Drive Subdivision Drinking Water System. A resample was collected and tested for sodium on September 2, 2015.

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

Section 13-9 of Schedule 13 of Ontario Regulation 170/03 requires that if a drinking water system does not provide fluoridation, the owner of the system and the operating authority for the system shall ensure that a water sample is taken at least once every 60 months and tested for fluoride.

Section 6-1.1 (7) of Schedule 6 of Ontario Regulation 170/03 states that if this Regulation requires at least one water sample to be taken every 60 months and tested for a parameter, the owner of the drinking water system and the operating authority for the system shall ensure that at least one sample that is taken during a 60-month period for the purpose of being tested for that parameter is taken not more than 90 days before or after the fifth anniversary of the day a sample was taken for that purpose in the previous 60-month period.

A treated water sample was collected on August 15, 2017 and tested for fluoride. Prior to that a sample was collected on August 22, 2012, from the treated water sample point at Davy Drive Subdivision Drinking Water System and tested for fluoride.

- **All water quality monitoring requirements imposed by the MDWL or DWWP issued under Part V of the SDWA were being met.**

Condition 4.4 of Schedule C of Municipal Drinking Water Licence 147-106 Issue Number 3 requires that total suspended solids and iron be tested quarterly in a manual composite sample at the point of discharge of the filter backwash system.

Subsection 6-1.1 (5) of Schedule 6 of Ontario Regulation 170/03 requires that if this Regulation or an approval, municipal drinking water licence or order, including an OWRA approval or order, requires at least one water sample to be taken every three months or in each calendar quarter and tested for a parameter, the owner of the drinking water system and the operating authority for the system shall ensure that at least one sample that is taken during a three-month period or calendar quarter for the purpose of being tested for that parameter is taken at least 60 days, and not more than 120 days after a sample was taken for that purpose in the previous three-month period or calendar quarter.

During the inspection review period backwash samples were tested for total suspended solids (TSS), iron and manganese on March 4, 2019, May 28, 2019 and August 21, 2019. The Davy Drive Water Works Operations Manual outlines how the manual composite samples are to be collected as required by the Municipal Drinking Water Licence.

There were 118 days between the backwash sample collected in November 2018 and March 2019. The Operating Authority typically collects the first quarterly sample of the calendar year in February.

Table 3 of Schedule C of Municipal Drinking Water Licence 147-106 Issue Number 3 states that the annual average concentration limit for TSS is 15 mg/L and for iron 1 mg/L. During the inspection review period the average concentration for TSS from backwash samples was 5.7 mg/L. The average concentration for iron was 0.85 mg/L during the inspection review period.

Condition 4.5 of Schedule C of Municipal Drinking Water Licence 147-106 Issue Number 3 requires that continuous monitoring of the UV intensity, UV transmittance and UV lamp status be carried out for the UV disinfection units, and that the flow rate be measured.

UV intensity, UV transmittance and the flow rate are continuously measured and recorded once per minute for each

Water Quality Monitoring

of the two UV units. The daily log print outs include the minimum, maximum and average for UV intensity and UV transmittance for both of the units. Raw water and treated water flow rate is continuously measured. The Hallett 30-1.5 units are equipped with a flow regulating device that limits the flow to a maximum of 113 litres per minute or 30 US gallons per minute. Individual lamp status is not recorded by a continuous analyser. If a value is recorded for the UV intensity the UV lamps are on. An uninterruptible power supply (UPS) has been installed to prevent data loss from the analysers.

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

Subsection 6-3. (1) of Schedule 6 of Ontario Regulation 170/03 states that if this Regulation requires a water sample to be taken and tested for a microbiological parameter, the owner of the drinking water system and the operating authority for the system shall ensure that another sample is taken at the same time from the same location and is tested immediately for free chlorine residual, if the system provides chlorination and does not provide chloramination.

During the inspection review period free chlorine residual was tested at the same time from the same location as treated water and distribution microbiological samples.

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).**

All samples collected during the inspection review period including Schedule 23 and 24 parameters, nitrate, nitrite, treated and distribution microbiological samples, THM and HAA results, and the most recent sample result for fluoride met the Ontario Drinking Water Quality Standards.

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.**

During the inspection review period there were no low chlorine alarms not generated by maintenance activities being performed by Operators. There were eight days with turbidity alarms during the inspection review period. Operators either responded to the pumphouse or were able to see that the issue was resolved or was caused by air bubbles by logging in and reviewing the data remotely. Appropriate corrective actions were taken, including relocating the analyser to resolve the air bubble issue.

- **When the primary disinfection equipment, other than that used for chlorination or chloramination, has failed causing an alarm to sound or an automatic shut-off to occur, a certified operator responded in a timely manner and took appropriate actions.**

During the inspection review period Operators responded to turbidity alarms for UV 2 one day and both UV 1 and UV 2 on another. Two other alarm responses were made for turbidity. On four days there were multiple turbidity alarms checked online. The UV 2 bulb failed one day and the lockout was checked. The bulb was replaced two days later.

For five days at the beginning of the inspection review period the UV transmittance was measuring below 75% multiple times each day for UV 1. UV 2 was functioning properly. UV 1 was sending multiple alarms. Not all of the alarms were recorded on the daily logsheets. The Operating Authority investigated the cause of the low transmittance readings and replaced the unit on November 20, 2018. Alarms were of short duration and no apparent pattern. The solenoid valve would close in the event of the dosage dropping below that required for primary disinfection.

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 UV sensors were not checked and calibrated as required.

Schedule E of Municipal Drinking Water Licence 147-106 Issue Number 3 states that Duty UV sensors shall:

1. be checked on at least a monthly basis against a reference UV sensor;
2. when comparing a duty UV sensor to a reference UV sensor, the calibration ratio (intensity measured with the duty UV sensor/intensity measured with the reference UV sensor) shall be less than or equal to 1.2;
3. if the calibration ratio is greater than 1.2, the duty UV sensor shall be replaced with a calibrated UV sensor or a UV sensor correction factor shall be applied while the problem with the UV sensor is being resolved;
4. reference UV sensors shall be checked against a Master Reference Assembly at a minimum frequency of once every three years or on a more frequent basis depending upon the recommendations of the equipment manufacturer.

Municipal Drinking Water Licences that have been issued more recently state that the sensors are to be checked monthly or as per the recommendations of the equipment manufacturer.

The Manufacturer or the UV units installed for the Davy Drive Well Supply provided documentation which recommends an annual sensor check. The document notes that if there is drift of the sensors it is only downwards and would result in the units alarming prematurely.

During the inspection review period, on January 19, 2019 the UV sensors were checked against the calibration unit. The Operating Authority keeps a sensor onsite for the sole purpose of being used to check against the installed sensors.

The Operating Authority has not had the sensors checked against a Master Reference Assembly by the manufacturer.

Action(s) Required:

As required by item 4 under Duty UV Sensor Checks and Calibration under Log Removal/Inactivation Credit Assignment Criteria in Schedule E of Municipal Drinking Water Licence 147-106 Issue Number 3 the reference UV sensors shall be checked against a Master Reference Assembly at a minimum frequency of once every three years or on a more frequent basis depending upon the recommendations of the equipment manufacturer.

The Owner and Operating Authority shall provide records to Provincial Officer Laura Greidanus at laura.kent@ontario.ca by no later than January 30, 2020 that the sensors have been sent to the manufacturer for a check against a Master Reference Assembly. The update to the Davy Drive Operations Manual shall also be provided outlining the procedure that will be used to ensure the sensors are checked as required by the Municipal Drinking Water Licence.


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:
Laura Mary Greidanus

Signature: (Provincial Officer)


Reviewed & Approved By:
Sheri Broeckel

Signature: (Supervisor)


Review & Approval Date:

Jan 10, 2020

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.



Inspection Summary Rating Record

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

DWS Name: DAVY DRIVE SUBDIVISION DRINKING WATER SYSTEM
DWS Number: 220007141
DWS Owner: Ramara, The Corporation Of The Township Of
Municipal Location: Ramara

Regulation: O.REG 170/03
Category: Small Municipal Residential System
Type Of Inspection: Focused
Inspection Date: November 21, 2019
Ministry Office: Barrie District

Maximum Question Rating: 493

Inspection Module	Non-Compliance Rating
Source	0 / 14
Capacity Assessment	0 / 30
Treatment Processes	0 / 102
Operations Manuals	0 / 28
Logbooks	0 / 14
Certification and Training	0 / 42
Water Quality Monitoring	0 / 91
Reporting & Corrective Actions	0 / 42
Treatment Process Monitoring	14 / 130
TOTAL	14 / 493

Inspection Risk Rating	2.84%
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FINAL INSPECTION RATING:	97.16%
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Ministry of the Environment - Detailed Inspection Rating Record (Reporting Year - 2019-2020)

DWS Name: DAVY DRIVE SUBDIVISION DRINKING WATER SYSTEM
DWS Number: 220007141
DWS Owner: Ramara, The Corporation Of The Township Of
Municipal Location: Ramara

Regulation: O.REG 170/03
Category: Small Municipal Residential System
Type Of Inspection: Focused
Inspection Date: November 21, 2019
Ministry Office: Barrie District

Non-compliant Question(s)	Question Rating
Treatment Process Monitoring	
If UV disinfection is used were duty sensors and reference UV sensors checked and calibrated as per the requirements of Schedule E of the MDWL or at a frequency as otherwise recommended by the UV equipment manufacturer?	14
TOTAL QUESTION RATING	14

Maximum Question Rating: 493

Inspection Risk Rating	2.84%
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FINAL INSPECTION RATING:	97.16%
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