

Ministry of the Environment,
Conservation and Parks

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

Barrie District

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September 4, 2020

Attention: John Pinsent Chief Administrative Officer

**Re: 2020 Drinking Water Inspection Report
South Ramara Drinking Water System**

Please find enclosed the Ministry of the Environment, Conservation and Parks Inspection Report for South Ramara Drinking Water System (Water Works # 220010681). The physical inspection process took place on July 14, 2020.


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.

No issues of non-compliance were identified in the inspection. 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.

Sincerely,



Laura Kent
Water Inspector
Provincial Officer
Barrie District Office, Ministry of the Environment Conservation and Parks

CC Medical Officer of Health, Simcoe Muskoka District Health Unit
Resources Technician/ Risk Management Official, Township of Ramara
Barrie District Office File, Ministry of the Environment, Conservation and Parks



Ministry of the Environment, Conservation and Parks

**SOUTH RAMARA DRINKING WATER SYSTEM
Inspection Report**

Site Number:	220010681
Inspection Number:	1-O72WM
Date of Inspection:	Jul 14, 2020
Inspected By:	Laura Kent

OWNER INFORMATION:

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

CONTACT INFORMATION

Type:	Operating Authority	Name:	Nick Leroux
Phone:	(705) 484-5374 x248	Fax:	(705) 484-0441
Email:	nleroux@ramara.ca		
Title:	Overall Responsible Operator		

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

INSPECTION DETAILS:

Site Name:	SOUTH RAMARA DRINKING WATER SYSTEM
Site Address:	3001 SUNTRAC Drive BRECHIN ON L0K 1B0
County/District:	RAMARA
MECP District/Area Office:	Barrie District
Health Unit:	SIMCOE MUSKOKA DISTRICT HEALTH UNIT
Conservation Authority:	
MNR Office:	
Category:	Large Municipal Residential
Site Number:	220010681
Inspection Type:	Announced
Inspection Number:	1-O72WM
Date of Inspection:	Jul 14, 2020
Date of Previous Inspection:	May 10, 2019

COMPONENTS DESCRIPTION

Site (Name):	MOE DWS Mapping	Sub Type:	
Type:	DWS Mapping Point		
Site (Name):	RAW WATER	Sub Type:	Surface
Type:	Source		

Comments:
 The Heritage Farm and Mara Shores Estate subdivisions obtain their drinking water from Lake Simcoe which is treated at the South Ramara Water Treatment Plant (WTP). The raw water intake structure for the South Ramara WTP consists of a redwood intake crib in approximately 3 metres of water located 80 metres from shore. An on shore

low lift pumping station, situated within a municipal easement on the Lake Simcoe shorefront, draws water from Lake Simcoe through a 150 millimetre diameter intake pipe. The intake pipe is equipped with a frazil ice cap, chlorine solution line, diffuser for pre-chlorination and zebra mussel control, and a raw water sampling line installed exterior to the ice cap. The low lift pumping station is a 1.8 metre diameter, 6.8 metre deep well with an average operational depth of 4.6 metres. The lift station is equipped with a manually cleaned inlet screen and two 3 kW submersible pumps, each capable of pumping 6.29 L/s at 18.9 metres Total Dynamic Head (TDH). Raw water is conveyed by the low lift pumps to the treatment facility, where water taking is measured by an electromagnetic flow measuring device prior to chemical injection and treatment. The low lift pumps alternate duty on each start-up, which are controlled by the level of the treated water reservoir at the plant.

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

Comments:

The South Ramara Water Treatment Plant is a surface water treatment facility with chemically assisted filtration. Raw water is dosed with sodium hypochlorite and poly aluminum chloride. The pre-chlorination system consists of a 50 litre chemical solution storage tank and a chemical metering pump with a rating of 7.5 litres/hour at 150 pounds per square inch (psi). The coagulant system consists of a 380 litre chemical solution storage tank and two chemical metering pumps (one duty, one standby) each with a rating of 2.1 litres/hour at 150 psi. The chemical metering pumps for both the pre-chlorination and coagulant dosing systems are interlocked with the low lift pump starter to start injecting at the same time that the low lift pumps begin pumping water. In addition, a three stage inline static mixer is installed within the raw water header downstream of the chemical injection points to provide flash mixing of the coagulant prior to flocculation and the treatment units. The post-chlorination system consists of a 100 litre chemical solution storage tank and two chemical metering pumps each with a rating of 0.59 litres/hour at 126 pounds per square inch (psi) equipped with an automatic switchover mechanism.

In addition to pre-chlorination and coagulation, a pH adjustment system consisting of a 340 kilogram stainless steel refillable storage cylinder containing liquefied carbon dioxide (CO) gas and a wall mounted metering panel equipped with an actuated control valve and bypass piping, gas feed flowmeter, filter, CO gas pressure regulator, and isolating manual ball valves are installed to inject CO gas into the raw water prior to the treatment units, to lower the pH, if required.

Two filtration units, each rated for a maximum capacity of 387 cubic metres/day, are utilized. A US Filter WaterBoy 133 (Filter #1) was installed in 2005 as part of the upgrades to duplicate the existing Neptune Microfloc WaterBoy Model WB-133 (Filter #2). Each package treatment unit consists of a flocculation tank, a settling tank, and a media filter. After an approximate detention time of 35 minutes in the flocculation tank, water overflows into the settling tank. The settling tank consists of horizontal tube settlers, and a sump pipe that is used for backwashing and the prevention of overflows. Settled water then flows through the filter media. Both filters are equipped with granular activated carbon, sand and gravel. The water is drawn through the filter media by a 1.5 kilowatt (kW) effluent pump that is controlled by an on/off float switch. A second float switch regulates the amount of water being filtered. The media filters are backwashed manually approximately once a week or more if necessary. The backwash cycle uses a 5.6 kW pump to draw water from the clearwell and flush the filter media. Backwash water overflows from the filter tank into the sedimentation tank and the sump pipe lowers the water level in the sedimentation tank to allow the settling tubes to be hosed off manually. Water from the backwash process is drained from near the bottom of the sedimentation tank, and discharged to a backwash water storage facility which overflows to Lake Simcoe. Upon completion of a backwash, a filter-to-waste cycle is initiated. Two continuous on-line turbidimeters are installed and separately supplied with continuous samples from each of the filter effluent lines. Each of the analysers are equipped with signal outputs connected to a data logging device and an auto dialer for continuous monitoring and reporting purposes. A primary disinfection system consisting of a 100 litre sodium hypochlorite solution storage tank and two sodium hypochlorite metering pumps (one duty, one stand-by) complete with 4-20 mA control, automatic switchover and contact output for alarm notification of duty pump failure injects sodium hypochlorite into the filtered water line prior to entering the clearwells. The injection rate is flow paced.

Chemically dosed water is discharged into the two above ground clearwells located in the building. Clearwell #1 has an approximate operating volume of 104 cubic metres and Clearwell #2 has an approximate operating volume of 72 cubic metres. These clearwells are designed and operated in series to provide a minimum chlorine contact volume of 35 cubic metres at all times. In the event that the low reservoir level falls below 35 cubic metres an Operator is called

and the high lift pumps lockout.

Two 7.5 kW (10 HP) high lift pumps deliver the water from the clearwell to the distribution system. One pump operates on continuous duty, while the other is on standby. The duty pump maintains line pressure of 620 kPA (90 psi). If it cannot keep up with the water demand, and the pressure drops to approximately 310 kPA (45 psi), the backup pump will engage to assist.

Water discharging from the clearwells is monitored by on-line turbidity and chlorine analysers that have signal outputs connected to a data logging device and an auto dialer for continuous monitoring and alarming purposes. The water for these analysers is drawn continuously by a pump to ensure that the water is being drawn from a location that represents the point at which CT is being achieved.

The South Ramara Water Treatment Plant has been equipped with a standby 47 kW propane powered generator capable of operating the entire treatment plant in the event of a power failure.

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

Comments:

The South Ramara water treatment plant is designed to service 76 residential lots in the Heritage Farm water distribution system, 36 residential lots in the Mara Shores Estates water distribution system, 8 lots on Furniss Crescent, and 5 residential lots on Florida Avenue.

The distribution system is comprised of 4 inch and 6 inch poly-vinyl chloride (PVC) water mains, isolation valves, fire hydrants, two designated sample stations and the former Mara Shores pumphouse which serves as a distribution sampling location and has a continuous chlorine analyser installed which is connected to the SCADA system. The fire hydrants have been installed for distribution system maintenance purposes only as the system is not designed for fire protection.

There are no known designated facilities serviced by the South Ramara Drinking Water 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.

The South Ramara Drinking Water System is a Large Municipal Residential drinking water system as defined by Ontario Regulation 170/03, and serves 104 service connections in the Heritage Farm and Mara Shores Estates distribution systems located in Part Lot 16 Concession B and Lot 15, Concession C. The South Ramara Drinking Water System has the drinking water system number 220010681. There are no known designated facilities serviced by the South Ramara Drinking Water System.

The South Ramara Drinking Water System draws water from Lake Simcoe. Treatment consists of chemically assisted filtration and chlorination. Two low lift pumps send water to the treatment plant. Raw water is injected with carbon dioxide for pH adjustment, sodium hypochlorite and poly aluminum chloride. Filtration is achieved in two package treatment units, each including a flocculation tank, settling tank and a mixed media filter. Water is then injected with sodium hypochlorite and contact time is achieved in two clearwells. Two highlift pumps discharge treated water to the distribution system. There are three sample stations, one in a former pumphouse, and 7 hydrants installed which are used for flushing and maintenance purposes.

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 inspection of the treatment equipment and facility; interview with Township of Ramara staff; and a review of relevant documents and data from the period of May 10, 2019 to July 14, 2020 (hereafter referred to as the "inspection review period"). The previous inspection of the South Ramara Drinking Water System was conducted on May 10, 2019.

Source

- **The owner had a harmful algal bloom monitoring plan in place.**

Raw water and treated samples are tested for microcystin in the summer months. During the inspection review period treated and raw water samples were tested for microcystin from the beginning of June 2019 to the end of September 2019 with the exception of the last week in July 2019 when samples weren't collected, and from May 25, 2020 to the end of the inspection review period. The first samples collected in 2019 were from the raw water and distribution system, rather than the treated water point of entry.

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 147-103 Issue Number 2 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 are three magnetic flow meters installed at the South Ramara Water Treatment Plant, one that measures the raw water entering the South Ramara Water Treatment Plant from Lake Simcoe, one that measures the combined filter effluent and one that measures the water entering the distribution system after the high lift pumps. Each of the flow meters provides a 4-20 mA signal. Raw, filtered and treated water flows are continuously recorded on the SCADA system. Daily log printouts include the 24 hour flows, flow since midnight, percentage of the allowable raw water taken and min, max and average flows recorded by each of the three flow meters.

- **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 147-103 Issue Number 2 states that the rated capacity for South Ramara Water Treatment System is 387 m³/day. This value was not exceeded during the inspection review period for the amount of water flowing from the treatment subsystem to the distribution system. There is not a maximum flow rate for South Ramara Drinking Water System in Table 2 of Schedule C of Municipal Drinking Water Licence 147-103 Issue Number 2.

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.**

Based on observations made at the time of inspection it appears that all equipment installed at the South Ramara Water Treatment Plant is as described in Schedule A of Drinking Water Works Permit 147-203 Issue Number 3. Drinking Water Works Permit 147-203 Issue Number 3 was issued on February 16, 2017 and does not contain a Schedule C.

- **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 11 Form 2 documents were completed. Some of the activities undertaken for which a Form 2 was completed include replacing the float valve for filter 1, replacing the raw water turbidity analyser, switching the coagulants from aluminum sulphate to poly aluminum chloride (pax-x16), replacing the raw water turbidity analyser and replacing the post pump surge solenoid valve.

- **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 South Ramara Drinking Water System is achieved by chemically assisted filtration and the use of the chlorine contact/concentration time (CT) concept to ensure the provision of effective pathogen inactivation. Two package filtration units, each with a flocculation tank, settling tank and mixed media filter, filter the water after raw water is injected with carbon dioxide, sodium hypochlorite and poly aluminum chloride. The effective disinfectant contact time required for the CT concept is attained within the two clearwells, one with an approximate operation volume of 104 m³ and one with an approximate operation volume of 72 m³. The clearwells are configured in series. Following completion of the intended contact time, free chlorine residuals are maintained within the distribution system for secondary disinfection purposes.

In efforts to ensure minimum treatment is provided at all times, a series of fail safes have been incorporated into the

Treatment Processes

SCADA system. The alarm set points are at levels which afford sufficient time for an Operator to respond, prior to the chlorine residual dropping below the level required for primary disinfection. Operators typically perform CT calculations in the event of a low chlorine alarm to confirm that primary disinfection has been achieved. Alarms are tested regularly to ensure they are functioning properly. In the event that the low reservoir level is reached an alarm is sent to the on-call Operator and the high lift pumps will lock out if the level reaches 0.65 m. During the inspection review period the majority of readings that were above or below the alarm set points were the result of maintenance activities, such as cleaning the analysers, changing electrolyte or probes, testing the generator and filter backwashing or air bubbles in the turbidity analyser. Otherwise the on-call Operator attended the site.

The SCADA system calculates the percentage of turbidity readings below 0.3 NTU. During the inspection review period the filters produced water with turbidity values below 0.3 NTU when in service in at least 95% of the measurements each month, as required by the Procedure for Disinfection of Drinking Water in Ontario. When the criteria was not met, it was during times that Filter 1 was not in service. Calculations were performed to ensure that when water was being directed to users, the criteria for filter effluent turbidity was met.

During the inspection review period records indicate that primary disinfection was achieved whenever water was being supplied. Data reviewed to assess if primary disinfection was achieved include facility logsheets, continuous analyser data for flows, reservoir levels, chlorine residuals for the treated water point of entry and in the distribution system, turbidity levels for each filter effluent line and the treated water point of entry, and sample results.

- **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 residual results recorded below 0.05 mg/L. The lowest recorded distribution free chlorine reading during the inspection review period was 0.21 mg/L. There was one day during the inspection review period when the free chlorine residual measured by the continuous analyser installed in the Mara Shores old pumphouse was -1.25 mg/L, however this was during a power failure.

At the time of inspection the inspector measured a free chlorine residual of 1.43 mg/L 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 147-203 Issue Number 3 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 South Ramara Water Works Contingency and Emergency Plan was updated in January 2019 by the Operating Authority. The Plan includes procedures for watermain leak repairs. The procedures are detailed and meet the requirements. The Ministry's Watermain Disinfection Procedure (effective for the system on January 29, 2017) as well as the most recent version of AWWA C651 are appended in the Plan. The Operations Manual includes direction for maintenance and cleaning of reservoirs and the AWWA Standard for Disinfection of Water-Storage Facilities.

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 continuous chlorine analyser is fed sample water from a point after the clearwells and the intended CT, prior to water entering the distribution system.

- **Continuous monitoring of each filter effluent line was being performed for turbidity.**

Subsection 7-3 (2) (b) of Schedule 7 of Ontario Regulation 170/03 requires that if a drinking water system obtains water from a raw water supply that is surface water and the system provides filtration the owner of the system shall ensure that sampling and testing for turbidity is carried out by continuous monitoring equipment on each filter effluent line.

There is a continuous turbidity analyser for each of the two filter effluent lines. There is also a continuous analyser that measures the turbidity of the treated water line to the distribution system.

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

Subsection 7-2 (3) of Schedule 7 of Ontario Regulation 170/03 requires that 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 free chlorine residual, if the system provides chlorination and does not provide chloramination.

Subsection 7-2 (4) of Schedule 7 of Ontario Regulation 170/03 states that the following rules apply to the distribution samples referred to in subsection (3) unless at least one sample is taken on each day of the week:

1. At least four of the samples must be taken on one day of the week, at least 48 hours after the last sample was taken in the previous week.
2. At least three of the samples must be taken on a second day of the week, at last 48 hours after the last sample was taken on the day referred to in paragraph 1.
3. When more than one sample is taken on the same day of the week under paragraph 1 or 2, each sample must be taken from a different location.

During the inspection review period distribution free chlorine residuals were measured and recorded daily. There is a continuous analyser installed in the former pumphouse at Mara Shores. Records were made daily on a monthly spreadsheet by Operators. The daily log print outs include the minimum and maximum chlorine residual measured in the Mara Shores pumphouse by the continuous chlorine analyser, as well as the reading at the time the daily sheet was printed which is typically around 6:00 am. There were two days in January 2020 when the continuous chlorine analyser data from the distribution system was not indicated on the logsheets. The distribution continuous analyser does not alarm out to the on-call Operator.

- **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 must be examined, within 72 hours after the tests are conducted by a certified operator, in the case of, a large municipal residential system, such as South Ramara Drinking Water System.

An Operator reviews the data recorded by the continuous monitoring equipment each day with few exceptions.

Data was always reviewed within 72 hours of it being recorded during the inspection review period. The Operating Authority has implemented a system by which operations can review the data remotely with their phones. As part of the review the time and name of the Operator who performs the review is electronically recorded and included on the daily log print out.

- **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.**

Treatment Process Monitoring

- **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.**

Subsection 6-5 (1) 8 of Schedule 6 of Ontario Regulation 170/03 states that the continuous monitoring equipment must be checked and calibrated in accordance with the manufacturer's instructions. Subsection 6-5(1)10 states that if the manufacturer's instructions do not indicate how often to check and calibrate the continuous monitoring equipment and paragraph 9 does not apply, the equipment must be checked and calibrated as often as necessary to ensure that test results are within the following margins of error: i. In the case of free chlorine residual, 0.05 milligrams per litre, if the concentrations usually measured by the equipment are less than or equal to 1.0 milligrams per litre, and proportionally higher if the concentrations usually measured are greater than 1.0 milligrams per litre, ii. In the case of free chlorine residual and total chlorine residual measured for the purpose of determining combined chlorine residual, 0.05 milligrams per litre, if the concentrations usually measured by the equipment are less than or equal to 1.0 milligrams per litre, and proportionally higher if the concentrations usually measured are greater than 1.0 milligrams per litre, iii. 0.1 Nephelometric Turbidity Units (NTU), in the case of turbidity. Most days that Operators attend the pumphouse they compare the hand held colorimeter value for free chlorine residual with the continuous analyser. In the event that the discrepancy is greater than approximately 0.2 mg/L, the span of the continuous analyser is supposed to be changed, in accordance with the Operations Manual. The hand held units undergo a verification with secondary standards periodically, and are serviced by the manufacturer if the secondary verification is not within the required range. The South Ramara Water Works Operations and Maintenance Manual states that the calibration is to be done annually for the hand held colorimeter and turbidimeter. The continuous analysers are calibrated annually by a service technician, in January 2020 during the inspection review period.

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.**

Section 16.2 of Schedule B of Municipal Drinking Water Licence 147-103 issue number 2 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;

The South Ramara Water Works Operations and Maintenance manual meets the requirements of the Municipal

Operations Manuals

Drinking Water Licence. The Operating Authority updated the Operations Manual in January 2019 to ensure that the descriptions contained and procedures outlined were accurate. In March 2020 the Operators and Classification section was updated to reflect changes to Operator certification.

The name of the former Overall Responsible Operator (ORO) is still indicated in the Operations Manual. The Operating Authority has updated the name to the current ORO with the Director. The Operating Authority will be changing in the near future, and at that time it is anticipated that the necessary updates to the Manual will be completed.

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 sample stations and pumphouse are locked. The pumphouse is also alarmed for forced entry. The reservoir hatches are located within the pumphouse building. The intake structure is not marked.

Certification and Training

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

The South Ramara Drinking Water System is comprised of a Water Distribution Class I and Water Treatment Class II subsystem. 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 South Ramara Drinking Water System is comprised of a Water Distribution Class I and Water Treatment Class II subsystem. 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 were being met.**

Subsection 10-2. of Schedule 10 of Ontario Regulation 170/03 requires that the owner of a drinking water system and the operating authority for the system shall ensure that if the system serves 100,000 people or less, at least eight distribution samples, plus one additional distribution sample for every 1,000 people served by the system, are taken every month, with at least one of the samples taken in each week. The owner of the drinking water system and the operating authority for the system shall ensure that each of the samples taken is tested for Escherichia coli and total coliforms and at least 25 per cent of the samples required to be taken are to be tested for general bacteria population expressed as colony counts on a heterotrophic plate count (HPC).

The estimated population of the South Ramara Drinking Water System is approximately 270 people. As such, 8 distribution samples are required to be collected each month. During the inspection review period two distribution samples were taken each week and tested for the required parameters, including all samples being tested for HPC.

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

Water Quality Monitoring

Subsection 10-3. of Schedule 10 of Ontario Regulation 170/03 requires that the owner of a drinking water system and the operating authority for the system shall ensure that a water sample is taken at least once every week and tested for *Escherichia coli*, total coliforms and general bacteria population expressed as colony counts on a heterotrophic plate count.

During the inspection review period a treated water sample was collected each week and tested for the required parameters.

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

Subsection 13-2. (1) of Schedule 13 of Ontario Regulation 170/03 requires that the owner of a large municipal residential system and the operating authority for the system shall ensure that, at least one water sample is taken every 12 months, if the system obtains water from a raw water supply that is surface water. Subsection 13-2. (2) of Schedule 13 of Ontario Regulation 170/03 states that the owner of a large municipal residential system and the operating authority for the system shall ensure that each of the samples taken under subsection (1) is tested for every parameter set out in Schedule 23.

The most recent treated water samples tested for all Schedule 23 parameters were collected on August 21, 2019 as required. Prior to that, samples were collected and tested for all parameters listed in Schedule 23 on August 29, 2018.

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

Subsection 13-4. (1) of Schedule 13 of Ontario Regulation 170/03 requires that the owner of a large municipal residential system and the operating authority for the system shall ensure that, at least one water sample is taken every 12 months, if the system obtains water from a raw water supply that is surface water. Subsection 13-4. (2) of Schedule 13 of Ontario Regulation 170/03 states that the owner of a large municipal residential system and the operating authority for the system shall ensure that each of the samples taken under subsection (1) is tested for every parameter set out in Schedule 24.

The most recent treated water samples tested for all Schedule 24 parameters were collected on August 21, 2019 as required. Prior to that, samples were collected and tested for all parameters listed in Schedule 24 on August 29, 2018.

- **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 came into effect on January 1, 2020.

During the inspection review period a sample was collected from the South Ramara distribution system in May 2019, August 2019, November 2019, February 2020 and May 2020 and tested for HAA as required. The average for HAA during the inspection review period was 52.5 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.

Water Quality Monitoring

During the inspection review period distribution samples were collected and tested for THMs in May 2019, August 2019, November 2019, February 2020 and May 2020. The average for THMs during the inspection review period was 71 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 South Ramara Drinking Water System in May 2019, August 2019, November 2019, February 2020 and May 2020.

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

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 prior to the inspection was collected on August 25, 2015 from the South Ramara Drinking Water System. A resample was collected and tested for sodium on September 2, 2015. Prior to that a sample was taken and tested for sodium on August 17, 2010 and a resample collected on August 25, 2010.

Since the inspection a treated water sample was collected on August 12, 2020 and had a sodium result of 32.0 mg/L. The sodium result was reported as required by Schedule 16 of Ontario Regulation 170/03 and the required corrective actions taken.

- **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.

The most recent sample tested for fluoride was collected on August 25, 2017 from the treated water sample point at the South Ramara Drinking Water System. Previously a sample to be tested for fluoride was collected on August 22, 2012.

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

Condition 4.2 of Schedule C of Municipal Drinking Water Licence 147-103 Issue Number 2 states that for each treatment subsystem or treatment subsystem component identified in column 1 of Table 7 and in addition to any other sampling, testing and monitoring that may be required, sampling, testing and monitoring shall be undertaken for a test parameter listed in column 2 using the sample type identified in column 3 at the sampling frequency listed

Water Quality Monitoring

in column 4 and at the monitoring location listed in column 5 of the same row.

Table 7 of Schedule C of Municipal Drinking Water Licence 147-103 Issue Number 2 requires that the point of discharge to Lake Simcoe be tested monthly for total suspended solids, pH and aluminum in a manual composite sample.

Sampling for the required parameters was conducted at the required frequency during the inspection review period. Table 3 of Schedule C of Municipal Drinking Water Licence 147-103 Issue Number 2 states that the annual average concentration of Total Suspended Solids is not to exceed 25 mg/L. During the inspection review period the average concentration of Total Suspended Solids was approximately 14 mg/L. Four of the samples collected had results below the method detection limit of 2 mg/L. A value of 2 mg/L was used for these four months when calculating the average.

- **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 residuals were tested at the same time from the same location as treated water and distribution microbiological samples as required.

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 treated water and distribution system samples collected during the inspection review period 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 Operators responded to alarms either in person or through remotely accessing the SCADA system. A high chlorine alarm and chlorine pump system failure were responded to in person. Primary disinfection was achieved in all instances.

The on-call Operator receives an alarm whenever either of the turbidity analysers on the filter effluent lines measure above 0.3 NTU. The operator would then log onto the system remotely and check the system. Usually these readings would be for the filter that was not in use, or during a backwash event. The Operator must acknowledge the alarm. The alarm log was not available for review. Operators typically initial the maximum effluent turbidity value when it is above 0.3 NTU on the logsheets. Alarm acknowledgment or reasons for the higher value were not always recorded during the inspection review period.

Other Inspection Findings

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

The Owner is in the process of switching the Operating Authority for the Township of Ramara to the Ontario Clean Water Agency (OCWA).

Since the inspection the date has been set for September 1, 2020 for OCWA to take over as the Operating Authority.

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.

Not Applicable

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.

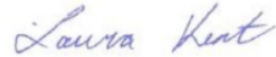
Not Applicable

SIGNATURES

Inspected By:

Laura Kent

Signature: (Provincial Officer)



Reviewed & Approved By:

Sheri Broeckel

Signature: (Supervisor)



Review & Approval Date:

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 Rating Record

Ministry of the Environment - Inspection Summary Rating Record (Reporting Year - 2020-2021)

DWS Name: SOUTH RAMARA DRINKING WATER SYSTEM
DWS Number: 220010681
DWS Owner: Ramara, The Corporation Of The Township Of
Municipal Location: Ramara

Regulation: O.REG 170/03
Category: Large Municipal Residential System
Type Of Inspection: Focused
Inspection Date: July 14, 2020
Ministry Office: Barrie District

Maximum Question Rating: 461

Inspection Module	Non-Compliance Rating
Capacity Assessment	0 / 30
Treatment Processes	0 / 81
Operations Manuals	0 / 28
Logbooks	0 / 14
Certification and Training	0 / 42
Water Quality Monitoring	0 / 112
Reporting & Corrective Actions	0 / 21
Treatment Process Monitoring	0 / 133
TOTAL	0 / 461

Inspection Risk Rating	0.00%
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FINAL INSPECTION RATING:	100.00%
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Ministry of the Environment - Detailed Inspection Rating Record (Reporting Year - 2020-2021)

DWS Name: SOUTH RAMARA DRINKING WATER SYSTEM
DWS Number: 220010681
DWS Owner: Ramara, The Corporation Of The Township Of
Municipal Location: Ramara

Regulation: O.REG 170/03
Category: Large Municipal Residential System
Type Of Inspection: Focused
Inspection Date: July 14, 2020
Ministry Office: Barrie District

Maximum Question Rating: 461

Inspection Risk Rating | 0.00%

FINAL INSPECTION RATING: | 100.00%