

CLARKE CRESCENT WELL

PORT SYDNEY

WATER SUMMARY

2015

REPORT



DRINKING WATER WORKS PERMIT :
MUNICIPAL DRINKING WATER LICENCE:

143-204
143-104

M.O.E. WATERWORKS#:

220005688

INTRODUCTION

The Clarke Crescent Well Water system in Port Sydney is owned and operated by the District of Muskoka and was originally constructed in 1984. It has a capacity of 90 cubic meters per day (m³/day), and the water system currently serves 34 homes.

The plant operates under licence 143-104 and permit 143-204 under the Municipal Drinking Water Licencing Program. The plant also presently operates under MOE Permit To Take Water #92-P-3015 which permits operation up to 90.92 m³/day.

The treatment system had significant improvements take place in 2004/2005. These upgrades include a filtration system and primary disinfection by Ultraviolet (UV) light. Secondary disinfection continues to be maintained by chlorination. Water is obtained from a drilled well located at 46 Clarke Crescent.

Legislation Requirements

Safe Drinking Water Act

In the Part Two Report of the Walkerton Inquiry, Commissioner Dennis O'Connor recommended that the Ontario Government enact a Safe Drinking Water Act to deal with matters related to treatment and distribution of drinking water. The Safe Drinking Water Act received royal assent in December, 2002.

The purpose of the Act is to gather in one place all legislation and regulations relating to the treatment and distribution of drinking water. The Act serves to protect human health through the control and regulation of drinking water systems and drinking water testing.

The foundation provisions of the Safe Drinking Water Act include:

- Purpose of the Act
- Definitions
- Minister's Powers and Duties
- Inspections
- Compliance and Enforcement
- Appeals and Offences

Ontario Regulations

The Ontario Government has enacted several supporting regulations under the Safe Drinking Water Act (2000) SDWA. These regulations combine previous requirements under the Ontario Water Resources Act and the new requirements under the SDWA. Key components of the regulations include:

- System Categories
- Groundwater Under Direct Influence Of Surface Water (GUDI)
- Exemptions
- Approval of Systems
- Treatment

- Testing and Operational Checks (General Rules)
- Operational Checks
- Microbiological Testing
- Chemical Testing
- Adverse Conditions
- Corrective Action
- Engineers and Summary Reports

Municipal Drinking Water Licenses / Certificates of Approval

The Municipal Drinking Water Licensing Program has replaced the Certificate of Approval program for municipal residential drinking water systems. The Ontario Government has implemented the Municipal Drinking Water Licensing Program (MDWLP) as recommended by Justice O'Connor in the Part II Report of the Walkerton Inquiry. Justice O'Connor recommended a new approvals framework for municipal drinking water systems, which would require owners to obtain a license to operate their systems as well as incorporate the concept of quality management into their operations.

A municipal drinking water license is an approval that is issued by the MOE to owners under the Safe Drinking Water Act, 2002 for the operation of municipal residential drinking water systems. The District of Muskoka operated under various Certificates of Approval until October 2010 when the operating licenses were issued.

Previous Certificates of Approval were required for the establishment, replacement or alteration of all municipal drinking water systems. The Ministry of Environment (MOE) issued Certificates of Approval to ensure that all undertakings comply with the legislation (i.e. Acts and Regulations) and the Ministry's Environmental Guidelines and Procedures developed to provide consistency of approach to various aspects of environmental protection throughout the province.

Municipal Drinking Water Licenses and Permits similar to previous Certificates of Approval provide specific details about the drinking water system including:

Drinking Water System Description

Definitions and Information

General Information – Compliance, Other Legal Requirements, Adverse Affects, Inspections

Performance – Rated Capacity, Management of Residue

Monitoring and Recording – Flow Measuring Devices, Sampling

Operations and Maintenance

Comparison to Rated Capacity and Flow Rate

The Clarke Crescent Well Water System has a rated capacity of 90 m³/day. In 2015, the total monthly average flow was 32.4 m³/day, which represents 36% of the plant's design flow rate. The maximum day flow for the year was 42.4 m³/day, however, the 3 year average for maximum day flow is 48.6 m³/day, which represents 54% of the design capacity (No

problems have been associated with this flow). The District of Muskoka has initiated Bylaw #2003-31 during the summer months, imposing lawn-watering restrictions.

Monthly flows are shown in the attached table.

Summary of Analytical Results

A total of 653 microbiological regulatory tests were performed in 2015 and all were acceptable results. There were 165 free chlorine residual tests performed in the distribution system and all results were satisfactory.

Summary of Treatment Chemicals

The following chemical is used for the treatment of drinking water at the Clarke Crescent Water Supply System:

Sodium Hypochlorite: Disinfectant

Documentation of System Repairs and Upgrades

No system upgrades or significant repairs were undertaken in 2015.

External Audits

MOE Inspection

A MOE inspection was completed on October 8, 2015 and is attached to this report. The overall rating was 100%.

DWQMS Audit

In 2015 all drinking water systems had an external recertification audit performed. There were seven (7) minor non-conformances reported, all have subsequently been addressed and as a result all drinking water systems have been recertified. Overall, all drinking water systems are performing satisfactorily.



OPTIONAL ANNUAL REPORT TEMPLATE

Drinking-Water System Number:	220005688
Drinking-Water System Name:	Clarke Crescent Well Water Treatment System
Drinking-Water System Owner:	District Municipality of Muskoka
Drinking-Water System Category:	Small Municipal Residential
Period being reported:	January 01 to December 31, 2015

<p><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></p> <p>Does your Drinking-Water System serve more than 10,000 people? Yes [] No [X]</p> <p>Is your annual report available to the public at no charge on a web site on the Internet? Yes [X] No []</p> <p>Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.</p> <div style="border: 1px solid black; padding: 5px;"> <p>District Municipality of Muskoka 70 Pine Street Bracebridge, Ontario P1L 1N3 www.muskoka.on.ca</p> </div>	<p><u>Complete for all other Categories.</u></p> <p>Number of Designated Facilities served:</p> <div style="border: 1px solid black; padding: 2px; width: 100px;">N.A.</div> <p>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [] No []</p> <p>Number of Interested Authorities you report to: <div style="border: 1px solid black; width: 100px; height: 20px; display: inline-block;"></div></p> <p>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [] No []</p>
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Note: For the following tables below, additional rows or columns may be added or an appendix may be attached to the report

List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Drinking Water System Name	Drinking Water System Number
N.A.	

Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water? Yes [] No [X]



Indicate how you notified system users that your annual report is available, and is free of charge.

- Public access/notice via the web
- Public access/notice via Government Office
- Public access/notice via a newspaper
- Public access/notice via Public Request
- Public access/notice via a Public Library
- Public access/notice via other method _____

Describe your Drinking-Water System

The Clarke well system services one subdivision consisting of 34 homes. The system was constructed in 1984. The system had significant upgrades in 2004/2005. The treatment process consists of disinfection by UV, chlorination and filtration. The rated water production capacity of this facility is 90 cubic meters per day. The water is obtained from a drilled well located at 46 Clarke Crescent.

List all water treatment chemicals used over this reporting period

Sodium Hypochlorite

Were any significant expenses incurred to?

- Install required equipment
- Repair required equipment
- Replace required equipment

Please provide a brief description and a breakdown of monetary expenses incurred

Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
Nov 12/15	Giardia log removal	<3 Log	Log Removal	Restore Giardia removal >3 Log	Nov 12/15
Dec 17/15	Filtered water turbidity	>1 NTU	NTU	Clean & flush turbidimeter	Dec 17/15



Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period.

	Number of Samples	Range of E.Coli Or Fecal Results (min #)-(max #) cfu/100 mL	Range of Total Coliform Results (min #)-(max #) cfu/100 mL	Number of HPC Samples	Range of HPC Results (min #)-(max #) cfu/100 mL
Raw	52	0	0	0	0
Treated	52	0	0	52	0-1
Distribution	165	0	0	63	0-3

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.

	Number of Grab Samples	Range of Results (min #)-(max #)	Geometric Mean
Turbidity	8760	0.01-0.11	0.02 NTU
Chlorine	8760	0.89-2.24	1.24 mg/L
Fluoride (If the DWS provides fluoridation)	N/A		

NOTE: For continuous monitors use 8760 as the number of samples.

*NOTE: Record the unit of measure if it is not milligrams per litre.
MDL = Method Detection Limit*

Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument.

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure

Summary of Inorganic parameters tested during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	Apr 13/15	0.46	ug/L	No
Arsenic	Apr 13/15	0.2<MDL	ug/L	No
Barium	Apr 13/15	22.7	ug/L	No
Boron	Apr 13/15	9.1	ug/L	No
Cadmium	Apr 13/15	0.005<MDL	ug/L	No
Chromium	Apr 13/15	0..34	ug/L	No
*Lead	Apr 13/15	1.18	ug/L	No
Mercury	Apr 13/15	0.01<MDL	ug/L	No
Selenium	Apr 13/15	1<MDL	ug/L	No
Sodium	Apr 13/15	35.3	mg/L	Yes
Uranium	Apr 13/15	0.069	ug/L	No

Fluoride	Apr 13/15	0.06<MDL	mg/L	No
Nitrite	Jan 12/15	0.003<MDL	mg/L	No
Nitrate	Jan 12/15	1.86	mg/L	No
Nitrite	Apr 13/15	0.003<MDL	mg/L	No
Nitrate	Apr 13/15	1.83	mg/L	No
Nitrite	Jul 13/15	0.003<MDL	mg/L	No
Nitrate	Jul 13/15	1.78	mg/L	No
Nitrite	Oct 12/15	0.003<MDL	mg/L	No
Nitrate	Oct 12/15	1.77	mg/L	No

*only for drinking water systems testing under Schedule 15.2; this includes large municipal non-residential systems, small municipal non-residential systems, non-municipal seasonal residential systems, large non-municipal non-residential systems, and small non-municipal non-residential systems

Summary of lead testing under Schedule 15.1 during this reporting period

(applicable to the following drinking water systems; large municipal residential systems, small municipal residential systems, and non-municipal year-round residential systems)

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Number of Exceedances
Plumbing			
Distribution	2	0.34 – 0.40 ug/L	0

Summary of Organic parameters sampled during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	Apr 13/15	0.02<MDL	ug/L	No
Aldicarb	Apr 13/15	0.01<MDL	ug/L	No
Aldrin + Dieldrin	Apr 13/15	0.01<MDL	ug/L	No
Atrazine + N-dealkylated metabolites	Apr 13/15	0.01<MDL	ug/L	No
Azinphos-methyl	Apr 13/15	0.02<MDL	ug/L	No
Bendiocarb	Apr 13/15	0.01<MDL	ug/L	No
Benzene	Apr 13/15	0.32<MDL	ug/L	No
Benzo(a)pyrene	Apr 13/15	0.004<MDL	ug/L	No
Bromoxynil	Apr 13/15	0.33<MDL	ug/L	No
Carbaryl	Apr 13/15	0.01<MDL	ug/L	No
Carbofuran	Apr 13/15	0.01<MDL	ug/L	No
Carbon Tetrachloride	Apr 13/15	0.16<MDL	ug/L	No
Chlordane (Total)	Apr 13/15	0.01<MDL	ug/L	No
Chlorpyrifos	Apr 13/15	0.02<MDL	ug/L	No
Cyanazine	Apr 13/15	0.03<MDL	ug/L	No
Diazinon	Apr 13/15	0.02<MDL	ug/L	No
Dicamba	Apr 13/15	0.20<MDL	ug/L	No
1,2-Dichlorobenzene	Apr 13/15	0.41<MDL	ug/L	No
1,4-Dichlorobenzene	Apr 13/15	0.36<MDL	ug/L	No
Dichlorodiphenyltrichloroethane (DDT) + metabolites	Apr 13/15	0.01<MDL	ug/L	No
1,2-Dichloroethane	Apr 13/15	0.35<MDL	ug/L	No

1,1-Dichloroethylene (vinylidene chloride)	Apr 13/15	0.33<MDL	ug/L	No
Dichloromethane	Apr 13/15	0.35<MDL	ug/L	No
2-4 Dichlorophenol	Apr 13/15	0.15<MDL	ug/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	Apr 13/15	0.19<MDL	ug/L	No
Diclofop-methyl	Apr 13/15	0.40<MDL	ug/L	No
Dimethoate	Apr 13/15	0.03<MDL	ug/L	No
Dinoseb	Apr 13/15	0.36<MDL	ug/L	No
Diquat	Apr 13/15	1<MDL	ug/L	No
Diuron	Apr 13/15	0.03<MDL	ug/L	No
Glyphosate	Apr 13/15	1<MDL	ug/L	No
Heptachlor + Heptachlor Epoxide	Apr 13/15	0.01<MDL	ug/L	No
Lindane (Total)	Apr 13/15	0.01<MDL	ug/L	No
Malathion	Apr 13/15	0.02<MDL	ug/L	No
Methoxychlor	Apr 13/15	0.01<MDL	ug/L	No
Metolachlor	Apr 13/15	0.01<MDL	ug/L	No
Metribuzin	Apr 13/15	0.02<MDL	ug/L	No
Monochlorobenzene	Apr 13/15	0.30<MDL	ug/L	No
Paraquat	Apr 13/15	1<MDL	ug/L	No
Parathion	Apr 13/15	0.02<MDL	ug/L	No
Pentachlorophenol	Apr 13/15	0.15<MDL	ug/L	No
Phorate	Apr 13/15	0.01<MDL	ug/L	No
Picloram	Apr 13/15	1<MDL	ug/L	No
Polychlorinated Biphenyls(PCB)	Apr 13/15	0.04<MDL	ug/L	No
Prometryne	Apr 13/15	0.03<MDL	ug/L	No
Simazine	Apr 13/15	0.01<MDL	ug/L	No
THM (NOTE: show latest annual average)	Samples taken: Jan 15/15 Apr 13/15 Jul 13/15 Oct 12/15	1.10	ug/L	No
Temephos	Apr 13/15	0.01<MDL	ug/L	No
Terbufos	Apr 13/15	0.01<MDL	ug/L	No
Tetrachloroethylene	Apr 13/15	0.35<MDL	ug/L	No
2,3,4,6-Tetrachlorophenol	Apr 13/15	0.20<MDL	ug/L	No
Triallate	Apr 13/15	0.01<MDL	ug/L	No
Trichloroethylene	Apr 13/15	0.44<MDL	ug/L	No
2,4,6-Trichlorophenol	Apr 13/15	0.25<MDL	ug/L	No
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	Apr 13/15	0.22<MDL	ug/L	No
Trifluralin	Apr 13/15	0.02<MDL	ug/L	No
Vinyl Chloride	Apr 13/15	0.17<MDL	ug/L	No

List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.

Parameter	Result Value	Unit of Measure	Date of Sample

District of Muskoka - Well - Port Sydney

Table 1: Treated Water Flow Summary - 2015

Month	Total Monthly (m ³)	Average Daily Flow (m ³ /d)	Peak Daily Flow (m ³ /d)	Minimum Daily Flow (m ³ /d)	Comments
January	842.7	30.1	34.5	27.8	
February	817.1	29.2	34.2	26.4	
March	905.0	29.2	34.5	26.3	
April	996.4	32.3	38.5	28.0	
May	1,082.1	34.9	44.3	29.4	
June	1,061.1	35.4	47.9	28.8	
July	1,087.3	36.2	48.2	30.9	
August	1,025.1	34.2	49.2	29.5	
September	979.0	33.0	47.9	28.5	
October	1,000.7	32.3	41.3	27.2	
November	935.7	32.3	53.2	28.5	
December	929.5	30.0	34.5	27.8	
		32.4	42.4	28.2	
Yearly Total	11,661.6				

District of Muskoka - Well - Clarke Crescent

Table 2: Raw Water Summary - 2015

Date	Alkalinity	Hardness	PH	Turbidity -	Max	True Colour	Temp	Cond.		UV T%	LSI	Raw EC / TC Samples	Range
January	32	90	6.64	0.01	0.02	0.0	8.1	186.5		100.6	-2.0	4	0
February	34	59	6.58	0.07	0.09	0.0	7.7	184.0		100.5	-2.0	4	0
March	32	56	6.60	0.07	0.08	0	9.4	196.6		105.5	-2.1	5	0
April	33	53	6.41	0.11	0.17	0	6.3	209.7		106.5	-2.3	4	0
May	30	53	6.40	0.07	0.11	0	8.0	230.3		99.7	-2.4	4	0
June	32	51	6.41	0.09	0.11	0	8.1	250.7		99.3	-2.4	5	0
July	29	52	6.51	0.11	0.18	0	8.2	279.8		99.4	-2.3	4	0
August	28	51	6.47	0.11	0.20	0	8.1	259.7		99.6	-2.3	5	0
September	32	58	6.66	0.07	0.09	0	13.5	248.8		100.0	-1.9	4	0
October	27	60	6.50	0.12	0.18	0	13.9	236.2		99.0	-2.2	4	0
November	29	59	6.60	0.14	0.17	0	8.4	236.6		99.9	-2.1	5	0
December	28	53	6.70	0.01	0.14	0	8.5	254.0		99.7	-2.2	4	0
Average	30	58	6.54	0.08	0.13	0.0	9.0	231.1		100.8	-2.2	4	0

CLARKE CRESCENT WATER DISTRIBUTION SUMMARY 2015

New Services

No customers connected to existing water services in 2015.
There were no new water services were installed 2015.

Broken Water mains

There were no broken water mains.

Service Leaks

There were no service leaks.

Frozen Services

There were no frozen services.

New Water mains

There were no new water mains installed.

Valve Replacement


No valves were added, replaced or repaired in 2015.

Curb stops

No curb stops were replaced or repaired.

Locates

District staff addressed 10 locate requests 2015.


**Ministry of the Environment and
Climate Change**

Safe Drinking Water
Branch

Director's Office
2nd floor
40 St. Clair Ave West
Toronto ON M4V 1M2

Ministère de l'Environnement

Direction du contrôle de la qualité de l'eau
potable

Bureau du directeur
2^e étage
40, avenue St. Clair Ouest
Toronto (Ontario) M4V 1M2



October 23, 2015

The District Municipality of Muskoka
70 Pine Street
Bracebridge, Ontario
P1L 1N3

Attention: Mr. Marcus Firman, Director of Water and Wastewater Engineering

**RE: 2015 Drinking Water Inspection Report
Port Sydney (Clarke Well) Drinking Water System (DWS#220005688)
Date of MOECC inspection: October 8, 2015**

Please find enclosed the Ministry of the Environment and Climate Change's 2015 Inspection Report for the Port Sydney (Clarke Well) Drinking Water System (DWS#220005688), following an inspection of the water treatment plant and distribution system on October 8, 2015.

The primary focus of this inspection was to confirm compliance with Ministry of the Environment and Climate Change legislation and control documents, as well as conformance with Ministry drinking water related policies for the inspection period. The Ministry is implementing a rigorous and comprehensive approach in the inspection of water systems that focuses on the source, treatment, and distribution components as well as water system management practices.

In order to measure individual inspection results, the Ministry has established an inspection compliance risk framework based on the principles of the Inspection, Investigation & Enforcement (I&E) Secretariat and advice of internal and risk experts. The Inspection Summary Rating Record (IRR), included as Appendix D of the inspection report, provides the Ministry, the system Owner and the associated Public Health Units with a summarized quantitative measure of the drinking water system's annual inspection and regulated water quality testing performance. IRR ratings are published (for the previous inspection year) in the Ministry's Chief Drinking Water Inspector's Annual Report. If you have any questions or concerns regarding the rating, please contact Craig Seabrook, Water Program Supervisor, at 705-739-6392.

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

If you have any questions or concerns regarding this inspection report, please contact the undersigned at 705-739-6379.

Respectfully,



James Crumbie
Provincial Officer
Ministry of the Environment and Climate Change
Barrie District Office
(705) 739-6379 (Tel)
(705) 739-6350 (Fax)
James.crumbie@ontario.ca

CC Mike Mitchell, District of Muskoka (email: mmitchell@muskoka.on.ca)
Jason Richardson, Chief Operator, District of Muskoka (email: jrichardson@muskoka.on.ca)
Medical Officer of Health, Simcoe Muskoka District Health Unit
Barrie District Office File, Ministry of the Environment and Climate Change



Ministry of the Environment and Climate Change

**PORT SYDNEY (CLARKE WELL) DRINKING WATER SYSTEM
Inspection Report**

Site Number:	220005688
Inspection Number:	1-BYLMF
Date of Inspection:	Oct 08, 2015
Inspected By:	James Crumbie

OWNER INFORMATION:

Company Name: MUSKOKA, THE CORPORATION OF THE DISTRICT MUNICIPALITY OF
Street Number: 70 **Unit Identifier:** District Office
Street Name: PINE ST N
City: BRACEBRIDGE
Province: ON **Postal Code:** P1L 1N3

INSPECTION DETAILS:

Site Name: PORT SYDNEY (CLARKE WELL) DRINKING WATER SYSTEM
Site Address: 40 CLARKE CRES PORT SYDNEY P0B 1L0
County/District: Huntsville
MOECC District/Area Office: Barrie District
Health Unit: SIMCOE MUSKOKA DISTRICT HEALTH UNIT
Conservation Authority: N/A
MNR Office: N/A
Category: Small Municipal Residential
Site Number: 220005688
Inspection Type: Unannounced
Inspection Number: 1-BYLMF
Date of Inspection: Oct 08, 2015
Date of Previous Inspection: Jan 30, 2015

COMPONENTS DESCRIPTION

Site (Name): MOE DWS Mapping
Type: DWS Mapping Point **Sub Type:**
Comments:
Not Applicable

Site (Name): RAW WELL 1
Type: Other **Sub Type:** Other
Comments:

Well 1 (non-potable fire supply) consists of a 50 mm diameter steel casing within a precast concrete casing extending to a depth of 5.2 m with a 1.5 kW (3,450 rpm) submersible well water pump having a rated capacity of 3.1 L/s complete with piping and valves for filling the on-site, non-potable fire storage tank. This concrete, 9 m³ underground fire storage tank is used to refill depleted fire tanker trucks in emergency situations and is equipped with float switches for well pump operation.

This well was reportedly drilled in 1976 and was provided a withdrawal rate of 204 l/min under the now revoked Permit to Take Water (PTTW) 78-P-3051.

This well is located approximately 4 m from the WTP, 5 m from the water course and 7 m from Well 2. The surrounding land slopes away from the well towards the creek.

**Site (Name):** RAW WELL 2**Type:** Other**Sub Type:** GUDI**Comments:**

Well 2 (production well) consists of a 200 mm diameter steel casing extending to a depth of 12.2 m with a stick up above grade of approximately 66 cm and a stainless steel screen with 0.2 mm slot size to a depth of 18.9 m. The well was drilled in 1982 (Water Well Record 4202750). A 2.24 kW (3,450 rpm) submersible well water pump with a rated capacity of 3.15 L/s is installed within the well which discharges to the water treatment plant (WTP) through a pitless adaptor. The well is also equipped with 50 mm diameter discharge piping and a continuously monitored magnetic flow meter, valves and an electronic level monitoring system within the WTP. A hydraulic flow control valve regulates the instantaneous water taking to less than 204.5 L/min.

A vented, screened, vermin proof cap is securely attached to the top of the casing.

The well is located approximately 3 m from the WTP, 7 m from Well 1, and 2 m from the adjacent water course.

The surrounding area appears to slope to the south (towards the creek).

Site (Name): TREATED WATER**Type:** Source**Sub Type:****Comments:**

Clarke Crescent Well Pumphouse

A 5.1 m x 7.5 m concrete block pumphouse with exterior wood paneling is located at 46 Clarke Crescent, Port Sydney in the District Municipality of Muskoka. The pumphouse contains water treatment equipment consisting of chlorination, cartridge filtration, and ultraviolet (UV) lights for primary and/or secondary disinfection.

Water enters the pumphouse by way of a 50 mm diameter line from the well, passes a raw water sample tap, a pressure gauge, a hydraulic flow control valve regulating flows to less than 204.5 L/min, a continuously monitored magnetic flow meter, a pressure gauge and two valved chlorine injection points.

The sodium hypochlorite disinfection system consists of a contained, 100 L sodium hypochlorite solution storage tank with alarmed weigh scale, two metering pumps (duty, standby) rated at 0.59 L/h and each equipped with individual lines, valves, flow sensors and back flow prevention and manual feed-rate control.

After the chlorine injection points, water can be directed to the two individually lined and valved cartridge filters (typical), or to the filter bypass line (normally valved closed).

The filtration system consists of two cartridge filters (duty, standby) each rated at 204.5 L/min and equipped with 1 micron (um) cartridge filters. Inlet and outlet lines are valved for isolation and maintenance. The common filter effluent line is equipped with a continuously monitored and alarmed pressure differential sensor. This line rejoins the filter bypass line, passes a pressure gauge and directs water to the two, individually valved and lined ultraviolet (UV) disinfection units. A sampling line comes off the common filter effluent line and leads to a continuously monitored and alarmed turbidity analyzer.

The UV disinfection system consists of two primary UV disinfection reactors (duty, standby) each with a light flux density of at least 40 mJ/cm² throughout the lamp lifetime. The lights are capable of handling a peak flow rate of 204.5 L/min and are equipped with an online UV intensity monitor with alarm, continuous alarmed dosage calculation and monitoring, manual cleaning mechanism, automatic switch-over capabilities, flow control valves on discharge, and associated controls and alarms. The common discharge line empties into the clearwell.

The clearwell consists of a 3.62 m x 1.93 m x 2.1 m, 10.83 m³ volume precast concrete underground tank that is equipped with four internal baffling curtains providing an effective detention time of 18 minutes at the maximum high lift pump flow rate. There is a continuously monitored and alarmed level

sensor installed and a 100 mm diameter PVC screened vent which protrudes through the pumphouse wall. Two high lift pumps (HLP's) draw from this tank and direct treated water to the distribution system.

The two (duty, standby) centrifugal, 5.6 kW (3,500 rpm) HLP's, each rated at 432m³/day at 61m total dynamic head (TDH) and equipped with valves and back flow prevention, direct treated water past six individually valved, 135 L hydropneumatic tanks for system pressure maintenance between 433 and 690 kPa and storage, a continuously monitored and alarmed finished water turbidity analyser, a continuously monitored and alarmed finished water free chlorine residual analyser, a domestic water supply line with backflow prevention and pressure gauge, a continuously monitored discharge pressure transmitter for HLP pump control, a continuously monitored magnetic flow meter, a sample line and a valve before water is discharged to the distribution system.

The on-site programmable logic controller (PLC), monitors and controls all of the equipment, registers alarm states and continuously communicates with the supervisory control and data acquisition system (SCADA) at the Huntsville Water Treatment Plant (WTP). Any generated alarms are first generated through the autodialer in the pumphouse. After a 20 minute delay, alarms are also routed through the autodialer at Huntsville as a backup. Automatic and manual control of the equipment is maintained through Huntsville. Manual over-rides can be achieved at the site.

A permanent standby diesel generator set is located at the Clarke Crescent Well Pumping Station. It provides power to the facility by way of an external plug. The permanent, steel encased, 50 kW standby diesel generator with automatic start and stop capability, and internal fuel tank has been positioned outside the pumphouse, in an adjacent structure.

Site (Name): DISTRIBUTION (WATER INSPECTION)

Type: Other

Sub Type:

Comments:

The Port Sydney water system, built in 1984, services one subdivision consisting of approximately 34 homes or approximately 130 persons. There are three sampling stations installed on potential dead ends, where all distribution sampling is performed.

There is approximately 1100 m of polyvinyl chloride (PVC) watermain installed with six valves. There are no hydrants.

There are no commercial, industrial, institutional or agricultural users on this system. There are no known designated facilities served by this system.

INSPECTION SUMMARY

INTRODUCTION

- * **The primary focus of this inspection is to confirm compliance with Ministry of the Environment and Climate Change (MOECC) 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 Port Sydney (Clarke Well) drinking water system serves the residential subdivision that has been developed in the community of Port Sydney. It is located within the Town of Huntsville boundary, in the District Municipality of Muskoka. Port Sydney is situated along the east side of Provincial Highway 11, at the south west end of Mary Lake. The drinking water system services a residential development consisting of 34 private residences, and an estimated population of 130 persons. There are presently no plans to expand the development. The Port Sydney (Clarke Well) drinking water system is owned and operated by the Corporation of the District Municipality of Muskoka. The Corporation of the District Municipality of Muskoka is referred to as the Owner, Operator and Municipality for the purposes of this inspection report.

The drinking water system obtains water from a single 18.9m deep drilled production well, Well 2 (Clarke Well), which is considered to be Groundwater Under the Direct Influence of surface water (GUDI). The Port Sydney (Clarke Well) drinking water treatment process consists of cartridge filtration and a combination of both UV disinfection and chlorination, with effective chlorine contact time, for primary disinfection purposes. The Port Sydney (Clarke Well) drinking water system is rated to treat up to 90.92 cubic meters of water per day. The drinking water was originally commissioned in 1984, with significant upgrades to the works being undertaken in 2004/2005.

The Port Sydney (Clarke Well) drinking water system is categorized as a Small Municipal Residential drinking water system and is regulated by the Safe Drinking Water Act, 2002 (SDWA) and regulations made therein, including Ontario Regulation (O.Reg.) 170/03.

Operation of the Port Sydney (Clarke Well) drinking water system is authorized under Municipal Drinking Water Licence #143-104 (Licence) and Drinking Water Works Permit 143-204 (Permit) which were originally issued to the District of Muskoka, respectively as Licence Issue#1 on October 14, 2010, and Permit Issue#1 on October 13, 2010. An application was submitted by the Owner to renew the Licence with the Ministry on February 3, 2015, and the Ministry renewed the Licence and re-issued the Licence Issue #2 and Permit Issue #2 on October 6, 2015.

INTRODUCTION

The groundwater takings from Well 2, the Clarke Well, are permitted in accordance with Permit to Take Water (PTTW) #5134-8FNR64 issued April 12, 2011. The PTTW allows the Owner to take a maximum of 90920 Litres per day (L/d) from the Clarke Well at a rate not exceeding 205 Litres per minute (L/min). The PTTW expires on January 15, 2021. Compliance with the PTTW was not assessed during the course of this inspection; however, the Owner is aware that water takings must be done in accordance with the conditions of a valid PTTW.

The Port Sydney (Clarke Well) Drinking Water System was last inspected by the Ministry on January 30, 2015. Findings associated with that 2014/2015 inspection were detailed in Inspection Report # 1-BBVNH, issued to the Owner on March 10, 2015.

The October 8, 2015 inspection, to which this inspection report pertains, encompasses an inspection review period between January 30, 2015 and October 8, 2015. The October 8, 2015 inspection included a physical inspection of the water treatment equipment and facilities; interviews with operational staff; and a review of relevant documents for the inspection review period.

SOURCE

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

Paragraph 1-2 (1)(1) of Schedule 1, O.Reg.170/03 requires the Owner and Operating Authority of a small municipal residential drinking water system to ensure that any well used as a raw water supply is constructed and maintained to prevent surface water and other foreign materials from entering the well. It is critical that the integrity of the aquifer be protected from contamination by surface water or other foreign material.

As previously discussed, the Port Sydney (Clarke Well) Drinking Water System obtains water from a single 18.9m deep drilled production well, Well 2 (Clarke Well), which is considered to be Groundwater Under the Direct Influence of surface water (GUDI). An initial hydrogeologic assessment conducted in conjunction with the preparation of the First Engineers Report in 2001, suggested that the source water may not be GUDI based on chemical, microbiological and physical water quality characteristics. However, given that the well is situated within close proximity to surface water sources, the Municipality decided not to conduct further assessments and have determined to treat the well as GUDI water source.

Although the well is considered to be GUDI, the Municipality does appear to be maintaining the well in such a manner that would prevent the direct entry of surface water and foreign materials into the well, and the raw well water results over this inspection review period have been free of any microbiological contamination.

The production well was constructed in 1982 by C. Marshall and Sons Well Drilling of Emsdale, Ontario. The well was reportedly drilled to a depth of 60 feet (18.29 metres). The 200mm diameter steel well casing extends approximately 66cm above adjacent grade and, according to the water well construction record (4202750), the well casing continues to a depth of 12.8 metres. A 171mm diameter telescopic steel screen extends down from within the casing at a depth of 12.2metres to the bottom of the well, 18.2m. There is no information on the record of the plugging and sealing details for the well, however there is no indication of subsidence adjacent to the casing which would suggest that the annular space is sufficiently sealed.

The top of the well's casing is sealed with a vermin-proof well cap with a screened vent. The ground area around the well is graded in such a way as to ensure that water does not collect or pond in the vicinity of the well. On the date of the physical inspection, there were no obvious visible sources, or potential sources, of pollution within eyesight of the general area of the source well. Privately owned homes and woodlands make up this small development. The homes are all equipped with septic systems. There was no evidence of industrial, agricultural or other potentially polluting activities around the well at the time of inspection.

There is a second well, Well 1, constructed on the property. Well 1 is reported to consist of a 50 mm diameter well point installed to a depth of 17.7m which yields an artesian flow in the range of 6 imperial gallons per minute. The well point casing is reportedly finished below grade within

SOURCE

concrete well crocks which were installed to a depth of 5.2 m. The well crocks provide water storage for the well. A submersible pump is installed within the well crocks and is used to pump water via a 50mm diameter raw watermain to a 9 m³ in-ground emergency fire reservoir located at the street line on the pumphouse property. Well 1 is located approximately 7 m west of the production well, Well 2 (Clarke Well). Well 1 is not a production well, and is not connected to the regulated drinking water system. The concrete crocks are finished greater than a 40 cm above grade and has a locked access hatch.

Both the production well, Well2, and the non-potable well emergency fire well, well 1, are accessible for cleaning, treatment, repair, testing, inspection and visual examination. The Municipality conducts regular inspections of the above grade components of the production well. Below grade inspections of the production well are also scheduled to be conducted by a licensed technician every ten years, or when water quality results warrant further investigation. As discussed in more detail in the following section of this inspection report, the Municipality retained Lotowater Technical Services Inc. in May 2015 to conduct a video inspection of the production well's casing and an evaluation of the well's performance. Lotowater reported on those findings in a well inspection report, dated June 18, 2015.

- **Measures were in place to protect the groundwater and/or GUDI source in accordance with a Permit and Licence or Approval issued under Part V of the SDWA.**

Condition 16, Schedule B of the Licence requires the Port Sydney (Clarke Well) Drinking Water System operations and maintenance manual to include:

- an inspection schedule for all wells associated with the water treatment system, including all production wells, standby wells, test wells and monitoring wells;
- defined well inspection and maintenance procedures for the entire well structure of each well, including all above and below grade well components; and
- remedial action plans to be implemented where inspection indicates non-compliance with respect to regulatory requirements and/or risk to the raw water quality.

To satisfy these conditions, the Municipality has incorporated a Well Inspection and Maintenance Plan for the drinking water system within the operations and maintenance manual. The Plan includes bi-annual (every 6 months) inspections of the above ground components of the well. Below grade video inspections of the wells are also scheduled to be conducted by a licensed technician every ten years, or when water quality/quantity results warrant further investigation.

In May 2015, Lotowater Technical Services Inc. was retained to conduct a video inspection of the well casing and an evaluation of the well's performance and reported on those findings in a well inspection report on June 18, 2015. According to the Lotowater report, there were no structural deficiencies identified, however the well screen was found to be severely fouled near the top and lightly fouled near the bottom of the well, and although the well performance was found to be satisfactory, Lotowater, suggested that the screen fouling may be impacting on the well yield. In addition, the video inspection identified a significant amount of large encrustations on the well casing, and it was recommended that the casing and screen be mechanically cleaned to dislodge the build-up identified, to improve on well yield. It was further recommended that, following the cleaning, another video inspection and casing thickness evaluation be completed to again assess the structural integrity of the well casing below 7.5m. The Lotowater report indicated that this work would require the well to be taken off-line for two to three days and require the need for an alternate supply of water (hauled water) during the process. The Municipality, in response to the Lotowater Report, continues to monitor well yield and given the current trends do not anticipate having to perform the cleaning work until 2017, at the earliest.

The well pump, checkvalve and pitless adapter were reportedly last replaced in December 2012.

CAPACITY ASSESSMENT

CAPACITY ASSESSMENT

- **There was sufficient monitoring of flow as required by the Permit and Licence or Approval issued under Part V of the SDWA**

Condition 2.1, Schedule C of the Licence requires the Owner to ensure the continuous flow measurement and recording be undertaken for the flow rate and daily volume of water conveyed into the treatment system and the flow rate and daily volume of water conveyed from the treatment system into the distribution system.

To comply with this condition, the Owner has installed flow meters to measure the raw water flow and the treated water flow entering the distribution system.

Instantaneous flow rates are measured by each flow measuring device and continuously trended and recorded on the Supervisory Control and Data Acquisition (SCADA) system associated with the drinking water system. Totalized daily flows are calculated by SCADA, and transcribed to record keeping mechanisms for reporting purposes.

All flow measuring devices were most recently calibrated on November 4, 2014.

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

Condition 1.1, Schedule C of the Licence stipulates that the maximum daily volume of treated water that flows from the Port Sydney (Clarke Well) drinking water treatment pumphouse to the distribution system shall not exceed 90.92 cubic metres per day (m³/day). Each of the cartridge filters and the UV disinfection units are also described as being capable of treating water at a rate of 204.5 Litres per minute (L/min.)

In 2014 the maximum day demand occurred on June 22, 2014 when a total daily flow of 47.9m³ or 53% of the rated capacity was noted to have occurred. The average day demand for 2014 was reported to be approximately 30.5m³/d or 34% of the plant rated capacity.

Between January 1, 2015 and up to the date of this inspection, October 8, 2015, the maximum day demand occurred on August 1, 2015 when a total daily flow of 49.2m³ or 54% of the rated capacity was noted to have occurred. The average day demand for this same period is reported to be approximately 32m³/d or 35% of the plant rated capacity.

During water production, the rate of flow into the treatment system is governed by valving installed on the raw water well header upstream of the cartridge filters. The SCADA system is also configured to initiate an alarm if the raw water flow rate exceeds 204.5L/min or the daily volume exceeds 90.92m³, to ensure PTTW conditions are adhered to.

A review of records made during this inspection review period indicates that the Port Sydney (Clarke Well) drinking water system was not operated to exceed the plant rated capacity set out in the Licence. Similarly, records indicate that the filters and UV disinfection units were not operated in excess of their design capacities during the production of water.

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.**

A review of the equipment installed at the Port Sydney (Clarke Well) pumphouse was referenced and found to compare favourably to the equipment listed in the Permit issued for the Port Sydney (Clarke Well) Drinking Water System. There have reportedly been no alterations to the drinking water system to necessitate the need for an alteration of the description of the drinking water system components. Similarly, there were reportedly no watermain additions or modifications to necessitate the completion of any Form 1 documents nor were there reportedly any minor modifications undertaken or additions made which required the completion of any Form 2 or Form 3 documents, during this inspection review period.

TREATMENT PROCESSES

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

Where a raw water supply is GUDI, O.Reg. 170/03 requires the provision of water treatment equipment that is designed to be capable of chemically assisted filtration or equivalent, and is designed to be capable of achieving, at all times, primary disinfection in accordance with the Ministry's Procedure for Disinfection of Drinking Water in Ontario (Procedure) including at least 2-log removal or inactivation of *Cryptosporidium* oocysts, 3-log removal or inactivation of *Giardia* cysts and 4-log removal or inactivation of viruses by the time water enters the distribution system.

The Port Sydney (Clarke Well) drinking water system uses a combination of cartridge filtration, UV irradiation and chlorination. Although filtration is required for the GUDI water supply, the cartridge filtration process is not, according to the Licence, assigned any log removal/inactivation credits, and the credits are to be met through the combination of UV irradiation and chlorine disinfection.

According to the Procedure, UV irradiation is acceptable as a primary disinfection process, provided that a UV pass through dose of at least 40 J/cm² is maintained throughout the life time of the lamp, and the UV equipment is validated to meet ANSI/NSF Standard 55 Class A or an equivalent standard.

The Trojan UV Swift units installed have been bioassay validated (DVGW) to be capable of delivering a UV dose of 40mJ/cm², at a minimum 90% UVT and the plant rated capacity of 204.5 L/min. The UV units are each equipped with UV intensity sensors, cleaning systems, alarms and controls. The UV units operate in a duty/standby mode, and are configured to trigger an alarm and automatically switch over to the standby unit in the event UV intensity falls below 23.5W/m², the minimum UV intensity required to ensure the required UV pass through dose. Where a complete UV system failure occurs, the well pump is locked out and actuated valves are closed, preventing improperly disinfected water from being conveyed further into the treatment train.

Condition 1.6, Schedule C of the Licence, requires the Owner to ensure the continuous monitoring (every 5 minutes) of the flow rate through the UV unit, the UV intensity and the UV lamp status. UVT is also required to be tested (grab sample) once each week. UV records are trended on SCADA, and records reviewed for this inspection period indicate that the UV units operated as designed when water was being produced. Operational staff measured the filtered water UVT once each week, and results were typically 90% or more.

The UV Disinfection process is credited with 2-log inactivation of Crypto, 2.5-log inactivation of *Giardia* and 2-log inactivation of viruses.

To achieve the remaining 0.5-log *Giardia* and 2-log Virus inactivation, a free available chlorine residual chemical disinfection system is utilized, through addition of sodium hypochlorite, and the CT disinfection concept is used to quantify the capability of the disinfection system for primary disinfection purposes. The effective chlorine contact time required for the CT concept is afforded by maintaining a minimum operating level (0.6m) in the baffled clearwell. The clearwell fill cycle is configured to begin filling at 1.35m and an alarm is initiated if the reservoir level falls below 1.15m. The high lift pumps will lockout if the reservoir level is below 0.7m. The system is operated to target a free chlorine residual of 1.20mg/L. The chlorine analyzer is configured to trigger an alarm in the event the free chlorine residual falls below 0.90mg/L. Should the free chlorine residual fall below 0.85mg/L, the well pump will shut down, ceasing water production until operational staff respond to the site and resolve any issues. The SCADA system is configured to calculate CT continuously to ensure adequate disinfection is provided and will alarm if CT is not met.

A manual CT calculator is also available for operators to verify whether or not CT provisions were being met under specific conditions. Supporting documentation related to CT is available in the operations and maintenance manuals.

Records reviewed indicate that the system was operated to achieve the necessary UV dosages and CT requirements for primary disinfection purposes during this inspection review period.

TREATMENT PROCESSES

Although the cartridge filtration component is not assigned with log removal credits, it is acknowledged that the cartridge filtration process may still meet the criteria set out in the Procedure to be eligible for removal credits. Specifically, section 3.4.5 of the Procedure indicates that cartridge filtration may be eligible to claim a 2.0-log Crypto removal credit if the process: uses filter elements that are ANSI/NSF Standard (NSF) 53 certified, or equivalent; ensures that differential pressures across the filter medium do not exceed NSF 61 or manufacturer's ratings; continuously monitors filtrate turbidity; and, meets the filtrate turbidity criterion of less than or equal to 0.2NTU. With respect to the cartridge filtration process at Port Sydney, the owner continuously monitors filtrate turbidity and the results are trended on SCADA. An alarm notification occurs if filtrate turbidity exceeds 0.3NTU and the well pump will shut down if turbidity exceeds 0.90NTU. Records reviewed indicate that turbidity concentrations were consistently below 0.2NTU during this inspection review period.

Pressure differential is also monitored through SCADA and is configured to initiate an alarm if pressure differential exceeds 25 psi, as per the manufacturer's recommendations. Only one filter is used at a time (duty/standby) and the filter units cannot change over automatically. Documentation is also available to suggest that the Harmsco (PP-HC-170-1) one micron absolute filters being used, have been certified to a NSF 53 equivalent.

- * **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.**

Following completion of the intended chlorine contact time for primary disinfection purposes, free available chlorine residual is maintained out and into the distribution system for secondary disinfection purposes to reduce the potential for microbial re-growth within the distribution system, and in accordance with section 1-5 of Schedule 1, O.Reg. 170/03. The Port Sydney (Clarke Well) water treatment system is designed to target a free chlorine residual of approximately 1.20 mg/L at the point of entry into the distribution system which should ensure a minimum free chlorine residual of 0.2mg/L is maintained throughout the distribution system as is recommended in the Ministry's Procedure for Disinfection. The free chlorine residual analyzer installed on the high lift pump discharge header is configured to initiate an alarm notification if the free available chlorine residual drops below 0.90mg/L, and the well pump will shut down if chlorine residual drops below 0.85mg/L. The free chlorine residual concentrations within the distribution system are measured at one location each day, Monday through Friday. In addition, chlorine residuals are also measured in conjunction with microbiological sampling and maintenance activities throughout the distribution system.

Records indicate that free chlorine residuals were maintained above the 0.2mg/L throughout the distribution system during this inspection review period; and, there were no records which indicated free chlorine residuals less than 0.05 mg/L at any time during the inspection review period. The recorded distribution system free chlorine residual concentrations ranged between 0.57mg/L and 1.88mg/L.

- * **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.**

As previously discussed, the Owner has installed two Trojan UVSwift irradiation units intended for primary disinfection purposes. Condition 1.6, Schedule C of the Licence requires the Owner to operate the UV disinfection equipment such that a continuous pass-through UV dose of 40 mJ/cm² is maintained throughout the life time of the UV Lamps. The UV disinfection unit have been bioassay validated, and are certified (DVGW) to be capable of delivering a UV dose of 40mJ/cm², at a minimum 90% UV transmittance (UVT) and the plant rated capacity of 204.5 L/min. The UV units are each equipped with UV intensity sensors, cleaning systems, alarms and controls. The UV units operate in a duty standby mode, and are configured to trigger an alarm and automatically switch over to the standby unit in the event there is a problem that results in an alarm condition on the duty U/V unit. The system operation is managed by the Programmable Logic Controller(PLC).

TREATMENT PROCESSES

Water is not capable of passing through the alternate U/V unit until a signal indicating that the required intensity of the lamp is reached. The system configuration is designed to also shut down the well pump operation and it remains inoperable until the U/V unit returns to normal operation. The design is configured in this manner so as to help prevent any chance of having improperly disinfected water from entering the distribution system.

The alarms and automatic switchover mechanisms are tested in conjunction with the diesel generator tests every two weeks.

- **The Operator-in-Charge had ensured that all equipment used in the processes was monitored, inspected, and evaluated.**

The operator-in-charge evaluates the system processes at the Port Sydney(Clarke Well) water treatment plant daily, Monday through Friday while visiting the water treatment plant. The operating conditions are also evaluated by reviewing the SCADA trending, which occurs from the Huntsville(Fairyview) water treatment building computer system. Any departures from the normal operating conditions are documented as part of the review. Weekends and holidays are also considered, to ensure that the review of the continuous monitoring data does not exceed 72 hours in duration. The specific operating conditions are recorded on checklists and stored electronically in Excel spreadsheets. Records of the checks are noted in the water treatment plant and distribution system log books.

TREATMENT PROCESS MONITORING

- **Primary disinfection chlorine monitoring was being conducted at a location approved by Permit, Licence or Approval issued under Part V of the SDWA, or at/near a location where the intended CT had just been achieved.**

The primary disinfection monitoring point is located following the baffled clearwell, off of the high-lift pump distribution header, a location where the intended CT has been achieved. The chlorine analyser is linked to SCADA for continuous monitoring, trending and alarming purposes, and is used by SCADA and operational staff to calculate CT provisions.

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

The treatment system has been equipped with two cartridge filters consisting of a duty and standby unit. One filter is in operation at any given time. The filtrate turbidity is monitored continuously when water is being produced. The information is trended through the SCADA system. The water treatment equipment has been designed recognizing that the production well has been considered a Groundwater Under the Direct Influence of Surface Water(GUDI).

The turbidimeter is configured to initiate an alarm notification if filtrate turbidity exceeds 0.30NTU and shut down the well pump if turbidity exceeds 0.9NTU.

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

Subsection 7-2 (5) of Schedule 7, O.Reg.170/03 requires the Owner of a small municipal residential system that provides secondary disinfection to ensure that at least two distribution samples are collected each week, at least 48 hours apart, but within the same week, and those samples be tested immediately for free available chlorine residual.

Records provided for review indicate that the Owner has ensured that at least two samples were collected each week, at least 48 hours apart, from within the distribution (plumbing) system and tested for free available chlorine residual. Typically, operational staff test the free chlorine residual for secondary disinfection monitoring purposes on Mondays and Thursdays of each week. Chlorine residual concentrations are also being assessed at the three distribution sample stations in conjunction with the weekly microbiological sample day, typically on Mondays.

During this inspection review period the recorded distribution system free chlorine residual concentrations ranged between 0.57mg/L and 1.88mg/L.

TREATMENT PROCESS MONITORING

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

The data review is completed daily Monday through Friday. Weekends and holidays are considered. Operators are scheduled to conduct a data review so that the time between checks does not exceed the 72 hour regulatory requirement.

The weekend results of the continuous monitoring equipment are being reviewed on Mondays, or the day after in the case of a holiday and documented in the log book in order to satisfy Schedule 6, O.Reg.170/03 requirements for examination of continuous monitoring data.

- * **All continuous monitoring equipment utilized for sampling and testing required by O. Reg. 170/03, or approval or order, were equipped with alarms or shut-off mechanisms that satisfied the standards described in Schedule 6.**

Continuous monitoring equipment is used to assess ultraviolet disinfection performance, turbidity, and chlorine residual concentrations. Primary disinfection is provided through a combination of ultraviolet irradiation(U/V) and chlorination. With respect to ultraviolet irradiation, one unit operates as the duty unit at a given time. Should there be an inadequate U/V dose or intensity detected, automatically, the unit shuts down and transfers to the standby unit. When this occurs, it also results in a shut down of the well pump to help prevent any improperly disinfected water from potentially entering the distribution system.

The primary disinfection chlorine residual concentration is monitored on the discharge header, after the clearwell. The low alarm set point is at 0.90mg/L, with a second low/low alarm set point of 0.85mg/L. The high alarm set point and the high/high set point are both set to alarm at 2.00mg/L.

Filter turbidity is monitored continuously, post filter. At the time of inspection, a high alarm set point was set at 0.3 NTU with a second high high alarm set point of 0.9 NTU. Should the turbidity reach the high high alarm set point, it will result in a shut down of the production well.

The Licence sets out specific UV related monitoring requirements as well as Sensor Checks and Calibration requirements, which are discussed in more detail in a later section of this inspection report.

- * **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.**

Schedule 6 of Ontario Regulation 170/03 outlines the recording frequency requirements for continuous on line analysers. It requires that the free chlorine for primary disinfection be tested and recorded with a minimum frequency of every five minutes. Turbidity monitoring must be performed with a minimum frequency of at least once every fifteen minutes.

The chlorine residual is being recorded in milligrams per litre(mg/L) and the turbidity is being recorded in Nephelometric Turbidity Units(NTU). Complying with the frequency requirements, continuous monitoring data is recorded and trended on the SCADA system at ten second intervals.

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

Calibrations are completed a minimum of at least once per month, or as needed to exceed the manufacturer's recommendations, to ensure effective operation and accuracy. The information is noted in the electronic spreadsheets and in the log books.

Procedures are available in the operations and maintenance manual for the calibration of the continuous analyzers.

The continuous chlorine analysers are calibrated when the unit reads 5% above or below hand held readings. Records of each calibration are made in the daily log book and the maintenance log

TREATMENT PROCESS MONITORING

book at the plant. Handheld colorimeters are verified against standards and titration tests on a regular basis.

The turbidity and pH meters are calibrated on a monthly frequency and a record is made in the daily log book and the maintenance log book at the treatment plant.

Schedule E of the Licence also sets out UV Sensor Checks and Calibration requirements, which are discussed in more detail in a later section of this inspection report.

OPERATIONS MANUALS

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

An operations and maintenance manual has been created and is available on-site for the utility operator's use at the water treatment plant. The manual and contingency plans were last reviewed in August 2015, and the contents of the manuals appear to be sufficient, enabling staff to safely operate the drinking water system. As discussed, in the following section of this inspection report, the Owner is currently reviewing sections of the operations and maintenance manual to ensure the manual is consistent with the requirements of the new Licence issued October 6, 2015.

- **The operations and maintenance manuals did meet the requirements of the Permit and Licence or Approval issued under Part V of the SDWA.**

Condition 16, Schedule B of the Licence prescribes that the operations and maintenance manual include at a minimum:

- the requirements of the licence and associated procedures;
- the requirements of the drinking water works permit for the drinking water system;
- a description of the processes used to achieve primary and secondary disinfection within the drinking water system, including where applicable a copy of the CT calculations that were used as the basis for primary disinfection under worst case operating conditions; and the validated operating conditions for UV disinfection equipment, including a copy of the validation certificate.
- 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;
- procedures for the operation and maintenance of monitoring equipment;
- contingency plans and procedures for the provision of adequate equipment and material to deal with emergencies, upset conditions and equipment breakdown; and,
- procedures for the 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.
- an inspection schedule for all wells associated with the drinking water system, including all production wells, standby wells, test wells and monitoring wells;
- Well inspection and maintenance procedures for the entire well structure of each well including all above and below grade well components; and
- remedial action plans for situations where an inspection indicates non-compliance with respect to regulatory requirements and/or risk to raw well water quality.

Procedures necessary for the operation and maintenance of any alterations to the drinking water system must also be incorporated into the operations and maintenance manual prior to the alterations coming into operation.

The operations manual and the contingency plans for the drinking water system appear to address all of these topics sufficiently, providing the utility operators enough information to effectively operate the drinking water system.

OPERATIONS MANUALS

The requirement for the operations manual to include a description of the processes used to achieve primary and secondary disinfection within the drinking water system, is a new condition, Condition 16.2.3, Schedule B), of the Licence that was issued on October 6, 2015 and the Owner has until April 13, 2016 to comply with this condition.

In review of the information contained in the Operations Manual and provided for this inspection, all of the information would appear to be available to satisfy this condition, and a copy of the UV validation certificate was also provided during this inspection. The Owner is in the process of reviewing the relevant sections of the Operations Manual as they pertain to this particular condition, to see where further improvements can be made to the manual in this regard. This review is to include directives regarding the UV Sensor checks and calibrations required by Schedule E of the Licence.

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.**

Records reviewed indicate that only the certified utility operators are the individuals that are performing the operational tests throughout the system.

SECURITY

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

Security measures in place at the Port Sydney (Clarke Well) drinking water system include locked access doors, security alarms, locked distribution sample hydrants. Security alarms have been linked to the SCADA system. There were no incidents of damage or vandalism to the Port Sydney (Clarke Well) drinking water system reported during the inspection review period.

CERTIFICATION AND TRAINING

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

In accordance with Ontario Regulation 128/04 (Certification of Drinking Water System Operators and Water Quality Analysts) made under the SDWA, the "Port Sydney Clarke Crescent Water Treatment Plant" is classified as a Class 1 Water Treatment Subsystem (#3664, dated September 6, 2005), while the "Port Sydney Clarke Crescent Water Distribution System" is classified as a Class 1 Water Distribution Subsystem (#3287, dated September 6, 2005).

At the time of this inspection, individuals possessing Class 4 Water Treatment Subsystem and Class 3 Water Distribution certificates, at a minimum, have been designated to act in the capacity of Overall Responsible Operator (ORO). Other operators, who possess, at a minimum, Class 3 Water Treatment and Distribution certifications, are also available and may serve in the ORO capacity, if required.

Records identifying the name of the individual serving in the capacity of ORO are documented within facility logbooks on a daily basis. There were no records to indicate that individuals other than sufficiently certified operators were acting in the capacity of ORO during this inspection review period.

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

The Owner has designated the operators who possess the appropriate level of certification to act as Operator-in-Charge (OIC) as required. Typically, the operator doing facility checks is considered the OIC of the facility on that particular day.

CERTIFICATION AND TRAINING

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

Records provided for review indicate that the District of Muskoka utility operators appear to be the only persons who are adjusting water treatment equipment and processes at the water treatment plant.

WATER QUALITY MONITORING

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

Subsection 11-2(1) of Schedule 11, O.Reg.170/03 requires the Owner and the operating authority of a small municipal residential drinking water system to ensure that at least one distribution sample is taken every two weeks, if the system provides treatment equipment in accordance with Schedule 2 and the equipment is operated in accordance with that Schedule, as is the case for the Port Sydney (Clarke Well) drinking water system. Subsection 11-2(2) further stipulates that each of the distribution samples collected are tested for E.Coli, total coliforms and general bacteria population expressed as colony counts on a heterotrophic plate count, if subsection 2-5 (1) of Schedule 2 applies to the system.

Records provided and reviewed in the course of this inspection indicate that the Owner has complied and exceeded these sampling requirements, generally collecting three samples from within the distribution system on a weekly basis, above and beyond the bi-weekly requirement. Each of those samples were tested for E.Coli, total coliform, and approximately one third of the samples were tested for general bacteria populations expressed as colony counts on a heterotrophic plate count. In addition to their sampling requirements, the Owner regularly conducts microbiological sampling of the treated water being conveyed to the distribution system, and includes results of this sampling within the Annual reports prepared for the drinking water system.

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

Section 13-2 of Schedule 13, O.Reg.170/03 requires the Owner and the operating authority to ensure that at least one water sample is taken every 60 months and tested for every inorganic parameter set out in Schedule 23, O.Reg.170/03.

Complying with these requirements, the Owner last conducted this sampling on April 13, 2015. Prior to that, samples had last been collected on April 14, 2014. There were no concerns identified with the results obtained.

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

Section 13-4 of Schedule 13, O.Reg.170/03 requires the Owner and the operating authority to ensure that at least one water sample is taken every 60 months and tested for every organic parameter set out in Schedule 24, O.Reg.170/03.

Complying with these requirements, the Owner last conducted this sampling on April 13, 2015. Prior to that, samples had last been collected on April 14, 2014. There were no concerns identified with the results obtained.

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

Section 13-6 of Schedule 13, O.Reg.170/03 requires the Owner and the operating authority to ensure that at least one distribution sample is taken every 3 months from a point in the drinking water system's distribution system, or in plumbing that is connected to the drinking water system, that is likely to have an elevated potential for the formation of Trihalomethanes (THMs), and tested for THMs. Section 6-1.1 of Schedule 6, O.Reg.170/03 requires that these samples be 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.

WATER QUALITY MONITORING

Complying with these requirements, the Owner conducted this sampling on July 2, 2014; October 20, 2014; January 12, 2015; April 13, 2015; and July 13, 2015. THM sampling is typically conducted from the Timber Trail sampling station installed at a location of significant distance from the treatment facility likely to have an elevated potential for the formation of THMs. The running annual average of the four most recent results is 2.4ug/L, below the Ontario Drinking Water Quality Standard of 100ug/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, O.Reg.170/03 requires the Owner and the operating authority to ensure that at least one water sample is taken every three months and tested for nitrates and nitrites. Section 6-1.1 of Schedule 6, O.Reg.170/03 requires that these samples be 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. Complying with these requirements, the Owner conducted this sampling on July 2, 2014; October 20, 2014; January 12, 2015; April 13, 2015; and July 13, 2015. There were no concerns identified with the results obtained.

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

Section 13-8 of Schedule 13, O.Reg.170/03 requires that the owner of a municipal residential drinking-water system ensure that a treated water sample is taken every 60 months and is tested for sodium.

Records, provided by the Owner and reviewed during the course of this inspection, indicate that the Owner conducted sampling for sodium on April 13, 2015. Prior to that, sampling for sodium had been undertaken April 14, 2014; April 08, 2013; April 17, 2012 and April 26, 2012.

Results of Sodium sampling are discussed in more detail in a later section of this inspection report.

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

Section 13-9 of Schedule 13, O.Reg.170/03 requires the Owner and the operating authority to ensure that at least one water sample is taken every 60 months and tested for Fluoride. The Owner last conducted Fluoride sampling on April 13, 2015, and typically conducts this sampling on an annual basis. The April 13, 2015 result obtained was 0.06 mg/L, which complied with the Ontario Drinking Water Quality Standard of 1.5 mg/L.

- **All water quality monitoring requirements imposed by the Permit and Licence or Approval issued under Part V of the SDWA were being met.**

Condition 1.6, Schedule C of the Licence, requires the Owner to ensure that the flow rate of water through the UV unit, the UV intensity and the UV lamp status be monitored every five minutes and recorded at a minimum frequency of every four hours. In addition the owner is required to measure and record the UVT in the filtered water on a weekly basis. UV intensity and flow rate are trended on SCADA every 10 seconds and Operational staff measure and record the UVT of the filtered water once each week. UVT results typically indicate a UVT of 90% or more. The owner possesses a Real Tech calibration unit used for assessing UVT and UVA performance.

The UV disinfection equipment is required to be operated such that a continuous pass-through UV dose of 40 mJ/cm² is maintained throughout the life time of the UV lamp(s). The Trojan UV disinfection units installed are equipped with UV sensors which measure UV intensity in W/m² on a continuous basis, the UV units are factory calibrated to initiate an alarm condition should UV intensity drop below the 23.5W/m², the minimum intensity required to achieve the necessary 40mJ/cm² UV dosage at the maximum design flow rate (204.5L/min) and a UVT 90%.

Schedule E of the Licence, requires that the duty UV sensors be checked on at least a monthly basis against a reference UV sensor, and that the duty UV sensor be replaced should the UV Sensor to Reference sensor calibration ratio be greater than 1.2. The Schedule E sensor check requirements were a new condition of the Licence issued October 6, 2015, and was discussed with

WATER QUALITY MONITORING

the Owner at the time of the October 8, 2015 inspection. In recognition of this new condition, the Owner ordered a reference sensor for the Port Sydney (Clarke Well) drinking water system, prior to the issuance of this inspection report, and intends to commence with the sensor checks and calibrations upon receipt of the reference sensor. As previously discussed, the Owner is also in the process of making amendments to the operations and maintenance manuals to ensure directives are included in regards to the monthly sensor checks.

- **All sampling requirements for lead prescribed by schedule 15.1 of O. Reg. 170/03 were being met.**

Based on the results of historical lead sampling, the Owner is exempt from the requirement to sample lead within the plumbing of the private residences in the Port Sydney Clarke Crescent community. Instead, the Owner must ensure to test for total alkalinity and pH during each of the prescribed sampling periods (December 15 to April 15 and June 15 and October 15), and must ensure lead is sampled within the distribution system in each of the prescribed sampling periods in every third 12 month period. Based on the estimated population (100) of the Port Sydney Clarke Crescent community, the Owner is required to ensure this sampling is conducted from one location within the distribution system. Typically, the Owner continues to sample for lead within the distribution system on an annual basis, during each sampling period.

During this inspection review period, sampling for lead occurred from one location within the distribution system on February 3, 2015 and April 13, 2015, and it was anticipated that sampling for lead would also be conducted prior to October 15, 2015.

Alkalinity and pH sampling is also undertaken on a weekly basis as part of the Langelier Saturation Index (LSI) sampling implemented by the Owner.

The Lead results ranged between 0.32 and 0.34ug/L, well within the Ontario Drinking Water Quality Standard of 10ug/L. Alkalinity results ranged between 26 and 48mg/L and pH ranged between 6.37 and 6.88.

- **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 O.Reg.170/03 prescribes that if a microbiological sample required by the regulation is taken, that another sample must be taken at the same time from the same location and tested immediately for free chlorine residual. Records provided by the Owner and reviewed during the course of this inspection indicate that the Owner ensured that a free chlorine residual was taken at the time of all microbiological samples. Operational staff recorded the free available chlorine residual tests directly on the Laboratory Sample Submission / Chain of Custody Form at the same time that microbiological samples were obtained. The chlorine residuals associated with microbiological sample were then included by the laboratory on the analytical report associated with results of the microbiological test.

WATER QUALITY ASSESSMENT

- **The audit samples collected by the inspector met the applicable Ontario Drinking Water Quality Standards and/or the aesthetic objectives or operation guidelines. The results of the audit sampling are summarized as follows:**

The free available chlorine residual within the distribution (plumbing) system on the date of inspection and was found to be acceptable with a concentration of 1.29mg/L being reported.

Microbiological and chemical audit samples were not collected as part of this inspection.

- **Records show that all water sample results taken during the review period met the Ontario Drinking Water Quality Standards (O. Reg. 169/03).**

The standards for drinking water quality in Ontario are prescribed in O.Reg. 169/03 "Ontario Drinking Water Quality Standards" (ODWQS). Background and supporting information for each of the standards can be found in the Ministry's "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines".

WATER QUALITY ASSESSMENT

Results of sampling conducted during this inspection review period met the microbiological and chemical requirements of the ODWQS.

It is, however, noted that samples collected from the Port Sydney (Clarke Well) drinking water system have, historically indicated elevated levels of Sodium in the treated water. Where the concentration of sodium exceeds 20mg/L in a drinking water sample, the Owner is required to make a report in accordance with subsection 16-3(1) of Schedule 16, O.Reg.170/03, if such a report had not been made in the previous 60 months. The Owner last made the required notifications in April 2012 when a sample collected April 17, 2012 rendered a sodium result of 25.7mg/L, and a resample collected April 26, 2012 confirmed the elevated sodium levels with a result of 23.8mg/L being reported. In accordance with Schedule 16, O.Reg.170/03 requirements, the results were reported to the Simcoe Muskoka District Health Unit (SMDHU), and under direction from the SMDHU, users of the system have been advised of the elevated sodium levels. Results of sodium sampling undertaken April 8, 2013; April 14, 2014 and April 13, 2015 continue to indicate elevated levels of sodium in the treated water with respective results of 34.7, 35.3 and 34.5mg/L. Raw water results have also typically indicated sodium levels in excess of 20mg/L.

The aesthetic objective for sodium in drinking water is 200 mg/L at which it can be detected by a salty taste. Consumption of sodium in excess of 10 grams per day by normal adults does not result in any apparent adverse health effects. In addition, the average intake of sodium from water is only a small fraction of that consumed in a normal diet. A maximum acceptable concentration for sodium in drinking water has, therefore, not been specified. Persons suffering from hypertension or congestive heart disease may require a sodium-restricted diet, in which case, the intake of sodium from drinking water could become significant. The local Medical Officer of Health is required to be notified when the sodium concentration exceeds 20 mg/L, so that this information may be passed on to local physicians.

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.**

Following a review of the SCADA and log book entries for the inspection review period, where required, operators responded to and took appropriate measures, where necessary, in response to alarm conditions. Explanations appear to have been consistently provided for power interruptions, maintenance activities, process operation alarm calls, and any communication errors that triggered alarms. Any after hours alarm calls appear to have been responded to in a timely fashion by the utility operators and notes have been entered in the log book of their actions taken for each instance.

- * **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.**

Should an alarm condition occur that is related to the U/V disinfection performance, the duty unit will automatically shut down and will transfer to the standby U/V unit, preventing improperly disinfected water from entering further into the treatment train or distribution system. The UV disinfection performance is tracked using SCADA. Should an alarm condition occur, the on call operator must acknowledge the alarm, and determine the appropriate level of response for each situation. Entries are completed in the log book at the treatment plant of any responses relating to U/V performance by the system operators. There were no concerns identified in the information provided during the inspection review period.

**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.

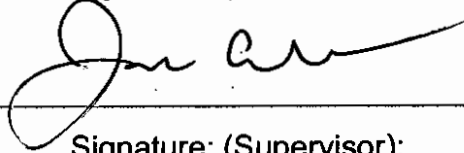
Not Applicable

**SIGNATURES**

Inspected By:

James Crumbie

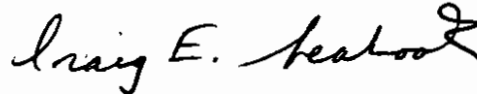
Signature: (Provincial Officer):



Reviewed & Approved By:

Craig Seabrook

Signature: (Supervisor):



Review & Approval Date:

2015 - 10 - 23

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.



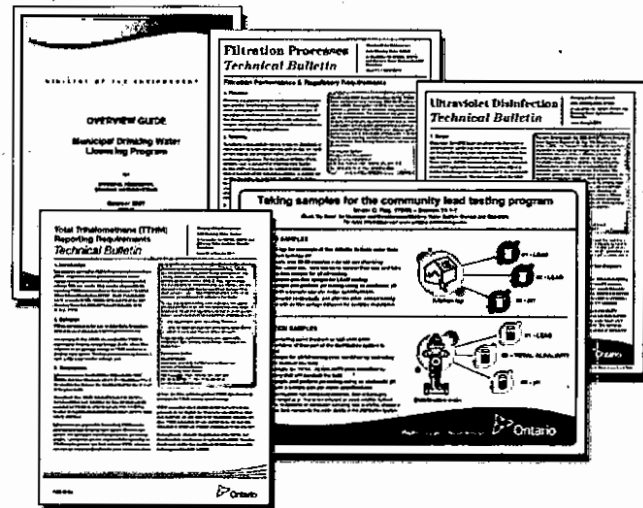
Stakeholder Appendix

Key Reference and Guidance Material for Municipal Residential Drinking Water Systems

Many useful materials are posted on the Ministry of the Environment's **Drinking Water Ontario** website at www.ontario.ca/drinkingwater to help in the operation of your drinking water system.

Below is a list of key materials frequently used by owners and operators of municipal drinking water systems. To read or download these materials, go to **Drinking Water Ontario** and search in the **Resources** section by **Publication Number**.

Visit **Drinking Water Ontario** for more useful materials. Contact the Public Information Centre if you need assistance or have questions at 1-800-565-4923/416-325-4000 or picemail.moe@ontario.ca.



PUBLICATION NUMBER	PUBLICATION TITLE
4448e01	Procedure for Disinfection of Drinking Water in Ontario
7152e	Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids
7467	Filtration Processes Technical Bulletin
7685	Ultraviolet Disinfection Technical Bulletin
8215	Total Trihalomethane (TTHM) Reporting Requirements Technical Bulletin (February 2011)
2601e	Overview Guide: Municipal Drinking Water Licensing Program
0000	Municipal Drinking Water Licensing Program Bulletin, Issue 1, January 2011
0000	Certification Guide for Operators and Water Quality Analysts
6560e	Taking Samples for the Community Lead Testing Program
7423e	Community Sampling and Testing for Lead: Standard and Reduced Sampling and Eligibility for Exemption
7128e	Drinking Water System Contact List
4449e01	Technical Support Document for Ontario Drinking Water Quality Standards

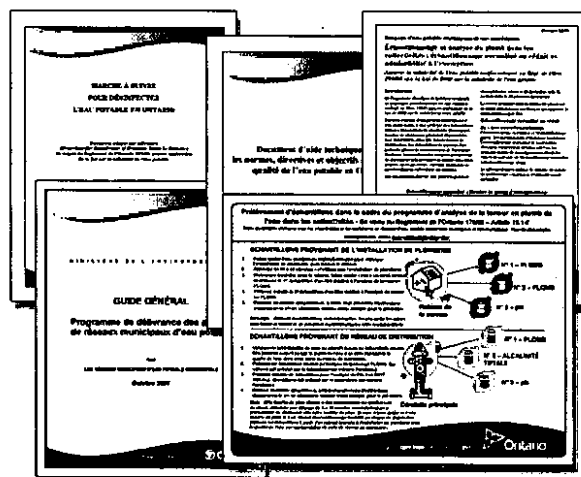
ontario.ca/drinkingwater

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

Beaucoup de documentation sur le fonctionnement d'un réseau d'eau potable se trouve sur le site Web du ministère de l'Environnement.

Vous trouverez ci-dessous la liste des principaux documents que les propriétaires et les exploitants de réseaux municipaux d'eau potable utilisent fréquemment. Pour lire ou télécharger ces documents, allez sur le site Web du Ministère, et effectuez une recherche par numéro de publication dans la section RESSOURCES.

Consultez le site d'Eau potable Ontario pour obtenir d'autre documentation. Communiquez avec le Centre d'information du public au 1 800 565-4923



ou au 416 325-4000, ou encore à picemail.moe@ontario.ca si vous avez des questions ou besoin d'aide.

NUMÉRO DE PUBLICATION	TITRE DE LA PUBLICATION
4448f01	Marche à suivre pour désinfecter l'eau potable en Ontario
7152e	Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids (en anglais seulement)
7467	Filtration Processes Technical Bulletin (en anglais seulement)
7685	Ultraviolet Disinfection Technical Bulletin (en anglais seulement)
8215	Total Trihalomethane (TTHM) Reporting Requirements Technical Bulletin (février 2011) (en anglais seulement)
2601f	Guide général - Programme de délivrance des permis de réseaux municipaux d'eau potable
0000	Bulletin du Programme des permis de réseaux municipaux d'eau potable, numéro 1, janvier 2011
0000	Guide sur l'accréditation des exploitants de réseaux d'eau potable et des analystes de la qualité de l'eau de réseaux d'eau potable
6560f	Prélèvement d'échantillons dans le cadre du programme d'analyse de la teneur en plomb de l'eau dans les collectivités
7423f	Échantillonnage et analyse du plomb dans les collectivités : échantillonnage normalisé ou réduit et admissibilité à l'exemption
7128f	Liste des personnes-ressources du réseau d'eau potable
4449f01	Document d'aide technique pour les normes, directives et objectifs associés à la qualité de l'eau potable en Ontario

ontario.ca/drinkingwater



MOE Audit Sample Results

Not Applicable



Provincial Officer's Report & Order

Not Applicable



Inspection Rating Record

Ministry of the Environment - Inspection Summary Rating Record (Reporting Year - 2015-2016)

DWS Name: PORT SYDNEY (CLARKE WELL) DRINKING WATER SYSTEM
DWS Number: 220005688
DWS Owner: Muskoka, The Corporation Of The District Municipality Of
Municipal Location: Huntsville
Regulation: O.REG 170/03
Category: Small Municipal Residential System
Type Of Inspection: Focused
Inspection Date: October 8, 2015
Ministry Office: Barrie District

Maximum Question Rating: 504

Inspection Module	Non-Compliance Rating
Source	0 / 28
Capacity Assessment	0 / 30
Treatment Processes	0 / 98
Operations Manuals	0 / 28
Logbooks	0 / 14
Certification and Training	0 / 28
Water Quality Monitoring	0 / 103
Reporting & Corrective Actions	0 / 42
Treatment Process Monitoring	0 / 133
TOTAL	0 / 504

Inspection Risk Rating 0.00%

FINAL INSPECTION RATING: 100.00%

Ministry of the Environment - Detailed Inspection Rating Record (Reporting Year - 2015-2016)

DWS Name: PORT SYDNEY (CLARKE WELL) DRINKING WATER SYSTEM
DWS Number: 220005688
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Maximum Question Rating: 504

Inspection Risk Rating 0.00%

FINAL INSPECTION RATING: 100.00%