

Ministry of the
Environment,
Conservation and Parks
Eastern Region
Kingston District Office
1259 Gardiners Road, Unit 3
Kingston ON K7P 3J6

Ministère de l'Environnement,
de la Protection de la nature
et des Parcs
Région de l'Est
Bureau du district de Kingston
1259, rue Gardiners, unité 3
Kingston (Ontario) K7P 3J6



January 4, 2019

Sent by Email: cao@laurentianhills.ca

The Corporation of the Town of Laurentian Hills
34465 Highway 17, RR#1
Deep River, Ontario K0J 1P0

Attention: Ms. Sherry Batten, Chief Administrative Officer

Dear Ms. Batten:

Re: 2018-2019 Inspection Report

The enclosed report documents findings of an announced detailed inspection that was performed at the Chalk River Drinking Water System on Tuesday, November 27, 2018.

Two sections of the report, namely "Non-compliance with Regulatory Requirements and Actions Required" and "Summary of Recommendations and Best Practice Issues", if found, will cite due dates for the submission of information or plans to my attention.

Please note that "Non-compliance with Regulatory Requirements and Actions Required" are linked to incidents of non-compliance with regulatory requirements contained within an Act, a Regulation, or site-specific approvals, licenses, permits, orders, or instructions. Such violations may result in the issuance of mandatory abatement instruments which could include orders, tickets, penalties, or referrals to the ministry's Environmental Enforcement and Compliance Office. ***There were no issues of "Non-compliance with Regulatory Requirements" and "No Actions Required" identified in the inspection.***

"Summary of Recommendations and Best Practice Issues" convey information that the owner or operating authority should consider implementing in order to advance efforts already in place to address such issues as emergency preparedness, the fulsome availability of information to consumers, and conformance with existing and emerging industry standards. Please note that items which appear as recommended actions do not, in themselves, constitute violations. ***There were no "Summary of Recommendations and Best Practice Issues" identified in the inspection.***

Section 19 of the Safe Drinking Water Act, 2002 (Standard of Care) cites a number of obligations of individuals who exercise decision-making authority over municipal drinking water systems. The ministry encourages individuals, particularly municipal councillors, to take steps to be well 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.

Thank you for the assistance afforded to me during the conduct of the compliance assessment. Should you have any questions regarding the content of the enclosed report, please do not hesitate to contact me.

Yours truly,



Suzanne Smith
Water Inspector/Provincial Officer, Badge # 1511 Drinking Water Compliance
Drinking Water and Environmental Compliance Division Kingston District Office
Tel. Direct Line: 613-540-6871

SS

- Ec: Greg Prangley, Project Manager, Veolia Water Canada Inc., E-mail:
gprangley@veolia.com
- Dave Ethier, Overall Responsible Operator - Chalk River DWS, Veolia Water Canada Inc., E-mail: dethier@veolia.com
 - David Tantalo, Manager, Environmental Health, Renfrew County and District Health Unit, E-mail: dtantalo@rcdhu.com
 - Randy McLaren, A/District Manager, Ministry of Natural Resources and Forestry, Pembroke District Office, E-mail: randy.mclaren@ontario.ca
- c: File SI-RE-LH-RA (2018 / 2019) DWS # 210000666



Ministry of the Environment, Conservation and Parks

CHALK RIVER DRINKING WATER SYSTEM

Inspection Report

Site Number:	210000666
Inspection Number:	1-18X16
Date of Inspection:	Nov 27, 2018
Inspected By:	Suzanne Smith

Table of Contents:

OWNER INFORMATION	2
CONTACT INFORMATION	2
INSPECTION DETAILS	2
COMPONENTS DESCRIPTION	3
INSPECTION SUMMARY	6
Introduction	6
Source	6
Permit To Take Water	6
Capacity Assessment	6
Treatment Processes	7
Treatment Process Monitoring	8
Process Wastewater	10
Distribution System	10
Operations Manuals	11
Logbooks	11
Contingency/Emergency Planning	12
Security	12
Consumer Relations	12
Certification and Training	12
Water Quality Monitoring	13
Water Quality Assessment	15
Reporting & Corrective Actions	15
NON-COMPLIANCE WITH REGULATORY REQUIREMENTS AND ACTIONS REQUIRED	18
SUMMARY OF RECOMMENDATIONS AND BEST PRACTICE ISSUES	19
SIGNATURES	20
APPENDIX A - MUNICIPAL DRINKING WATER LICENCE AND DRINKING WATER WORKS PERMIT	
APPENDIX B - PERMIT TO TAKE WATER	
APPENDIX C - INSPECTION RATING RECORD	
APPENDIX D - INSPECTION RATING METHODOLOGY	
APPENDIX E - STAKEHOLDER APPENDIX	

OWNER INFORMATION:

Company Name:	LAURENTIAN HILLS, THE CORPORATION OF THE TOWN OF	Unit Identifier:	
Street Number:	34465		
Street Name:	HIGHWAY 17 Hwy		
City:	DEEP RIVER		
Province:	ON	Postal Code:	K0J 1P0

CONTACT INFORMATION

Type:	Owner	Name:	Sherry Batten
Phone:	(613) 584-3114	Fax:	(613) 584-3285
Email:	cao@laurentianhills.ca		
Title:	Chief Administrative Officer, Laurentian Hills		

Type:	Operating Authority	Name:	Greg Prangley
Phone:	(905) 975-8669	Fax:	(905) 547-0511
Email:	greg.prangley@veolia.com		
Title:	Project Manager, Veolia Water Canada Inc.		

Type:	Operating Authority	Name:	Dave Ethier
Phone:	(613) 589-2161	Fax:	(613) 589-2158
Email:	dave.ethier@veolia.com		
Title:	Lead Operator, Chalk River		

Type:	Health Unit	Name:	David Tantalo
Phone:	(613) 735-8654 xx535	Fax:	(613) 735-3067
Email:	dtantalo@rcdhu.com		
Title:	Manager, Environmental Health, Renfrew County and District Health Unit		

Type:	Ministry of Natural Resources	Name:	Randy McLaren
Phone:	(613) 732-5520	Fax:	(613) 732-2972
Email:	randy.mclaren@ontario.ca		
Title:	A/District Manager, Ministry of Natural Resources and Forestry		

INSPECTION DETAILS:

Site Name:	CHALK RIVER DRINKING WATER SYSTEM
Site Address:	73 RAILWAY ST CHALK RIVER K0J 1P0
County/District:	Laurentian Hills
MECP District/Area Office:	Ottawa District
Health Unit:	RENFREW COUNTY AND DISTRICT HEALTH UNIT
Conservation Authority:	
MNR Office:	Pembroke District Office
Category:	Large Municipal Residential
Site Number:	210000666
Inspection Type:	Announced

Inspection Number: 1-18X16
Date of Inspection: Nov 27, 2018
Date of Previous Inspection: Jan 16, 2018

COMPONENTS DESCRIPTION

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

Site (Name): RAW WATER INTAKE
Type: Source **Sub Type:** Surface
Comments:

The source for the Chalk River drinking water system is Corry Lake, which is a shallow lake within the Chalk River drainage basin. The headwaters of Chalk River are located in the northeastern portion of Algonquin Park where land use is generally restricted to undeveloped forests and wetlands. According to the 2001 Engineers' Report prepared by Stantec Consulting Limited, Corry Lake is subject to potential contamination by storm water run-off, agricultural run-off and vector contact resulting in occasional elevated microbial levels.

The inlet screen consists of Tensar Biaxial Geogrid SSI screen with 25mm x 40mm openings and 100mm ribs. The screen is fastened to the end of a 400mm polyethylene intake pipe, located approximately 25m from shore and 1.65m below the water surface. Raw water flows by gravity through 60m of PET intake pipe to a three-chambered 2.5m by 2.5m pre-cast concrete valve chamber. Water flows from the first valve chamber to manhole 101 through 75m of 300mm poly vinyl chloride (PVC) pipe, and from manhole 101 to the low lift pumping station through 5m of 300mm corrugated steel pipe. Under normal conditions, the 300mm diameter knife gate isolation valve located within the valve chamber is fully open and the level in the raw water well matches the level in Corry Lake.

In addition, there is a 100mm diameter PVC pipe from the valve chamber to the low lift pumping station (for future use such as chlorination for zebra mussel control) which is currently capped at both ends.

Site (Name): LOW LIFT PUMPING STATION
Type: Source **Sub Type:** Pumphouse
Comments:

The low lift station is a brick and metal clad building located on the bank of Corry Lake. It is equipped with two 25HP horizontal end-suction centrifugal pumps (duty and standby), each with a capacity of 23L/s at 42.7m TDH, controlled by variable frequency drives, however since 2008, the pumps are operated at constant speed and adjusted to demand requirements.

Each pump has a dedicated suction line to the raw water well, which is 4.3m by 4.3m by 2m deep at average lake level. The pumps are brought into service manually or automatically through the use of an ultrasonic level measurement in the clearwell at the water treatment plant.

Water is pumped from the raw water well through a 150mm diameter common discharge header to the treatment plant through a 2000m long 200mm diameter transmission main along Corry Lake Road, Forestry Road, and Railway Street.

Site (Name): CHEMICAL FEED BUILDING
Type: Other **Sub Type:** Other
Comments:

The chemical feed building is located directly adjacent to the low lift pumping station. It is metal clad and is 7.8m long by 3m wide. The building contains two soda ash chemical feed pumps (duty and standby) each rated at 60L/hr,

and two 1000L soda ash solution tanks with containment.

Soda ash solution is dosed to the raw water well, flow-paced based on total raw water flow measured at the common raw water meter FE-101.

Site (Name): TREATED WATER
Type: Treated Water POE **Sub Type:** Treatment Facility
Comments:

The water treatment facilities are housed in a concrete block, brick and metal clad building 17m by 17m.

Raw water is pumped from the low lift station through a 2000m long 200mm diameter asbestos cement transmission main to the treatment plant. The flow rate is measured by the online flow meter (FE-101) located on the 200mm diameter common intake header just prior to the splitter box which was designed to divide the water flow equally between the two treatment units. PAX-XL 1900 is injected at the splitter box, and polyelectrolyte (Magnafloc LT 27AG) is injected at each the solids contact units.

Treatment Unit #1, installed in 1980, is composed of an ECODYNE solids contact unit and a dual media filter which provides coagulation, flocculation, settling and filtration. Until 2003, it was operated in batch mode at a flow rate equivalent to rated capacity. The solids contact unit contains two compartments: a circular sludge blanket tank with a rotating mixer, and a rectangular sedimentation basin with 60 degree tube settlers. There is no mechanical rake at the bottom of the tank to direct sludge to the drain.

Treatment Unit #2, installed in 2003, is composed of a solids contact unit and a two-compartment dual media (sand and anthracite) filter, which provide coagulation, flocculation, settling and filtration. It has improved operational characteristics including a more efficient solids contact tank which consists of a proprietary flocculator/clarifier providing a mixing zone, a reaction well cone with baffles, a clarification zone and a concentric sludge collector. No increase in rated capacity was made with the addition of the new treatment unit.

Other upgrades that were completed in 2003 included the following:

- Low lift pumps were replaced with variable frequency drive, in order to operate the plant at a lower flow rate.
- The original filters were modified to allow for filter-to-waste capability.
- Flow monitoring equipment and analyzers for pH, turbidity, chlorine residual and fluoride were replaced.
- Chemical feed systems were improved to allow for duty and standby pumps.
- Spill containment was provided for process chemicals.
- A sludge holding tank equipped with a mixer and two submersible pumps (one pump is now equipped with a variable frequency drive) were installed to discharge effluent to the sanitary sewer.
- Piping between the water treatment plant and the distribution system was modified to ensure all treated water was directed to the elevated storage tank prior to entering the distribution system. This was done to provide chlorine contact time needed to achieve 0.5-log inactivation of Giardia cysts and 2-log inactivation of viruses.

Filtered water from both units is directed through a common flow meter (FE-105), injected with hydrofluorosilicic acid, sodium hypochlorite, and soda ash, prior to entering the 100m³ clearwell.

Three horizontal centrifugal high lift pumps each rated at 15L/s at 40.8m TDH draw water from the clearwell and direct it through a common 300mm diameter discharge header to the elevated storage tank. In addition there is a 200mm diameter pipeline between the water treatment plant and the distribution system on Railway Street; the valve is kept closed and locked, but could be used in combination with a Boil Water Advisory in case of watermain failure to the elevated storage tank.

Process chemicals used in the treatment system include:

- sodium hypochlorite for disinfection

- soda ash for pH and alkalinity control
- polyaluminum chlorided (PAX-XL 1900) as a primary coagulant
- polyelectrolyte used as a coagulant aid
- hydrofluorosilicic acid for fluoridation

Water leaving the water treatment plant is directed to the elevated storage tank in order to complete its primary disinfection process.

Site (Name): ELEVATED STORAGE TANK
Type: Treated Water POE **Sub Type:** Treatment Facility
Comments:

Treated water from the water treatment plant is pumped to the elevated water storage tower through a 470m long, 250mm diameter pipe. The elevated storage tank has a volume of 1380m³, which is used to provide sufficient contact time to complete primary disinfection before water enters the distribution system. This storage capacity represents a one-day reserve in the summer and up to 3 days in the winter. Continuous analyzers are installed at the water tower to monitor chlorine residual, pH, temperature and fluoride.

It should be noted that the water tower inlet pipe is equipped with a swing check valve to keep the tower full in case of watermain failure prior to the tower. There are also swing check vaves at each high lift pump, to prevent backflow into the clearwell.

Site (Name): DISTRIBUTION SYSTEM
Type: Other **Sub Type:** Other
Comments:

Water from the elevated storage tank is conducted to Main Street via a 320m long, 200mm diameter pipe. The distribution system consists of approximately 12km of watermains (less than 10inch diameter) with more than ten dead-ends. Water consumers are not metered and customers are billed a flat rate dependent upon residential or commercial usage.

Site (Name): CHALK RIVER SEWAGE TREATMENT PLANT
Type: Other **Sub Type:** Other
Comments:

Historical records for water treatment operations are kept at the sewage treatment plant. In addition, daily chlorine residual monitoring of distribution system water is conducted there.

The sewage plant and water plant are also closely linked due to issues with the volume of wastewater generated at the water plant impacting the hydraulic capacity of the sewage treatment plant.

INSPECTION SUMMARY:

Introduction

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

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

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

An announced detailed inspection of the Chalk River Drinking Water System was conducted on November 27, 2018, under the authority of Section 81 of the Safe Drinking Water Act, by Suzanne Smith, Water Inspector, Provincial Officer / Inspector Badge # 1511, herein also referred to as the "Inspector".

The Chalk River Drinking Water System is owned by the Town of Laurentian Hills and operated by Veolia Water Canada Inc. The Inspector was assisted during the inspection by Dave Ethier, ORO/Operator and Greg Prangley, Project Manager with Veolia Water Canada Inc.

The following documents were reviewed as part of the compliance assessment: Municipal Drinking Water Licence (MDWL) #261-101 [Issue #4], expires on March 23, 2021; Drinking Water Works Permit (DWWP) #261-201 [Issue #2], expires on March 23, 2021; Permit to Take Water (PTTW) #8446-9BPRT6, expires on September 30, 2023; Operations Manuals for the DWS; logbooks and other record keeping mechanisms; Reports / Certificates of Analysis for drinking water samples, and other records for the period January 16 to November 16, 2018 inclusive, also herein referred to as the "inspection period".

Source

- Trends in source water quality were being monitored.

Trends in source water quality were being monitored and reviewed continuously; source water quality is assessed to ensure that the deterioration of water quality, which may lead to treatment problems in the future, is not occurring.

Permit To Take Water

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

Review of raw water flow data verified that the drinking water system (owner) was in compliance with all conditions of the PTTW. The maximum raw flow of 875.82 m³/d was taken from the source (Corry Lake) during the inspection review period was recorded on July 12, 2018.

Capacity Assessment

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

Flow measurement and recording requirements for the Chalk River DWS are prescribed in Section 2.0 "Flow Measurement and Recording Requirements" of Schedule C to MDWL # 261-101, Issue # 4 dated November 2, 2016. A copy of DWL # 261-101 is included in Appendices to this inspection report for reference purposes.

A raw flow meter measures the volume and rate of raw water entering the plant from the Corry Lake station. Treated flows are measured leaving the clearwell, prior to the tower, and again leaving the tower.

- **The flow measuring devices were calibrated or verified in accordance with the requirements of the Municipal Drinking Water Licence issued under Part V of the SDWA.**
Records were provided for the annual verification of all flow meters in the plant. Calibration checks / calibrations were last undertaken on all the flow metering devices September 10 and 11, 2018 by a third party - Metcon Sales and Engineering Ltd.
- **The owner was in compliance with the conditions associated with maximum flow rate or the rated capacity conditions in the Municipal Drinking Water Licence issued under Part V of the SDWA.**
The water inspector verified through document review that the maximum flow rate of the rated capacity measured 825.2 m³/d recorded on July 12, 2018; representing approximately 41 % of the rated capacity condition of the Municipal Drinking Water License.
- **Appropriate records of flows and any capacity exceedances were made in accordance with the Municipal Drinking Water Licence issued under Part V of the SDWA.**
The operating authority maintains appropriate records of flows made in accordance with the Municipal Drinking Water Licence issued under Part V of the SDWA. No exceedances were recorded during the inspection review period.

Treatment Processes

- **The owner had ensured that all equipment was installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit.**
The inspector conducted a supervised tour of the Chalk River WTP with Dave Ethier, ORO/Operator and Greg Prangley, Project Manager with Veolia Water Canada Inc. During the tour, the inspector noted the major components and equipment of the WTP, and assessed compliance with the equipment described in Schedule A and Schedule C in DWWP # 261-201 [Issue #2].

The inspector found the equipment installed at the Chalk River WTP matched that described in Schedule A and Schedule C in DWWP # 261-201 [Issue #2].
- **The owner had evidence that all required Director Notifications under Condition 2.4 of Schedule B of the Drinking Water Works Permit were made during the inspection period.**
A Director's Notification Form was completed and signed June 4, 2018 as required outlining the alteration, a trial run of a new coagulant chemical - PAX-XL 1900.
- **The owner/operating authority was in compliance with the requirement to prepare Form 2 documents as required by their Drinking Water Works Permit during the inspection period.**
A Form 2 was prepared in accordance with the DWWP to phase out PAS8 coagulant and replacing it with PAX_XL 1900.
- **Records indicated that the treatment equipment was operated in a manner that achieved the design capabilities required under Ontario Regulation 170/03 or a Drinking Water Works Permit and/or Municipal**

Drinking Water Licence issued under Part V of the SDWA at all times that water was being supplied to consumers.

Chalk River provides conventional filtration complete with chlorination for disinfection. Two (2) separate treatment units are installed - each providing slightly different treatment methods. A review of records indicates that the treatment equipment was operated as required at all times during the inspection period.

There are Daily Reports and Monthly Reports that are generated for the operators. Operators rely on the Daily Reports for the daily readings and for the daily CT calculations. Information gathered during plant checks is entered into a data management system and operators enter readings for numerous parameters.

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

- **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.**

Secondary chlorine residuals taken in the distribution system range from 0.28mg/L - 1.04mg/L for the inspection review period.

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

The water inspector reviewed documents that verifies that all chemicals and materials that come in contact with water within the drinking water system met the AWWA and ANSI standards in accordance with the Municipal Drinking Water Licence and Drinking Water Works Permit issued under Part V of the SDWA.

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

Up-to-date plans for the drinking water system are available at the Chalk River facility and can be readily viewed by all persons responsible for the operation of the drinking water system.

- **Where a potential bypass of primary or secondary treatment equipment existed, measures were taken to ensure that raw or partially treated water was not directed to the distribution system.**

The system has the ability to bypass the tower where primary disinfection is achieved, however, the valve that allows this is chained and locked so it cannot be easily operated.

Treatment Process Monitoring

- **Primary disinfection chlorine monitoring was conducted at a location approved by Municipal Drinking Water Licence and/or Drinking Water Works Permit issued under Part V of the SDWA, or at/near a location where the intended CT has just been achieved.**

Primary disinfection is completed in the elevated tower where sufficient CT is achieved. Water is directed from the filters to the small clearwell at the plant where it is then directed to the elevated tower, approximately 470m northwest of the plant.

CT is achieved leaving the tower and prior to the first consumer. CT calculations are completed on a daily basis, giving the "worst case scenario" for the previous day.

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

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

Each treatment unit has a dedicated filter (dual media) equipped with a continuous turbidity meter on the effluent.

Filter performance is assessed separately for each plant on a monthly basis. The Monthly Report shows the monthly minimum, maximum and average turbidity readings and the monthly percentage of readings <0.02NTU for each filter. Filter efficiency ranged from 99.97% - 100% over the inspection period.

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

Secondary distribution system free chlorine residuals are recorded continuously from an analyser installed at the Chalk River Wastewater Treatment Plant. During the inspection review period the free chlorine residuals measured between 0.057mg/L - 1.04mg/L.

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

Operators visit the plant every day conducting routine checks throughout the plant and reviewing data and trending. Verification of the daily review is also recorded in the WTP logbook.

- **Samples for chlorine residual analysis were tested using an acceptable portable device.**

HACH Pocket Colorimeter II is the instrument used for chlorine residual analysis; a portable device acceptable for conducting this test.

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

The plant is equipped with numerous online analyzers for chlorine, turbidity, pH, temperature and fluoride. The chlorine analyzer leaving the clearwell alarms at 0.65mg/L for low and 1.50mg/L for high; the filter effluent turbidity analyzers alarm at 0.25NTU; and each of these alarms will lock out the operation of the filters. The chlorine analyzer leaving the tower will alarm at 0.65mg/L for low and 1.50mg/L for high.

Legislative requirements have been met as all continuous monitoring equipment utilized for sampling and testing were equipped with alarms or shut-off mechanisms that satisfy the standards described in Schedule 6.

Alarms are tested on a regular basis by the operating staff to ensure that they are functional and that the alarm is received by the operator.

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

There are numerous continuous analyzers throughout the plant, measuring pH, chlorine residual, turbidity, fluoride and temperature. The analyzers are checked on a regular basis, adjusted as required.

Calibration records provided by the operating authority also contained information demonstrating that the chlorine analyzers were last cleaned and calibrated by a third party instrumentation and control contractor, Metcon Sales & Engineering Ltd.. The service dates for calibration of the units occurred on September 10 and 11, 2018.

Process Wastewater

- **The process wastewater and residual solids/sludges were treated, handled and disposed of in accordance with the design requirements approved under the Drinking Water Works Permit and the Municipal Drinking Water Licence.**

The water inspector verified that the process wastewater and residual solids/sludges are being treated, handled and disposed of in accordance with the design requirements approved under the Drinking Water Works Permit and the Municipal Drinking Water Licence.

Wastewater generated at the plant is discharged to the sanitary system for treatment at the WWTP.

Distribution System

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

The Municipality of the Town of Laurentian Hills has a bylaw in place requiring the installation of backflow preventers on all connections to the distribution system.

- **The owner had a program or maintained a schedule for routine cleanout, inspection and maintenance of reservoirs and elevated storage tanks within the distribution system.**

The water inspector verified that a formalized plan is not in place, however, the interior and exterior of the tower were inspected in August 2017 by a third-party. Recommendations were made in the report, mostly related to health and safety issues and protecting the exterior of the tank, and noting that a moderate amount of sediment was found inside the tank.

- **Existing parts of the distribution system that are taken out of service for inspection, repair or other activities that may lead to contamination, and all new parts of the distribution system that come in contact with drinking water, were disinfected in accordance with Schedule B, Condition 2.3 of the Drinking Water Works Permit, or an equivalent procedure (i.e. the Watermain Disinfection Procedure).**

Existing parts of the distribution system that are taken out of service for inspection, repair or other activities that may lead to contamination, and all new parts of the distribution system that come in contact with drinking water, are disinfected in accordance with Schedule B, Condition 2.3 of the Drinking Water Works Permit, or an equivalent procedure (i.e. the Watermain Disinfection Procedure).

The Municipality of the Town of Laurentian Hills hires a third party contractor to complete the necessary maintenance with the operating authority providing the oversight of the operation.

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

The owner / operating authority has implemented a program for the flushing of watermains, spring and fall, and the work orders are created by the work maintenance program - JOBCAL.

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

The water inspector reviewed the logbooks and in discussion with the operator verified that disinfectant residuals were routinely checked at the extremities and "dead ends" of the distribution system.

- **A program was in place for inspecting and exercising valves.**
- **There was a program in place for inspecting and operating hydrants.**
The program in place for inspecting and operating hydrants - JOBCAL- creates work orders in the spring and fall to conduct this activity.
- **There was a by-law or policy in place limiting access to hydrants.**
The Municipality of the Town of Laurentian Hills strictly prohibits access to hydrants; access is for Fire Personnel only.
- **The owner was able to maintain proper pressures in the distribution system and pressure was monitored to alert the operator of conditions which may lead to loss of pressure below the value under which the system is designed to operate.**
The water inspector verified through document review and in discussion with the Operator that the DWS is able to maintain proper pressures in the distribution system, and, the pressure is monitored at the WTP and the Tower.

Operations Manuals

- **Operators and maintenance personnel had ready access to operations and maintenance manuals.**
The operators and maintenance personnel have ready access to operations and maintenance manuals which are located at the Chalk River WTP.
- **The operations and maintenance manuals contained plans, drawings and process descriptions sufficient for the safe and efficient operation of the system.**
The operations and maintenance manuals prepared for the Chalk River Water Plant contain plans, drawings and process descriptions sufficient for the safe and efficient operation of the system.
- **The operations and maintenance manuals met the requirements of the Drinking Water Works Permit and Municipal Drinking Water Licence issued under Part V of the SDWA.**

Logbooks

- **Logbooks were properly maintained and contained the required information.**
Review of the water treatment system logbooks verified that the logbooks are properly maintained and contain the required information; as per legislative requirement of O. Reg. 128/04 Section 27 (1).
- **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.**
The inspector reviewed completed daily WTP worksheets used for recording operational testing results conducted at the Chalk River WTP; completed sample submission and chain of custody forms; and, found operational testing and other regulatory field testing was conducted by certified operator(s) at the Chalk River WTP.
- **For every required operational test and every required sample, a record was made of the date, time, location, name of the person conducting the test and result of the test.**

Review of log books and daily records (every required operational test and for every required sample) a record was made of the date, time, location, name of the person conducting the test and result of the test.

- **The operator-in-charge ensured that records were maintained of all adjustments made to the processes within his or her responsibility.**

Review of logbooks provided the water inspector with the necessary information to verify that the operator-in-charge ensured that records were maintained of all adjustments made to the processes within his responsibility.

- **Logs or other record keeping mechanisms were available for at least five (5) years.**

Discussion with the ORO/Operator verified that logs or other record keeping mechanisms are available for a period greater than five (5) years. Historical records for water treatment operations are kept at the sewage treatment plant.

Contingency/Emergency Planning

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

Security

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

The elevated water tower is kept locked and alarmed as well as fencing around the tower with an access gate which is also kept locked.

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

The water plant and low lift station are locked and alarmed for intrusion. Operators visit the plant on a daily basis.

Consumer Relations

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

The Corporation of the Town of Laurentian Hills has a bylaw in place, by-law number 19 -10, regulating the time, manner and nature for lawn watering during the months of May - September. It includes a clause that if necessary, all non-essential outdoor use of water shall cease in order to ensure an adequate amount of water for essential purposes.

Certification and Training

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

Chalk River DWS is classified as a Class II Water Treatment system and Class II Water Distribution system. An appropriately certified operator has been designated as the Overall Responsible Operator (ORO) and is noted in the logbook each day.

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

The Operator in Charge (OIC) is noted each day in the logbook and both operators in the employ of Veolia Water Canada Inc. are eligible to act as OIC at any given time.

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

Water Quality Monitoring

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

The raw water microbiological sampling and testing requirements under Section 10-4 of Schedule 10 of O. Reg. 170 are as follows:

- a water sample is taken at least once every week from raw water before any treatment is applied to the water.
- the drinking water samples must be tested for E.coli and total coliforms.

The raw water microbiological sample results were reviewed for the inspection period and verified that legislative requirements have been met.

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

O. Regulation 170/03 10-2 requires the owner and operating authority to take a minimum of eight distribution samples plus one additional sample for every 1,000 people served by the system if the system serves 100,000 people or less. At least one sample must be taken each week. All samples must be analyzed for E. coli and total coliforms. In addition, at least 25% of the distribution microbiological samples must be analyzed for heterotrophic plate count (HPC).

Chalk River DWS serves a population of approximately 1000 people, requiring nine (9) distribution samples each month, testing for E.coli, total coliform and 25% of samples tested for Heterotrophic Plate Count (HPC).

A review of samples taken at the Chalk River DWS show that all required samples were taken and analyzed for the appropriate parameters. Operators take three (3) samples each week, analyzing at least one (1) sample for HPC.

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

The inspector reviewed microbiological sampling and testing records available for the inspection period and found one (1) treated water sample was taken during each week and submitted to a licensed laboratory for testing for E. coli, total coliforms and HPC.

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

The inspector reviewed sampling and testing records for the inspection period and observed water samples were taken from the point where the water from the Chalk River WTP enters the distribution system January 24, 2018 and the samples were submitted to a licensed laboratory for testing for the inorganic parameters listed in Schedule 23 to O. Reg. 170/03.

A review of the inorganic test results found the drinking water met the ODWQS for all inorganic parameters.

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

The inspector reviewed sampling and testing records for the inspection period and observed water samples were taken from the point where the water from the Chalk River WTP enters the distribution system on January 24, 2018, and the samples were submitted to a licensed laboratory for testing for the organic parameters listed in Schedule 24 to O. Reg. 170/03.

A review of the organic test results found the drinking water met the ODWQS for organic parameters.

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

Haloacetic acids

O. Reg. 170/03 13-6.1 (1) The owner of a drinking water system that provides chlorination or chloramination and the operating authority for the system shall ensure that at least one distribution sample is taken in each calendar quarter, from a point in the drinking water system's distribution system, or plumbing that is connected to the drinking water system, that is likely to have an elevated potential for the formation of haloacetic acids (HAA).

(2) The owner of the drinking water system and the operating authority for the system shall ensure that each of the samples taken under subsection (1) is tested for haloacetic acids.

Records reviewed for the inspection period indicate that distribution samples were taken and submitted to a licensed laboratory for HAA testing on January 24, 2018, April 25, 2018, July 25, 2018, and October 24, 2018; legislative requirements have been met.

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

The inspector reviewed sampling and testing records for the inspection period, and observed water samples were taken once each month from a location within the Chalk River WTP where the treated water enters the distribution system, and submitted to a licensed laboratory for trihalomethane testing.

The quarterly regulatory requirements for trihalomethane water quality monitoring were conducted within the required frequency; January 24, 2018, April 25, 2018, July 25, 2018, and October 24, 2018.

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

The inspector reviewed sampling and testing records for the inspection period, and observed water samples were taken once each month from a location within the Chalk River WTP where the treated water enters the distribution system, and submitted to a licensed laboratory for nitrate and nitrite testing.

The quarterly regulatory requirements for nitrate/nitrite water quality monitoring were conducted within the required frequency; January 24, 2018, April 25, 2018, July 25, 2018, and October 24, 2018.

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

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

The fifth anniversary of the day the sample was taken indicating the next sampling legislative requirement was January 29, 2018. The operating authority ensured that this legislative requirement was met, the sample was collected January 24, 2018.

- **The required daily samples were being taken at the end of the fluoridation process.**
Fluoride is continuously monitored in water leaving the tower and reviewed by operating staff on a daily basis.
- **The owner ensured that water samples were taken at the prescribed location.**
- **All sampling requirements for lead prescribed by schedule 15.1 of O. Reg. 170/03 were being met.**
Chalk River has Lead Regulatory Relief under Schedule D of the MDWL. The relief allows for nine (9) sampling points in private plumbing, one (1) sampling point in plumbing that does not serve private residences and two (2) samples in the distribution system in each of the lead sampling periods until April 15, 2019.

This small drinking water system has experienced issues in obtaining enough volunteers to complete the required number of samples in private plumbing. During the sampling period June 15 – October 15, 2018, a total of six (6) plumbing locations were sampled. The non-private and distribution samples were taken as required.

It is also noted that the same locations are being sampled during each period; however, efforts are being made by the Town to obtain new volunteers. A posting on the Town's website has not encouraged additional volunteers to come forward to be part of the lead sampling program.

Letters were sent to residents advising them of the lead test results in their home and as previously indicated there was one (1) exceedance of the ODWQS for lead.

- **Records confirmed that chlorine residual tests were being conducted at the same time and at the same location that microbiological samples were obtained.**
The inspector verified that free chlorine residual test results were recorded on laboratory sample submission and chain of custody forms for each microbiological sample taken during the inspection period. The chlorine residual test results were also transposed to the certificates of analysis for the microbiological samples by the licensed laboratory utilized by Chalk River WTP.
- **The drinking water system owner submitted written notices to the Director that identified the laboratories that were conducting tests for parameters required by legislation, Order, Drinking Water Works Permit or Municipal Drinking Water Licence.**
- **The owner indicated that the required records are kept and will be kept for the required time period.**

Water Quality Assessment

- **Records did not show that all water sample results taken during the inspection review period did not exceed the values of tables 1, 2 and 3 of the Ontario Drinking Water Quality Standards (O.Reg. 169/03).**
As previously discussed in this report, a lead sample exceeded the ODWQS in private plumbing.

Reporting & Corrective Actions

- **Corrective actions (as per Schedule 17) had been taken to address adverse conditions, including any other**

steps that were directed by the Medical Officer of Health.

AWQI # 138638:

Sodium sampling is required every sixty (60) months under Schedule 13-8. It was last sampled for on January 24, 2018 with a sodium content of 22.0mg/L and a resample was taken on January 25, 2018 confirming high sodium content with a result of 23.9 mg/L.

The local Medical Officer of Health was notified of concentrations that exceed 20mg/L so that doctors in the area can be notified for those on sodium restricted diets. The aesthetic objective for sodium is 200mg/L.

- **Corrective actions as directed by the Medical Officer of Health had been taken by the owner and operating authority to address exceedances of the lead standard.**

There was one (1) exceedance during the inspection period. Since the regulation does not require specific corrective actions to address exceedances of the lead standard, it requires that the owner and operating authority follow any direction provided by the Medical Officer of Health.

There was no direction given by the Medical Officer of Health in relation to this lead exceedance; therefore, no further action was required.

- **All required notifications of adverse water quality incidents were immediately provided as per O. Reg. 170/03 16-6.**
- **All required written notices of adverse water quality incidents were provided as per O. Reg. 170/03 16-7.**
- **In instances where written notice of issue resolution was required by regulation, the notice was provided as per O. Reg. 170/03 16-9.**
- **All reporting requirements for lead sampling were complied with as per schedule 15.1-9 of O. Reg. 170/03.**
- **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.**
The inspector examined the logbooks for the DWS for the inspection period and found the log entries indicated alarms were responded to in a timely manner and appropriate actions were taken.
- **The Annual Report containing the required information was prepared by February 28th of the following year.**
The Annual Report for municipal council had been completed on time and included the required content, and was distributed in accordance with the regulatory requirements.
- **Summary Reports for municipal council were completed on time, included the required content, and were distributed in accordance with the regulatory requirements.**
The owner of a drinking water system is required to prepare a Summary Report on the operation of the system and the quality of its water for all municipal residential systems, the reporting period is from January 1 to December 31 and the owner of the system shall give a copy of the report to the municipality by March 31.

This requirement has been met, February 21, 2018, and is available to the public by request.

- **All changes to the system registration information were provided within ten (10) days of the change.**

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

The new operating authority, Veolia Canada Inc., provided the necessary changes as required to the ministry responsible for updates; legislative requirements have been met.

Schedule B section 11.2 Change of Owner or Operating Authority of Municipal Drinking Water Licence Number 261-101 outlines - The owner shall notify the Director in writing at least 30 days prior to a change of any operating authority identified in Schedule A of this licence.

Although the change of at least 30 days prior was not met, notification of the change from American Water Canada Corp. to Veolia Canada Inc. was sent to the Director Part V, Safe Drinking Water Act identified in Schedule A of the DWWP; legislative requirements have been met.

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

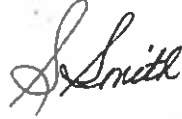
This section provides a summary of all recommendations and best practice issues identified during the inspection period. Details pertaining to these items can be found in the body of the inspection report. In the interest of continuous improvement in the interim, it is recommended that owners and operators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

Not Applicable

SIGNATURES

Inspected By:

Suzanne Smith



Signature: (Provincial Officer)

Reviewed & Approved By:

James Mahoney



Signature: (Supervisor)

Review & Approval Date:

04/01/2019

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



APPENDIX A

MUNICIPAL DRINKING WATER LICENCE, DRINKING WATER WORKS PERMIT AND CERTIFICATES OF APPROVAL