Ministry of the Environment and Climate Change

Safe Drinking Water Branch

Ottawa District Office
2430 Don Reid Drive
Ottawa ON K1H 1E1

Ministère de l'Environnement et de l'Action en matière de changement climatique

Direction du contrôle de la qualité de l'eau potable

Bureau du district d'Ottawa
2430, chemin Don Reid
Ottawa (Ontario) K1H 1E1

Ontario

March 22, 2016

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: 2015-2016 Inspection Report

The enclosed report documents findings of the inspection that was performed at the Chalk River drinking water system on January 14, 2016.

Two sections of the report, namely "Actions Required" and "Recommended Actions" cite due dates for the submission of information or plans to my attention.

Please note that "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 could result in the issuance of mandatory abatement instruments including orders, tickets, penalties, or referrals to the ministry's Investigations and Enforcement Branch.

"Recommended Actions" convey information that the owner or operating authority should consider implementing in order to advance efforts already in place to address such issues as emergency preparedness, the 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.

In order to measure individual inspection results, the ministry continues to adhere to an inspection compliance risk framework based on the principles of the Inspection, Investigation & Enforcement (II&E) Secretariat and advice of internal/external risk experts. The Inspection Rating Record (IRR), appended to the inspection report, provides the ministry, the system owner and the local Public Health Unit with a summarized quantitative measure of the drinking water system's annual inspection and regulated water quality testing performance. Please note the IRR methodology document, also appended to the inspection report, describes how the risk model was improved to better reflect any health related and administrative non-compliance issues that may be cited in our inspection reports. IRR ratings are published in the ministry's Chief Drinking Water Inspector's Annual Report. If you have any questions or concerns regarding the rating, please contact Jim Mahoney, Water Supervisor, at 613-548-6902.

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 councilors, 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,

Jen Bitten, B.Sc.
Drinking Water Inspector, Badge #1609
Ministry of the Environment & Climate Change
Safe Drinking Water Branch
2430 Don Reid Drive
Ottawa, ON K1H 1E1
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JB

Enclosure

ec: Greg Prangley, Project Manager, American Water, 701 Main Street, Hamilton, ON L8S 1A2, gprangley@amwater.com
- Dave Ethier, Overall Responsible Operator - Chalk River DWS, American Water, 73 Railway Street, Chalk River, ON K0J 1P0, dethier@amwater.com
- Mike Grace, Manager, Environmental Health, Renfrew County and District Health Unit, 7 International Dr., Pembroke, ON K8A 6W5, mgrace@rcdhu.com
- Bruce Mighton, District Manager (A), Ministry of Natural Resources, Pembroke District Office, 31 Riverside Dr., Pembroke, ON K8A 8R6, bruce.mighton@ontario.ca

c: File SI-RE-LH-RA-540 (2015)

Ontario

Ministry of the Environment and Climate Change

CHALK RIVER DRINKING WATER SYSTEM

Inspection Report

Site Number:	210000666
Inspection Number:	1-BZIP5
Date of Inspection:	Jan 14, 2016
Inspected By:	Jen Bitten

Table of Contents:

OWNER INFORMATION:

Company Name:	LAURENTIAN HILLS,THE CORPORATION OF THE TOWN OF		
Street Number:	34465	**Unit Identifier:**	
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		

Type:	Operating Authority	**Name:**	Greg Prangley
Phone:	(905) 521-4605	**Fax:**	(613) 544-0266
Email:	gprangley@amwater.ca		
Title:	Project Manager, American Water		

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

INSPECTION DETAILS:

Site Name:	CHALK RIVER DRINKING WATER SYSTEM
Site Address:	73 RAILWAY ST CHALK RIVER K0J 1P0
County/District:	Laurentian Hills
MOECC District/Area Office:	Ottawa District
Health Unit:	RENFREW COUNTY AND DISTRICT HEALTH UNIT
Conservation Authority	N/A
MNR Office:	Pembroke District Office
Category:	Large Municipal Residential
Site Number:	210000666
Inspection Type:	Unannounced
Inspection Number:	1-BZIP5
Date of Inspection:	Jan 14, 2016
Date of Previous Inspection:	Jan 09, 2015

COMPONENTS DESCRIPTION

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

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 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 facilites 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. PAS8 is injected at the spitter 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 100m^3 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
- pre-hydroxylated aluminum sulphate (PAS-8) 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 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.

Chalk River Drinking Water System is owned by the Town of Laurentian Hills and operated by American Water.

An inspection of the Chalk River Drinking Water System occured on January 14, 2016. It was attended by Ministry of the Environment and Climate Change Water Inspector Jen Bitten and American Water staff Dave Ethier and Dan Danis. The inspection period referenced throughout this report includes January 1, 2015 - January 14, 2016.

Chalk River DWS Licences & Permits:

Municipal Drinking Water Licence (MDWL) #261-101 [Issue #2], expires on May 23, 2016. The renewal application was submitted prior to the due date of November 22, 2015 as required. A renewed Licence and Permit is expected to be issued in 2016.

Drinking Water Works Permit (DWWP) #261-201 [Issue #1]

Permit to Take Water (PTTW) #8446-9BPRT6, expires on September 30, 2023.

CAPACITY ASSESSMENT

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

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. Records were provided for the annual verification of all flow meters in the plant.

CAPACITY ASSESSMENT

* **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.**

  Municipal Drinking Water Licence #261-101, Schedule C, Section 1 states a maximum rated capacity of 1987m³/day of water from the treatment subsystem into the distribution system. Maximum treated flows for the inspection period was 669m³/day in July.

  Permit to Take Water #8446-9BPRT6, states a maximum raw water taking of 1980m³/day. Maximum raw water taking for the inspection period was 680m³/day in August.

  All flows were well within their required capacity during the inspection 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 equipment is installed and operational as required.

  Operation rotates between the two (2) treatment units, with the new plant in operation at the time of inspection.

* **The owner/operating authority was in compliance with the requirement to prepare Form 1 documents as required by their Drinking Water Works Permit during the inspection period.**

  Watermains were added to the system in 2015 with the extension of Munro Street. A Form 1 is required for this work.

  The renewed Drinking Water Works Permit to be issued in the near future now includes the clause that a Form 1 must be completed prior to putting the new watermain into service.

* **The owner/operating authority was in compliance with the requirement to prepare Form 3 and associated documents as required by their Drinking Water Works Permit during the inspection period.**

  A standby generator has been installed but is still not operational as a standby power source. A Form 3 has been completed for this addition. A Director Notification Form is also required within thirty (30) days of putting the generator into service.

* **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.**

  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. There are some issues with the Monthly Report discussed further in this report; however, operators rely on the data provided in the Daily Reports and continue to review and note any issues with the Monthly Report. Operators enter the daily readings into a database for review.

* **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 are taken at the sewage treatment plant on a daily basis.

TREATMENT PROCESSES

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

  An Operator In Charge (OIC) is on-site each day, completing plant checks and ensuring proper operation of all necessary equipment.

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.**

  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.

* **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 filter on a monthly basis. The Monthly Report shows the monthly minimum, maximum and average turbidity readings and the monthly percentage of readings <0.3NTU for each filter. Filter efficiency ranged from 99.07% - 100% over the inspection period.

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

  Secondary chlorine residuals are taken at the sewage treatment plant on a daily basis and at other locations during sampling. Residuals in the distribution system ranged from 0.18mg/L - 1.22mg/L over the inspection period.

* **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.

* **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.**

  The plant is equipped with numerous online analyzers for chlorine, turbidity, pH, temperature and fluoride. Alarms are tested on a regular basis to ensure they are functional and received by the operator.

  Both chlorine analyzers - leaving the clearwell and leaving the tower - alarm at 0.65mg/L or low.

  The filter effluent turbidity analyzers alarm at 0.25NTU and will lock out the operation of the filters.

* **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, adjusting as required. An outside company also cleans and checks the both the online and hand held/desktop analyzers on an annual basis to ensure proper operation.

OPERATIONS MANUALS

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

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

LOGBOOKS

- **Records or other record keeping mechanisms confirmed that operational testing not performed by continuous monitoring equipment was being done by a certified operator, water quality analyst, or person who suffices the requirements of O. Reg. 170/03 7-5.**

SECURITY

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

  The water plant and Corry Lake station are locked and alarmed for intrusion. The elevated water tower is also kept locked and alarmed as well as fencing around the tower with an access gate which is also kept locked.

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.**

  The Operator in Charge (OIC) is noted each day in the logbook. Both operators are eligible to act as OIC at any given time.

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

WATER QUALITY MONITORING

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

  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.**

  Treated water samples are required weekly, testing for E.coli, total coliform and HPC.

  A review of results show that all treated samples were taken and analyzed as required.

WATER QUALITY MONITORING

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

  Inorganic parameters (Schedule 23) are required every twelve (12) months for a surface water facility. Chalk River DWS completed the annual inorganic sampling on January 28, 2015.

  All results were well within the Ontario Drinking Water Quality Standards (ODWQS).

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

  Organic parameters (Schedule 24) are required every twelve (12) months for a surface water facility. Chalk River DWS completed the annual organic sampling on January 28, 2015.

  All results were well within the Ontario Drinking Water Quality Standards (ODWQS).

  As of January 1, 2016, Ontario Regulation 170/03 was amended to remove thirteen (13) pesticides and the addition of MPCA to the list of organic parameters. A copy of the Update Bulletin is included in the Appendices which summarizes these changes.

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

  THM sampling is required every three (3) months from a point in the distribution system that is likely to have elevated THM levels (ie. the farthest point) under Schedule 13-6. The ODWQS for THMs is 100µg/L, based on the running annual average (RAA) of the last four (4) sample results. The current running annual average, including January 2016, is 76.2µg/L.

  As of January 1, 2016, Ontario Regulation 170/03 was amended for THM sampling and reporting requirements. Labs are no longer required to calculate the RAA, resamples are no longer required and the RAA calculation has changed. A copy of the Update Bulletin is included in the Appendices which summarizes these changes.

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

  Nitrate/nitrite sampling is required every three (3) months. Records show that samples were taken as required throughout the inspection period.

  Nitrate results range from 0.1 - 0.2mg/L, well within the ODWQS of 10mg/L.

  Nitrite results were consistently less than or equal to 0.1mg/L, also well within the ODWQS of 1mg/L.

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

  Sodium sampling is required every sixty (60) months. It was last sampled for on January 30, 2013 with a sodium content of 34.3mg/L and a resample was taken on February 12, 2013 confirming high sodium content with a result of 32.2mg/L. The local Medical Officer of Health is 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.

  Sodium sampling is required again in 2018.

* **The required daily samples were being taken at the end of the fluoridation process.**

  Fluoride is continuously monitored in water leaving the tower.

WATER QUALITY MONITORING

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

  Chalk River has regulatory relief from lead sampling which is listed under Schedule D of the Municipal Drinking Water Licence. Relief from taking plumbing samples has been granted until April 15, 2016; however, distribution samples for lead were required during the December 15, 2013 - April 15, 2014 and June 15, 2014 - October 15, 2014 sampling periods. These samples were taken as required with results well within the ODWQS of 10µ/L. Alkalinity and pH samples were collected as required during each sampling period.

  Regulatory relief from lead sampling expires for the end of the April 15, 2016 sampling period. This should be updated during the licence renewal process.

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

WATER QUALITY ASSESSMENT

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

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.**

  Responses to alarm conditions are recorded in the logbook.

OTHER INSPECTION FINDINGS

* **The following issues were also noted during the inspection:**

  Past inspections have noted issues with the Monthly Report with a review of the SCADA system reporting completed in 2014, comparing the data used for the Daily Reports and the Monthly Reports. Operators have continued to note the minimum and maximum chlorine residuals on the Monthly Report do not match the Daily Reports or the trending on the SCADA system.

  It was specifically noted during this inspection that the maximum chlorine residuals (mg/L) and the maximum raw flow (L/s) values shown in the Monthly Reports are the exact same, down to two (2) decimal places each month. It appears that these readings are linked in some way and it is unlikely that the values shown for the minimum and maximum chlorine residuals on the Monthly Report are correct. The Daily Reports contain accurate results and operators rely on the Daily Reports for the daily minimums and maximums. When there is a need for other SCADA work at the plant, it is recommended that this issue be investigated so that operators can rely on the data being provided on the Monthly Reports. Operators should continue to note the review of trending on the Monthly Reports.

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.

1. **The following issues were also noted during the inspection:**

   Past inspections have noted issues with the Monthly Report with a review of the SCADA system reporting completed in 2014, comparing the data used for the Daily Reports and the Monthly Reports. Operators have continued to note the minimum and maximum chlorine residuals on the Monthly Report do not match the Daily Reports or the trending on the SCADA system.

   It was specifically noted during this inspection that the maximum chlorine residuals (mg/L) and the maximum raw flow (L/s) values shown in the Monthly Reports are the exact same, down to two (2) decimal places each month. It appears that these readings are linked in some way and it is unlikely that the values shown for the minimum and maximum chlorine residuals on the Monthly Report are correct. The Daily Reports contain accurate results and operators rely on the Daily Reports for the daily minimums and maximums.

   Recommendation:
   When there is a need for other SCADA work at the plant, it is recommended that this issue be investigated so that operators can rely on the data being provided on the Monthly Reports. Operators should continue to note the review of trending on the Monthly Reports.

SIGNATURES

Inspected By:	Signature: (Provincial Officer):
Jen Bitten	
Reviewed & Approved By:	Signature: (Supervisor):
James Mahoney	
Review & Approval Date:	22/03/2016 (dd/mm/yyyy)

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

STAKEHOLDER SUPPORT