

**Ministry of the Environment,
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**Ministère de l'Environnement , de la
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February 1, 2021

File: SI-ES-LA-540

Town of Lakeshore
419 Notre Dame St.
Belle River, ON N0R 1A0

Attention: Mr. Truper McBride, CAO

Re: Town of Lakeshore Drinking Water System (DWS#260091507) Inspection Report

Please find enclosed the Inspection Report for the inspection that was conducted at the Lakeshore Drinking Water System (DWS#260091507) on November 10, 2020.

IRR ratings are published (for the previous inspection year) in the Ministry's Chief Drinking Water Inspectors' Annual Report. If you have any questions or concerns regarding the rating, please contact Marc Bechard, Water Compliance Supervisor, at 519-383-3778.

A **Summary of Recommendations and Best Practice Issues** are found on page 14 in the attached inspection report.

If you have any questions or concerns regarding this report, please call me at (226) 280-1406.

Yours truly,

Emily Awad
Water Inspector, Provincial Officer #1823
Drinking Water and Environmental Compliance Division
Sarnia/Windsor District

Encl.

cc: Garry Punt, Supervisor, Water Operations, Darryl Dunsby, Compliance Coordinator, Darrin Johnston, Water Treatment Operator, Krystal Kalbol, Director of Engineering & IS, Albert Dionne, Manager Environmental Services, Town of Lakeshore;
Dr. Wajid Ahmed, Medical Officer of Health (A), Theresa Marentette, Director of Health Protection, Kristy McBeth, Director of Health Protection, Phil Wong, Manager, Health Inspection Department, Victoria Peczulis, Manager, Environmental Health, Windsor-Essex County Health Unit;
Katie Stammier, Source Water Protection Manager, ERCA;
Marc Bechard, Supervisor, Ministry of the Environment, Conservation and Parks.



Ministry of the Environment, Conservation and Parks

MUNICIPALITY OF LAKESHORE DRINKING WATER SYSTEM
Inspection Report

Site Number:	260091507
Inspection Number:	1-NXSOB
Date of Inspection:	Nov 10, 2020
Inspected By:	Emily Awad

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Appendix A: Key Reference and Guidance Material

Appendix B: Inspection Summary Rating Record

OWNER INFORMATION:

Company Name:	LAKESHORE, THE MUNICIPALITY OF	Unit Identifier:	
Street Number:	419		
Street Name:	NOTRE DAME ST		
City:	BELLE RIVER		
Province:	ON	Postal Code:	N0R 1A0

CONTACT INFORMATION

Type:	Operating Authority	Name:	Darryl Dunsby
Phone:	(519) 796-6780	Fax:	(519) 728-4110
Email:	ddunsby@lakeshore.ca		
Title:	Compliance Coordinator		

Type:	Operating Authority	Name:	Darrin Johnston
Phone:	(519) 728-9142	Fax:	(519) 728-4110
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Title:	Water Treatment Working Foreman - ORO		

Type:	Operating Authority	Name:	Garry Punt
Phone:	(226) 345-2079	Fax:	(519) 728-4110
Email:	gpunt@lakeshore.ca		
Title:	Water Operations Supervisor		

INSPECTION DETAILS:

Site Name:	MUNICIPALITY OF LAKESHORE DRINKING WATER SYSTEM
Site Address:	492 LAKEVIEW Drive BELLE RIVER ON N0R 1A0
County/District:	LAKESHORE
MECP District/Area Office:	Windsor Area Office
Health Unit:	WINDSOR-ESSEX COUNTY HEALTH UNIT
Conservation Authority:	
MNR Office:	
Category:	Large Municipal Residential
Site Number:	260091507
Inspection Type:	Announced
Inspection Number:	1-NXSOB
Date of Inspection:	Nov 10, 2020
Date of Previous Inspection:	Nov 12, 2019

COMPONENTS DESCRIPTION

Site (Name): Distribution System

Type:

Comments:

Sub Type:

The Lakeshore Drinking Water System is owned by the Town of Lakeshore, and supplies water to the community of Belle River and the former township of Maidstone. According to the drinking water system registration profile, this

results in a total serviced population of approximately 29,000 persons. The system is considered a "large municipal residential system" under O. Regulation 170/03.

The communities of Belle River and Maidstone are equipped with water towers, including the newer Belle River tower. However, the operating levels established with the Belle River tower would cause the Maidstone tower to overflow and no longer be able to "float" on distribution pressure. Therefore, the tower is isolated from the distribution system, although it is kept on standby to use when the Belle River tower is removed from service for maintenance. The Town is considering long term options for operating the Maidstone Tower.

Site (Name): Intake & Raw Water Pumping Station

Type: Source

Sub Type:

Comments:

The treatment facility in Belle River, receives water from Lake St. Clair via a low lift pumping station. Four variable speed drive low lift pumps can draw water through a 1050 m long intake pipe from a circular crib. The low lift station is equipped for zebra mussel control consisting of a chlorine solution line originating from the chlorine room in the water plant, fitted through a conduit in the low-lift station and extending to a diffuser located within the intake crib. Frazzle ice control is also supplied to the intake using compressed air and air blowers which supply coarse air through diffusers around the intake crib via carrier pipe fitted through the same conduit line. The low lift pumping station consists of:

- A raw water well, equipped with float controls for low level shutoff/alarming.
- Two separate screening well channels (one equipped with an automatic travelling screen and the other a bypass equipped with a manually removed mesh screen).
- A two-cell pump-well.

Site (Name): Treatment Process

Type:

Sub Type:

Comments:

The treatment plant is currently rated at 36,400 m³/d approved capacity. It is a conventional water treatment plant consisting of contact clarification via four solids upflow clarifiers equipped with inclined tube settlers after coagulant (DelPac aluminum chloride hydroxide sulphate) and coagulant aid addition. Activated carbon slurry feed is also maintained for service but has not been employed since initial plant commissioning. Clarified water flows into four dual media-type filters (granulated activated carbon and sand). The filters are equipped with backwash facilities via two backwash pumps. Sedimentation sludge is directed to sanitary sewer, and backwash from the filters is directed to a residue management pump station and transferred to two dissolved air flotation (DAF) tanks with sequenced rapid mix, flocculation and clarification stages after being dosed with polymer treatment chemical. Clarification supernatant overflow is discharged into an on-site drainage ditch which empties to Lake St. Clair and concentrated sludge is directed to sanitary sewer.

Primary disinfection is provided via UV disinfection of filtered water and chlorine gas solution injection into a post-UV location. Chlorine contact is achieved in a two-cell on-site reservoir. Free chlorine is monitored ahead of the reservoirs, and free and total chlorine is monitored after the reservoirs and from the point of entry to the distribution system. Post-contact trim chlorine can also be added at the high-lift well. The high-lift well is a four-compartment structure equipped with three vertical turbine high-lift pumps (two duty/one standby) which supply pressure to the distribution system; filling the Belle River (and/or Maidstone) tower.

INSPECTION SUMMARY:

Introduction

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

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

This report is based on a "focused" inspection of the system. Although the inspection involved fewer activities than those normally undertaken in a detailed inspection, it contained critical elements required to assess key compliance issues. This system was chosen for a focused inspection because the system's performance met the ministry's criteria, most importantly that there were no deficiencies as identified in O.Reg. 172/03 over the past 3 years. The undertaking of a focused inspection at this drinking water system does not ensure that a similar type of inspection will be conducted at any point in the future.

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

Specifically, this review includes an assessment of compliance/conformance in relation to the following:

- Drinking Water Systems Regulation (O. Reg. 170/03)
- Drinking Water Operator and Water Quality Analyst Certification Regulation (O. Reg. 128/04)
- Drinking Water System Licence 031-101, Issue Number 2, issued June 6, 2016
- Drinking Water Works Permit 031-201, Issue Number 4, issued June 6, 2016
- Permit to Take Water 3648-B3EQWX, Issued August 16, 2018, and
- Ontario Drinking Water Quality Standards (ODWQS; O. Reg. 169/03) based on water quality data generated since the previous inspection.

The inspection was conducted on November 10, 2020 and included a physical inspection of the John George Water Treatment Plant, and the Low Lift and High Lift Pumping Stations. A follow-up site visit was conducted on December 11, 2020. The inspection covers the period from November 1, 2019 to October 31, 2020.

Source

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

Standard Operating Procedure (SOP) #2000661 indicates the monitoring schedule for blue-green algae and procedures for notification. During the warmer season, raw and treated samples are collected weekly. Sampling goes from June 1 to October 1 each year.

The operating authority was notified that in the new Licence/Permit to be issued in 2021, there will be a requirement to continue sampling until October 31st each season.

Capacity Assessment

- There was sufficient monitoring of flow as required by the Municipal Drinking Water Licence or Drinking

Capacity Assessment

Water Works Permit issued under Part V of the SDWA.

Condition 2.1, Schedule C of MDWL 031-101 for Town of Lakeshore Drinking Water System requires continuous flow measurement and recording to be undertaken for:

- The flow rate and daily volume of treated water that flows from the treatment subsystem to the distribution system,
- The flow rate and daily volume of water that flows into the treatment subsystem.

Endress & Hauser Promag magnetic type meters are installed on each of the raw inlet supplies to the up-flow clarifiers; four in total. At the site inspection on November 10, 2020 the raw flow into the plant was observed at each of the four Clarifier flow meters; the sum of the readings was 78.5 L/s. Endress & Hauser Promag meters are also installed on each filter effluent line and the two filter effluent headers which draw water into the UV reactor units. An Endress & Hauser magnetic type meter is installed on the high-lift discharge header to the distribution system. During the inspection, there was no treated flow observed at the high lift pumping station as the pumps were off; treated water from the Belle River Tower was feeding the distribution system at that time. Additionally flow meters are installed to measure filter backwash and waste residual treatment flows. Flows from these meters are recorded on the SCADA system Historian server.

- **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.**

Condition 1.1, Schedule C of MDWL 031-101 prescribes the maximum allowable daily volume of treated water from the treatment subsystem to the distribution system at 36,400 m³/day.

Record review indicates the maximum flow (18,235 m³/day) from treatment to distribution during the inspection period occurred in July 2020 at 50% of the rated capacity of the plant. The maximum average flow (14,257 m³/day) to the distribution system occurred in June 2020, and was 39% of the rated capacity of the plant.

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.**

All equipment listed in the Permit was observed at the plant inspection. UV2 was in service during the inspection. The operating authority has submitted their application for a Licence/Permit renewal which included the correction to the duty polymer feed pumps in the Chemical Feed Facilities section, identified in the last inspection.

During the inspection, it was observed that the screens on the vents of the treated water storage reservoir were replaced with a #24 mesh (0.70 mm) non-corrodible screen, as recommended in the last inspection. The operating authority stated that the flowmeter on UV2 had just been replaced and the other flowmeter is scheduled to be replaced. In addition, they are planning on adding a fourth High Lift pump to help with maintenance on the other pumps.

The coagulant DELPAC XG was used on a trial basis from May 25 to October 10, 2020. As this coagulant did not optimize plant performance or reduce the aluminum residuals in the treated water, the coagulant was switched back to DELPAC 2020.

The Owner has hired a consultant to assess the pH of the raw water. They are currently in the bench testing phase of this study and, once complete, may propose the installation of a pH adjustment system at the intake. This would require an amendment to the Licence and review by the ministry prior to implementation.

- **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.**

A Form 1 "Record of Watermains Authorized as a Future Alteration" document was prepared for:

Treatment Processes

1. Watermain additions for Serenity Bay Development. Date: Oct. 9, 2019; commissioned: Nov. 16, 2020.
2. New watermain installation for Lakeshore new Centre Estates Subdivision, Phase 3A. Date: Mar. 23, 2020; commissioned: July 22, 2020.
3. Watermain additions for Phase 7B of the River Ridge Subdivision, servicing 72 new townhome units. Date: June 17, 2020; commissioned: Aug. 5, 2020.

The owner/operating authority is reminded to complete all parts of the Form 1's (including the Permit number).

- **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 "Record of Minor Modifications or Replacement to the Drinking Water System" document was prepared for:

1. Aluminum residual trial: DELPAC 2020 coagulant substituted with DELPAC XG for a trial period, as recommended by supplier, in order to reduce aluminum residuals in treated water. Date: May 1, 2020; Trial: May 25-Oct. 10, 2020.
2. Replacement of Plant effluent and Reservoir 2 Chlorine analyzers with new ProMinent free and total continuous analyzers. Date: June 17, 2020. commissioned: Sept. 2, 2020.
3. Replacement of UV2 Endress Hauser 24 inch Promag 400 flow meter with new Endress Hauser Promag 400 flow meter. Date: July 3, 2020; commissioned: Sept. 17, 2020.

- **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.**

Operating logs and continuous trends from November 2019 to October 2020 were reviewed.

In order to claim applicable Cryptosporidium oocyst and Giardia cyst removal credits, the Procedure for Disinfection of Drinking Water Supplies in Ontario states that performance must meet filtered water turbidity of less than or equal to 0.3 NTU in 95% of the turbidity measurements each month. The performance standard was met at each filter in each month (99.89% to 100% of the time).

The Disinfection Procedure requires that in order to be considered conventional filtration and meet or exceed the 2.5 log Giardia cyst removal, the 2.0 log Cryptosporidium oocyst removal and 2.0 log virus removal credits, the filtration process must use a chemical coagulant at all times when the treatment plant is in operation. Coagulant flow data was provided in 15 minute intervals for the inspection period. All instances of prolonged coagulant interruption or low flow corresponded to plant shutdowns, no raw water flow or calibrations.

UV calculated dosage data was provided in 5 minute intervals for the inspection period. It indicated that adequate UV disinfection was consistently provided, with the exception of one instance. In general, when the UV equipment is not operating as designed, flow is automatically shutdown and water cannot be treated. However, on June 4, 2020, a power outage shut down the plant. The lack of power prevented the valve that stops flow through the UV system from closing, and water flowed through UV2 for 25 minutes without any UV treatment. The CT calculation for this instance was provided during the inspection, and it did indicate that the required chlorine CT was being met; however, chlorine is not included in the disinfection credits in the Licence. The operating authority will be submitting an application to have chlorine added to the disinfection credits on their Licence. In the future, operators shall review data during or immediately after major power outages to ensure that the CT achieved is sufficient. In addition, the owner shall investigate the reason for the delay in the switchover to backup power. On all other occasions, the UV disinfection equipment maintained a continuous passthrough UV dose of at least 40mJ/cm² while operating (range 55-120mJ/cm²) as required by Condition 1.6 in Schedule C of the Licence.

- **Records confirmed that the water treatment equipment which provides chlorination or chloramination for**

Treatment Processes

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.

During the inspection period, available chlorine residual data from the distribution system showed that free chlorine residuals ranged from 0.25 to 1.57 mg/L, never falling below 0.05 mg/L. At the inspection, chlorine residuals were measured at the new Lakeshore Operations Centre at 304 Rourke Line in the lunch/training room. The free chlorine residual was 0.44 mg/L and the total chlorine residual was 0.47 mg/L.

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

According to the Watermain Break Repair Standard Operating Procedure (SOP #2000397), all parts of the drinking water system are disinfected in accordance with the ministry's Watermain Disinfection Procedure and other procedures. Work orders were reviewed and it was noted that the Water Distribution Report Forms were missing key information, such as, the post repair flushing location, start and stop time, chlorine residuals, flow. The operating authority is reminded to complete all pertinent information on the Water Distribution Report.

- **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.**

The two Trojan UV Swift units are equipped with four manufacturer supplied photodiode sensors (one per lamp) which monitor UV intensity within the reactors. A low UV dosage alarm setting of 50 mJ/cm² (internal alarm) and a low-low setting of 40 mJ/cm², which shuts down the units, are programmed (default from manufacturer). Reactor lockout on low dosage or failure is accomplished via motorized valves located just downstream of the reactor units. The alarms are enunciated audibly and visually at the site and via SCADA to the operator on-call pager through the security company.

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.**

According to the licence, chlorine does not provide primary disinfection for this system; only conventional filtration and UV are included for log removal credits. A ProMinent D1C continuous chlorine monitor/controller with CLE probe measures free chlorine on the reservoir outlet line. This location is prior to the post-reservoir injection point for free chlorine top-up/trim which is periodically employed to boost the concentration of secondary disinfectant directed to the distribution system. Free chlorine residual data was provided at 5 minute intervals, and ranged from 1.15 to 2.36 mg/L. At the inspection, the chlorine residuals were measured at this location: free: 1.40 mg/L (continuous analyzer: 1.46 mg/L) and total: 1.59 mg/L (continuous analyzer: 1.69 mg/L).

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

Filter effluent turbidity values are measured by Hach 1720E turbidity sensors with SC100 controllers. Results are recorded by the SCADA Historian system and each has a SD card backup. During the inspection, all four filters had operating turbidimeters and the following were recorded: Filter #1=0.021, Filter #2=0.022, Filter #3=0.021, and Filter #4=0.026 NTU.

Filter turbidity data was provided at 15 minute intervals for the inspection period. Data review showed that turbidity was monitored continuously and any shutdowns due to backwash or maintenance were documented in the logbooks.

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

Logs show that distribution system free chlorine residuals were taken and measured at least seven times per week as required; four and three times on separate days, with the sets of measurements being made at least 48 hours

Treatment Process Monitoring

apart.

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

Operators examine continuous monitoring data daily. In accordance with the operating authority's Routine Plant Rounds standard operating procedure, and as reflected in the project logs, reviews of continuous monitoring results are completed once per day and recorded in the operating logbook.

- **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 low chlorine alarm setting for the CT analyser is 0.75 mg/L. Low and low-low alarms for secondary disinfection free chlorine level leaving the plant are also set at 1.0 and 0.8 mg/L, respectively. Filter turbidity alarm and filter-to-waste set-points are similarly setup in SCADA to respond to measured tests from these analysers, including high and high-high alarms of 0.3 NTU and 1.0 NTU and a filter to waste set point of 0.9 NTU. The 1.0 NTU setting triggers a filter shutdown. Operational alarms for clarifier effluent turbidity prior to filtration are set at 3 NTU.

Alarms are enunciated via SCADA to an audible horn in the plant and visual display at the SCADA terminal. Critical alarms are also alarmed out to a security company who is required to contact a sequence of contact numbers starting with the on-call operator's phone. The operator indicated that the audible can be heard throughout the plant. The plant is not staffed 24 hours per day, but an operations shift is conducted from 7:00 AM to 3:30 PM.

- **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.**

O. Regulation 170 sub-section 6-5(1), paragraph 1 requires the continuous monitoring equipment to record the date, time, sampling location and result of every test for the parameter with at least the minimum frequency prescribed as follows:

1. Free chlorine residual required to achieve primary disinfection - 5 minutes [currently not required for log disinfection credits];
2. Filter effluent turbidity - 15 minutes.

The operating authority reported a communication loss on March 1, 2020 due to a Remote Processing Unit (RPU)/Programmable Logic Controller (PLC) failure. This caused the Historian to go down for approximately 20 minutes (16:07 to 16:41). They were able to retrieve the data from the SD card backup on the new HACH turbidimeters, and the turbidity was steady during the outage. In addition, it was noted that the audible alarm was not operating; only the banner alarm on the SCADA screen and the pager call-out was functioning. On March 4, 2020, it was reported that the audible tone for the alarm notification was repaired. This audible alarm tone was demonstrated during the inspection.

- **The owner and operating authority ensured that the primary disinfection equipment had a recording device that continuously recorded the performance of the disinfection equipment.**

As per Condition 1.6 in Schedule C of the Licence, the UV disinfection equipment monitors UV calculated dose, flow rate, transmittance and lamp status continuously.

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

Records show that continuous chlorine and turbidity analysers, as well as handheld meters, are verified/calibrated on a regular basis. Maintenance and calibrations are tracked in the Antero work order system and documented in the operating authority's logbooks and instrument calibration logs. Continuous analyzers are verified monthly

Treatment Process Monitoring

against a laboratory bench test and a handheld meter, respectively; maintenance is completed if required (e.g. flushing and cleaning of sensors).

Annual instrument calibrations and maintenance were completed by manufacturer and/or instrument supplier representatives: turbidimeters: Filter 1-4 (Hach; Nov. 3/2020); chlorine analyzers in the plant and at the Belle River tower (SCG; Sept. 2/2020); flowmeters (Endress & Hauser; March 2020); portable turbidimeters/colorimeters (Hach; July 8/2020). Calibration certificates were provided.

- **All UV sensors were checked and calibrated as required.**

As per "EPA Disinfection Guidance Manual for the Final LT2ESWTR" (2006), UV sensors were calibrated monthly by H2flow for TrojanUV. The reference sensor was validated on July 17, 2020 and is scheduled to be revalidated prior to June 2023.

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 manual, created by the plant's design engineer, details unit operations. The associated record drawings for the water plant, including process and instrumentation diagrams, are available for reference by operators on map racks in the boardroom.

Distribution system manuals contain general and specific procedures and directions related to distribution maintenance and repair activities, and contingencies. Distribution operators have access to maps produced on the owner's GIS system. The GIS maps identify locations of watermain, water services, hydrants, valves, blow-offs, and curb-stops as well as archived drawings/maps. Water distribution operators access this system via tablets or the garage computer.

- **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.**

The SOPs meet the requirements of Condition 16.2, Schedule B of the Licence. Copies of the Licence and Permit are kept in a separate binder which is available to operators in the control room. Similarly, standard operating procedures and contingencies are maintained for the distribution group within the "Lakeshore Water Supply System - Operations & Maintenance/Contingency Plan Manual" binder. A copy of the UV validation certificate, as required by Condition 16.2.3, Schedule B of the Licence, was provided at a previous inspection.

As per Condition 16.4, Schedule C of the Licence, a monthly UV alarm summary report shall be prepared, and include the time, date and duration of each UV equipment alarm. These summary reports were completed for the inspection period, however, do not include the volume of water treated during each alarm period, as required. This field should be added to the monthly UV alarm summary report and documented going forward.

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.**

For the calibration and lab analysis records reviewed, operational testing such as total chlorine residual, pH, temperature, conductivity, hardness, colour and aluminum residual, conducted during regular compliance, operational and additional program sampling, was done by the operating authority's certified operators.

Security

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

Security

The John George Facility is gated around the perimeter and all outer doors are locked. Visitors must be buzzed in for access. The facility is equipped with security cameras monitored by operators in the SCADA room. As recommended during the last inspection, a camera overlooking the reservoir was installed to improve security monitoring at the plant. The low lift building is in a separate brick structure which is not fully fenced, although it has security fencing with padlocked gates installed to prevent access to the side and rear of the compound. The outward facing walls are windowless walls and are equipped with lockable steel security doors. The building is equipped with remote camera monitoring, intruder door contact alarms and keycode access.

Four additional security cameras have been installed since the last inspection, and a new keycard access security system was being installed on the lowlift and plant doors during the inspection.

Certification and Training

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

The plant supervisor is the designated overall responsible operator (ORO) for the system and he holds a class 3 water treatment certification matching the water treatment subsystem 3 classification of the plant. The backup ORO for the treatment system also holds a class 3 certification and the backup ORO for the distribution system holds a class 3 certification exceeding the water distribution subsystem 2 classification of the distribution system.

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

The operator on call each week is the designated Operator in Charge (OIC) of Operations. For both treatment and distribution subsystems, the OIC for each shift is identified in the designated field in the Daily Operational Log book.

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

Water Quality Monitoring

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

O. Regulation 170/03, Sch.10-2 requires the owner and operating authority to take a minimum of one sample per week, and at least 36 samples per month from the distribution system. All samples must be analysed for E. coli and total coliforms. In addition, at least 25% of the distribution microbiological samples must be analysed for heterotrophic plate count (HPC).

The operating authority collected 40-50 samples per month from approximately 72 sample stations throughout the distribution system. Samples were analyzed for E.coli, total coliform, and more than 25% of the samples (16-20 samples/month) were tested for HPC.

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

O. Regulation 170/03, Sch. 10-3 requires the owner and operating authority to sample treated water once per week and analyse them for E. coli, total coliforms and heterotrophic plate count (HPC).

For the period reviewed, duplicate treated water samples were taken at the High Lift pump building each week.

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

Provided that previous sample results haven't exceeded one-half the maximum acceptable concentration (MAC) for any parameter under Schedule 23, O. Regulation 170/03 Schedule 13-2 requires that samples must be taken and

Water Quality Monitoring

analysed for Schedule 23 parameters every 12 months (+/- 30 days) for a surface water supply. The required samples were taken November 13, 2019, within the prescribed time frame. No parameters exceeded one-half the maximum acceptable concentration (MAC) listed in O.Reg. 169/03.

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

Provided that previous sample results haven't exceeded one-half the maximum acceptable concentration (MAC) for any parameter under Schedule 24, O. Regulation 170/03 Schedule 13-2 requires that samples must be taken and analysed for Schedule 24 parameters every 12 months (+/- 30 days) for a surface water supply. The required samples were taken November 13, 2019, within the prescribed time frame. No parameters exceeded one-half the maximum acceptable concentration (MAC) listed in O.Reg. 169/03.

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

As required under O. Regulation 170/03 Schedule 13-6 (2), samples must be taken and analysed for haloacetic acid quarterly (60-120 days after previous sample). Samples were taken within the prescribed time frame. The running annual average (RAA) was 5.2 ug/L.

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

As required under O. Regulation 170/03 Schedule 13-6 (2), samples must be taken and analysed for trihalomethanes quarterly (60-120 days after previous sample). Samples were taken within the prescribed time frame. The running annual average (RAA) was 17.6 ug/L. Samples were also taken from treated water at the High Lift pump building quarterly and the RAA was 11.9 ug/L.

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

During the inspection review period, one treated water sample was collected quarterly (from the high lift pump station) for nitrate and nitrite, as prescribed in Sch. 13-7 of O.Regulation 170/03. Nitrate concentrations ranged from 0.14 to 1.4 mg/L, well below the standard of 10 mg/L, and nitrite concentrations were all below the method detection limit (0.01-0.05mg/L), as well as the standard of 1 mg/L.

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

O. Regulation 170/03 Schedule 13-8 requires sampling and analysis of sodium every 60 months. The sample for sodium was last taken on November 13, 2019 and the result was 11.5 mg/L. The previous sample was taken on September 26, 2017. A sample was also taken from the distribution system for sodium on November 13, 2019 and the result was 11.2 mg/L.

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

O. Regulation 170/03 Schedule 13-9 requires sampling and analysis of fluoride every 60 months. The sample for fluoride was taken on November 13, 2019 and the result was 0.069 mg/L. The previous sample was taken on October 23, 2018. A sample was also taken from the distribution system for fluoride on November 13, 2019 and the result was 0.068 mg/L.

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

Condition 1.6 under Schedule C of the Drinking Water System Licence requires the owner and operating authority to continuously monitor and record flow rate, calculated UV dose, UV transmittance and UV lamp status with a

Water Quality Monitoring

minimum testing/reading and recording frequency of every five minutes. Control data output includes recording of calculated UV dosage, lamp status for each of the lamps, reactor flow rate and UV transmittance. The frequency of measurement and recording of these parameters is at least every five minutes.

Condition 4.4 under Schedule C of the Drinking Water System Licence requires monthly sampling of composite samples of total suspended solids (TSS) from the waste residual discharge point. The annual average cannot exceed 15mg/L. For 2019, the annual average was 10.55 mg/L. The average for this portion of 2020 (January to October) was 6.28 mg/L.

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

Chlorine residual measurements were observed on all laboratory chain of command sheets. Free chlorine residual ranged from 0.40 to 1.57 mg/L.

Water Quality Assessment

- **Records showed that all water sample results taken during the inspection review period did not exceed the values of tables 1, 2 and 3 of the Ontario Drinking Water Quality Standards (O.Reg. 169/03).**

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.**

Water plant operating logs reviewed indicate that certified operators responded to alarms in a timely manner and took appropriate actions.

- **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.**

UV reactor units shutdown as designed on abnormal conditions and alarms. The UV system SCADA control incorporates an auto-start and switchover function to the standby unit. Nonetheless, a UV critical alarm requires an operator's immediate attendance to confirm the status of operations. Critical alarms are documented in the Critical Control Limit Exceedances Binder. A critical alarm for low UV calculated dosage occurred on January 15, 2020 and August 16, 2020. There was one instance (June 30, 2020), where a critical UV alarm was noted in the logbook but was not included in the Critical Control Limit Exceedance log. In most cases, the response to plant and UV alarm conditions documented in the logbook were sufficient. There were a handful of instances, in which the alarm conditions and/or corrective actions were not clearly documented in the logbook. Operators are reminded to document alarms and corrective actions in the Facility Logbook as well as on the monthly summaries.

Other Inspection Findings

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

See SUMMARY OF RECOMMENDATIONS AND BEST PRACTICE ISSUES.

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:

As per Condition 1.6.4, Schedule C of the Licence, a monthly UV alarm summary report shall be prepared, and include the time, date and duration of each UV equipment alarm. These summary reports were completed for the inspection period, however, do not include the volume of water treated during each alarm period, as required.

Recommendation:

The volume of water treated during each alarm period should be added to the monthly UV alarm summary report and documented going forward.

SIGNATURES

Inspected By:

Emily Awad

Signature: (Provincial Officer)

Reviewed & Approved By:

Marc Bechard

Signature: (Supervisor)

Review & Approval Date:

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



Stakeholder Appendix

Key Reference and Guidance Material for Municipal Residential Drinking Water Systems

Many useful materials are available to help you operate your drinking water system. Below is a list of key materials owners and operators of municipal residential drinking water systems frequently use.

To access these materials online click on their titles in the table below or use your web browser to search for their titles. Contact the Ministry if you need assistance or have questions at 1-866-793-2588 or waterforms@ontario.ca.

For more information on Ontario's drinking water visit www.ontario.ca/drinkingwater



PUBLICATION TITLE	PUBLICATION NUMBER
FORMS: Drinking Water System Profile Information Laboratory Services Notification Adverse Test Result Notification	012-2149E 012-2148E 012-4444E
Taking Care of Your Drinking Water: A Guide for Members of Municipal Councils	Website
Procedure for Disinfection of Drinking Water in Ontario	Website
Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids	Website
Filtration Processes Technical Bulletin	Website
Ultraviolet Disinfection Technical Bulletin	Website
Guide for Applying for Drinking Water Works Permit Amendments, & License Amendments	Website
Certification Guide for Operators and Water Quality Analysts	Website
Guide to Drinking Water Operator Training Requirements	9802E
Community Sampling and Testing for Lead: Standard and Reduced Sampling and Eligibility for Exemption	Website
Drinking Water System Contact List	7128E01
Ontario's Drinking Water Quality Management Standard - Pocket Guide	Website
Watermain Disinfection Procedure	Website
List of Licensed Laboratories	Website



Inspection Rating Record

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

DWS Name: TOWN OF LAKESHORE DRINKING WATER SYSTEM
DWS Number: 260091507
DWS Owner: Lakeshore, The Corporation Of The Town Of
Municipal Location: Lakeshore

Regulation: O.REG 170/03
Category: Large Municipal Residential System
Type Of Inspection: Focused
Inspection Date: November 10, 2020
Ministry Office: Windsor Area Office

Maximum Question Rating: 525

Inspection Module	Non-Compliance Rating
Capacity Assessment	0 / 30
Treatment Processes	0 / 106
Operations Manuals	0 / 28
Logbooks	0 / 14
Certification and Training	0 / 42
Water Quality Monitoring	0 / 112
Reporting & Corrective Actions	0 / 42
Treatment Process Monitoring	0 / 151
TOTAL	0 / 525

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

DWS Name: TOWN OF LAKESHORE DRINKING WATER SYSTEM
DWS Number: 260091507
DWS Owner: Lakeshore, The Corporation Of The Town Of
Municipal Location: Lakeshore

Regulation: O.REG 170/03

Category: Large Municipal Residential System

Type Of Inspection: Focused

Inspection Date: November 10, 2020

Ministry Office: Windsor Area Office

Maximum Question Rating: 525

Inspection Risk Rating	0.00%
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FINAL INSPECTION RATING:	100.00%
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