Ontario

Ministry of the Environment, Conservation and Parks

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February 22, 2024 by email: Karin.Pratte@northbay.ca

Ms. Karin Pratte
Senior Facilities and Environment Engineer
The Corporation of the City of North Bay
200 McIntyre Street East
North Bay, ON
P1B 8V6

RE: 2023-2024 Inspection Report for the North Bay Drinking Water System No. 1-189616384

On December 4, 2023 I conducted the annual inspection of the North Bay Drinking Water System. The inspection included a physical inspection of the North Bay Water Treatment Plant, interview with Jonathan Dewey, Overall Responsible Operator and Operations Supervisor Water and Wastewater, City of North Bay and document review for the period from December 7, 2022 to December 3, 2023. The resulting inspection report is attached.

Please note that section "Non-compliance" contains "Compliance Response/Corrective Action(s)" that 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.

Section "Recommendations" suggests "Recommended Actions" the owner and the operating authority should consider implementing in order to advance efforts already in place to address issues of source protection and emergency preparedness. Items which appear as "recommended actions" do not, in themselves, constitute violations. Recommendations can also be found in the "Observation" fields of some of the questions of the inspection report with suggestions for better management practices.

Section 19 of the Safe Drinking Water Act (Standard of Care) creates a number of obligations for individuals who exercise decision-making authority over municipal drinking water systems. Please be aware that the Ministry has encouraged such individuals, particularly municipal councillors, to take steps to be better informed about the drinking water systems over which they have decision-making authority. These steps could include asking for a copy of this inspection report and a review of its findings. Further information about Section 19 can be found in "Taking Care of Your Drinking Water: A Guide for Members of Municipal Councils" on the

Drinking Water Ontario website at https://www.ontario.ca/environment-and-energy/taking-care-your-drinking-water-guide-members-municipal-councils.

The Inspection Rating Report (IRR) is a summarized quantitative measure of the drinking water system's annual inspection and is published in the Ministry's Chief Drinking Water Inspector's Annual Report. The Risk Methodology document describes the risk rating methodology which has been applied to the findings of the Ministry's municipal residential drinking water system inspection results. Please find attached the corresponding IRR in Appendix A and Risk Methodology document.

Attached in Appendix B is a document entitled "DWS Components Information" and in Appendix C is a document titled "Key Reference and Guidance Material for Municipal Residential Drinking Water Systems".

Electronic copies of this inspection report have been sent to the North Bay Parry Sound District Health Unit and North Bay Mattawa Conservation Authority in accordance with the Ministry's Municipal Drinking Water Inspection Protocol.

Thank you for your co-operation. If you have any questions about this inspection report, please contact me at (705) 491-2781 or by email at vesna.alimpic@ontario.ca.

Sincerely,

VAlimpic

Vesna Alimpic
Water Compliance Officer
Provincial Officer Badge No. 1882
Drinking Water and Environmental Compliance Division
Ministry of the Environment, Conservation and Parks
North Bay Office

c: Scott Taggart, Operations Manager, Public Works Water and Wastewater, City of North Bay
Jonathan Dewey, Operations Supervisor, Water and Wastewater Facilities, City of North Bay
Robert A‑Muhong, Manager of Environmental Health, North Bay Parry Sound District Health Unit
David Ellingwood, Supervisor of Source Water Protection, North Bay Mattawa Conservation Authority
Sherry Ilersich, Water Compliance Supervisor, Timmins/North Bay, Northern Region, Drinking Water and Environmental Compliance Division, Ministry of the Environment, Conservation and Parks

NORTH BAY DRINKING WATER SYSTEM
248 LAKESIDE DR, NORTH BAY, ON, P1A 3E3

INSPECTION REPORT

System Number:	220000460
Entity:	THE CORPORATION OF THE CITY OF NORTH BAY
Inspection Start Date:	December 04, 2023
Inspection End Date:	February 21, 2024
Inspected By:	Vesna Alimpic
Badge #:	1882

VAlimpic

_____
(signature)

INTRODUCTION

Purpose

This announced focused inspection was conducted to confirm compliance with Ministry of the Environment, Conservation and Parks' (MECP) legislation and conformance with ministry drinking water policies and guidelines.

Scope

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 and the operation of the system.

The inspection of the drinking water system included both the physical inspection of the component parts of the system listed in section 4 "Systems Components" of the report and the review of data and documents associated with the operation of the drinking water system during the review period.

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.

Facility Contacts and Dates

The drinking water system is owned and operated by The City of North Bay.

The system serves an estimated population of 52,000 and is categorized as a large municipal residential system. Information reviewed for this inspection covered the time period of December 7, 2022 to December 3, 2023.

As part of the inspection process, the water inspector met with Jonathan Dewey, City of North Bay, Operations Supervisor Water & Wastewater, who is also the overall responsible operator for the North Bay Water Treatment Plant.

Systems/Components

All locations associated with primary disinfection were visited as part of this inspection. The

following sites were visited as part of the inspection of the drinking water system: North Bay Water Treatment Plant.

Permissions/Approvals

This drinking water system was subject to specific conditions contained within the following permissions and/or approvals at the time of the inspection in addition to the requirements of the SDWA and its regulations: Municipal Drinking Water Licence (MDWL) No. 196-101, Issue No. 6 dated November 24 2021 and Drinking Water Works Permit (DWWP) No. 196-201, Issue No. 6 dated February 2, 2022.

NON-COMPLIANCE

The following item(s) have been identified as non-compliance, based on a "No" response captured for a legislative question(s). For additional information on each question see the Inspection Details section of the report.

Ministry Program: DRINKING WATER | **Regulated Activity:** DW Municipal Residential

Item	Question	Compliance Response/Corrective Action(s)
NC-1	**Question ID:** DWMR1025000 Were all parts of the drinking water system that came in contact with drinking water (added, modified, replaced or extended) disinfected in accordance with a procedure listed in Schedule B of the Drinking Water Works Permit?	All parts of the drinking water system were not disinfected in accordance with a procedure listed in Schedule B of the Drinking Water Works Permit. Required action: By no later than March 22, 2024, the owner/operating authority shall provide written documentation to Vesna Alimpic, Provincial Officer/Water Compliance Officer of the North Bay office identifying the actions that will be taken to ensure that the record keeping requirements for the disinfection of new watermains as specified in Section 3.1 to Watermain Disinfection Procedure will be met.
NC-2	**Question ID:** DWMR1039000 If primary disinfection equipment that does not use chlorination or chloramination is provided, has the owner and operating authority ensured that the equipment has a recording device that continuously records the performance of the disinfection equipment?	The owner and operating authority did not ensure that the primary disinfection equipment had a recording device that continuously recorded the performance of the disinfection equipment. Required action: The operating authority took adequate action to resolve this issue. No further action required.

RECOMMENDATIONS

This should not be construed as a confirmation of full conformance with all potential applicable BMPs. These inspection findings are limited to the components and/or activities that were assessed, and the legislative framework(s) that were applied. It remains the responsibility of the owner to ensure compliance with all applicable legislative and regulatory requirements.

If you have any questions related to this inspection, please contact the signed Provincial Officer.

INSPECTION DETAILS

This section includes all questions that were assessed during the inspection.

Ministry Program: DRINKING WATER | **Regulated Activity:** DW Municipal Residential

Question ID	DWMR1000000	**Question Type**	Information

Legislative Requirement(s):
Not Applicable

Question:
Does this drinking water system provide primary disinfection?

Compliance Response(s)/Corrective Action(s)/Observation(s):
This drinking water system provides for both primary and secondary disinfection and distribution of water.

Question ID	DWMR1012000	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | 31 | (1);

Question:
Does the owner have a harmful algal bloom monitoring plan in place that meets the requirements of the MDWL?

Compliance Response(s)/Corrective Action(s)/Observation(s):
The owner had a harmful algal bloom monitoring plan in place.

Condition 6 to MDWL requires the owner to develop and keep up-to-date a Harmful Algal Bloom (HAB) monitoring, reporting and sampling plan, to be implemented when a potential harmful algal bloom is suspected or present. Conditions 6.1 to 6.4 specify the requirements for the content of the plan, implementation, training, definition of a HAB and sampling. Standard Operating Procedure (SOP) for Procedure for Algal Toxins (Revision Date: Aug 9, 2021) requires annual training in the SOP, daily visual monitoring of the water surface around the intake for presence of blue green algae and weekly collection and testing of raw water samples for presence of microcystin in period May 15 to October 31.

A review of sampling records confirmed that weekly samples of raw and treated water were collected in the inspection period and that the operators were trained in the standard operating procedure on April 27, 2023.

Question ID	DWMR1014000	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | 31 | (1);

Question:

Is there sufficient monitoring of flow as required by the MDWL or DWWP issued under Part V of the SDWA?

Compliance Response(s)/Corrective Action(s)/Observation(s):

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.

Question ID	DWMR1016000	**Question Type**	Legislative

Legislative Requirement(s):

SDWA | 31 | (1);

Question:

Is the owner in compliance with the conditions associated with maximum flow rate or the rated capacity conditions in the MDWL issued under Part V of the SDWA?

Compliance Response(s)/Corrective Action(s)/Observation(s):

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.

Based on the review of the provided flow records of treated water, rated capacity of 79,500 m^3/day set by the MDWL was not exceeded in the inspection period.

Question ID	DWMR1018000	**Question Type**	Legislative

Legislative Requirement(s):

SDWA | 31 | (1);

Question:

Has the owner ensured that all equipment is installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit?

Compliance Response(s)/Corrective Action(s)/Observation(s):

The owner had ensured that all equipment was installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit.

Question ID	DWMR1020000	**Question Type**	Legislative

Legislative Requirement(s):

SDWA | 31 | (1);

Question:

Is the owner/operating authority able to demonstrate that, when required during the inspection period, Form 1 documents were prepared in accordance with their Drinking Water Works Permit?

Compliance Response(s)/Corrective Action(s)/Observation(s):

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.

Note: Based on the information provided by the overall responsible operator, the alterations listed in Form 1 document titled 'PRV Gormanville' provided to the inspecting officer were completed within the old Canadore Booster Station (located at Gormanville Rd and McKeown Ave. The owner/operating authority completed a Form 2 for this alteration as required. However, the previously completed Form 1 with outdated information was kept on file and provided to the inspecting officer for review. The owner/operating authority are reminded to remove the inapplicable Form 1 from their records to avoid confusion.

Question ID	DWMR1021000	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | 31 | (1);

Question:
Is the owner/operating authority able to demonstrate that, when required during the inspection period, Form 2 documents were prepared in accordance with their Drinking Water Works Permit?

Compliance Response(s)/Corrective Action(s)/Observation(s):
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.

Note: Based on the review of provided Form 1 and current Form 2 documents, it appears that some documents do not contain the location of the minor modifications or replacements. The owner and the operating authority are reminded to include the location of the works being modified or replaced in the completed Form 2 documents.

Question ID	DWMR1025000	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | 31 | (1);

Question:
Were all parts of the drinking water system that came in contact with drinking water (added, modified, replaced or extended) disinfected in accordance with a procedure listed in Schedule B of the Drinking Water Works Permit?

Compliance Response(s)/Corrective Action(s)/Observation(s):
All parts of the drinking water system were not disinfected in accordance with a procedure listed in Schedule B of the Drinking Water Works Permit.

Required action:

By no later than March 22, 2024, the owner/operating authority shall provide written documentation to Vesna Alimpic, Provincial Officer/Water Compliance Officer of the North Bay office identifying the actions that will be taken to ensure that the record keeping requirements for the disinfection of new watermains as specified in Section 3.1 to Watermain Disinfection

Procedure will be met.

Condition 2.3 to Schedule B of North Bay DWS DWWP requires that all parts of the drinking water system in contact with drinking water that are added, modified, replaced, extended shall be disinfected in accordance with a procedure approved by the Director or in accordance with the applicable provisions of the following documents:
a) The ministry's Watermain Disinfection Procedure, dated August 1, 2020;
b) Subject to condition 2.3.2, any updated version of the ministry's Watermain Disinfection Procedure;
c) AWWA C652 – Standard for Disinfection of Water-Storage Facilities;
d) AWWA C653 – Standard for Disinfection of Water Treatment Plants; and
e) AWWA C654 – Standard for Disinfection of Wells.

Section 3.1 to the ministry's Watermain Disinfection Procedure defines the requirements for documentation for new watermains related to backflow prevention, pre-disinfection swabbing, disinfection process, microbiological sampling and connecting new watermains to the existing system. During the review of new watermain disinfection records for Mary St, George St and Aviation Ln, the inspecting officer observed that the required records of the pre-disinfection swabbing and/or flushing and schematics or drawings showing approximate location where microbiological samples were incomplete or absent.

Question ID	DWMR1023000	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 1-2 | (2);

Question:
Do records indicate that the treatment equipment was operated in a manner that achieved the design capabilities required under Ontario Regulation 170/03 or a DWWP and/or MDWL issued under Part V of the SDWA at all times that water was being supplied to consumers?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Records indicated that the treatment equipment was operated in a manner that achieved the design capabilities required under O. Reg. 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.

The North Bay WTP is designed to achieve the performance criteria using microfiltration (0.1 micron pore size), ultraviolet (UV) disinfection and chlorine disinfection as per Section 1-3 of Schedule 1 to O. Reg. 170/03. The MDWL identifies log removal/inactivation credits assigned to the three (3) processes as the following:
- Microfiltration receives 2-log for Cryptosporidium oocysts and 2.5-log for Giardia cysts;
- UV disinfection receives 0.5 log Giardia cysts;
- Chlorination receives 4 log viruses.

In order to receive full log credits the treatment process must be fully operational and meet the following credit assignment identified in Schedule E of the MDWL:

Microfiltration:
1. Maintain effective backwash procedures, including filter-to-waste or an equivalent procedure, to ensure that the effluent turbidity requirements are met at all times;
2. Monitor integrity of the membrane by continuous particle counting or by an equivalently effective means (e.g. intermittent pressure decay measurements) (NOTE: intermittent pressure decay monitored at the North Bay WTP);
3. Continuously monitor filtrate turbidity; and
4. Meet the performance criterion for filtered water turbidity of less than or equal to 0.1 NTU in 99% of the measurements each month for each filter train.

For the process of microfiltration, it appears that all four criteria were met during the inspection period.

UV Disinfection:
1. Duty UV sensor shall be checked at least monthly against a reference sensor; or at a frequency recommended by the UV manufacturer.
2. When comparing the duty UV sensor to the reference sensor, the calibration ration must be equal to or below 1.2.
3. If the calibration ration is greater than 1.2 the duty sensor shall be replaced with a calibrated unit or a UV sensor correction factor shall be applied until the problem has been resolved.
4. Reference sensor shall be checked against a Master Reference Assembly at a minimum frequency of once every three (3) years or on a more frequent basis depending on recommendation of the equipment manufacturer.

Chlorination
1. Sampling and testing for free chlorine residual shall be carried out by continuous monitoring equipment.
2. At all times, CT provided shall be greater than or equal to the CT required to achieve.

Note: The two chlorine contact tanks can be operated separately or in sequence and still provide the required 4 log removal. This facility is equipped with online CT calculation. This program automatically takes data from several sources (flow, temperature, free chlorine residual, pH, water depth in contact tank and which contact tanks are in service) and then calculates the log removal credits achieved for Giardia & Viruses.

Based on the review of data provided during the inspection relating to UV calculated dosage, free chlorine residual level after the contact tank and the online CT calculation, performance criteria for UV disinfection and chlorination were satisfied at all times during the inspection period.

Note:
During the inspection, the overall responsible operator (ORO) informed the inspecting officer that, as a result of SCADA upgrades, monthly compliance reports containing calculations of percentages of turbidity measurements less than or equal to 0.1 NTU for each month and for each filter train had not been created for the months of September, October and November 2023. Monthly filter efficiency reports and their review are essential to determine if the log

removal credits have been met for the microfiltration process. The owner/operating authority are reminded that failure to meet the performance criterion for filtered water turbidity of less than or equal to 0.1 NTU in 99% of the measurements each month for each filter train is a reportable adverse condition per Subsection 16-4 to Schedule 16 of O. Reg. 170/03.

Question ID	DWMR1026000	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 1-6 | (1);

Question:
If primary disinfection equipment that does not use chlorination or chloramination is provided, is the equipment equipped with alarms or shut-off mechanisms that satisfy the standards described in Section 1-6 (1) of Schedule 1 of Ontario Regulation 170/03?

Compliance Response(s)/Corrective Action(s)/Observation(s):
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 O. Reg. 170/03.

Section 1-6 of Schedule 1 to O. Reg. 170/03 requires that in the event the UV disinfection system loses power, malfunctions or ceases to provide the appropriate level of disinfection that the system either has a feature that ensures that no water is directed to users or immediately cause an alarm to sound at the following locations:
1. The building or structure where the disinfection equipment is installed.
2. A location where a person is present, if a person is not always present at the building or structure where the disinfection equipment is installed.

At the time of the inspection, the ultraviolet (UV) reactors for the primary and secondary disinfection systems were equipped with a shut down mechanism in the event that the calculated dose dropped below the minimum required. The primary UV system is required to provide a minimum ultraviolet dosage of 10 mJ/cm², the shut down setpoint was set at 12 mJ/cm². The secondary UV system is required to provide a minimum ultraviolet dosage of 15 mJ/cm², the shut down setpoint was set at 15 mJ/cm².

In addition, UV reactors are set to alarm to an on-call operator when the UV units reach the setpoint of 20 mJ/cm².

Question ID	DWMR1024000	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 1-2 | (2);

Question:
Do records confirm that the water treatment equipment which provides chlorination or chloramination for secondary disinfection purposes was operated as required?

Compliance Response(s)/Corrective Action(s)/Observation(s):
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.

Question ID	DWMR1033000	Question Type	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 7-2 | (3); SDWA | O. Reg. 170/03 | 7-2 | (4);

Question:
Is the secondary disinfectant residual measured as required for the large municipal residential distribution system?

Compliance Response(s)/Corrective Action(s)/Observation(s):
The secondary disinfectant residual was measured as required for the large municipal residential distribution system.

As of December 14, 2021, the owner has designated the Judge Avenue Valve free chlorine analyzer as the regulatory analyzer used to monitor secondary disinfection in the distribution system. Based on the review of the trends of free chlorine residuals at Judge Avenue Valve for the inspection period, it appears that the continuous monitoring met the requirements in terms of the required minimum testing and recording frequency.

Secondary disinfection residual was additionally monitored in at least 17 locations in the distribution system each week during collection of weekly bacteriological samples.

Question ID	DWMR1030000	Question Type	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 7-2 | (1); SDWA | O. Reg. 170/03 | 7-2 | (2);

Question:
Is primary disinfection chlorine monitoring being conducted at a location approved by MDWL and/or DWWP issued under Part V of the SDWA, or at/near a location where the intended CT has just been achieved?

Compliance Response(s)/Corrective Action(s)/Observation(s):
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 chlorine monitoring is conducted at the exit from chlorine contact tank no. 2, at the location where the intended CT has just been achieved.

Question ID	DWMR1032000	Question Type	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 7-3 | (2);

Question:
If the drinking water system obtains water from a surface water source and provides filtration, is continuous monitoring of each filter effluent line being performed for turbidity?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Continuous monitoring of each filter effluent line was being performed for turbidity.

Question ID	DWMR1035000	Question Type	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 6-5 | (1)1-4; SDWA | O. Reg. 170/03 | 6-5 | (1)5-10;

Question:
Are operators examining continuous monitoring test results and are they examining the results within 72 hours of the test?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Operators were examining continuous monitoring test results and they were examining the results within 72 hours of the test.

Note: Considering that the Judge Ave free chlorine analyzer is used for regulatory monitoring of free chlorine residual in the distribution system, it is recommended to specifically state that the results from this analyzer were reviewed in the facility's logbooks in addition to the round sheets.

Question ID	DWMR1038000	Question Type	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 6-5 | (1)1-4;

Question:
Is continuous monitoring equipment that is being utilized to fulfill O. Reg. 170/03 requirements 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?

Compliance Response(s)/Corrective Action(s)/Observation(s):
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.

Question ID	DWMR1037000	Question Type	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 6-5 | (1)1-4; SDWA | O. Reg. 170/03 | 6-5 | (1)5-10; SDWA | O. Reg. 170/03 | 6-5 | (1.1);

Question:
Are all continuous monitoring equipment utilized for sampling and testing required by O. Reg. 170/03, or MDWL or DWWP or order, equipped with alarms or shut-off mechanisms that satisfy

the standards described in Schedule 6?

Compliance Response(s)/Corrective Action(s)/Observation(s):

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.

Section 6-5 of Schedule 6 of O. Reg. 170/03 requires that the continuous monitoring equipment must have a feature that ensures that no water is directed to users or cause an alarm to signal at a location where the equipment conducts tests and where a person is always present in the event a test result for a parameter is above the maximum alarm standard or below the minimum alarm standard specified in the Table to this section for the parameter and in the event the equipment malfunctions or loses power or malfunctions.

The maximum alarm standard for turbidity is 1.0 Nephelometric Turbidity Units (NTU). The minimum alarm standard for free chlorine residual required to achieve primary disinfection is 0.1 mg/L less than the concentration of free chlorine residual that is required to achieve primary disinfection. The minimum alarm standard for continuous monitoring of free chlorine residual secondary disinfection is required to be set at 0.05 mg/L.

The regulatory free chlorine residual low level alarm after primary disinfection (i.e. analyzer after contact tank # 2) was set at 0.70 mg/L and would immediately trigger a plant shutdown. This facility also had a low low level alarm for virus log removal after primary disinfection set at 5.0 log removal and would immediately trigger a plant shutdown.

All thirteen turbidity analyzers on filter racks were set to alarm and shut down at high high turbidity at 0.10 NTU without delay.

The continuous free chlorine analyzer at Judge Ave Valve was set to alarm at 0.3 mg/L without delay.

Question ID	DWMR1040000	**Question Type**	Legislative

Legislative Requirement(s):

SDWA | O. Reg. 170/03 | 6-5 | (1)1-4; SDWA | O. Reg. 170/03 | 6-5 | (1)5-10;

Question:

Are all continuous analysers calibrated, maintained, and operated, in accordance with the manufacturer's instructions or the regulation?

Compliance Response(s)/Corrective Action(s)/Observation(s):

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

Continuous chlorine analyzers and turbidity analyzers are calibrated monthly.

Question ID	DWMR1108000	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 6-5 | (1)1-4; SDWA | O. Reg. 170/03 | 6-5 | (1)5-10; SDWA | O. Reg. 170/03 | 6-5 | (1.1);

Question:
Where continuous monitoring equipment used for the monitoring of free chlorine residual, total chlorine residual, combined chlorine residual or turbidity, required by O. Reg. 170/03, an Order, MDWL, or DWWP issued under Part V, SDWA, has triggered an alarm or an automatic shut-off, did a qualified person respond in a timely manner and take appropriate actions?

Compliance Response(s)/Corrective Action(s)/Observation(s):
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.

Question ID	DWMR1039000	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 1-6 | (3);

Question:
If primary disinfection equipment that does not use chlorination or chloramination is provided, has the owner and operating authority ensured that the equipment has a recording device that continuously records the performance of the disinfection equipment?

Compliance Response(s)/Corrective Action(s)/Observation(s):
The owner and operating authority did not ensure that the primary disinfection equipment had a recording device that continuously recorded the performance of the disinfection equipment.

Required action:

The operating authority took adequate action to resolve this issue.

No further action required.

Condition 1.6.2 of Schedule C to the MDWL specifies that for primary and secondary UV disinfection systems at North Bay Water Treatment Plant and while directing water to the distribution system, the ultraviolet light disinfection equipment must test for intensity, flow rate, UV transmittance (UVT), UV lamp status at a testing frequency of once every five (5) minutes or less and record the test data at a recording frequency of once every four (4) hours or less.

There were three events during which the UV transmittance analyzer was not continuously measuring and recording the transmittance values due to operational issues with the sample pump for the UVT analyzer:
1. From July 27, 2023 at 10:33 to August 2, 2023 at 12:08 (WTP was providing water to users with the UVT analyzer not reading and recording UVT values for total of 5 days and 17 hours).
2. From August 3, 2023 at 14:54 to August 4, 2023 at 13:54 (WTP was providing water to users

with the UVT analyzer not reading and recording UVT values for 23 hours) and
3. On August 8, 2023 from 09:28 to 12:32 (WTP was providing water to users with the UVT analyzer not reading and recording UVT values for 3 hours and 8 minutes)

In order to address the issue, the operating authority replaced a sample pump and identified and solved a problem with the wiper unit. As of August 4, 2023, the UVT analyzer has been operational.

The UVT transmittance value has manually been set at 79% for all five UV reactors at North Bay WTP since June 20, 2023. The operating authority indicated that this value was selected to be conservative as the UVT analyzer consistently reads greater than 80%.

Failure to ensure that the disinfection equipment has a recording device that continuously records the performance of the disinfection equipment, if primary disinfection equipment that does not use chlorination or chloramination is provided by a large municipal residential system, is a violation of Subsection 1-6(3) of Schedule 1 to O. Reg. 170/03.

Question ID	DWMR1109000	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 1-6 | (1);

Question:
If the system uses equipment for primary disinfection other than chlorination or chloramination and the equipment has malfunctioned, lost power or ceased to provide the appropriate level of disinfection, causing an alarm or an automatic shut-off, did a qualified person respond in a timely manner and take appropriate actions?

Compliance Response(s)/Corrective Action(s)/Observation(s):
When failure(s) of primary disinfection equipment, other than that used for chlorination or chloramination, caused an alarm to sound or an automatic shut-off to occur, a certified operator responded in a timely manner and took appropriate actions.

Note: A review of the monthly summary reports of UV alarms revealed that there were UV alarm events on the reports that were not marked as on/off specifications (December 2022, January and February 2023,) and that there were two events missing other information (March 2023 – alarm duration, operator, action taken, July 2023 – alarm duration).

The owner/operating authority is reminded that as per Condition 1.6.4 to Schedule C to North Bay DWS MDWL, the monthly summary report of UV alarms must contain the following information: time, date and duration of each UV equipment alarm (the disinfection equipment is malfunctioning, has lost power, or is not providing the appropriate level of disinfection), the volume of water treated during each alarm period and the actions taken by the operating authority to correct the alarm situation.

Question ID	DWMR1042000	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | 31 | (1);

Question:
If UV disinfection is used were duty sensors and reference UV sensors checked and calibrated as per the requirements of Schedule E of the MDWL or at a frequency as otherwise recommended by the UV equipment manufacturer?

Compliance Response(s)/Corrective Action(s)/Observation(s):
All UV sensors were checked and calibrated as required.

Question ID	DWMR1099000	**Question Type**	Information

Legislative Requirement(s):
Not Applicable

Question:
Do records 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)?

Compliance Response(s)/Corrective Action(s)/Observation(s):
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).

There was one lead exceedance in the inspection period (AWQI no. 163836).

Question ID	DWMR1081000	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 10-2 | (1); SDWA | O. Reg. 170/03 | 10-2 | (2); SDWA | O. Reg. 170/03 | 10-2 | (3);

Question:
For LMR systems, are all microbiological water quality monitoring requirements for distribution samples being met?

Compliance Response(s)/Corrective Action(s)/Observation(s):
All microbiological water quality monitoring requirements prescribed by legislation for distribution samples in a large municipal residential system were being met.

Subsection 10-2(1)(a) to Schedule 10 of O. reg. 170/03 requires that if a system serves 100,000 people or less, at least 8 distribution samples, plus 1 additional distribution sample for every 1,000 people served by the system, are taken each month, with at least 1 of the samples being taken in each week.

Based on the 2021 census population of North Bay (52,662), at least 61 samples are required to be taken each month. During the inspection period, at least 17 samples from distribution were

collected weekly (16 in the week March 31 – April 6, 2023) and tested for E. coli and total coliforms, resulting in 68 to 85 monthly samples. Every week, five distribution samples were tested for HPC (four in the week March 31 – April 6, 2023), meeting the requirement to have at least 25 per cent of the samples tested for this parameter.

Question ID	DWMR1083000	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 10-3;

Question:
For LMR systems, are all microbiological water quality monitoring requirements for treated samples being met?

Compliance Response(s)/Corrective Action(s)/Observation(s):
All microbiological water quality monitoring requirements prescribed by legislation for treated samples were being met.

Section 10-3 of Schedule 10 of O. Reg. 170/03 requires the owner of a drinking-water system and the operating authority for the system must ensure that a treated water sample is taken at least once every week and tested for Escherichia coli, total coliforms and general bacteria population expressed as colony counts on a heterotrophic plate count (HPC).

During the inspection period, samples of treated water were collected once every week and tested for Escherichia coli, total coliforms and HPC.

Question ID	DWMR1096000	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 6-3 | (1);

Question:
Do records confirm that chlorine residual tests are being conducted at the same time and at the same location that microbiological samples are obtained?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Records confirmed that chlorine residual tests were being conducted at the same time and at the same location that microbiological samples were obtained.

Question ID	DWMR1084000	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 13-2;

Question:
Are all inorganic water quality monitoring requirements prescribed by legislation conducted within the required frequency?

Compliance Response(s)/Corrective Action(s)/Observation(s):

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

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

A sample was collected and tested for every parameter set out in Schedule 23 on July 17, 2023.

Question ID	DWMR1085000	**Question Type**	Legislative

Legislative Requirement(s):

SDWA | O. Reg. 170/03 | 13-4 | (1); SDWA | O. Reg. 170/03 | 13-4 | (2); SDWA | O. Reg. 170/03 | 13-4 | (3);

Question:

Are all organic water quality monitoring requirements prescribed by legislation conducted within the required frequency?

Compliance Response(s)/Corrective Action(s)/Observation(s):

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

Subsection 13-4 of Schedule 13 of O. Reg. 170/03 requires the owner of a large municipal residential system and the operating authority for the system shall ensure that at least one water sample is taken every 12 months, if the system obtains water from a raw water supply that is surface water and tested for every parameter set out in Schedule 24.

A sample was collected and tested for every parameter set out in Schedule 24 on July 17, 2023.

Question ID	DWMR1086000	**Question Type**	Legislative

Legislative Requirement(s):

SDWA | O. Reg. 170/03 | 13-6.1 | (1); SDWA | O. Reg. 170/03 | 13-6.1 | (2); SDWA | O. Reg. 170/03 | 13-6.1 | (3); SDWA | O. Reg. 170/03 | 13-6.1 | (4); SDWA | O. Reg. 170/03 | 13-6.1 | (5); SDWA | O. Reg. 170/03 | 13-6.1 | (6);

Question:

Are all haloacetic acid water quality monitoring requirements prescribed by legislation conducted within the required frequency and at the required location?

Compliance Response(s)/Corrective Action(s)/Observation(s):

All haloacetic acid water quality monitoring requirements prescribed by legislation were conducted within the required frequency and at the required location.

Section 13-6.1 of Schedule 13 of O. Reg. 170/03 requires that the owner of a drinking water system that provides chlorination and the operating authority for the system must ensure that at least one distribution sample is taken in each calendar quarter, from a point in the drinking water

systems 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 and tested for haloacetic acids (HAAs). O. Reg. 170/03 defines the "calendar quarter" as the three-month period that begins on January 1, April 1, July 1 or October 1. Effective January 1, 2020, a standard for HAAs was introduced. The standard is 0.08 mg/L (80 µg/L) and is expressed as a running annual average (RAA) of quarterly results.

Samples were collected and tested for HAAs from the distribution system in the three month periods meeting requirements of O. Reg. 170/03. The RAA for the period March 6, 2023 to December 5, 2023 was 0.067 mg/L (67 µg/L).

Question ID	DWMR1087000	**Question Type**	Legislative

Legislative Requirement(s):

SDWA | O. Reg. 170/03 | 13-6 | (1); SDWA | O. Reg. 170/03 | 13-6 | (2); SDWA | O. Reg. 170/03 | 13-6 | (3); SDWA | O. Reg. 170/03 | 13-6 | (4); SDWA | O. Reg. 170/03 | 13-6 | (5); SDWA | O. Reg. 170/03 | 13-6 | (6);

Question:

Have all trihalomethane water quality monitoring requirements prescribed by legislation been conducted within the required frequency and at the required location?

Compliance Response(s)/Corrective Action(s)/Observation(s):

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

Subsection 13-6 of Schedule 13 of O. Reg. 170/03 requires the owner of a drinking water system that provides chlorination and the operating authority for the system must ensure that at least one distribution sample is taken in each calendar quarter, from a point in the drinking water system's distribution system that is likely to have an elevated potential for the formation of trihalomethanes and tested for trihalomethanes (THMs). O. Reg.169/03 sets the standard for THMs at 0.100 mg/L (100 µg/L) expressed as a RAA for THMs for a drinking water system.

The municipality has conducted extensive THM sampling program to assess where they are being formed and what the THM values are throughout the distribution system. Samples are collected and tested for THM monthly at the WTP at the point of entry and at 12 locations in the distribution system: at the entry and exit of water into the Ellendale High Lift Pump Station and 10 locations throughout the distribution system. In 2023, THM concentrations ranged from 32 to 137 µg/L in the distribution system. As of December 5, 2023, the running annual average (RAA) for THM of all samples collected in the distribution system was 64 µg/L.

Question ID	DWMR1088000	**Question Type**	Legislative

Legislative Requirement(s):

SDWA | O. Reg. 170/03 | 13-7;

Question:

Are all nitrate/nitrite water quality monitoring requirements prescribed by legislation conducted within the required frequency for the DWS?

Compliance Response(s)/Corrective Action(s)/Observation(s):

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

Section 13-7 of Schedule 13 of O. Reg. 170/03 requires that the owner of a drinking water system and the operating authority for the system must ensure that at least one water sample is taken every three months and tested for nitrate and nitrite.

Data review confirmed that samples of treated water were collected and tested for nitrate/nitrite with the required frequency.

Question ID	DWMR1089000	**Question Type**	Legislative

Legislative Requirement(s):

SDWA | O. Reg. 170/03 | 13-8;

Question:

Are all sodium water quality monitoring requirements prescribed by legislation conducted within the required frequency?

Compliance Response(s)/Corrective Action(s)/Observation(s):

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

Section 13-8 of Schedule 13 requires that the owner of a drinking water system and the operating authority for the system must ensure that at least one treated water sample is taken every 60 months and tested for sodium.

The most recent sodium sample was collected on July 18, 2022.

Question ID	DWMR1091000	**Question Type**	Legislative

Legislative Requirement(s):

SDWA | O. Reg. 170/03 | 7-4;

Question:

Where fluoridation is practiced, are the required daily samples being taken at the end of the fluoridation process?

Compliance Response(s)/Corrective Action(s)/Observation(s):

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

Question ID	DWMR1094000	**Question Type**	Legislative

Legislative Requirement(s):

SDWA | 31 | (1);

Question:
Are all water quality monitoring requirements imposed by the MDWL and DWWP being met?

Compliance Response(s)/Corrective Action(s)/Observation(s):
All water quality monitoring requirements imposed by the MDWL or DWWP issued under Part V of the SDWA were being met.

Section 5 to Schedule C of the North Bay DWS MDWL requires that quarterly samples are taken of at a minimum 11 perfluorinated alkyl substances (PFAS) parameters in raw and treated water. Samples are to be collected in accordance with subsection 6-1.1(4) of Schedule 6 to O. Reg. 170/03, i.e. the owner must ensure that a sample is taken at least 60 days and not more than 120 days after a sample was taken for the previous three month period.

A review of the sampling records confirmed that sampling for the required parameters was done with the required frequency for both raw and treated water.

Question ID	DWMR1103000	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 15.1-10;

Question:
Have corrective actions as directed by the Medical Officer of Health been taken by the owner and operating authority to address exceedances of the lead standard in plumbing?

Compliance Response(s)/Corrective Action(s)/Observation(s):
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.

Question ID	DWMR1113000	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 10.1 | (3);

Question:
Have all changes to the system registration information been provided to the Ministry within ten (10) days of the change?

Compliance Response(s)/Corrective Action(s)/Observation(s):
All changes to the system registration information were provided within ten (10) days of the change.

Question ID	DWMR1060000	**Question Type**	Legislative

Legislative Requirement(s):
SDWA | 31 | (1);

Question:

Do the operations and maintenance manuals meet the requirements of the DWWP and MDWL issued under Part V of the SDWA?

Compliance Response(s)/Corrective Action(s)/Observation(s):

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.

Question ID	DWMR1062000	**Question Type**	Legislative

Legislative Requirement(s):

SDWA | O. Reg. 170/03 | 7-5;

Question:

Do records or other record keeping mechanisms confirm that operational testing not performed by continuous monitoring equipment is being done by a certified operator, water quality analyst, or person who meets the requirements of O. Reg. 170/03 7-5?

Compliance Response(s)/Corrective Action(s)/Observation(s):

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.

Question ID	DWMR1071000	**Question Type**	BMP

Legislative Requirement(s):

Not Applicable

Question:

Has the owner provided security measures to protect components of the drinking water system?

Compliance Response(s)/Corrective Action(s)/Observation(s):

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

The WTP and all of the DS components were equipped with locked doors and intruder alarms. The following locations include additional measures:

- North Bay WTP – key-card swipe sensors to enter building and to enter the treatment area, video surveillance of the property, exterior lighting and fenced in area;
- Airport Road Standpipe – located in a fenced in area;
- Larocque Standpipe - located in fenced in area;
- Birchs Road Standpipe – located in a fenced in area and gated entry to roadway;
- Cedar Heights Pump Station - located in fenced in area;
- Ellendale Reservoir – video surveillance, double steel door for main entrance and single door security gate on access door to the reservoir, both equipped with locks and fencing around the reservoir access to prevent unauthorized entry into the reservoir.
- Judge Ave Valve – located in a locked building equipped with intrusion alarm.

Question ID	DWMR1073000	Question Type	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 128/04 | 23 | (1);

Question:
Has the overall responsible operator been designated for all subsystems which comprise the drinking water system?

Compliance Response(s)/Corrective Action(s)/Observation(s):
The overall responsible operator had been designated for each subsystem.

During the inspection period, Jonathan Dewey was designated as the overall responsible operator for the North Bay Water Treatment Plant subsystem and Scott Taggart as the overall responsible operator for the North Bay Water Distribution subsystem.

Question ID	DWMR1074000	Question Type	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 128/04 | 25 | (1);

Question:
Have operators-in-charge been designated for all subsystems which comprise the drinking water system?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Operators-in-charge had been designated for all subsystems which comprise the drinking water system.

Question ID	DWMR1075000	Question Type	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 128/04 | 22;

Question:
Do all operators possess the required certification?

Compliance Response(s)/Corrective Action(s)/Observation(s):
All operators possessed the required certification.

Question ID	DWMR1076000	Question Type	Legislative

Legislative Requirement(s):
SDWA | O. Reg. 170/03 | 1-2 | (2);

Question:
Do only certified operators make adjustments to the treatment equipment?

Compliance Response(s)/Corrective Action(s)/Observation(s):
Only certified operators made adjustments to the treatment equipment.

Question ID	DWMR1117000	Question Type	Information

Legislative Requirement(s):
Not Applicable

Question:
Are there any other DWS related items that should be recognized in this report?

Compliance Response(s)/Corrective Action(s)/Observation(s):
The following items are noted as being relevant to the Drinking Water System:

Until the 1990s, Canadian Forces Base in North Bay had fire training facilities where foams containing per- and polyfluoroalkyl substances (PFAS) were used for practice drills. This resulted in contamination of Trout Lake, City of North Bay's drinking water source with PFAS. The existing drinking water treatment at North Bay is not capable of removing PFAS from the drinking water. The City of North Bay is mandated by its DWWP to take quarterly samples of 11 PFAS parameters in raw and treated water. Total PFAS levels in raw and treated water are consistently about 60 ng/L.

There are no Ontario drinking water standards for PFAS. The ministry has developed an interim advice value (IAV) of 70 ng/L for the sum of 11 toxicologically relevant PFAS. In February 2023, Health Canada posted a consultation document to the public that recommends treatment if more than a total of 30 ng/L of per- and polyfluoroalkyl substances (PFAS) are present.

The city has undertaken a treatability study to provide options for treatment of PFAS to respond to potential future regulatory changes related to PFAS.

APPENDIX A

INSPECTION RATING REPORT

Ministry of the Environment, Conservation and Parks - Inspection Summary Rating Record (Reporting Year - 2023-24)

DWS Name:	NORTH BAY DRINKING WATER SYSTEM
DWS Number:	220000460
DWS Owner:	THE CORPORATION OF THE CITY OF NORTH BAY
Municipal Location:	NORTH BAY
Regulation:	O.REG. 170/03
DWS Category:	DW Municipal Residential
Type of Inspection:	Focused
Inspection Date:	Dec-4-23
Ministry Office:	North Bay Area Office

Maximum Risk Rating: 529

Inspection Module	Non Compliance Risk (X out of Y)
Capacity Assessment	0/30
Certification and Training	0/42
Logbooks	0/14
Operations Manuals	0/14
Reporting & Corrective Actions	0/60
Source	0/0
Treatment Processes	25/257
Water Quality Monitoring	0/112
Overall - Calculated	**25/529**

Inspection Risk Rating:	**4.73%**

Final Inspection Rating:	**95.27%**

Inspection Rating Record Generated On 2024-02-22 (Inspection ID: 1-189616384)

DWS Name: NORTH BAY DRINKING WATER SYSTEM
DWS Number: 220000460
DWS Owner Name: THE CORPORATION OF THE CITY OF NORTH BAY
Municipal Location: NORTH BAY

Regulation: O.REG. 170/03
DWS Category: DW Municipal Residential
Type of Inspection: Focused
Inspection Date: Dec-4-23
Ministry Office: North Bay Area Office

Non-Compliance Question(s)	Non Compliance Risk
Treatment Processes	
Were all parts of the drinking water system that came in contact with drinking water (added, modified, replaced or extended) disinfected in accordance with a procedure listed in Schedule B of the Drinking Water Works Permit?	21
If primary disinfection equipment that does not use chlorination or chloramination is provided, has the owner and operating authority ensured that the equipment has a recording device that continuously records the performance of the disinfection equipment?	4
Overall - Total	**25**

Maximum Question Rating: 529

Inspection Risk Rating:	**4.73%**
FINAL INSPECTION RATING:	**95.27%**

APPENDIX B

DRINKING WATER SYSTEM COMPONENTS

DWS Component Information Report for 220000460

as of 20-FEB-2024

Drinking Water System Profile Information

DWS # 220000460
MOE Assigned Name North Bay Drinking Water System
Category LMRS
Regulation O.REG 170/03
DWS Type Water Treatment Plant
Source Type Surface Water
Address 248 Lakeside Drive, North Bay, Ontario, P1A 3E3, Canada
Region Northern Region
District North Bay Area Office
Municipality North Bay
Public Health Unit North Bay Parry Sound District Health Unit

LWIS Component Name	LWIS Component Type	LWIS Component Sub-Type	Component Address	Comments
Ellendale Reservoir	Other	Reservoir	East End Ellendale Drive,	The Ellendale Reservoir is a double cell, 18,200 m³ capacity reservoir equipped with two sodium hypochlorite re-chlorination systems and four (4) high lift pumps to maintain pressure in the system. The facility is also comprised of on-line, continuous water quality analyzers for free chlorine and turbidity and a stand-by power system to operate the entire facility during power outages.
Cedar Heights Booster Pumping Station (Bps)	Other	Other		The Cedar Height BPS is a facility located on College Drive. The facility is equipped with two (2) centrifugal pumps for the purpose of maintaining pressure in the distribution system. The building also has an on-line continuous water quality analyzer for free chlorine, pressure tanks and a standby diesel generator. The booster station was commissioned 2019.
Raw Water Intake	Source	Surface	248 Lakeside Drive,	The North Bay Water Treatment Plant (WTP) draws its raw water from Trout Lake which is part of the Mattawa River watershed. The intake structure is located in Delaney Bay, approximately 300 m from shore, at a depth of 21.5 meters. The plant's intake facilities consist of a 1,200 mm diameter polyethylene pipe extending 300 m into Trout Lake to an intake structure located approximately 3.6 meters off the lake bottom with a capacity of 80,000m³/day. The North Bay Water Treatment Plant is also equipped with another intake pipe and structure described as follows: a 900 mm iron intake (not in service) extending 122 m into Trout Lake at a depth of 7.6 meters, 1.5 meters off the lake bottom, with a capacity of 50,000m³/day.
North Bay Water Treatment Plant	Treated Water Poe	Treatment Facility		The North Bay WTP went into service on February 17, 2010. This facility operates on a multi-barrier approach which consists of microfiltration membrane filtration followed by ultraviolet (UV) radiation, chlorination, a high lift pumping station, and a fluoridation system. This facility has two treatment systems (i.e. primary and

LWIS Component Name	LWIS Component Type	LWIS Component Sub-Type	Component Address	Comments
				secondary) both with separate microfiltration racks and separate UV disinfection systems with different dosages. Raw water enters the water plant through an intake/junction chamber and passes through five 300 micron automatic feed strainers before being directed to the primary membrane filtration system. The primary treatment system has 11 filter racks (with 64 modules each) and three UV reactors dosing at 10 millijoules/cm² (mJ/cm²). Treated water is then directed to the contact chamber for chlorination. The secondary treatment system is fed from the non-chemical backwash water of the primary microfiltration system and has two filter racks (with 40 modules each) and two UV reactors dosing at 15 mJ/cm². Treated water from the secondary UV system is then directed to the primary UV system for additional treatment prior to entering the contact chamber for chlorination. The chlorine contact chamber consists of two tanks which can be operated in series or separately. Tank # 1 has a storage volume of 688 m³ and Tank # 2 a storage volume of 502 m³. Once water has passed through the contact chamber it is directed to the high lift pump wet wells. Wet well # 1 has the capacity of 240 m³ and is equipped with one variable speed pump and two constant speed vertical turbine pumps. Wet well # 2 has a capacity of 240 m³ and is equipped with one variable speed pump and one constant speed turbine pump. This facility is also equipped with a dual fuel (natural gas/diesel) generator for backup power with a rating of 2050 kW to supply power during emergencies and high demand periods. Chemical wastewater generated on-site is directed to the neutralization tank where the pH and chlorine concentration are adjusted. Note: On March 28, 2011 a Schedule C amendment to Drinking Water Works Permit (DWWP) No. 196-201 was approved which permitted the installation of piping and valving for bypassing the membrane filtration system in the event of a catastrophic membrane-SCADA failure.
	Victor Fedeli			
Canadore Pumping Station	Other	Other		The Canadore Pumping Station is a facility located at the corner of Gormanville Road and McKeown Avenue. The facility is equipped with three (3) high lift pumps and a fire pump all for the purpose of maintaining pressure in the distribution system. The building also has an on-line continuous water quality analyzer for free chlorine, pressure tanks and a standby diesel generator. Note: The pump station has been offline since the date the Cedar Height Booster Pumping Station was brought online.

DWS Component Information Report for 220000460

as of 20-FEB-2024

LWIS Component Name	LWIS Component Type	LWIS Component Sub-Type	Component Address	Comments
Birchs Road Standpipe And Rechlorination Station	Other	Reservoir	Southwest Corner Birchs & Booth Roads,	The Birchs Road Standpipe and Rechlorination Station is an 11,775 m³ capacity, steel unbaffled treated water standpipe equipped with a sodium hypochlorite rechlorination system. The facility is also comprised of on-line, continuous water quality analyzers for free chlorine residual and turbidity and standby power to run the entire facility during a power outage. Note: On December 19, 2014 a Schedule C amendment to the DWWP was approved which permitted the installation of a submersible mixer at the Birchs Road standpipe.
Larocque Water Storage Standpipe	Other	Reservoir		The Larocque Water Storage Standpipe is located on Larocque Road and has a capacity of 4,100 m³. The standpipe was commissioned in December 2019.
Judge Avenue Valve Chamber And Rechlorination Station	Other	Other	Northeast Corner Judge Avenue & Lakeshore Drive,	The Judge Avenue Valve Chamber and Rechlorination Station is equipped with a sodium hypochlorite re-chlorination system. The facility has continuous water quality analyzers for free chlorine and turbidity, standby power to run the entire facility during power outages and a UPS battery with three hours of standby power to maintain the SCADA system. Note: The rechlorination equipment is kept off site as it is not presently in-use.
Airport Road Standpipe	Other	Reservoir		The Airport Road Standpipe and Booster Pumping Station are located at the intersection of Airport Road and Airport Way in North Bay. Based on information contained in the DWWP, the standpipe is 26.2m high by 13.7m in diameter. Its capacity is 3,862m³ intended to provide storage for fire, equalization and emergency purposes for pressure Zones 4 and 5. The pumping station is supplied water from Zone 3 to pressure Zone 4 via a new 500 mm water main. The pump house is equipped with three (3) pumps for this Pressure Zone 4 and four (4) pumps for Pressure Zone 5. The pump house is also equipped with two (2) high capacity pumps, a sodium hypochlorite rechlorination system and a 350 kW diesel generator set for emergency power. The standpipe and pumping station was commissioned in the fall of 2009. Note: Under normal operation, Zone 4 is fed via gravity from the standpipe via the new 500 mm water main.
Cfb Standpipe (New 2021)	Other	Reservoir		The CFB Standpipe is a glass fused to steel un-baffled tank with an electric mixer inside, it is located on the Airport Standpipe property and shares all the buildings resources such as the PLC and standby generator. This Standpipe has a volume of 2,280m3 and supplies water to zone 3 and to the Airport Standpipe. The piping at this facility allows this standpipe to also supply water for zone 5 during emergencies and maintenance activities.

DWS Component Information Report for 220000460

as of 20-FEB-2024

LWIS Component Name	LWIS Component Type	LWIS Component Sub-Type	Component Address	Comments
Cfb Reservoir	Other	Reservoir	North End Manston Crescent,	The Canadian Forces Base (CFB) Reservoir comprised of 1820m³ reservoir and pumping facilities. The building also has an on-line continuous water quality analyzer for free chlorine and a standby diesel generator. However, since the addition of the Airport Standpipe this facility is only used for water storage. Note: In October 2021, this reservoir was decommissioned and replaced by the CFB Standpipe.

APPENDIX C

REFERENCE MATERIALS

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

Ontario

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

De nombreux documents utiles peuvent vous aider à exploiter votre réseau d'eau potable. Vous trouverez ci-après une liste de documents que les propriétaires et exploitants de réseaux résidentiels municipaux d'eau potable utilisent fréquemment. Pour accéder à ces documents en ligne, cliquez sur leur titre dans le tableau ci-dessous ou faites une recherche à l'aide de votre navigateur Web. Communiquez avec le ministère au 1-866-793-2588, ou encore à waterforms@ontario.ca si vous avez des questions ou besoin d'aide.

Pour plus de renseignements sur l'eau potable en Ontario, consultez le site www.ontario.ca/eaupotable

TITRE DE LA PUBLICATION	NUMÉRO DE PUBLICATION
Renseignements sur le profil du réseau d'eau potable Avis de demande de services de laboratoire Avis de résultats d'analyse insatisfaisants et de règlement des problèmes	012-2149F 012-2148F 012-4444F
Prendre soin de votre eau potable - Un guide destiné aux membres des conseils municipaux	Site Web
Marche à suivre pour désinfecter l'eau portable en Ontario	Site Web
Stratégies pour minimiser les trihalométhanes et les acides haloacétiques de sous-produits de désinfection	Site Web
Filtration Processes Technical Bulletin (en anglais seulement)	Site Web
Ultraviolet Disinfection Technical Bulletin (en anglais seulement)	Site Web
Guide de présentation d'une demande de modification du permis d'aménagement de station de production d'eau potable	Site Web
Guide sur l'accréditation des exploitants de réseaux d'eau potable et des analystes de la qualité de l'eau de réseaux d'eau potable	Site Web
Guide sur les exigences relatives à la formation des exploitants de réseaux d'eau potable	9802F
Échantillonnage et analyse du plomb dans les collectivités : échantillonnage normalisé ou réduit et admissibilité à l'exemption	Site Web
Liste des personnes-ressources du réseau d'eau potable	Site Web
L'eau potable en Ontario - Norme de gestion de la qualité - Guide de poche	Site Web
Procédure de désinfection des conduites principales	Site Web
Laboratoires autorisés	Site Web

Ontario