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January 15, 2020

Ms. Belinda Ketchabaw
CAO, Clerk Treasurer
The Corporation of the Township of Nairn and Hyman
64 McIntyre Street
Nairn Centre, Ontario
P0M 2L0

Dear Ms. Ketchabaw:

Re: Nairn Centre Drinking Water System Final Inspection Report 2019-20

Please find attached the 2019-20 Annual Inspection Report for the Nairn Centre Drinking Water System.

The components of the system that were reviewed at the time of inspection, and the documentation provided, were generally found to be in proper order.

There were however two minor items of concern that were identified during the inspection:

1. **Chlorine Residual Distribution Sample missing for January 2, 2019:** (Only two samples were collected instead of three. Please see pages 8 and 10 of the attached report);
2. **Quarterly Nitrate/Nitrite sample missing for the 2nd Quarter of 2019:** (Please see page 18 of the attached report).

Please review these findings, and if any improvements can be made (operationally, training, or otherwise), it is strongly recommended that such improvements be considered.

This matter will be reviewed at the next Annual Inspection.

Also included with the Report is the Inspection Rating Record (IRR) for the Nairn Centre Drinking Water System; please feel free to share this information with your Municipal council.

Please note that a copy of this Inspection Report has been provided to the Sudbury and District Health Unit as per the Ministry's Drinking Water Inspection Protocol.

Also please note that 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. As such, 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 council" found under "Resources" on the Drinking Water Ontario website at www.ontario.ca/drinkingwater.

I would like to thank OCWA staff for their cooperation during the inspection, as it was much appreciated.

Should you have any questions regarding the attached document, please feel free to contact me at 705-919-3251.

Yours truly,



Marc Chalifoux | Water Inspector
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Drinking Water and Environmental Compliance Division
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cc: Natalie Wager, Process and Compliance Technician, OCWA, Espanola Hub
Keith Stringer, Operations Manager, OCWA, Espanola Hub
Burgess Hawkins, Manager-Environmental Health Division, SDHU

File SI DS NC FE 540



Ministry of the Environment, Conservation and Parks

**NAIRN CENTRE DRINKING WATER SYSTEM
Inspection Report**

Site Number:	210002138
Inspection Number:	1-L7RUO
Date of Inspection:	Nov 13, 2019
Inspected By:	Marc Chalifoux

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OWNER INFORMATION:

Company Name:	NAIRN AND HYMAN, THE CORPORATION OF THE TOWNSHIP		
Street Number:	64	Unit Identifier:	
Street Name:	MCINTYRE St		
City:	NAIRN CENTRE		
Province:	ON	Postal Code:	P0M 2L0

CONTACT INFORMATION

Type:	Main Contact	Name:	Belinda Ketchabaw
Phone:	(705) 869-4232	Fax:	(705) 869-5248
Email:	nairncentre@personainternet.com		
Title:	CAO, Clerk Treasurer		
Type:	Operating Authority	Name:	Natalie Wager
Phone:	(705) 869-5578	Fax:	(705) 869-4374
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Title:	Process Compliance Technician		
Type:	Operating Authority	Name:	Keith Stringer
Phone:	(705) 368-0922	Fax:	(705) 368-0922
Email:	kstringer@ocwa.com		
Title:	Manager		

INSPECTION DETAILS:

Site Name:	NAIRN CENTRE DRINKING WATER SYSTEM
Site Address:	26 FERRY Street NAIRN CENTRE ON P0M 2L0
County/District:	NAIRN AND HYMAN
MECP District/Area Office:	Sudbury District
Health Unit:	SUDBURY AND DISTRICT HEALTH UNIT
Conservation Authority:	
MNR Office:	Espanola Regional Office
Category:	Large Municipal Residential
Site Number:	210002138
Inspection Type:	Announced
Inspection Number:	1-L7RUO
Date of Inspection:	Nov 13, 2019
Date of Previous Inspection:	Nov 06, 2018

COMPONENTS DESCRIPTION

Site (Name):	MOE DWS Mapping	Sub Type:	
Type:	DWS Mapping Point		
Site (Name):	RAW WATER		

Type: Source

Sub Type:

Comments:

The plant draws raw water from the Spanish River. Logging operations, landfilling and mining operations are all located within the overall watershed and may impact the raw water quality. Locally, residential septic beds and recreational boating may also impact raw water quality. Both the public boat launch and the plant's field bed are located very close to the low lift pumping station on the shores of the Spanish River. A zebra mussel system is not currently in use, however a sodium hypochlorite 75 mm diameter pipe is in place should such a system be required in the future.

Site (Name): TREATED WATER

Type: Treated Water POE

Sub Type:

Comments:

The Nairn Centre Water Treatment Plant is a Class 3 System, operating under Certificate No. 2810, issued October 27, 2005. The plant was originally commissioned in 1995, and is currently operated by the Ontario Clean Water Agency (OCWA).

The raw water intake is located in the Spanish River and is comprised of a polyethylene drum weighted down with rock ballast. The intake pipe is ~ 33 meters in length, and the raw water is gravity fed to a low lift pumping station, where two low lift pumps (alternating as duty and standby) are utilized to move water through a 150 mm supply line to the plant.

The package plant is designed to provide treatment elements in a compact setting, consisting of coagulation, flocculation, clarification and filtration through sand and anthracite dual media filters.

Liquid coagulant (PAC) and soda ash (pre-filtration) are injected upstream of the static mixer, with a liquid polymer injected just downstream. The three chemical additions are injected at manually set rates based on low lift pumping rates.

Soda ash (post-filtration) is also injected at the filter effluent line to control pH and provide corrosion control for the distribution system components.

Chlorination is by injection of Sodium Hypochlorite solution (stored in a 200L day tank), using two metering pumps (one duty, one standby). The chlorine is injected after the filters, upstream of the clear wells.

Filter backwash is gravity fed to a surge tank. Waste from this tank is pumped via two submersible pumps to a settling chamber. Supernatant, which is tested monthly for suspended solids, flows to a ditch and then to the Spanish River. Sludge from the settling tank is pumped as required via pumper truck and sent for proper disposal.

NOTE: It should be noted that Fluoride is no longer added to this Drinking Water System as part of the treatment process.

Site (Name): DISTRIBUTION (WATER INSPECTION)

Type: Other

Sub Type:

Comments:

The Nairn Centre Distribution System is a Class 1 system, operating under Certificate No. 3400, issued July 13, 2005. The system is operated by the Ontario Clean Water Agency (OCWA).

The distribution system serves a population of ~ 357 residents including 150 service connections. The system includes 50 hydrants and approximately 5 kilometers of PVC pipes. There are 13 dead ends within the distribution system.

INSPECTION SUMMARY:

Introduction

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

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

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

The Nairn Centre Water Treatment Plant is a conventional surface water treatment plant, that is owned by the Corporation of the Township of Nairn and Hyman, and Operated by the Ontario Clean Water Agency (OCWA), under "Municipal Drinking Water License Number 281-101" (Issue 2), dated November 25, 2015, and "Drinking Water Works Permit Number 281-201" (Issue 3), dated September 6, 2016, at a rated capacity of 818 cubic meters/day.

The treatment process is a "prefabricated package water treatment plant" that uses conventional treatment which includes chemical addition, alkalinity adjustment, coagulation/ flocculation, sedimentation, and dual media filtration, followed by pH adjustment and chlorination.

An inspection of the system was conducted on November 13, 2019, with the assistance of OCWA staff, Bill Hanson (Operator), and Natalie Wagar (Process Compliance Technician), and included a tour and physical review of the components of the Water Treatment Plant as identified under "Municipal Drinking Water License Number 281-101", (Issue 2), dated November 25, 2015, and "Drinking Water Works Permit Number 281-201", (Issue 3), dated September 6, 2016. Operations Manuals were also briefly reviewed at the time of inspection.

As part of the overall inspection, specific documentation, including log books, Daily Facility Reports, daily work sheets, calibration records, and analytical data were also requested and reviewed, covering the period of October 1, 2018 to September 30, 2019.

NOTE: It should also be noted that FLUORIDE is no longer added as part of the treatment process.

Source

- **Trends in source water quality were being monitored.**

The Nairn Centre Drinking Water System, is a conventional surface water treatment plant that is owned by the Corporation of the Township of Nairn and Hyman, and Operated by the Ontario Clean Water Agency (OCWA), under "Municipal Drinking Water License Number 281-101", (Issue 2), dated November 25, 2015, and "Drinking Water Works Permit Number 281-201", (Issue 3), dated September 6, 2016, at a rated capacity of 818 cubic meters/day.

The Water Treatment Plant, originally commissioned in 1995, is a Class 3 System, operating under Certificate No. 2810, issued October 27, 2005. The package plant is designed to provide treatment elements in a compact setting, consisting of coagulation, flocculation, clarification and filtration through sand and anthracite dual media filters.

Source

The source water is the Spanish River, and the intake (~ 33 meters in length) feeds the low lift pumping station by gravity, where two low lift pumps (alternating as duty and standby) move the water via a 150 mm supply line to the plant.

The source water is monitored on an ongoing basis (typically 3 times a week) for colour, pH, temperature, and alkalinity, and is subject to seasonal fluctuations. And although no impacts have been identified, logging, landfilling and mining operations are all within the overall watershed of the Spanish River, and have the potential to impact the raw water quality.

Locally, residential septic systems and recreational boating also have the potential to impact raw water quality. The public boat launch and the plant's field bed are also located within proximity to the low lift pumping station on the shores of the Spanish River. Nevertheless, no impacts or concerns have been identified.

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

Permit To Take Water

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

The Nairn Centre Water Treatment Plant operates under "Permit To Take Water, Surface Water, Number 6410-BAPR97", issued April 9, 2019, and has an expiry date of April 9, 2029.

The Permit restricts the water takings to a total taking of 820,800 litres/day. This volume is consistent with the rated capacity of the Water Treatment Plant which is 818 cubic meters/day, as identified under "Municipal Drinking Water License Number 281-101", (Issue 2), dated November 25, 2015.

Condition 4.1 of "Permit To Take Water, Surface Water, Number 6410-BAPR97" requires (among other things), that the Permit Holder maintain a record of all water takings, including the dates and times of water takings, and the total measured amounts of water pumped per day. Continuous flow measuring devices on both the raw water and treated water satisfy this requirement.

Raw water flow data for the facility was reviewed for the period between October 1, 2018 and September 30, 2019, and found to be in order, maintained consistently below the Permit to Take Water allowance of 820,800 litres/day.

Treated water flow data for the facility was also reviewed for the period between October 1, 2018 and September 30, 2019, and found to be in order, also maintained consistently below the plant's rated capacity of 818 cubic meters/day. No concerns were identified.

Capacity Assessment

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

The Nairn Centre Water Treatment Plant is a Surface Water Supply that operates under "Municipal Drinking Water License Number 281-101" (Issue 2), dated November 25, 2015, and "Drinking Water Works Permit Number 281-201" (Issue 3), dated September 6, 2016, at a rated capacity of 818 cubic meters/day.

Section 2.1, Schedule C, of "Municipal Drinking Water License Number 281-101" (Issue No. 2), dated November 25, 2015, requires (among other things), that there be continuous flow measurement and recording for:

2.1.1 - "the flow rate and daily volume of treated water that flows from the treatment subsystem to the distribution

Capacity Assessment

system"; and

2.1.2 - "the flow rate and daily volume of water that flows into the treatment system".

Continuous flow measuring devices on both the raw water and treated water satisfy this requirement. No concerns were identified in this regard.

- **The flow measuring devices were calibrated or verified in accordance with the requirements of the MDWL issued under Part V of the SWDA.**

It was identified during the course of the inspection that all flow meters and continuous analyzers, are calibrated, maintained, and operated in accordance with the manufacturers instructions or the Regulation. Calibration Records and Work Order Summaries were provided in this regard. No concerns were identified.

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

The Nairn Centre Water Treatment Plant operates under "Permit To Take Water, Surface Water, Number 6410BAPR97", issued April 9, 2019, which restricts the water taking to a total of 820,800 litres/day.

The Plant also operates under "Municipal Drinking Water License Number 281-101" (Issue 2), dated November 25, 2015, at a rated capacity of 818 cubic meters/day, which is consistent with the above noted Permit To Take Water.

Raw water flow data for the facility was reviewed for the period between October 1, 2018 to September 30, 2019, and found to be in order, maintained consistently below the Permit to Take Water allowance of 820,800 litres/day.

Treated water flow data for the facility was also reviewed for the period between October 1, 2018 to September 30, 2019, and also found to be in order, consistently maintained below the plant's rated capacity of 818 cubic meters/day. No concerns were identified.

- **Appropriate records of flows and any capacity exceedances were made in accordance with the Municipal Drinking Water Licence issued under Part V of the SDWA.**

The Nairn Centre Water Treatment Plant operates under "Permit To Take Water, Surface Water, Number 6410-BAPR97", issued April 9, 2019, which restricts the water taking to a total of 820,800 litres/day.

The Plant also operates under "Municipal Drinking Water License Number 281-101" (Issue 2), dated November 25, 2015, at a rated capacity of 818 cubic meters/day, which is consistent with the above noted Permit To Take Water.

Raw water flow data for the facility was reviewed for the period between October 1, 2018 to September 30, 2019, and found to be in order, maintained consistently below the Permit to Take Water allowance of 820,800 litres/day.

Treated water flow data for the facility was also reviewed for the period between October 1, 2018 to September 30, 2019, and also found to be in order, consistently maintained below the plant's rated capacity of 818 cubic meters/day. No concerns were identified.

Treatment Processes

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

The Nairn Centre Water Treatment Plant operates under "Municipal Drinking Water License Number 281-101" (Issue 2), dated November 25, 2015, and "Drinking Water Works Permit Number 281-201" (Issue 3), dated September 6, 2016.

Treatment Processes

The equipment as identified on the above noted documents was reviewed at the time of inspection, and generally found to be in order.

NOTE: It should be noted that FLUORIDE is no longer added to this Drinking Water System as part of the treatment process, and as such, all equipment previously used for the addition of fluoride has been removed. No concerns were identified in this regard.

- **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.**

The Nairn Centre Water Treatment Plant operates as a conventional surface water treatment plant under "Municipal Drinking Water License Number 281-101" (Issue 2), dated November 25, 2015, and "Drinking Water Works Permit Number 281-201" (Issue 3), dated September 6, 2016, at a rated capacity of 818 cubic meters/day.

The treatment process is a "prefabricated package water treatment plant" that uses conventional treatment which includes chemical addition, alkalinity adjustment, coagulation/ flocculation, sedimentation, and dual media filtration, followed by pH adjustment and chlorination.

The system is designed to meet the minimum 2-log removal of *Cryptosporidium* oocysts and 2.5-log removal of *Giardia* cysts, through chemically assisted filtration; and the minimum 0.5-log removal/inactivation of *Giardia* cysts and 4-log removal/inactivation of viruses, through disinfection by chlorination using sodium hypochlorite.

Process data and supporting documentation provided during the course of the inspection indicates that the Nairn Centre Water Treatment Plant is operating in accordance with these requirements.

With respect to Filter Effluent Turbidity, the Procedure for Disinfection of Drinking Water in Ontario, requires among other things, that the process meet the performance criterion for filtered water turbidity of less than or equal to 0.3 NTU in 95% of the measurements each month.

Filter Effluent Turbidity data provided during the course of the inspection, was reviewed for the period of October 1, 2018 to September 30, 2019, and generally found to be in order, meeting the performance criterion for filtered water turbidity of less than or equal to 0.3 NTU in 95% of the measurements each month. No concerns were identified.

- **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.**

The secondary disinfectant residual in the distribution system was previously measured using a continuous chlorine residual analyzer located at the Nairn Centre Community Centre.

Due to re-occurring problems with the analyzer however, it was decided in 2015-16, that the chlorine residual in the distribution system would best be monitored using an approved "4-3 sampling system".

This method, as allowed under Section 7-2 (3) and Section 7-2 (4) of O.Reg. 170/03, requires that:

7-2.(3) The owner of a large municipal residential system that provides secondary disinfection and the operating authority for the system shall ensure that at least seven distribution samples are taken each week in accordance with subsection (4) and are tested immediately for:

(a) free chlorine residual, if the system provides chlorination and does not provide chloramination;

Treatment Processes

7-2.(4) The following rules apply to the distribution samples referred to in subsection (3) unless at least one sample is taken on each day of the week:

1. At least four of the samples must be taken on one day of the week, at least 48 hours after the last sample was taken in the previous week.
2. At least three of the samples must be taken on a second day of the week, at least 48 hours after the last sample was taken on the day referred to in paragraph 1.
3. When more than one sample is taken on the same day of the week under paragraph 1 or 2, each sample must be taken from a different location.

Chlorine residual data for the distribution system (collected using the "4-3 monitoring system") was reviewed for the period of October 1, 2018 to September 30, 2019, and generally found to be in order.

MISSED CHLORINE RESIDUAL SAMPLE:

There were however two minor discrepancies identified on January 2, 2019 and January 9, 2019, where it appeared that only two chlorine residual samples were collected, instead of the three that are required.

Upon further investigation, it was confirmed that three chlorine residual samples were in fact collected on January 9, 2019 (documentation provided), however only two samples could be confirmed for January 2, 2019.

As such, OCWA Staff are reminded to ensure that the above noted Legislative requirements be strictly followed each and every week. This matter will be reviewed at the next Annual Inspection.

- **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.**
It was indicated at the time of inspection that all chemicals, materials, standards, procedures, and operational practices, are consistent with AWWA Standards and applicable plumbing code requirements.
- **The owner had evidence indicating that all chemicals and materials that come in contact with water within the drinking water system met the AWWA and ANSI standards in accordance with the Municipal Drinking Water Licence and Drinking Water Works Permit issued under Part V of the SDWA.**
It was indicated at the time of inspection that all chemicals, materials, standards, procedures, and operational practices, are consistent with AWWA Standards and applicable plumbing code requirements.
- **Up-to-date plans for the drinking water system were kept in a place, or made available in such a manner, that they could be readily viewed by all persons responsible for all or part of the operation of the drinking water system in accordance with the DWWP and MDWL issued under Part V of the SDWA.**

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.**

The Nairn Centre Water Treatment Plant operates under "Municipal Drinking Water License Number 281-101" (Issue 2), dated November 25, 2015, and "Drinking Water Works Permit Number 281-201" (Issue 3), dated September 6, 2016, at a rated capacity of 818 cubic meters/day.

Treatment Process Monitoring

The treatment process is a "prefabricated package water treatment plant" that uses conventional treatment which includes chemical addition, alkalinity adjustment, coagulation/ flocculation, sedimentation, and dual media filtration, followed by pH adjustment, and chlorination using sodium hypochlorite.

The system is designed to meet the minimum 2-log removal of *Cryptosporidium* oocysts and 2.5-log removal of *Giardia* cysts, through chemically assisted filtration; and the minimum 0.5-log removal/inactivation of *Giardia* cysts and 4-log removal/inactivation of viruses, through disinfection by chlorination.

Primary disinfection chlorine residual is monitored at or near the location where the intended CT had just been achieved, and Operators are fully aware of the operational criteria necessary to achieve primary disinfection. The facility now uses an "automatic CT calculator" to ensure that adequate CT is maintained at all times, and plant CT can now be tracked via the plant's SCADA system.

Process data and supporting documentation provided during the course of the inspection for the period of October 1, 2018 to September 30, 2019, indicates that the Nairn Centre Water Treatment Plant is operating in accordance with the above noted requirements. No concerns were identified.

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

The Nairn Centre Water Treatment Plant operates under "Municipal Drinking Water License Number 281-101" (Issue 2), dated November 25, 2015, and "Drinking Water Works Permit Number 281-201" (Issue 3), dated September 6, 2016, at a rated capacity of 818 cubic meters/day.

The treatment process is a "prefabricated package water treatment plant" that uses conventional treatment which includes chemical addition, alkalinity adjustment, coagulation/ flocculation, sedimentation, and dual media filtration, followed by pH adjustment, and chlorination using sodium hypochlorite.

The system is designed to meet the minimum 2-log removal of *Cryptosporidium* oocysts and 2.5-log removal of *Giardia* cysts, through chemically assisted filtration; and the minimum 0.5-log removal/inactivation of *Giardia* cysts and 4-log removal/inactivation of viruses, through disinfection by chlorination.

Primary disinfection chlorine residual is monitored at or near the location where the intended CT had just been achieved, and Operators are fully aware of the operational criteria necessary to achieve primary disinfection. The facility now uses an "automatic CT calculator" to ensure that adequate CT is maintained at all times, and plant CT can now be tracked via the plant's SCADA system.

Process data and supporting documentation provided during the course of the inspection for the period of September 1, 2017 to September 30, 2018, indicates that the Nairn Centre Water Treatment Plant is operating in accordance with the above noted requirements. No concerns were identified.

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

Filter effluent turbidity is monitored on-line via a continuous turbidity analyzer. Filter Effluent turbidity data was reviewed for the period of October 1, 2018 to September 30, 2019, and generally found to be in order, confirming that the process consistently met the performance criteria for filtered water turbidity of less than or equal to 0.3 NTU in 95% of the measurements each month. No concerns were identified in this regard.

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

The secondary disinfectant residual in the distribution system was previously measured using a continuous chlorine

Treatment Process Monitoring

residual analyzer located at the Nairn Centre Community Centre.

Due to re-occurring problems with the analyzer however, it was decided in 2015-16, that the chlorine residual in the distribution system would best be monitored using an approved "4-3 sampling system".

This method, as allowed under Section 7-2 (3) and Section 7-2 (4) of O.Reg. 170/03, requires that:

7-2.(3) The owner of a large municipal residential system that provides secondary disinfection and the operating authority for the system shall ensure that at least seven distribution samples are taken each week in accordance with subsection (4) and are tested immediately for:

(a) free chlorine residual, if the system provides chlorination and does not provide chloramination;

7-2.(4) The following rules apply to the distribution samples referred to in subsection (3) unless at least one sample is taken on each day of the week:

1. At least four of the samples must be taken on one day of the week, at least 48 hours after the last sample was taken in the previous week.
2. At least three of the samples must be taken on a second day of the week, at least 48 hours after the last sample was taken on the day referred to in paragraph 1.
3. When more than one sample is taken on the same day of the week under paragraph 1 or 2, each sample must be taken from a different location.

Chlorine residual data for the distribution system (collected using the "4-3 monitoring system") was reviewed for the period of October 1, 2018 to September 30, 2019, and generally found to be in order.

MISSED CHLORINE RESIDUAL SAMPLE:

As previously noted, two minor discrepancies were identified on January 2, 2019 and January 9, 2019, where it appeared that only two chlorine residual samples were collected in the distribution system, instead of the three that are required.

Upon further investigation, it was confirmed that the three required chlorine residuals were in fact collected on January 9, 2019 in the distribution system (documentation provided), however only two records could be confirmed for January 2, 2019.

As such, OCWA Staff are reminded to ensure that the above noted Legislative requirements are strictly followed each and every week. This matter will be reviewed at the next Annual Inspection.

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

"Facility Log Books" and "Daily Report sheets" are maintained by OCWA staff for the Water Treatment Plant. These documents were reviewed during the course of the inspection, and it was noted that Operators were reviewing the continuous monitoring data, typically within 48-72 hours of the test.

OCWA staff are reminded to continue to ensure that when they are unable to visit the plant within 72 hours, and that data is reviewed remotely, that this is documented in the "Facility Log Books" and/or on the "Daily Report sheets". No concerns were identified in this regard.

Treatment Process Monitoring

- **Samples for chlorine residual analysis were tested using an acceptable portable device.**
- **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.**
It was noted during the course of the inspection that all continuous monitoring equipment utilized for sampling and testing, is equipped with alarms as required by O.Reg.170/03. No concerns were identified.
- **Continuous monitoring equipment that was being utilized to fulfill O. Reg. 170/03 requirements was performing tests for the parameters with at least the minimum frequency specified in the Table in Schedule 6 of O. Reg. 170/03 and recording data with the prescribed format.**
- **All continuous analysers were calibrated, maintained, and operated, in accordance with the manufacturer's instructions or the regulation.**
It was identified during the course of the inspection that all flow meters and continuous analyzers, are calibrated, maintained, and operated in accordance with the manufacturers instructions or the Regulation. Calibration Records and Work Order Summaries were provided in this regard. No concerns were identified.

Process Wastewater

- **The process wastewater and residual solids/sludges were treated, handled and disposed of in accordance with the design requirements approved under the Drinking Water Works Permit and the Municipal Drinking Water Licence.**
Process wastewater at the Nairn Centre Water Treatment Plant is generated primarily from the Filter Backwash, and from the Clarifier. Effluent from these locations is directed initially to a "Surge Tank", and then to a sludge thickening tank or "Settling Chamber".

Supernatant from the sludge thickening tank is sampled once a month for suspended solids in accordance with "Municipal Drinking Water License Number 281-101" (Issue 2), dated November 25, 2015, and then discharged to a drainage ditch which eventually flows to the Spanish River. The thickened sludge from the storage tank is removed via a licensed waste hauler and disposed of as required, typically on an annual basis.

The "Municipal Drinking Water License Number 281-101" (Issue 2), dated November 25, 2015, also requires that the process wastewater effluent discharge be sampled and analyzed on a monthly basis for suspended solids, and that the average annual concentration of suspended solids in the effluent discharge from the backwash wastewater facilities not exceed 25 mg/L.

A review of the monitoring data for the period in question confirmed that the analysis of the suspended solids in the effluent discharge was being conducted on a monthly basis, and that the above noted requirements were being met. No concerns were identified.
- **The process wastewater discharge monitoring program and discharge quality complied with requirements established in the Municipal Drinking Water Licence Issued under Part V of the SDWA.**
Process wastewater at the Nairn Centre Water Treatment Plant is generated primarily from the Filter Backwash, and from the Clarifier. Effluent from these locations is directed initially to a "Surge Tank", and then to a sludge thickening tank or "Settling Chamber".

Supernatant from the sludge thickening tank is sampled once a month for suspended solids in accordance with "Municipal Drinking Water License Number 281-101" (Issue 2), dated November 25, 2015, and then discharged to

Process Wastewater

a drainage ditch which eventually flows to the Spanish River. The thickened sludge from the storage tank is removed via a licensed waste hauler and disposed of as required, typically on an annual basis.

The "Municipal Drinking Water License Number 281-101" (Issue 2), dated November 25, 2015, also requires that the process wastewater effluent discharge to be sampled and analyzed on a monthly basis for suspended solids, and that the average annual concentration of suspended solids in the effluent discharge from the backwash wastewater facilities not exceed 25 mg/L.

A review of the monitoring data for the period in question confirmed that the analysis of the suspended solids in the effluent discharge was being conducted on a monthly basis, and that the above noted requirements were being met. No concerns were identified.

Distribution System

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

It was indicated at the time of the inspection, that the Municipality now has a formal By-law in place regarding "backflow prevention".

"By-law No. 2014-33, being a By-law to Regulate Cross Connection and Back Flow Prevention on Plumbing Systems as Required to Protect the Township of Nairn and Hyman Drinking Water Supply and Distribution System from Contaminations" was passed on Dec. 1, 2014. (copy provided).

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

There are no exterior storage facilities (reservoirs or standpipes) for this drinking water system. The only water storage is in the clearwells which are located within the Water Treatment Plant building itself which is under lock and key at all times.

Documents provided during the course of previous inspections indicated that both clearwells at the Nairn Centre Water Treatment Plant were fully cleaned and inspected in August 2013. This was once again confirmed. No concerns were identified.

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

It was indicated at the time of inspection that the entire system is flushed once a year by OCWA Staff. When the system is flushed, all hydrants are inspected, all valves are exercised, static pressure is measure and recorded at each hydrant, and chlorine residual readings are also taken and recorded at each hydrant. Supporting documentation to this effect was provided by OCWA staff. No concerns identified.

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

It was indicated at the time of inspection that the entire system is flushed once a year by OCWA Staff. When the system is flushed, all hydrants are inspected, all valves are exercised, static pressure is measure and recorded at each hydrant, and chlorine residual readings are also taken and recorded at each hydrant. Supporting documentation to this effect was provided by OCWA staff. No concerns identified.

- **A program was in place for inspecting and exercising valves.**

It was indicated at the time of inspection that the entire system is flushed once a year by OCWA Staff. When the system is flushed, all hydrants are inspected, all valves are exercised, static pressure is measure and recorded at each hydrant, and chlorine residual readings are also taken and recorded at each hydrant. Supporting documentation to this effect was provided by OCWA staff. No concerns identified.

Distribution System

- **There was a program in place for inspecting and operating hydrants.**

It was indicated at the time of inspection that the entire system is flushed once a year by OCWA Staff. When the system is flushed, all hydrants are inspected, all valves are exercised, static pressure is measure and recorded at each hydrant, and chlorine residual readings are also taken and recorded at each hydrant. Supporting documentation to this effect was provided by OCWA staff. No concerns identified.

- **There was a by-law or policy in place limiting access to hydrants.**

It was noted during the course of the inspection, that the Municipality now has a formal By-law in place which limits the access to hydrants to only OCWA Staff, Municipal staff and Fire Department staff. "By-law #2011-36, being a By-law to Control Access to Fire Hydrants" was passed on Dec. 5, 2011.

The Municipality also has By-law #94-31, Section 12(vii), which states that: "No person or persons except the By-Law Enforcement Officer or those acting under his direction or authority, shall open or close any valve hydrant or gate in the street main, or molest or interfere with the same in any manner".

A copy of the by-laws had been previously obtained. No concerns were identified.

- **The owner was able to maintain proper pressures in the distribution system and pressure was monitored to alert the operator of conditions which may lead to loss of pressure below the value under which the system is designed to operate.**

According to OCWA Staff, pressure in the Nairn Centre distribution system is monitored primarily by monitoring the "back pressure" at the Water Treatment Plant. If the "back pressure" remains constant, the operators know that the system is intact. If the back pressure starts fluctuate, the system is investigated.

Pressure throughout the system is also measured at each and every hydrant during the hydrant flushing program. No concerns were identified

Operations Manuals

- **Operators and maintenance personnel had ready access to operations and maintenance manuals.**

Operations and Maintenance Manual(s) for the Water Treatment Plant were briefly reviewed at the time of inspection and found to be in order, containing plans, drawings, and process descriptions sufficient for the safe and efficient operation of the system. The manuals are kept at the Water Treatment Plant, readily available to all OCWA staff. No concerns were identified.

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

Operations and Maintenance Manual(s) for the Water Treatment Plant were briefly reviewed at the time of inspection and found to be in order, containing plans, drawings, and process descriptions sufficient for the safe and efficient operation of the system. The manuals are kept at the Water Treatment Plant, readily available to all OCWA staff. No concerns were identified.

- **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.**

Operations and Maintenance Manual(s) for the Water Treatment Plant were briefly reviewed at the time of inspection and found to be in order, containing plans, drawings, and process descriptions sufficient for the safe and efficient operation of the system. The manuals are kept at the Water Treatment Plant, readily available to all OCWA staff. No concerns were identified.

Logbooks

- **Logbooks were properly maintained and contained the required information.**

According to OCWA staff and operational logs, only certified operators make adjustments to the treatment equipment at the Nairn Centre Water Treatment Plant.

The main operators at the Nairn Centre Water Treatment Plant during the review period in question were Bill Hanson (Operator - Class 1), and Alex Nahwegahbow (Operator-in-Training).

All have the required certifications. Operator Certificates were properly displayed at the plant. No concerns were identified in this regard.

"Facility Log Books" for the period in question, were reviewed during the course of the inspection, and found to be in order. No concerns were identified.

- **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.**

According to OCWA staff and operational logs, only certified operators make adjustments to the treatment equipment at the Nairn Centre Water Treatment Plant.

The main operators at the Nairn Centre Water Treatment Plant during the review period in question were Bill Hanson (Operator Class 1), and Alex Nahwegahbow (Operator-in-Training).

All have the required certifications. Operator Certificates were properly displayed at the plant. No concerns were identified in this regard.

- **For every required operational test and every required sample, a record was made of the date, time, location, name of the person conducting the test and result of the test.**

Facility Log Books are maintained by OCWA staff for both the Distribution System and Water Treatment Plant (one log book for both). These log books were reviewed during the course of the inspection, and generally found to be in order.

Detailed information with respect to sampling is recorded and maintained on Chain of Custody Forms, and reported on the Certificates of Analysis. No concerns were identified.

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

According to OCWA staff and operational logs, only certified operators make adjustments to the treatment equipment at the Nairn Centre Water Treatment Plant.

The main operators at the Nairn Centre Water Treatment Plant during the review period in question were Bill Hanson (Operator Class 1), and Alex Nahwegahbow (Operator-in-Training).

All have the required certifications. Operator Certificates were properly displayed at the plant. No concerns were identified in this regard.

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

Contingency/Emergency Planning

- **Spill containment was provided for process chemicals and/or standby power generator fuel.**

Contingency/Emergency Planning

It was noted at the time of inspection that spill containment is provided for all process chemicals. No concerns were identified.

- **Clean-up equipment and materials were in place for the clean up of spills.**

It was noted at the time of inspection that a "Spill Kit" is on site for the clean up of possible spills. No concerns were identified.

- **Standby power generators were tested under normal load conditions.**

It was noted at the time of inspection, that the standby power generator is tested under normal load conditions on a monthly basis, and tracked on a "Generator Check List" which is kept on-site. No concerns were identified.

Security

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

All major components of the drinking water system were found to be completely covered and secure, and under lock and key at all times.

There are no exterior storage facilities (reservoirs or standpipes) for this drinking water system. The only storage is in the clearwells which are located within the Water Treatment Plant building itself. The Water Treatment Plant building was found to be covered and secure, and under lock and key at all times. No concerns were identified in this regard.

The raw water low lift pumps however, are housed in a separate concrete pumping station located near the water intake at the Spanish River's edge. And although the pumping station is a concrete structure that is covered and secure, and under lock and key, the station is located adjacent to a public boat launch, and there is no signage or security fencing.

As such, as noted in previous inspection reports, security fencing and proper signage is a measure that should be considered to properly protect this component of the system.

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

All major components of the drinking water system were found to be completely covered and secure, and under lock and key at all times.

There are no exterior storage facilities (reservoirs or standpipes) for this drinking water system. The only storage is in the clearwells which are located within the Water Treatment Plant building itself. The Water Treatment Plant building was found to be covered and secure, and under lock and key at all times.

The raw water low lift pumps however, are housed in a separate concrete pumping station located near the water intake at the Spanish River's edge. And although the pumping station is a concrete structure that is covered and secure, and under lock and key, the station is located adjacent to a public boat launch, and there is no signage or security fencing.

As such, as noted in previous inspection reports, security fencing and proper signage is a measure that should be considered to properly protect this component of the system.

Consumer Relations

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

It was noted at the time of inspection, that Section 8(viii) of the previously mentioned By-law #94-31 does make provisions to deal with any "excessive use" of municipal water.

It was also indicated that pressure in the Nairn Centre distribution system is monitored by monitoring the "back pressure" at the Water Treatment Plant. If the "back pressure" remains constant, the operators know that the system is intact. If the back pressure starts fluctuate, the system is investigated. No concerns were identified.

Certification and Training

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

The Nairn Centre Water Treatment Plant is a Class 3 facility, operating under Classification Certificate No. 2810, issued October 27, 2005.

It was identified at the time of inspection that Keith Stringer (Class 4 License) is the main Overall Responsible Operator (ORO) for this facility. It was further identified that Todd Lampron (Class 2 License), and Dillon Duxbury (Class 2 License), are also available as back-up Overall Responsible Operators (OROs), whenever Keith Stringer is absent or unable to act. No concerns were identified.

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

The main operators at the Nairn Centre Water Treatment Plant during the review period in question, were Bill Hanson (Operator Class 1), and Alex Nahwegahbow (Operator-in-Training).

It was also identified that Todd Lampron (Operator Class 2), and Dillon Duxbury (Operator Class 2) are available as a back-up OICs (Operator in Charge) when Bill Hanson is absent or unable to act.

All have the required certifications, and Operator Certificates were properly displayed at the plant. No concerns were identified in this regard.

- **All operators possessed the required certification.**

The main operators at the Nairn Centre Water Treatment Plant during the review period in question, were Bill Hanson (Operator Class 1), and Alex Nahwegahbow (Operator-in-Training).

All have the required certifications, and Operator Certificates were properly displayed at the plant. No concerns were identified in this regard.

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

According to OCWA staff and operational logs, only certified operators make adjustments to the treatment equipment at the Nairn Centre Water Treatment Plant.

The main operators at the Nairn Centre Water Treatment Plant during the review period in question, were Bill Hanson (Operator Class 1), and Alex Nahwegahbow (Operator-in-Training).

All have the required certifications, and Operator Certificates were properly displayed at the plant. No concerns were identified in this regard.

- **An adequately licenced operator was designated to act in place of the overall responsible operator when the overall responsible operator was unable to act**

The Nairn Centre Water Treatment Plant is a Class 3 facility, operating under Classification Certificate No. 2810,

Certification and Training

issued October 27, 2005.

It was identified at the time of inspection that Keith Stringer (Class 4 License) is the main Overall Responsible Operator (ORO) for this facility. It was further identified that Todd Lampron (Class 2 License), and Dillon Duxbury (Class 2 License), are also available as back-up Overall Responsible Operators (OROs), whenever Keith Stringer is absent or unable to act. No concerns were identified.

Water Quality Monitoring

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

Section 10-4 of Schedule 10, O. Reg. 170/03, requires that a raw water sample be taken at least once a week from the raw water source, and tested for the required microbiological parameters. A review of the water quality monitoring data for the period between October 1, 2018 to September 30, 2019, confirmed that the microbiological sampling requirements were consistently being met. No concerns were identified.

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

According to information identified during the course of the inspection, the total permanent residential population served by the Nairn Centre Drinking Water System is approximately 357. Based on that population (<1000), the total number of distribution samples required per month is 8.

A review of the water quality monitoring data for the period of October 1, 2018 TO September 30, 2019, confirmed that the microbiological monitoring requirements for the Nairn Centre Water Drinking Water System were being met. No concerns were identified.

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

Section 10-3 of Schedule 10, O. Reg. 170/03, requires that a treated water sample be taken at least once a week and tested for the required microbiological parameters. A review of the water quality monitoring data for the period of October 1, 2018 to September 30, 2019, confirmed that the all microbiological monitoring requirements for the treated water were being met. No concerns were identified.

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

Section 13-2 of Schedule 13, O. Reg. 170/03 requires that at least one sample be taken every 12 months and tested for the required inorganic parameters identified under Schedule 23, O. Reg. 170/03. A review of the inorganic water quality monitoring data for the period of October 1, 2018 to September 30, 2019, confirmed that the required samples were collected on February 15, 2019, and that the monitoring requirements prescribed by the legislation were met. No concerns were identified.

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

Section 13-4 of Schedule 13, O. Reg. 170/03 requires that at least one sample be taken every 12 months and tested for the required organic parameters identified under Schedule 24, O. Reg. 170/03. A review of the organic water quality monitoring data for the period of October 1, 2018 to September 30, 2019, confirmed that the required samples were collected on February 15, 2019, and that the monitoring requirements prescribed by the legislation were met. No concerns were identified.

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

Section 13-6.1 of Schedule 13, O. Reg. 170/03 requires that at least one sample be taken every 3 months and tested for Haloacetic Acids. A review of the water quality monitoring data for the period in question, confirmed that

Water Quality Monitoring

the required samples were collected in accordance with the monitoring requirements prescribed by the legislation. No concerns were identified.

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

Section 13-6 of Schedule 13, O. Reg. 170/03 requires that at least one sample be taken every three months and tested for trihalomethanes. A review of the water quality monitoring data for the period in question, confirmed that trihalomethane samples were collected in accordance with the monitoring requirements prescribed by the legislation.

Monitoring results were found to be:

October 11, 2018: THM = 91 ug/L;

January 31, 2019: THM = 49 ug/L;

April 8, 2019: THM = 56 ug/L;

July 25, 2019: THM = 68 ug/L;

Running Annual Average (Oct. 1, 2018 to Sept. 30, 2019):

THM = 66 ug/L, which is below the 100 ug/L required under O.Reg. 169/03. No concerns were identified.

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

Section 13-7 of Schedule 13, O. Reg. 170/03 requires that at least one sample be taken every three months and tested for nitrates/nitrites. A review of the water quality monitoring data for the period between October 1, 2018 to September 30, 2019, confirmed that the nitrate/nitrite quarterly samples were collected on:

- October 11, 2018: 4th Quarter 2018;

- January 31, 2019: 1st Quarter 2019:

- April 8, 2019: 2nd Quarter 2019 - Sample Results missing;

- July 25, 2019: 3rd Quarter 2019.

In reviewing the Quarterly Sampling Data for the Nairn Centre Drinking Water System, it was identified that the Nitrate-Nitrite monitoring results (as required under Section 13-7 of Schedule 13, O. Reg. 170/03), were missing for the 2nd Quarter of 2019.

Upon further investigation, it was noted that all other Quarterly samples (THMs, HAAs) were collected as required on April 8, 2019. For whatever reason however, either due to Lab error or Operator error, the required samples were either not collected or the sample results were not available.

As such, OCWA Staff are once again reminded to ensure that all Legislative requirements for sampling and monitoring are strictly adhered to. This matter will be reviewed at the next Annual Inspection.

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

Water Quality Monitoring

required frequency.

Section 13-8 of Schedule 13, O. Reg. 170/03 requires that at least one sample be taken every 60 months and tested for sodium. A review of the water quality monitoring data for the period in question, confirmed that the last set of sodium samples were collected on January 26, 2017 with a result of 10.4 mg/L, all in accordance with the monitoring requirements prescribed by the legislation. No concerns were identified.

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

In previous years, the fluoride concentrations in the treated water had typically been monitored by a continuous analyzer located at the Nairn Centre Water Treatment Plant. The analyzer (when functioning), had been set to alarm and "lock-out" the High Lift Pumps if the fluoride concentration in the treated water reached 0.8 mg/L.

During one of the inspections conducted on September 10, 2015, it was noted that the Fluoride Analyzer was not working properly, and according to the Facility Log Books, had not been working properly since ~ December 2014.

It was indicated at that time, that in spite of numerous efforts to get it to work properly, it had continued to malfunction. As such, it was indicated that a new analyzer would be required, and that in the interim, fluoride residuals in the treated water would continue to be monitored on a daily basis, and recorded on daily works sheets, as allowed under Section 7-4 of Schedule 7, of O. Reg. 170/03.

In January of 2016, the Municipality and OCWA started to make inquiries regarding the requirements to formally discontinue the fluoridation process. In April 2016, a formal Municipal By-law to discontinue the fluoridation of the municipal water supply, was passed by Municipal Council, and subsequent to this, an application was submitted to the Ministry to have the fluoridation component formally removed from the Municipal Drinking Water Works Permit.

On September 26, 2016, Formal Notice was received from the Ministry's Approvals and Licensing Section, advising that "Drinking Water Works Permit Number 281-20" (Issue Number 3), dated September 6, 2016, had been issued, and that Section 1.1, Schedule A, of the Drinking Water Works Permit, had been amended to remove all references to the requirement for fluoridation. As such, the Municipality now had formal approval to discontinue the fluoridation process.

On September 28, 2016, Formal Notification was received from OCWA advising that effective immediately, fluoridation of the drinking water would no longer be implemented at the Nairn Centre Water Treatment Plant. No further action was required in this regard.

As such, with Fluoride no longer being added as part of the treatment process, Section 13-9 of Schedule 13, O. Reg. 170/03 now applies, and only requires that at least one sample be taken every 60 months and tested for Fluoride.

A review of the water quality monitoring data for the period in question, confirmed that the last set of Fluoride samples were collected on January 26, 2017, all in accordance with the monitoring requirements prescribed by the legislation. No concerns were identified, and no further action is required in this regard.

- **The owner ensured that water samples were taken at the prescribed location.**
- **All water quality monitoring requirements imposed by the MDWL or DWWP issued under Part V of the SDWA were being met.**

The only additional monitoring requirement identified under "Municipal Drinking Water License Number 281-101" (Issue 2), dated November 25, 2015, is for the process wastewater effluent discharge to be sampled and analyzed on a monthly basis for Suspended Solids. The License requires that the "average annual concentration" of

Water Quality Monitoring

suspended solids in the effluent discharge, from the backwash wastewater facilities, not exceed 25 mg/L.

A review of the monitoring data for the period of October 1, 2018 to September 30, 2019, confirmed that the analysis for Suspended Solids in the effluent discharge, was being conducted on a monthly basis as required. No concerns were identified.

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

It should be noted that the Nairn Centre Drinking Water System is now exempt from lead sampling from private residences.

As such, the most recent lead sampling "in the distribution system", as required under Schedule 15.1 of O.Reg. 170/03, was conducted in the Nairn Centre Drinking Water System on;

- January 16, 2018, for the period of December 15, 2018 to April 15, 2018; and on

- July 23, 2018, for the period of June 15, 2018 to October 15, 2018.

All pH and Alkalinity sampling was also conducted as required throughout all sampling periods, and all reporting requirements as prescribed by Schedule 15.1 of O.Reg. 170/03, were also met. No concerns were identified.

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

A review of the microbiological water quality monitoring data for the period between October 1, 2018 to September 30, 2019, confirmed that chlorine residual tests were being conducted at the same time and at the same location that microbiological samples were obtained. No concerns were identified.

- **The owner indicated that the required records are kept and will be kept for the required time period.**

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).**

Analytical results provided for the Nairn Centre Drinking Water System for the period between October 1, 2018 to September 30, 2019, were reviewed and found to be in order, meeting the requirements of the prescribed Ontario Drinking Water Standards (O.Reg. 169/03). No concerns were identified.

Reporting & Corrective Actions

- **Corrective actions (as per Schedule 17) had been taken to address adverse conditions, including any other steps that were directed by the Medical Officer of Health.**

There were no Adverse Water Quality Incident Reports (AWQIs) identified for the Nairn Centre Drinking Water System during the review period of October 1, 2018 to September 30, 2019.

There were also no Adverse Water Quality Incident Reports (AWQIs) identified during either of the two previous review periods of:

1) September 1, 2017 to September 30, 2018; and

2) June 1, 2016 to August 31, 2017.

Reporting & Corrective Actions

The most recent Adverse Water Quality Incident Reports (AWQIs) for the Nairn Centre Drinking Water System was identified on August 7, 2015.

It was AWQI # 125654, reported on August 7, 2015: A TC=98 was identified in samples collected at the Nairn Centre Water Treatment Plant. A sampling error was suspected as the chlorine residual at the time of sampling was 1.06 mg/L. Nevertheless, all required Notifications to the Spills Action Centre and the Medical Officer of Health (SDHU) were provided, and all required Corrective Actions were taken. The system was subsequently restored, and all re-sample results came back clear. The required Notice of Issue Resolution was subsequently provided. No further action was required.

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

There were no Adverse Water Quality Incident Reports (AWQIs) identified for the Nairn Centre Drinking Water System during the review period of October 1, 2018 to September 30, 2019.

There were also no Adverse Water Quality Incident Reports (AWQIs) identified during either of the two previous review periods of:

- 1) September 1, 2017 to September 30, 2018; and
- 2) June 1, 2016 to August 31, 2017.

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- **All required notifications of adverse water quality incidents were immediately provided as per O. Reg. 170/03 16-6.**

There were no Adverse Water Quality Incident Reports (AWQIs) identified for the Nairn Centre Drinking Water System during the review period of October 1, 2018 to September 30, 2019.

There were also no Adverse Water Quality Incident Reports (AWQIs) identified during either of the two previous review periods of:

- 1) September 1, 2017 to September 30, 2018; and
- 2) June 1, 2016 to August 31, 2017.

The most recent Adverse Water Quality Incident Reports (AWQIs) for the Nairn Centre Drinking Water System was identified on August 7, 2015.

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Reporting & Corrective Actions

and all re-sample results came back clear. The required Notice of Issue Resolution was subsequently provided. No further action was required.

- **All required written notices of adverse water quality incidents were provided as per O. Reg. 170/03 16-7.**

There were no Adverse Water Quality Incident Reports (AWQIs) identified for the Nairn Centre Drinking Water System during the review period of October 1, 2018 to September 30, 2019.

There were also no Adverse Water Quality Incident Reports (AWQIs) identified during either of the two previous review periods of:

- 1) September 1, 2017 to September 30, 2018; and
- 2) June 1, 2016 to August 31, 2017.

The most recent Adverse Water Quality Incident Reports (AWQIs) for the Nairn Centre Drinking Water System was identified on August 7, 2015.

It was AWQI # 125654, reported on August 7, 2015: A TC=98 was identified in samples collected at the Nairn Centre Water Treatment Plant. A sampling error was suspected as the chlorine residual at the time of sampling was 1.06 mg/L. Nevertheless, all required Notifications to the Spills Action Centre and the Medical Officer of Health (SDHU) were provided, and all required Corrective Actions were taken. The system was subsequently restored, and all re-sample results came back clear. The required Notice of Issue Resolution was subsequently provided. No further action was required.

- **In instances where written notice of issue resolution was required by regulation, the notice was provided as per O. Reg. 170/03 16-9.**

There were no Adverse Water Quality Incident Reports (AWQIs) identified for the Nairn Centre Drinking Water System during the review period of October 1, 2018 to September 30, 2019.

There were also no Adverse Water Quality Incident Reports (AWQIs) identified during either of the two previous review periods of:

- 1) September 1, 2017 to September 30, 2018; and
- 2) June 1, 2016 to August 31, 2017.

The most recent Adverse Water Quality Incident Reports (AWQIs) for the Nairn Centre Drinking Water System was identified on August 7, 2015.

It was AWQI # 125654, reported on August 7, 2015: A TC=98 was identified in samples collected at the Nairn Centre Water Treatment Plant. A sampling error was suspected as the chlorine residual at the time of sampling was 1.06 mg/L. Nevertheless, all required Notifications to the Spills Action Centre and the Medical Officer of Health (SDHU) were provided, and all required Corrective Actions were taken. The system was subsequently restored, and all re-sample results came back clear. The required Notice of Issue Resolution was subsequently provided. No further action was required.

- **All reporting requirements for lead sampling were complied with as per schedule 15.1-9 of O. Reg. 170/03.**

It should be noted that the Nairn Centre Drinking Water System is now exempt from lead sampling from private residences.

Reporting & Corrective Actions

As such, the most recent lead sampling "in the distribution system", as required under Schedule 15.1 of O.Reg. 170/03, was conducted in the Nairn Centre Drinking Water System on;

- January 16, 2018, for the period of December 15, 2018 to April 15, 2018; and on
- July 23, 2018, for the period of June 15, 2018 to October 15, 2018.

All pH and Alkalinity sampling was also conducted as required throughout all sampling periods, and all reporting requirements as prescribed by Schedule 15.1 of O.Reg. 170/03, were also met. No concerns were identified.

- **Where required continuous monitoring equipment used for the monitoring of chlorine residual and/or turbidity triggered an alarm or an automatic shut-off, a qualified person responded in a timely manner and took appropriate actions.**
- **The Annual Report containing the required information was prepared by February 28th of the following year.**
- **Summary Reports for municipal council were completed on time, included the required content, and were distributed in accordance with the regulatory requirements.**

NON-COMPLIANCE WITH REGULATORY REQUIREMENTS AND ACTIONS REQUIRED

This section provides a summary of all non-compliance with regulatory requirements identified during the inspection period, as well as actions required to address these issues. Further details pertaining to these items can be found in the body of the inspection report.

Not Applicable

SUMMARY OF RECOMMENDATIONS AND BEST PRACTICE ISSUES

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

Not Applicable

SIGNATURES

Inspected By:

Marc Chalifoux

Signature: (Provincial Officer)



Reviewed & Approved By:

Marnie Managhan

Signature: (Supervisor)



Review & Approval Date:

Jan 15/20

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

APPENDIX I

Municipal Drinking Water Licence



MUNICIPAL DRINKING WATER LICENCE

Licence Number: 281-101
Issue Number: 2

Pursuant to the *Safe Drinking Water Act, 2002*, S.O. 2002, c. 32, and the regulations made thereunder and subject to the limitations thereof, this municipal drinking water licence is issued under Part V of the *Safe Drinking Water Act, 2002*, S.O. 2002, c. 32 to:

The Corporation of the Township of Nairn and Hyman

64 McIntyre Street
Nairn Centre ON P0M 2L0

For the following municipal residential drinking water system:

Nairn Centre Drinking Water System

This municipal drinking water licence includes the following:

Schedule	Description
Schedule A	Drinking Water System Information
Schedule B	General Conditions
Schedule C	System-Specific Conditions
Schedule D	Conditions for Relief from Regulatory Requirements
Schedule E	Pathogen Log Removal/Inactivation Credits

DATED at TORONTO this 25th day of November, 2015

Signature

Aziz Ahmed, P.Eng.
Director
Part V, *Safe Drinking Water Act, 2002*

Schedule A: Drinking Water System Information

System Owner	The Corporation of the Township of Nairn and Hyman
Licence Number	281-101
Drinking Water System Name	Nairn Centre Drinking Water System
Schedule A Issue Date	November 25th, 2015

The following information is applicable to the above drinking water system and forms part of this licence:

Licence

Licence Issue Date	2015-11-25
Licence Expiry Date	2020-11-23
Application for Licence Renewal Date	2020-05-24

Drinking Water Works Permit

Drinking Water System Name	Permit Number	Issue Date
Nairn Centre Drinking Water System	281-201	November 25, 2015

Permits to Take Water

Water Taking Location	Permit Number	Issue Date
Spanish River	2003-7TDPEP	June 26, 2009

Financial Plans

The Financial Plan Number for the Financial Plan required to be developed for this drinking water system in accordance with O. Reg. 453/07 shall be:	281-301
Alternately, if one Financial Plan is developed for all drinking water systems owned by the owner, the Financial Plan Number shall be:	281-301A

Accredited Operating Authority

Drinking Water System or Operational Subsystems	Accredited Operating Authority	Operational Plan No.	Operating Authority No.
Nairn Centre Drinking Water System	Ontario Clean Water Agency	281-401	281-OA1

Schedule B: General Conditions

System Owner	The Corporation of the Township of Nairn and Hyman
Licence Number	281-101
Drinking Water System Name	Nairn Centre Drinking Water System
Schedule B Issue Date	November 25th, 2015

1.0 Definitions

1.1 Words and phrases not defined in this licence and the associated drinking water works permit shall be given the same meaning as those set out in the SDWA and any regulations made in accordance with that act, unless the context requires otherwise.

1.2 In this licence and the associated drinking water works permit:

“**adverse effect**”, “**contaminant**” and “**natural environment**” shall have the same meanings as in the EPA;

“**alteration**” may include the following in respect of this drinking water system:

- (a) An addition to the system,
- (b) A modification of the system,
- (c) A replacement of part of the system, and
- (d) An extension of the system;

“**compound of concern**” means a contaminant that, based on generally available information, may be emitted from a component of the drinking water system to the atmosphere in a quantity that is significant either in comparison to the relevant point of impingement limit or if a point of impingement limit is not available for the compound, then based on generally available toxicological information, the compound has the potential to cause an adverse effect as defined by the EPA at a point of impingement;

“**Director**” means a Director appointed pursuant to section 6 of the SDWA for the purposes of Part V of the SDWA;

“**drinking water works permit**” means the drinking water works permit for the drinking water system, as identified in Schedule A of this licence and as amended from time to time;

“**emission summary table**” means the table that was prepared by a Professional Engineer in accordance with O. Reg. 419/05 and the procedure document listing the appropriate point of impingement concentrations of each compound of concern emitted from a component of the drinking water system and providing comparison to the corresponding point of impingement limit;

“**EPA**” means the *Environmental Protection Act*, R.S.O. 1990, c. E.19;

“**financial plan**” means the financial plan required by O. Reg. 453/07;

“**licence**” means this municipal drinking water licence for the municipal drinking water system identified in Schedule A of this licence;

“**operational plan**” means an operational plan developed in accordance with the Director’s Directions – Minimum Requirements for Operational Plans made under the authority of subsection 15(1) of the SDWA;

“**owner**” means the owner of the drinking water system as identified in Schedule A of this licence;

“**permit to take water**” means the permit to take water that is associated with the taking of water for purposes of the operation of the drinking water system, as identified in Schedule A of this licence and as amended from time to time;

“**point of impingement**” means any point in the natural environment that is not on the same property as the source of the contaminant and as defined by section 2 of O. Reg. 419/05;

“**point of impingement limit**” means the appropriate standard from Schedule 1, 2 or 3 of O. Reg. 419/05 and if a standard is not provided for a compound of concern, the appropriate criteria listed in the Ministry of the Environment and Climate Change publication titled “Summary of Standards and Guidelines to support Ontario Regulation 419: Air Pollution – Local Air Quality (including Schedule 6 of O. Reg. 419 on Upper Risk Thresholds)”, dated February 2008, as amended;

“**procedure document**” means the Ministry of the Environment and Climate Change procedure titled “Procedure for Preparing an Emission Summary and Dispersion Modelling Report” dated July 2005, as amended;

“**Professional Engineer**” means a Professional Engineer who has been licenced to practice in the Province of Ontario;

“**provincial officer**” means a provincial officer appointed pursuant to section 8 of the SDWA;

“**publication NPC-300**” means the Ministry of the Environment and Climate Change publication titled “Environmental Noise Guideline: Stationary and Transportation Sources – Approval and Planning” dated August 2013, as amended;

“**SDWA**” means the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32;

“**sensitive populations**” means any one or a combination of the following locations where the health effects of nitrogen oxides emissions from emergency generators shall be considered using the point of impingement limit instead of the Ministry of the Environment and Climate Change screening level for emergency generators:

- (a) health care units (e.g., hospitals and nursing homes),
- (b) primary/junior public schools,
- (c) day-care facilities, and
- (d) playgrounds;

“**subsystem**” has the same meaning as in Ontario Regulation 128/04 (Certification of Drinking Water System Operators and Water Quality Analysts);

“**surface water**” means water bodies (lakes, wetlands, ponds - including dug-outs), water courses (rivers, streams, water-filled drainage ditches), infiltration trenches, and areas of seasonal wetlands;

2.0 Applicability

- 2.1 In addition to any other requirements, the drinking water system identified above shall be established, altered and operated in accordance with the conditions of the drinking water works permit and this licence.

3.0 Licence Expiry

- 3.1 This licence expires on the date identified as the licence expiry date in Schedule A of this licence.

4.0 Licence Renewal

- 4.1 Any application to renew this licence shall be made on or before the date identified as the application for licence renewal date set out in Schedule A of this licence.

5.0 Compliance

- 5.1 The owner and operating authority shall ensure that any person authorized to carry out work on or to operate any aspect of the drinking water system has been informed of the SDWA, all applicable regulations made in accordance with that act, the drinking water works permit and this licence and shall take all reasonable measures to ensure any such person complies with the same.

6.0 Licence and Drinking Water Works Permit Availability

- 6.1 At least one copy of this licence and the drinking water works permit shall be stored in such a manner that they are readily viewable by all persons involved in the operation of the drinking water system.

7.0 Permit to Take Water and Drinking Water Works Permit

- 7.1 A permit to take water identified in Schedule A of this licence is the applicable permit on the date identified as the Schedule A Issue Date.
- 7.2 A drinking water works permit identified in Schedule A of this licence is the applicable permit on the date identified as the Schedule A Issue Date.

8.0 Financial Plan

- 8.1 For every financial plan prepared in accordance with subsections 2(1) and 3(1) of O. Reg. 453/07, the owner of the drinking water system shall:

- 8.1.1 Ensure that the financial plan contains on the front page of the financial plan, the appropriate financial plan number as set out in Schedule A of this licence; and
- 8.1.2 Submit a copy of the financial plan to the Ministry of Municipal Affairs and Housing within three (3) months of receiving approval by a resolution of municipal council or the governing body of the owner.

9.0 Interpretation

- 9.1 Where there is a conflict between the provisions of this licence and any other document, the following hierarchy shall be used to determine the provision that takes precedence:
 - 9.1.1 The SDWA;
 - 9.1.2 A condition imposed in this licence that explicitly overrides a prescribed regulatory requirement;
 - 9.1.3 A condition imposed in the drinking water works permit that explicitly overrides a prescribed regulatory requirement;
 - 9.1.4 Any regulation made under the SDWA;
 - 9.1.5 Any provision of this licence that does not explicitly override a prescribed regulatory requirement;
 - 9.1.6 Any provision of the drinking water works permit that does not explicitly override a prescribed regulatory requirement;
 - 9.1.7 Any application documents listed in this licence, or the drinking water works permit from the most recent to the earliest; and
 - 9.1.8 All other documents listed in this licence, or the drinking water works permit from the most recent to the earliest.
- 9.2 If any requirement of this licence or the drinking water works permit is found to be invalid by a court of competent jurisdiction, the remaining requirements of this licence and the drinking water works permit shall continue to apply.
- 9.3 The issuance of and compliance with the conditions of this licence and the drinking water works permit does not:
 - 9.3.1 Relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement, including the *Environmental Assessment Act*, R.S.O. 1990, c. E.18; and
 - 9.3.2 Limit in any way the authority of the appointed Directors and provincial officers of the Ministry of the Environment and Climate Change to require certain steps be taken or to require the owner to furnish any further information related to compliance with the conditions of this licence or the drinking water works permit.

- 9.4** For greater certainty, nothing in this licence or the drinking water works permit shall be read to provide relief from regulatory requirements in accordance with section 46 of the SDWA, except as expressly provided in the licence or the drinking water works permit.

10.0 Adverse Effects

- 10.1** Nothing in this licence or the drinking water works permit shall be read as to permit:
- 10.1.1 The discharge of a contaminant into the natural environment that causes or is likely to cause an adverse effect; or
- 10.1.2 The discharge of any material of any kind into or in any waters or on any shore or bank thereof or into or in any place that may impair the quality of the water of any waters.
- 10.2** All reasonable steps shall be taken to minimize and ameliorate any adverse effect on the natural environment or impairment of the quality of water of any waters resulting from the operation of the drinking water system including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the effect or impairment.
- 10.3** Fulfillment of one or more conditions imposed by this licence or the drinking water works permit does not eliminate the requirement to fulfill any other condition of this licence or the drinking water works permit.

11.0 Change of Owner or Operating Authority

- 11.1** This licence is not transferable without the prior written consent of the Director.
- 11.2** The owner shall notify the Director in writing at least 30 days prior to a change of any operating authority identified in Schedule A of this licence.
- 11.2.1 Where the change of operating authority is the result of an emergency situation, the owner shall notify the Director in writing of the change as soon as practicable.

12.0 Information to be Provided

- 12.1** Any information requested by a Director or a provincial officer concerning the drinking water system and its operation, including but not limited to any records required to be kept by this licence or the drinking water works permit, shall be provided upon request.

13.0 Records Retention

- 13.1** Except as otherwise required in this licence or the drinking water works permit, any records required by or created in accordance with this licence or the drinking water works permit, other than the records specifically referenced in section 12 of O. Reg. 170/03,

shall be retained for at least 5 years and made available for inspection by a provincial officer, upon request.

14.0 Chemicals and Materials

- 14.1** All chemicals and materials used in the alteration or operation of the drinking water system that come into contact with water within the system shall meet all applicable standards set by both the American Water Works Association ("AWWA") and the American National Standards Institute ("ANSI") safety criteria standards NSF/60, NSF/61 and NSF/372.
- 14.1.1 In the event that the standards are updated, the owner may request authorization from the Director to use any on hand chemicals and materials that previously met the applicable standards.
- 14.1.2 The requirement for the owner to comply with NSF/372 shall come into force no later than December 19, 2017.
- 14.2** The most current chemical and material product registration documentation from a testing institution accredited by either the Standards Council of Canada or by the American National Standards Institution ("ANSI") shall be available at all times for each chemical and material used in the operation of the drinking water system that comes into contact with water within the system.
- 14.3** Conditions 14.1 and 14.2 do not apply in the case of the following:
- 14.3.1 Water pipe and pipe fittings meeting AWWA specifications made from ductile iron, cast iron, PVC, fibre and/or steel wire reinforced cement pipe or high density polyethylene (HDPE);
- 14.3.2 Articles made from stainless steel, glass, HDPE or Teflon®;
- 14.3.3 Cement mortar for watermain lining and for water contacting surfaces of concrete structures made from washed aggregates and Portland cement;
- 14.3.4 Gaskets that are made from NSF approved materials;
- 14.3.5 Food grade oils and lubricants, food grade anti-freeze, and other food grade chemicals and materials that are compatible for drinking water use; or
- 14.3.6 Any particular chemical or material where the owner has written documentation signed by the Director that indicates that the Ministry of the Environment and Climate Change is satisfied that the chemical or material is acceptable for use within the drinking water system and the chemical or material is only used as permitted by the documentation.

15.0 Drawings

- 15.1** All drawings and diagrams in the possession of the owner that show any treatment subsystem as constructed shall be retained by the owner unless the drawings and

diagrams are replaced by a revised or updated version showing the subsystem as constructed subsequent to the alteration.

- 15.2** Any alteration to any treatment subsystem shall be incorporated into process flow diagrams, process and instrumentation diagrams, and record drawings and diagrams within one year of the substantial completion of the alteration.
- 15.3** Process flow diagrams and process and instrumentation diagrams for any treatment subsystem shall be kept in a place, or made available in such a manner, that they may be readily viewed by all persons responsible for all or part of the operation of the drinking water system.

16.0 Operations and Maintenance Manual

- 16.1** An up-to-date operations and maintenance manual or manuals shall be maintained and applicable parts of the manual or manuals shall be made available for reference by all persons responsible for all or part of the operation or maintenance of the drinking water system.
- 16.2** The operations and maintenance manual or manuals, shall include at a minimum:
- 16.2.1 The requirements of this licence and associated procedures;
 - 16.2.2 The requirements of the drinking water works permit for the drinking water system;
 - 16.2.3 A description of the processes used to achieve primary and secondary disinfection within the drinking water system, including where applicable:
 - a) A copy of the CT calculations that were used as the basis for primary disinfection under worst case operating conditions; and
 - b) The validated operating conditions for UV disinfection equipment, including a copy of the validation certificate;
 - 16.2.4 Procedures for monitoring and recording the in-process parameters necessary for the control of any treatment subsystem and for assessing the performance of the drinking water system;
 - 16.2.5 Procedures for the operation and maintenance of monitoring equipment;
 - 16.2.6 Contingency plans and procedures for the provision of adequate equipment and material to deal with emergencies, upset conditions and equipment breakdown;
 - 16.2.7 Procedures for dealing with complaints related to the drinking water system, including the recording of the nature of the complaint and any investigation and corrective action taken in respect of the complaint;

- 16.3** Procedures necessary for the operation and maintenance of any alterations to the drinking water system shall be incorporated into the operations and maintenance manual or manuals prior to those alterations coming into operation.
- 16.4** The requirement for the owner to comply with condition 16.2.3 shall come into force on May 19, 2016.

Schedule C: System-Specific Conditions

System Owner	The Corporation of the Township of Nairn and Hyman
Licence Number	281-101
Drinking Water System Name	Nairn Centre Drinking Water System
Schedule C Issue Date	November 25th, 2015

1.0 System Performance

Rated Capacity

- 1.1 For each treatment subsystem listed in column 1 of Table 1, the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed the value identified as the rated capacity in column 2 of the same row.

Table 1: Rated Capacity	
Column 1 Treatment Subsystem Name	Column 2 Rated Capacity (m ³ /day)
Nairn Centre Water Treatment Plant	818

Maximum Flow Rates

- 1.2 For each treatment subsystem listed in column 1 of Table 2, the maximum flow rate of water that flows into a treatment subsystem component listed in column 2 shall not exceed the value listed in column 3 of the same row.

Table 2: Maximum Flow Rates		
Column 1 Treatment Subsystem Name	Column 2 Treatment Subsystem Component	Column 3 Maximum Flow Rate (L/s)
Not Applicable	Not Applicable	Not Applicable

- 1.3 Despite conditions 1.1 and 1.2, a treatment subsystem may be operated temporarily at a maximum daily volume and/or a maximum flow rate above the values set out in column 2 of Table 1 and column 3 of Table 2 respectively for the purposes of fighting a large fire or for the maintenance of the drinking water system.
- 1.4 Condition 1.3 does not authorize the discharge into the distribution system of any water that does not meet all of the requirements of this licence and all other regulatory requirements, including compliance with the Ontario Drinking Water Quality Standards.

Residue Management

- 1.5** In respect of an effluent discharged into the natural environment from a treatment subsystem or treatment subsystem component listed in column 1 of Table 3:
- 1.5.1 The annual average concentration of a test parameter identified in column 2 shall not exceed the value in column 3 of the same row; and
- 1.5.2 The maximum concentration of a test parameter identified in column 2 shall not exceed the value in column 4 of the same row.

Table 3: Residue Management			
Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Test Parameter	Column 3 Annual Average Concentration (mg/L)	Column 4 Maximum Concentration (mg/L)
Residue Management	Suspended Solids (composite)	25	

UV Disinfection Equipment Performance

- 1.6** For each treatment subsystem or treatment subsystem component listed in column 1 of Table 4, and while directing water to the distribution system:
- 1.6.1 The UV disinfection equipment shall be operated such that a continuous pass-through UV dose is maintained throughout the life time of the UV lamp(s) that is at least the minimum continuous pass-through UV dose set out in column 2 of the same row at the maximum design flow rate for the equipment;
- 1.6.2 In addition to any other sampling, analysis and recording that may be required, the ultraviolet light disinfection equipment shall test for the test parameters set out in column 4 of the same row 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;
- 1.6.3 If there is a UV disinfection equipment alarm, the test parameters set out in column 4 of the same row shall be recorded at a recording frequency of once every five minutes or less until the alarm condition has been corrected;
- 1.6.4 A monthly summary report shall be prepared at the end of each calendar month which sets out the time, date and duration of each UV equipment alarm, the volume of water treated during each alarm period and the actions taken by the operating authority to correct the alarm situation;

Table 4: UV Disinfection Equipment			
Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Minimum Continuous Pass-Through UV Dose (mJ/cm²)	Column 3 Control Strategy	Column 4 Test Parameter
N/A	N/A	N/A	N/A

2.0 Flow Measurement and Recording Requirements

2.1 For each treatment subsystem identified in column 1 of Table 1 and in addition to any other flow measurement and recording that may be required, continuous flow measurement and recording shall be undertaken for:

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

2.1.2 The flow rate and daily volume of water that flows into the treatment subsystem.

2.2 For each treatment subsystem component identified in column 2 of Table 2 and in addition to any other flow measurement and recording that may be required, continuous flow measurement and recording shall be undertaken for the flow rate and daily volume of water that flows into the treatment subsystem component.

2.3 Where a rated capacity from Table 1 or a maximum flow rate from Table 2 is exceeded, the following shall be recorded:

2.3.1 The difference between the measured amount and the applicable rated capacity or maximum flow rate specified in Table 1 or Table 2;

2.3.2 The time and date of the measurement;

2.3.3 The reason for the exceedance; and

2.3.4 The duration of time that lapses between the applicable rated capacity or maximum flow rate first being exceeded and the next measurement where the applicable rated capacity or maximum flow rate is no longer exceeded.

3.0 Calibration of Flow Measuring Devices

3.1 All flow measuring devices that are required by regulation, by a condition in the Drinking Water Works Permit, or by a condition otherwise imposed by the Ministry of the Environment and Climate Change, shall be checked and calibrated in accordance with the manufacturer's instructions.

3.2 If the manufacturer's instructions do not indicate how often to check and calibrate a flow measuring device, the equipment shall be checked and calibrated at least once every 12 months during which the drinking water system is in operation.

3.2.1 For greater certainty, if condition 3.2 applies, the equipment shall be checked and calibrated not more than 30 days after the first anniversary of the day the equipment was checked and calibrated in the previous 12-month period.

4.0 Additional Sampling, Testing and Monitoring

Drinking Water Health and Non-Health Related Parameters

4.1 For each treatment subsystem or treatment subsystem component identified in column 1 of Tables 5 and 6 and in addition to any other sampling, testing and monitoring that may be required, sampling, testing and monitoring shall be undertaken for a test parameter listed in column 2 at the sampling frequency listed in column 3 and at the monitoring location listed in column 4 of the same row.

Table 5: Drinking Water Health Related Parameters			
Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Test Parameter	Column 3 Sampling Frequency	Column 4 Monitoring Location
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Table 6: Drinking Water Non-Health Related Parameters			
Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Test Parameter	Column 3 Sampling Frequency	Column 4 Monitoring Location
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Environmental Discharge Parameters

4.2 For each treatment subsystem or treatment subsystem component identified in column 1 of Table 7 and in addition to any other sampling, testing and monitoring that may be required, sampling, testing and monitoring shall be undertaken for a test parameter listed in column 2 using the sample type identified in column 3 at the sampling frequency listed in column 4 and at the monitoring location listed in column 5 of the same row.

4.3 For the purposes of Table 7:

4.3.1 Manual Composite means the mean of at least three grab samples taken during a discharge event, with one sample being taken immediately following the

commencement of the discharge event, one sample being taken approximately at the mid-point of the discharge event and one sample being taken immediately before the end of the discharge event; and

4.3.2 Automated Composite means samples must be taken during a discharge event by an automated sampler at a minimum sampling frequency of once per hour.

4.4 Any sampling, testing and monitoring for the test parameter Total Suspended Solids shall be performed in accordance with the requirements set out in the publication "Standard Methods for the Examination of Water and Wastewater", 21st Edition, 2005, or as amended from time to time by more recently published editions.

Table 7: Environmental Discharge Parameters				
Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Test Parameter	Column 3 Sample Type	Column 4 Sampling Frequency	Column 5 Monitoring Location
Residue Management	Suspended Solids (composite)	Manual Composite	Monthly	Point of Discharge

4.5 Pursuant to Condition 10 of Schedule B of this licence, the owner may undertake the following environmental discharges associated with the maintenance and/or repair of the drinking water system:

4.5.1 The discharge of potable water from a watermain to a road or storm sewer;

4.5.2 The discharge of potable water from a water storage facility or pumping station:

4.5.2.1 To a road or storm sewer; or

4.5.2.2 To a watercourse where the discharge has been dechlorinated and if necessary, sediment and erosion control measures have been implemented.

4.5.3 The discharge of dechlorinated non-potable water from a watermain, water storage facility or pumping station to a road or storm sewer;

4.5.4 The discharge of raw water from a groundwater well to the environment where if necessary, sediment and erosion control measures have been implemented; and

4.5.5 The discharge of raw water, potable water or non-potable water from a treatment subsystem to the environment where if necessary, the discharge has been dechlorinated and sediment and erosion control measures have been implemented.

5.0 Studies Required

5.1 Not Applicable

6.0 Source Protection

6.1 Not Applicable

Schedule D: Conditions for Relief from Regulatory Requirements

System Owner	The Corporation of the Township of Nairn and Hyman
Licence Number	281-101
Drinking Water System Name	Nairn Centre Drinking Water System
Schedule D Issue Date	November 25th, 2015

1.0 Lead Regulatory Relief

- 1.1** Any relief from regulatory requirements previously authorized by the Director in respect of the drinking water system under section 38 of the SDWA in relation to the sampling, testing or monitoring requirements contained in Schedule 15.1 of O. Reg. 170/03 shall remain in force until such time as Schedule 15.1 of O. Reg. 170/03 is amended after June 1, 2009.

2.0 Other Regulatory Relief

- 2.1** Not Applicable

Schedule E: Pathogen Log Removal/Inactivation Credits

System Owner	The Corporation of the Township of Nairn and Hyman
Licence Number	281-101
Drinking Water System Name	Nairn Centre Drinking Water System
Schedule E Issue Date	November 25th, 2015

1.0 Primary Disinfection Pathogen Log Removal/Inactivation Credits

Nairn Centre Water Treatment Plant

Spanish River [Surface Water]

Minimum Log Removal/ Inactivation Required	Cryptosporidium Oocysts	Giardia Cysts ^a	Viruses ^b
Nairn Centre Water Treatment Plant	2	3	4

^a At least 0.5 log inactivation of Giardia shall be achieved by the disinfection portion of the overall water treatment process.

^b At least 2 log inactivation of viruses shall be achieved by disinfection.

Log Removal/Inactivation Credits Assigned ^c	Cryptosporidium Oocysts	Giardia Cysts	Viruses
Conventional Filtration	2	2.5	2
Chlorination [CT:Clearwell]	NA	0.5	2+

^c Log removal/inactivation credit assignment is based on each treatment process being fully operational and the applicable log removal/inactivation credit assignment criteria being met.

Treatment Component	Log Removal/Inactivation Credit Assignment Criteria
Conventional Filtration	<ol style="list-style-type: none"> 1. A chemical coagulant shall be used at all times when the treatment plant is in operation; 2. Chemical dosages shall be monitored and adjusted in response to variations in raw water quality; 3. Effective backwash procedures shall be maintained including filter-to-waste or an equivalent procedure during filter ripening to ensure that effluent turbidity requirements are met at all times; 4. Filtrate turbidity shall be continuously monitored from each filter; and 5. Performance criterion for filtered water turbidity of less than or equal to 0.3 NTU in 95% of the measurements each month shall be met for each filter.
Chlorination	<ol style="list-style-type: none"> 1. Sampling and testing for free chlorine residual shall be carried out by continuous monitoring equipment in the treatment process at or near a location where the intended contact time has just been completed in accordance with the Ministry's <i>Procedure for Disinfection of Drinking Water in Ontario</i>; and 2. At all times, CT provided shall be greater than or equal to the CT required to achieve the log removal credits assigned.

APPENDIX II

Drinking Water Works Permit



DRINKING WATER WORKS PERMIT

Permit Number: 281-201

Issue Number: 3

Pursuant to the *Safe Drinking Water Act, 2002*, S.O. 2002, c. 32, and the regulations made thereunder and subject to the limitations thereof, this drinking water works permit is issued under Part V of the *Safe Drinking Water Act, 2002*, S.O. 2002, c. 32 to:

The Corporation of the Township of Nairn and Hyman

**64 McIntyre St.
Nairn Centre ON
P0M 2L0**

For the following municipal residential drinking water system:

Nairn Centre Drinking Water System

This drinking water works permit includes the following:

Schedule	Description
Schedule A	Drinking Water System Description
Schedule B	General
Schedule C	All documents issued as Schedule C to this drinking water works permit which authorize alterations to the drinking water system
Schedule D	Process Flow Diagrams

DATED at TORONTO this 6th day of September, 2016

Signature

Aziz Ahmed, P.Eng.
Director
Part V, *Safe Drinking Water Act, 2002*

Schedule A: Drinking Water System Description

System Owner	The Corporation of the Township of Nairn and Hyman
Permit Number	281-201
Drinking Water System Name	Nairn Centre Drinking Water System
Schedule A Issue Date	6th day of September, 2016

1.0 System Description

- 1.1 The following is a summary description of the works comprising the above drinking water system:

Overview

The **Nairn Centre Drinking Water System** consists of one conventional drinking water treatment plant and approximately 6.5 kilometers distribution water mains. The water treatment plant is a prefabricated package water treatment plant comprised of chemical addition, prechlorination, coagulation/flocculation, sedimentation, and dual media filtration.

Nairn Centre Drinking Water System

Treatment Plant

Name	Nairn Centre Water Treatment Plant
Street Address	Ferry Lane
UTM Coordinates	NAD 83, Zone 17m 455049m E, 5131662 m N
System Type	A prefabricated package surface water treatment plant
Notes	

Surface Water Supply

Intake Structure

Description	Water intake structure comprising a polyethylene "drum" (1.05 m diameter), weighed down with rock ballast, partially embedded into the river bottom
Location	
Mesh Screen	150 mm intake ports wrapped with 9.5 mm mesh screen
Intake Pipe	An intake pipe of 250mm approximately 33 m in length, connecting to the raw water well
Zebra Mussel Control	A 75 mm diameter pipe installed alongside the intake pipe, for future use in chlorination for zebra mussel control
Notes	

Low Lift Works

Wet Wells

Description	A raw water wet well
Dimensions	One (1) raw water pump wet well, 2.44 m diameter
Notes	

Low Lift Pumps

Description	Two (2) low lift pumps, alternating as duty and standby
Capacity	Each pump rated at 9.5 L/s at 18.5 m TDH
Notes	Discharging raw water into the 150 mm common header, and to the treatment plant through a 150 mm diameter PVC plant supply pipe

Mixing Zone

Description	Mixing Zone
Notes	The static in-line mixer for mixing of coagulant, soda ash and polymer added

Flocculation

Flocculation Tanks

Description	Flocculation Zone
Notes	Providing a retention time of 30 min

Clarification

Settling Compartment

Description	An upflow clarifier, complete with tube settlers
Notes	Providing a retention time of 60 min at a surface rise rate of 3.7 m/hr

Filtration

Dual Media Filter

Description	A two-compartment filter containing sand and anthracite
Notes	Operating at a filtration rate of 6.5 m/hr, and provided with backwash at a rate of 37 m/hr

Waste Residual Management

Surge Tank

Description	Surge tank receives sludge from the clarifiers and backwash waste from the dual media filters
Capacity	26 m ³
Equipment	Two (2) (one duty, one standby) centrifugal submersible pumps each rated at 1.0 L/s at 5.0 m TDH
Notes	Submersible pumps transfer waste to a 65 m ³ settling chamber (clarifier)

Setting Chamber (Clarifier)

Description	Setting Chamber (Clarifier) receives waste from the surge tank
Capacity	65 m ³
Notes	From the settling chamber overflowing to an outfall chamber, and from there to the adjacent creek and from there to the Spanish River (downstream of the plant intake); and deposited sludge removed from the clarifier by vacuum pump truck for off-site disposal

High Lift Works

High Lift Pumps

Description	High lift pumping devices
Capacity	Two (2) vertical multi-stage pumps alternating as duty and standby, each pump rated at 6.6 L/s at 59.5 m TDH
	One (1) fire pump rated at 40.1 L/s at 61 m TDH
Notes	Having a system of three hydro-pneumatic (pressure) tanks, each 1.6 m ³ capacity

On-Site Storage

Clearwells

Description	Two (2) equal-capacity clearwells, interconnected via an overflow wall
Capacity	Each clearwell has a maximum volume of 345 m ³ , for a total treated water storage volume of 690 m ³
Notes	Each clearwell equipped with a 200 mm diameter high lift pump intake

Emergency Power

Backup Power Supply

Description	A 160 kW (200 kVA) diesel generator set
Notes	Provide emergency "back-up" power for the water treatment plant

Chemical Addition

Chlorine

Description	Pre-chlorination and post-chlorination system
Feed Point	Injection point to the upstream of the static mixer into raw water for pre-chlorination
	Injection point to the filter effluent line for post-chlorination
Equipment	Three (3) metering pumps, one for pre-chlorination, Two (2) for post chlorination, one duty, one standby each pump capable of 6.3 L/hr, complete with a solution tank
Notes	

Coagulant

Description	Coagulant injection system
Feed Point	Injection into the raw water supply pipe upstream of the static mixer
Equipment	Two (2) metering pumps (one duty and one standby), each capable of 19 L/hr
	One (1) 11.4 m ³ polyethylene tank with a concrete containment
Notes	

Soda Ash System

Description	Soda ash solution injection system
Feed Point	Injection to the raw water upstream of the static mixer
	Injection also to the treated water upstream of the clearwell/reservoir
Equipment	Two (2) metering pumps (one pre and one post) each capable of 17 L/hr Both pumps can be valved to run as back up for each other.
	One (1) 1,400 L steel tank
Notes	

Polymer Solution

Description	Polymer solution injection system
Feed Point	Injection to downstream of the static mixer
Equipment	Two (2) (one duty and one standby) metering pumps, each capable of 19 L/hr,
	One (1) 200 L polyethylene solution tank
Notes	

Instrumentation and Control**Regulatory Monitoring**

Description	Process control and monitoring equipment for the Nairn Centre Drinking Water System
Notes	System control with data acquisition including various in-line analyzers and monitors

Watermains

1.2 Watermains within the distribution system comprise:

1.2.1 Watermains that have been set out in each document or file identified in column 1 of Table 1.

Table 1: Watermains	
Column 1 Document or File Name	Column 2 Date
Township of Nairn, Water Distribution System Commissioned	December 30, 2014

1.2.2 Watermains that have been added, modified, replaced or extended further to the provisions of Schedule C of this drinking water works permit on or after the date identified in column 2 of Table 1 for each document or file identified in column 1.

1.2.3 Watermains that have been added, modified, replaced or extended further to an authorization by the Director on or after the date identified in column 2 of Table 1 for each document or file identified in column 1.

Schedule B: General

System Owner	The Corporation of the Township of Nairn and Hyman
Permit Number	281-201
Drinking Water System Name	Nairn Centre Drinking Water System
Schedule B Issue Date	6th day of September, 2016

1.0 Applicability

- 1.1 In addition to any other requirements, the drinking water system identified above shall be altered and operated in accordance with the conditions of this drinking water works permit and the licence.
- 1.2 The definitions and conditions of the licence shall also apply to this drinking water works permit.

2.0 Alterations to the Drinking Water System

- 2.1 Any document issued by the Director as a Schedule C to this drinking water works permit shall provide authority to alter the drinking water system in accordance, where applicable, with the conditions of this drinking water works permit and the licence.
- 2.2 All Schedule C documents issued by the Director for the drinking water system shall form part of this drinking water works permit.
- 2.3 All parts of the drinking water system in contact with drinking water which are:
 - 2.3.1 Added, modified, replaced, extended; or
 - 2.3.2 Taken out of service for inspection, repair or other activities that may lead to contamination,shall be disinfected before being put into service 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, effective no later than March 1, 2017;
 - b) AWWA C652 – Standard for Disinfection of Water-Storage Facilities;
 - c) AWWA C653 – Standard for Disinfection of Water Treatment Plants; and
 - d) AWWA C654 – Standard for Disinfection of Wells.
- 2.4 The owner shall notify the Director within thirty (30) days of the placing into service or the completion of any addition, modification, replacement or extension of the drinking water system which had been authorized through:
 - 2.4.1 Schedule B to this drinking water works permit which would require an alteration of the description of a drinking water system component described in Schedule A of this drinking water works permit;

- 2.4.2 Any Schedule C to this drinking water works permit respecting works other than watermains; or
- 2.4.3 Any approval issued prior to the issue date of the first drinking water works permit respecting works other than watermains which were not in service at the time of the issuance of the first drinking water works permit.
- 2.5** For greater certainty, the notification requirements set out in condition 2.4 do not apply to any addition, modification, replacement or extension in respect of the drinking water system which:
- 2.5.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03;
- 2.5.2 Constitutes maintenance or repair of the drinking water system; or
- 2.5.3 Is a watermain authorized by condition 3.1 of Schedule B of this drinking water works permit.
- 2.6** The owner shall notify the legal owner of any part of the drinking water system that is prescribed as a municipal drinking water system by section 2 of O. Reg. 172/03 of the requirements of the licence and this drinking water works permit as applicable to the prescribed system.
- 2.7** For greater certainty, any alteration to the drinking water system made in accordance with this drinking water works permit may only be carried out after other legal obligations have been complied with including those arising from the *Environmental Assessment Act*, *Niagara Escarpment Planning and Development Act*, *Oak Ridges Moraine Conservation Act, 2001* and *Greenbelt Act, 2005*.

3.0 Watermain Additions, Modifications, Replacements and Extensions

- 3.1** The drinking water system may be altered by adding, modifying, replacing or extending a watermain within the distribution system subject to the following conditions:
- 3.1.1 The design of the watermain addition, modification, replacement or extension:
- Has been prepared by a Professional Engineer;
 - Has been designed only to transmit water and has not been designed to treat water;
 - Satisfies the design criteria set out in the Ministry of the Environment and Climate Change publication "Watermain Design Criteria for Future Alterations Authorized under a Drinking Water Works Permit – June 2012", as amended from time to time; and
 - Is consistent with or otherwise addresses the design objectives contained within the Ministry of the Environment and Climate Change publication "Design Guidelines for Drinking Water Systems, 2008", as amended from time to time.

- 3.1.2 The maximum demand for water exerted by consumers who are serviced by the addition, modification, replacement or extension of the watermain will not result in an exceedance of the rated capacity of a treatment subsystem or the maximum flow rate for a treatment subsystem component as specified in the licence, or the creation of adverse conditions within the drinking water system.
 - 3.1.3 The watermain addition, modification, replacement or extension will not adversely affect the distribution system's ability to maintain a minimum pressure of 140 kPa at ground level at all points in the distribution system under maximum day demand plus fire flow conditions.
 - 3.1.4 Secondary disinfection will be provided to water within the added, modified, replaced or extended watermain to meet the requirements of O. Reg. 170/03.
 - 3.1.5 The watermain addition, modification, replacement or extension is wholly located within the municipal boundary over which the owner has jurisdiction.
 - 3.1.6 The owner of the drinking water system consents in writing to the watermain addition, modification, replacement or extension.
 - 3.1.7 A Professional Engineer has verified in writing that the watermain addition, modification, replacement or extension meets the requirements of condition 3.1.1.
 - 3.1.8 The owner of the drinking water system has verified in writing that the watermain addition, modification, replacement or extension meets the requirements of conditions 3.1.2 to 3.1.6.
- 3.2** The authorization for the addition, modification, replacement or extension of a watermain provided for in condition 3.1 does not include the addition, modification, replacement or extension of a watermain that:
- 3.2.1 Passes under or through a body of surface water, unless trenchless construction methods are used;
 - 3.2.2 Has a nominal diameter greater than 750 mm;
 - 3.2.3 Results in the fragmentation of the drinking water system; or
 - 3.2.4 Connects to another drinking water system, unless:
 - a) Prior to construction, the owner of the drinking water system seeking the connection obtains written consent from the owner or owner's delegate of the drinking water system being connected to; and
 - b) The owner of the drinking water system seeking the connection retains a copy of the written consent from the owner or owner's delegate of the drinking water system being connected to as part of the record that is recorded and retained under condition 3.3.

- 3.3** The verifications required in conditions 3.1.7 and 3.1.8 shall be:
- 3.3.1 Recorded on “Form 1 – Record of Watermains Authorized as a Future Alteration”, as published by the Ministry of the Environment and Climate Change, prior to the watermain addition, modification, replacement or extension being placed into service; and
 - 3.3.2 Retained for a period of ten (10) years by the owner.
- 3.4** For greater certainty, the verification requirements set out in condition 3.3 do not apply to any addition, modification, replacement or extension in respect of the drinking water system which:
- 3.4.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or
 - 3.4.2 Constitutes maintenance or repair of the drinking water system.
- 3.5** The document or file referenced in Column 1 of Table 1 of Schedule A of this drinking water works permit that sets out watermains shall be retained by the owner and shall be updated to include watermain additions, modifications, replacements and extensions within 12 months of the addition, modification, replacement or extension.
- 3.6** The updates required by condition 3.5 shall include watermain location relative to named streets or easements and watermain diameter.

4.0 Minor Modifications to the Drinking Water System

- 4.1** The drinking water system may be altered by adding, modifying or replacing the following components in the drinking water system:
- 4.1.1 Raw water pumps and treatment process pumps in the treatment system;
 - 4.1.2 Coagulant feed systems in the treatment system, including the location and number of dosing points;
 - 4.1.3 Valves;
 - 4.1.4 Instrumentation and controls, including SCADA systems, and software associated with these devices;
 - 4.1.5 Filter media, backwashing equipment and under-drains in the treatment system; or,
 - 4.1.6 Spill containment works.
- 4.2** The drinking water system may be altered by adding, modifying, replacing or removing the following components in the drinking water system:
- 4.2.1 Treated water pumps and associated equipment;
 - 4.2.2 Re-circulation devices within distribution system storage facilities;

- 4.2.3 In-line mixing equipment;
 - 4.2.4 Chemical metering pumps and chemical handling pumps;
 - 4.2.5 Chemical storage tanks (excluding fuel storage tanks) and associated equipment; or,
 - 4.2.6 Measuring and monitoring devices that are not required by regulation, by a condition in the Drinking Water Works Permit, or by a condition otherwise imposed by the Ministry of the Environment and Climate Change.
- 4.3** The drinking water system may be altered by replacing the following:
- 4.3.1 Raw water piping, treatment process piping or treated water piping within the treatment subsystem;
 - 4.3.2 Fuel storage tanks and spill containment works, and associated equipment; or
 - 4.3.3 Coagulants and pH adjustment chemicals, where the replacement chemicals perform the same function;
 - a) Prior to making any alteration to the drinking water system under condition 4.3.3, the owner shall undertake a review of the impacts that the alteration might have on corrosion control or other treatment processes; and
 - b) The owner shall notify the Director in writing within thirty (30) days of any alteration made under condition 4.3.3 and shall provide the Director with a copy of the review.
- 4.4** Any alteration of the drinking water system made under conditions 4.1, 4.2 or 4.3 shall not result in:
- 4.4.1 An exceedance of a treatment subsystem rated capacity or a treatment subsystem component maximum flow rate as specified in the licence;
 - 4.4.2 The bypassing of any unit process within a treatment subsystem;
 - 4.4.3 A deterioration in the quality of drinking water provided to consumers;
 - 4.4.4 A reduction in the reliability or redundancy of any component of the drinking water system;
 - 4.4.5 A negative impact on the ability to undertake compliance and other monitoring necessary for the operation of the drinking water system; or
 - 4.4.6 An adverse effect on the environment.
- 4.5** The owner shall verify in writing that any addition, modification, replacement or removal of drinking water system components in accordance with conditions 4.1, 4.2 or 4.3 has met the requirements of the conditions listed in condition 4.4.

- 4.6** The verifications and documentation required in condition 4.5 shall be:
- 4.6.1 Recorded on “Form 2 – Record of Minor Modifications or Replacements to the Drinking Water System”, as published by the Ministry of the Environment and Climate Change, prior to the modified or replaced components being placed into service; and
 - 4.6.2 Retained for a period of ten (10) years by the owner.
- 4.7** For greater certainty, the verification requirements set out in conditions 4.5 and 4.6 do not apply to any addition, modification, replacement or removal in respect of the drinking water system which:
- 4.7.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or
 - 4.7.2 Constitutes maintenance or repair of the drinking water system.
- 4.8** The owner shall update any drawings maintained for the drinking water system to reflect the modification or replacement of the works, where applicable.

5.0 Equipment with Emissions to the Air

- 5.1** The drinking water system may be altered by adding, modifying or replacing any of the following drinking water system components that may discharge or alter the rate or manner of a discharge of a compound of concern to the atmosphere:
- 5.1.1 Any equipment, apparatus, mechanism or thing that is used for the transfer of outdoor air into a building or structure that is not a cooling tower;
 - 5.1.2 Any equipment, apparatus, mechanism or thing that is used for the transfer of indoor air out of a space used for the production, processing, repair, maintenance or storage of goods or materials, including chemical storage;
 - 5.1.3 Laboratory fume hoods used for drinking water testing, quality control and quality assurance purposes;
 - 5.1.4 Low temperature handling of compounds with a vapor pressure of less than 1 kilopascal;
 - 5.1.5 Maintenance welding stations;
 - 5.1.6 Minor painting operations used for maintenance purposes;
 - 5.1.7 Parts washers for maintenance shops;
 - 5.1.8 Emergency chlorine and ammonia gas scrubbers and absorbers;
 - 5.1.9 Venting for activated carbon units for drinking water taste and odour control;
 - 5.1.10 Venting for a stripping unit for methane removal from a groundwater supply;
 - 5.1.11 Venting for an ozone treatment unit;

- 5.1.12 Natural gas or propane fired boilers, water heaters, space heaters and make-up air units with a total facility-wide heat input rating of less than 20 million kilojoules per hour, and with an individual fuel energy input of less than or equal to 10.5 gigajoules per hour; or
- 5.1.13 Emergency generators that fire No. 2 fuel oil (diesel fuel) with a sulphur content of 0.5 per cent or less measured by weight, natural gas, propane, gasoline or biofuel, and that are used for emergency duty only with periodic testing.
- 5.2** The owner shall not add, modify or replace a drinking water system component set out in condition 5.1 for an activity that is not directly related to the treatment and/or distribution of drinking water.
- 5.3** The emergency generators identified in condition 5.1.13 shall not be used for non-emergency purposes including the generation of electricity for sale or for peak shaving purposes.
- 5.4** The owner shall prepare an emission summary table for nitrogen oxide emissions only, for each addition, modification or replacement of emergency generators identified in condition 5.1.13.

Performance Limits

- 5.5** The owner shall ensure that a drinking water system component identified in conditions 5.1.1 to 5.1.13 is operated at all times to comply with the following limits:
- 5.5.1 For equipment other than emergency generators, the maximum concentration of any compound of concern at a point of impingement shall not exceed the corresponding point of impingement limit;
- 5.5.2 For emergency generators, the maximum concentration of nitrogen oxides at sensitive populations shall not exceed the applicable point of impingement limit, and at non-sensitive populations shall not exceed the Ministry of the Environment and Climate Change half-hourly screening level of 1880 ug/m³ as amended; and
- 5.5.3 The noise emissions comply at all times with the limits set out in publication NPC-300, as applicable.
- 5.6** The owner shall verify in writing that any addition, modification or replacement of works in accordance with condition 5.1 has met the requirements of the conditions listed in condition 5.5.
- 5.7** The owner shall document how compliance with the performance limits outlined in condition 5.5.3 is being achieved, through noise abatement equipment and/or operational procedures.
- 5.8** The verifications and documentation required in conditions 5.6 and 5.7 shall be:
- 5.8.1 Recorded on "Form 3 – Record of Addition, Modification or Replacement of Equipment Discharging a Contaminant of Concern to the Atmosphere", as published by the Ministry of the Environment and Climate Change, prior to the additional, modified or replacement equipment being placed into service; and

5.8.2 Retained for a period of ten (10) years by the owner.

5.9 For greater certainty, the verification and documentation requirements set out in conditions 5.6 and 5.8 do not apply to any addition, modification or replacement in respect of the drinking water system which:

5.9.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or

5.9.2 Constitutes maintenance or repair of the drinking water system.

5.10 The owner shall update any drawings maintained for the works to reflect the addition, modification or replacement of the works, where applicable.

6.0 Previously Approved Works

6.1 The owner may add, modify, replace or extend, and operate part of a municipal drinking water system if:

6.1.1 An approval was issued after January 1, 2004 under section 36 of the SDWA in respect of the addition, modification, replacement or extension and operation of that part of the municipal drinking water system;

6.1.2 The approval expired by virtue of subsection 36(4) of the SDWA; and

6.1.3 The addition, modification, replacement or extension commenced within five years of the date that activity was approved by the expired approval.

7.0 System-Specific Conditions

7.1 Not Applicable

8.0 Source Protection

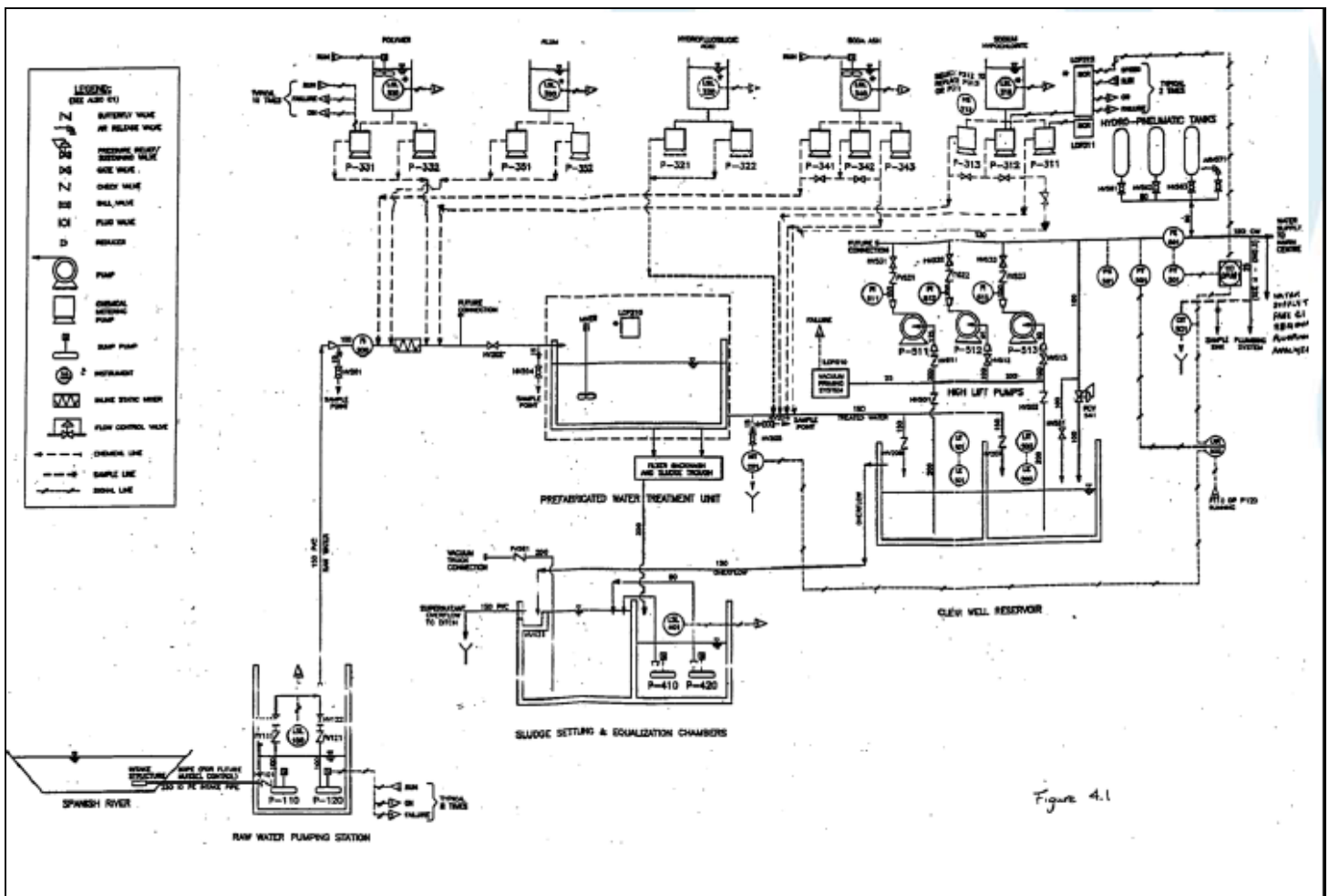
8.1 Not Applicable

Schedule D: Process Flow Diagrams

System Owner	The Corporation of the Township of Nairn and Hyman
Permit Number	281-201
Drinking Water System Name	Nairn Centre Drinking Water System
Schedule D Issue Date	6th day of September, 2016

1.0 Process Flow Diagrams

Township of Nairn and Hyman, Process flow charts of the Nairn Centre Water Treatment Plant



[Source: Operational Plan Element #6, Revision #5, December 30, 2014]

APPENDIX III

Permit to Take Water

PERMIT TO TAKE WATER
Surface Water
NUMBER 6410-BAPR97

Pursuant to Section 34.1 of the Ontario Water Resources Act, R.S.O. 1990 this Permit To Take Water is hereby issued to:

The Corporation of the Township of Nairn and Hyman
64 McIntyre St Nairn Centre
Nairn and Hyman, Ontario, P0M 2L0
Canada

For the water Spanish River
taking from:

Located at: Ferry St Nairn Centre
Nairn and Hyman, District of Sudbury

For the purposes of this Permit, and the terms and conditions specified below, the following definitions apply:

DEFINITIONS

- (a) "Director" means any person appointed in writing as a Director pursuant to section 5 of the OWRA for the purposes of section 34.1, OWRA.
- (b) "Provincial Officer" means any person designated in writing by the Minister as a Provincial Officer pursuant to section 5 of the OWRA.
- (c) "Ministry" means Ontario Ministry of the Environment, Conservation and Parks.
- (d) "District Office" means the Sudbury District Office.
- (e) "Permit" means this Permit to Take Water No. 6410-BAPR97 including its Schedules, if any, issued in accordance with Section 34.1 of the OWRA.
- (f) "Permit Holder" means The Corporation of the Township of Nairn and Hyman.
- (g) "OWRA" means the *Ontario Water Resources Act*, R.S.O. 1990, c. O. 40, as amended.

You are hereby notified that this Permit is issued subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. Compliance with Permit

- 1.1 Except where modified by this Permit, the water taking shall be in accordance with the application for this Permit To Take Water, dated March 13, 2019 and signed by Belinda Ketchabaw, and all Schedules included in this Permit.
- 1.2 The Permit Holder shall ensure that any person authorized by the Permit Holder to take water under this Permit is provided with a copy of this Permit and shall take all reasonable measures to ensure that any such person complies with the conditions of this Permit.
- 1.3 Any person authorized by the Permit Holder to take water under this Permit shall comply with the conditions of this Permit.
- 1.4 This Permit is not transferable to another person.
- 1.5 This Permit provides the Permit Holder with permission to take water in accordance with the conditions of this Permit, up to the date of the expiry of this Permit. This Permit does not constitute a legal right, vested or otherwise, to a water allocation, and the issuance of this Permit does not guarantee that, upon its expiry, it will be renewed.
- 1.6 The Permit Holder shall keep this Permit available at all times at or near the site of the taking, and shall produce this Permit immediately for inspection by a Provincial Officer upon his or her request.
- 1.7 The Permit Holder shall report any changes of address to the Director within thirty days of any such change. The Permit Holder shall report any change of ownership of the property for which this Permit is issued within thirty days of any such change. A change in ownership in the property shall cause this Permit to be cancelled.

2. General Conditions and Interpretation

- 2.1 Inspections
The Permit Holder must forthwith, upon presentation of credentials, permit a Provincial Officer to carry out any and all inspections authorized by the OWRA, the *Environmental Protection Act*, R.S.O. 1990, the *Pesticides Act*, R.S.O. 1990, or the *Safe Drinking Water Act*, S. O. 2002.
- 2.2 Other Approvals
The issuance of, and compliance with this Permit, does not:
 - (a) relieve the Permit Holder or any other person from any obligation to comply with any other applicable legal requirements, including the provisions of the *Ontario Water Resources Act*, and

the *Environmental Protection Act* , and any regulations made thereunder; or

(b) limit in any way any authority of the Ministry, a Director, or a Provincial Officer, including the authority to require certain steps be taken or to require the Permit Holder to furnish any further information related to this Permit.

2.2.1 Prior to the taking of any water under the authorization of this Permit, the Permit Holder shall ensure full compliance with the *Safe Drinking Water Act* , R.S.O. 2002 and its regulations. At no time does this permit authorize the taking of water when out of compliance with the *Safe Drinking Water Act* , R.S.O. 2002 and its regulations.

2.3 Information

The receipt of any information by the Ministry, the failure of the Ministry to take any action or require any person to take any action in relation to the information, or the failure of a Provincial Officer to prosecute any person in relation to the information, shall not be construed as:

(a) an approval, waiver or justification by the Ministry of any act or omission of any person that contravenes this Permit or other legal requirement; or

(b) acceptance by the Ministry of the information's completeness or accuracy.

2.4 Rights of Action

The issuance of, and compliance with this Permit shall not be construed as precluding or limiting any legal claims or rights of action that any person, including the Crown in right of Ontario or any agency thereof, has or may have against the Permit Holder, its officers, employees, agents, and contractors.

2.5 Severability

The requirements of this Permit are severable. If any requirements of this Permit, or the application of any requirements of this Permit to any circumstance, is held invalid or unenforceable, the application of such requirements to other circumstances and the remainder of this Permit shall not be affected thereby.

2.6 Conflicts

Where there is a conflict between a provision of any submitted document referred to in this Permit, including its Schedules, and the conditions of this Permit, the conditions in this Permit shall take precedence.

3. Water Takings Authorized by This Permit

3.1 Expiry

This Permit expires on **April 9, 2029**. No water shall be taken under authority of this Permit after the expiry date.

3.2 Amounts of Taking Permitted

The Permit Holder shall only take water from the source, during the periods and at the rates and amounts of taking specified in Table A. Water takings are authorized only for the purposes

specified in Table A.

Table A

	Source Name / Description:	Source: Type:	Taking Specific Purpose:	Taking Major Category:	Max. Taken per Minute (litres):	Max. Num. of Hrs Taken per Day:	Max. Taken per Day (litres):	Max. Num. of Days Taken per Year:	Zone/ Easting/ Northing:
1	Spanish River	River	Municipal	Water Supply	570	24	820,800	365	17 455049 5131662
							Total Taking:	820,800	

4. Monitoring

4.1 The Permit Holder shall, on each day water is taken under the authorization of this Permit, record the date, the volume of water taken on that date and the rate at which it was taken. The daily volume of water taken shall be measured by a flow meter or calculated in accordance with the method described in the application for this Permit or as otherwise accepted by the Director. A separate record shall be maintained for each source. The Permit Holder shall keep all records required by this condition current and available at or near the site of the taking and shall produce the records immediately for inspection by a Provincial Officer upon his or her request. The Permit Holder, unless otherwise required by the Director, shall submit, on or before March 31st in every year, the daily water taking data collected and recorded for the previous year to the ministry's Water Taking Reporting System.

5. Impacts of the Water Taking

5.1 Notification

The Permit Holder shall immediately notify the local District Office of any complaint arising from the taking of water authorized under this Permit and shall report any action which has been taken or is proposed with regard to such complaint. The Permit Holder shall immediately notify the local District Office if the taking of water is observed to have any significant impact on the surrounding waters. After hours, calls shall be directed to the Ministry's Spills Action Centre at 1-800-268-6060.

5.2 For Surface-Water Takings

The taking of water (including the taking of water into storage and the subsequent or simultaneous withdrawal from storage) shall be carried out in such a manner that streamflow is not stopped and is not reduced to a rate that will cause interference with downstream uses of water or with the natural functions of the stream.

6. Director May Amend Permit

The Director may amend this Permit by letter requiring the Permit Holder to suspend or reduce the taking to an amount or threshold specified by the Director in the letter. The suspension or reduction in taking shall be effective immediately and may be revoked at any time upon notification by the Director. This condition does not affect your right to appeal the suspension or reduction in taking to the Environmental Review Tribunal under the *Ontario Water Resources Act*, Section 100 (4).

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is included to ensure that the conditions in this Permit are complied with and can be enforced.
2. Condition 2 is included to clarify the legal interpretation of aspects of this Permit.
3. Conditions 3 through 6 are included to protect the quality of the natural environment so as to safeguard the ecosystem and human health and foster efficient use and conservation of waters. These conditions allow for the beneficial use of waters while ensuring the fair sharing, conservation and sustainable use of the waters of Ontario. The conditions also specify the water takings that are authorized by this Permit and the scope of this Permit.

In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 101 of the Ontario Water Resources Act, R.S.O. 1990, as amended, provides that the Notice requiring the hearing shall state:

1. The portions of the Permit or each term or condition in the Permit in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

In addition to these legal requirements, the Notice should also include:

- a. The name of the appellant;
- b. The address of the appellant;
- c. The Permit to Take Water number;
- d. The date of the Permit to Take Water;
- e. The name of the Director;
- f. The municipality within which the works are located;

This notice must be served upon:

The Secretary
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto ON
M5G 1E5
Fax: (416) 326-5370
Email: ERTTribunalsecretary@ontario.ca

AND

The Director, Section 34.1,
Ministry of the Environment, Conservation
and Parks
331-435 James St S
Thunder Bay ON P7E 6S7
Fax: (807) 475-1754

Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal:

by Telephone at
(416) 212-6349
Toll Free 1(866) 448-2248

by Fax at
(416) 326-5370
Toll Free 1(844) 213-3474

by e-mail at
www.ert.gov.on.ca

This Permit cancels and replaces Permit Number 2003-7TDPEP, issued on 2009/06/26.

Dated at Greater Sudbury this 9th day of April, 2019.



Shannon M Innis
Director, Section 34.1
Ontario Water Resources Act, R.S.O. 1990

Schedule A

This Schedule "A" forms part of Permit To Take Water 6410-BAPR97, dated April 9, 2019.

APPENDIX IV

Inspection Rating Record

Ministry of the Environment - Inspection Summary Rating Record (Reporting Year - 2019-2020)

DWS Name:	NAIRN CENTRE DRINKING WATER SYSTEM
DWS Number:	210002138
DWS Owner:	Nairn And Hyman, The Corporation Of The Township
Municipal Location:	Nairn And Hyman

Regulation: O.REG 170/03
Category: Large Municipal Residential System
Type Of Inspection: Detailed
Inspection Date: November 13, 2019
Ministry Office: Sudbury District

Maximum Question Rating: 667

Inspection Module	Non-Compliance Rating
Permit To Take Water	0 / 12
Capacity Assessment	0 / 42
Treatment Processes	0 / 89
Process Wastewater	0 / 20
Operations Manuals	0 / 42
Logbooks	0 / 30
Certification and Training	0 / 49
Water Quality Monitoring	0 / 136
Reporting & Corrective Actions	0 / 106
Treatment Process Monitoring	0 / 141
TOTAL	0 / 667

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 - 2019-2020)

DWS Name: NAIRN CENTRE DRINKING WATER SYSTEM
DWS Number: 210002138
DWS Owner: Nairn And Hyman, The Corporation Of The Township
Municipal Location: Nairn And Hyman

Regulation: O.REG 170/03
Category: Large Municipal Residential System
Type Of Inspection: Detailed
Inspection Date: November 13, 2019
Ministry Office: Sudbury District

Maximum Question Rating: 667

Inspection Risk Rating | 0.00%

FINAL INSPECTION RATING: | 100.00%