October 4, 2021

Report To: Travis Rob, P.Eng., Manager of Operations & Facilities

From: Craig Miller, P.Eng., Environmental Superintendent

SUBJECT: Harmful Algae Bloom (HAB) Monitoring Standard Operating Procedure

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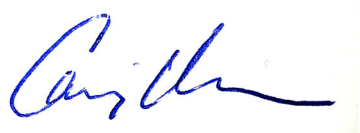
Please find attached the final draft of the HAB Monitoring Standard Operating Procedure, as required by our Municipal Drinking Water License 224-101 Issue #3. Upon Resolution by Council, this will be submitted to the Ministry of Environment, Conservation and Parks (MECP) for their information to satisfy the requirements of the Town's Municipal Drinking Water License.

The procedure meets the requirements as outlined by the MECP in our license.

Attached is a copy of the proposed SOP and an excerpt from the Town's Municipal Drinking Water License of the relevant pages used to draft the SOP.

Respectfully submitted,



Craig Miller, P.Eng.
Environmental Superintendent

PROPOSED SOP

THE TOWN OF FORT FRANCES

Section: Operations and Facilities

Policy: STANDARD OPERATING PROCEDURE FOR MONITORING AND REPORTING BLUE-GREEN ALGAE BLOOMS

Creation Date:	October 2021
Review Date:	
Resolution Number:	
Supersedes Resolution Number:	
Policy Number:	4.31

1. PURPOSE:

To ensure that if a blue-green algae bloom is detected within the Water Treatment Plant Source Water Intake Area, a monitoring and reporting program is in place. The visual monitoring and testing requirements will be enforced between the thawing of ice in the spring ("Ice Out") and until October 31st of each year or as specified by the Ministry or the Northwestern Health Unit (NWHU).

2. RESPONSIBILITY:

All WTP staff are responsible for understanding and carrying out the responsibilities and duties outlined in this policy.

3. PROCEDURE:

On-Call Operator shall:

Visually monitor source water daily near the shoreline and plant intake for blue-green algae blooms within the Source Water Intake Area. Observations will be documented daily in the Water Treatment Plant Logbook.

Any observed or suspected blue-green algae blooms shall be reported same day to the Overall Responsible Operator, Operator-in-Charge and Environmental Superintendent.

Follow instructions provided by the Water Treatment Plant Overall Responsible Operator, Operator-in-Charge and/or Environmental Superintendent.

Commence with sampling per sampling protocol below.

Document any actions taken in the Water Treatment Plant Logbook.

Overall Responsible Operator and/or Environmental Superintendent shall:

Report the observed or suspected blue-green algae bloom to:

- The local Ministry of Environment Inspector
- The Spills Action Centre
- The local NWHU Inspector / medical officer of health
- Complete sampling as per below
- Document all samples taken

Sampling Protocol

The Environmental Superintendent and/or Overall Responsible Operator shall ensure that sampling and testing for blue green algae is completed in accordance with this procedure and the Town of Fort Frances' Municipal Drinking Water License.

If a blue-green algae bloom is suspected:

1. Collect at least one sample from the shoreline within the intake area.
2. Collect one sample from the Raw Water at the WTP.
3. Collect one sample from the Treated Water at the WTP.
4. Submit samples to ALS Labs for testing.
5. Samples shall be collected daily until the presence of microcystin is confirmed to be present or absent.

If blue-green algae bloom is confirmed:

1. Collect one sample (weekly) from the Raw Water at the WTP.
2. Collect one sample (weekly) from the Treated Water at the WTP.
3. Submit samples to ALS Labs for testing.
4. Weekly sampling will continue until 3 consecutive samples have shown non-detection of microcystin and the algae bloom is no longer visually detected.
5. Sampling frequencies may be increased at the request / direction of the Ministry or the Medical Officer of Health.

4. TRAINING:

Training of Town Operators shall be on an annual basis. A review of this HAB monitoring & reporting procedure shall be conducted and documented in the pink "Emergency" binder located in the water treatment plant as part of the annual SOP review process.

5. CORRECTIVE ACTIONS:

A corrective action plan shall be developed in consultation with the Local Ministry, the NWHU and Town of Fort Frances representatives if a blue-green algae bloom is confirmed.

MUNICIPAL DRINKING WATER LICENSE

SCHEDULE C – PAGES 16, 17 & 18

SECTION 6 – STUDIES REQUIRED

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**
Fort Frances Water Treatment Plant	Total Suspended Solids	Composite	Monthly	Top of filter (for point of discharge to Rainy River)
Fort Frances Water Treatment Plant	Total Chlorine Residual	Grab	Monthly	Top of filter (for point of discharge to Rainy River)

5.5 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:

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

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

a) To a road or storm sewer; or

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

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

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

5.5.5 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.

5.5.6 The discharge of any excess water to a road, storm sewer or the environment, associated with the management of materials excavated as part of watermain construction or repair, where necessary sediment, erosion and environmental control measures have been implemented.

6.0 Studies Required

Harmful Algal Blooms

6.1 The owner shall develop and keep up to date a Harmful Algal Bloom monitoring, reporting and sampling plan, herein known as the “Plan”, to be implemented when a potential harmful algal bloom is suspected or present. The owner shall have the Plan in place on or before October 28, 2021.

6.1.1 The owner must have a copy of the Plan available onsite at the drinking water system, for inspection upon request by Ministry staff.

6.1.2 The owner must implement the Plan annually during the harmful algal bloom season, during but not limited to the warm seasonal period between June 1 and October 31 each year, or as otherwise directed by the Ministry or the Medical Officer of Health.

6.1.3 The owner must train all relevant drinking water system staff on the Plan prior to the beginning of each warm season, as described in Condition 6.1.2.

6.2 For clarity, a Harmful Algal Bloom is considered suspected or occurring when:

6.2.1 the owner or operating authority has observed an algal bloom:

a) near the shoreline at or near the source water intake(s) described in drinking water works permit #224-201, or

b) where the intake has an Intake Protection Zone in a source protection plan, within IPZ-1, or

c) within a circle that has a radius, measured from the intake, equal to the distance from the intake to the farthest edge of IPZ-2.

6.2.2 microcystin has been detected in a raw or treated water sample; and/or,

6.2.3 the owner has received any form of notification related to an algal bloom from the Ministry, a Medical Officer of Health, or the public; or,

6.2.4 the presence of or identification of cyanobacteria has been determined though optical probes or other analytic techniques used by the drinking water system.

6.3 The Plan described in condition 6.1 must include, at a minimum:

6.3.1 details relating to visual monitoring for harmful algal blooms at or near the drinking water system intake(s),

a) as described in drinking water works permit #224-101, or

b) where the intake has an Intake Protection Zone in a source protection plan, within IPZ-1, or

c) within a circle that has a radius, measured from the intake, equal to the distance from the intake to the farthest edge of IPZ-2.

6.3.2 details relating to visual monitoring of shoreline; this is applicable to drinking water systems where the proximity of the intake(s) may be of concern.

6.3.3 details relating to reporting the observed or suspected harmful algal bloom, as described in section 6.2:

a) to the Overall Responsible Operator(s) and/or Operator(s)-in-Charge if the blooms have been observed or suspected by a duty operator; the

Plan shall include wording that directs relevant drinking water staff to follow the instructions provided by the Overall Responsible Operator(s) or the Operator(s)-in-Charge;

b) to the medical officer of health; and

c) to the local MECP representative and the Ministry's Spills Action Centre.,

6.3.4 a sampling plan, including the identification of sample location(s) and frequencies that at a minimum match those described in condition 6.4.

6.3.5 triggers that may increase the required sampling frequency;

6.3.6 up-to-date records that document staff training on the harmful algal bloom monitoring, reporting, and sampling procedures.

6.4 Any water samples collected under Condition 6.3.4 must be:

6.4.1 collected, at a minimum, once per week, or as otherwise directed by the Ministry or the medical officer of health;

6.4.2 collected prior to any treatment, if the sample is taken from raw water;

6.4.3 collected at the point of entry into the distribution system, if the sample is taken from treated water;

6.4.4 collected from the shoreline by the drinking water system, if applicable based on Condition 6.3.1;

6.4.5 submitted to a laboratory licensed to perform ELISA testing for total microcystin;

6.4.6 repeatedly collected until 3 consecutive samples have shown non-detection of microcystin and the algal bloom is no longer suspected or visually observed.

7.0 Source Protection

7.1 The owner of the drinking water system shall implement risk management measures, as appropriate, to manage any potential threat to drinking water that results from the operation of the drinking water system.

7.2 The owner of the system shall notify the Director in writing within thirty (30) days of any approved changes to an applicable source protection plan that impact the assessed threat level of a fuel oil system identified in Schedule A of drinking water works permit.

7.3 The notification required in condition 7.2 shall include:

7.3.1 A description of the changes and their impact on the assessed threat level of the fuel oil system(s); and,

7.3.2 A timeline for re-assessing the threat level and providing the results of the assessment to the Director.