

IN THE MATTER OF Chapter 1 of the Acts of
Nova Scotia 1994-95, the *Environment Act*

- and -

IN THE MATTER OF an Order issued pursuant
to Section 125 of said Act to **Northern Pulp
Nova Scotia Corporation** at or near 260
Granton Abercrombie Road, Abercrombie Point,
Abercrombie, Pictou County, Nova Scotia.

MINISTERIAL ORDER

I. WHEREAS Northern Pulp Nova Scotia Corporation, hereafter called “NPNSC”, owns, occupies, operates or is responsible for the operation of a plant, structure, facility, undertaking or thing, to wit: a former bleached kraft pulp mill and all of its associated works which is located at or near 260 Granton Abercrombie Road, Abercrombie Point, Abercrombie, Pictou County, Nova Scotia, hereafter called the “Site”;

II. AND WHEREAS NPNSC operated the Site under Approval #2011-076657-A01 until its expiry on January 30th, 2020;

III. AND WHEREAS the Minister of Environment believes on reasonable and probable grounds that the persons named in this Ministerial Order have contravened or will contravene the:

Environment Act

s. 50(2) No person shall commence or continue any activity designated by the regulations as requiring an approval, unless that person holds the appropriate class of approval required for that activity;

IV. AND WHEREAS the Minister is of the opinion that it is in the public interest to do all things and take all steps necessary to comply with the *Environment Act* or to repair any injury or damage, or to control, eliminate or manage an adverse effect;

IT IS HEREBY ORDERED:

That upon service of this Ministerial Order and pursuant to subsection 125(1) of the *Environment Act*, the persons named in this Ministerial Order shall, at their own cost, comply with the terms and conditions, including compliance times, set forth in Schedule “A” attached to and forming part of this Ministerial Order.

AND TAKE NOTICE if the persons to whom the Ministerial Order is directed fail to comply with the Ministerial Order, or any part thereof, the Minister, pursuant to Section 132(2) of the *Environment Act*, may take whatever action the Minister considers necessary to carry out the terms of the Order and may recover any reasonable costs, expenses and charges incurred by the Minister pursuant to Section 132 of the *Environment Act*.

AND FURTHER TAKE NOTICE that the appeal provisions respecting the issuance of a Ministerial Order are more fully outlined in Section 138 of the *Environment Act*, including a 30-day time period from the date of the issuance of the Ministerial Order to file an appeal.

ISSUED at Halifax, in the Halifax Regional Municipality, Province of Nova Scotia,
this 14th day of May 2020.



The Honourable Gordon Wilson
Minister of Environment

SCHEDULE "A"
TERMS AND CONDITIONS
Northern Pulp Nova Scotia Corporation

1. NPNSC shall operate the Facility in accordance with the Environment Act S.N.S. 1994-1995, c.1 and its Regulations, as amended from time to time.
2. NPNSC shall comply with all terms of Ministerial Order #55774 dated the 29th day of January 2020, signed by the Minister of the Environment, the Honourable Gordon Wilson unless otherwise stated in this Schedule A or until such time as Ministerial Order #55774 is revoked.
3. Unless otherwise notified in writing by the Minister, the contact person at the Department to receive any correspondence relating to this Order is:

District Manager Marc Theriault
Nova Scotia Environment
20 Pumphouse Road
Granton, Nova Scotia B2H 5C6

Definitions

4. All definitions in expired Approval #2011-076657-A01 and Minister Miller's Appeal Decision letter, dated February 8, 2016, are applicable in this Order.
5. Bulk Storage, for the purpose of this Order, means the storage of liquids, such as petroleum products and chemicals in tanks, as distinguished from drum or packaged storage.
6. Decommissioning, for the purpose of this Order, means to make inoperative, empty, purge, decontaminate and secure to ensure no adverse impact to the environment may occur.
7. Hibernation, for the purpose of this Order, means to prepare for an extended period of inactivity or non-use.
8. Pulping Liquor, for the purpose of this Order, means black liquor, green liquor and white liquor.

9. Mill Site, for the purpose of this Order, means the property and associated works, located at 260 Granton Abercrombie Branch Road, Abercrombie Point, Abercrombie, PID 00864538.

Facility Production and Maintenance

10. NPNSC shall not produce pulp until an Industrial Approval to Operate is obtained from the Department.
11. NPNSC shall maintain the infrastructure of the Facility to ensure systems which have the potential to have an impact on the environment are not compromised by the cessation of pulp production.
12. NPNSC shall provide, by the end of each calendar month, a comprehensive list of all projects that have the potential to impact the environment that were performed during that calendar month.

Wastewater

13. NPNSC shall cease discharge of all wastewater generated at the Mill Site, including, but not limited to, all domestic sewage, all process water, gas scrubbing water, boiler blow-down water, wash-down water, any pulping liquor and pulping liquor residues and is prohibited from discharging any dangerous goods or waste dangerous goods to the Boat Harbour Effluent Treatment Facility (BHETF) by no later than April 30th, 2020.
14. NPNSC shall retain the services of a Class III Wastewater Treatment System Certified Operator to oversee the day to day operation of the BHETF.
15. NPNSC shall retain the services of a qualified 3rd Party Professional Engineer, licensed to practice in the Province of Nova Scotia, who has expertise in the decommissioning of wastewater treatment lagoons to develop a transition plan to ensure the BHETF does not experience a septic condition or any other change in condition that may cause an adverse effect, including but not limited to an adverse effect to water quality and/or air quality, for the period beginning April 30, 2020 until the decommissioning of the BHETF can begin. This transition plan shall be submitted to the Department by no later than May 29, 2020.
16. NPNSC shall implement the transition plan required under Condition 15 of this Ministerial Order once approved by the Department.
17. NPNSC shall not remove any portion of the BHETF infrastructure, including aerators (fixed or floating), until authorized by the Department, in writing.

18. NPNSC shall continue to manage the wastewater in BHETF to prevent a septic condition from developing, including but not limited to operating the aeration system (fixed and floating), the wastewater within the BHETF until decommissioning of the Aeration Basin and Settling Basins begins, and/or until authorized by the department in writing.
19. As of May 1, 2020, NPNSC shall monitor Point C for the parameters outlined in Table 1 of Appendix A until authorized, in writing, by the Department.
20. NPNSC shall monitor at Point D for the parameters outlined in Table 2 of Appendix A. While flow continues into the Stabilization Basin from Point C, the criteria in Table 2 of Appendix A are compliance criteria. If discharge at Point C ceases permanently, monitoring for compliance purposes shall continue for 10 days following the cessation of flow, after which, monitoring for informational purposes shall continue until the decommissioning of the BHETF has been completed to the satisfaction of the Department. Should flow at Point C into the Stabilization Basin be intermittent, NPNS shall monitor for the parameters outlined in Table 2 of Appendix A at Point D for compliance purposes.
21. NPNSC shall ensure all potentially impacted stormwater and landfill leachate generated at the Facility is collected and transported to a facility that is Approved to treat the constituents in the wastewater unless otherwise authorized by the Department in writing. Records of shipment and receipt by the treatment facility shall be maintained for a minimum of two years after all shipments cease. These records shall be made available to the Department upon request.

Effluent Pipeline and Associated Infrastructure

22. NPNSC shall retain the services of a qualified professional engineer to develop a decommissioning plan for the effluent pipeline as well as the open ditches, settling basins and aeration basin. This plan shall include but not be limited to all details regarding the removal and disposal of all solid wastes located within the open ditches, settling basins and aeration basin as well as removal/disposal of all effluent and/or wastewater from the pipeline, open ditch, settling basins and aeration basin and final decommissioning and sealing of the pipeline. The plan together with a detailed implementation schedule shall be submitted to the Department for review and approval by no later than August 1st, 2020.
23. NPNSC shall undertake decommissioning in accordance with the approved implementation schedule provided under Condition 22 of this Order.

Air Emissions

24. NPNSC shall generate no emissions from the Recovery Boiler, Lime Kiln, Smelt Dissolving Tank, High Level Roof Vent or any other high level roof vent at the Facility as of end of day, January 30, 2020.
25. Notwithstanding Condition 35 of Ministerial Order # 55774, NPNSC shall generate no emissions from the Power Boiler.
26. NPNSC shall ensure emissions from the Facility do not contribute to an exceedance of the maximum permissible ground level concentrations specified in Schedule A of the Air Quality Regulations.
27. For the purpose of determining compliance with Schedule A of the Air Quality Regulations, the measurement of Total reduced Sulphur (TRS) at ambient air monitoring stations shall be considered the measurement of hydrogen sulphide (H₂S).
28. Notwithstanding Condition 38 of Ministerial Order # 55774, following the shutdown of the power boiler, Condition 38 of Ministerial Order # 55774 will no longer apply.
29. Notwithstanding Condition 39 Ministerial Order # 55774, following the shutdown of the power boiler, NPNSC shall operate an ambient air monitoring station and monitors at Pictou Landing (PID 65006785) to measure the following parameters:
 - a. 1-hour and 24-hour rolling average concentration of Total Reduced Sulphur (TRS) in parts per billion; and
 - b. Meteorological data: wind speed, wind direction, ambient temperature, barometric pressure and humidity.
30. NPNSC shall maintain the ambient air quality station and monitors, identified in Condition 29 of this Order, in accordance with the following documents:

Total Reduced Sulphur

- a. Addendum to Model TML87 Instruction Manual (P/N 047400000 Rev.A4) for Model TML60 Total Reduced Sulfur Analyzer with Model 501 TRS Thermal Converter, prepared by Teledyne Instruments Monitor Labs, dated REV.A2, February 8, 2007; and

- b. Calibrate/Maintain TRS Analyzers, prepared by Environmental Services, Nova Scotia Power, dated Revised: January 14, 2015

Meteorological Data

- c. Instrument Manufacturers Requirements
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- 31. Notwithstanding Condition 41 of Ministerial Order #55774, following the shutdown of the power boiler, NPNSC shall demonstrate compliance with Conditions 26 and 27 of this Order, by utilizing data from the ambient air quality station and monitors identified in Condition 29 of this Order.

 - 32. Notwithstanding Condition 55 of Ministerial Order # 55774, effective May 1st, 2020 NPNSC shall submit quarterly summary reports within 15 days of the end of each quarter containing the following information:
 - a. a summary of any air quality related emergency and non-emergency incidents pursuant to the Environment Act, the Air Quality Regulations or this Order, including the date and time of the incident(s);
 - b. a summary of any operational problems related to the ambient air monitor(s), including the date and time of the incident(s);
 - c. a summary of the quality assured, quality controlled (QA/QC) ambient air quality data from the ambient air monitor(s) identifying the one hour averages and 24-hour rolling averages of total reduced sulphur in parts per billion, hourly average wind speed, wind direction, ambient temperature, barometric pressure and humidity including the dates used to calculate the averages;
 - d. the electronic spreadsheets of the quality assured, quality controlled (QA/QC) air quality data; and
 - e. a summary of any complaints received from the public and how they were responded to by NPNSC, including the date and time of the complaint and any correlation to an incident that occurred.

Hydrology and Hydrogeology

33. Notwithstanding Condition 65 of Ministerial Order #55774, during the 2020 calendar year, NPNSC shall sample and analyze the groundwater and surface water monitoring network at the NPNSC Mill Site in accordance with Table 3, Appendix B.
 - a. Results of all quarterly testing for surface water at the mill site shall be submitted to the Department within 30 days of receipt from the laboratory.
34. NPNSC shall ensure that all surface water discharged from the Mill Site meet the limits in Table 5 in Appendix B. – This includes the following surface water monitoring stations: SW5, SW6, SW11, SW12, SW13, SW12-1, SW12-2, and SW12-3.
35. Notwithstanding Condition 66 of Ministerial Order 55774, as of May 1, 2020, NPNSC shall sample and analyze the groundwater and surface water monitoring network at the BHETF as outlined in Table 4 of Appendix B.
36. NPNSC shall ensure all surface and ground water samples are collected in a consistent manner in accordance with established industry standards and best practices.
37. The monitoring well network at both the Mill Site and the BHETF shall be visually inspected during each field visit and maintenance performed, as required. The monitoring wells shall be fitted with a protective well casing and secured.
38. The Department reserves the right to modify groundwater or surface water monitoring locations, parameters and frequency, and to require remedial measures based on the change of site activities, results of monitoring data and/or site inspections.
39. NPNSC shall not modify, (addition, deletion or replacement), the groundwater or surface water monitoring program, including locations, parameters, or frequency, without written authorization from the Department. Any request to modify the groundwater or surface water monitoring program shall be submitted to the Department in writing, including justification for the change(s), prepared by a qualified professional, licensed to practice in Nova Scotia by Geoscientists Nova Scotia (APGNS) or Engineers Nova Scotia (APENS).
40. NPNSC shall submit any request for modification to the groundwater or surface water monitoring program a minimum of thirty (30) days prior to the proposed implementation of the modification.

41. NPNSC shall review the groundwater and surface water quality monitoring data as it is collected in order to identify potential changes in water chemistry associated with mill activities. Any change in groundwater quality shall be reported immediately to the Department.
42. NPNSC shall maintain records for all groundwater monitoring wells and production wells at the both the Mill Site and the BHETF, including but not limited to borehole logs and construction details, and maintenance records for a minimum of 15 years.
43. NPNSC shall submit an Annual Report for the 2020 groundwater and surface water monitoring at both the Mill Site and the BHETF to the Department by April 1st, 2021. The Annual Report shall include, but is not limited to, the following information:
 - a. a review of field methodologies, including sampling techniques;
 - b. a description of the current groundwater monitoring network;
 - c. a description of the current surface water monitoring network;
 - d. a review of the current groundwater and surface water monitoring programs and recommendations for modifications, as applicable;
 - e. summary of any deficiencies noted during the visual inspections of the monitoring well networks and a summary of the required and completed maintenance, as required;
 - f. current and historical static water level data in tabular format;
 - g. groundwater gradients and flow direction.
 - h. current and historical groundwater quality data in tabular format with comparison to applicable guidelines and historical data;
 - i. current and historical surface water and leachate quality data in tabular format with comparison to applicable guidelines and historical data;
 - j. laboratory certificates of analysis;
 - k. a detailed interpretation of the groundwater, surface water and leachate quality data including an analysis of spatial and temporal trends; and

- I. the identification of any adverse impacts to groundwater and/or surface water and associated recommendations, as applicable.
44. The annual report shall be prepared by or under the direction of a qualified professional licensed to practice in Nova Scotia by Geoscientists Nova Scotia or Engineers of Nova Scotia.
45. NPNSC shall ensure that the following discharge limits for suspended solids are met for any water which is discharged from the Site to a watercourse or wetland at the Site:

Clear Flows (Normal Background Conditions):*

- a. Maximum increase of 25 milligrams/litre from background levels for any short-term exposure (24 hours or less)
- b. Maximum average increase of 5 milligrams/litre from background levels for longer term exposure (inputs lasting between 24 and 30 days)

High Flow (Spring Freshets and Storm Events):*

- c. Maximum increase of 25 milligrams/litre from background levels at any time when background levels are between 25 milligrams/litre and 250 milligrams/litre
- d. Shall not increase more than 10% over background levels when background is > 250 milligrams/litre

CCME Environmental Quality Guideline for Aquatic Life, as amended.

Registered Public Drinking Water Supply

46. NPNSC shall register as a Public Drinking Water Supply if the facility meets the definition of as detailed in the Water and Wastewater Facilities and Public Drinking Water Supplies Regulations.

Dangerous Goods

47. NPNSC shall implement the accepted Dangerous Goods management and deposition plans required to be submitted April 30, 2020 under Condition 80 of Ministerial Order # 55774.

48. NPNSC shall not store bulk Dangerous Goods or Waste Dangerous Goods at the Facility after April 30, 2020 unless an Approval is obtained under the Activities Designation Regulations first. Please note, all storage, handling and secondary containment required under the Dangerous Goods Management Regulations must be met.

Petroleum Management

49. NPNSC shall provide a list of petroleum products that are regulated under the Petroleum Management Act and will remain at the Facility after April 30, 2020 by no later than May 20, 2020.
50. NPNSC shall not store bulk petroleum products in any tanks which are in hibernation which are regulated under the Petroleum Management Regulations at the Facility after April 30, 2020 unless an Approval is obtained under the Activities Designation Regulations first. Please note, all storage, handling, piping and secondary containment required under the Petroleum Management Regulations must be met.

Industrial Landfill

51. NPNSC is strictly prohibited from disposing of domestic solid waste in the industrial landfill(s). All domestic solid waste shall be disposed of at a facility licensed or approved for the recycling, composting or disposal of such solid waste.
52. NPNSC shall submit an assessment of the BHETF sludges (both settling basin and aeration basin sludges), using the Nova Scotia Guidelines for Disposal of Contaminated Solids in Landfills, dated May 10, 2016. In addition to the parameters outlined in the Guidelines, the assessment shall include but not limited to analysis for dioxins and furans. This assessment must meet the satisfaction of the Department, prior to disposal at the industrial landfill. Any request to dispose of BHETF sludges at an alternate location requires written authorization from the Department. This assessment shall be submitted with the decommissioning plan required under Condition 22 of this Order.
53. NPNSC may dispose of combustion residues and solid waste originating from pollution control equipment such as, electrostatic precipitators, scrubbers and demisters at the industrial landfill, unless authorization has been obtained from the Department for alternative disposal. Unless otherwise approved, solid waste from the multiclone must be disposed at the industrial landfill.

54. NPNSC is strictly prohibited from disposing of petroleum impacted soil at the industrial landfill. All petroleum impacted soils must be disposed of at a licensed or approved for the treatment or disposal for such waste.
55. NPNSC is restricted to dispose of only the industrial waste types for which the industrial landfill was designed, as identified in the Landfill Operations Manual, dated December 1989 and Solid Waste Management Strategy Background Report, dated November 1989, at the industrial landfill.
56. NPNSC shall retain the services of a professional engineer, licensed to practice in the Province of Nova Scotia, to assess all of the industrial landfills and develop a closure plan for each of on-site industrial landfills. This closure plan shall include but not be limited to, a detailed engineering plan to cap the industrial landfills, develop a comprehensive long-term monitoring plan as well as an implementation schedule for the proposed closure activities. This assessment and plan shall be submitted to the Department no later than August 31, 2020.

Asbestos Disposal

57. NPNSC shall update the survey plan and provide a copy of the plan within 60 days of the completion the disposal, should any asbestos waste be added to the disposal area after April 30, 2020.
58. Abandonment or discontinuance of use of the designated asbestos waste disposal area requires a final capping material having a depth of not less than one hundred twenty-five (125) centimetres with a permeability of not greater than 10^{-6} .
59. NPNSC shall ensure clear permanent signage marks the location of the asbestos disposal area and the area is secured from unauthorized access by no later than May 29, 2020.

Communication Plan

60. NPNSC shall maintain the Mi'kmaq Communication Plan for the purposes of sharing information with the Pictou Landing First Nation on environmental or any other issues as directed by the Department.

Insurance

61. NPNSC, at its own expense, must purchase and maintain in full force during the period of operation, insurances to protect itself, its contractors and sub-contractors, the Department, the Corporation, their successors and assigns and their respective directors, officers, council members, employees, agents and servants involved in the operation and reclamation of a Bleached Kraft Pulp Mill.

Such insurance shall provide coverage for all environmental risks associated with the operation of the Facility and shall protect the Department, the Corporation, their successors and assigns, and their respective officers, directors, council members and employees from all claims arising out of liability for environmental impairment.

All policies shall be issued by financially sound insurers licensed to carry on business in Canada and shall be subject to review by the Department. All policies shall be non-cancellable, except for violation of statutory law which places the Insurer in violation of the laws of its place of domicile or threatens its solvency.

All operation, reclamation period insurance policies, as accepted by the Department, shall be maintained valid for the period of this Ministerial Order. Proof of insurance to be submitted annually by January 31.

62. This insurance will include the following provisions:
- a. a policy limit of liability of not less than \$10 million per occurrence;
 - b. "Her Majesty the Queen in the Right of the Province of Nova Scotia as represented by the Minister of Environment" named as "Additional Insured";
 - c. this approved Facility shall be included on the policy in its description of operations;
 - d. waiver of Insurer's rights of subrogation against Nova Scotia;
 - e. breach of any terms or conditions of the policy, or negligence or willful act or omission or false representation by an Insured or any other person, shall not invalidate the insurance with respect to Nova Scotia;
 - f. 90 days prior written notice of cancellation or material change from Insurer to the Department;
 - g. Gradual and sudden pollution coverage for all insured perils;

- h. Government- ordered clean up expenses coverage;
 - i. Waste materials coverage; and
 - j. Products Hazard & Completed Operations, Pollution Coverage.
63. Following a review by the Department, the Department may require NPNSC to make a change in the coverage required.
64. NPNSC shall notify the Department in advance of any change that is not addressed in this Order, as an Approval may be required.

Appendix A

TABLE 1: Effluent Monitoring Parameters

Parameter	Sample Type	Monitoring Frequency	Location
Biochemical Oxygen Demand (BOD ₅)	Continuous*	3 days per Week	Effluent Monitoring Station Point C
Suspended Solids	Continuous*	Daily	Effluent Monitoring Station Point C
pH	Continuous*	Daily	Effluent Monitoring Station Point C
Dissolved Oxygen	Continuous*	Daily	Effluent Monitoring Station Point C

*Continuous monitoring if flow over the dam at Point C, otherwise grab sample required.

TABLE 2: Wastewater Monitoring Parameters and Criteria

Parameter	Sample Type	Monitoring Frequency	Location	Criteria
Biochemical Oxygen Demand (BOD ₅)	Continuous	5 days per Week	Effluent Monitoring Station Point D	25 mg/L daily*
Suspended Solids	Continuous	Daily	Effluent Monitoring Station Point D	25 mg/L daily*
pH	Continuous	Daily	Effluent Monitoring Station Point D	6-9
Acute Toxicity-rainbow trout**	Grab	once per month	Effluent Monitoring Station Point D	Pass LC50
Acute Toxicity-Daphnia magna***	Grab	once per week	Effluent Monitoring Station Point D	Pass LC50

* Concentration shall be calculated- $[TSS_{\text{measured}}] \times 0.667 = [TSS_{\text{for comp}}]$; $[BOD_{5 \text{ measured}}] \times 0.667 = [BOD_{5 \text{ for comp}}]$ Comp= compliance

** Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Daphnia magna, 2nd Edition, December 200, Amended Feb 2016, EPS1/RM/13.

*** Biological Test Method Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout, 2nd Edition, Dec 2000 amended May 2007 and Feb 2026, EPS1/RM/14.

Appendix B

Table 3: NPNSC Mill Site – Groundwater and Surface Water Monitoring Requirements

Location*	Frequency	Parameters
Industrial Landfill Monitoring Network		
Groundwater		
1 (B) 2 (A,B) 4 (A,B) 09-1 (A) 96-1 (B) 96-2 (B) 09-2 (C) 09-3 (B) 96-3 (C) Construction Gate Well Scale House Well	Semi-Annual (Spring and Fall)	General Chemistry, Metals, Fluoride Water Level
1 (A,C) 3 (A,B,C) 4 (C) 5 (A,B) 6 (A,B) 7 (A,B,C) 8 (B) 9 (A,C)	Annual (Fall)	General Chemistry, Metals, Fluoride Water Level
09-1 (A) 96-1 (B) 96-2 (B) 09-2 (C)	Annual (Fall)	VOCs, PAHs
4 (A,B) 5 (A,B) 6 (A,B) 7 (A,B,C)	Annual (Fall)	TPH and BTEX
7 (A,B,C) 09-1 (A) 96-1 (B) 96-2 (B) 09-2 (C) 09-3 (B) 96-3 (C)	Annual (Fall)	Mercury

Location*	Frequency	Parameters
Surface Water		
SW2 SW4 SW9 SW10 SW13	Semi-Annual (Spring and Fall)	General Chemistry, Metals, Fluoride DOC, dissolved Zn, TSS, COD/BOD TPH/BTEX
	Annual (Fall)	Mercury
SW5 SW6 SW11 SW12	Quarterly	General Chemistry, Metals, Fluoride DOC, Dissolved Zn, TSS, COD/BOD TPH/BTEX
	Annual (Fall)	Mercury
SW5 SW6 SW11 SW12	Quarterly	Cr ³⁺ and Cr ⁶⁺
SW13	Semi-Annual (Spring and Fall)	
Leachate		
Leachate	Quarterly	General Chemistry, Metals, Fluoride TSS, COD/BOD, TPH/BTEX, Cr ³⁺ and Cr ⁶⁺ Mercury, Flow rate
Mill Monitoring Network		
Groundwater		
MW12-1 MW12-2 MW12-3 MW12-4 MW12-5R MW12-6R	Semi Annual (Spring and Fall)	General Chemistry, Metals, Fluoride, Water Level
	Annual (Fall)	TPH/BTEX
MW12-1 MW12-2 MW12-4 MW12-5R MW12-6R	Annual (Fall)	PAHs
Cardlock Facility Wells: Well A Well B Well C Well D	Annual (Fall)	General Chemistry, Metals, Fluoride TPH/BTEX, Water Level

Surface Water		
SW12-1 SW12-2 SW12-3	Quarterly	General Chemistry, Metals, Fluoride DOC, Dissolved Zn, TSS, COD/BOD TPH/BTEX, Cr ³⁺ and Cr ⁶⁺
	Annual (Fall)	Mercury

Table 4: Boat Harbour Effluent Treatment Facility - Groundwater and Surface Water Monitoring Requirements

Location*	Frequency	Parameters
Groundwater		
MW15-1S MW15-1D MW15-2S MW15-2D MW15-3S MW15-3D MW15-4S MW15-5S	Quarterly	General Inorganic Chemistry (including Fluoride) Dissolved Metals DOC COD TKN Total phosphorus Absorbable Organic Halogens (AOX) Water Levels
Surface Water		
Point 1 Point 2 Pond 2	Quarterly	General Inorganic Chemistry (including Fluoride) Total Metals (including Mercury) Trivalent chromium Hexavalent chromium Dissolved Zinc DOC TSS BOD COD TKN Total phosphorus Total Petroleum Hydrocarbons (TPH/BTEX) Polycyclic Aromatic Hydrocarbons (PAHs) Volatile Organic Compounds (VOCs) Absorbable Organic Halogens (AOX)

*As depicted in Figure 3-1 of the following report: Dillon Consulting Limited (File 18-7281-2000). March 2019. Boat Harbour Effluent Treatment System – 2018 Monitoring Program.

Table 5: Surface Water Discharge Limits

PARAMETER	DISCHARGE LIMIT
pH	6.5 - 9.0
Total Petroleum Hydrocarbons	3.5 milligrams per litre or Atlantic RBCA*
Chromium (trivalent)	8.9 micrograms per litre
Chromium (Hexavalent)	1.0 micrograms per litre
Copper	2-4 micrograms per litre
Iron	300 micrograms per litre
Nickel	25-150 micrograms per litre
Vanadium	2 milligrams per litre
Dissolved Zinc	Refer to the guideline calculation in the latest version of the CCME Freshwater Aquatic Life Guidelines (2018)

* lowest value after finalization of Atlantic RBCA standard for surface water