



Bruce Energy Centre Lagoon System

2020 Annual Report

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1.0 Introduction

The Bruce Energy Centre Lagoon System treats wastewater from the Bruce Energy Centre Industrial Park and the Tiverton and Inverhuron Collection Systems. All of the treatment and collection works are owned and operated by the Municipality of Kincardine.

The Bruce Energy Centre (BEC) Lagoon System operated under Environmental Compliance Approval #8894-9QDPS7 (see Appendix A). Section 10(5) of the Approval requires a Performance Report to be submitted annually to the Ministry of the Environment. The Tiverton Collection System Certificate of Approval #3-2417-89-906 also has annual reporting requirements. This Annual Report includes information for both the Bruce Energy Centre Lagoon System and the Tiverton Collection System and is intended to satisfy the reporting requirements for both of these systems.

The BEC Lagoon System is classified as a WWT2 facility. Both the Tiverton Collection System and the Inverhuron Collection System are classified as WWC2 facilities.

The BEC Lagoon System is an aerated four-cell lagoon system with year round disinfection (using sodium hypochlorite) with continuous discharge of the effluent to Lake Huron.

The Tiverton Collection System consists of a gravity flow collection system and two raw sewage pump stations. The wastewater collected at the King Street lift station is pumped to the Maple Street pumping station. From there the wastewater is pumped via a force main to the Bruce Energy Centre Lagoon System for treatment.

Wastewater from the Inverhuron Provincial Park and some residential areas of Inverhuron is pumped to the Bruce Energy Centre Lagoon from sewage pumping stations.

Wastewater from the Bruce Energy Centre Industrial Park flows by gravity to the BEC Lagoon System.

In December 2020, an ultraviolet light disinfection system was installed along with an emergency backup generator.

2.0 Sampling and Monitoring

The raw influent samples collected at the lagoon are 24 hour composite samples. The final effluent samples are grab samples. Samples of the influent and effluent were collected biweekly. In addition to these samples, samples were collected from industries in the Industrial Park to determine strength for operational and billing purposes.

The Tiverton and Inverhuron Collection Systems do not require routine sampling of the raw wastewater.

The coarse bubble diffuser system and the addition of the coagulant aluminum sulphate, work together to meet the effluent objectives outlined in the Environmental Compliance Approval. All effluent objectives were met except for Total Suspended Solids for the month of February (the monthly average concentration was 27.5 mg/L and the objective is 25 mg/L), however, the average did not exceed the monthly effluent limit of 30 mg/L.

The monthly average loadings have been calculated and are shown in Table 1, below, and compared with the effluent objectives. All loading objectives were met in 2020.

Table 1 Monthly Average Loading

Monthly Average Loading kg/day					
	CBOD5	TSS	TP	Ammonia freezing	Ammonia non-freezing
Effluent Objective	55	55	1.8	11	26.4
January	10	27	0.6	3.4	
February	6	22	0.4	4.1	
March	12	25	0.5	5.6	
April	13	14	0.1		2.4
May	15	16	0.1		0.4
June	5	10	0.0		0.4
July	2	4	0.0		0.1
August	2	4	0.0		0.1
September	2	9	0.1		0.2
October	2	2	0.0		0.1
November	1	2	0.0		0.5
December	2	2	0.1	3.0	
Averages	6	11	0.2	4.0	0.5

Aluminum sulphate is added to the transfer pipe between Cell 2 and 3 to aid in coagulation and for phosphorous removal. A total of 5,169 kg of alum was added in 2020 and the average dosage was 24.7 mg/L. When comparing the influent and effluent sample results, we determined that there was 86% removal of Total Suspended Solids and 93% removal of Total Phosphorous.

The effluent pH ranged from 6.5 to 8.9 which met the effluent limit (6.0 to 9.5) but was slightly outside the effluent objective of 6.5 to 8.5.

The effluent was continuously disinfected resulting in an E. coli annual geometric mean density of 9 organisms per 100 mL. The highest monthly geometric mean was 105 organisms per 100 mL in the month of September. The effluent objective is 150 organisms per 100 mL.

The Bruce Energy Centre Environmental Compliance Approval sets out non-compliance limits for effluent parameters based on both an average monthly concentration and a daily concentration. Although the ECA, Section 7, specifies Unionized Ammonia as an effluent parameter, the limits outlined are for Total Ammonia. As instructed by the Owen Sound Ministry of the Environment, Conservation and Parks office, we are reporting the results for Total Ammonia. However, it also appears that the Effluent Limits for the Freezing and Non-freezing periods have been inverted as typically a Freezing Period would have a higher allowable limit of ammonia.

Table 2 summarizes the effluent sample results compared to their non-compliance limits. There were no exceedances of non-compliance limits. An additional spreadsheet showing both influent and effluent monthly averages can be found in Appendix B.

No leachate from the Kincardine Waste Management Centre was hauled to the Bruce Energy Centre Lagoon in 2020. Septage was received from Bruce Power from July 20 to the end of the year. A total of 255 m³ was hauled in 2020. The septage was sampled at the start of the event and a copy of the results are in Appendix C.

Table 2 Sample Results Compared to Non-Compliance Limits

	CBOD5 (mg/L)		Total Suspended Solids (mg/L)		Total Phosphorous (mg/L)		Total Ammonia (mg/L)				Total Chlorine Residual (mg/L)	
	Monthly Average	Max Daily Conc.	Monthly Average	Max Daily Conc.	Monthly Average	Max Daily Conc.	Freezing		Non-freezing		Monthly Average	Max Daily Conc.
Non-compliance Limits	30	45	30	45	1.0	1.5	7.5	10	15	20	0.5	1.0
January	9.0	10.0	24.0	25.0	0.52	0.56	3.05	3.8	--	--	0.30	0.57
February	8.0	11.0	27.5	28.0	0.44	0.52	5.05	5.4	--	--	0.34	0.79
March	11.5	14.0	24.5	29.0	0.45	0.57	5.50	5.7	--	--	0.28	0.59
April	17.0	23.0	18.5	22.0	0.19	0.19	--	--	3.25	5.2	0.23	0.48
May	23.0	33.0	25.0	34.0	0.15	0.18	--	--	0.55	1.0	0.22	0.58
June	9.0	13.0	18.0	23.0	0.07	0.09	--	--	0.70	0.8	0.25	0.46
July	4.7	6.0	12.0	14.0	0.09	0.09	--	--	0.37	0.5	0.24	0.60
August	4.5	5.0	8.0	9.0	0.09	0.11	--	--	0.20	0.2	0.33	0.82
September	3.5	5.0	14.0	16.0	0.14	0.19	--	--	0.25	0.3	0.40	0.95
October	3.0	4.0	3.0	3.0	0.07	0.09	--	--	0.25	0.3	0.30	0.40
November	2.0	2.0	4.0	5.0	0.08	0.08	--	--	0.80	1.0	0.38	0.59
December	2.7	4.0	3.0	4.0	0.11	0.16	3.70	5.5	--	--	0.35	0.59

3.0 Flow Data

The BEC Lagoon System average daily design flow is 2200 m³/day with a maximum peak flow of 6160 m³/d allowed. Table 3 summarizes the Influent and Effluent Flows at the lagoon as well as the contributing collection systems flows.

Table 3 Bruce Energy Centre Lagoon and Collection Systems Flows

	Average Flow (m³/d)	Maximum Flow (m³/d)	Total Flow (m³)
Tiverton Collection System	326	1,257	119,349
Inverhuron Collection System	42	--	15,444
Inverhuron Provincial Park	--	--	2,462
BEC Industrial Park	--	--	143,757
Leachate from KWMC	--	--	0
BEC Influent Flow	693	1,274	252,809
BEC Effluent Flow	698	1,527	254,770

BEC Industrial Park flow data is a sum of the wastewater flows from two businesses within the park that are metered. Not all businesses are equipped with flow meters as they have low flows.

In 2020, flow into the treatment works was within the design specifications. The average daily influent flow was approximately 31% of the design capacity. The Tiverton Collection System average daily flow for 2020 was 346 m³/d; the permitted average day flow stated in the facility Certificate of Approval is 700 m³/d. Discharge from the lagoons was stopped September 24 to 27 to raise the cell level. Appendix D contains additional 2020 flow data for the lagoon system and the following table compares the flows at the lagoons over the past 5 years.

Table 4 BEC Flows

	2016	2017	2018	2019	2020
Total Influent Flow (m3)	534,736	622,418	465,079	284,900	252,809
Overall Percentage of Influent Design Capacity	66%	77%	58%	36%	31%
Design Capacity Exceedances (days)	36	61	15	1	0
Total Effluent Flow (m3)	256,329	293,758	256,240	300,122	254,770

Inflow and infiltration continues as evidenced through the increased flows at the Tiverton and Inverhuron pump stations and in the wastewater pumped to the BEC lagoon during times of heavy precipitation. Table 5 compares the volume of water produced by the Tiverton Drinking Water System, the annual precipitation (based on Environment Canada’s Kincardine Station and in-house data) and the volumes pumped from the Maple Street SPS.

Table 5 Tiverton Volume Comparisons

	2016	2017	2018	2019	2020
Tiverton Drinking Water Produced (m³)	80,173	75,546	83,713	84,573	80,719
Tiverton Collection System Flow (m³)	110,296	130,405	118,280	126,022	119,349
% Increase	27%	42%	29%	33%	32%
Annual Precipitation (mm)	835	953	670	709	444

4.0 Maintenance and Calibration of Equipment

Preventative maintenance was completed on the blowers at the lagoon and repairs to the airlines at the cells was completed as required. The bar screens at the influent chamber and vegetation and debris from the Cell 4 discharge pipe were cleared on an as needed basis.

Routine maintenance and repairs were performed throughout the year on both the chlorine and alum feed systems.

Preventative maintenance was completed on the diesel generators at the Tiverton Pumping Stations.

Main-line and lateral video inspections were also performed on the Tiverton Collection System. There was one forcemain repair completed.

Flow measuring equipment was calibrated annually. Copies of the calibration reports are included in Appendix E. The influent flow meter failed the calibration and it was recommended that it be replaced.

5.0 Volume of Sludge Generated

Sludge depths were taken in each cell in 2020 using a sludge judge. The average volume of sludge in each cell was estimated and is shown in the table below. From the estimated volumes of sludge there appears to be no total increase in sludge across the four cells since last year.

Table 6 Estimated Sludge Volumes

Estimated Sludge Volume (m³)					
	2015	2017	2018	2019	2020
Cell #1	2,961	3,909	5,686	4,501	4,501
Cell #2	4,171	4,048	3,435	3,435	2,822
Cell #3	5,404	7,236	5,109	6,046	3,481
Cell #4	4,013	4,459	3,707	1,783	3,121

6.0 By-pass, Spill or Abnormal Discharge Events

There were two by-passes in 2020 at the Maple Street Sewage Pumping Station due to a combination of heavy precipitation and snow melt. A leak on the forcemain from the Lake Street Sewage Pumping Station was repaired and during that time a by-pass was reported to the Spills Action Centre for a by-pass of the Pump Station. A copy of the Annual By-pass Log can be viewed in Appendix F.

There were no abnormal discharge events, plant upsets or major process and equipment failures in 2020 at the lagoon system or in any of the collection systems.

7.0 Summary

Overall, there were no major operational problems encountered in 2020. Discharge of effluent was stopped for four days in September to raise the cell levels and extend the retention time. The lagoon system was effective at treating the wastewater and the effluent CBOD, Total Suspended Solids and Phosphorous did not exceed the non-compliance limits.

Staff responded to two complaints in 2020. A complaint summary and the actions taken can be viewed in Appendix G.

The Proposed Landfill Leachate and Septage Receiving Station was not installed in 2020, nor were there any Notice of Modifications submitted to the Ministry of the Environment, Conservation and Parks.

APPENDIX A

Environmental Compliance Approval

AMENDED ENVIRONMENTAL COMPLIANCE APPROVALNUMBER 8894-9QDPS7
Issue Date: November 25, 2014

The Corporation of the Municipality of Kincardine
1475 Concession 5
Rural Route, No. 5
Kincardine, Ontario
N2Z 2X6

Site Location: Bruce Energy Centre Sewage Treatment Plant
Part 5, Plan 3R-7015
Lot Lake Range, 11 to 14, Concession 3
Kincardine Municipality, County of Bruce

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

The Owner shall ensure Establishment of a sewage collection, transmission, and treatment system with a Rated Capacity of 2,200 m³/day and Peak Flow Rate of 6,160 m³/day to be constructed on Lot 11 and 12, Concession Lake Range, Township of Bruce, to service the Bruce Energy Centre and discharging through the cooling water channel of Bruce "B" Nuclear Power Generation Station to Lake Huron, consisting of the following:

PROPOSED WORKS**Landfill Leachate and Septage Receiving Station**

Establishment of Landfill Leachate and Septage Receiving Station (MH2A) approved to receive a maximum of 200 m³/day of Septage and a maximum of 46 m³/day of landfill leachate for treatment at the Works (Bruce Energy Centre Sewage Treatment Plant (BEC STP)) consisting of the following:

- One (1) 3.0 m wide x 4.0 m long spill containment pad consisting of a compacted-clay liner with 2% horizontal slope towards a collection sump discharging through one (1) 100 mm diameter pipe into an existing manhole (MH2A);
- One (1) leachate and Septage unloading and transferring system consisting of one (1) 100 mm diameter HDPE pipe equipped with a waste haul tanker quick connect/disconnect hook-up system to unload leachate and septage into the sewer manhole for treatment at the Works;

- One (1) perimeter security fence equipped with a standard access gate; and
- Including all controls and associated appurtenances.

All in accordance with the documents listed in Schedule 'A'.

PREVIOUS WORKS APPROVED ON JULY 6, 1990

Influent Works

- One (1) reinforced concrete inlet chamber with approximate dimensions of 3 m x 2 m x 2.85 m SWD;
- One (1) raw sewage automatic sampler;
- One (1) flow monitoring station;

Aerated Lagoon

- Aerated lagoon with four (4) cells and with a minimum total liquid retention capacity of forty five (45) days at the Rated Capacity of 2,200 m³/day having the following minimum basin volume and depth:

Aerated Lagoons		
Cell	Retention Volume (m³)	Liquid Depth (m)
Cell No. 1	28,600	3.0
Cell No. 2	28,600	3.0
Cell No. 3	21,900	3.0
Cell No. 4	21,900	3.0

- Interconnecting piping to allow the operation of the lagoons is series or parallel mode of operation;

Aeration System

- Two (2) multi-stage centrifugal blowers (one duty, one standby), each rated at 802 L/sec at 100 kPa (1700 scfm at 14.7 psia) and driven by 75 kW (100 hp) motors;
- Blower accessories and air piping;
- Coarse bubble diffuser system;

Chemical Feed System

- Two (2) alum metering pumps (one duty, one standby), each rated at 167 L/day;

- One (1) 9,000 L heavy duty polyethylene tank for the storage of liquid alum;
- Two (2) sodium hypochlorite metering pumps (one duty, one standby), each rated at 167 L/day;
- One (1) 450 L polyethylene tank for the storage of sodium hypochlorite;

Outlet Chamber

- One (1) reinforced concrete outlet chamber with approximate dimensions of 3 m x 2.5 m x 3.1 SWD;
- V-notch weir plate and flow monitoring equipment;
- One (1) effluent outfall trunk sewer discharging through the condenser cooling water channel of Bruce "B" Nuclear Power Generation Station to Lake Huron;

Control Building

- One (1) control building to house blowers, chemical storage tanks, metering pumps and portable water tank;
- Including all controls and associated appurtenances.

All in accordance with the documents listed in Schedule 'A'.

For the purpose of this environmental compliance approval, the following definitions apply:

"Approval" means this entire document and any schedules attached to it, and the application;

"Average Daily Flow" means the cumulative total sewage flow to the sewage works during a calendar year divided by the number of days during which sewage was flowing to the sewage works that year;

"BOD₅" (also known as TBOD₅) means five day biochemical oxygen demand measured in an unfiltered sample and includes carbonaceous and nitrogenous oxygen demand;

"By-pass" means diversion of sewage around one or more unit processes within the Sewage Treatment Plant with the diverted sewage flows being returned to the Sewage Treatment Plant treatment train upstream of the Final effluent sampling location, and discharging to the environment through the Sewage Treatment Plant outfall;

"CBOD₅" means five day carbonaceous (nitrification inhibited) biochemical oxygen demand measured in an unfiltered sample.

"Daily Concentration" means the concentration of a contaminant in the effluent discharged over any single day, as measured by a composite or grab sample, whichever is required;

"Director" means a person appointed by the Minister pursuant to section 5 of the EPA for the purposes of Part II.1 of the EPA;

"EPA" means the *Environmental Protection Act*, R.S.O. 1990, c.E.19, as amended;

"*E. Coli*" refers to the thermally tolerant forms of *Escherichia* that can survive at 44.5 degrees Celsius;

"Emergency Situation" means a structural, mechanical or electrical failure that causes a temporary reduction in the capacity of the Sewage Treatment Plant or an unforeseen flow condition that may result in:

- a) danger to the health or safety of any person; or,
- b) injury or damage to any property, or serious risk of injury or damage to any property;
- c) treatment process biomass washout.

"Event" means an action or occurrence, at a given location within the Sewage Treatment Plant that causes a Plant Bypass or Plant Overflow. An Event ends when there is no recurrence of a Bypass or Overflow in the 12-hour period following the last Bypass or Overflow. Two Events are separated by at least 12 hours during which there has been no recurrence of a Bypass or Overflow;

"Equivalent equipment" means a substituted equipment or like-for-like equipment that meets the required quality and performance standards of a named equipment;

"Final Effluent" means sewage discharge via the Sewage Treatment Plant outfall after undergoing the full train of unit processes as listed in the Approval;

"Geometric Mean Density" is the n th root of the product of multiplication of the results of n number of samples over the period specified;

"Limited Operational Flexibility" (LOF) means any modifications that the Owner is permitted to make to the Works under this Approval;

"Ministry" means the ministry of the government of Ontario responsible for the EPA and OWRA and includes all officials, employees or other persons acting on its behalf;

"Monthly Average Concentration" means the arithmetic mean of all Daily Concentrations of a contaminant in the effluent sampled or measured, or both, during a calendar month;

"Monthly Average Daily Flow" means the cumulative total sewage flow to the sewage works during a calendar month divided by the number of days during which sewage was flowing to the sewage works that month;

"Monthly Average Loading" means the value obtained by multiplying the Monthly Average Concentration of a contaminant by the Monthly Average Daily Flow over the same calendar month;

"Notice of Modifications" means the form entitled "Notice of Modifications to Sewage Works";

"Owner" means the Corporation of the Municipality of Kincardine and its successors and assignees;

"OWRA" means the Ontario Water Resources Act , R.S.O. 1990, c. O.40, as amended;

"Partial Treatment" means any treatment that does not include the full train of unit processes of the Sewage Treatment Plant described and approved in the Approval;

"Peak Flow Rate" means the maximum rate of sewage flow for which the plant or process unit was designed;

"Plant Overflow" means a discharge to the environment from the Sewage Treatment Plant at a location other than the plant outfall or into the plant outfall downstream of the Final Effluent sampling location;

"Previous Works" means those portions of the sewage works previously constructed and approved under an Approval;

"Proposed Works" means the sewage works described in the Owner's application, this Approval, to the extent approved by this Approval;

"Rated Capacity" means the Average Daily Flow for which the Works are approved to handle;

"Septage" means sanitary sewage hauled from septic tank systems, portable toilets, cesspools, and other sanitary sewage systems for treatment and disposal;

"Sewage Treatment Plant" means the entire sewage treatment and effluent discharge facility;

"Substantial Completion" has the same meaning as "substantial performance" in the Construction Lien Act;

"Water Supervisor" means the Water Supervisor for the Owen Sound office of the Ministry; and

"Works" means the sewage works described in the Owner's application and this Approval, including the Proposed Works, Previous Works and the modifications made under Limited Operational Flexibility.

You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. GENERAL PROVISIONS

(1) The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Works is notified of this Approval and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

(2) Except as otherwise provided by these Conditions, the Owner shall design, build, install, operate and maintain the Works in accordance with the description given in this Approval , the application for

approval of the works and the submitted supporting documents and plans and specifications as listed in this Approval.

(3) Where there is a conflict between a provision of any submitted document referred to in this Approval and the Conditions of this Approval, the Conditions in this Approval shall take precedence, and where there is a conflict between the listed submitted documents, the document bearing the most recent date shall prevail.

(4) Where there is a conflict between the listed submitted documents, and the application, the application shall take precedence unless it is clear that the purpose of the document was to amend the application.

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

2. EXPIRY OF APPROVAL

This Approval will cease to apply to those parts of the Works which have not been constructed within five (5) years of the date of this Approval.

3. CHANGE OF OWNER

(1) The Owner shall notify the Water Supervisor and the Director, in writing, of any of the following changes within **30 days** of the change occurring:

- (a) change of Owner;
- (b) change of address of the Owner;
- (c) change of partners where the Owner is or at any time becomes a partnership, and a copy of the most recent declaration filed under the *Business Names Act*, R.S.O. 1990, c.B17 shall be included in the notification to the Water Supervisor;
- (d) change of name of the corporation where the Owner is or at any time becomes a corporation, and a copy of the most current information filed under the *Corporations Informations Act*, R.S.O. 1990, c. C39 shall be included in the notification to the Water Supervisor;

(2) In the event of any change in ownership of the Works, other than a change to a successor municipality, the Owner shall notify in writing the succeeding owner of the existence of this Approval, and a copy of such notice shall be forwarded to the Water Supervisor and the Director.

4. UPON THE SUBSTANTIAL COMPLETION OF THE WORKS

(1) Within one (1) year of the Substantial Completion of the Proposed Works a set of as-built drawings showing the works “as constructed” shall be prepared. These drawings shall be kept up to date through revisions undertaken from time to time and a copy shall be retained at the Works for the operational life of the Works.

5. BY-PASSES

(1) Any Bypass or Plant Overflow is prohibited, except:

- (a) in an Emergency Situation;
- (b) where the approved design and operation of the Works provides for Bypasses / Plant Overflows to be triggered under certain flow conditions and those conditions have been met;
- (c) where the Bypass / Plant Overflow is a direct and unavoidable result of a planned maintenance procedure, the Owner notified the Director **15 days** prior to the Bypass/Plant Overflow and the Director has given written consent of the Bypass/Plant Overflow; and
- (d) where the Bypass / Plant Overflow is planned for research or training purposes, the discharger notified the Director **15 days** prior to the Bypass / Plant Overflow and the Director has given written consent of the Bypass / Plant Overflow.

(2) The Owner shall forthwith notify the Spills Action Centre (SAC) and the Medical Officer of Health of all Bypass and Plant Overflow Events. This notice shall include, at a minimum, the following information:

- (a) the date, time, and duration of the Event;
- (b) the location of the Event;
- (c) the measured or estimated volume of the Event;
- (d) the reason for the Event; and
- (e) the level of treatment the Bypass(es) and/or Plant Overflow(s) received and disinfection status of same.

(3) The Owner shall submit Bypass and Plant Overflow Event Reports to the Water Supervisor on a quarterly basis, no later than each of the following dates for each calendar year: February 14, May 15, August 14, and November 15. Event Reports shall be in an electronic format specified by the Ministry. In each Event Report the Owner shall include, at a minimum, the following information on any Events that occurred during the preceding quarter:

- (a) the date of the Event(s);
- (b) the measured or estimated volume of the Event(s);
- (c) the duration of the Event(s);
- (d) the location of the Event(s);
- (e) the reason for the Event(s); and
- (f) the level of treatment the Bypass(es) and/or Plant Overflow(s) received and disinfection status of same.

(4) The Owner shall use best efforts to collect a representative sample consisting of a minimum of two (2) grab samples of the By-pass / Plant Overflow and have it analyzed for parameters outlined in Condition 7 using the protocols specified in Condition 9 (with BOD5 instead of CBOD5, preferably), one at the beginning of the Event and the second approximately near the end of the Event, to best reflect the effluent quality of such By-pass or Plant Overflow.

(5) The Owner shall maintain a logbook of all Plant Bypasses and Plant Overflows, which shall contain, at a minimum, the types of information set out in subsection 2(a) to 2(e) in respect of each Bypass and Plant Overflow.

6. EFFLUENT OBJECTIVES

(1) The Owner shall use best efforts to design, construct and operate the Works with the objective that the concentrations of the materials named below as effluent parameters are not exceeded in the effluent from the Works.

Table 1 - Effluent Objectives		
Effluent Parameter	Monthly Average Concentration (milligrams per litre unless otherwise indicated)	Monthly Average Loading (kilograms per day unless otherwise indicated)
CBOD5	25	55
Total Suspended Solids	25	55
Total Phosphorus	0.8	1.8
Un-Ionized Ammonia as Nitrogen (Freezing Period: T < 5°C)	5	11
Un-Ionized Ammonia as Nitrogen (Non-Freezing Period: T ≥ 5°C - Apr 15 to Dec 15)	12	26.4

(2) The Owner shall use best efforts to:

- (a) maintain the pH of the effluent from the Works within the range of 6.5 to 8.5, inclusive, at all times;
- (b) operate the works within the Rated Capacity of the Works;
- (c) ensure that the effluent from the Works is essentially free of floating and settleable solids and does not contain oil or any other substance in amounts sufficient to create a visible film or sheen or foam or discolouration on the receiving waters.

(3) Notwithstanding subsection (1), the Owner shall operate and maintain the Works such that the effluent is continuously disinfected so that the monthly Geometric Mean Density of *E.Coli* does not exceed 150 organisms per 100 millilitres of effluent discharged from the Works.

(4) The Owner shall include in all reports submitted in accordance with Condition 10 a summary of the efforts made and results achieved under this Condition.

7. EFFLUENT LIMITS

(1) The Owner shall operate and maintain the Works such that the concentrations of the materials named below as effluent parameters are not exceeded in the effluent from the Works.

Table 2 - Effluent Limits		
Effluent Parameter	Daily Concentration (milligrams per litre unless otherwise indicated)	Monthly Average Concentration (milligrams per litre unless otherwise indicated)
Column 1	Column 2	Column 3
CBOD5	45	30
Total Suspended Solids	45	30
Total Phosphorus	1.5	1.0
Un-Ionized Ammonia as Nitrogen (Freezing Period)	10	7.5
Un-Ionized Ammonia as Nitrogen (Non-Freezing Period)	20	15
Total Residual Chlorine	1.0	0.5
pH of the effluent maintained between 6.0 to 9.5, inclusive, at all times		

(2) For the purposes of determining compliance with and enforcing subsection (1):

- (a) The Daily Concentration of a parameter named in Column 1 of subsection (1) shall not exceed the corresponding maximum concentration set out in Column 2 of subsection (1).
- (b) The Monthly Average Concentration of a parameter named in Column 1 of subsection (1) shall not exceed the corresponding maximum concentration set out in Column 3 of subsection (1).
- (c) The pH of the effluent shall be maintained within the limits outlined in subsection (1).

(3) Notwithstanding subsection (1), the Owner shall operate and maintain the Works such that the effluent is continuously disinfected so that the monthly Geometric Mean Density of *E. Coli* does not exceed 200 organisms per 100 millilitres of effluent discharged from the Works.

8. OPERATION AND MAINTENANCE

(1) The Owner shall exercise due diligence in ensuring that, at all times, the Works and the related equipment and appurtenances used to achieve compliance with this Approval are properly operated and maintained. Proper operation and maintenance shall include effective performance, adequate funding, adequate operator staffing and training, including training in all procedures and other requirements of this Approval and regulations, adequate laboratory facilities, process controls and alarms and the use of process chemicals and other substances used in the Works.

(2) The Owner shall prepare an updated operations manual within one (1) year of the issuance date of this Approval, that includes, but not necessarily limited to, the following information:

- (a) operating procedures for routine operation of the Works;
- (b) inspection programs, including frequency of inspection, for the Works and the methods or tests employed to detect when maintenance is necessary;
- (c) repair and maintenance programs, including the frequency of repair and maintenance for the Works;
- (d) procedures for the inspection and calibration of monitoring equipment;
- (e) a spill prevention control and countermeasures plan, consisting of contingency plans and procedures for dealing with equipment breakdowns, potential spills and any other abnormal situations, including notification of the Water Supervisor; and
- (f) procedures for receiving, responding and recording public complaints, including recording any follow up actions taken.

(3) The Owner shall maintain the operations manual current and retain a copy at the location of the Works for the operational life of the Works. Upon request, the Owner shall make the manual available to Ministry staff.

(4) The Owner shall provide for the overall operation of the Works with an operator who holds a licence that is applicable to that type of facility and that is of the same class as or higher than the class of the facility in accordance with Ontario Regulation 129/04.

(5) The Owner is permitted to accept a maximum of 46 m³/day total volume of landfill leachate delivered by waste haul tankers to the Landfill Leachate and Septage Receiving Station (MH2A) for treatment at the Works;

(6) The Owner is permitted to accept a maximum of 200 m³/day Septage hauled from the Bruce Power Inc. (on-site sewage treatment plant and visitor's centre septic tank system) on a contingency basis delivered by waste haul tankers to the Landfill Leachate and Septage Receiving Station (MH2A) for treatment at the Works.

9. MONITORING AND RECORDING

The Owner shall, upon commencement of operation of the Works, carry out the following monitoring program:

(1) All samples and measurements taken for the purposes of this Approval are to be taken at a time and in a location characteristic of the quality and quantity of the effluent stream over the time period being monitored.

(2) For the purposes of this condition, the following definitions apply:

- (a) Daily means once each day;
- (b) Weekly means once each week;
- (c) Bi-Weekly means once every two weeks;
- (d) Monthly means once every month; and

(e) Annually means once every twelve months.

(3) Samples shall be collected at the following sampling points, at the frequency specified, by means of the specified sample type and analyzed for each parameter listed and all results recorded:

Table 3 - Influent Monitoring		
Sampling Location: Inlet Works		
Parameters	Sample Type	Frequency
BOD5	24-hr Composite	Bi-Weekly
Total Suspended Solids	24-hr Composite	Bi-Weekly
Total Phosphorus	24-hr Composite	Bi-Weekly
Total Kjeldahl Nitrogen	24-hr Composite	Bi-Weekly

Table 4 - Effluent Monitoring		
Sampling Location: Effluent Outfall		
Parameters	Sample Type	Frequency
CBOD5	Grab	Bi-Weekly
Total Suspended Solids	Grab	Bi-Weekly
Total Phosphorus	Grab	Bi-Weekly
Total Ammonia Nitrogen	Grab	Bi-Weekly
Total Kjeldhal Nitrogen	Grab	Bi-Weekly
Nitrate as Nitrogen	Grab	Bi-Weekly
Nitrite as Nitrogen	Grab	Bi-Weekly
Alkalinity	Grab	Bi-Weekly
pH	Grab	Bi-Weekly
Temperature	Grab	Bi-Weekly
<i>E. Coli</i>	Grab	Bi-Weekly
Total Residual Chlorine (Only when in use)	Grab	Bi-Weekly

(4) The Owner shall collect a representative grab sample of Septage **during each event** when Septage is being off-loaded into the Landfill Leachate and Septage Receiving Station (MH2A) and analyzed for each parameter listed below and all results recorded:

Table 5 - Septage Monitoring	
Sampling Location: Leachate and Septage Receiving Station (MH2A)	
Parameters	Parameters
BOD5	pH
Total Suspended Solids	Temperature
Total Phosphorus	Oil & Grease
Total Kjeldhal Nitrogen	

(5) The Owner shall collect a representative grab sample of landfill leachate on a **Bi-Weekly frequency** when landfill leachate is being off-loaded into the Landfill Leachate and Septage Receiving Station (MH2A) and analyzed for each parameter listed below and all results recorded:

Table 6 - Leachate Monitoring	
Sampling Location: Leachate and Septage Receiving Station (MH2A)	
Parameters	Parameters
BOD5	Temperature
Total Suspended Solids	Boron
Total Phosphorus	Iron (Total)
Total Kjeldhal Nitrogen	Zinc (Total)
pH	

(6) The methods and protocols for sampling, analysis and recording shall conform, in order of precedence, to the methods and protocols specified in the following:

- (a) the Ministry's Procedure F-10-1, "Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works (Liquid Waste Streams Only), as amended from time to time by more recently published editions;
- (b) the Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" (January 1999), ISBN 0-7778-1880-9, as amended from time to time by more recently published editions;
- (c) the publication "Standard Methods for the Examination of Water and Wastewater" (21st edition), as amended from time to time by more recently published editions;

(7) The temperature and pH of the effluent from the Works shall be determined in the field at the time of sampling for Total Ammonia Nitrogen. The concentration of un-ionized ammonia shall be calculated using the total ammonia concentration, pH and temperature using the methodology stipulated in "Ontario's Provincial Water Quality Objectives" dated July 1994, as amended, for ammonia (un-ionized).

(8) The measurement frequencies specified in subsections (3) and (5) in respect to any parameter are minimum requirements which may, after one (1) year of monitoring in accordance with this Condition, be modified by the Water Supervisor in writing from time to time.

(9) The Owner shall install and maintain (a) continuous flow measuring device(s), to measure the flow rate of the effluent from the Works with an accuracy to within plus or minus 15 per cent (+/- 15%) of the actual flow rate for the entire design range of the flow measuring device, and record the flow rate at a daily frequency.

(10) The Owner shall keep a record, using a log-book or electronically, for each event that a waste haul tanker is allowed to off-load landfill leachate or Septage into the Landfill Leachate and Septage Receiving Station (MH2A) including as a minimum the date, source, and approximate volume of the leachate or Septage, as well as the quality monitoring results obtained under subsection (4) and (5); and

(11) The Owner shall retain for a minimum of five (5) years from the date of their creation, all records and

information related to or resulting from the monitoring activities required by this Approval.

10. REPORTING

(1) Ten (10) days prior to the date of a planned By-pass being conducted pursuant to Condition 5 and as soon as possible for an unplanned By-pass, the Owner shall notify the Water Supervisor(in writing) of the pending start date, in addition to an assessment of the potential adverse effects on the environment and the duration of the By-pass.

(2) The Owner shall report to the Water Supervisor or designate, any exceedance of any parameter specified in Condition 7 orally, as soon as reasonably possible, and in writing within seven (7) days of the exceedance.

(3) In addition to the obligations under Part X of the *Environmental Protection Act* , the Owner shall, within ten (10) working days of the occurrence of any reportable spill as defined in Ontario Regulation 675/98, bypass or loss of any product, by-product, intermediate product, oil, solvent, waste material or any other polluting substance into the environment, submit a full written report of the occurrence to the Water Supervisor describing the cause and discovery of the spill or loss, clean-up and recovery measures taken, preventative measures to be taken and schedule of implementation.

(4) The Owner shall, upon request, make all manuals, plans, records, data, procedures and supporting documentation available to Ministry staff.

(5) The Owner shall prepare and submit to the Water Supervisor, a performance report, on an annual basis, within ninety (90) days following the end of the period being reported upon. The first such report shall cover the first annual period following the commencement of operation of the Works and subsequent reports shall be submitted to cover successive annual periods following thereafter. The reports shall contain, but shall not be limited to, the following information:

- (a) a summary and interpretation of all monitoring data and a comparison to the effluent limits outlined in Condition 7, including an overview of the success and adequacy of the Works;
- (b) a summary of all monitoring data for landfill leachate and Septage collected under Condition 9;
- (c) a description of any operating problems encountered and corrective actions taken;
- (d) a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the Works;
- (e) a summary of any effluent quality assurance or control measures undertaken in the reporting period;
- (f) a summary of the calibration and maintenance carried out on all effluent monitoring equipment;
- (g) a description of efforts made and results achieved in meeting the Effluent Objectives of

Condition 6;

- (h) a tabulation of the volume of sludge generated in the reporting period, an outline of anticipated volumes to be generated in the next reporting period and a summary of the locations to where the sludge was disposed;
 - (i) a summary of any complaints received during the reporting period and any steps taken to address the complaints;
 - (j) a summary of all By-pass, spill or abnormal discharge events;
 - (k) a copy of all Notice of Modifications submitted to the Water Supervisor as a result of Schedule 'B', Section 1, with a status report on the implementation of each modification;
 - (l) a report summarizing all modifications completed as a result of Schedule 'B', Section 3; and
 - (m) any other information the Water Supervisor requires from time to time.
- (6) The Owner shall, within thirty (30) calendar days of issuance of this Approval, submit a Municipal and Local Services Board Sewage Works Profile Information Form, and shall resubmit the updated document every time a notification is provided to the Water Supervisor in compliance with requirements of change of ownership under this Approval.

11. LIMITED OPERATIONAL FLEXIBILITY

(1) The Owner may make modifications to the Works in accordance with the Terms and Conditions of this Approval and subject to the Ministry's "Limited Operational Flexibility Criteria for Modifications to Sewage Works", included under Schedule 'B' of this Approval, as amended.

(2) Sewage works proposed under Limited Operational Flexibility shall adhere to the design guidelines contained within the Ministry's publication "Design Guidelines for Sewage Works 2008", as amended.

(3) The Owner shall ensure at all times, that the Works, related equipment and appurtenances which are installed or used to achieve compliance are operated in accordance with all Terms and Conditions of this Approval.

(4) For greater certainty, the following are not permitted as part of Limited Operational Flexibility:

(a) Modifications to the Works that result in an increase of the approved Rated Capacity of the Works;

(b) Modifications to the Works that may adversely affect the approved effluent quality criteria or the location of the discharge/outfall;

(c) Modifications to the treatment process technology of the Works, or modifications that involve construction of new reactors (tanks) or alter the treatment train process design;

(d) Modifications to the Works approved under s.9 of the EPA, and

(e) Modifications to the Works pursuant to an order issued by the Ministry.

(5) Implementation of Limited Operational Flexibility is not intended to be used for piecemeal measures that result in major alterations or expansions.

(6) If the implementation of Limited Operational Flexibility requires changes to be made to the Emergency Response, Spill Reporting and Contingency Plan, the Owner shall, as deemed necessary in consultation with the Water Supervisor, provide a revised copy of this plan to the local fire services authority prior to implementing Limited Operational Flexibility.

(7) For greater certainty, any modification made under the Limited Operational Flexibility may only be carried out after other legal obligations have been complied with, including those arising from the Environmental Protection Act , Niagara Escarpment Planning and Development Act , Oak Ridges Moraine Conservation Act , Lake Simcoe Protection Act and Greenbelt Act .

(8) Prior to implementing Limited Operational Flexibility, the Owner shall complete a Notice of Modifications describing any proposed modifications to the Works and submit it to the Water Supervisor.

SCHEDULE 'A'

I. PROPOSED WORKS:

1. Application for Environmental Compliance Approval dated July 3, 2013 submitted by The Corporation of the Municipality of Kincardine and design specifications and engineering drawings prepared by Conestoga-Rovers and Associates, Waterloo, Ontario.

II PREVIOUS WORKS APPROVED ON JULY 6, 1990:

1. Application for Certificate of Approval dated April 8, 1988 submitted by Ontario Hydro and design specifications and engineering drawings prepared by Proctor & Redfern Limited, Don Mills, Ontario.

SCHEDULE 'B'

Limited Operational Flexibility Criteria for Modifications to Municipal Sewage Works

1. The modifications to sewage works approved under an Environmental Compliance Approval (Approval) that are permitted under the Limited Operational Flexibility (LOF), are outlined below and are subject to the LOF conditions in the Approval, and require the submission of the Notice of Modifications. If there is a conflict between the sewage works listed below and the Terms and Conditions in the Approval, the Terms and Conditions in the Approval shall take precedence.

1.1 Sewage Pumping Stations

- a. Alter pumping capacity by adding or replacing equipment where new equipment is located within an existing sewage treatment plant site or an existing sewage pumping station site, provided that the modifications do not result in an increase of the sewage treatment plant Rated Capacity and the existing flow process and/or treatment train are maintained, as applicable.
- b. Forcemain relining and replacement with similar pipe size where the nominal diameter is not greater than 1,200mm

1.2 Sewage Treatment Process

- a. Installing additional chemical dosage equipment including replacing with alternative chemicals for pH adjustment or coagulants (non-toxic polymers) provided that there are no modifications of treatment processes or other modifications that may alter the intent of operations and may have negative impacts on the effluent quantity and quality.
- b. Expanding the buffer zone between a sanitary sewage lagoon facility or land treatment area and adjacent uses provided that the buffer zone is entirely on the proponent's land.
- c. Optimizing existing sanitary sewage lagoons with the purpose to increase efficiency of treatment operations provided that existing sewage treatment plant rated capacity is not exceeded and where no land acquisition is required.
- d. Optimizing existing sewage treatment plant equipment with the purpose to increase the efficiency of the existing treatment operations, provided that there are no modifications to the works that result in an increase of the approved Rated Capacity, and may have adverse effects to the effluent quality or location of the discharge.
- e. Replacement, refurbishment of previously approved equipment in whole or in part with Equivalent Equipment, like-for-like of different make and model, provided that the firm capacity, reliability, performance standard, level of quality and redundancy of the group of equipment is kept the same or exceeded. For clarity purposes, the following equipment can be considered under this provision: pumps, screens, grit separators, blowers, aeration equipment, sludge thickeners, dewatering

equipment, UV systems, chlorine contact equipment, bio-disks, and sludge digester systems.

1.3 Sewage Treatment Plant Outfall

- a. Replacement of discharge pipe with similar pipe size or diffusers provided that the outfall location is not changed.

1.4 Sanitary Sewers

- a. Pipe relining and replacement with similar pipe size within the Sewage Treatment Plant site, where the nominal diameter is not greater than 1,200mm.

1.5 Pilot Systems

- a. Installation of pilot systems for new or existing technologies provided that:
 - i. any effluent from the pilot system is discharged to the inlet of the sewage treatment plant or hauled off-site for proper disposal,
 - ii. any effluent from the pilot system discharged to the inlet of the sewage treatment plant or sewage conveyance system does not significantly alter the composition/concentration of the influent sewage to be treated in the downstream process; and that it does not add any inhibiting substances to the downstream process, and
 - iii. the pilot system's duration does not exceed a maximum of two years; and a report with results is submitted to the Director and Water Supervisor three months after completion of the pilot project.
2. Sewage works that are exempt from section 53 of the OWRA by O. Reg. 525/98 continue to be exempt and are not required to follow the notification process under this Limited Operational Flexibility.
3. Normal or emergency operational modifications, such as repairs, reconstructions, or other improvements that are part of maintenance activities, including cleaning, renovations to existing approved sewage works equipment, provided that the modification is made with Equivalent Equipment, are considered pre-approved.
4. The modifications noted in section (3) above are not required to follow the notification protocols under Limited Operational Flexibility, provided that the number of pieces and description of the equipment as described in the Approval does not change.



Notice of Modification to Sewage Works

RETAIN COPY OF COMPLETED FORM AS PART OF THE ECA AND SEND A COPY TO THE WATER SUPERVISOR (FOR MUNICIPAL) OR DISTRICT MANAGER (FOR NON-MUNICIPAL SYSTEMS)

Part 1 – Environmental Compliance Approval (ECA) with Limited Operational Flexibility <i>(Insert the ECA's owner, number, issuance date and notice number, which should start with "01" and consecutive numbers thereafter)</i>		
ECA Number	Issuance Date (mm/dd/yy)	Notice number (if applicable)
ECA Owner		Municipality

Part 2: Description of the modifications as part of the Limited Operational Flexibility <i>(Attach a detailed description of the sewage works)</i>
<p>Description shall include:</p> <ol style="list-style-type: none"> 1. A detail description of the modifications and/or operations to the sewage works (e.g. sewage work component, location, size, equipment type/model, material, process name, etc.) 2. Confirmation that the anticipated environmental effects are negligible. 3. List of updated versions of, or amendments to, all relevant technical documents that are affected by the modifications as applicable, i.e. submission of documentation is not required, but the listing of updated documents is (design brief, drawings, emergency plan, etc.)

Part 3 – Declaration by Professional Engineer	
<p>I hereby declare that I have verified the scope and technical aspects of this modification and confirm that the design:</p> <ol style="list-style-type: none"> 1. Has been prepared or reviewed by a Professional Engineer who is licensed to practice in the Province of Ontario; 2. Conforms with the Limited Operational Flexibility as per the ECA; 3. Has been designed consistent with Ministry's Design Guidelines, adhering to engineering standards, industry's best management practices, and demonstrating ongoing compliance with s.53 of the Ontario Water Resources Act; and other appropriate regulations. <p>I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate.</p>	
Name (Print)	PEO License Number
Signature	Date (mm/dd/yy)
Name of Employer	

Part 4 – Declaration by Owner	
<p>I hereby declare that:</p> <ol style="list-style-type: none"> 1. I am authorized by the Owner to complete this Declaration; 2. The Owner consents to the modification; and 3. These modifications to the sewage works are proposed in accordance with the Limited Operational Flexibility as described in the ECA. 4. The Owner has fulfilled all applicable requirements of the <i>Environmental Assessment Act</i>. <p>I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate.</p>	
Name of Owner Representative (Print)	Owner representative's title (Print)
Owner Representative's Signature	Date (mm/dd/yy)

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

1. Condition 1 is imposed to ensure that the Works are built and operated in the manner in which they were described for review and upon which approval was granted. This condition is also included to emphasize the precedence of Conditions in the Approval and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review. The condition also advises the Owners their responsibility to notify any person they authorized to carry out work pursuant to this Approval the existence of this Approval.
2. Condition 2 is included to ensure that the Works are constructed in a timely manner so that standards applicable at the time of Approval of the Works are still applicable at the time of construction, to ensure the ongoing protection of the environment.
3. Condition 3 is included to ensure that the Ministry records are kept accurate and current with respect to the approved works and to ensure that subsequent owners of the Works are made aware of the Approval and continue to operate the Works in compliance with it.
4. Condition 4 is included to ensure that the Works are constructed in accordance with the approval and that record drawings of the Works “as constructed” are maintained for future references.
5. Condition 5 is included to indicate that by-passes of untreated sewage to the receiving watercourse is prohibited, save in certain limited circumstances where the failure to Bypass could result in greater injury to the public interest than the Bypass itself where a Bypass will not violate the approved effluent requirements, or where the Bypass can be limited or otherwise mitigated by handling it in accordance with an approved contingency plan. The notification and documentation requirements allow the Ministry to take action in an informed manner and will ensure the Owner is aware of the extent and frequency of Bypass events.
6. Condition 6 is imposed to establish non-enforceable effluent quality objectives which the Owner is obligated to use best efforts to strive towards on an ongoing basis. These objectives are to be used as a mechanism to trigger corrective action proactively and voluntarily before environmental impairment occurs and before the compliance limits of Condition 7 are exceeded.
7. Condition 7 is imposed to ensure that the effluent discharged from the Works to the Lake Huron meets the Ministry's effluent quality requirements thus minimizing environmental impact on the receiver and to protect water quality, fish and other aquatic life in the receiving water body.
8. Condition 8 is included to require that the Works be properly operated, maintained, funded, staffed and equipped such that the environment is protected and deterioration, loss, injury or damage to any person or property is prevented. As well, the inclusion of a comprehensive operations manual governing all significant areas of operation, maintenance and repair is prepared, implemented and kept up-to-date by the owner and made available to the Ministry. Such a manual is an integral part of the operation of the Works. Its compilation and use should assist the Owner in staff training, in proper plant operation and in

identifying and planning for contingencies during possible abnormal conditions. The manual will also act as a benchmark for Ministry staff when reviewing the Owner's operation of the work.

9. Condition 9 is included to enable the Owner to evaluate and demonstrate the performance of the Works, on a continual basis, so that the Works are properly operated and maintained at a level which is consistent with the design objectives and effluent limits specified in the Approval and that the Works does not cause any impairment to the receiving watercourse.
10. Condition 10 is included to provide a performance record for future references, to ensure that the Ministry is made aware of problems as they arise, and to provide a compliance record for all the terms and conditions outlined in this Approval, so that the Ministry can work with the Owner in resolving any problems in a timely manner.
11. Condition 11 is included to ensure that the Works are operated in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider. These conditions are also included to ensure that a Professional Engineer has reviewed the proposed modifications and attests that the modifications are in line with that of Limited Operational Flexibility, and provide assurance that the proposed modifications comply with the Ministry's requirements stipulated in the terms and conditions of this Approval, MOE policies, guidelines, and industry engineering standards and best management practices.

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 6651-9CRR77 issued on February 20, 2014.

In accordance with Section 139 of the Environmental Protection Act, 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 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval 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.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of
Part II.1 of the Environmental Protection Act
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 25th day of November, 2014



Edgardo Tovilla
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

HV/

c: DWMD Supervisor, MOECC Owen Sound District Office.
S. Smith, The Corporation of the Municipality of Kincardine.

APPENDIX B

Average Monthly Analytical Results

AVERAGE MONTHLY ANALYTICAL RESULTS

Bruce Energy Centre Lagoons

2020	INFLUENT FLOWS			RAW INFLUENT				FINAL EFFLUENT											
				Monthly Average				Monthly Average											
Month	Total Flow m3	Max Flow m3/day	Avg. Flows m3/Day	BOD5 mg/L	TSS mg/L	TKN mg/L	Total P mg/L	CBOD5 mg/L	TSS mg/L	TKN mg/L	Total P mg/L	Alkalinity CaCO3 mg/L	Nitrite NO2 mg/L	Nitrate NO3 mg/L	Ammonia+ Ammonium NH3+NH4 mg/L	E-Coli /100 mL (Geomean)	pH	Temperature C	Unionized Ammonia mg/L
January	16112	769	520	62	63	9.5	2.17	9.0	24.0	4.4	0.52	175	0.04	1.08	3.1	60	7.60	1.1	0.026
February	22414	1142	773	92	85	14.7	3.76	8.0	27.5	5.9	0.44	191	0.05	1.14	5.1	23	7.65	2.4	0.023
March	21522	1025	694	316	465	24.1	5.20	11.5	24.5	6.2	0.45	186	0.04	0.93	5.5	4	8.20	9.1	0.149
April	22050	914	735	101	107	15.4	2.25	17.0	18.5	4.9	0.19	167	0.24	0.87	3.3	5	8.60	10.0	0.188
May	25485	1236	822	85	97	13.4	2.12	23.0	25.0	2.0	0.15	123	0.14	0.46	0.6	6	7.73	12.8	0.014
June	26389	1274	880	101	122	17.0	2.44	9.0	18.0	2.8	0.07	132	0.16	0.22	0.7	5	8.13	20.1	0.042
July	22323	990	720	148	178	30.6	3.96	4.7	12.0	2.3	0.09	116	0.13	0.23	0.4	2	8.07	23.9	0.021
August	24893	1086	803	141	96	42.3	5.00	4.5	8.0	1.1	0.09	120	0.03	0.20	0.2	7	7.82	25.0	0.007
September	17648	922	588	123	151	38.6	3.74	3.5	14.0	0.8	0.14	135	0.06	0.36	0.3	105	8.56	16.8	0.026
October	22752	1109	734	69	50	26.3	3.44	3.0	3.0	1.0	0.07	140	0.10	1.08	0.3	12	8.19	12.7	0.009
November	17995	1067	600	82	66	20.1	2.75	2.0	4.0	1.2	0.08	134	0.16	2.49	0.8	8	8.24	8.2	0.021
December	13225	582	427	78	62	13.7	1.84	2.7	3.0	3.9	0.11	151	0.10	4.01	3.7	3	8.22	7.4	0.087
Annual	252809.2	1274.35	691	116	128	22.1	3.22	8.2	15.1	3.0	0.20	147	0.10	1.09	2.0	9	8.08	12.4	0.051

refers to <

APPENDIX C

Septage Monitoring Results



SGS Canada Inc.

P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

29-July-2020

Mun of Kincardine (Bruce Energy Centre Lagoons)

Attn : Donna Hardman

Date Rec. : 22 July 2020
LR Report: CA12887-JUL20

155 Durham St.
Kincardine, ON
N2Z 1A4, Canada

Copy: #1

Phone: 519-396-4660
Fax:

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	9: Bruce Power Wastewater
Sample Date & Time					20-Jul-20 11:45
Temperature Upon Receipt [°C]	---	---	---	---	12.0
Field pH [no unit]	---	---	---	---	7.74
Field Temperature [celcius]	---	---	---	---	24.3
Biochemical Oxygen Demand (BOD5) [mg/L]	22-Jul-20	17:28	27-Jul-20	14:42	196
Total Suspended Solids [mg/L]	23-Jul-20	10:46	24-Jul-20	08:51	800
Phosphorus (total) [mg/L]	24-Jul-20	08:16	29-Jul-20	10:48	24.6
Total Kjeldahl Nitrogen [as N mg/L]	24-Jul-20	08:16	28-Jul-20	15:53	202
Oil & Grease (total) [mg/L]	23-Jul-20	08:40	24-Jul-20	09:44	96

Patti Stark
Project Specialist,
Environment, Health & Safety

APPENDIX D

Flow Summary

**Bruce Energy Centre Lagoon System
Flow Summary
2020**

Month		Influent Flow	Effluent Flow
January	Total (m3)	16,112	34,888
	Average (m3/d)	520	1,125
	Maximum (m3/d)	769	1,527
February	Total (m3)	22,414	23,269
	Average (m3/d)	773	802
	Maximum (m3/d)	1,142	1,018
March	Total (m3)	21,522	31,397
	Average (m3/d)	694	1,013
	Maximum (m3/d)	1,025	1,447
April	Total (m3)	22,050	22,300
	Average (m3/d)	735	743
	Maximum (m3/d)	914	940
May	Total (m3)	25,485	20,108
	Average (m3/d)	822	649
	Maximum (m3/d)	1,236	875
June	Total (m3)	26,389	17,380
	Average (m3/d)	880	579
	Maximum (m3/d)	1,274	963
July	Total (m3)	22,323	10,477
	Average (m3/d)	720	338
	Maximum (m3/d)	990	428
August	Total (m3)	24,893	15,590
	Average (m3/d)	803	503
	Maximum (m3/d)	1,086	1,137
September	Total (m3)	17,648	18,437
	Average (m3/d)	588	615
	Maximum (m3/d)	922	1,465
October	Total (m3)	22,752	18,278
	Average (m3/d)	734	590
	Maximum (m3/d)	1,109	733
November	Total (m3)	17,995	17,920
	Average (m3/d)	600	597
	Maximum (m3/d)	1,067	729
December	Total (m3)	13,225	24,726
	Average (m3/d)	427	798
	Maximum (m3/d)	582	974
2020	Total (m3)	252,809	254,770
	Average (m3/d)	693	698
	Maximum (m3/d)	1,274	1,527

APPENDIX E
Calibration Reports



151 Superior Blvd, Unit #13
Mississauga, ON, L5T 2L1.
www.Indus-Control.com

VERIFICATION REPORT - KHRONE ELECTRO-MAGNETIC FLOW MEASUREMENT

Customer Name: Municipality of Kincardine
Plant Name: Bruce Energy Centre

Site/Plant Address: Bruce Energy Lagoon System
Tiverton , ON

Device Information
Make: Khrone
Model: IFC 110PF
Order Code: N/A
Serial No.: A02 40541
Tag: BEC-LAGOON-INFLUENT

Service Information
Date: June 11, 2020
Report No: CO1128-26
Job No: CO1128-2006

Sensor Details
Line size: 20 Inch
GK: 8.815
GKL: NA
Mounting: Compact

Flow Details
Unit: L/S
Flow Range: 0 - 2100 L/S
Current Output: 4-20 mA
4 mA Set Point: 0
20 mA Set Point: 2100

Inst. Reading	AS FOUND	AS LEFT
TOTALIZER (m3)	368724	368732
FLOW (L/S)	13.5	24.5

Maintenance Checklist	Remarks
Visual Inspection: <input checked="" type="checkbox"/> OK <input type="checkbox"/> NOT OK	
Electrical Inspection: <input checked="" type="checkbox"/> OK <input type="checkbox"/> NOT OK	
Sensor Installation: <input checked="" type="checkbox"/> OK <input type="checkbox"/> NOT OK	
Transmitter Installation: <input checked="" type="checkbox"/> OK <input type="checkbox"/> NOT OK	

Instrument Test Information and Results					
Set-Point as Per Calibration KIT	Calculated Flow (L/S)	Calculated O/P (mA)	UUT Display (L/S)	UUT Measured Output (mA)	Deviation (L/S)
0	0.00	4.00	0.0002	4.00	0.00
A	263.78	6.01	297.0000	6.23	33.22
B	527.55	8.02	597.0000	12.49	69.45
C	1055.11	12.04	1513.9000	16.78	458.79

Information of Tools used for Verification of the Instruments			
Details	Tool/Kit 1	Tool/Kit 2	Tool/Kit 2
Device Description:	Calibrator	Electrical Multimeter	N/A
Manufacturer:	Khrone	Fluke	N/A
Model No:	GS8B	179	N/A

* Refer Calibration Tools Certificates submittal for more Information

Verification Test Result: Passed Fail Not Verified

Overall Remarks: Verification Test of above Instrument Fail. Very Old model obsolete. Need to be Replaced. Accuracy decrease as flow increase. Also Error on instrument.

Service Technician : Dhaval Patel
Printed Date: June 17, 2020

Stamp/Signature 



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Mississauga, ON, L5T 2L1.
www.Indus-Control.com

VERIFICATION REPORT - OCM III OPEN CHANNEL MEASUREMENT

Customer Name: Municipality of Kincardine
Plant Name: Bruce Energy Centre

Site/Plant Address: Bruce Energy Lagoon System
Tiverton , ON

Device Information

Make: Milltronics
Model: OCM III
Order Code: N/A
Serial No.: A0329706
Tag: BEC-LAGOON - Effluent

Service Information

Date: June 11, 2020
Report No: CO1128-27
Job No: CO1128-2006

Flow Details

Unit: L/S
Flow Range: 0 - 60 L/S
Current Output: 4-20 mA
4 mA Set Point 0
20 mA Set Point 60

Inst. Reading	AS FOUND	AS LEFT
TOTALIZER (m3)	851491.12	851492.26
FLOW (L/S)	10.69	10.57

Maintenance Checklist

Visual Inspection:	<input checked="" type="checkbox"/> OK	<input type="checkbox"/> NOT OK
Electrical Inspection:	<input checked="" type="checkbox"/> OK	<input type="checkbox"/> NOT OK
Sensor Installation:	<input checked="" type="checkbox"/> OK	<input type="checkbox"/> NOT OK
Transmitter Installation:	<input checked="" type="checkbox"/> OK	<input type="checkbox"/> NOT OK

Remarks

Instrument Test Information and Results

Input (%)	Calculated Flow (L/S)	Calculated O/P (mA)	UUT Display (L/S)	UUT Measured Output (mA)	Deviation (L/S)
0	0.00	4.00	0.06	4.00	0.06
25	15.00	8.00	14.48	8.01	-0.52
50	30.00	12.00	28.52	11.99	-1.48
75	45.00	16.00	43.85	15.98	-1.15
100	60.00	20.00	57.39	19.99	-2.61

Information of Tools used for Verification of the Instruments

Details	Tool/Kit 1	Tool/Kit 2	Tool/Kit 2
Device Description:	Electrical Multimeter	N/A	N/A
Manufacturer:	Fluke	N/A	N/A
Model No:	179	N/A	N/A

* Refer Calibration Tools Certificates submittal for more Information

Verification Test Result: **Passed** **Fail** **Not Verified**

Overall Remarks: Obsolete need to replace in Future.

Service Technician : Dhaval Patel

Stamp/Signature

Printed Date: June 17, 2020



VeriMaster - Flow Meter Verification Report

Customer Information		Meter Information	
Customer	KINCARDINE	Meter Owner	INVERHURON
Verification Download	Thu, Jun 11, 2020	Meter Type	WaterMaster
		Sensor Size	DN100
		Pipe Status	Fluid Present
		Sensor Type	Fullbore
		Sensor Serial No	3K620000270827
		Transmitter Serial No	3K620000270827
		Tag	Inverhuron Sewage
		Location	Inverhuron

Overall Status: Pass

The flowmeter has passed its internal continuous verification and automatic self calibration. It is working within +/-1% of its original factory calibration

Summary of Results		Verification History	
Coil Group	Passed	OIML Accuracy Alarms	0
Electrode Group	Passed	Totaliser Information	
Sensor Group	Passed	Forward	6812649.00 l
Transmitter Signal	Passed	Reverse	160953.00 l
Transmitter Driver	Passed	Net	6651695.00 l
Output Group	Passed	Sensor Data	
Configuration	Passed	Coil Current	179.9 mA
		Coil Inductance	215.5 mH
		Coil Inductance Shift	0.0%
		Coil / Loop Resistance	38.8 ohm
Sensor Information		Transmitter Data	
Q3	69.44 l/s	Tx Gain - Adjustment	0.1%
Calibration Accuracy	OIML Class 2	VeriMaster Information	
Sensor Calibration Factors	91.8%; -3.05 mm/s; 11	Version	01.00.03
Date of Manufacture	22 Apr 2018	Limit Version	01.00.01
Run Hours	330days 21hrs 18488mins	Pulse Output	
Transmitter Information		Output 1: 1200.0Hz	Pass : 1199.900 Hz ; 0.01%
Application Version	V01.07.00 03/02/17	Output 1: 600.0Hz	Pass : 599.800 Hz ; 0.03%
MSP Version	01.00.00	Output 2: 1200.0Hz	Pass : 1199.900 Hz ; 0.01%
Date of Manufacture	22 Apr 2018	Output 2: 600.0Hz	Pass : 599.990 Hz ; 0.00%
Run Hours	662days 8hrs 29696mins		
Current Output			
4mA Value	Pass : 3.996 mA ; 0.10%		
12mA Value	Pass : 11.996 mA ; 0.03%		
20mA Value	Pass : 19.996 mA ; 0.02%		

Installation Comments / Equipment used:	Configuration Settings
SEWAGE FLOWMETER	Mains Frequency 60 Hz
	Qmax 25.00 l/s
	Pulses/Unit 100.000000
	Pulses Limit Frequency 1200.0 Hz
	Sensor User Span/Zero 100.0%; 0.00 mm/s
	User Flow Cutoff/Hysteresis 1.00%; 20%
	Meter Mode Normal operation

Date Thu, Jun 11, 2020

Operator Signature 

Print

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APPENDIX F

Annual By-pass Log

**Bruce Energy Centre Lagoon System
2020 Annual Bypass/Spill Report**

Month	Date(s)	Location	Duration (minutes)	Volume (m3)
January	11	Maple Street SPS	190	55
February				
March	10	Maple Street SPS	412	95
	10	Lake Street SPS	180	5
April				
May				
June				
July				
August				
September				
October				
November				
December				
Total # of Bypasses	3		782	155

APPENDIX G

Complaints Summary

WorkOrderId	Description	Actual Finish	Shop	Address	Comments
3273	Sanitary Lateral Backup	June 18, 2020	BEC WASTEWATER	65 KING ST	Both upstream and downstream manholes clear and flowing well
4078	Sanitary Odour Investigate	December 9, 2020	BEC WASTEWATER	131 LAKE ST	(Copied from Service Request 1488): "Neighbour's cottage isn't used much this year but when they are there, there is a sewage odour coming from the property. Other neighbours walking by have noticed the smell as well. "