

**ENVIRONMENTAL COMPLIANCE APPROVAL**

NUMBER A-500-1508282062

Version: 1.0

Issue Date: July 27, 2020

*Pursuant to section 20.3 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 and subject to all other applicable Acts or regulations this Environmental Compliance Approval is issued to:*

1479893 ONTARIO LIMITED

344 ROSELAWN AVENUE (AVE) ,  
 APARTMENT 1  
 TORONTO ONTARIO  
 M4R 1G1

*For the following site:*

99 FOURTH CONC Road , BURFORD, BRANT, ONTARIO,  
 CANADA, N0E 1A0

*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:*

establishment, usage and operation of new non-municipal sewage works, for the treatment of sanitary sewage from Twin Springs Camping & Cottages and disposal of effluent to outflowing channel of Crestwood Lake at the culvert crossing (UTM co-ordinate 536,112 m easting and 4,774,253 m northing in zone 17) via a Sewage Treatment Plant and Final Effluent disposal facilities as follows:

**Classification of Sewage Treatment Plant:** Tertiary

**Details of Service Area:**

- **Type of Occupancy:** Seasonal Residential
- **Type and Number of Units:** 400 lots of camping sites and cottages

**Design Capacity of Sewage Treatment Plant:**

Design Capacity with All Treatment Trains in Operation	Prior to Completion of Construction of All Proposed Works	Upon Completion of Construction of All Proposed Works
Rated Capacity	85 cubic metres per day	170 cubic metres per day

**Influent Sewage**

Receiving Location	Types
In Collection System	Sanitary Sewage

## WWTP – PHASE 1

### Flow Equalization System

- one (1) 64,300 litres capacity in-ground equalization tank, two (2) air mixing blowers, and two (2) screen feed pumps.

### Preliminary Treatment System

- Screening – one (1) fine screen, one (1) discharge tank.

### Secondary Treatment Systems

- Biological Treatment - one (1) 99,400 litres capacity aerobic tank, two (2) aeration blowers, two (2) membrane feed pumps, and one (1) wasting activated sludge pump.

### Tertiary Treatment Systems

- Membrane Filtration System - one (1) membrane tank, one (1) MicroClear™ MB3-3L submerge membrane module with MicroClear™ MCXL2 membrane cassettes, permeate extraction header, two (2) permeate extraction pumps, and two (2) air scouring blowers.

### Supplementary Treatment Systems

- Chemical Dosing System
- two (2) alum dosing pumps, two (2) caustic dosing pumps, two (2) acid dosing pumps, spill containments for chemical drums.

### Disinfection System

- two (2) train each with one (1) UV reactor.

### Sludge Management System

- one (1) 66,600 litres capacity in-ground sludge holding tank, one (1) aeration blower, and one (1) decanting pump.

### Odor Control System

- one (1) activated carbon vessel.

## Final Effluent Disposal Facilities

- effluent sewer from the UV/filter building to the outfall chamber discharging to the outflowing channel of Crestwood Lake.

## WWTP – PHASE 2

### Secondary Treatment Systems

- one (1) addition membrane feed pump.

### Tertiary Treatment Systems

- Membrane Filtration System - one (1) membrane tank, one (1) MicroClear™ MB3-3L submerge membrane module with MicroClear™ MCXL2 membrane cassettes, permeate extraction header, two (2) permeate extraction pumps, and two (2) air scouring blowers.

including all other mechanical system, electrical system, instrumentation and control system, standby power system, piping, pumps, valves and appurtenances essential for the proper, safe and reliable operation of the Works in accordance with this Approval, in the context of process performance and general principles of wastewater engineering only.

all in accordance with the submitted supporting documents listed in Schedule A.

## DEFINITIONS

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

1. "Approval" means this entire Environmental Compliance Approval and any Schedules attached to it.
2. "BOD<sub>5</sub>" (also known as TBOD<sub>5</sub>) means five day biochemical oxygen demand measured in an unfiltered sample and includes carbonaceous and nitrogenous oxygen demands.
3. "Bypass" means diversion of sewage around one or more treatment processes, excluding Preliminary Treatment System, 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 point(s) and discharged via the approved effluent disposal facilities.
4. "CBOD<sub>5</sub>" means five day carbonaceous (nitrification inhibited) biochemical oxygen demand measured in an unfiltered sample.
5. "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.
6. "District Manager" means the District Manager of the appropriate local district office of the Ministry where the Works is geographically located.
7. "*E. coli*" refers to coliform bacteria that possess the enzyme beta-glucuronidase and are capable of cleaving a fluorogenic or chromogenic substrate with the corresponding release of a fluorogen or chromogen, that produces fluorescence under long wavelength (366 nm) UV light, or color development, respectively. Enumeration methods include tube, membrane filter, or multi-well procedures. Depending on the method selected, incubation temperatures include 35.5 + 0.5 °C or 44.5 + 0.2 °C (to enumerate thermotolerant species). Depending on the procedure used, data are reported as

either colony forming units (CFU) per 100 mL (for membrane filtration methods) or as most probable number (MPN) per 100 mL (for tube or multi-well methods).

8. "EPA" means the *Environmental Protection Act*, R.S.O. 1990, c.E.19.
9. "Event" means an action or occurrence, at a given location within the Works that causes a Bypass or Overflow. An Event ends when there is no recurrence of Bypass or Overflow in the 12-hour period following the last Bypass or Overflow. Overflows and Bypasses are separate Events even when they occur concurrently.
10. "Final Effluent" means effluent that is discharged to the environment through the approved effluent disposal facilities, including all Bypasses, that are required to meet the compliance limits stipulated in the Approval for the Sewage Treatment Plant at the Final Effluent sampling point(s).
11. "Influent" means flows to the Sewage Treatment Plant from the collection system.
12. "Licensed Engineering Practitioner" means a person who holds a licence, limited licence or temporary licence under the PEO.
13. "Limited Operational Flexibility" (LOF) means the conditions that the Owner shall follow in order to undertake any modification that is pre-authorized as part of this Approval.
14. "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.
15. "Monthly Average Effluent Concentration" is the mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar month, calculated and reported as per the methodology specified in Schedule 6.
16. "Monthly Average Daily Effluent Flow" means the cumulative total Final Effluent discharged during a calendar month divided by the number of days during which Final Effluent was discharged that month.
17. "Monthly Average Daily Effluent Loading" means the value obtained by multiplying the Monthly Average Effluent Concentration of a contaminant by the Monthly Average Daily Effluent Flow over the same calendar month.
18. "Monthly Geometric Mean Density" is the mean of all Single Sample Results of *E.coli* measurement in the samples taken during a calendar month, calculated and reported as per the methodology specified in Schedule 6.
19. "Normal Operating Condition" means the condition when all unit process(es), excluding Preliminary Treatment System, in a treatment train is operating within its design capacity.
20. "Operating Authority" means the Owner, person or the entity that is authorized by the Owner for the management, operation, maintenance, or alteration of the Works in accordance with this Approval.
21. "Overflow" means a discharge to the environment from the Works at designed location(s) other than the approved effluent disposal facilities or via the effluent disposal facilities downstream of the Final Effluent sampling point.
22. "Owner" means any person that is responsible for the establishment of the Works being approved by this Approval, and includes Owner's Legal Name and its successors and assigns.
23. "OWRA" means the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40
24. "PEO" means *Professional Engineers Act*, R.S.O. 1990, c. P.28.
25. "Preliminary Treatment System" means all facilities in the Sewage Treatment Plant associated with screening and grit removal.

26. "Procedure F-5-1" means the Ministry guidance document titled "Procedure F-5-1 - Determination of Treatment Requirements for Municipal and Private Sewage Treatment Works Discharging to Surface Waters " dated May 2, 2019.
27. "Procedure F-5-5" means the Ministry guidance document titled "Procedure F-5-5 - Determination of Treatment Requirements for Municipal and Private Combined and Partially Separated Sewer Systems" dated March 25, 2019.
28. "Rated Capacity" means the Annual Average Daily Influent Flow for which the Sewage Treatment Plant is designed to handle.
29. "Sewage Treatment Plant" means all the facilities related to sewage treatment within the sewage treatment plant site excluding the Final Effluent disposal facilities.
30. "Single Sample Result" means the test result of a parameter in the effluent discharged on any day, as measured by a probe, analyzer or in a composite or grab sample, as required.
31. "Works" means the approved sewage works, and includes modifications made under Limited Operational Flexibility.

## **TERMS AND CONDITIONS**

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

### **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, and the application for approval of the Works.
3. Where there is a conflict between a provision of any document referred to in this Approval and the conditions of this Approval, the conditions in this Approval shall take precedence.
4. The Conditions of this Approval are severable. If any Condition of this Approval, or the application of any requirement of this Approval to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this Approval shall not be affected thereby.
5. The issuance of, and compliance with the conditions of, this Approval: does not:
  - a. relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement, including, but not limited to, the obligation to obtain approvals from the local conservation authority and the municipality necessary to construct or operate the sewage Works; or
  - b. limit in any way the authority of the Ministry to require certain steps be taken to require the Owner to furnish any further information related to compliance with this Approval.

### **2. CHANGE OF OWNER AND OPERATING AUTHORITY**

1. The Owner shall notify the District Manager and the Director, in writing, of any of the following changes within thirty (30) days of the change occurring:

- a. change of address of Owner;
  - b. change of Owner, including address of new 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. B.17*, as amended, shall be included in the notification;
  - 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 Information Act, R.S.O. 1990, c. C.39*, as amended, shall be included in the notification.
2. The Owner shall notify the District Manager, in writing, of any of the following changes within thirty (30) days of the change occurring:
    - a. change of address of Operating Authority;
    - b. change of Operating Authority, including address of new Operating Authority.
  3. In the event of any change in ownership of the Works, the Owner shall notify the succeeding owner in writing, of the existence of this Approval, and forward a copy of the notice to the District Manager.
  4. The Owner shall ensure that all communications made pursuant to this condition refer to the environmental compliance approval number.

### **3. CONSTRUCTION OF WORKS / RECORD DRAWINGS**

1. All Works in this Approval shall be constructed and installed and must commence operation within five (5) years of issuance of this Approval, after which time the Approval ceases to apply in respect of any portions of the Works not in operation. In the event that the construction, installation and/or operation of any portion of the Works is anticipated to be delayed beyond the time period stipulated, the Owner shall submit to the Director an application to amend the Approval to extend this time period, at least six (6) months prior to the end of the period. The amendment application shall include the reason(s) for the delay and whether there is any design change(s).
2. Upon completion of construction of the Works, the Owner shall prepare and submit a written statement to the District Manager, certified by a Licensed Engineering Practitioner, that the Works is constructed in accordance with this Approval.
3. One (1) week prior to the commencement of the operation of the Works, the Owner shall notify the District Manager (in writing) of the pending start-up date.
4. Within one (1) year of completion of construction of the Works, a set of record drawings of the Works shall be prepared or updated. These drawings shall be kept up to date through revisions undertaken from time to time and a copy shall be readily accessible for reference at the Works.

### **4. BYPASSES**

1. Any Bypass is prohibited, except:
  - a. an emergency Bypass when a structural, mechanical or electrical failure causes a temporary reduction in the capacity of a treatment process or when an unforeseen flow condition exceeds the design capacity of a treatment process that is likely to result in personal injury, loss of life, health hazard, basement flooding, severe property damage, equipment damage or treatment process upset, if a portion of the flow is not bypassed;

- b. a planned Bypass that is a direct and unavoidable result of a planned repair and maintenance procedure or other circumstance(s), the Owner having notified the District Manager in writing at least fifteen (15) days prior to the occurrence of Bypass, including an estimated quantity and duration of the Bypass, an assessment of the impact on the quality of the Final Effluent and the mitigation measures if necessary, and the District Manager has given written consent of the Bypass.
2. Notwithstanding the exceptions given in Paragraph 1, the Operating Authority shall undertake everything practicable to maximize the flow through the downstream treatment process(es) prior to bypassing.
3. At the beginning of a Bypass Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:
  - a. the type of the Bypass as indicated in Paragraph 1 and the reason(s) for the Bypass;
  - b. the date and time of the beginning of the Bypass;
  - c. the treatment process(es) gone through prior to the Bypass and the treatment process(es) bypassed;
  - d. the effort(s) done to maximize the flow through the downstream treatment process(es) and the reason(s) why the Bypass was not avoided.
4. Upon confirmation of the end of a Bypass Event, the Owner shall immediately notify the SAC and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:
  - a. the date and time of the end of the Bypass;
  - b. the estimated or measured volume of Bypass.
5. For any Bypass Event, the Owner shall collect daily sample(s) of the Final Effluent, inclusive of the Event and analyze for all effluent parameters outlined in Compliance Limits condition, except for *E. coli*, toxicity to Rainbow Trout and *Daphnia magna*, total residual chlorine / bisulphite residual, dissolved oxygen, pH, temperature and unionized ammonia, following the same protocol specified in the Monitoring and Recording condition as for the regular samples. The sample(s) shall be in addition to the regular Final Effluent samples required under the monitoring and recording condition, except when the Event occurs on a scheduled monitoring day.
6. The Owner shall develop a notification procedure in consultation with the District Manager and SAC and notify the public and downstream water users that may be adversely impacted by any Bypass Event.

## 5. OVERFLOWS

1. Any Overflow is prohibited, except:
  - a. an emergency Overflow in an emergency situation when a structural, mechanical or electrical failure causes a temporary reduction in the capacity of the Works or when an unforeseen flow condition exceeds the design capacity of the Works that is likely to result in personal injury, loss of life, health hazard, basement flooding, severe property damage, equipment damage or treatment process upset, if a portion of the flow is not overflowed;
  - b. a planned Overflow that is a direct and unavoidable result of a planned repair and maintenance procedure or other circumstance(s), the Owner having notified the District Manager in writing at least fifteen (15) days prior to the occurrence of Overflow,

including an estimated quantity and duration of the Overflow, an assessment of the impact on the environment and the mitigation measures if necessary, and the District Manager has given written consent of the Overflow.

2. Notwithstanding the exceptions given in Paragraph 1, the Operating Authority shall undertake everything practicable to maximize the flow through the downstream treatment process(es) and Bypass(es) prior to overflowing.
3. At the beginning of an Overflow Event, the Owner shall immediately notify the SAC and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:
  - a. the type of the Overflow as indicated in Paragraph 1 and the reason(s) for the Overflow;
  - b. the date and time of the beginning of the Overflow;
  - c. the point of the Overflow from the Works, the treatment process(es) gone through prior to the Overflow, the disinfection status of the Overflow and whether the Overflow is discharged through the effluent disposal facilities or an alternate location;
  - d. the effort(s) done to maximize the flow through the downstream treatment process(es) and Bypass(es) and the reason(s) why the Overflow was not avoided.
4. Upon confirmation of the end of an Overflow Event, the Owner shall immediately notify the SAC and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:
  - a. the date and time of the end of the Overflow;
  - b. the estimated or measured volume of the Overflow.
5. For any Overflow Event
  - a. in the Sewage Treatment Plant, the Owner shall collect grab sample(s) of the Overflow, one near the beginning of the Event and one every eight (8) hours for the duration of the Event, and have them analyzed at least for CBOD5, total suspended solids, total phosphorus, total ammonia nitrogen, nitrate as N, nitrite as N, total Kjeldahl nitrogen, *E. coli.*, hydrogen sulphide except that raw sewage and primary treated effluent Overflow shall be analyzed for BOD5, total suspended solids, total phosphorus and total Kjeldahl nitrogen only.
6. The Owner shall develop a notification procedure in consultation with the District Manager and SAC and notify the public and downstream water users that may be adversely impacted by any Overflow Event.

## 6. DESIGN OBJECTIVES

1. The Owner shall design and undertake everything practicable to operate the Sewage Treatment Plant in accordance with the following objectives:
  - a. Final Effluent parameters design objectives listed in the table(s) included in Schedule 2.
  - b. Final Effluent 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 discoloration on the receiving waters.
  - c. Annual Average Daily Influent Flow is within the Rated Capacity of the Sewage Treatment Plant.

## 7. COMPLIANCE LIMITS



1. The Owner shall operate and maintain the Sewage Treatment Plant such that compliance limits for the Final Effluent parameters listed in the table(s) included in Schedule 3 are met.
2. The Owner shall operate and maintain the Sewage Treatment Plant such that the Final Effluent is disinfected continuously year-round.

## **8. OPERATION AND MAINTENANCE**

1. The Owner shall ensure 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 staffing and training, including training in all procedures and other requirements of this Approval and the OWRA 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/update the operations manual for the Works within six (6) months of completion of construction of the Works, that includes, but not necessarily limited to, the following information:
  - a. operating procedures for the Works under Normal Operating Conditions;
  - 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. operating procedures for the Works to handle situations outside Normal Operating Conditions and emergency situations such as a structural, mechanical or electrical failure, or an unforeseen flow condition, including procedures to minimize Bypasses and Overflows;
  - f. a spill prevention and contingency plan, consisting of procedures and contingency plans, including notification to the District Manager, to reduce the risk of spills of pollutants and prevent, eliminate or ameliorate any adverse effects that result or may result from spills of pollutants;
  - g. procedures for receiving, responding and recording public complaints, including recording any followup actions taken.
3. The Owner shall maintain the operations manual up-to-date and make the manual readily accessible for reference at the Works.
4. The Owner shall ensure that the Operating Authority fulfills the requirements under O. Reg. 129 /04, as amended for the Works, including the classification of facilities, licensing of operators and operating standards.

## **9. MONITORING AND RECORDING**

1. The Owner shall, upon commencement of operation of the Works, carry out a scheduled monitoring program of collecting samples at the required sampling points, at the frequency specified or higher, by means of the specified sample type and analyzed for each parameter listed in the tables under the monitoring program included in Schedule 4 and record all results, as follows:

- a. all samples and measurements are to be taken at a time and in a location characteristic of the quality and quantity of the sewage stream over the time period being monitored.
  - b. definitions and preparation requirements for each sample type are included in document referenced in Paragraph 3.b.
  - c. a schedule of the day of the week/month for the scheduled sampling shall be created. The sampling schedule shall be revised and updated every year through rotation of the day of the week/month for the scheduled sampling program, except when the actual scheduled monitoring frequency is three (3) or more times per week.
  - d. The measurement frequencies specified in Schedule 4 in respect to any parameter may, after one (1) year of monitoring in accordance with this condition, be modified by the Director in writing.
2. The methods and protocols for sampling, analysis and recording shall conform, in order of precedence, to the methods and protocols specified in the following documents and all analysis shall be conducted by a laboratory accredited to the ISO/IEC:17025 standard or as directed by the District Manager:
    - 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;
    - b. the Ministry's publication "Protocol for the Sampling and Analysis of Industrial /Municipal Wastewater Version 2.0" (January 2016), PIBS 2724e02, as amended;
    - c. the publication "Standard Methods for the Examination of Water and Wastewater", as amended; and
    - d. for any parameters not mentioned in the documents referenced in Paragraphs 3.a, 3.b and 3.c, the written approval of the District Manager shall be obtained prior to sampling.
  3. The Owner shall monitor and record the flow rate and daily quantity using flow measuring devices or other methods of measurement as approved below calibrated to an accuracy within plus or minus 15 per cent (+/- 15%) of the actual flowrate of the following:
    - a. Influent flow to the Sewage Treatment Plant by continuous flow measuring devices and instrumentations/pumping rates or in lieu of an actual installation of equipment, adopt the flow measurements of the Final Effluent for the purpose of estimating Influent flows if the Influent and Final Effluent streams are considered not significantly different in flow rates and quantities; and
    - b. Final Effluent discharged from the Sewage Treatment Plant by continuous flow measuring devices and instrumentations/pumping rates or in lieu of an actual installation of equipment, adopt the flow measurements of the Influent for the purpose of estimating Final Effluent flows if the Influent and Final Effluent streams are considered not significantly different in flow rates and quantities.
  4. 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. LIMITED OPERATIONAL FLEXIBILITY**

1. The Owner may make pre-authorized modifications to the Sewage Treatment Plant in Works in accordance with the document "Limited Operational Flexibility - Protocol for Pre-Authorized Modifications to Municipal Sewage Works" (Schedule 5), as amended, subject to the following:

- a. the modifications will not involve the addition of any new treatment process or the removal of an existing treatment process, including chemical systems, from the liquid or solids treatment trains as originally designed and approved.
  - b. the scope and technical aspects of the modifications are in line with those delineated in Schedule 5 and conform with the Ministry's publication "Design Guidelines for Sewage Works 2008", as amended, Ministry's regulations, policies, guidelines, and industry engineering standards;
  - c. the modifications shall not negatively impact on the performance of any process or equipment in the Works or result in deterioration in the Final Effluent quality; or
  - d. where the pre-authorized modification requires notification, a "Notice of Modifications to Sewage Works" (Schedule 5), as amended shall be completed with declarations from a Licensed Engineering Practitioner and the Owner and retained on-site prior to the scheduled implementation date. All supporting information including technical memorandum, engineering plans and specifications, as applicable and appropriate to support the declarations that the modifications conform with LOF shall remain on-site for future inspection.
2. The following modifications are not pre-authorized under Limited Operational Flexibility:
- a. Modifications that involve addition or extension of process structures, tankages or channels;
  - b. Modifications that involve relocation of the Final Effluent outfall or any other discharge location or that may require reassessment of the impact to the receiver or environment;
  - c. Modifications that involve addition of or change in technology of a treatment process or that may involve reassessment of the treatment train process design;
  - d. Modifications that require changes to be made to the emergency response, spill prevention and contingency plan; or
  - e. Modifications that are required pursuant to an order issued by the Ministry.

## 11. REPORTING

1. The Owner shall report to the District Manager orally as soon as possible any non-compliance with the compliance limits, and in writing within seven (7) days of non-compliance.
2. The Owner shall, within fifteen (15) days of occurrence of a spill within the meaning of Part X of the EPA, submit a full written report of the occurrence to the District Manager describing the cause and discovery of the spill, clean-up and recovery measures taken, preventative measures to be taken and schedule of implementation, in addition to fulfilling the requirements under the EPA and O. Reg. 675/98 "Classification and Exemption of Spills and Reporting of Discharges".
3. The Owner shall, upon request, make all manuals, plans, records, data, procedures and supporting documentation available to Ministry staff.
4. The Owner shall prepare performance reports on a calendar year basis and submit to the District Manager by March 31 of the calendar year following the period being reported upon. The reports shall contain, but shall not be limited to, the following information pertaining to the reporting period:
  - a. a summary and interpretation of all Influent monitoring data, and a review of the historical trend of the sewage characteristics and flow rates;

- b. a summary and interpretation of all Final Effluent monitoring data, including concentration, flow rates, loading and a comparison to the design objectives and compliance limits in this Approval, including an overview of the success and adequacy of the Works;
- c. a summary of all operating issues encountered and corrective actions taken;
- d. a summary of all normal and emergency repairs and maintenance activities carried out on any major structure, equipment, apparatus or mechanism forming part of the Works;
- e. a summary of any effluent quality assurance or control measures undertaken;
- f. a summary of the calibration and maintenance carried out on all Influent and Final Effluent monitoring equipment to ensure that the accuracy is within the tolerance of that equipment as required in this Approval or recommended by the manufacturer;
- g. a summary of efforts made to achieve the design objectives in this Approval, including an assessment of the issues and recommendations for pro-active actions when any of the design objectives is not achieved more than 50% of the time in a year or there is an increasing trend in deterioration of Final Effluent quality;
- h. a tabulation of the volume of sludge generated, 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 and any steps taken to address the complaints;
- j. a summary of all Bypasses, Overflows, other situations outside Normal Operating Conditions and spills within the meaning of Part X of EPA and abnormal discharge events;
- k. a summary of all Notice of Modifications to Sewage Works completed under Paragraph 1. d. of Condition 10, including a report on status of implementation of all modification;
- l. a summary of efforts made to achieve conformance with Procedure F-5-1 including but not limited to projects undertaken and completed in the sanitary sewer system that result in overall Bypass/Overflow elimination including expenditures and proposed projects to eliminate Bypass/Overflows with estimated budget forecast for the year following that for which the report is submitted;
- m. any changes or updates to the schedule for the completion of construction and commissioning operation of major process(es) / equipment groups in the Works; and
- n. any other information the District Manager requires from time to time.

## 12. RESPONSIBILITY AGREEMENT

1. The Owner shall enter into a duly signed Municipality Responsibility Agreement (MRA) with County of Brant prior to the operation of the Works approved herein.
2. Prior to the operation of the Works approved herein, the Owner shall register the Certificate of Requirement signed by the Director, in the appropriate Land Registry Office.
3. The Owner shall submit a copy of the registered Certificate of Requirement to the District Manager.
4. Any dealings with the property are prohibited in any way without first giving a copy of this Approval and the Municipality Responsibility Agreement to each person acquiring an interest in the property.

5. In the event that the County of Brant with the power to provide sewage service to the users of the Works, determines to do so directly, pursuant to the Municipality Responsibility Agreement or otherwise, or is required, by the Medical Officer of Health or the Director, to do so, the Owner shall, without compensation, transfer to the County of Brant, such parts of the Works and any related interests in land required for the Works as are determined by the County of Brant.

### 13. CERTIFICATE OF REQUIREMENT

1. Pursuant to Section 103 of the OWRA, no person having an interest in the Property, shall deal with the Property in any way without first giving a copy of this Approval to each person acquiring an interest in the Property as a result of the dealing.
2. The Owner shall:
  - a. within sixty (60) days of the date of the issuance of this Approval, submit to the Director for their review, two copies of a completed Certificate of Requirement and a registerable description of the Property; and
  - b. within ten (10) calendar days of receiving the Certificate of Requirement authorized by the Director, register the Certificate of Requirement in the appropriate Land Registry Office on title to the Property and submit to the Director the duplicate registered copy immediately following registration.
3. For the purposes of this condition, Property shall mean the property located at 99 FOURTH CONC Road, Burford, Brant.

## REASONS

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

1. Condition 1 regarding general provisions is imposed to ensure that the Works are constructed and operated in the manner in which they were described and upon which approval was granted.
2. Condition 2 regarding change of Owner and Operating Authority is included to ensure that the Ministry records are kept accurate and current with respect to ownership and Operating Authority of the 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.
3. Condition 3 regarding construction of Works/record drawings 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, and that prior to the commencement of construction of the portion of the Works that are approved in principle only, the Director will have the opportunity to review detailed design drawings, specifications and an engineer's report containing detailed design calculations for that portion of the Works, to determine capability to comply with the Ministry's requirements stipulated in the terms and conditions of the Approval, and also ensure that the Works are constructed in accordance with the Approval and that record drawings of the Works "as constructed" are updated and maintained for future references.
4. Condition 4 regarding Bypasses is included to indicate that Bypass is prohibited, except in circumstances where the failure to Bypass could result in greater damage to the environment than the Bypass itself. 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.

5. Condition 5 regarding Overflows is included to indicate that Overflow of untreated or partially treated sewage to the receiver is prohibited, except in circumstances where the failure to Overflow could result in greater damage to the environment than the Overflow itself. 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 Overflow Events.
6. Condition 6 regarding design objectives is imposed to establish non-enforceable design objectives to be used as a mechanism to trigger corrective action proactively and voluntarily before environmental impairment occurs.
7. Condition 7 regarding compliance limits is imposed to ensure that the Final Effluent discharged from the Works to the environment meets the Ministry's effluent quality requirements.
8. Condition 8 regarding operation and maintenance 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. 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 Works.
9. Condition 9 regarding monitoring and recording 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 compliance limits.
10. Condition 10 regarding Limited Operational Flexibility is included to ensure that the Works are constructed, maintained and operated in accordance with the Approval, and that any pre-approved modification will not negatively impact on the performance of the Works.
11. Condition 11 regarding reporting 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 this Approval.
12. Condition 12 is included to ensure that there is a Municipality Responsibility Agreement in place between the Owner and the Municipality prior to operation of the Works so that, in the event that the Owner is unable to continue to provide sewage service, the Municipality may be able to assume ownership and operation of the Works.
13. Condition 13 is included in order to require the Owner to give notice of this Approval to potential future owners of the property before the property is dealt with.

## **APPEAL PROVISIONS**

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*In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me, the Environmental Review Tribunal and in accordance with Section 47 of the Environmental Bill of*

*Rights, 1993, the Minister of the Environment, Conservation and Parks, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Minister of the Environment, Conservation and Parks will place notice of your appeal on the Environmental Registry. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:*

- a. 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;
- b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

*The Notice should also include:*

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. 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 Minister of the  
Environment, Conservation  
and Parks  
777 Bay Street, 5th Floor  
Toronto, Ontario  
M7A 2J3*

AND

*The Director appointed for the purposes  
of Part II.1 of the Environmental  
Protection Act  
Ministry of the Environment,  
Conservation and Parks  
135 St. Clair Avenue West, 1st Floor  
Toronto, Ontario  
M4V 1P5*

**\* 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) 326-5370 or [www.elfto.gov.on.ca](http://www.elfto.gov.on.ca)**

*This instrument is subject to Section 38 of the Environmental Bill of Rights, 1993, that allows residents of Ontario to seek leave to appeal the decision on this instrument. Residents of Ontario may seek leave to appeal within 15 days from the date this decision is placed on the Environmental Registry. By accessing the Environmental Registry at [www.ero.ontario.ca](http://www.ero.ontario.ca), you can determine when the leave to appeal period ends.*

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

Dated at Toronto this 27th day of July, 2020

*Fariha Ramu.*

Fariha Pannu

Director

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

c: Danny Menard, Groundwater Environmental Management Services Inc.  
Jonathan Weaver, TWIN LAKES

The following schedules are a part of this environmental compliance approval:



## **SCHEDULE 1**

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Environmental Compliance Approval Application for Industrial Sewage Works uploaded by Danny Menard, of Groundwater Environmental Management Services, certified by Jonathan Weaver, of 1479893 ONTARIO LIMITED, dated March 06, 2020, and all supporting documentation and information.

## SCHEDULE 2

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### Final Effluent Design Objectives

#### Concentration Objectives

<b>Final Effluent Parameter</b>	<b>Averaging Calculator</b>	<b>Objective</b> (milligrams per litre unless otherwise indicated)
CBOD <sub>5</sub>	Single Sample Result	5
Total Suspended Solids	Single Sample Result	5
Total Phosphorus	Single Sample Result	0.08
<i>E. coli</i>	Monthly Geometric Mean Density	100 CFU/100 mL
pH	Single Sample Result	6.5 - 8.5 inclusive at all times

#### Loading Objectives

<b>Final Effluent Parameter</b>	<b>Averaging Calculator</b>	<b>Waste Loading</b> (kilogram per day)
CBOD <sub>5</sub>	Single Sample Waste Loading	0.85
Total Suspended Solids	Single Sample Waste Loading	0.85
Total Phosphorus	Single Sample Waste Loading	0.014

## SCHEDULE 3

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### Final Effluent Compliance Limits

#### Concentration Limits

<b>Final Effluent Parameter</b>	<b>Averaging Calculator</b>	<b>Limit</b> (milligrams per litre unless otherwise indicated)
CBOD <sub>5</sub>	Monthly Average Effluent Concentration	6
Total Suspended Solids	Monthly Average Effluent Concentration	7
Total Phosphorus	Monthly Average Effluent Concentration	0.1
Unionized Ammonia Nitrogen	Monthly Average Effluent Concentration	0.0026
<i>E. coli</i>	Monthly Geometric Mean Density	130 CFU/100 mL
pH	Single Sample Result	6.5 - 8.5 inclusive at all times

#### Loading Limits

<b>Final Effluent Parameter</b>	<b>Averaging Calculator</b>	<b>Loading</b> (kilogram per day)
CBOD <sub>5</sub>	Monthly Average Effluent Loading	1.02
Total Suspended Solids	Monthly Average Effluent Loading	1.19
Total Phosphorus	Monthly Average Effluent Loading	0.017
Unionized Ammonia Nitrogen	Monthly Average Effluent Loading	0.004

## SCHEDULE 4

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### Monitoring Program

#### Influent &ndash; Equalization Tank

Parameters	Sample Type	Minimum Frequency
BOD <sub>5</sub>	8 hour composite	Twice per monthly
pH	8 hour composite	Twice per monthly
Temperature	8 hour composite	Twice per monthly
Total Ammonia Nitrogen	8 hour composite	Twice per monthly
Total Kjeldahl Nitrogen	8 hour composite	Twice per monthly
Total Phosphorus	8 hour composite	Twice per monthly
Total Suspended Solids	8 hour composite	Twice per monthly

#### Final Effluent &ndash; After the disinfection system

Parameters	Sample Type	Minimum Frequency
CBOD <sub>5</sub>	8 hour composite	Twice per monthly
pH*	Grab	Twice per monthly
Temperature*	Grab	Twice per monthly
<i>E.coli</i>	Grab	Twice per monthly
Nitrate Nitrogen	8 hour composite	Twice per monthly
Nitrite Nitrogen	8 hour composite	Twice per monthly
Total Ammonia Nitrogen	8 hour composite	Twice per monthly
Total Kjeldahl Nitrogen	8 hour composite	Twice per monthly
Total Phosphorus	8 hour composite	Twice per monthly
Total Suspended Solids	8 hour composite	Twice per monthly
Unionized Ammonia Nitrogen**	As Calculated	Twice per monthly

\*pH and temperature of the Final Effluent 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.

## **SCHEDULE 5**

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### **Limited Operational Flexibility**

#### **Protocol for Pre-Authorized Modifications to Municipal Sewage Works**

##### **General**

1. Pre-authorized modifications are permitted only where Limited Operational Flexibility has already been granted in the Approval and only permitted to be made at the pumping stations and sewage treatment plant in the Works, subject to the conditions of the Approval.
2. Where there is a conflict between the types and scope of pre-authorized modifications listed in this document, and the Approval where Limited Operational Flexibility has been granted, the Approval shall take precedence.
3. The Owner shall consult the District Manager on any proposed modifications that may fall within the scope and intention of the Limited Operational Flexibility but is not listed explicitly or included as an example in this document.
4. The Owner shall ensure that any pre-authorized modifications will not:
  - a. adversely affect the hydraulic profile of the Sewage Treatment Plant or the performance of any upstream or downstream processes, both in terms of hydraulics and treatment performance;
  - b. result in new Overflow or Bypass locations, or any potential increase in frequency or quantity of Overflow(s) or Bypass(es).
  - c. result in a reduction in the required Peak Flow Rate of the treatment process or equipment as originally designed.

##### **Modifications that do not require pre-authorization:**

1. Sewage works that are exempt from Ministry approval requirements;
2. Modifications to the electrical system, instrumentation and control system.

##### **Pre-authorized modifications that do not require preparation of "Notice of Modification to Sewage Works"**

1. Normal or emergency maintenance activities, such as repairs, renovations, refurbishments and replacements with Equivalent Equipment, or other improvements to an existing approved piece of equipment of a treatment process do not require pre-authorization. Examples of these activities are:
  - a. Repairing a piece of equipment and putting it back into operation, including replacement of minor components such as belts, gear boxes, seals, bearings;
  - b. Repairing a piece of equipment by replacing a major component of the equipment such as motor, with the same make and model or another with the same or very close power rating but the capacity of the pump or blower will still be essentially the same as originally designed and approved;
  - c. Replacing the entire piece of equipment with Equivalent Equipment.
2. Improvements to equipment efficiency or treatment process control do not require pre-authorization. Examples of these activities are:

- a. Adding variable frequency drive to pumps;
- b. Adding on-line analyzer, dissolved oxygen probe, ORP probe, flow measurement or other process control device.

## **Pre-Authorized Modifications that require preparation of "Notice of Modification to Sewage Works"**

### Pumping Stations

1. Replacement, realignment of existing sewers including manholes, valves, gates, weirs and associated appurtenances provided that the modifications will not add new influent source(s) or result in an increase in flow from existing sources as originally approved.
2. Extension or partition of wetwell to increase retention time for emergency response and improve station maintenance and pump operation;
3. Replacement or installation of inlet screens to the wetwell;
4. Replacement or installation of flowmeters, construction of station bypass;
5. Replacement, reconfiguration and modifications to pump suctions and discharge pipings including valve, gates, motors, variable frequency drives and associated appurtenances to maintain firm pumping capacity or modulate the pump rate provided that the modifications will not result in a reduction in the firm pumping capacity or discharge head or an increase in the peak pumping rate of the pumping station as originally designed;
6. Replacement, realignment of existing forcemain(s) including valves, gates, and associated appurtenances provided that the modifications will not reduce the flow capacity or increase the total dynamic head and transient in the forcemain.

### Sewage Treatment Plant

1. Sewers and appurtenances
  - a. Replacement, realignment of existing sewers (including pipes and channels), including manholes, valves, gates, weirs and associated appurtenances within the a sewage treatment plant, provided that the modifications will not add new influent source(s) or result in an increase in flow from existing sources as originally approved and that the modifications will remove hydraulic bottlenecks or improve the conveyance of sewage into and through the Works.
2. Flow Distribution Chambers/Splitters
  - a. Replacement or modification of existing flow distribution chamber/splitters or construction of new flow distribution chamber/splitters, including replacements or installation of sluice gates, weirs, valves for distribution of flows to the downstream process trains, provided that the modifications will not result in a change in flow distribution ratio to the downstream process trains as originally designed.
3. Imported Sewage Receiving Facility
  - a. Replacement or relocation of loading bays, connect/disconnect hook-up systems and unloading /transferring systems;
  - b. Replacement or relocation of screens, grit removal units and compactors;

- c. Replacement or relocation of pumps, such as dosing pumps and transfer pumps, valves, piping and appurtenances;
- d. Replacement or relocation of storage tanks/chambers and spill containment systems;
- e. Replacement, relocation or installation of flow measurement and sampling equipment.

#### 4. Preliminary Treatment System

- a. Replacement of existing screens and grit removal units with equipment of the same or higher process performance technology, including where necessary replacement or upgrading of existing screenings dewatering washing compactors, hydrocyclones, grit classifiers, grit pumps, air blowers conveyor system, disposal bins and other ancillary equipment to the screening and grit removal processes.
- b. Replacement of channel aeration systems, including air blowers, air supply main, air headers, air laterals, air distribution grids and diffusers.

#### 5. Primary Treatment System

- a. Replacement of existing sludge removal mechanism, including sludge chamber;
- b. Replacement of scum removal mechanism, including scum chamber;
- c. Replacement of primary sludge pumps, scum pumps, provided that:the modifications will not result in a reduction in the firm pumping capacity or discharge head that the primary sludge pump(s) and scum pump(s) are originally designed to handle.

#### 6. Secondary Treatment System

##### a. Biological Treatment

- i. Conversion of complete mix aeration tank to plug-flow multi-pass aeration tank, including modifications to internal structural configuration;
- ii. Addition of inlet gates in multi-pass aeration tank for step-feed operation mode;
- iii. Partitioning of an anoxic/flip zone in the inlet of the aeration tank, including installation of submersible mixer(s);
- iv. Replacement of aeration system including air blowers, air supply main, air headers, air laterals, air distribution grids and diffusers, provided that the modifications will not result in a reduction in the firm capacity or discharge pressure that the blowers are originally designed to supply or in the net oxygen transferred to the wastewater required for biological treatment as originally required.

##### b. Secondary Sedimentation

- i. Replacement of sludge removal mechanism, including sludge chamber;
- ii. Replacement of scum removal mechanism, including scum chamber;
- c. Replacement of return activated sludge pump(s), waste activated sludge pump(s), scum pump (s), provided that the modifications will not result in a reduction in the firm pumping capacity or discharge head that the activated sludge pump(s) and scum pump(s) are originally designed to handle.

##### Post-Secondary Treatment System

- i. Replacement of filtration system with equipment of the same filtration technology, including feed pumps, backwash pumps, filter reject pumps, filtrate extract pumps,



holding tanks associated with the pumping system, provided that the modifications will not result in a reduction in the capacity of the filtration system as originally designed.

## 7. Disinfection System

### a. UV Irradiation

- i. Replacement of UV irradiation system, provided that the modifications will not result in a reduction in the design capacity of the disinfection system or the radiation level as originally designed.

### b. Chlorination/Dechlorination and Ozonation Systems

- i. Extension and reconfiguration of contact tank to increase retention time for effective disinfection and reduce dead zones and minimize short-circuiting;
- ii. Replacement of chemical storage tanks, provided that the tanks are provided with effective spill containment.

## 8. Supplementary Treatment Systems

### a. Chemical systems

- i. Replacement or relocation of chemical storage tanks for existing chemical systems only, provided that the tanks are sited with effective spill containment;
- ii. Replacement of chemical dosing pumps provided that the modifications will not result in a reduction in the firm capacity that the dosing pumps are originally designed to handle.
- iii. Relocation and addition of chemical dosing point(s) including chemical feed pipes and valves and controls, to improve phosphorus removal efficiency;
- iv. Use of an alternate chemical provided that it is a non-proprietary product and is a commonly used alternative to the chemical approved in the Works, provided that the chemical storage tanks, chemical dosing pumps, feed pipes and controls are also upgraded, as necessary.

## 9. Sludge Management System

### a. Sludge Holding and Thickening

- i. Replacement of sludge holding tanks, sludge handling pumps, such as transfer pumps, feed pumps, recirculation pumps, provided that modifications will not result in reduction in the solids storage or handling capacities;

### b. Sludge Digestion

- i. Replacement of digesters, sludge handling pumps, such as transfer pumps, feed pumps, recirculation pumps, provided that modifications will not result in reduction in the solids storage or handling capacities;
- ii. Replacement of sludge digester covers.

### c. Sludge Dewatering and Disposal

- i. Replacement of sludge dewatering equipment, sludge handling pumps, such as transfer pumps, feed pumps, cake pumps, loading pumps, provided that modifications will not result in reduction in solids storage or handling capacities.

## 10. Standby Power System

- a. Replacement or installation of standby power system, including feed from alternate power grid, emergency power generator, fuel supply and storage systems, provided that the existing standby power generation capacity is not reduced.

## 11. Lagoons

- a. installing baffles in lagoon provided that the operating capacity of the lagoon system is not reduced;
- b. raise top elevation of lagoon berms to increase free-board;
- c. replace interconnecting pipes and chambers between cells, provided that the process design operating sequence is not changed;
- d. replace mechanical aerators, or replace mechanical aerators with diffused aeration system provided that the mixing and aeration capacity are not reduced;
- e. removal of accumulated sludge and disposal to an approved location offsite.

## 12. Final Effluent Disposal Facilities

- a. Replacement or realignment of the Final Effluent channel, sewer or forcemain, including manholes, valves and appurtenances from the end of the treatment train to the discharge outfall section, provided that the sewer conveys only effluent discharged from the Sewage Treatment Plant and that the replacement or re-aligned sewer has similar dimensions and performance criteria and is in the same or approximately the same location and that the hydraulic capacity will not be reduced.

A digital copy of the form entitled "Notice of Modification to Sewage Works" can be obtained from the District Manager.

## SCHEDULE 6

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### Methodology for Calculating and Reporting

#### Monthly Average Effluent Concentration, Annual Average Effluent Concentration and Monthly Geometric Mean Density

##### Monthly Average Effluent Concentration

Step 1: Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar month and proceed as follows depending on the result of the calculation:

1. If the arithmetic mean does not exceed the compliance limit for the contaminant, then report and use this arithmetic mean as the Monthly Average Effluent Concentration for this parameter where applicable in this Approval;
2. If the arithmetic mean exceeds the compliance limit for the contaminant and there was no Bypass Event during the calendar month, then report and use this arithmetic mean as the Monthly Average Effluent Concentration for this parameter where applicable in this Approval;
3. If the arithmetic mean exceeds the compliance limit for the contaminant and there was Bypass Event (s) during the calendar month, then proceed to Step 2;
4. If the arithmetic mean does not exceed the compliance limit for the contaminant and there was Bypass Event(s) during the calendar month, the Owner may still elect to proceed to Step 2 calculation of the flow-weighted arithmetic mean.

Step 2: Calculate the flow-weighted arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar month and proceed depending on the result of the calculation:

1. Group No Bypass Days (**NBPD**) data and Bypass Days (**BPD**) data during a calendar month separately;
2. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all NBPD during a calendar month and record it as **Monthly Average NBPD Effluent Concentration**;
3. Obtain the "**Total Monthly NBPD Flow**" which is the total amount of Final Effluent discharged on all NBPD during the calendar month;
4. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all BPD during a calendar month and record it as **Monthly Average BPD Effluent Concentration**;
5. Obtain the "**Total Monthly BPD Flow**" which is the total amount of Final Effluent discharged on all BPD during the calendar month;
6. Calculate the flow-weighted arithmetic mean using the following formula:

**$$\frac{[(\text{Monthly Average NBPD Effluent Concentration} \times \text{Total Monthly NBPD Flow}) + (\text{Monthly Average BPD Effluent Concentration} \times \text{Total Monthly BPD Flow})]}{(\text{Total Monthly NBPD Flow} + \text{Total Monthly BPD Flow})}$$**

It should be noted that in this method, if there are no Bypass Event for the month, the calculated result would be the same as the non-flow-weighted arithmetic mean method;

1. Report and use the lesser of the flow-weighted arithmetic mean obtained in Step 2 and the arithmetic mean obtained in Step 1 as the Monthly Average Effluent Concentration for this parameter where applicable in this Approval.

#### Annual Average Effluent Concentration

Step 1: Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar year and proceed as follows depending on the result of the calculation:

1. If the arithmetic mean does not exceed the compliance limit for the contaminant, then report and use this arithmetic mean as the Annual Average Effluent Concentration for this parameter where applicable in this Approval;
2. If the arithmetic mean exceeds the compliance limit for the contaminant and there was no Bypass Event during the calendar year, then report and use this arithmetic mean as the Annual Average Effluent Concentration for this parameter where applicable in this Approval;
3. If the arithmetic mean exceeds the compliance limit for the contaminant and there was Bypass Event (s) during the calendar year, then proceed to Step 2;
4. If the arithmetic mean does not exceed the compliance limit for the contaminant and there was Bypass Event(s) during the calendar year, the Owner may still elect to proceed to Step 2 calculation of the flow-weighted arithmetic mean.

Step 2: Calculate the flow-weighted arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar year and proceed depending on the result of the calculation:

1. Group No Bypass Days (**NBPD**) data and Bypass Days (**BPD**) data during a calendar year separately;
2. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all NBPD during a calendar year and record it as **Annual Average NBPD Effluent Concentration**;
3. Obtain the "**Total Annual NBPD Flow**" which is the total amount of Final Effluent discharged on all NBPD during the calendar year;
4. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all BPD during a calendar year and record it as **Annual Average BPD Effluent Concentration**;
5. Obtain the "**Total Annual BPD Flow**" which is the total amount of Final Effluent discharged on all BPD during the calendar year;
6. Calculate the flow-weighted arithmetic mean using the following formula:

**[(Annual Average NBPD Effluent Concentration &times; Total Annual NBPD Flow) + (Annual Average BPD Effluent Concentration &times; Total Annual BPD Flow)] &divide; (Total Annual NBPD Flow + Total Annual BPD Flow)**

It should be noted that in this method, if there are no Bypass Event for the calendar year, the calculated result would be the same as the non-flow-weighted arithmetic mean method;

1. Report and use the lesser of the flow-weighted arithmetic mean obtained in Step 2 and the arithmetic mean obtained in Step 1 as the Annual Average Effluent Concentration for this parameter where applicable in this Approval.

#### Monthly Geometric Mean Density

Geometric mean is defined as the  $n^{\text{th}}$  root of the product of  $n$  numbers. In the context of calculating Monthly Geometric Mean Density for *E. coli*, the following formula shall be used:

$$n \text{ square root } (x_1 * x_2 * x_3 * \dots * x_n)$$

in which,

" $n$ " is the number of samples collected during the calendar month; and

" $x$ " is the value of each Single Sample Result.

For example, four weekly grab samples were collected and tested for *E. coli* during the calendar month. The *E. coli* densities in the Final Effluent were found below:

Sample Number	<i>E. coli</i> Densities* (CFU/100 mL)
1	10
2	100
3	300
4	50

The Geometric Mean Density for these data:

$$4 \text{ square root } (10 * 100 * 300 * 50) = 62$$

\*If a particular result is zero (0), then a value of one (1) will be substituted into the calculation of the Monthly Geometric Mean Density. If the MPN method is utilized for *E. coli* analysis, values in the table shall be MPN/100 mL.