

2018 Annual Performance Report

TALBOTVILLE SEWAGE TREATMENT PLANT



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NEWTERRA | 1291 CALIFORNIA AVENUE, BROCKVILLE ON K6V 5Y6

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1.0 Executive Summary

Newterra is retained by the Corporation of the Township of Southwold to act as the operating authority for the Talbotville MBR Wastewater Treatment Plant (WWTP). Newterra has prepared this report on the behalf of the owner.

The WWTP received an average daily sewage flow of 16.04 cubic metres per day (m³/day) and a Max day flow of 54.96 M₃. This well below its rated capacity for Phase one of 33m³/day ADF and (98 M₃ Max day flow. The maximum daily flow received was 54.96m³ on July4, 2018. The WWTP achieved excellent removal of all treatment parameters.

During the reporting period, an approximate total 10 loads totaling 150M₃ of settled biosolids (sludge) was removed from the WWTP. The owners have contracted GFS Services Ltd 39090 Talbot Line St Thomas as the licensed hauler. The owner/operator expects similar amounts of biosolid production for the 2019 operating season.

There were no reportable spills in the 2018 operating period.

2.0 Introduction

The Talbotville Sewage Treatment Plant (STP) was designed and constructed to provide sewage treatment for the DHP Custom Homes Development in the Township of Southwold.

The following is the anticipated phases of design:

- Phase 1 - 30 lots treatment capacity
- Phase 2 - 30 lots treatment capacity
- Phase 3 - 55 lots treatment capacity

Based on the design, each treatment module will handle 41 homes at 800 l/day average. The plant was commissioned in early 2018.

This report presents a summary of the annual sewage treatment system monitoring results from start on February 1, 2018 to December 31, 2018. In accordance with Condition 11.4 of Environmental Compliance Approval Number 9766-AKXKWN, this report includes a detailed analysis of effluent concentrations with reference to the criteria outlined in Condition 7 of the ECA.

Wastewater from the individual serviced sites flows through the sanitary pipe gravity collection system, to collect sewage from the individual serviced sites 43 as of this report and discharges into one of two 95.3 M₃ flow equalization tanks. Collected sewage is then discharged on a demand dose basis to the Newterra MicroClear Membrane Bioreactor treatment system, designed to treat a daily sewage flow of up to 500 M₃/day after the completion of all three phases of this project, housed in pre-packaged/assembled modified shipping containers and consisting of the following components: Inlet Screen, Equalization Tank, Anoxic Zone Tank, Aerobic Zone, Chemical System for Phosphorous removal, Membrane Tanks, UV Disinfection prior to discharging to Dodds Creek.

3.0 Summary of Monitoring and Analytical Data

The Environmental Compliance Approval (ECA) No. 9766-AKXKWN was issued on April 24, 2017. The ECA sets out the effluent objectives and limits (shown in the first two columns of Table 1).

The monthly and annual plant data summaries are included in this section of the report. Copies of the Laboratory Certificates of Analysis from Caduceon Environmental Laboratories are available on request. The system always operated within the rate daily discharge limit of 33m³/day ADF and 98 M₃ /day Max flow for phase 1. Table 1 outlines the Effluent Objectives as per Condition 6 and the Effluent Limits (non-compliance criteria) as per Condition 7 of the ECA for the operation of the WWTP.

Table 1: Effluent Objectives and Limits based on Monthly Average Concentration

| Effluent Parameter | Effluent Objectives (mg/L) | Effluent Limits (mg/L) |
|---|--|--|
| Rated Capacity (m³/day) | -- | 500 M ₃ /Day |
| CBOD₅ | 5.0 | 10.0 |
| Total Suspended Solids | 5.0 | 10.0 |
| Total Phosphorous | 0.20 | 0.30 |
| Total Ammonia Nitrogen (May 1- November 30) Summer | 1.0 | 1.5 |
| Total Ammonia Nitrogen (December 1 to April 30) Winter | 3.0 | 4.0 |
| pH | 6.5 to 8.5 | 6.0 to 9.5 |
| E.Coli | 100 organisms/100 mL (monthly Geometric Mean Density) | 150 organisms / 100 mL (monthly Geometric Mean Density) |

The works achieved excellent treatment efficacy for all effluent parameters listed in Condition 7. See Table 2 for monthly average concentrations (MAC) and the seasons averages.

Table 2: 2018 Monthly Average Concentrations of Final Effluent

| Month | CBOD5 (mg/L) | Total Suspended Solids (mg/L) | Total Phosphorous (mg/L) | Total Ammonia Nitrogen (mg/L) | E.Coli (100 organisms/100 mL) |
|-----------|--------------|-------------------------------|--------------------------|-------------------------------|-------------------------------|
| January | | | | | |
| February | 3 | 3 | 0.082 | 0.042 | 2 |
| March | 3 | 3 | 0.095 | 0.26 | 2 |
| April | 3 | 3 | 0.065 | 0.225 | 0.53183 |
| May | 2.8 | 3 | 0.082 | 0.05 | 0.693145 |
| June | 3 | 3 | 0.0575 | 0.03 | 2 |
| July | 2 | 3 | 0.11 | 0.0525 | 0.01 |
| August | 2 | 3.67 | 0.085 | 0.025 | 0.01 |
| September | 2 | 3 | 0.0475 | 0.035 | 0.01 |
| October | 2 | 4.75 | 0.025 | 0.06 | 0.037606 |
| November | 4.75 | 2.32 | 0.04 | 0.12 | 0 |
| December | 3 | 2.43 | 0.047 | 0.276 | 0 |
| Average: | 2.55 | 2.85 | 0.061 | 0.010 | 0.608 |

4.0 Operating Problems

Once the biology stabilized the system run without any major problems.

5.0 Maintenance Performed

Routine preventative maintenance was performed on equipment during the reporting period. This maintenance includes cleaning the coarse and fine screen, cleaning the pH probe, cleaning the DO probe, cleaning blower filters, and cleaning chemical injection lines. All preventative maintenance was performed as per manufacturer’s recommendations.

As this facility was only started up in February of this year maintenance was minimal other than routine preventative maintenance.

6.0 Effluent Quality Assurance and Control Measures

Grab samples for the influent are collected from the outlet of the external equalization tank and the effluent samples are collected at the outlet of the UV system. In addition,

Samples are analyzed by Caduceon Laboratories in Windsor, Ontario. The lab is fully accredited. Copies of all lab analysis are available on request. The necessary instrumentation required to perform the in-house analysis of pH and temperatures are available to operators. All in-house sampling and analyses are performed in accordance with the “Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater” and “Standard Methods for Examination of Water and Wastewater”.

7.0 Calibration of Effluent Monitoring Equipment

The flow measuring devices were not due for calibration until 2019 as the WWTP was started in February 2018.

The pH meter used onsite was calibrated regularly as per manufacturer’s recommendations.

8.0 Efforts Made to Meet Effluent Objectives

During the operating season, every effort was made to meet the objectives set out in Condition 5 of the ECA. See Section 4.0 for descriptions of operating challenges encountered in the 2018 operating season.

9.0 Production and Removal of Biosolids

The system wastes excess biosolids from the biological reactor into a sludge tank where the solids are thickened through decanting.

For the 2018 operating season, approximately 150 M³ of sludge was removed from the system.

The owner has contracted GFS Services Ltd 39090 Talbot Line St Thomas as the licensed hauler. It is anticipated that the same volume of biosolids will be generated in 2019.

10. Complaints Received

No complaints were received during the 2018 operating season.

11.0 Bypass, Spill, or Abnormal Discharge Events

There were no bypasses, spills, or abnormal discharge events in the 2018 operating season.

12.0 Additional Information Requested

No additional requests