

Facility Muskoka Beach Road Wastewater Treatment Plant



2018

Wastewater, Year End Report

Environmental Compliance Approval: #7847-ABVPD3

Introduction

The Beach Road Water Pollution Control Plant (WPCP), which services the Town of Gravenhurst, is owned and operated by the District Municipality of Muskoka. The plant is located at 1083 Muskoka Beach Road, and was commissioned in May, 1993. It is capable of servicing a population of 9,500 people.

The Beach Road Plant receives influent wastewater from a gravity sewer main, which runs underneath Muskoka Beach Road. The majority of the wastewater is from the James St Sewage Pumping Station that is located on the site of the original Gravenhurst sewage treatment plant in central Gravenhurst. In addition the collection system contains fourteen other sewage pumping stations. The pumping stations serve residential areas of Gravenhurst as well as customers as diverse as the Taboo Resort and Beaver Creek Correctional Institution. The WPCP also has a septic receiving facility, which processes septic and holding tank wastes that are trucked in.

The Plant operates under the MOE Environmental Compliance Approval (ECA) # 7847-ABVPD3, issued September 9, 2016. Under the terms of the Environmental Compliance Approval, the plant is permitted to treat an average daily flow of 5,165 m³/day, and a peak flow of 13,791 m³/day. Additionally, effluent limit criteria are as follows:

Effluent Parameter		Concentration	Total Effluent Loading
CBOD5		10 mg/l	51.65 kg/day
Suspended Solids		10 mg/l	51.65 kg/day
Ammonia/Ammonia Nitrogen	- Summer	5 mg/l	25.8 kg/day
	- Winter	10 mg/l	51.65 kg/day
Total Phosphorous		0.30 mg/l	1.6 kg/day
E. Coli		100 organisms/100 ml for any month	
pH		To be between 6.0 and 9.5 at all times	

The treatment process is conventional activated sludge with tertiary filtration and ultra violet disinfection before discharge of the effluent to Lake Muskoka. Biosolids from the primary and secondary plant processes are sent to anaerobic digesters. The stabilized biosolids are then dewatered with a centrifuge. The centrifuge cake is hauled off site for disposal at Lystek's Organic Material Recovery Centre in Southgate.

General Information

A review of the District of Muskoka's infrastructure needs is conducted annually by the Director of Water and Sewer Services, Area Manager and Chief Operator, and recommendations for maintenance, rehabilitation and renewal programs are considered.

Efforts to eliminate the discharge of untreated or partially treated wastewater to receiving waters are being accomplished by a long term financial commitment to correct excessive infiltration into the wastewater collection system by means of sewer main rehabilitation / replacement, manhole rehabilitation and pumping station rehabilitation programs.

The treatment facility is capable of effective operation during emergencies; maintenance shut downs, and power failures. This is achieved through such measures as preventive maintenance of duty /

standby units, the duplication of major treatment components, the provision of standby power sources and extensive use of the SCADA (Supervisor control and Data Acquisition) systems. All pumping stations and treatment control systems use SCADA, in combination with Data Highway Plus, and programmable logic controllers.

All operators are qualified and to operate the systems efficiently and effectively in order to achieve the highest level of treatment at all times. A commitment to provide Operator training and certification is being sustained.

Regulatory sampling is carried out to meet the requirements outlined in the ECA, and additional in-house operational sampling beyond these regulatory requirements is being performed on a routine basis. These efforts have resulted in an effective treatment process which ensures that effluent discharges consistently meet effluent objectives and are environmentally safe. All final effluent sample results for the Beach Road Plant met the effluent limits.

All data in this report is a compilation of test results received from SGS Canada and their accredited laboratory, Lakefield Research. All in-plant sampling, analysis and recording of results conforms, in order of precedence, to the following 3 standards: Ministry's Procedure F-10-1, "Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works", Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" and the American Water Works Association/Water Environment Federation (AWWA/WEF) publication "Standard Methods for the Examination of Water and Wastewater".

Executive Summary

In all respects, test results of the treated effluent for the parameters of CBOD5, suspended solids, ammonia, total phosphorous, and E. Coli are in compliance with the limits outlined in the ECA regarding monthly allowable concentrations and total effluent loading throughout the entire year.

Overall, the plant treatment processes performed satisfactorily and are deemed to be adequate. All sample test results of the final effluent were within levels outlined in the plant ECA (#7847-ABVPD3).

Quantity of Flow Summary

The plant has a daily average flow design capacity of 5,165 m³/day. The actual average daily flow for the year was 2,916 m³/day, however, the 3-year average is 3,122 m³/day, which represents 60% of the plant capacity.

Plant Operational Upsets or Process Failures

There were no plant operational problems in 2018.

Summary of Maintenance

There were no significant plant upgrades on major infrastructure in 2018.

All equipment information at this plant is entered into a computer database. From this information, a scheduled preventive maintenance programme has been established. The maintenance programme includes (and not limited to):

- Monthly testing of emergency testing (under load) of the standby generators.
- Annual servicing of emergency standby generators.
- Annual replacement of U.V. bulbs.
- Annual infrared inspection of Motor Control panels.
- Annual calibration of flow metering devices.
- Annual cleaning of all sewage pumping stations.
- Marine inspection of effluent outfall and diffuser completed in 2017. (5 year cycle)

Evaluation of the Need for Improvement Works

The treatment facility is operating at a plant capacity of 60% and is in compliance with specified effluent parameter criteria. In addition, there has been no significant treatment process upsets and plant bypasses. As a result, there is no compliance need for improvements to the existing works.

Summary of Proposed Work Requiring Approval under OWRA

Since the treatment facility is operating satisfactorily there is no anticipated works requiring an ECA amendment for 2019.

Interpretation of Analytical Results

All sample results for Raw Sewage and Final Effluent are reported in this section. Other tables in this report include Chemical Usage, Biosolids Quality, and Biosolids Quantity.

Raw Sewage

The information reported in the Raw Sewage sample results summary table consists of test results of analysis conducted on composite samples of the plant influent flow as required by the plant ECA. Samples are sent for analysis to Lakefield Research, as well as analysis conducted on site using Standard Methods or equivalent. Weekly analysis has been performed and reported as specified under the terms outline in the ECA.

Effluent analysis

The information reported in the Final Effluent sample results summary table #7 consists of test results of analysis conducted on final effluent composite samples. Bacteriological samples, however, consisted of grab samples. Weekly analysis has been performed and reported as specified under the terms outlined in the ECA.

Final Effluent Analysis Summary

	Minimum	4 Week Average Maximum	Annual Average	Average loading kg/day
CBOD5 (mg/l)	2.0	2.75	2.08	6.06
Suspended Solids (mg/l)	2.0	3.00	2.12	6.17
Total Phosphorous (mg/l)	0.03	0.06	0.04	0.13
Ammonia (mg/l)	0.10	0.60	0.18	0.52
E. Coli (#/100 ml)	0	19.8	3.5	Not Applicable
pH	Min – 6.0	Max – 7.3	6.8	Not Applicable

All final effluent samples tested for CBOD5, suspended solids, ammonia, E. Coli, and total phosphorous were below non-compliance limits outlined in the ECA.

Biosolids Receiving and Generation

The quality and volume of biosolids hauled from the facility for disposal is outlined in the table provided. Dewatered biosolids from the plant is hauled off site for disposal at Lystek's Organic Material Recovery Centre in Southgate. A contractor was used by the District of Muskoka to transfer all material for disposal in 2018, and will continue to do so in 2019. It is not anticipated that there will be a significant increase in the total volume of bio solids produced in 2019.

Biosolids Co-Treatment

The treatment plant has the capability to co-treat additional wastes through the Hauled Waste Receiving Facility, which located on site at headworks of the plant. Septage and holding tank waste are hauled in by vacuum trucks, and dumped into the 76 cubic meter tank, which is then blended into the plant influent flow. Biosolids and water treatment sludge generated by smaller municipal treatment facilities may be processed in this fashion as well. Tables summarizing the chemical characteristics and monthly loading rates of the hauled wastes that have been co-treated at the plant in 2018 are included in this report.

Co-Treatment Flow Summary

The plant ECA (Sewage) #7847-ABVPD3, issued September 9, 2016 states that the monthly average quantity of septage and holding tank waste being co-treated at the plant shall not exceed 20 m³/day. The certificate further stipulates that the monthly average volume of biosolids being co-treated shall not exceed a monthly average flow of 20 m³/day, and that volumes of water treatment plant sludges being co-treated shall not exceed a monthly average flow of 20 m³/day as well. The highest monthly average for septage was 14.7 m³/day in June 2018 with no problems observed by this volume and the highest monthly average for biosolids was 2.9 m³/day in October 2018. No water plant sludges were received in 2018.

Summary of Complaints received throughout the reporting period

There were no complaints received in the reporting period.

Gravenhurst Wastewater Collection Summary

New Sewer Services

Seventeen new customers connected to existing municipal services in 2018.

New Sewer Mains

There were no new sewer mains installed in 2018.

Sewer Main Replacements

There were no existing sewer mains replaced in 2018.

Low Pressure Sewer Breaks

There were no low pressure sewer breaks in Year.

Sewer Force Main Breaks

There were no sewer force main breaks in Year.

Sewer Force Main Valve Replacement

There were no sewer force main valve replacements in Year.

Main Line Sewer Blockage

There were no main line sewer blockages in 2018.

Sewer Lateral Blockage

One lateral blockage on the municipal side was observed in 2018, the lateral was repaired.

Low Pressure Sewer Blockages

No low pressure sewer blockages in 2018.

Frozen Sewer Force Mains

No sewer force mains froze in 2018.

Frozen Sewer Service Laterals

No sewer service laterals froze in 2018.

Frozen Low Pressure Sewer Services

No low pressure sewer services froze in 2018.

Air Release Valves

All nineteen (19) of the air release vacuum valves connected to the sewage force mains in our collection system were removed, cleaned, tested and reinstalled for the yearly maintenance inspection.

Sewer Flushing/Video

All the low pressure sewage force mains within the collection system were flushed by field staff through our annual preventive maintenance program.

Approximately 5,125 meters of various size sanitary sewer mains were flushed using high pressure equipment, and inspected by video camera.

The two 250mm depressed (siphon) sewer mains from our Kinister sewage pump station was swabbed from the collection chamber located in the Brydon Bay Road easement, through to the receiving chamber on Brydon Bay Road.

Sewer Rehabilitation

There was no sewer rehabilitation in Year.

Sewer locates

Field staff addressed 881 locate requests.

Certification of Reports

The plant has a daily average flow design capacity of 5,165 m³/day. The actual average daily flow for the year was 2,916 m³/day, however, the 3-year average is 3,122 m³/day, which represents 60% of the plant capacity.

I certify that the information in this document and all attachments are correct, accurate, and complete to the best of my knowledge.

Marcus Firman, C.E.T.
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