

# Long Sault Wastewater Treatment System

Certificate of Approval No. 3-0918-93-979 (June 1997)

Works No. 120000131

- 2020 Annual Performance Report -

**Prepared by:**

CANEAU WATER AND SEWAGE OPERATIONS INC.  
19740 WELLINGTON ST.  
WILLIAMSTOWN, ON K0C 2J0

## 1.0 Introduction

This Annual Performance Report is submitted to satisfy the requirements of the Certificate of Approval issued to the Long Sault WWTP. (Amended C of A No. 3-0918-93-979, June 1997).

This report corresponds with the period of January to December, 2020 and provides:

- an overview of the wastewater treatment plant performance;
- a summary and interpretation of all monitoring data and analytical results collected during the reporting period, including quality and quantity;
- a summary of the system operation, including calibration; information on operating problems encountered in the reporting period and modifications to the works to correct the problems; and
- a tabulation of the volume of sludge generated in the reporting period, an outline of anticipated volumes to be generated over the next reporting period, and an outline of the sludge handling methods and disposal areas to be utilized over the next reporting period.

## 2.0 Wastewater Treatment Performance

The current treatment system for Long Sault consists of a sequential batch reactor (SBR) process.

Overall, the wastewater treatment facility in Long Sault has operated efficiently and has proven to provide consistent removal efficiencies for the design parameters. Appendix A contains the monthly quantity and quality values.

Please note that the data contained in Appendix A represents all the acquired data throughout the year, including laboratory results and "in-house" testing at the plant.

### 2.1 Raw Wastewater Characteristics

The average process wastewater flow rate was 1,475 m<sup>3</sup>/d (55% of the average daily design flow of 2,700m<sup>3</sup>/d). The plant is rated at 11,500m<sup>3</sup>/d (peak daily flow). The maximum daily flow did not exceed the plant's rated peak capacity. Appendix A contains the monthly quantity and quality values for the influent and effluent.

### 2.2 Treatment Performance

Table 2.2: Annual average treatment efficiencies of the treatment process within the facility for 2020.

Constituent	Raw Influent mg/L*	Final effluent mg/L	Final eff. C of A mg/L	Average Loading kg/d	Loading C of A kg/d	Average Removal Efficiency (%)
CBOD (mg/L)	68	1.59	25	2.37	67.5	97
SS (mg/L)	134	2.93	25	4.62	67.5	97
TP (mg/L)	2.62	0.58	1	0.77	2.7	80
NH <sub>3</sub> +NH <sub>4</sub>	12.54	1.41	15	2.10	40.5	84
E. Coli (cnts/100ml)		1 (geomean)	200			

\*Note: Raw wastewater sampling was paused June through October 2020 under Pandemic Relief granted by the MECP.

### 3.0 Effluent Monitoring

The results are based on weekly samples, which are taken from the influent channel ahead of the pretreatment equipment (raw sample) as well as in the effluent channel prior to the effluent discharge pumps.

Total sewage flows (m<sup>3</sup>), average sewage flow (m<sup>3</sup>/d) and peak daily flows (m<sup>3</sup>/d) are tabulated each month.

Disinfection results (sampled weekly) are recorded in the annual monitoring and performance report which is attached (Appendix A).

Composite raw samples are collected and analyzed weekly for Suspended Solids, Total Phosphorous, Dissolved Reactive Phosphorous, Total Kjeldahl Nitrogen, Ammonia + Ammonium Nitrogen, Nitrite + Nitrate Nitrogen, Alkalinity, pH, and CBOD<sub>5</sub>.

Composite final effluent samples are collected and analyzed weekly for Suspended Solids, Total Phosphorous, Dissolved Reactive Phosphorous, Total Kjeldahl Nitrogen, Ammonia + Ammonium Nitrogen, Nitrite + Nitrate Nitrogen, Alkalinity, pH, and CBOD<sub>5</sub>.

Grab samples of Total Coliform, Fecal Coliform/E. Coli, Fecal Streptococcus are also collected weekly.

In addition to the routine sampling program above, on site testing is performed on the final effluent for temperature and pH 5 times per week.

Please refer to Appendix A for the monthly quantity and quality results.

### 3.1 Effluent Quality

In accordance with the C of A:

#### ***In Compliance***

- Non-compliance with respect to concentrations of CBOD<sub>5</sub> in the effluent is deemed to have occurred when the annual average concentration exceeds 25 mg/L during any twelve consecutive calendar months.

#### ***In Compliance***

- Non-compliance with respect to concentrations of Suspended Solids in the effluent is deemed to have occurred when the annual average concentration exceeds 25 mg/L during any twelve consecutive calendar months.

***In Compliance***

- Non-compliance with respect to concentrations of Ammonia + Ammonium in the effluent is deemed to have occurred when the daily concentration exceeds 15 mg/L during any calendar day.

***In compliance***

- Non-compliance with respect to concentrations of Total Phosphorus in the effluent is deemed to have occurred when the monthly average concentration exceeds 1 mg/L during any calendar month.

***In compliance***

- Non-compliance with respect to total loading of CBOD<sub>5</sub> in the effluent is deemed to have occurred when the annual average loading exceeds 67.5 kg/d during any twelve consecutive calendar months.

***In Compliance***

- Non-compliance with respect to total loading of Suspended Solids in the effluent is deemed to have occurred when the annual average loading exceeds 67.5 kg/d during any twelve consecutive calendar months.

***In compliance***

- Non-compliance with respect to total loading of Total Phosphorus in the effluent is deemed to have occurred when the annual average loading exceeds 2.7 kg/d during any twelve consecutive calendar months.

***In compliance***

- Non-compliance with respect to loading of Ammonia + Ammonium Nitrogen in the effluent is deemed to have occurred when daily concentration during any calendar day, multiplied by the average daily flow over the seasonal period the sample was taken exceeds 40.5 kg/d.

***In Compliance***

- Non-compliance with respect to E.coli in the effluent is deemed to have occurred when the monthly geomean exceeds 200 CFU (colony forming units).

Please refer to Appendix A for a detailed look at the analytical results.

#### **4.0 Plant Operations**

A preventative maintenance program is in effect at the Long Sault WWTP. Preventative maintenance is scheduled on a weekly basis and records are maintained of completed activities.

In 2001, CANEAU had a computerized maintenance program installed to ensure that preventative maintenance is performed on all equipment in accordance with the manufacturer's specifications.

The last compliance inspection conducted by the MOECC was February 16, 2017.

The flow meter was calibrated on October 19, 2020 by Capital Controls.

#### **4.1 Operational Problems**

A logbook of operational activities and problems is maintained at the treatment facility.

#### **4.2 Maintenance**

The following is a list of repairs, calibrations and upgrades that took place at the Long Sault WWTP in the reporting period:

- January 2 – Surgeson on site to replace starter on foam cutter.
- January 9 – Marleau Mechanical on site to repair floor drain needle valve and to begin plumbing of solenoids for bar screen system.
- January 14 – Marleau Mechanical on site to wire solenoids for bar screen system.
- January 15 – Marleau Mechanical on site to finish plumbing of solenoids for bar screen system.
- January 15 – Genrep on site to troubleshoot a failed low pressure switch at Post Rd PS.
- January 22 – Marleau Mechanical on site, working on explosion proof conduit for grit removal and compactor systems.
- February 21 – Ironbrook UV on site to service UV system.
- March 12 – GFL on site to empty grit/compactor bin.
- March 13 – Surgeson on site to install new storm float in both SBRs.
- March 17 – Pyro Pro on site to service fire extinguishers.
- March 17 - CDTEC on site for annual gas monitor calibrations.
- April 1 – David Brown on site to pressure wash bar screen compactor shaft.
- April 14 – Marleau HVAC on site to repair hot water circulating pump and repair leak on domestic hot water line.
- April 15 – Marleau HVAC on site to finalize hot water repair and wire new pump.
- April 17 – Township of South Stormont on site to drop off spare effluent pump.
- April 28 – Marleau HVAC on site for regularly schedule HVAC maintenance.
- April 28 – Third High Farms on site to haul sludge from long term storage.
- April 29 – Third High Farms on site to haul sludge from long term storage.
- April 29 – Marleau on site to replace pressure relief valve on boiler.
- May 5 – Marleau on site to spec new AC job.
- May 26 – Marleau on site to re-pipe outside hose connection.
- June 1 – Marleau on site to replace motor in vestibule heater.
- June 2 – Genrep on site at Post Rd Pumping Station to repair pressure switch and to perform semi-annual load test.
- June 3 – Genrep on site for semi-annual generator maintenance.
- June 8 – Marleau on site to repair domestic hot water main.

- June 10 – EVB on site to inspect Post Rd Pumping Station as part of capital project upgrades.
- June 24 – Marleau Mechanical on site to install new air conditioning system in office.
- July 14 – Surgeson on site to install pump 2.
- July 30 – GFL on site to empty Post Rd Pumping Station dumpster.
- August 10 – DBC on site to vacuum out the scum blanket in the wet well of Mille Roches SPS.
- August 14 – Surgeson on site at Mille Roches SPS to put P2 back in service.
- August 18 – Hach on site to conduct calibrations.
- August 25 – Marleau Mechanical on site to inspect air handling unit.
- August 27 – Third High Farms on site to haul sludge from long term storage.
- August 28 – Third High Farms on site to haul sludge from long term storage.
- August 31 – Third High Farms on site to haul sludge from long term storage.
- September 3 – Third High Farms on site to haul sludge from long term storage. Pumps were not pushing sludge out, so no load was taken.
- September 14 – CDTEC on site to conduct bi-annual testing/maintenance of gas monitors.
- September 16 – Township on site to conduct router updates.
- September 29 – Genrep on site for annual generator maintenance.
- September 30 – Genrep on site to test generator at Post Rd pumping station.
- October 1 – Genrep on site at Mille Roches SPS to conduct annual generator maintenance.
- October 3 – DBC on site with vac truck to pump out wet well and force main during force main break west of Post Rd pumping station.
- October 4 – DBC on site with vac truck to pump out wet well and force main during force main break west of Post Rd pumping station.
- October 14 – Marleau Mechanical on site to install new exterior light fixtures.
- October 19 – Capital Controls on site to calibrate Greyline instruments at the WWTP.
- October 19 – Capital Controls on site at Mille Roches SPS to conduct annual calibrations.
- November 2 – Capital Controls on site to conduct flow meter calibration at Post Rd pumping station.
- November 12 – Capital Controls on site to install new WAS tank level sensor.
- November 20 – Capital Controls on site to troubleshoot WAS level sensor.
- November 24 – EVB Engineering on site to inspect bar screen.
- November 27 – Surgeson on site to install new pump in P2 at Mille Roches pumping station.
- December 2 – Enviromark on site to change settings on WAS tank level sensor.
- December 18 – Capital Controls on site to back up SCADA.

#### **4.3 Completed Modifications**

- There were no completed modifications in 2020.

#### **4.4 Planned Modifications**

- There are no planned modifications for 2021.

#### **5.0 Biosolids Management**

WSP Canada Inc. was retained to coordinate the transfer and disposal via land application of sewage biosolids from the Long Sault Sewage Treatment Plant (STP) over the course of 2020.

The beneficial use of the sewage biosolids for the purpose of improving the growth of agricultural crops was demonstrated through laboratory analysis in accordance with O. Reg. 267/03. Material application rates were determined based on field conditions and agronomic and/or crop removal balances incorporating assessment of nutrients, metals and solids loading.

The stored biosolids were transferred by Terrapure Environmental/Third High Farms Limited (Terrapure) via tankers and hauled to Land Application Sites with active NASM Plans in accordance with ECA 0936-574KQF. Field markers delineating the required separation distances to sensitive features were positioned by Third High Farms at all land-application sites as per the setbacks shown on the appropriate NASM Plan field sketches. The material was land applied by direct injection and/or immediately incorporated to reduce odour and minimize runoff potential.

The total volume of biosolids transferred from the Long Sault STP in 2020 was **620 m<sup>3</sup>**. The receiving field locations and volumes applied are detailed in Table 1 below along with nutrient loadings.

**Table 1: NASM Land Application Summary, Long Sault Sewage Treatment Plan**

DATE	NASM PLAN OWNER / ID	FIELD / AREA	MATERIAL SOURCE	TOTAL VOLUME (M <sup>3</sup> )	NITROGEN LOADING (KG/HA)	PHOSPHOROUS LOADING (KG/HA) †
April 29, 2020	Rombough – 23325	Rombough Home Field – Lot 22 Concession 5	Long Sault	640	128	60

† Phosphorus as P2O5

†† Potassium as K2O

Based on recent historical (2015 - 2020) annual volumes of biosolids transferred from the facility, the volume of biosolids generated by the Long Sault STP in 2021 is anticipated to be approximately 1,000 m<sup>3</sup>.

Metals of concern resulting from the land application of sewage biosolids include As, Cd, Co, Cr, Cu, Hg, Mo, Ni, Pb, Se, Zn. Cumulative metal loadings for these fields range from 0% to 16% of the maximum metal loading limit for five (5) years.

Table 2 below provides a summary of the agricultural fields approved to receive Long Sault STP sewage biosolids (these fields are also approved to receive Ingleside STP material) and, based on nutrient loadings resulting from current and past applications, the remaining capacity of the field to receive material. Please note this is an estimate as nutrient and metals loadings will vary based on material quality data and application rates established at the time of application.

*Table 2: Inventory of Fields Approved Under a NASM Plan to Receive Ingleside and Long Sault Biosolids.*

FIELD	NASN PLAN OWNER/ID	AREA AVAILABLE FOR NASM (HA)	COMMENT
Rombough North	Rombough – 23325	9	Unavailable – Maximum five-year Phosphorous loading reached.
Rombough South	Rombough - 23325	27	Unavailable – Maximum five-year Phosphorous loading reached.
Hollister Rd.	Rombough - 23325	16	<b>Available</b> - Field has not received material under this NASM plan.
Neville Rd.- Home	Rombough - 23325	13	<b>Available</b> – Part of this field is available.
Neville Rd. - South East	Rombough - 23325	3	<b>Available</b> - Field has not received material under this NASM plan.
Neville Rd. - South West	Rombough - 23325	2	<b>Available</b> - Field has not received material under this NASM plan.
Habers Field B + C	Habers - 23973	7.1	Unavailable – Maximum five-year Phosphorous loading reached.
Habers Field D + E	Habers - 23973	11.5	Unavailable – Maximum five-year Phosphorous loading reached.
Habers Field F	Habers - 23973	9.8	Could receive approximately 500 m <sup>3</sup> of Long Sault material at a low application rate.
Habers Field G + H	Habers - 23973	9	Unavailable – Maximum five-year Phosphorous loading reached.
Gallinger Edwards Rd	Gallinger - 24012	21	<b>Available</b> – only 5% of 5 year phosphorus loading – can still receive Ingleside or Long Sault.
Gallinger Home Field	Gallinger - 24012	28	Unavailable – Maximum five-year Phosphorous loading reached.
Gallinger County Rd 18 & 11	Gallinger – 24012	28	Unavailable – Maximum five-year Phosphorous loading reached.

Fields have been identified for spring 2021 land application of Long Sault material and will be confirmed closer to land application dates based on field availability and weather conditions.



Appendix A  
Wastewater Data & Rolling Averages