

Ingleside Wastewater Treatment System

Certificate of Approval No. 8524-5JFP5F
Works No. 120000140

- 2020 Annual Performance Report –

Prepared by:

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1.0 Introduction

This Annual Performance Report is submitted to satisfy the requirements of the Sewage Certificate of Approval issued to the Ingleside WWTP (Amended C of A No. 8524-5JFP5F, February, 2003).

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 Ingleside is extended aeration process with screening of the raw influent, grit removal, aeration, chemically-assisted flocculation and sedimentation of solids and phosphorous, chlorination and discharge to Lake St. Lawrence.

Overall, the Ingleside wastewater treatment facility has operated efficiently and has proven to provide consistent removal efficiencies for the design parameters during the reporting period.

Appendix A contains monthly wastewater quantity and quality values.

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

There were no bypasses within the facility for the reporting year.

2.1 Raw Wastewater Characteristics

The average process wastewater flow rate was 3,477 m³/d (86% of the average daily design flow of 4,045 m³/d). The plant is rated at 10,027 m³/d (peak daily flow). Appendix A contains the monthly quantity and quality values for the influent and effluent. The peak daily flow was exceeded on one occasion – March 10, 2020, where the influent flow was 10,256 m³ due to heavy rains and/or snow melt.

Treatment Performance

Table 2.2 outlines the annual average treatment efficiencies of the treatment process within the facility for the reporting year.

Table 2.2 System Treatment Performance

Constituent	Raw Influent mg/L	Final effluent mg/L	Final effluent C of A mg/L	Average Loading kg/d	Final effluent C of A kg/d	Average Removal Efficiency (%)
BOD (mg/L)	131	1.96	25	6.62	101	98
SS (mg/L)	361	6.30	25	22.48	101	98
TP (mg/L)	15.38	0.61	1	2.07	4	96
E. Coli (cnts/100ml)		3 (geometric mean)	200 (geometric mean)			

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

3.0 Effluent Monitoring

Composite influent samples are collected and analyzed weekly for Suspended Solids, Total Phosphorous, Dissolved Reactive Phosphorous, Total Kjeldahl Nitrogen, Ammonia + Ammonium Nitrogen, Nitrite + Nitrate Nitrogen, Alkalinity, Chlorides, Conductivity, and BOD₅.

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, Conductivity, Chlorides, and BOD₅.

Grab samples of Total Coliform, Fecal Coliform/E. Coli, Fecal Streptococcus are collected weekly in the final effluent. Testing is performed daily for total chlorine and temperature.

In addition to the routine sampling program above, on site testing is performed twice a week for total phosphorous, dissolved reactive phosphorous, total suspended solids and conductivity. pH is tested three times a week.

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

3.1 Effluent Quality

In accordance with the C of A:

In compliance

- Non-compliance with respect to concentrations of BOD₅ in the effluent is deemed to have occurred when the annual average concentration exceeds 25 mg/L.

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 concentration of total phosphorus (TP) in the effluent is deemed to have occurred when the monthly average concentration exceeds 1 mg/L.

In compliance

- Non-compliance with respect to loading of BOD₅ in the effluent is deemed to have occurred when the annual average loading exceeds 101 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 101 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 4 kg/d during any twelve consecutive calendar months.

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

4.0 Plant Operations

A preventive maintenance program is in effect at this treatment facility. Preventive 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 MOECC last performed an inspection of the Ingleside WWTP on February 4, 2020.

The influent and effluent flow meters were calibrated on November 30, 2020 by Can-Am Instruments.

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 the repairs, calibrations and upgrades which took place at the Ingleside WWTP in the reporting period:

- January 9 – Surgeson on site to deliver 75hp motor for blower #4.
- January 14 – Capital Steam Cleaning on site to thaw long term storage intake and decant cable.

- January 14 – Surgeson on site to investigate issue with poly room sump pump and long term storage transfer pump.
- February 6 – Eastern Welding on site to work on mast support for clarifier skimmer.
- February 12 – Marleau on site to supply and install toilets.
- February 13 – Capital Controls on site to move SCADA back into office following mould abatement and paint work.
- February 19 – Eastern Welding on site to complete work on clarifier.
- February 19 – Marleau on site to rewire pump #5 and check timer on pump #4.
- February 26 – Marleau Mechanical on site, working on lights at pumping station.
- March 16 – Genrep on site to conduct semi-annual load tests.
- March 16 – DBC on site to unplug decant arm in primary.
- March 17 – Pyro Pro on site to inspect fire extinguishers.
- March 17 – CDTEC on site to calibrate gas monitors.
- March 20 – Marleau on site to install hot water tank.
- March 24 – Eastern Welding on site to repair broken bar screen.
- March 25 – Eastern Welding on site to return/install bar screen brackets and scraper.
- April 6 – EVB on site to do locates for STP expansion project.
- April 23 – DBC on site to hydro vac locations for bore hole program relating to STP expansion project.
- April 28 – EVB on site to supervise bore hole program for STP expansion project.
- April 29 – Marleau HVAC on site for regularly scheduled HVAC maintenance.
- April 29 – Third High Farms on site to haul sludge from long term storage.
- May 4 - Third High Farms on site to haul sludge from long term storage.
- May 5 – Marleau on site to work on HVAC unit.
- May 5 - Third High Farms on site to haul sludge from long term storage.
- May 6 - Third High Farms on site to haul sludge from long term storage.
- May 7 – Eastern Welding on site to fix decant arm valve and gate valve for north row of primary.
- May 7 – DBC on site to clean aeration pipes in primary.
- May 8 – DBC on site to clean off surface of pre-aeration channel.
- May 12 – DBC on site to flush out line in primary.
- May 19 – Surgeson on site to replace timer on RAS pump 2.
- May 20 – Surgeson on site to work on RAS pump 1. Pump 1 sent out to replace pump’s mechanical seal.
- May 26 – Surgeson on site to deliver and install RAS pump 1.
- May 26 – Marleau on site to work on water line in RAS pump room.
- June 2 – DBC on site to suck grit out of centrate well and grit bin, and to pressure wash the inside of the barscreen.
- June 2 – Eastern Welding on site to install new base plates with new studs at barscreen.
- June 3 - Genrep on site at Mille Roches Pumping Station to conduct semi-annual generator maintenance.
- June 4 – Marleau on site to install back flow preventer in RAS/WAS room.
- June 4 – Capital Controls on site to copy data out of SCADA.
- June 4 – Surgeson on site to replace fan at RAS VFD #2.
- June 18 – EVB on site to conduct surveying.
- June 19 – Surgeson on site to troubleshoot blower #4’s cooling fan.
- June 23 – Surgeson on site to repair the fan in blower #4 and #5 main cabinet.
- July 2 – Marleau on site to troubleshoot Blower #1 (timer will be replaced) and to troubleshoot final sampler.

- July 6 – Surgeson on site to put fans into service for Blower #4/5 cabinet and to replace timer for Blower #1.
- July 7 – Marleau on site to replace Cl₂ fill line in Cl₂ room.
- July 9 – Genrep on site to replace coolant on generator.
- July 13 – Surgeson on site to install new fan in Blower #4/5 cabinet.
- July 22 – Marleau on site to troubleshoot sampler fridge.
- July 28 – Eastern Welding on site to fix scraper upright at bar screen.
- August 4 – Surgeson on site to wire motor on east clarifier.
- August 6 – Capital Controls connected remotely to site to troubleshoot SCADA trends display loading issues.
- August 13 – Eastern Welding and EVB on site to plan for raw sampler and centrate discharge job.
- August 17 – Hach on site to conduct calibrations.
- August 17 – Eastern Welding and Marleau on site to plan for raw sampler and centrate discharge job.
- August 18 – Eastern Welding on site to deliver parts and begin raw sampler and centrate discharge job.
- August 19 – Eastern Welding on site to move centrate well discharge location.
- August 19 – Township on site to deliver sample hut.
- August 20 – Eastern Welding on site to run new raw wastewater sample line.
- August 24 – DBC on site to vacuum scum and rags from pre-aeration channel.
- August 26 – Eastern Welding on site to extend new centrate discharge line.
- August 27 – Eastern Welding on site to weld broken stud back onto base plate in bar screen.
- September 1 – Eastern Welding on site to install pillow block bearings at bar screen.
- September 3 – Marleau on site to inspect failed compressor on A/C unit.
- September 11 – Eastern Welding on site to weld new studs on base plate of bar screen.
- September 14 – CDTEC on site to calibrate gas monitors.
- September 15 – Rob Boileau Construction on site to disassemble fiberglass bar screen hut.
- September 21 – Aerzen on site to deliver blower.
- September 21 – Rob Boileau Construction on site to build new bar screen hut.
- September 22 – Rob Boileau Construction on site to build new bar screen hut.
- September 22 – Marleau on site to troubleshoot secondary transfer pump.
- September 23 – Marleau on site to install new overload switch and contactor for secondary transfer pump.
- September 28 – Genrep on site for annual generator maintenance and load test.
- September 28 – Capital Controls connected remotely to SCADA to troubleshoot issue with PLC hardware fault.
- September 29 – Genrep on site to conduct annual maintenance at the sewage pumping station.
- September 30 – Eastern Welding on site to move raw sampler hut to top of headworks.
- October 1 – Eastern Welding on site to work on raw sampler hut job.
- October 1 – Marleau on site to replace cam lock fitting for hypo line.
- October 6 – Marleau on site to do calculations on sampler hut wiring.
- October 8 – EVB on site at the sewage pumping station to review drawings against existing site infrastructure.
- October 8 – E&H on site to conduct annual maintenance/calibrations on RAS flow meters, SPS meter and Cl₂ analyzer.
- October 8 – E&H on site at Ingleside SPS for annual calibrations.
- October 9 – Third High Farms on site to haul sludge from long term storage.
- October 14 – Surgeson on site to replace faulty timer on RAS #2.

- October 15 – Third High Farms on site to haul sludge from long term storage.
- October 19 – Capital Controls on site to calibrate flow meter.
- October 27 – Bergeron on site to conduct fire alarm testing.
- October 27 – DBC on site with a vac truck to clean out rags from the pre-aeration channel.
- October 27 – Promark on site to do locates for EVB.
- October 29 – Robert Boileau Construction on site to put steel cladding on bar screen hut.
- October 30 – Robert Boileau Construction on site to continue bar screen hut.
- November 1 – Surgeson on site at sewage pumping station to check VFDs.
- November 2 – Capital Controls on site to trouble shooting faulting scum chamber level sensor.
- November 2 – Capital Controls on site to reset PLC for HMI at sewage pumping station.
- November 4 – Marleau on site to run heat tracing for raw sampler hut line.
- November 4 – CDTEC on site to calibrate gas monitor at sewage pumping station.
- November 5 – Marleau on site to run power to heat tracing and raw sampler hut.
- November 6 – DBC on site with EVB to bore holes as part of expansion project design.
- November 9 – Capital Steam Cleaning on site to pressure wash exterior of office building.
- November 11 – CDTEC on site for gas monitor at sewage pumping station.
- November 16 – EVB on site with drilling company to bore holes as part of expansion project design.
- November 16 – Eastern Welding on site to measure and install a new chute for the bar screen.
- November 20 – Capital Controls on site to take measurements for scum chamber level transmitter.
- November 24 – St. Lawrence Insulation on site to check out job for sampler hut lines and teacup fluidizing valve.
- November 26 – Bergeron on site to fix light post.
- November 30 – Can-Am Instruments on site to calibrate flow meters at Lactalis, Ingleside sewage pumping station and Ingleside WWTP.
- December 1 – Bergeron on site to install photocells for light posts.
- December 3 – St. Lawrence Insulation on site to wrap centrate and sampler pipe, and teacup fluidizing valve.
- December 9 – DBC on site to vacuum rags from pre-aeration channels.
- December 15 – Eastern Welding on site to repair bar screen rake.
- December 17 – Marleau on site to replace teacup solenoid.
- December 17 – Township on site to move dumpster from centrifuge building to behind office per EVB instructions.
- December 18 – Surgeson and Capital Controls on site to install new scum tank level sensor and transmitter.
- December 22 – EVB on site to discuss dechlorination project with Caneau leadership and staff.
- December 24 – Marleau Mechanical on site to replace failed lighting ballasts.

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 Ingleside Sewage Treatment Plant (STP) over the course of the spring and fall 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 placed by Terrapure 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 Ingleside STP in 2020 was **5,760 m³**. The receiving field locations and volumes applied are detailed in Table 1 below along with nutrient loadings.

Table 1: NASM Land Application Summary, Ingleside Wastewater Treatment Plan

DATE	NASM PLAN OWNER / ID	FIELD / AREA	MATERIAL SOURCE	TOTAL VOLUME (M ³)	NITROGEN LOADING (KG/HA)	PHOSPHOROUS LOADING (KG/HA) †
May 4, 2020	Gallinger – 24102	Home Field Lot 28 Concession 4	Ingleside	2080	37	219
May 6, 2020	Gallinger – 24102	County Rd 18 + 11 Lot 31 Concession 4	Ingleside	1640	33	193
October 9, 2020	Habers Finch 23412	Field 1, Lot 23, Concession 7	Ingleside	480	33	191
October 9, 2020	Habers Finch 23412	Field 2, Lot 23, Concession 7	Ingleside	560	33	191
October 14, 2020	McPherson – 22900	Field 1 – East F, Lots 36 and 37 Concession 1 – South Dundas	Ingleside	1000	26	153

† Phosphorus as P2O5

Based on recent historical (2015 - 2020) annual volumes of biosolids transferred from the facility, the volume of biosolids generated by the Ingleside STP in 2021 is anticipated to be approximately 5,500 m³.

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 3% of the maximum metal loading limit for five (5) years.

Table 2 below provides a summary of the agricultural fields approved to receive Ingleside STP (these fields are also approved to receive Long Sault STP sewage biosolids) 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	Available - Field has not received material under this NASM plan.
Neville Rd.- Home	Rombough - 23325	13	Available – Part of the field is available.
Neville Rd. - South East	Rombough - 23325	3	Available - Field has not received material under this NASM plan.
Neville Rd. - South West	Rombough - 23325	2	Available - 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 ³ 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	Available – 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 the Ingleside material and will be confirmed closer to land application dates based on field availability and weather conditions.

Appendix A
Wastewater Data & Rolling Averages