

**Ingleside Wastewater Treatment System
2018 Annual Performance Report**

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

**Completed 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 Annual report corresponds with the period from January to December 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;
- 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 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 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 3,837 m³/d (95% 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 two occasions – January 12, 2018 – influent flow was 10,622m³, and February 21, 2018 – influent flow was 10,921m³ (both flow exceedances occurred due to heavy rains and 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)	190	2.85	25	10.92	101	98
SS (mg/L)	358	9.67	25	37.11	101	97
TP (mg/L)	17.81	0.81	1	3.11	4	95
E. Coli (cnts/100ml)		8 (geometric mean)	200 (geometric mean)			

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 performed an inspection of the Ingleside WWTP on June 3, 2015.

The influent and effluent flow meters were calibrated on October 18, 2018 by Can-Am Instruments.

4.1 Operational Problems

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

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

4.2 Maintenance

- Jan. 9 – Surgeson Electric on site at pumping station to look at pump #1 VFD problem
- Jan. 10 – Surgeson Electric on site at pumping station to replace contactor on pump #1 VFD
- Jan. 19 – Eastern Welding on site to install sampler in its new location at pumping station
- Jan. 24 – Ranguard on site at sewage pumping station to repair phone line
- Feb. 5 – Genrep on site at pumping station to replace priming pump and fix leaks on generator
- Feb. 7&8 – TC Electric on site at pumping station to install new variable frequency drive
- Feb. 9 – Township cleaning trunk sewer
- Feb. 9 – DBC on site at pumping station to clean out wet well

- Feb. 13 – DBC on site to thaw centrate collection under bar screen
- Feb. 21 – Capital Controls on site at pumping station to work on Kraft radio signal
- Feb. 22&23 – DBC on site to haul sludge from primary tank to storage
- Feb. 27 – Eastern Welding on site to fix bar screen scraper
- Mar. 2 – Surgeson Electric on site at pumping station to troubleshoot pump #2 fault
- Mar. 6 – Xylem on site at pumping station to remove pump #2 and replace with spare
- Mar. 8 – Surgeson Electric on site at pumping station to check electrical connections on pump #2
- Mar. 13 – Surgeson Electric on site working on sludge transfer pump
- Mar. 22 – John Brooks (Glenn Henderson) on site to look at sludge transfer pumps
- Apr. 10 – Surgeson Electric on site to troubleshoot sludge pump
- May 7-10 – Third High Farms on site to haul sludge to Esdale Farm (2,160m³ total)
- May 31 – Marleau Mechanical on site to repair A/C unit
- Aug. 21 – Surgeson Electric on site to install new timer on pump #2 at pumping station
- Month of September -- HSP continuing mold remediation capital project
- Sept. 11 – GenRep on site to perform annual generator maintenance
- Sept. 12 – Township IT Rep on site to map out computer network for a secure VPN
- Sept. 17 – Bergeron Electric on site to perform annual fire alarm testing and maintenance
- Sept. 18 – Surgeson Electric on site to install polymer transfer pump
- Sept. 18 – Marleau Mechanical on site at pumping station for electrical installation of new sampler
- Sept. 18 – Seaway Coring on site at pumping station to core holes for the new sampler hut
- Sept. 20 – TC Electric on site to reconnect polymer transfer pump
- Sept. 24 – Endress and Hauser on site for annual calibration of RAS/WAS flow sensors
- Sept. 25 – Marleau Mechanical on site for annual HVAC maintenance
- Sept. 25 – GenRep on site to repair generator issue at main plant (a temporary generator had to be installed until main generator issue was resolved)
- Sept. 25 – Marleau Mechanical on site to aid in installation of the temporary generator
- Sept. 26 – Marleau Mechanical on site to complete the work on the tie in of the temporary generator to the auto transfer switch
- Oct. 2 – CDTech on site to perform gas monitor calibrations
- Oct. 4 – Bell Canada on site at pumping station to perform work on communication line
- Oct. 17 – GenRep on site to work on generator
- Oct. 18 – CanAm Instruments on site to calibrate influent and effluent flow meters
- Oct. 25 – GenRep on site to perform maintenance on portable generator
- Nov. 8-12 – Third High Farms on site to haul sludge to Rombough farm (2,045m³)
- Nov. 14 – Genrep on site to replace starter on generator
- Nov. 15 – Marleau Mechanical on site to disconnect electrical for temporary generator and to hook up permanent generator after repair
- Nov. 16 – Genrep on site to retrieve temporary generator

4.3 Completed Modifications

- There were no completed modifications in 2018.

4.4 Planned Modifications

- There are no planned modifications for 2019.

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 2018.

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 Third High Farms Limited (Iroquois, ON) 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 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 Ingleside STP in 2018 was **4,202 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) [†]	POTASSIUM LOADING (KG/HA) ^{††}
May 10, 2018	Esdale - 22350	Black River, Lot 28 Con. 7	Ingleside	2,160	49	216	8
November 12, 2018	Rombough - 23325	Rombough North, Lot 18 Con. 6. Lots 25, 26, 22, 23 and 21 Con. 5	Ingleside	652	60	237	8
November 12, 2018	Rombough - 23325	Rombough South, Lot 18 Con. 6. Lots 25, 26, 22, 23 and 21 Con. 5	Ingleside	1,390	60	237	8

[†] Phosphorus as P2O5

^{††} Potassium as K2O

Based on recent historical (2013 - 2018) annual volumes of biosolids transferred from the facility, the volume of biosolids generated by the Ingleside STP in 2019 is anticipated to be approximately 5,000 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. A figure illustrating the approved field locations and summarizing their current land application status is enclosed with this letter.

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
Dixon Rd, Segment South of Creek	Hartle - 22349	22	Available - 1 more application of Long Sault material at a maximum rate of 75 m ³ /ha.
Dixon Rd, Segment North of Creek	Hartle - 22349	16	Available - 1 more application of Ingleside material at a maximum rate of 50 m ³ /ha OR 2 applications of Long Sault material 12 months apart.
Moak Rd, Segments C + E	Hartle - 22349	10	Unavailable – Maximum five year Phosphorous loading reached.
Moak Rd, Segements A + B + D	Hartle - 22349	16	Available - Field has not received material under this NASM plan.
Anderson North	Bruining - 22351	28	Available - Field has not received material under this NASM plan.
Edwards Road A	Bruining - 22351	6.2	Available – more application for Ingleside OR more application for Long Sault material
Edwards Road B	Bruining - 22351	13.2	Available - Field has not received material under this NASM plan.
Gallingertown	Bruining - 22351	18	Unavailable – Maximum five year Phosphorous loading reached.
Home Farm North	Bruining - 22351	9	Unavailable – Maximum five year Phosphorous loading reached.
Home Farm South	Bruining - 22351	16	Unavailable – Maximum five year Phosphorous loading reached.
Mary's Rd South	Bruining - 22351	36	Available - more application for Ingleside OR a few applications for Long Sault material
Solar Farm	Bruining - 22351	8	Available - Field has not received material under this NASM plan.
Black River Rd	Esdale – 22350	34	Available – A few applications for Long Sault material or 1 application for Ingleside at a low application rate
Cornwall Centre	Esdale – 22350	30	Field no longer available as of spring 2018.
Speer Rd	Esdale – 22350	19	Available – Steep slopes limit application rates and area for material.

Ingleside WWTP
 2018 Annual Performance Report - SEWAGE

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 - Field has not received material under this NASM plan.
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.

Fields have been identified for spring 2019 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