



BARRIE DISTRICT OFFICE  
MAR 20 2020

Lake Simcoe Regional Airport  
224 Line 7 North, Oro-Medonte Township

2019 Annual Monitoring Report  
Certificate of Approval Number 3223-ADYKC4

March 20, 2020

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The City of Barrie  
Wastewater Operations Branch  
P.O. Box 400 Barrie, Ontario L4M 4T5  
Telephone 705-739-4220 • Fax 705-739-4251 • [www.barrie.ca](http://www.barrie.ca)

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## Review and Sign-Off

LSRA 2019 Annual Report Reviewed by:	Signature	Date
M. Shaw, Supervisor of Wastewater Technical Services		Feb 10/20
A. Baker, Lead Hand, Wastewater Operations		Feb 18/20
G. Jorden, Supervisor, Wastewater Operations and Maintenance		FEB 10/20
M. Drumm, Manager, LSRA		Feb 14/20
S. Coulter, Manager of Wastewater Operations		Feb 10/20
B. Araniyasundaran, Director of Infrastructure		Feb. 28/20

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## Overview

In 2019 the City of Barrie Wastewater Operations Branch operated and maintained a private sewage works at the Lake Simcoe Regional Airport (LSRA) located at 224 Line 7 North, Oro Station, Lot Part of 17,18,19 Concession 7, Oro-Medonte Township, County of Simcoe, L0L 2E0. On January 1, 2020 the ownership of the entire airport facility transferred to the Lake Simcoe Regional Airport Incorporated and the operation and maintenance of this facility's private sewage works was transferred to the Ontario Clean Water Agency (OCWA). On January 6, 2020 Chris Hyde, District Supervisor, MECP acknowledged receipt of a notification of change of ownership from Sandy Coulter, Manager of Wastewater Operations, City of Barrie dated January 6, 2020 (see Appendix A for copies of correspondence).

On September 27, 2016 MOECC issued Amended Environmental Compliance Approval No. 3223-ADYKC4 for previously-constructed facilities (*Previous Works*) to service 13,044 L/d which include

- A grease trap at the airport terminal building;
- A gravity sanitary sewer system of approximately 543 m 200 mm PVC pipe servicing the airport terminal building, maintenance building and three hangars located Lots 1-5;
- A low lift pump station with two 0.5 HP pumps which pumps collected sewage to septic tanks;
- Two 22,700 L septic tanks operating in parallel complete with effluent filters;
- A high lift pump station with two 2.7 HP pumps and 75 mm PE force main which conveys septic tank effluent to a dosing tank;
- A dosing tank which feeds two leaching beds 795 L per dose at a rate of approximately 272 Lpm;
- Two leaching beds with total pipe length of 630 m and 786 m;

and more recently-constructed facilities (*Proposed Works*) to service 2,700 L/d which include

- a gravity sewer system consisting of approximately 510 m. of 250 mm PVC pipe to service a hangar on Lots 7-8;
- a septic tank and Waterloo Biofilter (WBF) to pre-treat collected sewage;
- a pump chamber complete with two 0.5 HP pumps and approximately 522 m. of 50 mm PE force main which pumps treated sewage to a subsurface disposal system;
- a subsurface leaching bed (area bed) with pipe length of 390 m. for final treatment of effluent .

This report will summarize the Section 8 reporting requirements of ECA 3223-ADYKC4 being sections 8(1) to 8(2) (h) inclusive.

## Reporting Section 8(1) Notification

Section 8(1) requires that “at least one (1) week prior to the startup of the operation of the *Proposed Works*, the Owner shall notify the *District Manager* (in writing) of the pending startup date”. On June 19, 2015 David James, City of Barrie, advised Cindy Hood, District Manager of the impending startup of the (original) *Proposed Works* in writing (see Correspondence, Appendix A).

## Reporting Section 8(2) (a) Summary/Interpretation of Monitoring Data

Section 8(2)(a) requires a summary and interpretation of all monitoring data and a comparison to WBF effluent objectives outlined in Condition 6 of the ECA (Table 3) including an overview of the success and adequacy of the Works. The ECA is attached in Appendix B.

Section 5 of the ECA sets forth minimum influent and effluent sampling requirements as follows:

- ECA Table 1- One grab sample of raw sewage (septic tank inlet) per year – for both Previous works and Proposed works - for BOD<sub>5</sub>, TSS, TKN, TP.
- ECA Table 2 – One grab sample of WBF effluent (Proposed works only) every six months (twice per year) for cBOD<sub>5</sub>, TSS, TAN, TP and nitrate-N.

The results of ECA Table 1 sampling (raw sewage) are presented in Table 1 below as follows:

Table 1 2019 Raw Sewage Sampling Results

Parameter	Previous Works (LL Pump) Jan. 7/19	Previous Works (LL Pump) July 24/19	Proposed Works Oct. 1/19
BOD <sub>5</sub> (mg/L)	30.6	170	46
TSS (mg/L)	26	88	43
TKN (mg/L)	69.9	86	75.5
Total P (mg/L)	3.16	13.9	9.56

Raw sewage strength in the *Previous Works* is weak to normal for BOD<sub>5</sub> and TSS and strong in TKN compared to domestic sewage. Raw sewage strength in the *Proposed Works* was weak in BOD and TSS but high in TKN and TP compared to domestic sewage.

WBF Effluent sampling was conducted April 24 and October 1, 2019 by Waterloo Biofilter Systems Inc. (WBSI) and the following results of analysis (see Appendix A for WBSI reports) demonstrate that the biofilters generally met the ECA objectives with the exception of nitrate.

Table 2 WBF 2019 Effluent Sampling Results

WBF Effluent Parameter	Table 3 ECA Concentration Objective	Proposed Works Result (mg/L) Apr. 24, 2019	Proposed Works Result (mg/L) Oct. 1, 2019
cBOD <sub>5</sub> (mg/L)	10	4	4
TSS (mg/L)	10	2	5
Total P (mg/L)	-	5.69	8.45
Total NH <sub>3</sub> -N (mg/L)	-	22.8	25.9
Nitrate – N (mg/L)	15	16.0	17.6

## Reporting Section 8(2) (b) Flow Analysis

Section 8(2) (b) requires a tabulation of estimated average daily volumes of effluent disposed through the subsurface disposal systems based upon weekly flows. The *Previous Works* discharges via the High Lift Pump Station #2 (PS#2) to a subsurface disposal system while the *Proposed Works* discharges to Pump Station #3 (PS#3) thence to a relatively new subsurface disposal system. The average daily design flows as reflected in Amended Environmental Compliance Approval No. 3223-ADYKC4 were 13,044 L/d and 2,700 L/d respectively. Calculated tabular weekly average daily flow data is summarized in Appendix D. Flow monitoring results are graphically presented below.

The results indicate that in 2019 the weekly average daily flow for the *Previous Works* exceeded the design objective of 13,044 L/d on average only in the third week of March. Weather in this period was warm reaching temperature highs of about 11 degrees C while overall the month of March received precipitation on 23 of 31 days. Visual checks have so far been unable to locate exactly how or where water infiltrates or flows into this works. Flow measurements are based on a flow meter installed on PS#2 and flow totalizer readings routinely recorded by operators.

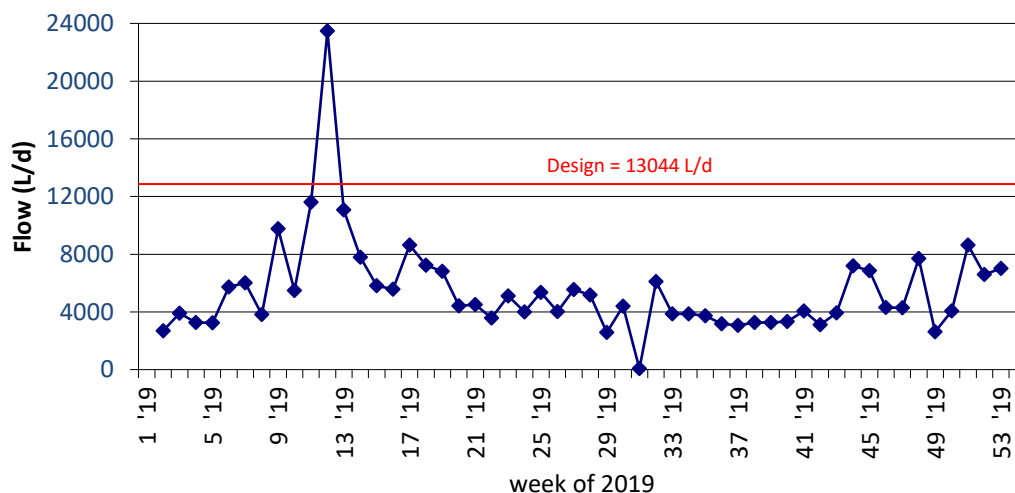


Figure 1 Weekly Average Flow (Previous Works) (L/d)

Weekly average daily flows in the *Proposed Works* did not exceed the design flow of 2,700 L/d. These flows were estimated based on pump hours until March 7 and thereafter on a new flow meter and totalizer. The estimated flow rate of the pumps in the *Proposed Works* was 6,037 L/hr based on a field calibration test conducted November 20, 2017.

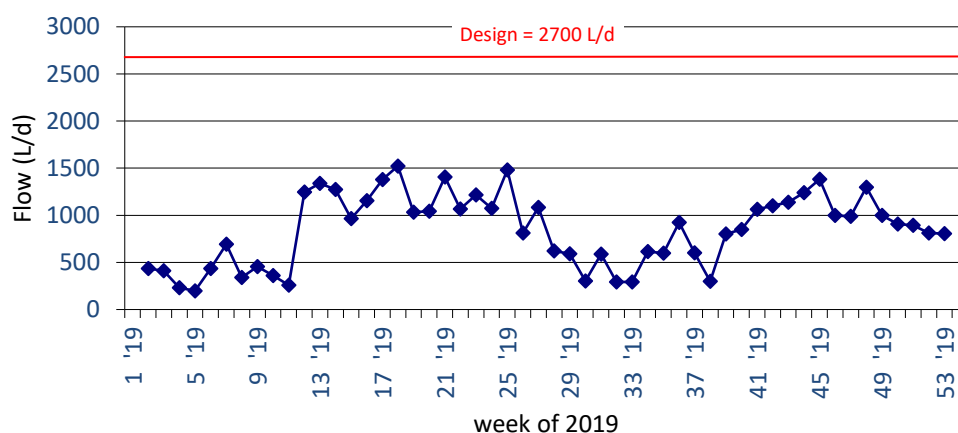


Figure 2 Average Weekly Flow (Proposed Works) (L/d)

## Reporting Section 8(2) (c) Maintenance

Section 8(2) (c) requires a summary of all maintenance and repairs carried out on all major equipment. A detailed list of all routine maintenance completed by the City of Barrie is contained in Appendix “C”. The maintenance items completed by City staff in 2019 were in accordance with the requirements of Section 7 of the ECA. Weekly checks are conducted to test for alarms and take readings of flow and pump hours. Inspections of subsurface drainage beds are conducted monthly. Routine maintenance conducted April and October, 2019 by WBSI on their biofilters is documented in the attached report (see Appendix A - Correspondence). Annual verification of flow meters was conducted Sept. 21 by Indus Controls Inc. and is documented separately under Section 8(2) (e) below. Verification certificates are contained in Appendix A.

## Reporting Section 8(2) (d) Summary of Effluent QA/QC Measures

The City of Barrie currently uses E3 Laboratories Inc. located in Niagara-on-the-Lake. E3 is CALA-accredited (Canadian Association for Laboratory Accreditation Inc.) for analysis of all samples taken for regulatory reporting purposes. In addition, under our contract with WBSI, the contractor (WBSI) samples the effluent of the biofilters twice per year. WBSI send their samples to SGS Canada Inc. in Lakefield who are also CALA-accredited.

A letter from SGS confirming their accreditation is contained in Appendix A.

The following information (*italicized below*) (s. 7.0 to 7.2.2) is taken from the E3 Labs Quality Manual dated September 1<sup>st</sup>, 2015 and describes their QA/QC procedures that were in place for 2019.

### 7.0 *QUALITY CONTROL*

*Quality Control Samples are used, as appropriate, to ensure that the analytical process is in control. The various types of quality control samples and the characteristics they monitor are summarized as follows:*

Type of Quality Control Samples	Characteristic Monitored
Standards/Lab QC	verify
Reference	calibration/stability
Material*	method accuracy
Duplicate	method precision
Samples Analyte	method recovery
Spike Reagent	contamination
Blank	(chemical)
Matrix Spike	sample recovery*

\*Reference materials may be either certified reference materials or can be prepared by the laboratory using the same compound as the calibration standards but using a different lot# or manufacturer of the chemical.

These Quality Control samples are defined as follows:

*Standards/ Lab QC:* A solution prepared by the use of a primary standard or purchased pre-made from a supplier who certifies its concentration. The analyst performing the applicable tests for which that standard will be used usually prepares standards. Standard preparation is documented in the Standard Logbook.

*Certified Reference Material:* A sample that contains the analytes of interest in concentrations that are known from a previous in-house analysis or provided by an outside source. In-house reference material preparation is documented in the Standard Logbook.

*Analyte Spike:* A sample prepared by adding a measured amount of a reference standard to reagent water or sample.

*Reagent Blank:* A sample containing laboratory high quality water which is analyzed as though it were a sample.

The quality control results for each run are monitored and verified by the analyst against the established control limits, which have been determined for the tests and/or specific parameters analyzed. The Laboratory Manager review quality control results on a regular basis. The values outside the established limits are automatically flagged by LTMS to warn the analysts of the outlier results. The Laboratory Manager will review all flagged data. The analyst in consultation with the Laboratory Manager review raw data and the steps followed in the test procedure and take the appropriate action(s) to identify and resolve the situation.

If any quality control sample results fall outside the control limits, the acceptance or rejection of the results is at the discretion of the analyst in consultation with the Laboratory Manager. The Laboratory Manager has the final authority to accept or reject results.

If necessary, the analysis will be repeated, if sufficient sample remains. The Laboratory Manager will review the repeated test results.

## 7.1 Proficiency Testing and Inter-/Intra-laboratory Studies

An important part of our Quality Assurance program is the participation in proficiency testing and inter- and intra-laboratory studies. The Laboratory Manager ensures that the lab participates in external proficiency testing.

These include proficiency samples for CALA and other PT sample suppliers.

If a proficiency test study provides results that cause doubt concerning test method performance, the Laboratory Manager may initiate a Quality Audit. Based on the audit findings, corrective action is initiated.

The results of this audit and any actions taken shall be documented and maintained on file by the Laboratory Manager.

## 7.2 Control Charts and Control Limits

### 7.2.1 Control Charts

Control charts are used, as appropriate, to monitor and evaluate the quality of the QC data generated. Such charts

relate on-going test method performance to either statistically defined ( $\pm 3$  STD) or protocol defined control limits. The values that are outside these limits are automatically or manually flagged to notify the analyst of the deviation. The supervisor or senior analyst designated to the co-ordination/supervision of the respective test is responsible to ensure the continual monitoring of the method's performance. Prescribed control charting practices are contained in the method SOP. All control charts are maintained by the LIMS.

#### 7.2.2 Control Limits

Control limits, or other specified limits, when exceeded, are automatically or manually flagged. The analyst responsible for the test or reviewing the data is then expected to intervene and document the reason for the non-conformity or outlier result. This is realized through the LIMS or recorded in the appropriate logbook. Action limits may be assigned by the Laboratory Manager for results that impact the customer or regulatory limits.

SGS Canada Inc. has extensive QA/QC programs and provide a brief statement thereof as follows:

SGS Environmental Services (Lakefield, London and Fort McMurray locations) are accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 for specific tests listed in the scope of accreditation. Combined, the laboratories have over 100 accredited methods. ISO/IEC 17025 addresses both quality management and the technical aspects of operating a testing laboratory. Additionally, the laboratories participate in proficiency testing and round robin programs (both nationally and internationally) as a demonstration of testing performance by means of inter-laboratory comparisons. The Quality Assurance program of SGS Environmental Services consists of a documented quality system, including a quality manual, methods, standard operating procedures and data approval criteria. Quality control techniques and activities are method specific and include duplicate samples, spiked blanks, spiked replicates, reagent/instrument blanks, preparation control samples, certified reference material analysis and instrument control samples, as appropriate for the individual methods. Matrix matching of reference materials to samples is always attempted. Frequency of insertion of control samples is method specific and follows regulatory guidelines (where applicable). As required, the Quality Coordinator is independent of the production area of the laboratory and reports directly to the Manager. Copies of the current scope of testing are available directly through the CALA website.

More specific information on QA/QC can be provided upon request.

## Reporting Section 8(2) (e) Calibration of Effluent Monitoring Equipment

Section 5.4 of the Amended Environmental Compliance Approval requires that the weekly volume of effluent to each subsurface disposal system be calculated or determined and recorded. The sewage flow meter on the *Previous Works* was calibrated by Indus Controls Inc. on June 11, 2019. The calibration Certificate is in Appendix A. The *Proposed Works* flow meter was commissioned in March, 2019 and was not calibrated in June.

On Nov. 20, 2017 City staff verified the pump rate at 100.61 Lpm (6,037 L/h) using a stop watch and by measuring difference in hydraulic level over a five minute pumping interval. There were no other effluent monitoring devices.

## Reporting Section 8(2) (f) Description of Operating Problems

The main operating challenge with the Lake Simcoe Regional Airport sewage works is occasional high flows. In the *Previous Works* it is believed that runoff somehow causes sewer inflow in spite of past measures to prevent inflow such as installing rain stoppers on manholes. Because the capacity of the *Previous Works* is only 13 m<sup>3</sup>/d it can be easily challenged by something as simple as a leaky toilet (which has also been an issue in the past). A recommended strategy would be to install remote sensing and alarms in order to be able to respond quickly and locate the source of high flows.

## Reporting Section 8(2) (g) Complaints

There were no complaints on record from the public in 2019.

## Reporting Section 8(2) (h) Additional Reporting

This section allows the Water Supervisor of the MECP to request additional information.

## Appendix A: Correspondence

**From:** Hyde, Chris (MECP) [<mailto:Chris.Hyde@ontario.ca>]  
**Sent:** Monday, January 06, 2020 2:51 PM  
**To:** Sandy Coulter <[Sandy.Coulter@barrie.ca](mailto:Sandy.Coulter@barrie.ca)>; Pannu, Fariha (MECP) <[Fariha.Pannu@ontario.ca](mailto:Fariha.Pannu@ontario.ca)>  
**Cc:** Bala Araniyasundaran <[Bala.Araniyasundaran@barrie.ca](mailto:Bala.Araniyasundaran@barrie.ca)>; David Parks ([david.parks@simcoe.ca](mailto:david.parks@simcoe.ca)) <[david.parks@simcoe.ca](mailto:david.parks@simcoe.ca)>; Dawn McAlpine <[Dawn.McAlpine@barrie.ca](mailto:Dawn.McAlpine@barrie.ca)>; Mike Drumm ([mike.drumm@simcoe.ca](mailto:mike.drumm@simcoe.ca)) <[mike.drumm@simcoe.ca](mailto:mike.drumm@simcoe.ca)>; Dunville, Lyndsay (MECP) <[Lyndsay.Dunville@ontario.ca](mailto:Lyndsay.Dunville@ontario.ca)>  
**Subject:** RE: Notice of Change of Owner - Lake Simcoe Regional Airport

Hi Sandy,

This email will serve to confirm receipt of the notification of the change of ownership of the sewage works servicing the Lake Simcoe Regional Airport.

Sincerely,

Chris

Chris Hyde

District Supervisor

Barrie District Office

Ministry of the Environment, Conservation and Parks

54 Cedar Point Drive, Unit 1201

Barrie, Ontario L4N 5R7

Office: (800) 890-8511 • Fax: (705) 739-6440

Cell: 705-791-0945

24/7 Spills Action Centre: (800) 268-6060

24/7 Pollution Hotline: (866) 663-8477 • [moe.tips@ontario.ca](mailto:moe.tips@ontario.ca)

If you have any accommodation needs or require communication supports or alternate formats, please let me know.

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***“We want to hear from you. How was my service? You can provide feedback at 1-888-745-8888.”***

---

**From:** Sandy Coulter <[Sandy.Coulter@barrie.ca](mailto:Sandy.Coulter@barrie.ca)>

**Sent:** January 6, 2020 2:43 PM

**To:** Pannu, Fariha (MECP) <[Fariha.Pannu@ontario.ca](mailto:Fariha.Pannu@ontario.ca)>; Hyde, Chris (MECP) <[Chris.Hyde@ontario.ca](mailto:Chris.Hyde@ontario.ca)>

**Cc:** Bala Araniyasundaran <[Bala.Araniyasundaran@barrie.ca](mailto:Bala.Araniyasundaran@barrie.ca)>; David Parks ([david.parks@simcoe.ca](mailto:david.parks@simcoe.ca)) <[david.parks@simcoe.ca](mailto:david.parks@simcoe.ca)>; Dawn McAlpine <[Dawn.McAlpine@barrie.ca](mailto:Dawn.McAlpine@barrie.ca)>; Mike Drumm ([mike.drumm@simcoe.ca](mailto:mike.drumm@simcoe.ca)) <[mike.drumm@simcoe.ca](mailto:mike.drumm@simcoe.ca)>

**Subject:** Notice of Change of Owner - Lake Simcoe Regional Airport

**CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.**

Fariha and Chris, in accordance with Section 3 of ECA Number 3223-ADYKC4 dated September 27, 2016 as attached, please accept this email as formal notification from the City of Barrie regarding a Change of Ownership of the Lake Simcoe Regional Airport effective January 1<sup>st</sup>, 2020.

As of January 1<sup>st</sup>, 2020 the majority shareholder of the Lake Simcoe Regional Airport is the Corporation of the County of Simcoe as outlined in the attached Share Transfer Agreement. The Airport Manager, Mike Drumm has been copied on this email and can be contacted at the following email address for further information: [Mike.Drumm@simcoe.ca](mailto:Mike.Drumm@simcoe.ca).

Trusting this notification satisfies the obligations outlined in Section 3 of ECA Number 3223-ADYKC4 and please note I would be happy to answer any questions you may have.

Thanks

**Sandy Coulter, B.Sc.**

Manager of Wastewater Operations

The City of Barrie

Central Ontario's Premier Waterfront Community

Wastewater Treatment Facility

249 Bradford Street

Mailing Address:

P.O. Box 400, Barrie ON, L4M 4T5

Tel: 705-739-4220 ext. 5826

Fax: 705-739-4253

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REPORT NO:CO1086-1910-07

DTM Version: 3.25.00

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## Flowmeter Verification Certificate Transmitter

City of Barrie	WWTF
Customer	Plant
	SEWAGE
Order code	Tag Name
PROMAG 50 W DN50	0.8828 - 0.8828
Device type	K-Factor
JB01BF16000	-1
Serial number	Zero point
V2.04.00	V1.04.10
Software Version Transmitter	Software Version I/O-Module
06.11.2019	11:00
Verification date	Verification time

## Verification result Transmitter: Passed

Test item	Result	Applied Limits
Amplifier	Passed	Basis: 1.55 %
Current Output 1	Passed	0.05 mA
Pulse Output 1	Not tested	0 P
Test Sensor	Passed	

<b>FieldCheck Details</b>	<b>Simubox Details</b>
551063	8812984
Production number	Production number
V1.01.10	V1.01.10
Software Version	Software Version
08/2019	08/2019
Last Calibration Date	Last Calibration Date

06.11.2019



Date

Operator's Sign

Inspector's Sign

### Overall results:

The achieved test results show that the instrument is completely functional, and the measuring results lie within +/- 1% of the original calibration. <sup>1)</sup>

The calibration of the Fieldcheck test system is fully traceable to national standards.

<sup>1)</sup> Prerequisite is an additional proof of electrode integrity with a high voltage test.

### FieldCheck - Result Tab Transmitter

Customer	City of Barrie	Plant	WWTF
Order code		Tag Name	SEWAGE
Device type	PROMAG 50 W DN50	K-Factor	0.8828 - 0.8828
Serial number	JB01BF16000	Zero point	-1
Software Version Transmitter	V2.04.00	Software Version I/O-Module	V1.04.10
Verification date	06.11.2019	Verification time	11:00

Verification Flow end value ( 100 % ): 471.239 l/m  
Flow speed 4.00 m/s

Passed / Failed	Test item	Simul. Signal	Limit Value	Deviation
	<b>Test Transmitter</b>			
✓	Amplifier	23.562 l/m (5%)	2.50 %	-0.75 %
✓		47.124 l/m (10.0%)	2.00 %	-0.58 %
✓		235.620 l/m (50.0%)	1.60 %	-0.60 %
✓		471.240 l/m (100%)	1.55 %	-0.60 %
✓	Current Output 1	4.000 mA (0%)	0.05 mA	-0.005 mA
✓		4.800 mA (5%)	0.05 mA	-0.005 mA
✓		5.600 mA (10.0%)	0.05 mA	-0.016 mA
✓		12.000 mA (50.0%)	0.05 mA	0.002 mA
✓		20.000 mA (100%)	0.05 mA	0.037 mA
—	Pulse Output 1	---	---	---
		<b>Start value</b>	<b>Limits range</b>	<b>Measured value</b>
	<b>Test Sensor</b>			
✓	Coil Curr. Rise	3.500 ms	0.000..10.875 ms	4.451 ms
✓	Coil Curr. Stability		---	---
✓	Electrode Integrity	mV	0.0..300.001 mV	6.591 mV

Legend of symbols

✓	✗	—	?	!
Passed	Failed	not tested	not testable	Attention

### FieldCheck: Parameters Transmitter

Customer	City of Barrie	Plant	WWTF
Order code		Tag Name	SEWAGE
Device type	PROMAG 50 W DN50	K-Factor	0.8828 - 0.8828
Serial number	JB01BF16000	Zero point	-1
Software Version Transmitter	V2.04.00	Software Version I/O-Module	V1.04.10
Verification date	06.11.2019	Verification time	11:00

Current Output	Assign	Current Range	Value 0_4mA	Value 20 mA		
Terminal 26/27	VOLUME FLOW	4-20 mA activ	0.0 l/m	300.01 l/m		
Pulse Output	Assign	Pulse Value	Output signal	Pulse width		
Terminal 24/25	OFF	---	---	---		

Actual System Ident.

113.0

CITY HALL  
70 COLLIER STREET  
TEL. (705) 739-4210  
FAX. (705) 739-4248



P.O. BOX 400  
BARRIE, ONTARIO  
L4M 4T5

THE CORPORATION OF THE CITY OF BARRIE  
Engineering Department  
"Committed to Service Excellence"

June 19, 2015

File: T10-LSRA

Ministry of the Environment and Energy  
Barrie District Office  
54 Cedar Pointe Drive  
Barrie, ON L4N 5R7

Attention: Ms. Cindy Hood,  
District Manger

Re: MOEE ECA 9258-88DNJX dated October 14, 2015  
Lake Simcoe Regional Airport Sewage System, Proposed Works.  
Notice of Operation Start-Up

The Lake Simcoe Regional Airport south west commercial area was expanded in 2010 and 2011 as part of the Infrastructure Stimulus Fund project. The new commercial lots have been vacant until now. A new hangar is nearing completion and is expected to start operation on June 27, 2015.

Please accept this letter as the written notification of system start up required by Paragraph 8.1 of the ECA noted above.

If you require any additional information please contact the under signed at 705-7309-4220 Extension 4444 or at [dave.james@barrie.ca](mailto:dave.james@barrie.ca).

Yours truly,

David M. James, P. Eng.,  
Senior Project Engineer

cc: Christine Schlecht, MOEE  
Sandy Coulter, COB WW Operations  
Martin Shaw, COB WW Operations  
Mike Drumm, LSRA, APM



**Lake Simcoe Regional Airport  
Wastewater Treatment System**

**2019 Annual Report  
January 1, 2018 - December 31, 2019**

Prepared for:

Lake Simcoe Regional Airport  
224 Line 7 North  
Oro Station

January 3, 2019

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## Introduction

The sewage works located at Lake Simcoe Regional Airport, 224 Line 7 North, Oro Station, is governed by the Ministry of Environmental Amended Environmental Compliance Approval (ECA) #: 3233-ADYKC4. Waterloo Biofilter Systems has been contracted by The Corporation of the City of Barrie and Lake Simcoe Regional Airport Inc. to provide semi-annual service for the septic system at the hanger building on Lots 7 and 8. This system is rated for peak daily sanitary sewage flow of 2,700 L/day and comprises a septic tank, pump chamber, and a Biofilter treatment unit housed in a buried concrete tank. Treated effluent is discharged to a subsurface leaching bed. The treatment system was commissioned on June 29, 2015.

## Plant Performance Objectives and Requirements

### Sampling Requirements

The ECA requires sewage be sampled once per year and analyzed for Biological Oxygen Demand (BOD<sub>5</sub>), Total Suspended Solids (TSS), Total Kjeldahl Nitrogen (TKN) and Total Phosphorus (TP). Biofilter Effluent is to be sampled once every six months and analyzed for Carbonaceous Biological Oxygen Demand (cBOD<sub>5</sub>), TSS, TP, Total Ammonia Nitrogen (TAN), and Nitrate Nitrogen (NO<sub>3</sub>).

### ECA Objectives

The ECA dictates that the Owner shall use best efforts to operate the Works with the objective that the concentrations of the materials named below as effluent parameters are not exceeded in the effluent being discharged to the subsurface disposal system. Table 1 shows these ECA objectives.

**Table 1: Environmental Compliance Approval Objectives**

Effluent Parameters	Concentration Objective (mg/L)
cBOD <sub>5</sub>	10
Total Suspended Solids	10
Nitrate Nitrogen	15

## Results and Discussion

### Mixed Sewage

Mixed Sewage, which is true raw sewage (expected to be higher in strength) mixed with approximately 50% recirculated Biofilter Effluent sent back to the septic tank to increase nitrogen removal, was sampled on October 1, 2019. The concentrations of BOD<sub>5</sub> and TSS were moderately low strength at 46 mg/L and 43 mg/L respectively. However, sample results for TP and TKN were more indicative of high strength sewage.

Mixed Sewage results are presented in Appendix A1.

### Biofilter Effluent

Effluent from the Biofilter treatment unit was sampled on April 24 and October 1. The cBOD<sub>5</sub> and TSS objectives for Final Effluent were met on both sampling dates. The 15 mg/L NO<sub>3</sub> objective was marginally exceeded with results of 16.0 mg/L on April 24 and 17.6 mg/L on October 1. The presence of TAN in the effluent samples, indicates that the nitrification reactions (conversion of TAN and TKN to NO<sub>3</sub>) were incomplete in the Biofilter. Due the high strength of TKN in the influent sewage, it is possible that alkalinity is limiting the nitrification process.

The Total Nitrogen in Mixed Sewage, on October 1, of approximately 75.5 mg/L was reduced to 46.34 mg/L in Biofilter effluent representing a removal rate of 38.6%. A healthy Biofilter unit can be expected to remove in the range of 40-60% of the Total Nitrogen. The lack of organic content in Mixed Sewage will make denitrification more difficult.

Biofilter Effluent results are presented in Appendix A2.

### Visual Inspection

Photo 1 below shows the typical quality of samples collected for analyses.

On visual inspection the mixed sewage was slightly cloudy and the Biofilter effluent was clear, with a slight tint.



**Photo 1: Samples collected for analysis October 1, 2019**

From left to right: Mixed sewage, Biofilter effluent.

## **Operations and Maintenance**

The service activities carried out by Waterloo Biofilter during the reporting period are summarized in Appendix B.

### **Operating Problems and Remedial Actions**

During the April 24<sup>th</sup> visit, it was noted that a spray nozzle was causing overspray and aerosolization within the Biofilter treatment unit. This spray nozzle was replaced with a different model to improve effluent distribution over the Biofilter media. Proper distribution and spray pattern were confirmed upon making the change.

## Appendix A: Analytical Results

### Appendix A1: Mixed Sewage

Sample Quality Parameter	Lake Simcoe Airport Mixed Sewage						
	pH	Temp	DO	BOD	TSS	TP	TKN
Units	-	°C	mg/L	mg/L	mg/L	mg/L	mg/L
Sampling Date							
1-Oct-19	-	-	-	46	43	9.56	75.5
Mean	-	-	-	46	43	9.56	75.5
Median	-	-	-	46	43	9.56	75.5

### Appendix A2: Biofilter Effluent

Sample Quality Parameter	Lake Simcoe Airport Effluent									
	pH	Temp	DO	cBOD <sub>5</sub>	TSS	TP	TAN	NO <sub>3</sub>	NO <sub>2</sub>	TN
Units	-	°C	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Objective				10	10			15		
Sampling Date										
24-Apr-19	7.17	6.60	6.49	4	2	5.69	22.8	16.0	0.66	39.46
1-Oct-19	-	-	-	4	5	8.45	25.9	17.6	2.84	46.34
Mean	7.17	6.60	6.49	4	4	7.07	24.4	16.8	1.75	42.90
Median	7.17	6.60	6.49	4	4	7.07	24.4	16.8	1.75	42.90

## Appendix B: Site Notes

### April 24, 2019

- Sampled Biofilter Effluent
- Biofilter effluent is crystal clear with a slight orange tint
- Cleaned effluent filter, it had very minimal build up
- Added one jug of Jump Start to septic tank
- Balance tank:
  - All floats operational.
  - Inspected inline filters – very clean.
  - Biofilter dosing timer – 1 minute ON; 10 minutes OFF.
  - Dosing pump is drawing 8.6A
- Biofilter Tank:
  - All floats operational.
  - Biofilter media is a yellow colour, still looks fairly new.
  - One nozzle was over spraying slightly and aerosolizing. Changed out nozzle for TF 150/24 to reduce overspray and aerosolization.
  - Nozzles have good pressure and even spray pattern.
  - Disposal pump is drawing 10.5A.
- All alarms operational.
- Disposal bed looks dry – no signs of ponding or breakouts, healthy grass cover.

### October 1, 2019

- Sampled Sewage and Biofilter Effluent.
- Biofilter effluent looks good, minimal solids.
- Cleaned effluent filter, it had very minimal build up.
- Added one jug of Jump Start to septic tank. Left 5 jugs on site.
- Balance tank:
  - All floats operational.
  - Inspected inline filters – very clean.
  - Biofilter dosing timer – 1-minute ON; 10 minutes OFF.
- Biofilter Tank:
  - All floats operational.
  - Biofilter media is a yellow colour, looks healthy.
  - Nozzles have good pressure and even spray pattern.
- All alarms operational.
- Disposal bed looks dry – no signs of ponding or breakouts, healthy grass cover.
- All lids secure and pumps in auto on departure.



### **SGS Environment, Health & Safety – Lakefield Quality Policy**

Sound management practices and commitment to good professional practice and quality of service are important responsibilities in the conduct of our business.

As an employer, SGS Environment, Health & Safety – Lakefield will work to deliver the following:

- High quality analysis of waters, soils and other materials in a timely manner
- A program of scheduled quality activity that ensures the requirements of the management system are documented and includes the following:
  - Service that is fit for purpose, which includes quality and responsiveness
  - Prevention rather than correction.
  - The use of internationally recognized methods wherever possible.
  - An effective and documented training program.
  - A comprehensive validation program, including accuracy and short & long-term precision, limit of detection and limit of quantification, linearity and estimation of uncertainty of measurement.
  - Participation in proficiency testing & round robin programs (where available).
  - Competent, trained personnel assigned to carry out duties in a timely manner and in accordance with the mandate of the management system, while ensuring that the work is done safely and with due regard to the environment.
- Compliance with ISO/IEC 17025:2005 – General requirements for the competence of testing and calibration laboratories and with all applicable legal and regulatory legislation requirements.
- Compliance with the program requirements of both CALA and PALA.
- Regular review, audit and internal quality control procedures to continually improve the effectiveness of the management system.
- Communication of the objectives of the management system to ensure understanding by all personnel.

A handwritten signature in blue ink, appearing to read 'Chris Bates', written over a horizontal line.

Chris Bates, Operations Manager

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#### **SGS Canada Inc.**

185 Concession Street, P.O. Box 4300, Lakefield, ON, K0L 2H0 Canada  
Tel: (705) 652-2000 Fax: (705) 652-6365  
[www.ca.sgs.com](http://www.ca.sgs.com)



Waterloo Biofilter Systems Inc.  
on-site wastewater treatment

**Effective Date: August 1, 2015**

*The Corporation of the City of Barrie*  
70 Collier Street  
PO Box 400  
Barrie, ON  
L4M 4T5

*Waterloo Biofilter Systems Inc.*  
143 Dennis Street, PO Box 400  
Rockwood, Ontario  
N0B 2K0  
T: (519) 856-0757  
F: (519) 856-0759

*Lake Simcoe Regional Airport Inc.*  
224 Line 7 North, Oro Station  
Oro-Medonte Township  
County of Simcoe  
L0L 2E0

**Site Location:**

Lake Simcoe Regional Airport  
224 Line 7 North, Oro Station

Upon execution of this Service Contract Agreement by *The Corporation of the City of Barrie* (City) and *Lake Simcoe Regional Airport Inc.* (LSRA), *Waterloo Biofilter Systems Inc.* (WBS) agrees to perform the services itemized in Sections 1-10 of this Service Contract Agreement for the Lake Simcoe Regional Airport facility in Oro-Medonte, Ontario during the five year term of this Agreement. The Annual Fee for the services to be provided under the terms of this Agreement is \$1210 plus HST in the first twelve month period. Thereafter the Annual Fee will increase at a rate of 2% per year. The Annual Fee will be invoiced on a semi-annual basis after each service visit.

This Service Contract Agreement is based on one Waterloo Biofilter installed in the spring of 2015 for Lots 7 and 8 and does not include any other Waterloo Biofilter systems or items not specifically mentioned in Sections 1- 10 of this Agreement. This Service Contract Agreement will be revised if additional Waterloo Biofilter systems are installed at the site.

**PROVIDED SERVICES**

Listed below are services to be provided by WBS:  
**Sampling and Chemical Analyses**

1. Collection of grab samples of Raw Sewage from the septic tank once a year to be analyzed for BOD5, Total Suspended Solids, Total Phosphorus, and Total Kjeldahl Nitrogen meeting the sampling requirements in the Ministry of the Environment Certificate of Approval (Number 9258-88DNJX).
2. Collection of grab samples of Biofilter Effluent once every six months to be analyzed for cBOD5, Total Suspended Solids, Total Phosphorus, Total Ammonia Nitrogen, and Nitrate Nitrogen meeting the requirements in the Ministry of the Environment Certificate of Approval (Number 9258-88DNJX).
3. Samples taken to an MOECC-accredited laboratory for analysis.
4. Tabulation of analytical results, which will be reported to the City twice a year.

**Operations and Maintenance (twice a year)**

5. Inspect and clean (when necessary) spray nozzles.
6. Perform overall system check-up including:
  - a. Control Panels and Pumps – ensuring Biofilter system is dosed properly by setting correct timer settings and ensuring that alarms are functioning properly.
  - b. Inspection of disposal area – ensuring effluent is not breaking out to the surface or and identifying any potential problems.
  - c. Septic system journal entries- entering activities in maintenance checklist and recording major events such as failures, pump-outs, etc..
7. Inspect and clean (when necessary) effluent filters on septic tanks.
8. Perform check of septic and pump tanks – estimating health of the system and recommend if tanks need to be pumped out.

**Annual Performance Report (Once a Year)**

9. An annual performance report as per Section 8(2) in the Ministry of the Environment Certificate of Approval (Number 9258-88DNJX) shall be submitted to the City within 45 days of the end of each calendar year.

**Emergency Calls**

10. Telephone and e-mail support during normal office hours (Monday – Friday) will be included in this Service Contract. Emergency site visits are not included in this Service Contract. If it is deemed necessary by both parties to conduct an emergency visit, a flat fee of \$290 and \$85 per hour on-site will be charged to the City. If the emergency call coincides with a regularly scheduled maintenance visit, the flat fee of \$290 will be waived.

**Requirements in the Certificate of Approval Not Included in this Service Contract Agreement**

Recording of the weekly volume of effluent being discharged to the subsurface disposal system.

Inspection of the disposal bed for breakout in all months in the year (10 months in total) that WBS is not onsite for service.

WBS further agrees to the following:

1. Renewal of this Service Contract Agreement every five years provided terms are agreeable to both parties and unless the parties mutually agree to renew the Agreement sooner.
2. If improper operation cannot be corrected at the time of service, the City will be notified immediately and given an estimated date of correction.
3. If necessary, any defective mechanical units or parts will be replaced according to the manufacturer's warranty program. (Note - Freight and labour charges for replacement parts or repairs are not covered under this Service Contract Agreement.)
4. To inform the City of any irregularities (unusually high flows, poisoning or unhealthy state of the system, ground water infiltration, etc.) and recommend possible solutions and remedies.
5. To use best efforts to help the City conform to the requirements of the Certificate of Approval (#9258-88DNJX).

LSRA further agrees to the following:

1. To facilitate WBS personnel the legal right of access to the premises for the purpose of carrying out this Service Contract Agreement, including access to all concrete tanks, control panels etc. Access will be provided any time service is needed or requested or whenever service personnel schedule periodic inspections as per Service Contract Agreement requirements. A copy of the keys to any locks will be provided to WBS.
2. Reasonable access to any interior facilities, including washrooms and/or kitchens for the purpose of troubleshooting.

3. To use best efforts to conform to the Guidelines for Healthy Sewage outlined in Appendix A of this Agreement.

The City further agrees to advise WBS and LSRA in a timely manner of any operational problems encountered or the occurrence of events which may lead to operational problems.

This Agreement constitutes the complete and exclusive Agreement between the parties hereto and supersedes all prior agreements, whether oral or written and all other communications between the parties relating to the subject matter of this Agreement. In Witness whereof the Parties hereto have duly executed this Agreement as of the date first above written.

Accepted by *The Corporation of the City of Barrie*:

Name (print clearly) JEFF LEHMAN

Signature : 

Date signed: Sept 22/15

Dawn A McAlpine City Clerk

 Sept-22/15

Accepted by *Lake Simcoe Regional Airport Inc.:*

Name (print clearly) MIKE DRUMM

Signature : 

Date signed: Sept 15/15

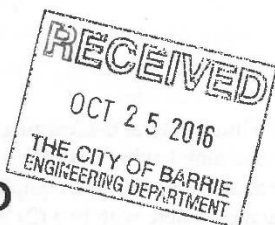
Accepted by **Waterloo Biofilter Systems Inc.**

Name (print clearly) Robin Jewett

Signature : Robin Jewett

Date signed: Aug 24/15

## Appendix B: Amended Environmental Compliance Approval No. 3223-ADYKC4



Ministry of the Environment and Climate Change  
Ministère de l'Environnement et de l'Action en  
matière de changement climatique

### AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 3223-ADYKC4  
Issue Date: September 27, 2016

The Corporation of the City of Barrie  
70 Collier Street, 4th Floor  
P.O. Box 400  
Barrie, Ontario  
L4M 4T5

Site Location: Lake Simcoe Regional Airport South-West Commercial Area  
224 Line 7 North  
R.R. #2, Oro Station  
Lot Part of 17,18 and 19, Concession 7, Part 1 Reference Plan 51- 20864  
Township of Oro-Medonte, County of Simcoe  
LOL 2E0

*You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:*

modifications to the existing subsurface disposal works and the establishment of new subsurface disposal works for the collection, transmission, treatment and subsurface disposal of sanitary sewage, designed for a total daily sanitary sewage flow of 21,825 L/d from commercial lots to be developed or have been developed as hanger buildings within the Lake Simcoe Regional Airport South-West Commercial Area, located in the Township of Oro-Medonte, west of Highway #11 between Lines 6 and 7, to be used in conjunction with existing sewage works (with some modifications), consisting of the following:

#### **PROPOSED WORKS**

The establishment of subsurface disposal works for the collection, transmission, treatment and subsurface disposal of sanitary sewage, designed for a daily sanitary sewage flow of 2,700 L/d from combined commercial Lots 7/8 to be developed as a large hanger building located within the Lake Simcoe Regional Airport South-West Commercial Area, consisting of the following:

##### New Combined Lots 7/8 Septic Tank and Treatment Unit:

A septic tank and Waterloo Biofilter Treatment (WBF) unit located on Lots 7 and 8 to service a large hanger building located on combined Lots 7/8, with the effluent from the septic tank dosed to the WBF unit in accordance with manufacturer's specifications, the WBF unit to be set to discharge 50% of its effluent back to

the septic tank for re-processing and the remaining 50% into a lateral discharging to the existing gravity sanitary sewer system located along South Access Road, the septic tank having a working capacity of 10,000 L/day (exceeding the minimum 3 times estimated daily flow of 2,700 L/day) and equipped with an effluent filter that at minimum screens out particles larger than 3.2 mm and complete with two (2) waterproof access covers, the WBF unit sized for a maximum loading rate of 659 L/day/m<sup>3</sup> of the foam medium, equalling a minimum 4.1 m<sup>3</sup> of biofilter foam medium spread evenly between two wire mesh baskets placed within a 6,800 L concrete biofilter tank;

New Pump Chamber:

A pump chamber located on Lot 8, having a minimum emergency storage capacity of 2,700 L, complete with two (2) - 1/2 HP submersible effluent pumps (Little Giant WSV50 Effluent Series or equivalent), receiving effluent via a 150 mm diameter sanitary sewer from the septic tank and dosing the WBF unit;

**PREVIOUS WORKS**

the establishment of new subsurface disposal works for the collection, transmission, treatment and disposal of sanitary sewage from commercial lots to be developed as hanger buildings at the Lake Simcoe Regional Airport, located in the Township of Oro-Medonte, west of Highway #11 between Lines 6 and 7, to be used in conjunction with existing sewage works (with some modifications), consisting of the following:

New subsurface disposal works designed for a daily sanitary sewage flow of 22,875 litres per day, designed to service ten (10) new commercial lots (Lots 6 through 15) and may also include the existing Lot 5, consisting of the following:

- Individual Lot Septic Tank and Treatment Unit:

An individual septic tank and Waterloo Biofilter Treatment (WBF) unit to service each lot, with effluent from each septic tank dosed to the WBF unit in accordance with manufacturer's specifications. Each WBF unit to be set to discharge 50% of its effluent back to the septic tank for re-processing and the remaining 50% into a lateral draining to the proposed gravity sanitary sewer system within the proposed new road, with septic tanks for Lots 5 and 7-15 sized for a minimum volume of 6,800 L/day (3x estimated daily flow of 1,875L/day) and for Lot 6 at 13,500 L/day (3x estimated daily flow of 4,125 L/day), with each septic tank to be equipped with an effluent filter that at minimum screens out particles larger than 3.2 mm, with the WBF units sized for a maximum loading rate of 750 L/day/m<sup>3</sup> of the foam medium, equalling minimum 2.5 m<sup>3</sup> of biofilter foam medium spread evenly between two wire mesh baskets placed within a 6,800 L concrete biofilter tank for lots 5 and 7-15, and minimum 5.5 m<sup>3</sup> of biofilter foam medium spread evenly between two wire mesh baskets placed within a 9,000 L concrete biofilter tank for lot 6, with a minimum biofilter dosing pump chamber requirement of 2,000 L for Lots 5 and 7-15 and 4,500 L for Lot 6;

- Gravity Sewer System:

A proposed gravity sanitary sewer system within the proposed new road (South Access Road) consisting of approximately 510 m of 250 mm dia. PVC sewer and seven (7) 1,200 mm dia. maintenance holes;

- New Pump Chamber:

A proposed 2,400 mm dia. pump chamber (PS3) complete with two Flygt MP3068.170 HT effluent pumps (or equivalent), receiving sewage from the gravity sanitary sewer system, and pumping effluent through

approximately 522 m of a 50 mm dia. PE forcemain to a proposed distribution box;

- Leaching Bed:

A Waterloo Biofilter Area Bed absorption system receiving effluent from the distribution box, comprised of a stone layer with distribution pipe overlying an unsaturated sand layer, consisting of a 487 m<sup>2</sup> (15.6 m x 31.2 m) stone layer with minimum thickness of 0.25 m, with evenly spaced distribution piping consisting of 13 runs at 30 m long spaced 1.2 m apart, overlying an 1,810 m<sup>2</sup> (51 m x 35.5 m) layer of sand with a percolation time of 6-10 min/cm and a minimum thickness of 0.6 m ensuring that the bottom of stone layer is minimum 0.6 m above the local high water table, with the sand layer extended at least 15 m beyond the distribution pipes in the stone layer, in any direction which the effluent entering the soil will move horizontally;

Existing works to service the Air Terminal Building (ATB), a Maintenance Building and three (3) existing Hangar Buildings located on existing Lots 1 through 4, and possibly Lot 5 if sewage from it is not directed to the proposed works, with an estimated daily sanitary sewage flow of 13,044 L/day, consisting of the following:

- Gravity Sewer System:

An existing gravity sanitary collection system consisting of approximately 543 m of 200 mm dia. PVC gravity sewer with seven (7) 1,200 mm dia. maintenance holes, draining to an existing 1,800 mm dia. (4,500 L) low lift pump station (PS1) complete with two (2) Myers WHR 0.5 HP sewage pumps (or equivalent), discharging to the septic tanks described below;

- Septic Tanks:

Two (2) existing 22,700 L capacity septic tanks (connected in parallel), receiving sewage from PS1, both to be equipped with effluent filters that at minimum screens out particles larger than 3.2 mm;

- Pump Chamber:

A single 22,700 L high lift pump chamber (PS2) complete with two (2) Flygt CF-3068 2.7 HP pumps (or equivalent), receiving septic tank effluent via gravity, and pumping effluent through 640 m of a 75 mm dia. Polyethylene (PE) forcemain to a double alternating siphon tank;

- Leaching Bed:

Expansion of the existing absorption trench type subsurface disposal system consisting of two leaching beds, described as Leaching Bed A consisting of 10 runs at 30.0 m and Leaching Bed B consisting of 10 runs at 33 m each, for a total pipe length of 630 m, to be expanded with addition of 3 runs @ 30 m each to the Leaching Bed A and 2 runs of 33 m each to be added to Leaching Bed B, allowing a total length of distribution pipe of 786 m. The two beds are to be dosed by the existing siphon tank at the rate of 795 L per dose with 272 Lpm flow to each bed. Also provided is the existing mantle covering an approximate area of 4,300 m<sup>2</sup>.

Also Including:

- Grease Trap:

A grease trap for the restaurant in the Airport Terminal Building designed in accordance with the Ontario Building Code requirements;

- Miscellaneous:

All other controls, electrical equipment, instrumentation, piping, valves and appurtenances essential for the proper operation of the aforementioned sewage works;

all in accordance with the supporting documents listed in Schedule 'A'.

*For the purpose of this environmental compliance approval, the following definitions apply:*

"Act" means the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended;

"Approval" means this entire document and any schedules attached to it, and the application;

"BOD<sub>5</sub>" (also known as TBOD<sub>5</sub>) means five day biochemical oxygen demand measured in an unfiltered sample and includes carbonaceous and nitrogenous oxygen demand;

"CBOD<sub>5</sub>" means five day carbonaceous (nitrification inhibited) biochemical oxygen demand measured in an unfiltered sample;

"Director" means a person appointed by the Minister pursuant to section 5 of the EPA for the purposes of Part II.1 of the EPA;

"EPA" means the Environmental Protection Act, R.S.O. 1990, c.E.19, as amended;

"Equivalent Equipment" means a substituted equipment or like-for-like equipment that meets the required quality and performance standards of a named equipment;

"Licensed Installer" means a person who holds a licence under Article 2.12.3.1 of the Ontario Building Code ;

"Ministry" means the ministry of the government of Ontario responsible for the EPA and OWRA and includes all officials, employees or other persons acting on its behalf;

"OBC" means the Ontario Building Code ;

"Owner" means The Corporation of the City of Barrie and includes its successors and assignees;

"OWRA" means the Ontario Water Resources Act, R.S.O. 1990, c. O.40, as amended;

"Previous Works" means those portions of the sewage works previously constructed and approved under an Approval;

"Professional Engineer" means a person entitled to practise as a Professional Engineer in the Province of Ontario under a licence issued under the Professional Engineers Act ;

"Proposed Works" means the sewage works described in the Owner's application, this Approval and in the supporting documentation referred to herein, to the extent approved by this Approval;

"Substantial Completion" has the same meaning as "substantial performance in the Construction Lien Act ;

"Water Supervisor" means the Water Supervisor for the Barrie office of the Ministry; and

"Works" means the sewage works described in the Owner's application, this Approval and in the supporting documentation referred to herein, to the extent approved by this Approval and includes both Previous Works and Proposed Works.

*You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:*

## **TERMS AND CONDITIONS**

### **1. GENERAL PROVISIONS**

(1) The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Works is notified of this Approval and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

(2) Except as otherwise provided by these Conditions, the Owner shall design, build, install, operate and maintain the Works in accordance with the description given in this Approval, the application for approval of the Works and the submitted supporting documents and plans and specifications as listed in this Approval.

(3) Where there is a conflict between a provision of any submitted document referred to in this Approval and the Conditions of this Approval, the Conditions in this Approval shall take precedence, and where there is a conflict between the listed submitted documents, the document bearing the most recent date shall prevail.

(4) Where there is a conflict between the listed submitted documents, and the application, the application shall take precedence unless it is clear that the purpose of the document was to amend the application.

(5) The requirements of this Approval are severable. If any requirement of this Approval, or the application of any requirement of this Approval to any circumstance, is held invalid or unenforceable, the application of such requirement to other circumstances and the remainder of this certificate shall not be affected thereby.

### **2. EXPIRY OF APPROVAL**

This Approval will cease to apply to those parts of the Works which have not been constructed within five (5) years of the date of this Approval.

**3. CHANGE OF OWNER**

(1) The Owner shall notify the Water Supervisor and the Director, in writing, of any of the following changes within thirty (30) days of the change occurring:

(a) change of Owner;

(b) change of address of the Owner;

(c) change of partners where the Owner is or at any time becomes a partnership, and a copy of the most recent declaration filed under the Business Names Act, R.S.O. 1990, c.B17 shall be included in the notification to the ;

(d) change of name of the corporation where the Owner is or at any time becomes a corporation, and a copy of the most current information filed under the Corporations Information Act, R.S.O. 1990, c. C39 shall be included in the notification to the Water Supervisor;

(2) In the event of any change in ownership of the Works, other than a change to a successor municipality, the Owner shall notify in writing the succeeding owner of the existence of this Approval, and a copy of such notice shall be forwarded to the Water Supervisor and the Director.

**4. CONSTRUCTION**

(1) The Owner shall ensure that the construction of the Works is supervised by a Licensed Installer or a Professional Engineer, as defined in the Professional Engineers Act .

(2) The Owner shall ensure that the Waterloo Biofilter Area Bed Systems are installed by the authorized Waterloo Biofilter installer.

(3) The Owner shall ensure that the Works are constructed such that minimum horizontal clearance distances as specified in the Ontario Building Code are satisfied.

(4) Upon construction of the Works, the Owner shall prepare a statement, certified by a Licensed Installer or a Professional Engineer, that the Works are constructed in accordance with this Approval, and upon request, shall make the written statement available for inspection by Ministry staff and staff of the local municipality.

(5) Upon construction of the Works, as-built drawing(s) showing the Works "as constructed" shall be prepared by the Licensed Installer or a Professional Engineer. The drawing(s) shall be kept up to date through revisions undertaken from time to time and a copy shall be retained at the location of the Works for the operational life of the Works.

## 5. MONITORING AND RECORDING

The Owner shall, upon commencement of operation of the Works, carry out the following monitoring program:

(1) All samples and measurements taken for the purposes of this Approval are to be taken at a time and in a location characteristic of the quality and quantity of the effluent stream over the time period being monitored.

(2) Samples shall be collected of the raw sewage and effluent being discharged to each subsurface disposal system (the Waterloo Area Bed and the existing modified Leaching Bed) at the frequency specified, by means of the specified sample type and analyzed for each parameter listed and all results recorded:

<b>Table 1 - Raw Sewage Monitoring - (Samples to be collected at the head of each septic tank including proposed and existing works)</b>	
<b>Frequency</b>	Once a year
<b>Sample Type</b>	Grab
<b>Parameters</b>	BOD <sub>5</sub> , Total Suspended Solids, Total Kjeldahl Nitrogen, Total Phosphorus

<b>Table 2 - Effluent Monitoring - (Effluent discharged from each Waterloo Biofilter Treatment Unit)</b>	
<b>Frequency</b>	Every six months (twice a year)
<b>Sample Type</b>	Grab
<b>Parameters</b>	CBOD <sub>5</sub> , Total Suspended Solids, Total Phosphorus, Total Ammonia Nitrogen, Nitrate Nitrogen

(3) The monitoring outlined pursuant to subsection (2) shall be undertaken for a minimum of three (3) years following the start up of the Proposed Works. After this period, this condition may be modified by the Water Supervisor in writing upon submission of a request from the Owner and the submission of supporting documentation.

(4) The Owner shall calculate (or determine) and record the weekly volume of effluent being discharged to each subsurface disposal system (the Waterloo Area Bed and the existing modified Leaching Bed) and estimate the average daily flow value based upon the weekly flow measurement.

(5) The methods and protocols for sampling, analysis and recording shall conform, in order of precedence, to the methods and protocols specified in the following:

- (a) the Ministry's Procedure F-10-1, "Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works (Liquid Waste Streams Only), as amended from time to time by more recently published editions;

(b) the Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" (January 1999), ISBN 0-7778-1880-9, as amended from time to time by more recently published editions; and

(c) the publication "Standard Methods for the Examination of Water and Wastewater" (21st edition), as amended from time to time by more recently published editions.

(6) The Owner shall retain for a minimum of three (3) years from the date of their creation, all records and information related to or resulting from the monitoring activities required by this Approval.

**6. EFFLUENT OBJECTIVES**

(1) The Owner shall use best efforts to design, construct and operate the Works with the objective that the concentrations of the materials named below as effluent parameters are not exceeded in the effluent being discharged to the proposed subsurface disposal system (Waterloo Area Bed) from each of the Waterloo Biofilter Treatment Units:

Table 3 - Effluent Objectives	
Effluent Parameter	Concentration Objective (milligrams per litre unless otherwise indicated)
CBOD <sub>5</sub>	10
Total Suspended Solids	10
Nitrate Nitrogen	15

(2) The Owner shall use best efforts to operate the Works such that the design daily sanitary sewage flows for the proposed and existing Works are not exceeded.

**7. OPERATIONS AND MAINTENANCE**

(1) The Owner shall exercise due diligence in ensuring that, at all times, the Works and the related equipment and appurtenances used to achieve compliance with this Approval are properly operated and maintained. Proper operation and maintenance shall include effective performance, adequate funding, adequate operator staffing and training, including training in all procedures and other requirements of this Approval and the Act and regulations, adequate laboratory facilities, process controls and alarms and the use of process chemicals and other substances used in the Works.

(2) The Owner shall prepare an operations manual within six (6) months of the introduction of sewage to the Works, that includes, but not necessarily limited to, the following information:

(a) operating procedures for routine operation of the Works;

(b) inspection programs, including frequency of inspection, for the Works and the methods or tests employed to detect when maintenance is necessary;

- (c) repair and maintenance programs, including the frequency of repair and maintenance for the Works; copies of maintenance contracts for any routine inspections & pump-outs should be included for all the tanks and treatment units;
  - (d) procedures for the inspection and calibration of monitoring equipment;
  - (e) a spill prevention control and countermeasures plan, consisting of contingency plans and procedures for dealing with equipment breakdowns, potential spills and any other abnormal situations, including notification of the Water Supervisor; and
  - (f) procedures for receiving, responding and recording public complaints, including recording any follow-up actions taken.
- (3) The Owner shall maintain the operations manual current and retain a copy at the location of the Works for the operational life of the Works. Upon request, the Owner shall make the manual available to Ministry staff.
- (4) The Owner shall sign a Service and Maintenance Agreement with the manufacturer (Waterloo Biofilter Systems Inc.) or approved agent of the Waterloo Biofilter Systems Inc. The maintenance agreement must be retained at the site for as long as the Works are in operation, kept current and made available for inspection by the Ministry staff.
- (5) The Owner shall receive from the manufacturer or distributor of Waterloo Biofilter Systems Inc. treatment units printed literature that describes the treatment units in detail and provides complete instructions regarding the operation, servicing, and maintenance requirements of the units and their related components necessary to ensure the continued proper operation in accordance with the original design and specifications.
- (6) The Owner shall ensure that each Waterloo Biofilter Treatment Unit is at minimum inspected annually by the manufacturer or an authorized agent to ensure the Works are operated/maintained as per the manufacturer's recommendations.
- (7) The Owner shall ensure that the septic tanks are pumped out every 3-5 years or when the tanks are 1/3 full of solids.
- (8) The Owner shall ensure that the effluent filters are cleaned out at a minimum frequency of once a year or more often if recommended by the manufacturer.
- (9) The Owner shall ensure that grass-cutting is maintained regularly over each subsurface disposal system (the Waterloo Area Bed and the existing modified Leaching Bed) and that adequate steps are taken to ensure that the areas of the underground works is protected from vehicle traffic.

(10) The Owner shall ensure that the drainage operations each subsurface disposal system (the Waterloo Area Bed and the existing modified Leaching Bed) are visually observed on a monthly (once every month) for breakouts and results recorded in a log book.

(11) The Owner shall ensure that in the event a break-out is observed from the subsurface disposal systems (the Waterloo Area Bed and the existing modified Leaching Bed), the sewage discharge to the beds is discontinued and the incident immediately reported verbally to the Water Supervisor, followed by a written report within seven (7) days. The Owner shall ensure that during the time remedial actions are taking place the sewage generated at the site shall not be allowed to discharge to a surface water body or to the environment, and safely collected and disposed of through a licensed waste hauler to an approved waste disposal site.

(12) The Owner shall maintain a logbook to record the results of Operation and Maintenance activities specified in the above subclauses, and shall keep the logbook at the site and make it available for inspection by the Ministry staff.

## **8. REPORTING**

(1) At least one (1) week prior to the start up of the operation of the Proposed Works, the Owner shall notify the Water Supervisor (in writing) of the pending start up date.

(2) The Owner shall prepare, and submit to the Water Supervisor, a performance report, on an annual basis, within ninety (90) days following the end of the period being reported upon. The first such report shall cover the first annual period following the commencement of operation of the Works and subsequent reports shall be submitted to cover successive annual periods following thereafter. The reports shall contain, but shall not be limited to, the following information:

(a) a summary and interpretation of all monitoring data and a comparison to the Effluent Objectives outlined in Condition 6, including an overview of the success and adequacy of the Works;

(b) a tabulation of the estimated average daily volumes of effluent disposed through each subsurface disposal system (the Waterloo Area Bed and the existing modified Leaching Bed) during the reporting period based upon weekly flow as calculated;

(c) a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the Works;

(d) a summary of any effluent quality assurance or control measures undertaken in the reporting period;

(e) a summary of the calibration and maintenance carried out on all effluent monitoring equipment;

(f) a description of any operating problems encountered and corrective actions taken;

(g) a summary of any complaints received during the reporting period and any steps taken to address the complaints; and

(h) any other information the Water Supervisor requires from time to time.

(3) After three (3) years of reporting in accordance with this Condition, the reporting requirement may be modified by the Water Supervisor in writing from time to time.

*The reasons for the imposition of these terms and conditions are as follows:*

1. Condition 1 is imposed to ensure that the Works are built and operated in the manner in which they were described for review and upon which Approval was granted. This condition is also included to emphasize the precedence of Conditions in the Approval and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review. The condition also advises the Owners their responsibility to notify any person they authorized to carry out work pursuant to this Approval the existence of this Approval.
2. Condition 2 is imposed to ensure that, when the Works are constructed, the Works will meet the standards that apply at the time of construction to ensure the ongoing protection of the environment.
3. Condition 3 is imposed to ensure that the Ministry records are kept accurate and current with respect to the approved Works and to ensure that subsequent owners of the Works are made aware of the Approval and continue to operate the Works in compliance with it.
4. Condition 4 is imposed to ensure that the Works are constructed, and may be operated and maintained such that the environment is protected and deterioration, loss, injury or damage to any person or property is prevented.
5. Condition 5 is imposed to enable the Owner to evaluate and demonstrate the performance of the Works, on a continual basis, so that the Works are properly operated and maintained at a level which is consistent with the design objectives specified in the Approval and that the Works does not cause any impairment to the receiving watercourse.
6. Condition 6 is imposed to establish non-enforceable effluent quality objectives which the Owner is obligated to use best efforts to strive towards on an ongoing basis. These objectives are to be used as a mechanism to trigger corrective action proactively and voluntarily before environmental impairment occurs.
7. Condition 7 is imposed to require that the Works be properly operated, maintained, and equipped such that the environment is protected. As well, the inclusion of an operations manual, maintenance agreement with the manufacturer for the treatment process/technology and a complete set of "as

constructed" drawings governing all significant areas of operation, maintenance and repair is prepared, implemented and kept up-to-date by the Owner and made available to the Ministry. Such a information is an integral part of the operation of the Works. The manual will also act as a benchmark for Ministry staff when reviewing the Owner's operation of the Work.

8. Condition 8 is imposed to provide a performance record for future references, to ensure that the Ministry is made aware of problems as they arise, and to provide a compliance record for all the terms and conditions outlined in this Approval, so that the Ministry can work with the Owner in resolving any problems in a timely manner.

**SCHEDULE 'A'**

1. Environmental Compliance Approval Application submitted by David M. James, P.Eng., Senior Project Engineer, City of Barrie, dated September 8, 2015 and received June 25, 2015.
2. Design Report titled "Lake Simcoe Regional Airport Lot 7/8 Hangar Waterloo Biofilter Sizing Calculations" dated May 7, 2015 and prepared by David J. Williams, CET, Senior Engineering Technologist, Skelton, Brumwell & Associates Inc., Engineering Planning Environmental Consultants.
3. Application for Approval of Municipal and Private Sewage Works submitted by Mr. John Foster, P.Eng. of Richardson Foster Consulting Engineers, dated May 11, 2010 and received on May 19, 2010, including the Sewage System Design Report dated May 4, 2010 prepared by Richardson Foster Engineers and enclosed Engineering Drawings/Plans Set;
4. Electronic correspondence from Mr. Foster dated October 8, 2010 regarding measurement and recording of daily effluent discharge to the subsurface disposal beds;
5. Electronic correspondence from Mr. Foster dated October 5, 2010 including revised Page 8 of the Sewage System Design Report and updated Drawing SS5;
6. Electronic correspondence from Mr. Foster dated September 11, 2010 including Revised Sewage System Design Report, Revised Reasonable Use Calculations, Revised Sewage Pumping Station Table for PS 3, Revised Engineering Drawings SSA, SS4 and SS5;
7. Electronic correspondence from Mr. Foster dated August 25, 2010 including Description of the Works;
8. Electronic correspondence from Mr. Dave James of City of Barrie dated July 13, 2010 including the Pipe Data Form and letter from Infrastructure Canada.

**Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 9258-88DNJX issued on October 14, 2010.**

*In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:*

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

*Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.*

*The Notice should also include:*

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

*And the Notice should be signed and dated by the appellant.*

*This Notice must be served upon:*

The Secretary\*  
Environmental Review Tribunal  
655 Bay Street, Suite 1500  
Toronto, Ontario  
M5G 1E5

AND

The Director appointed for the purposes of Part II.1 of  
the Environmental Protection Act  
Ministry of the Environment and Climate Change  
135 St. Clair Avenue West, 1st Floor  
Toronto, Ontario  
M4V 1P5

\* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or [www.ert.gov.on.ca](http://www.ert.gov.on.ca)

*The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.*

DATED AT TORONTO this 27th day of September, 2016



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Fariha Pannu, P.Eng.  
Director  
appointed for the purposes of Part II.1 of the  
*Environmental Protection Act*

KC/

c: DWMD Supervisor, MOECC Barrie District Office  
David James P.Eng., City of Barrie

## Appendix C: Maintenance Summary

Pump Stations were checked 2-3 times weekly on average. These checks include recording of pump hours and flow totalizers, alarm testing, float operation checks and visual inspections. Subsurface systems were checked on a monthly basis for breakout, weed growth and traffic damage.

The following is a summary list of City of Barrie maintenance tasks completed in 2019 for the Lake Simcoe Regional Airport:

Work Description	Completion Date
MONTHLY LSRA Inspection of Leaching Beds	4/1/2019
MONTHLY LSRA Inspection of Leaching Beds	6/2/2019
MONTHLY LSRA Inspection of Leaching Beds	7/3/2019
MONTHLY LSRA Inspection of Leaching Beds	4/4/2019
MONTHLY LSRA Inspection of Leaching Beds	2/5/2019
MONTHLY LSRA Inspection of Leaching Beds	5/6/2019
MONTHLY LSRA Inspection of Leaching Beds	29/7/2019
MONTHLY LSRA Inspection of Leaching Beds	16/8/2019
MONTHLY LSRA Inspection of Leaching Beds	24/10/2019
MONTHLY LSRA Inspection of Leaching Beds	5/11/2019
MONTHLY LSRA Inspection of Leaching Beds	4/12/2019
Attend hi level alarm (station 1&2) due to power outage	3/4/2019
Attend hi level alarm (station 1&2) due to power outage	3/6/2019
Repair broken electrical conduit (station 3)	4/29/2019
Fasten electrical conduit (station 1&2)	4/25/2019
Calibrate Flow Meters	6/11/2019
Attend hi level alarm (station 1&2) due to pumps in "off " position	31/7/2019
Clean wet well (station 1&2)	28/11/2019
Replace float (station 1&2)	3/12/2019
Attend hi level alarm (station 1&2) due to power outage	5/12/2019
Timer on high lift pump not working; bypassed (station 1&2)	3/12/2019
Total number of inspections (station 1&2) by operators: 131	All of 2019
Total number of inspections (station 3) by operators: 128	All of 2019
ANNUAL LSRA Inspection Schedule. A grab sample must be taken at the inlet to the septic tanks (i.e. Station 1) and analyzed for BOD5, Total Suspended Solids, Total Kjeldahl Nitrogen and Total Phosphorus	7/1/2019

## Appendix D: Tabular Flow Data

Date	Tot12 (L)	P13 (hr)	P23 (Hr)	Total	Station 1 & 2 Avg Weekly
01-Jan-19				420	
02-Jan-19	8235811	517.56	865.84	4608	
03-Jan-19				4608	
04-Jan-19	8245027	517.69	865.86	3059	
05-Jan-19				3059	
06-Jan-19				3059	
07-Jan-19	8254205	517.74	866.04	0	2687.71
08-Jan-19	8254205	517.74	866.04	4566	
09-Jan-19		517.74	866.04	4566	
10-Jan-19	8263336			3656	
11-Jan-19				3656	
12-Jan-19				3656	
13-Jan-19				3656	
14-Jan-19				3656	3916.00
15-Jan-19	8281617	517.81	866.43	4472	
16-Jan-19	8286089	517.81	866.46	0	
17-Jan-19	8286089	517.81	866.5	3441	
18-Jan-19				3441	
19-Jan-19				3441	
20-Jan-19				3441	
21-Jan-19	8299852	517.81	866.65	4546	3254.43
22-Jan-19	8304398	517.81	866.69	4514	
23-Jan-19				4514	
24-Jan-19	8313425	517.81	866.69	2722	
25-Jan-19				2722	
26-Jan-19				2722	
27-Jan-19				2722	
28-Jan-19				2722	3233.86
29-Jan-19	8327035	517.81	866.92	4442	
30-Jan-19	8331477	517.81	866.92	4725	
31-Jan-19	8336202	517.81	866.92	3391	
01-Feb-19				3391	
02-Feb-19				3391	
03-Feb-19				3391	
04-Feb-19	8349767	517.81	867.28	17319	5721.57
05-Feb-19				17319	
06-Feb-19	8384405	517.81	867.57	4391	

07-Feb-19	8388796	517.81	867.67	4508	
08-Feb-19				4508	
09-Feb-19				4508	
10-Feb-19				4508	
11-Feb-19	8406826	517.81	868.15	2343	6011.86
12-Feb-19				2343	
13-Feb-19	8411512	517.81	868.31	4517	
14-Feb-19				4517	
15-Feb-19	8420546	517.81	868.44	3837	
16-Feb-19				3837	
17-Feb-19				3837	
18-Feb-19				3837	3817.86
19-Feb-19	8435894	517.81	868.62	3216	
20-Feb-19	8439110	517.81	868.69	10862	
21-Feb-19				10862	
22-Feb-19				10862	
23-Feb-19				10862	
24-Feb-19				10862	
25-Feb-19				10862	9769.47
26-Feb-19				10862	
27-Feb-19	8515142	517.81	869.15	6916	
28-Feb-19	8522058	517.81	869.21	4520	
01-Mar-19	8526578	517.81	869.27	4009	
02-Mar-19				4009	
03-Mar-19				4009	
04-Mar-19				4009	5476.44
05-Mar-19				4009	
06-Mar-19				4009	
07-Mar-19	8550634	517.81	869.6	1976	
08-Mar-19	8552610	517.82	869.6	22204	
09-Mar-19				22204	
10-Mar-19				22204	
11-Mar-19	8619222	517.82	869.6	4698	11614.95
12-Mar-19	8623920	517.96	869.6	16233	
13-Mar-19				16233	
14-Mar-19	8656386	518.29	869.6	31814	
15-Mar-19				31814	
16-Mar-19				31814	
17-Mar-19				31814	
18-Mar-19	8783642	518.6	870.2	4576	23471.14
19-Mar-19	8788218	518.6	870.2	12158	
20-Mar-19				12158	

21-Mar-19				12158	
22-Mar-19				12158	
23-Mar-19				12158	
24-Mar-19				12158	
25-Mar-19	8861166	519.21	870.79	4567	11073.52
26-Mar-19				4567	
27-Mar-19				4567	
28-Mar-19	8874866	519.52	870.79	10172	
29-Mar-19				10172	
30-Mar-19				10172	
31-Mar-19				10172	
01-Apr-19	8915552	519.82	871.37	4673	7784.62
02-Apr-19				4673	
03-Apr-19	8924898	519.82	871.66	8460	
04-Apr-19	8933358	520.13	871.66	4585	
05-Apr-19				4585	
06-Apr-19				4585	
07-Apr-19				4585	
08-Apr-19	8951698	520.42	871.95	9200	5810.43
09-Apr-19	8960898	520.42	871.95	4596	
10-Apr-19	8965494	520.42	872.24	5501	
11-Apr-19				5501	
12-Apr-19				5501	
13-Apr-19				5501	
14-Apr-19				5501	
15-Apr-19	8992998	521.03	872.54	6978	5582.57
16-Apr-19				6978	
17-Apr-19	9006954	521.03	872.82	9128	
18-Apr-19	9016082	521.03	872.82	8876	
19-Apr-19				8876	
20-Apr-19				8876	
21-Apr-19				8876	
22-Apr-19				8876	8640.57
23-Apr-19	9060460	521.64	873.42	4628	
24-Apr-19	9065088	521.64	873.42	7679	
25-Apr-19				7679	
26-Apr-19				7679	
27-Apr-19				7679	
28-Apr-19				7679	
29-Apr-19		521.7	874.64	7679	7243.51
30-Apr-19				7679	
01-May-19	9118844	522.04	874.64	8468	

02-May-19	9127312	522.04	874.79	6750	
03-May-19				6750	
04-May-19				6750	
05-May-19				6750	
06-May-19	9154312	522.28	875.46	4562	6815.63
07-May-19	9158874	522.35	875.6	0	
08-May-19	9158874	522.39	875.73	5154	
09-May-19				5154	
10-May-19				5154	
11-May-19				5154	
12-May-19				5154	
13-May-19				5154	4417.71
14-May-19				5154	
15-May-19	9194952	522.68	876.3	8106	
16-May-19	9203058	522.98	876.3	3656	
17-May-19				3656	
18-May-19				3656	
19-May-19				3656	
20-May-19				3656	4505.71
21-May-19	9221338	523.28	879.91	4608	
22-May-19	9225946	523.28	879.91	2267	
23-May-19				2267	
24-May-19	9230480	523.57	879.91	4546	
25-May-19				4546	
26-May-19				4546	
27-May-19	9244118	523.87	877.2	2239	3574.14
28-May-19				2239	
29-May-19	9248596	523.87	877.49	5788	
30-May-19				5788	
31-May-19				5788	
01-Jun-19				5788	
02-Jun-19				5788	
03-Jun-19	9277536	524.46	877.77	4519	5099.71
04-Jun-19				4519	
05-Jun-19	9286574	524.46	878.06	4796	
06-Jun-19	9291370	524.46	878.35	3466	
07-Jun-19				3466	
08-Jun-19				3466	
09-Jun-19				3466	
10-Jun-19	9305234	524.76	878.63	4784	3994.71
11-Jun-19	9310018	524.76	878.63	4668	
12-Jun-19				4668	

13-Jun-19	9319354	524.76	878.92	4697	
14-Jun-19				4697	
15-Jun-19				4697	
16-Jun-19				4697	
17-Jun-19	9338142	525.35	879.2	9264	5341.14
18-Jun-19	9347406	525.58	879.43	4614	
19-Jun-19	9352020	525.58	879.43	3933	
20-Jun-19				3933	
21-Jun-19				3933	
22-Jun-19				3933	
23-Jun-19				3933	
24-Jun-19				3933	4030.16
25-Jun-19				3933	
26-Jun-19	9379550	525.88	880.03	3790	
27-Jun-19	9383340	526.28	880.03	6232	
28-Jun-19				6232	
29-Jun-19				6232	
30-Jun-19				6232	
01-Jul-19				6232	5554.34
02-Jul-19				6232	
03-Jul-19				6232	
04-Jul-19				6232	
05-Jul-19	9433192	526.6	880.82	3089	
06-Jul-19				3089	
07-Jul-19				3089	
08-Jul-19	9442458	526.6	881.1	8290	5178.64
09-Jul-19	9450748	526.6	881.1	2285	
10-Jul-19				2285	
11-Jul-19				2285	
12-Jul-19				2285	
13-Jul-19				2285	
14-Jul-19				2285	
15-Jul-19	9464458	526.6	881.37	4370	2582.86
16-Jul-19	9468828	526.89	881.37	8210	
17-Jul-19	9477038	526.89	881.37	3757	
18-Jul-19				3757	
19-Jul-19				3757	
20-Jul-19				3757	
21-Jul-19				3757	
22-Jul-19				3757	4393.14
23-Jul-19	9499580	526.89	881.66	0	
24-Jul-19	9499580	527.17	881.66	88	

25-Jul-19				88	
26-Jul-19				88	
27-Jul-19				88	
28-Jul-19				88	
29-Jul-19	9500022	527.17	881.93	0	63.14
30-Jul-19				0	
31-Jul-19	9500022	527.17	881.93	14560	
01-Aug-19				14560	
02-Aug-19	9529142	527.17	881.93	3401	
03-Aug-19				3401	
04-Aug-19				3401	
05-Aug-19				3401	6103.14
06-Aug-19	9542744	527.45	881.93	4492	
07-Aug-19	9547236	527.45	881.93	3596	
08-Aug-19				3596	
09-Aug-19				3596	
10-Aug-19				3596	
11-Aug-19				3596	
12-Aug-19	9565216	527.45	882.2	4509	3854.43
13-Aug-19				4509	
14-Aug-19	9574234	527.45	882.2	3762	
15-Aug-19				3762	
16-Aug-19				3762	
17-Aug-19				3762	
18-Aug-19				3762	
19-Aug-19				3762	3868.71
20-Aug-19	9596806	528	882.38	8702	
21-Aug-19	9605508	528	882.66	3792	
22-Aug-19	9609300	528	882.66	2720	
23-Aug-19				2720	
24-Aug-19				2720	
25-Aug-19				2720	
26-Aug-19				2720	3728.00
27-Aug-19	9622902	528	882.94	4472	
28-Aug-19	9627374	528	883.22	2970	
29-Aug-19				2970	
30-Aug-19				2970	
31-Aug-19				2970	
01-Sep-19				2970	
02-Sep-19				2970	3184.57
03-Sep-19	9645194	528.31	883.5	0	
04-Sep-19	9645194	528.31	883.5	3582	

05-Sep-19	9648776	528.6	883.5	3582	
06-Sep-19				3582	
07-Sep-19				3582	
08-Sep-19				3582	
09-Sep-19				3582	3070.29
10-Sep-19	9666434	528.6	883.78	3257	
11-Sep-19				3257	
12-Sep-19				3257	
13-Sep-19				3257	
14-Sep-19				3257	
15-Sep-19				3257	
16-Sep-19				3257	3257.14
17-Sep-19	9689234	528.66	884.06	3303	
18-Sep-19				3303	
19-Sep-19				3303	
20-Sep-19				3303	
21-Sep-19				3303	
22-Sep-19		528.89	884.34	3303	
23-Sep-19	9709052			3078	3270.86
24-Sep-19				3078	
25-Sep-19	9715208	529.18	884.34	4093	
26-Sep-19				4093	
27-Sep-19	9723394	529.18	884.62	2680	
28-Sep-19				2680	
29-Sep-19				2680	
30-Sep-19	9731434	529.48	884.62	4052	3336.57
01-Oct-19				4052	
02-Oct-19	9739538	529.48	884.91	4072	
03-Oct-19				4072	
04-Oct-19				4072	
05-Oct-19				4072	
06-Oct-19				4072	
07-Oct-19				4072	4069.14
08-Oct-19	9763970	530.07	885.19	1871	
09-Oct-19				1871	
10-Oct-19	9767712	530.36	885.48	4370	
11-Oct-19	9772082	530.36	885.48	3402	
12-Oct-19				3402	
13-Oct-19				3402	
14-Oct-19				3402	3103.09
15-Oct-19				3402	
16-Oct-19	9789094	530.36	886.06	5627	

17-Oct-19				5627	
18-Oct-19	9800348	530.36	886.34	2995	
19-Oct-19				2995	
20-Oct-19				2995	
21-Oct-19	9809332	530.66	886.63	3950	3941.49
22-Oct-19				3950	
23-Oct-19				3950	
24-Oct-19	9821182	530.66	886.92	4366	
25-Oct-19	9825548	530.66	886.92	9510	
26-Oct-19				9510	
27-Oct-19				9510	
28-Oct-19				9510	7186.73
29-Oct-19				9510	
30-Oct-19				9510	
31-Oct-19				9510	
01-Nov-19	9892120	531.55	887.77	4992	
02-Nov-19				4992	
03-Nov-19				4992	
04-Nov-19	9907096	531.84	888.06	4466	6853.27
05-Nov-19	9911562	531.84	888.06	4495	
06-Nov-19				4495	
07-Nov-19	9920552	532.14	888.06	4259	
08-Nov-19				4259	
09-Nov-19				4259	
10-Nov-19				4259	
11-Nov-19	9937586	532.14	888.63	4104	4304.00
12-Nov-19				4104	
13-Nov-19	9945794	532.4	888.63	4344	
14-Nov-19				4344	
15-Nov-19				4344	
16-Nov-19				4344	
17-Nov-19				4344	
18-Nov-19	9967514	532.76	888.92	4118	4277.43
19-Nov-19				4118	
20-Nov-19	9975750	532.76	889.21	8277	
21-Nov-19				8277	
22-Nov-19	9992304	533.07	889.22	8300	
23-Nov-19				8300	
24-Nov-19				8300	
25-Nov-19				8300	7695.77
26-Nov-19				8300	
27-Nov-19	33802	533.08	890.19	4531	

28-Nov-19	38333	533.22	890.2	1106	
29-Nov-19				1106	
30-Nov-19				1106	
01-Dec-19				1106	
02-Dec-19	38333			1106	2622.66
03-Dec-19	43861	533.85	890.2	998	
04-Dec-19	44859	533.97	890.2	2300	
05-Dec-19				2300	
06-Dec-19				2300	
07-Dec-19				2300	
08-Dec-19				2300	
09-Dec-19	56358	543.38	890.44	15974	4067.29
10-Dec-19	72332	543.38	890.58	11767	
11-Dec-19				11767	
12-Dec-19	95865	534.41	890.8	7390	
13-Dec-19				7390	
14-Dec-19				7390	
15-Dec-19				7390	
16-Dec-19				7390	8640.71
17-Dec-19	132817	534.43	891.41	7277	
18-Dec-19	140094			8633	
19-Dec-19				8633	
20-Dec-19	157360	534.57	891.67	4889	
21-Dec-19				4889	
22-Dec-19				4889	
23-Dec-19	172027			7016	6603.77
24-Dec-19				7016	
25-Dec-19				7016	
26-Dec-19				7016	
27-Dec-19				7016	
28-Dec-19				7016	
29-Dec-19				7016	
30-Dec-19				7016	7016.38
31-Dec-19	228158	534.93	891.7	7016	
01-Jan-20	1992347			2000035	284717.00
02-Jan-20					
03-Jan-20					
04-Jan-20					
05-Jan-20					

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Date	Tot12	Tot3	P13	P23	P1 t	P2 t	T hrs	Avg Hrs	Total	Station 3 Avg Weekly
27-Dec-18	8203134		517.43	865.44	0.06	0.22	0.28	0.07	422.59	
28-Dec-18							0	0.07	422.59	
29-Dec-18							0	0.07	422.59	
30-Dec-18							0	0.07	422.59	
31-Dec-18			517.49	865.66	0.07	0.18	0.25	0.13	754.63	
01-Jan-19								0.13	754.63	
02-Jan-19	8235811		517.56	865.84	0.13	0.02	0.15	0.08	452.78	
03-Jan-19							0	0.08	452.78	
04-Jan-19	8245027		517.69	865.86	0.05	0.18	0.23	0.08	462.84	
05-Jan-19							0	0.08	462.84	
06-Jan-19							0	0.08	462.84	
07-Jan-19	8254205		517.74	866.04	0	0	0	0.00	0.00	435.53
08-Jan-19	8254205		517.74	866.04	0	0	0	0.00	0.00	
09-Jan-19			517.74	866.04	0.07	0.39	0.46	0.08	462.84	
10-Jan-19	8263336						0	0.08	482.96	
11-Jan-19							0	0.08	482.96	
12-Jan-19							0	0.08	482.96	
13-Jan-19							0	0.08	482.96	
14-Jan-19							0	0.08	482.96	411.09
15-Jan-19	8281617		517.81	866.43	0	0.03	0.03	0.03	181.11	
16-Jan-19	8286089		517.81	866.46	0	0.04	0.04	0.04	241.48	
17-Jan-19	8286089		517.81	866.5	0	0.15	0.15	0.04	226.39	
18-Jan-19							0	0.04	241.48	
19-Jan-19							0	0.04	241.48	
20-Jan-19							0	0.04	241.48	
21-Jan-19	8299852		517.81	866.65	0	0.04	0.04	0.04	241.48	230.70
22-Jan-19	8304398		517.81	866.69	0	0	0	0.00	0.00	
23-Jan-19							0	0.00	0.00	
24-Jan-19	8313425		517.81	866.69	0	0.23	0.23	0.05	277.70	
25-Jan-19							0	0.05	277.70	
26-Jan-19							0	0.05	277.70	
27-Jan-19							0	0.05	277.70	
28-Jan-19							0	0.05	277.70	198.36
29-Jan-19	8327035		517.81	866.92	0	0	0	0.00	0.00	
30-Jan-19	8331477		517.81	866.92	0	0	0	0.00	0.00	
31-Jan-19	8336202		517.81	866.92	0	0.36	0.36	0.09	543.33	
01-Feb-19							0	0.09	543.33	
02-Feb-19							0	0.09	543.33	
03-Feb-19							0	0.09	543.33	

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04-Feb-19	8349767		517.81	867.28	0	0.29	0.29	0.15	875.37	435.53
05-Feb-19							0	0.15	875.37	
06-Feb-19	8384405		517.81	867.57	0	0.1	0.1	0.10	603.70	
07-Feb-19	8388796		517.81	867.67	0	0.48	0.48	0.12	724.44	
08-Feb-19							0	0.12	724.44	
09-Feb-19							0	0.12	724.44	
10-Feb-19							0	0.12	724.44	
11-Feb-19	8406826		517.81	868.15	0	0.16	0.16	0.08	482.96	694.26
12-Feb-19							0	0.08	482.96	
13-Feb-19	8411512		517.81	868.31	0	0.13	0.13	0.07	392.41	
14-Feb-19							0	0.07	422.59	
15-Feb-19	8420546		517.81	868.44	0	0.18	0.18	0.04	271.66	
16-Feb-19							0	0.04	271.66	
17-Feb-19							0	0.04	271.66	
18-Feb-19							0	0.04	271.66	340.66
19-Feb-19	8435894		517.81	868.62	0	0.07	0.07	0.07	422.59	
20-Feb-19	8439110		517.81	868.69	0	0.46	0.46	0.08	462.84	
21-Feb-19							0	0.08	462.84	
22-Feb-19							0	0.08	462.84	
23-Feb-19							0	0.08	462.84	
24-Feb-19							0	0.08	462.84	
25-Feb-19							0	0.08	462.84	457.09
26-Feb-19							0	0.08	462.84	
27-Feb-19	8515142		517.81	869.15	0	0.06	0.06	0.06	362.22	
28-Feb-19	8522058		517.81	869.21	0	0.06	0.06	0.06	362.22	
01-Mar-19	8526578		517.81	869.27	0	0.33	0.33	0.06	332.04	
02-Mar-19								0.06	332.04	
03-Mar-19								0.06	332.04	
04-Mar-19								0.06	332.04	359.35
05-Mar-19								0.06	332.04	
06-Mar-19								0.06	332.04	
07-Mar-19	8550634	143317.1	517.81	869.6					0.00	
08-Mar-19	8552610	143317.1	517.82	869.6					0.00	
09-Mar-19									0.00	
10-Mar-19									0.00	
11-Mar-19	8619222	143317.1	517.82	869.6					1144.00	258.30
12-Mar-19	8623920	144461.1	517.96	869.6					1091.50	
13-Mar-19									1091.50	
14-Mar-19	8656386	146644.1	518.29	869.6					1634.73	
15-Mar-19									1634.73	
16-Mar-19									1634.73	
17-Mar-19									1634.73	

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18-Mar-19	8783642	153183	518.6	870.2						0.00	1245.99
19-Mar-19	8788218	153183	518.6	870.2						1441.83	
20-Mar-19										1441.83	
21-Mar-19										1441.83	
22-Mar-19										1441.83	
23-Mar-19										1441.83	
24-Mar-19										1441.83	
25-Mar-19	8861166	161834	519.21	870.79						729.00	1340.00
26-Mar-19										729.00	
27-Mar-19										729.00	
28-Mar-19	8874866	164021	519.52	870.79						1603.75	
29-Mar-19										1603.75	
30-Mar-19										1603.75	
31-Mar-19										1603.75	
01-Apr-19	8915552	170436	519.82	871.37						1056.05	1275.58
02-Apr-19										1056.05	
03-Apr-19	8924898	172548.1	519.82	871.66						2185.90	
04-Apr-19	8933358	174734	520.13	871.66	0.29	0.29	0.58	0.15		875.37	
05-Apr-19										875.37	
06-Apr-19										875.37	
07-Apr-19										875.37	
08-Apr-19	8951698	3480	520.42	871.95	0	0	0	0.00		0.00	963.34
09-Apr-19	8960898		520.42	871.95	0	0.29	0.29	0.29		1750.73	
10-Apr-19	8965494	1740	520.42	872.24	0.61	0.3	0.91	0.18		1098.73	
11-Apr-19										1098.73	
12-Apr-19										1098.73	
13-Apr-19										1098.73	
14-Apr-19										1098.73	
15-Apr-19	8992998	5460	521.03	872.54	0	0.28	0.28	0.14		845.18	1155.65
16-Apr-19										845.18	
17-Apr-19	9006954	189726.1	521.03	872.82						2167.00	
18-Apr-19	9016082	191893.1	521.03	872.82						1326.18	
19-Apr-19										1326.18	
20-Apr-19										1326.18	
21-Apr-19										1326.18	
22-Apr-19										1326.18	1377.58
23-Apr-19	9060460	198524	521.64	873.42						0.00	
24-Apr-19	9065088	198524	521.64	873.42						1917.20	
25-Apr-19										1917.20	
26-Apr-19										1917.20	
27-Apr-19										1917.20	
28-Apr-19										1917.20	

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29-Apr-19		208110	521.7	874.64	1077.50	1523.36
30-Apr-19					1077.50	
01-May-19	9118844	210265	522.04	874.64	1119.00	
02-May-19	9127312	211384	522.04	874.79	1259.75	
03-May-19					1259.75	
04-May-19					1259.75	
05-May-19					1259.75	
06-May-19	9154312	216423	522.28	875.46	0.00	1033.64
07-May-19	9158874	216423	522.35	875.6	1078.00	
08-May-19	9158874	217501	522.39	875.73	936.00	
09-May-19		218437			1059.18	
10-May-19					1059.18	
11-May-19					1059.18	
12-May-19					1059.18	
13-May-19					1059.18	1044.27
14-May-19					1059.18	
15-May-19	9194952	224792.1	522.68	876.3	2134.00	
16-May-19	9203058	226926.1	522.98	876.3	1332.00	
17-May-19					1332.00	
18-May-19					1332.00	
19-May-19					1332.00	
20-May-19					1332.00	1407.60
21-May-19	9221338	233586.1	523.28	879.91	0.00	
22-May-19	9225946	233586.1	523.28	879.91	1058.00	
23-May-19					1058.00	
24-May-19	9230480	235702.1	523.57	879.91	1425.33	
25-May-19					1425.33	
26-May-19					1425.33	
27-May-19	9244118	239978.1	523.87	877.2	1079.50	1067.36
28-May-19					1079.50	
29-May-19	9248596	242137.1	523.87	877.49	1277.00	
30-May-19					1277.00	
31-May-19					1277.00	
01-Jun-19					1277.00	
02-Jun-19					1277.00	
03-Jun-19	9277536	248522.1	524.46	877.77	1054.50	1217.00
04-Jun-19					1054.50	
05-Jun-19	9286574	250631.1	524.46	878.06	2186.00	
06-Jun-19	9291370	252817.1	524.46	878.35	1070.23	
07-Jun-19					1070.23	
08-Jun-19					1070.23	
09-Jun-19					1070.23	

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10-Jun-19	9305234	257098	524.76	878.63	0.00	1074.49
11-Jun-19	9310018	257098	524.76	878.63	1060.50	
12-Jun-19					1060.50	
13-Jun-19	9319354	259219	524.76	878.92	1598.52	
14-Jun-19					1598.52	
15-Jun-19					1598.52	
16-Jun-19					1598.52	
17-Jun-19	9338142	265613.1	525.35	879.2	1845.00	1480.01
18-Jun-19	9347406	267458.1	525.58	879.43	0.00	
19-Jun-19	9352020	267458.1	525.58	879.43	947.71	
20-Jun-19					947.71	
21-Jun-19					947.71	
22-Jun-19					947.71	
23-Jun-19					947.71	
24-Jun-19					947.71	812.33
25-Jun-19					947.71	
26-Jun-19	9379550	274092.1	525.88	880.03	2864.00	
27-Jun-19	9383340	276956.1	526.28	880.03	754.36	
28-Jun-19					754.36	
29-Jun-19					754.36	
30-Jun-19					754.36	
01-Jul-19					754.36	1083.36
02-Jul-19					754.36	
03-Jul-19					754.36	
04-Jul-19					754.36	
05-Jul-19	9433192	282991	526.6	880.82	700.03	
06-Jul-19					700.03	
07-Jul-19					700.03	
08-Jul-19	9442458	285091.1	526.6	881.1	0.00	623.31
09-Jul-19	9450748	285091.1	526.6	881.1	343.98	
10-Jul-19					343.98	
11-Jul-19					343.98	
12-Jul-19					343.98	
13-Jul-19					343.98	
14-Jul-19					343.98	
15-Jul-19	9464458	287155	526.6	881.37	2086.00	592.84
16-Jul-19	9468828	289241	526.89	881.37	0.00	
17-Jul-19	9477038	289241	526.89	881.37	352.18	
18-Jul-19					352.18	
19-Jul-19					352.18	
20-Jul-19					352.18	
21-Jul-19					352.18	

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22-Jul-19					352.18	301.87
23-Jul-19	9499580	291354.1	526.89	881.66	2071.90	
24-Jul-19	9499580	293426	527.17	881.66	408.40	
25-Jul-19					408.40	
26-Jul-19					408.40	
27-Jul-19					408.40	
28-Jul-19					408.40	
29-Jul-19	9500022	295468	527.17	881.93	0.00	587.70
30-Jul-19					0.00	
31-Jul-19	9500022	295468	527.17	881.93	0.00	
01-Aug-19					0.00	
02-Aug-19	9529142	295468	527.17	881.93	510.25	
03-Aug-19					510.25	
04-Aug-19					510.25	
05-Aug-19					510.25	291.57
06-Aug-19	9542744	297509	527.45	881.93	0.00	
07-Aug-19	9547236	297509	527.45	881.93	411.20	
08-Aug-19					411.20	
09-Aug-19					411.20	
10-Aug-19					411.20	
11-Aug-19					411.20	
12-Aug-19	9565216	299565	527.45	882.2	0.00	293.71
13-Aug-19					0.00	
14-Aug-19	9574234	299565	527.45	882.2	717.50	
15-Aug-19					717.50	
16-Aug-19					717.50	
17-Aug-19					717.50	
18-Aug-19					717.50	
19-Aug-19					717.50	615.00
20-Aug-19	9596806	303870	528	882.38	2109.00	
21-Aug-19	9605508	305979	528	882.66	0.00	
22-Aug-19	9609300	305979	528	882.66	413.80	
23-Aug-19					413.80	
24-Aug-19					413.80	
25-Aug-19					413.80	
26-Aug-19					413.80	596.86
27-Aug-19	9622902	308048	528	882.94	2119.00	
28-Aug-19	9627374	310167	528	883.22	725.83	
29-Aug-19					725.83	
30-Aug-19					725.83	
31-Aug-19					725.83	
01-Sep-19					725.83	

02-Sep-19					725.83	924.86
03-Sep-19	9645194	314522	528.31	883.5	0.00	
04-Sep-19	9645194	314522	528.31	883.5	2097.00	
05-Sep-19	9648776	316619	528.6	883.5	421.80	
06-Sep-19					421.80	
07-Sep-19					421.80	
08-Sep-19					421.80	
09-Sep-19					421.80	600.86
10-Sep-19	9666434	318728	528.6	883.78	297.86	
11-Sep-19					297.86	
12-Sep-19					297.86	
13-Sep-19					297.86	
14-Sep-19					297.86	
15-Sep-19					297.86	
16-Sep-19					297.86	297.86
17-Sep-19	9689234	320813	528.66	884.06	847.20	
18-Sep-19					847.20	
19-Sep-19					847.20	
20-Sep-19					847.20	
21-Sep-19					847.20	
22-Sep-19		325049	528.89	884.34	689.00	
23-Sep-19	9709052				689.00	802.00
24-Sep-19					689.00	
25-Sep-19	9715208	327116	529.18	884.34	1039.50	
26-Sep-19					1039.50	
27-Sep-19	9723394	329195	529.18	884.62	705.70	
28-Sep-19					705.70	
29-Sep-19					705.70	
30-Sep-19	9731434	331312.1	529.48	884.62	1068.95	850.58
01-Oct-19					1068.95	
02-Oct-19	9739538	333450	529.48	884.91	1064.33	
03-Oct-19					1064.33	
04-Oct-19					1064.33	
05-Oct-19					1064.33	
06-Oct-19					1064.33	
07-Oct-19					1064.33	1064.99
08-Oct-19	9763970	339836	530.07	885.19	2106.50	
09-Oct-19					2106.50	
10-Oct-19	9767712	344049	530.36	885.48	0.00	
11-Oct-19	9772082	344049	530.36	885.48	870.60	
12-Oct-19					870.60	
13-Oct-19					870.60	

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14-Oct-19					870.60	1099.34
15-Oct-19					870.60	
16-Oct-19	9789094	348402	530.36	886.06	1060.00	
17-Oct-19					1060.00	
18-Oct-19	9800348	350522	530.36	886.34	1429.00	
19-Oct-19					1429.00	
20-Oct-19					1429.00	
21-Oct-19	9809332	354809	530.66	886.63	699.67	1139.61
22-Oct-19					699.67	
23-Oct-19					699.67	
24-Oct-19	9821182	356908	530.66	886.92	0.00	
25-Oct-19	9825548	356908	530.66	886.92	1821.29	
26-Oct-19					1821.29	
27-Oct-19					1821.29	
28-Oct-19					1821.29	1240.64
29-Oct-19					1821.29	
30-Oct-19					1821.29	
31-Oct-19					1821.29	
01-Nov-19	9892120	369657	531.55	887.77	1404.33	
02-Nov-19					1404.33	
03-Nov-19					1404.33	
04-Nov-19	9907096	373870	531.84	888.06	0.00	1382.41
05-Nov-19	9911562	373870	531.84	888.06	1068.50	
06-Nov-19					1068.50	
07-Nov-19	9920552	376007	532.14	888.06	972.91	
08-Nov-19					972.91	
09-Nov-19					972.91	
10-Nov-19					972.91	
11-Nov-19	9937586		532.14	888.63	972.91	1000.22
12-Nov-19					972.91	
13-Nov-19	9945794		532.4	888.63	972.91	
14-Nov-19					972.91	
15-Nov-19					972.91	
16-Nov-19					972.91	
17-Nov-19					972.91	
18-Nov-19	9967514	386709	532.76	888.92	1090.00	989.64
19-Nov-19					1090.00	
20-Nov-19	9975750	388889	532.76	889.21	1166.00	
21-Nov-19					1166.00	
22-Nov-19	9992304	391221	533.07	889.22	1417.40	
23-Nov-19					1417.40	
24-Nov-19					1417.40	

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25-Nov-19					1417.40	1298.80
26-Nov-19					1417.40	
27-Nov-19	33802	398308	533.08	890.19	18.00	
28-Nov-19	38333	398326	533.22	890.2	1109.22	
29-Nov-19					1109.22	
30-Nov-19					1109.22	
01-Dec-19					1109.22	
02-Dec-19	38333				1109.22	997.36
03-Dec-19	43861	403872.1	533.85	890.2	840.00	
04-Dec-19	44859	404712.1	533.97	890.2	910.40	
05-Dec-19					910.40	
06-Dec-19					910.40	
07-Dec-19					910.40	
08-Dec-19					910.40	
09-Dec-19	56358	409264.1	543.38	890.44	965.00	908.14
10-Dec-19	72332	410229.1	543.38	890.58	868.00	
11-Dec-19					868.00	
12-Dec-19	95865	411965.1	534.41	890.8	906.20	
13-Dec-19					906.20	
14-Dec-19					906.20	
15-Dec-19					906.20	
16-Dec-19					906.20	895.29
17-Dec-19	132817	416496.1	534.43	891.41	822.67	
18-Dec-19	140094				822.67	
19-Dec-19					822.67	
20-Dec-19	157360	418964.1	534.57	891.67	806.73	
21-Dec-19					806.73	
22-Dec-19					806.73	
23-Dec-19	172027				806.73	813.56
24-Dec-19					806.73	
25-Dec-19					806.73	
26-Dec-19					806.73	
27-Dec-19					806.73	
28-Dec-19					806.73	
29-Dec-19					806.73	
30-Dec-19					806.73	806.73
31-Dec-19	228158	427838.1	534.93	891.7	806.73	
01-Jan-20						