Williamsburg Wastewater System

Waterworks #120002013

Annual Report

Prepared for: Municipality of South Dundas

Reporting Period of January 1st – December 31st 2019

Issued: March 19, 2020

Revision: 0

Certificate of Approval #3-0456-84-887

Table of Contents

Operations and Compliance Reliability Indices

Compliance Event	# of Events
Ministry of Environment Inspections	0
Ministry of Labour Inspections	0
Non-Compliance	0
Spills/Bypasses/Overflows	0
Sewer Main Blockages	0

System Process Description

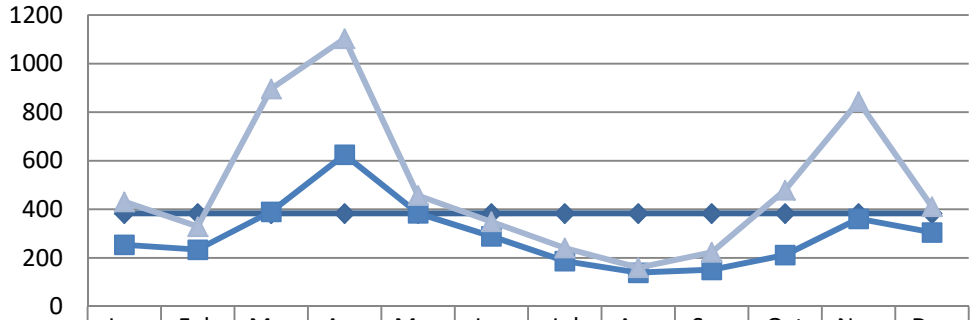
Williamsburg's wastewater system is owned and operated by the Municipality of South Dundas. It consists of a gravity fed collection system, two sewage pumping stations and a wastewater treatment lagoon. The two-cell facultative lagoon system is a Class I wastewater treatment system. Effluent from the the lagoon is discharged annually to the McMartin Drain between March 15th and April 21st in accordance with the facility's Certificate of Approval.

Wastewater System Flows

The hydraulic flows reaching the sewage lagoons in 2019 averaged 294 m^3/day which represents 77% of the 383 m^3/day design capacity.

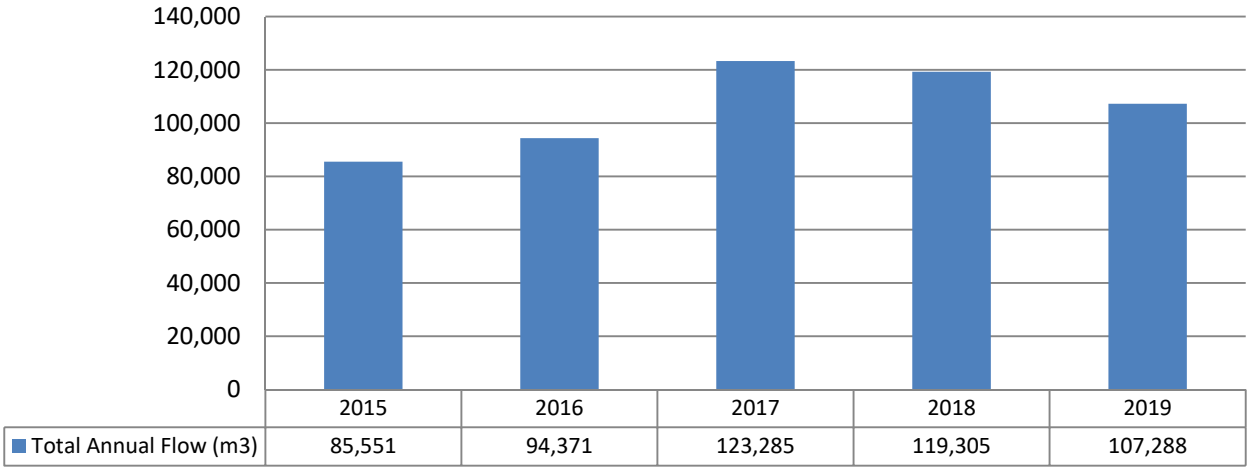
Raw Flows

2019 Raw Flows:



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Design Capacity (m3/d)	383	383	383	383	383	383	383	383	383	383	383	383
Avg Flow (m3/d)	254	234	390	625	384	289	187	139	151	212	361	305
Max Flow (m3/d)	431	329	896	1103	457	349	241	160	223	479	844	411

Annual Raw Flow Comparison:



	2015	2016	2017	2018	2019
Total Annual Flow (m3)	85,551	94,371	123,285	119,305	107,288

Effluent Flow

A total of 22,354 m^3 was discharged from Williamsburg's sewage lagoons in the spring of 2019. Please refer to the Performance Assessment Reports attached in Appendix A for details.

Effluent Quality Assurance or Control Measures

Effluent control measures include pre-discharge sampling and testing of lagoon cell contents prior to seasonal discharges. Samples are collected by the Municipality of South Dundas' competent and licensed staff using approved methods and protocols for sampling including those specified in the Ministry's Procedure F-10-1, "Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works", the Ministry's publication, "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" and the publication, "Standard Methods for the Examination of Water and Wastewater".

Effluent samples collected during the reporting period were submitted to Caduceon laboratory in Ottawa for analysis, with the exception of pH and temperature. Caduceon is accredited by the Canadian Association for Laboratory Accreditation (CALA). Accredited labs must meet strict provincial guidelines including an extensive quality assurance/quality control program. By choosing this laboratory, the Municipality of South Dundas is ensuring appropriate control measures are undertaken during sample analysis.

The pH and temperature were analyzed in the field at the time of sample collection by certified operators to ensure accuracy and precision of the results obtained.

Effluent Quality

There were no exceedances of the concentration limits outlined in the facility's Certificate of Approval during the 2019 discharge period. The results from the spring discharge can be found tabulated in the Performance Assessment Reports attached in Appendix A.

Operating Issues

There were no operating issues to report for 2019.

Maintenance

Maintenance Summary

Both wet wells were cleaned in 2019.

Notice of Modifications

No modifications took place during the reporting period.

Sludge Generation

Sludge depth is monitored periodically, and plans for sludge removal are made as required for optimal operation of the lagoon system.

Summary of Complaints

No complaints were documented during the reporting period.

Summary of Abnormal Discharge Events

Bypass/Overflow

No bypasses or overflows occurred during the reporting period.

Spills

No spills occurred during the reporting period.

Appendix A

Performance Assessment Reports

MUNICIPALITY OF SOUTH DUNDAS
PERFORMANCE ASSESSMENT REPORT

PROJECT: **WILLIAMSBURG SEWAGE** **YEAR:** **2019**
WORKS NUM.: **3-0456-84-887** **WATER COURSE:** **MCMARTIN DRAIN**
DESCRIPTION: **A TWO CELL LAGOON HAVING A TOTAL SURFACE AREA OF 7.1 HA** **DESIGN CAPACITY:** **383 m^3/day**

MONTH	FLOWS					BIOCHEMICAL O_2 DEMAND			SUSPENDED SOLIDS			PHOSPHORUS			TKN
	Total Flow m^3	Avg Day Flow m^3	Max Day Flow m^3	Effluent Flow m^3	Discharge Duration (days)	Avg Raw BOD (mg/L)	Avg Eff BOD (mg/L)	Percent Removal	Avg Raw SS (mg/L)	Avg Eff SS (mg/L)	Percent Removal	Avg Raw PHOS. (mg/L)	Avg Eff PHOS. (mg/L)	Percent Removal	Avg Raw TKN
JAN	7861	254	431			104			75			3.88			32.7
FEB	6544	234	329			83			140			3.15			28.1
MAR	12092	390	896			130			185			6.44			62.1
APR	18745	625	1103	22,354	5	36	1.5		60	7.7		1.45	0.67		11.6
MAY	11908	384	457			60			46			2.32			20.3
JUN	8666	289	349			74			70			2.30			20.7
JUL	5785	187	241			188			220			5.76			49.3
AUG	4303	139	160			218			220			7.93			63.9
SEPT	4524	151	223			6			40			0.74			6.6
OCT	6580	212	479			628			750			11.40			117.0
NOV	10831	361	844			95			140			3.10			27.9
DEC	9450	305	411			163			150			3.72			30.3
TOTAL	107,288			22,354	5										
AVG		294				149	1.5	99.0	175	7.7	95.6	4.35	0.67	84.6	39.2
MAX			1103			628			750			11.4			
CRITERIA		**383**					**30**			**30**					
COMPLIANCE		YES					YES			YES					

COMMENTS: **PERCENT REMOVAL BASED ON 12 MONTHS OF RAW COMPOSITE SAMPLES**

MUNICIPALITY OF SOUTH DUNDAS
LAGOON PERFORMANCE ASSESSMENT REPORT

PROJECT: WILLIAMSBURG LAGOON
WORKS NUM.: 3-0456-84-887
DESCRIPTION: A TWO CELL LAGOON HAVING A TOTAL SURFACE AREA OF 7.1 HA

YEAR: 2019
WATER COURSE: MCMARTIN DRAIN
DESIGN CAPACITY: 383 m^3/day

	SAMPLE RESULTS	SPRING			22,354 m^3	
	DATE	17-Apr	18-Apr	21-Apr	Average	C of A Limit*
Minimum 2x per Week Sample Collection	CBOD (mg/L)	<3	<3	<3	1.5	**30**
	TSS (mg/L)	<3	8	12	7.7	**30**
	TP (mg/L)	0.29	0.83	0.90	0.67	
	NH_3 (mg/L)	0.14	0.68	0.26	0.36	
	NO_2 (mg/L)	<0.1	<0.1	<0.1		
	NO_3 (mg/L)	<0.10	<0.1	<0.1		
	TKN (mg/L)	0.8	1.9	1.5		
	S2- (mg/L)	<0.01	0.01	0.01		

* Discharge between March 15 & April 21

pH	7.1	8.61	8.01
Temp	8.66	10.4	11.5
S2- (mg/L)	<0.01	0.01	0.01
%	56.4	3.7	12.8
undissociated H2S	ND	0.0004	0.0013

EFFLUENT FLOW	
DATE	Flow (m^3/d)
17-Apr	3577
18-Apr	4885
19-Apr	4885
20-Apr	4885
21-Apr	4122