

Williamsburg Wastewater System

Waterworks #120002013

Annual Report

Prepared for: Municipality of South Dundas

Reporting Period of January 1st – December 31st 2021

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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

Non-Compliance Identified in a Ministry Inspection

Legislation	requirement(s) system failed to meet	Corrective Action
None to report.		

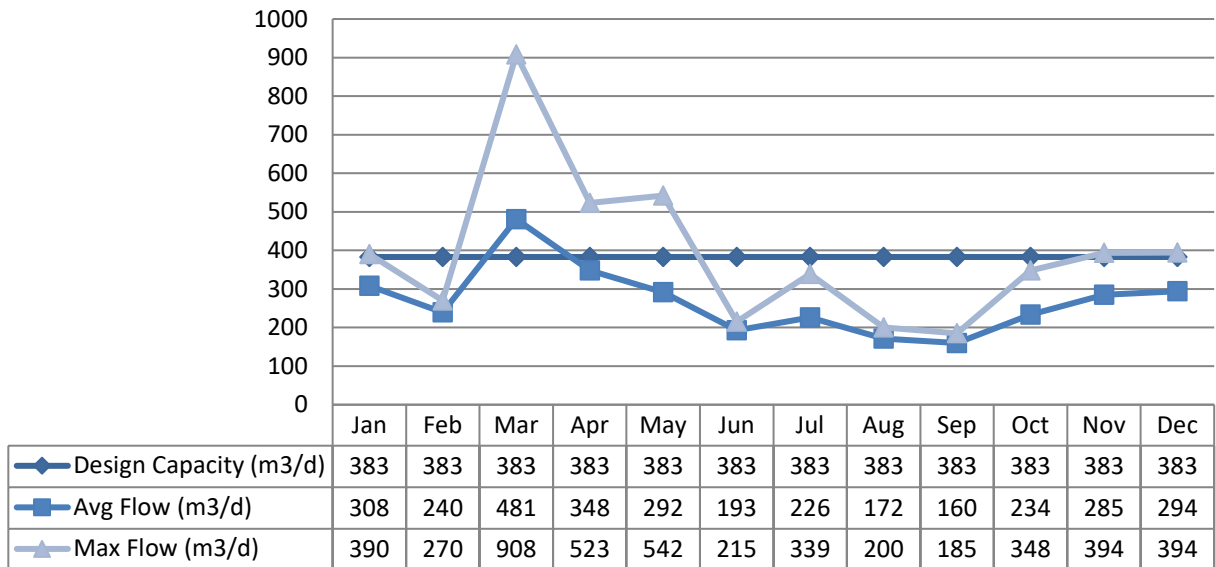
System Process Description

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.

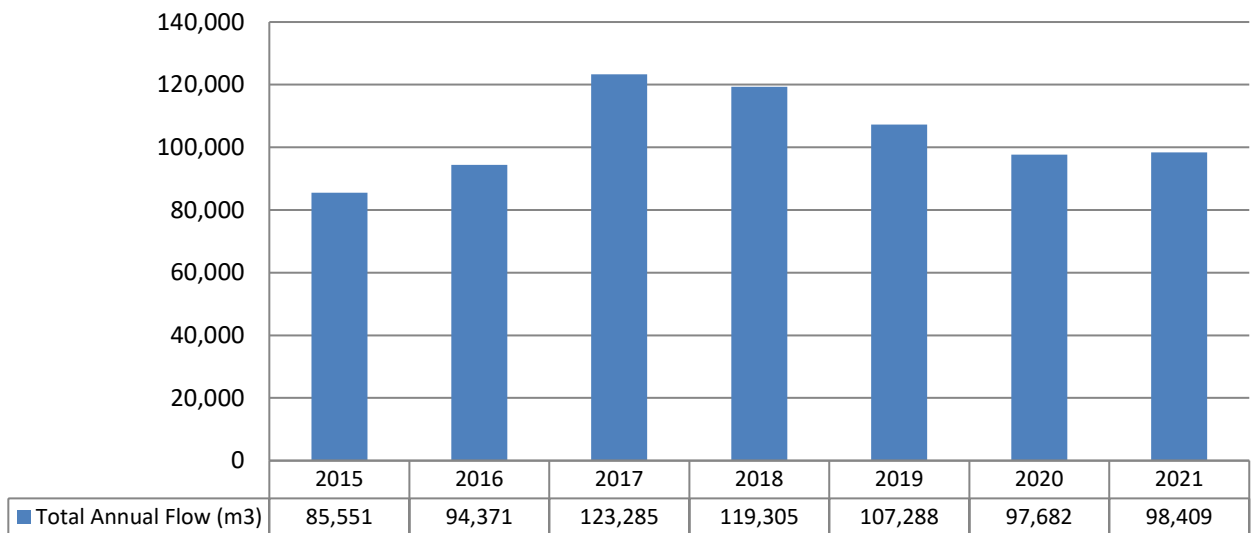
Wastewater System Flows

The hydraulic flows reaching the sewage lagoons in 2021 averaged 269 m³/day which represents 70% of the 383 m³/day design capacity.

Raw Flows



Annual Raw Flow Comparison:



Effluent Flow

A total of 31,157 m³ was discharged from Williamsburg’s sewage lagoons in the spring of 2021. 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 2021 discharge period. The results from the spring discharge can be found tabulated in the Performance Assessment Reports attached in Appendix A.

Operating Issues

None to report during discharge period.

Maintenance

Maintenance Summary

- Semi-annual Hydrovac and cleaning of HWY 31 and Williamsburg pump station wet wells
- Installation of Mag meter in Williamsburg pump station
- Installation of pressure transmitter in Williamsburg pump station with a digital level display.
- SCADA upgrades
- Yearly Generator Maintenance

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/Spills

No bypasses, overflows, or spills occurred during the reporting period.

Appendix A

Performance Assessment Reports

MUNICIPALITY OF SOUTH DUNDAS PERFORMANCE ASSESSMENT REPORT

PROJECT: **WILLIAMSBURG SEWAGE** YEAR: **2021**
 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 m³/day**

MONTH	FLOWS			Effluent Flow m ³	Discharge Duration (days)	BIOCHEMICAL O ₂ DEMAND			SUSPENDED SOLIDS			PHOSPHORUS			TKN Avg Raw TKN
	Total Flow m ³	Avg Day Flow m ³	Max Day Flow m ³			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	
JAN	9541	308	390			99			90			3.77			37.4
FEB	6709	240	270			120			140			4.98			33.2
MAR	14914	481	908			123			135			5.42			57.0
APR	10442	348	523	31,157	3	83	1.5		76	1.5		2.10	0.49		16.0
MAY	9045	292	542			55			168			2.63			20.7
JUN	5781	193	215			134			110			3.73			34.3
JUL	6958	226	339			244			370			6.38			49.0
AUG	5317	172	200			183			190			7.57			80.4
SEPT	4799	160	185			190			300			6.40			51.0
OCT	7241	234	348			134			126			5.75			47.0
NOV	8542	285	394			16			116			5.10			47.7
DEC	9080	294	394			101			150			3.39			27.5
TOTAL	98,409			31,157	3										
AVG		269				124	1.5	98.8	164	1.5	99.1	4.77	0.49	89.7	42.2
MAX			908			244			370			7.57			
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** YEAR: **2021**
 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 m³/day**

SAMPLE RESULTS	SPRING				31,157 m ³	
	DATE	14-Apr	15-Apr	21-Apr	Average	C of A Limit*
Minimum 2x per Week Sample Collection	BOD (mg/L)	<3	<3	<3	1.5	30
	TSS (mg/L)	<3	<3	<3	1.5	30
	TP (mg/L)	0.75	0.7	0.03	0.49	
	NH ₄ (mg/L)	0.1	0.1	0.06	0.09	
	NO ₃ (mg/L)	<0.1	<0.1	<0.1		
	NO ₂ (mg/L)	<0.1	<0.1	<0.1		
	TKN (mg/L)	1.2	1.1	0.6		
	S ₂ (mg/L)	<0.01	<0.01	<0.01		

* Discharge between March 15 & April 21

EFFLUENT FLOW	
DATE	Flow (m ³ /d)
14-Apr	12,621
15-Apr	16,367
20-Apr	2,189

pH	8.2	8.25	7.86
Temp	10.6	16.1	7.4
S ₂ (mg/L)	<0.01	<0.01	<0.01
%	-	-	-
undissociated H ₂ S	ND	ND	ND