Mississippi Mills Wastewater System

2018 Annual Report

January 1, 2018 – December 31, 2018

Prepared By

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

This report has been prepared to meet the requirements set out in the facility Certificate of Approval #42425-8DXR5U issued February 16, 2011 and Certificate of Approval #1637-AC8NT7.

Contents

Appendix

Compliance Report Card

Compliance Event	# of Events	Details
Ministry of Environment Inspections	0	There were no Inspections during the reporting period
Ministry of Labour Inspections	0	There were no Inspections during the reporting period
Effluent Parameter Exceedances	0	There were no parameter exceedances during the reporting period
Bypass/Overflows	2	• Filtrate Tank 2018-04-28 • Gemmill's Bay SPS 2018-05-28
Community Complaints	1	Sewer smell from Spring Street Sewage Pumping Station
Spills	0	There were no spills during the reporting period

System/Process Description

Primary Treatment

Flow enters the treatment and passes through screen channels which contain fine screens that lead to a screw compactor. Grit is removed using circular vortex grit removal, air lift and grit classifier system units

Chemical Addition

Chemicals are added to the process for phosphorus control.

Secondary Treatment

The Mississippi Mills WPCP supports a Two (2) treatment train system using the extended aeration activated sludge process. Each train is equipped with aeration tanks, anoxic tanks and a secondary clarifier.

Tertiary Treatment

Five (5) filter trains with three (3) filtration cells in each. Disinfection is provided using Ultraviolet (UV) lights. There is ability for chlorine disinfection in the event the UV units fail.

Solids Handling

Solids from the biological process are transferred from the waste tank to a rotary disk thickener. From there the solids are processed through autothermic thermophilic aerobic digesters. The solids are then pressed to a cake form.

Septage Receiving

The Mississippi Mills WWTP also consists of a septage receiving station consisting of a storage tank, two (one duty and one standby) dry-pit pumps, and a grinder on the inlet piping

Proposed Alterations, Extensions, or Replacement to Works

There are no proposed alterations, extensions or replacements that would affect the Certificate of Approval.

Effluent Quality Assurance or Control Measures

The Municipality of Mississippi Mills facilities are part of OCWA's operational Mississippi Cluster. The facilities are supported by regional and corporate resources. Operational Services are delivered by OCWA staff that live and work in the community.

OCWA operates facilities in compliance with applicable regulations. The facility has comprehensive manuals detailing operations, maintenance, instrumentation, and emergency procedures. All procedures are treated as active documents, with annual reviews.

OCWA has additional "Value Added" and operational support services that the Municipality of Mississippi Mills benefits from including:

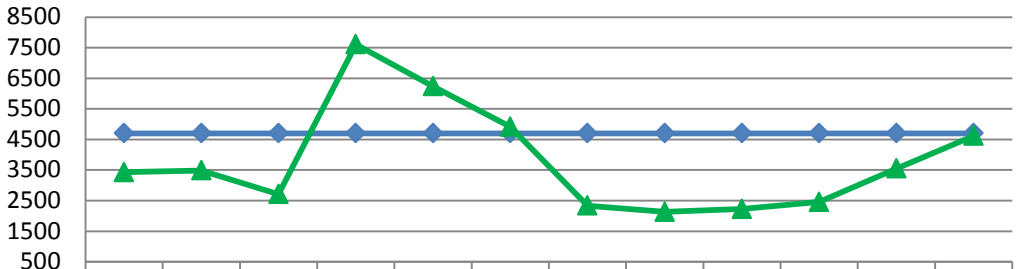
- Access to a network of operational compliance and support experts at the regional and corporate level, as well as affiliated programs that include the following:
    - Quality & Environmental Management System, Occupational Health & Safety System and an internal compliance audit system.
    - Process Data Management (PDM) facility operating information repository, which consolidates field data, online instrumentation, and electronic receipt of lab test results for reporting, tracking and analysis.
    - Work Management System (WMS) that tracks and reports maintenance activity, and creates predictive and preventative reports.
    - Outpost 5 wide-area SCADA system allows for process optimization and data logging, process trending, remote alarming and optimization of staff time.
- Client reporting which includes operational data, equipment inventory, financial statements, maintenance work orders, and capital status reports
- Site-Specific Contingency Plans and Standard Operating Procedures
- Use of accredited laboratories
- Additional support in response to unusual circumstances, and extra support in an emergency.
- Use of sampling schedules for external laboratory sampling

Treatment Flows

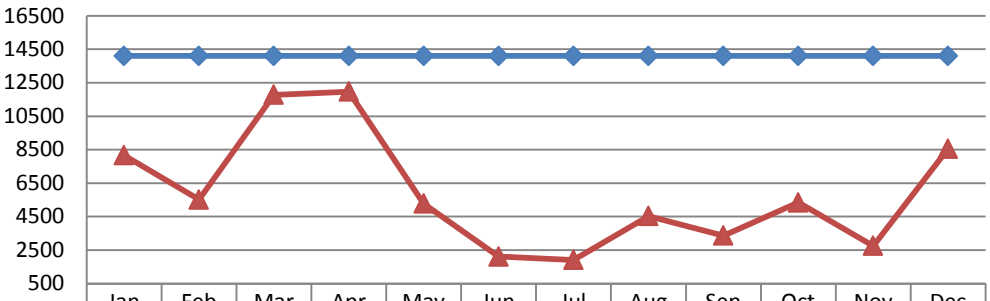
Raw Flow (m³/d)

Annual average flow for 2018 = 3808.58m³/d

Flow spikes are associated to wet weather events such as rain and seasonal changes such as the spring snow melt.

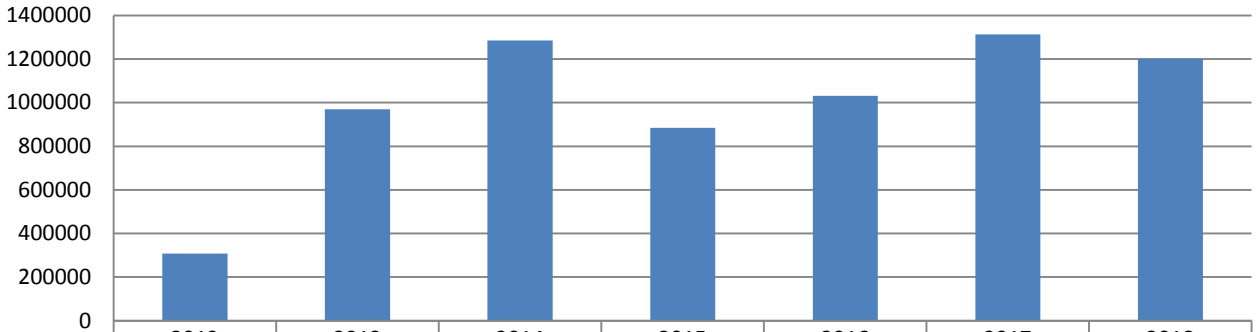


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Design Average (m³/d)	4700	4700	4700	4700	4700	4700	4700	4700	4700	4700	4700	4700
Average Daily Flow (m³/d)	3427.8	3485.7	2714.0	7609.7	6236.3	4912.5	2334.9	2132.6	2228.3	2454.8	3548.3	4617.9



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Peak Capacity (m³/d)	14100	14100	14100	14100	14100	14100	14100	14100	14100	14100	14100	14100
Maximum Daily Flow (m³/d)	8168	5512	11779	11971	5273	2112	1908	4536	3361	5342	2749	8555

Annual Comparison (m³)



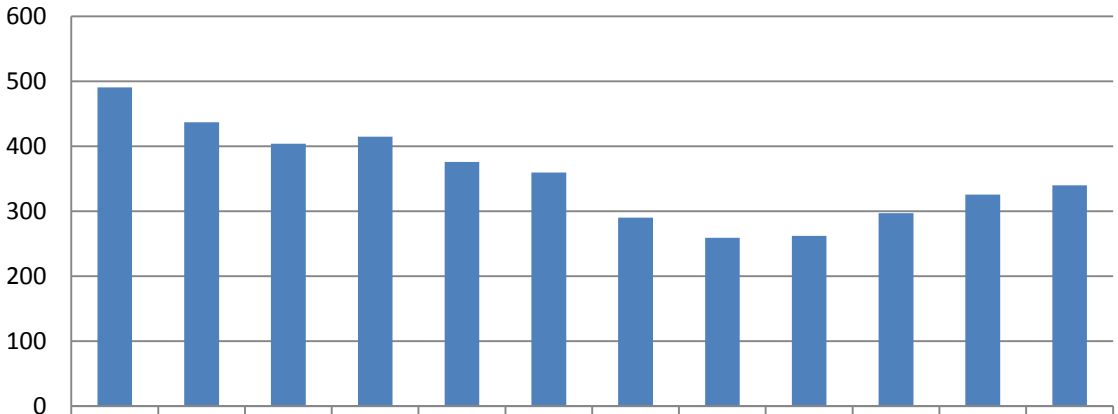
	2012	2013	2014	2015	2016	2017	2018
Total Annual Flow	308093	969878	1285551	884055	1031585	1312674	1201247

Septage Volumes

Average daily flow for 2018 = 11.65 m³/d

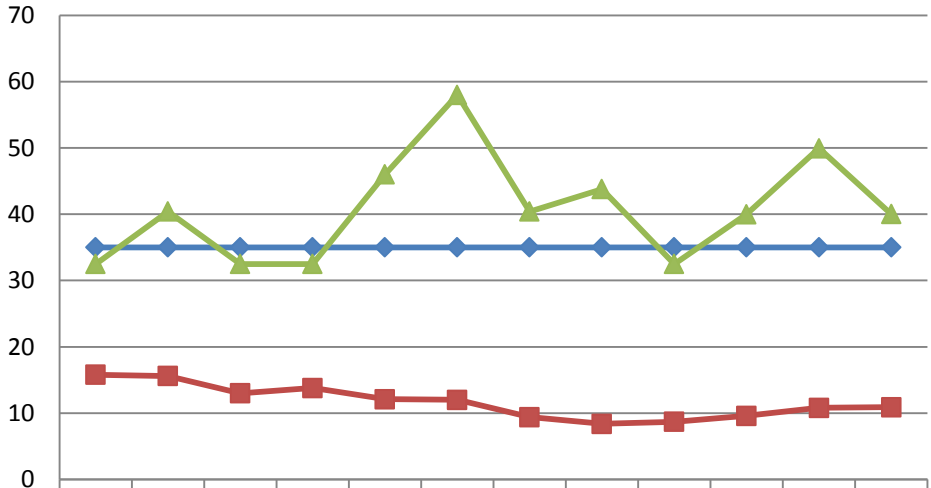
Total Flow for 2018 = 4253.762 m³

Total Monthly Volume Received



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Volume (m³)	490	437	404	414	376	359	290	259	262	297	325	340

Monthly Volumes Processed



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Design Average (m³/d)	35	35	35	35	35	35	35	35	35	35	35	35
Average Flow(m³/d)	15.8	15.6	13	13.8	12.1	12	9.4	8.4	8.7	9.6	10.8	10.9
Maximum Flow (m³/d)	32.5	40.4	32.5	32.5	46.0	58.0	40.4	43.8	32.5	40.0	49.9	40.0

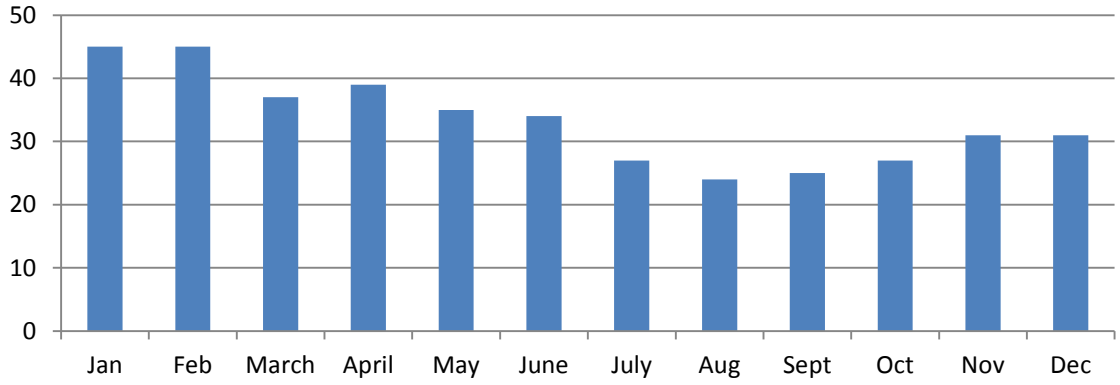
Average Flow (m³/d) is the total sum of the volume of the loads received for the month which is then divided by the days in the month.

Design Average (m³/d) sets the capacity limit based on the total sum of the volume of the loads received for the month which is then divided by the days in the month.

Maximum Flow (m^3/d) indicates largest single day volume received in the month

Septage Capacity Utilization

Septage Capacity (%) is based on Average Flow (m^3/d) over Design Average (m^3/d)



Raw Sewage Quality

Results of raw sewage concentrations and loadings are available in the Facility Performance Assessment Report in Appendix A.

Effluent Quality

The limits are based on current requirements in the facilities Environmental Compliance Approval. Laboratory samples are submitted to an accredited laboratory for regulatory analysis.

The Federal Government also regulates certain sewage effluent parameters under the Federal Fisheries Act. The results are submitted to Environment and Climate Change Canada's Effluent Regulatory and Reporting Information System (ERRIS) on a quarterly basis.

Effluent Exceedance Summary

Limit

Sample	Date	Parameter	Exceedance of	Limit	Value	Corrective Action
There were no effluent exceedances in 2018						

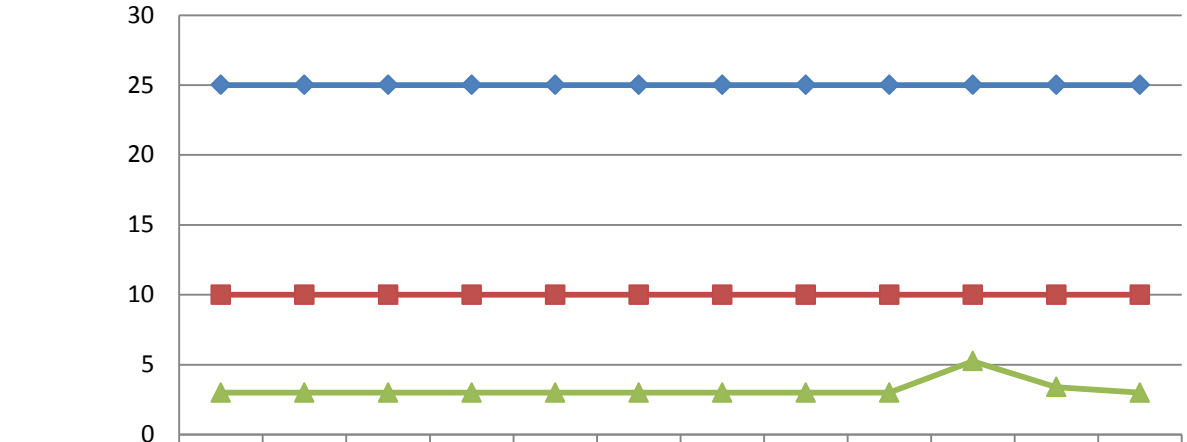
Other Effluent Sampling Issues

Sample	Legislation	Date	Details	Response
There were no other operational issues affecting effluent quality				

Effluent Parameter Summary

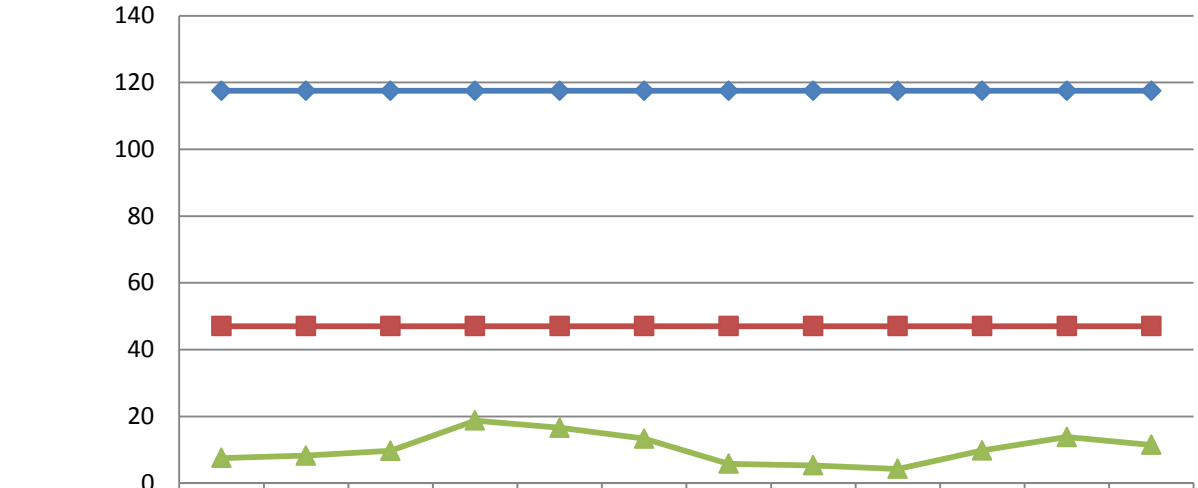
CBOD5

Concentration (mg/L)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Limit	25	25	25	25	25	25	25	25	25	25	25	25
Objective	10	10	10	10	10	10	10	10	10	10	10	10
Average	3	3	3	3	3	3	3	3	3	5.3	3.4	3

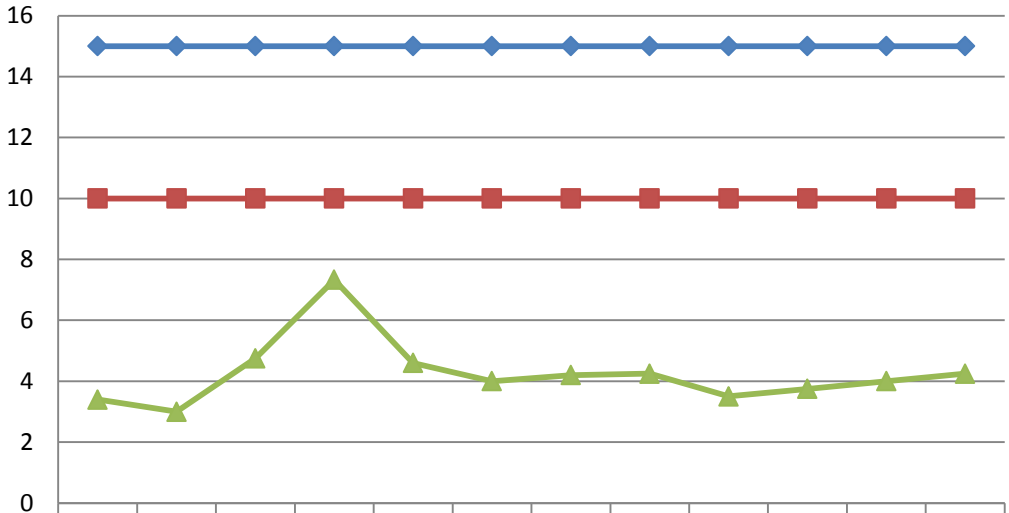
Loading (kg/d)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Limit	117.5	117.5	117.5	117.5	117.5	117.5	117.5	117.5	117.5	117.5	117.5	117.5
Objective	47	47	47	47	47	47	47	47	47	47	47	47
Average	7.5	8.2	9.7	18.7	16.6	13.3	5.8	5.3	4.3	9.7	13.8	11.4

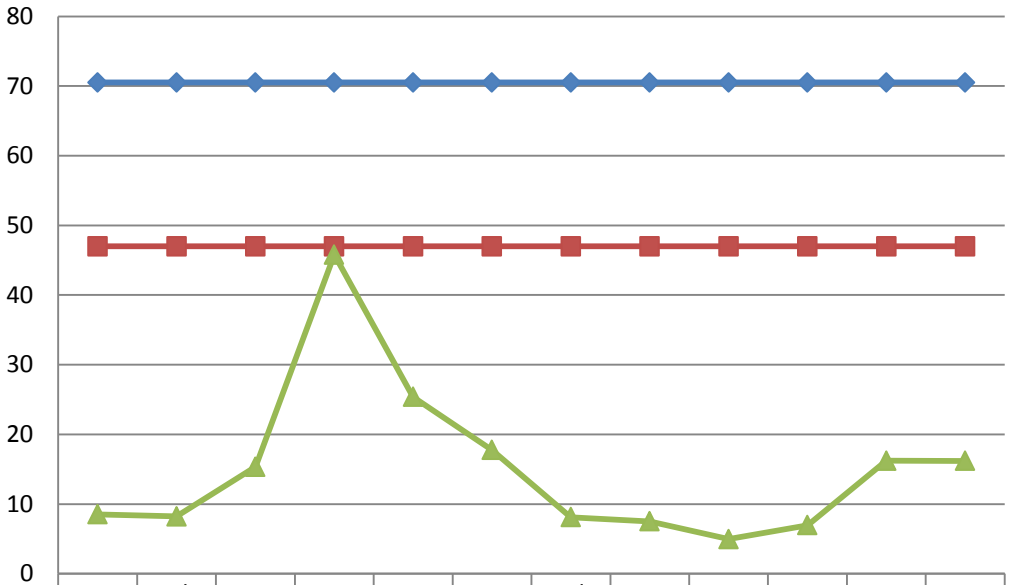
Total Suspended Solids

Concentration (mg/L)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Limit	15	15	15	15	15	15	15	15	15	15	15	15
Objective	10	10	10	10	10	10	10	10	10	10	10	10
Average	3.4	3.0	4.8	7.3	4.6	4.0	4.2	4.3	3.5	3.8	4.0	4.3

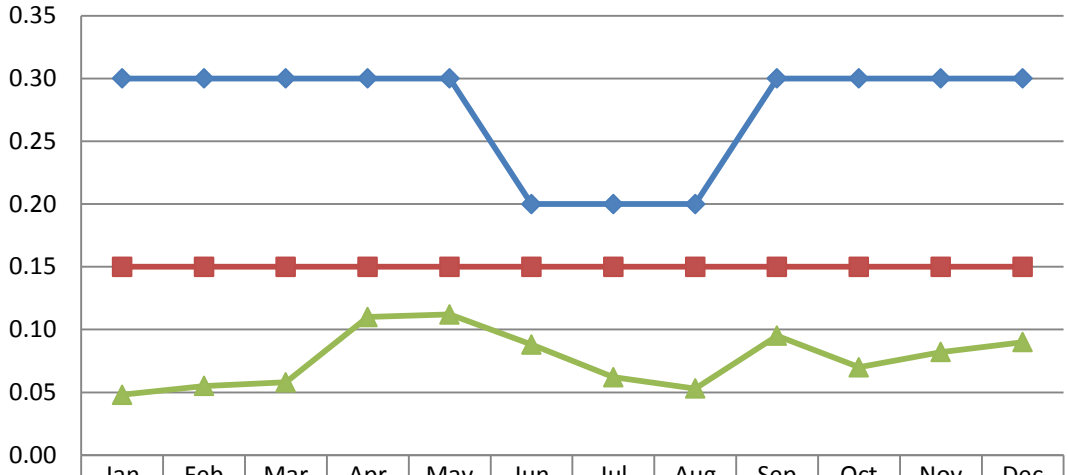
Loading (kg/d)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Limit	70.5	70.5	70.5	70.5	70.5	70.5	70.5	70.5	70.5	70.5	70.5	70.5
Objective	47	47	47	47	47	47	47	47	47	47	47	47
Average	8.52	8.24	15.35	45.80	25.38	17.76	8.13	7.52	4.97	6.96	16.23	16.21

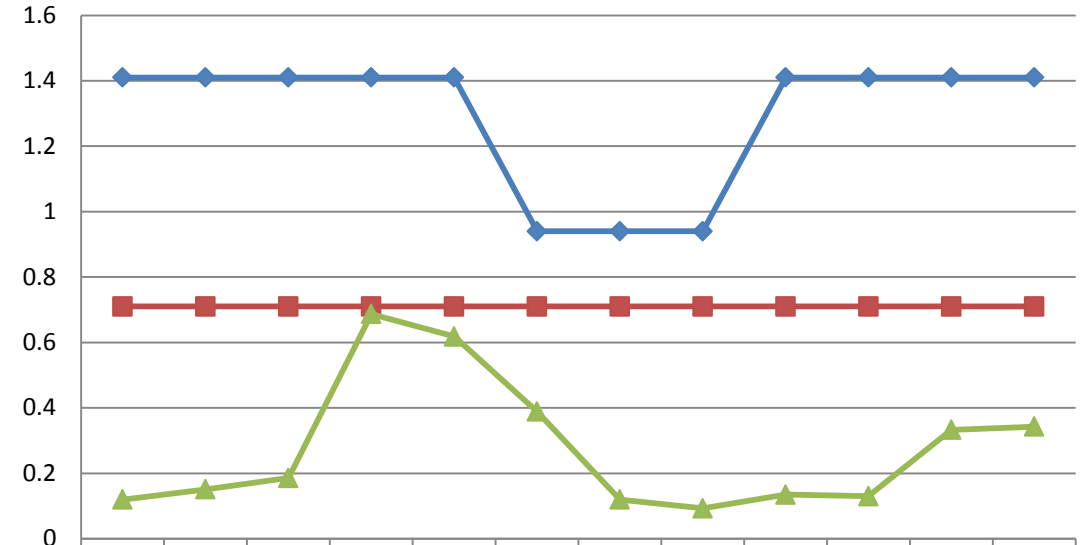
Total Phosphorus

Concentration (mg/L)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Limit	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20	0.30	0.30	0.30	0.30
Objective	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Average	0.048	0.055	0.058	0.11	0.112	0.088	0.062	0.053	0.095	0.07	0.082	0.09

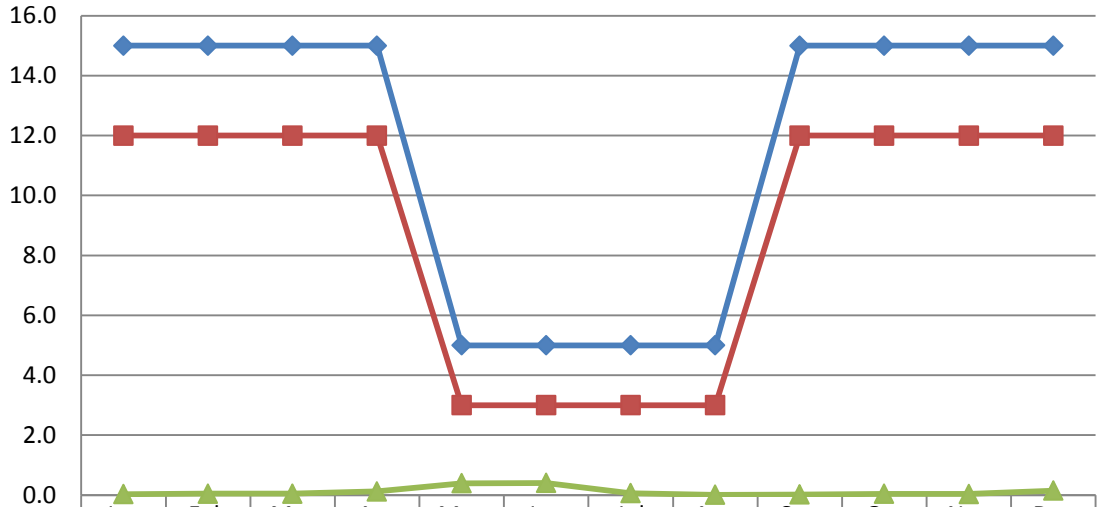
Loading (kg/d)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Limit	1.41	1.41	1.41	1.41	1.41	0.94	0.94	0.94	1.41	1.41	1.41	1.41
Objective	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Average	0.12	0.151	0.186	0.687	0.618	0.389	0.12	0.093	0.135	0.13	0.333	0.343

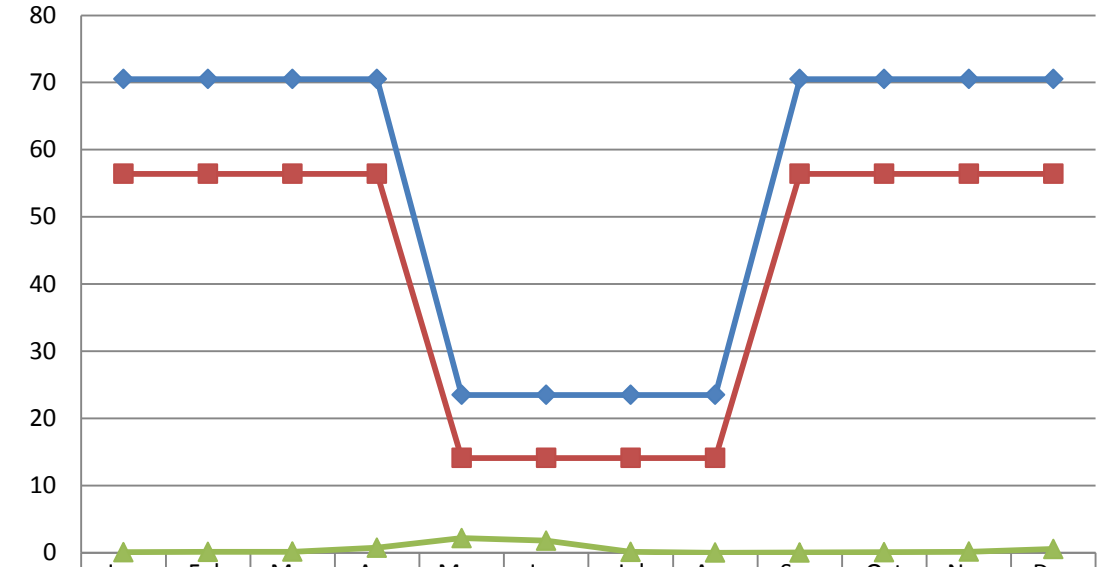
Total Ammonia Nitrogen

Concentration (mg/L)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Limit	15.0	15.0	15.0	15.0	5.0	5.0	5.0	5.0	15.0	15.0	15.0	15.0
Objective	12.0	12.0	12.0	12.0	3.0	3.0	3.0	3.0	12.0	12.0	12.0	12.0
Average	0.032	0.045	0.045	0.12	0.394	0.405	0.064	0.01	0.02	0.04	0.038	0.148

Loading (kg/d)

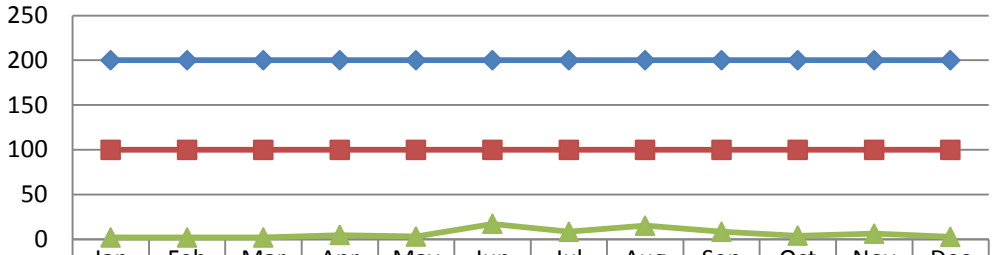


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Limit	70.5	70.5	70.5	70.5	23.5	23.5	23.5	23.5	70.5	70.5	70.5	70.5
Objective	56.4	56.4	56.4	56.4	14.1	14.1	14.1	14.1	56.4	56.4	56.4	56.4
Average	0.08	0.124	0.145	0.749	2.174	1.798	0.124	0.018	0.028	0.074	0.154	0.562

E-coli

Geometric Mean Average

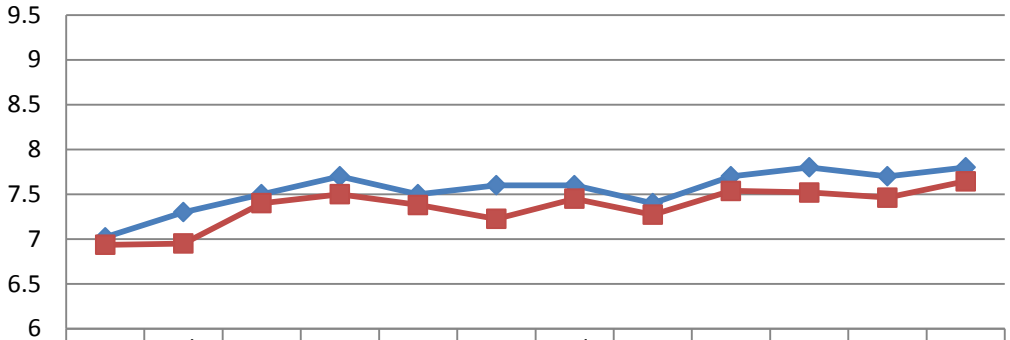
All individual sample results were lower than the reportable value of <2.



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Limit	200	200	200	200	200	200	200	200	200	200	200	200
Objective	100	100	100	100	100	100	100	100	100	100	100	100
Geometric Mean Avg	2	2	2	5	3	17	8	15	9	4	6	3

pH

This parameter is tested in-house.



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Monthly pH	7.02	7.3	7.5	7.7	7.5	7.6	7.6	7.4	7.7	7.8	7.7	7.8
Min Monthly pH	6.9	7.0	7.4	7.5	7.4	7.2	7.5	7.3	7.5	7.5	7.5	7.6

Acute Lethality

There were four (4) samples collected in 2018 and tested for acute lethality (Rainbow Trout and Daphnia Magna). Results are displayed as % mortality.

Quarter	Rainbow Trout	Daphnia Magna
1st Quarter	0%	0%
2nd Quarter	0%	0%
3rd Quarter	0%	0%
4th Quarter	0%	0%

Septage Quality

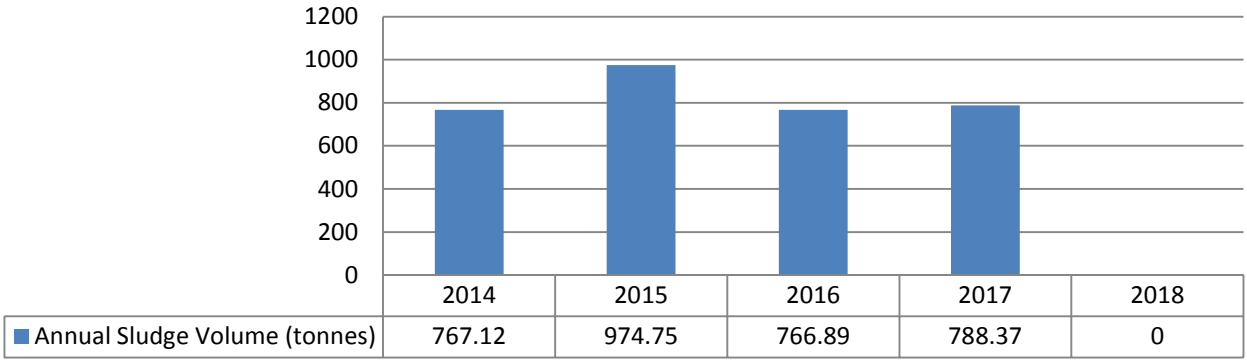
Septage was tested when received. A summary of the results are attached in Appendix B. Grab samples are collected from each load.

Biosolids

Sludge generated from the treatment plant was spread on agricultural land during the spreading season as per the Nutrient Management Act O.Reg 267/03. This facility dewaters and biosolids are handled as cake. During the winter cake is stored on-site until certified sites are ready for spreading.

Biosolids Disposal Summary

Annual Comparison



Quality

The biosolids sampling results are summarized in Appendix C. All results met the established guidelines.

Summary of Complaints

The following community complaints were received related to the operations of the Mississippi Mills WWTP.

Date	Location	Details
September 24, 2018	Spring Street SPS	Sewer odour outside of house stemming from Spring Street SPS

Summary of Bypass/Overflows

Event	Details of Events
April 28, 2018 – Filtrate Tank Bypass	During a period where the entire plant was experiencing elevated flows due to heavy rain and snow melt this system was hydraulically overloaded. The overflow water from the filtrate tank was directed to the effluent channel through the overflow pipe, as designed, from the tank to upstream of U.V. disinfection.
May 10, 2018 – Gemmill's Bay SPS	The low level float did not reset to normal state after installing in the Wetwell. This caused the SPS float controls to override the PLC (as designed in the event of a PLC failure) and the pumps shut off. The pumps did not start due to the low level float alarm in state.

Summary of Spills/Abnormal Discharges

There were no spills or abnormal discharges reported in 2018.

Maintenance

OCWA uses a risk-based preventative maintenance framework that ensures assets are maintained to manufacturer's and/or industry standards. Maintenance is completed using various tools and operational supports. The Ottawa Valley Hub has specialized certified staff such as Millwrights, Electricians and Instrumentation Specialists to name a few.

OCWA uses a Workplace Maintenance System (WMS). WMS is a maintenance tracking system that can generate work orders as well as give summaries of completed and scheduled work. During the year, the operating authority at the facility generates scheduled work orders on a weekly, monthly and annual basis. The service work is recorded in the work order history. This ensures routine and preventive maintenance is carried out. Emergency and capital repair maintenance is completed and added to the system.

Capital projects are listed and provided to the Municipality of Mississippi Mills in the form of a "Capital Forecast". This list is developed by facility staff and provides recommendations for facility components requiring upgrading or improvement.

Maintenance Highlights

WO #	Summary
1016383	Capital ATAD valve failure
1017550	Capital O2 sensors Hetek
1017914	Capital MAU2 Flame out -off
1053650	Capital #2 Blanket Items under $200
1054019	Capital SCADA low memory crash
740646	Capital SCADA Upgrade

WO #	Summary
823330	Capital Sam Grit conveyor leaking
898616	Capital UV Parts
898773	Capital Roof Repairs
900102	Capital Fournier gear box
900106	Capital pump parts
940406	Capital Septage pump rebuild 02
941402	Capital Secondary Baffle install
941414	Capital Clarifier 01 Clarifier repairs
941620	Capital Service Water System Pressure Tank Replacement
980276	Capital Clarifier 01 weir paint
982852	Capital Thermaer Motor Bearings Noisy
626062	Capital Server Hard Drive Fail
627620	Capital Filtrate Pump 751 Low Flow
627786	Deferred Capital Flusher Valves for Filtrate Pumps
627990	Capital Health & Safety Drum Lifter
662185	Capital UV disinfection parts
695308	Capital Server Hard Drive Fail
701299	Capital Roof Assessment Almonte
779840	Capital SCADA service call
780615	Capital filtrate tank vac truck
780619	Capital Safety Life Ring
780707	Capital Filtrate pump 02 rebuild & pump modifications
821863	Capital Dissolved Oxygen Caps
861703	Capital YSI Part pH meter
860010	Capital SCADA Work ATAD and Attenuation Pumps
663561	Capital New Compressor Electrical work
699694	Capital #1 Blanket Items under $200
741300	Capital Scum pump control
664781	Capital Compressor 1 Aftercooler Leak
625261	Capital install new screw compressor
741978	Capital Boiler 2 Maintenance
1054336	Capital boiler #2 heat exchanger leaking
701403	Capital MAU 2 Flame Loss and Boiler 2 Leak
1018292	Capital flow meter PLC programing
626063	Capital septage pump rebuild
699929	Capital rebuild septage pump
661908	Capital ATAD 1 Air Valve Actuator Repair
642142	Capital Grit Conveyor Stub Shaft Replacement

WO #	Summary
663562	Capital Blower 2 Fail

Calibration

The flow meters were calibrated on April 13, 2018. Records are attached in Appendix D. Analyzers are scheduled for maintenance in the WMS program. Work is completed and logged in the logbook and in the WMS.

Appendix A

Facility Assessment Report

Ontario Clean Water Agency
Performance Assessment Report Wastewater/Lagoon

Report extracted 03/26/2019 12:37 **From: 01/01/2018 to 31/12/2018**

Facility: [5678] MISSISSIPPI MILLS WASTEWATER TREATMENT FACILITY

Works: [110000873]

		01/2018		02/2018		03/2018		04/2018		05/2018		06/2018		07/2018		08/2018		09/2018		10/2018		11/2018		12/2018	<--Total-->		<--Avg.-->		<--Max.-->		<--Criteria-->
Flows:																															
Raw Flow: Total - Raw Sewage (m^3)		106261.34		97600.10		84135.22		228291.70		193326.65		147375.05		72380.53		66111.56		66849.89		76097.66		106450.20		143154.76	1388034.66							
Raw Flow: Avg - Raw Sewage (m^3/d)		3427.79		3485.72		2714.04		7609.72		6236.34		4912.50		2334.86		2132.63		2228.33		2454.76		3548.34		4617.90				3808.58			
Raw Flow: Max - Raw Sewage (m^3/d)		11227.23		10019.75		10078.05		13780.29		11859.76		7612.14		5924.15		3017.29		4654.40		3520.71		6415.00		8886.44						13780.29	
Eff. Flow: Total - Final Effluent (m^3)		77652.82		76889.17		100144.22		187357.93		171052.29		133206.76		59972.99		54882.70		42598.26		57564.72		121722.41		118202.54	1201246.81							
Eff. Flow: Avg - Final Effluent (m^3/d)		2504.93		2746.04		3230.46		6245.26		5517.82		4440.23		1934.61		1770.41		1419.94		1856.93		4057.41		3812.99				3294.75			
Eff. Flow: Max - Final Effluent (m^3/d)		7664.87		7729.05		9661.98		9661.98		9252.84		5879.41		3845.24		2613.92		2498.79		2736.77		40006.27		6396.91						40006.27	
Carbonaceous Biochemical Oxygen Demand: CBOD:																															
Raw: # of samples of cBOD5 - Raw Sewage (mg/L)		5		4		4		4		5		4		5		4		4		5		4		4	52						
Eff: Avg cBOD5 - Final Effluent (mg/L)	<	3.000	<	3.000	<	3.000	<	3.000	<	3.000	<	3.000	<	3.000	<	3.000	<	3.000	<	5.250	<	3.400	<	3.000		<	3.221	<	5.250		25.0
Eff: # of samples of cBOD5 - Final Effluent (mg/L)		5		4		4		6		5		4		5		4		4		4		5		4	54						
Loading: cBOD5 - Final Effluent (kg/d)	<	7.515	<	8.238	<	9.691	<	18.736	<	16.553	<	13.321	<	5.804	<	5.311	<	4.260	<	9.749	<	13.795	<	11.439		<	10.368	<	18.736		117.5
Percent Removal: cBOD5 - Raw Sewage (mg/L)		98.787		99.053		98.544		97.241		97.521		97.846		98.664		98.227		98.827		96.941		98.538		97.059						99.053	
Biochemical Oxygen Demand: BOD5:																															
Raw: # of samples of BOD5 - Raw Sewage (mg/L)		5		4		4		4		5		4		5		4		4		5		4		4	52						
Eff: Avg BOD5 - Final Effluent (mg/L)	<	3.000	<	4.000	<	3.000	<	3.000	<	3.000	<	3.000	<	3.000	<	3.000	<	3.000	<	3.000	<	3.800	<	3.250		<	3.171	<	4.000		25.0
Loading: BOD5 - Final Effluent (kg/d)	<	7.515	<	10.984	<	9.691	<	18.736	<	16.553	<	13.321	<	5.804	<	5.311	<	4.260	<	5.571	<	15.418	<	12.392		<	10.463	<	18.736		
Percent Removal: BOD5 - Raw Sewage (mg/L)		99.080		99.137		98.772		97.814		98.258		98.238		98.805		98.658		99.033		99.011		98.844		98.214						99.137	
Total Suspended Solids: TSS:																															
Raw: Avg TSS - Raw Sewage (mg/L)		462.000		716.000		368.000		229.000		358.800		368.500		520.400		233.000		370.000		536.000		450.000		247.500				404.933		716.000	
Raw: # of samples of TSS - Raw Sewage (mg/L)		5		4		4		4		5		4		5		4		4		5		4		4	52						
Eff: Avg TSS - Final Effluent (mg/L)	<	3.400	<	3.000		4.750		7.333	<	4.600	<	4.000	<	4.200	<	4.250	<	3.500	<	3.750	<	4.000	<	4.250		<	4.253		7.333		15.0
Eff: # of samples of TSS - Final Effluent (mg/L)		5		4		4		6		5		4		5		4		4		4		5		4	54						
Loading: TSS - Final Effluent (kg/d)	<	8.517	<	8.238		15.345		45.799	<	25.382	<	17.761	<	8.125	<	7.524	<	4.970	<	6.963	<	16.230	<	16.205		<	15.088		45.799		70.5
Percent Removal: TSS - Raw Sewage (mg/L)		99.264		99.581		98.709		96.798		98.718		98.915		99.193		98.176		99.054		99.300		99.111		98.283						99.581	
Total Phosphorus: TP:																															
Raw: Avg TP - Raw Sewage (mg/L)		7.862		11.772		6.458		2.183		5.608		6.660		8.738		6.315		8.710		9.232		7.087		4.500				7.094		11.772	
Raw: # of samples of TP - Raw Sewage (mg/L)		5		4		4		4		5		4		5		4		4		5		4		4	52						
Eff: Avg TP - Final Effluent (mg/L)		0.048		0.055		0.058		0.110		0.112		0.088		0.062		0.053		0.095		0.070		0.082		0.090				0.077		0.112	0.2 - 0.3
Eff: # of samples of TP - Final Effluent (mg/L)		5		4		4		6		5		4		5		4		4		4		5		4	54						
Loading: TP - Final Effluent (kg/d)		0.120		0.151		0.186		0.687		0.618		0.389		0.120		0.093		0.135		0.130		0.333		0.343				0.275		0.687	1.41
Percent Removal: TP - Raw Sewage (mg/L)		99.389		99.533		99.110		94.960		98.003		98.686		99.290		99.169		98.909		99.242		98.843		98.000						99.533	
Nitrogen Series:																															
Raw: Avg TKN - Raw Sewage (mg/L)		46.580		55.550		36.950		18.900		30.200		41.100		50.140		51.350		48.400		57.520		38.950		27.475				41.926		57.520	
Raw: # of samples of TKN - Raw Sewage (mg/L)		5		4		4		4		5		4		5		4		4		5		4		4	52						
Eff: Avg TAN - Final Effluent (mg/L)	<	0.032		0.045		0.045		0.120		0.394	<	0.405	<	0.064	<	0.010	<	0.020		0.040		0.038		0.148			<	0.113		0.405		5.0 - 15.0
Eff: # of samples of TAN - Final Effluent (mg/L)		5		4		4		6		5		4		5		4		4		1		5		4	51						
Loading: TAN - Final Effluent (kg/d)	<	0.080		0.124		0.145		0.749		2.174	<	1.798	<	0.124	<	0.018	<	0.028		0.074		0.154		0.562			<	0.503		2.174		70.5
Disinfection:																															
Eff: GMD E. Coli - Final Effluent (cfu/100mL)		2.000		2.000		2.000		4.640		3.031		17.145		8.492		15.335		8.509		4.000		6.347		2.828				6.361		17.145	200.0
Eff: # of samples of E. Coli - Final Effluent (cfu/100mL)		5		4		4		6		5		4		5		4		3		4		5		4	53						

Appendix B

Septage Sample Data

Ontario Clean Water Agency
Time Series Info Report

Report extracted 03/27/2019 11:34

From: **01/01/2018 to 31/12/2018**

Facility Org Number: **5678**

Facility Works Number: **110000873**

Facility Name: **MISSISSIPPI MILLS WASTEWATER TREATMENT FACILITY**

Facility Owner: **Municipality: Municipality of Mississippi Mills**

Facility Classification: **Class 3 Wastewater Treatment**

Receiver: **Mississippi River**

Service Population:

Total Design Capacity: **14100.0 m3/day**

	01/2018	02/2018	03/2018	04/2018	05/2018	06/2018	07/2018	08/2018	09/2018	10/2018	11/2018	12/2018	Total	Avg	Max	Min
Septage / Biochemical Oxygen Demand: BOD5 - mg/L																
Count Lab	23	18	18	17	16	13	12	11	11	17	16	14	186			
Max Lab	19300	23800	18600	4770	5710	4530	6360	4360	5260	5060	10800	4380			23800	
Mean Lab	7704.913	8154.111	7997	1695.294	1832.563	1707.077	1787.25	1232.364	2607	1371.941	2557.813	1145.429		3898.755		
Min Lab	357	483	306	139	192	197	126	100	109	107	186	103				100
Septage / Septage Processed - m³																
Count IH	31	28	31	30	31	30	31	31	30	31	30	31	365			
Total IH	490.26	436.738	403.808	414.419	375.851	359.25	290.149	259.191	262.127	296.897	325.346	339.726	4253.762			
Max IH	32.5	40.4	32.5	32.5	46	58	40.4	43.795	32.5	40	49.939	40.031			58	
Mean IH	15.815	15.598	13.026	13.814	12.124	11.975	9.36	8.361	8.738	9.577	10.845	10.959		11.654		
Min IH	0	0	0	0	0	0	0	0	0	0	0	0				0
Septage / Total Kjeldahl Nitrogen: TKN - mg/L																
Count Lab	23	18	18	17	16	13	12	12	11	17	16	14	187			
Max Lab	2250	2980	2820	1870	2440	2570	1990	1980	1580	1590	2180	1490			2980	
Mean Lab	1265.904	1429.411	1640.794	838.5	914.269	864.308	998.15	700.275	598.855	580.259	998.5	499.693		1025.824		
Min Lab	65.6	87.4	64.3	43.5	23.3	143	10.8	0.7	58.6	62.1	110	32.4				0.7
Septage / Total Phosphorus: TP - mg/L																
Count Lab	23	18	18	17	16	13	12	12	11	17	16	14	187			
Max Lab	847	857	898	1220	271	997	567	275	311	141	637	138			1220	
Mean Lab	365.538	376.339	421.398	165.653	112.535	215.715	184.053	106.242	109.044	47.316	174.969	55.921		216.705		
Min Lab	8.77	11.4	7.17	4.8	2.76	11.3	3.23	18.3	6.58	9.6	9.4	8.79				2.76
Septage / Total Solids: TS - mg/L																
Count Lab	23	18	18	17	16	13	12	11	11	17	16	14	186			
Max Lab	47800	51000	43900	386000	27700	51700	27600	13700	32700	20000	23500	15200			386000	
Mean Lab	23547.83	25138.33	22793.33	36447.65	8042.5	13463.08	6385	4206.364	10038.18	5131.765	8553.125	5765.714		15364.52		
Min Lab	760	990	890	1170	1090	810	410	160	560	270	720	600				160
Septage / Total Suspended Solids: TSS - mg/L																
Count Lab	23	18	18	17	16	13	12	11	11	17	16	14	186			
Max Lab	47800	51000	43900	245000	23000	51700	23000	13200	17600	23000	23800	12400			245000	
Mean Lab	22191.3	20881.11	21286.11	22000.59	5202.5	11281.54	4090.833	2818.182	6819.091	4438.824	5748.75	3560		12064.29		
Min Lab	200	280	150	140	250	300	140	100	350	180	200	250				100
Septage / pH - ---																
Count Lab	23	18	18	17	16	13	12	11	11	17	16	14	186			
Max Lab	9.06	8.67	8.8	8.89	8.8	8.85	8.6	7.86	7.7	8.84	8.69	8.71			9.06	
Mean Lab	6.923	6.923	7.086	7.454	7.512	7.566	7.528	7.203	6.874	7.532	7.542	7.741		7.327		
Min Lab	5.66	5.45	5.41	5.64	5.77	6.56	6.07	5.91	6.16	6.53	5.59	7.13				5.41

Appendix C

Biosolids Application Summary

Ontario Clean Water Agency
Biosolids Quality Report - Liquid
Digestor Type: AEROBIC
Solids and Nutrients

Facility: MISSISSIPPI MILLS WASTEWATER TREATMENT FACILITY
Works: 5678
Period: 01/01/2018 to 12/01/2018

Facility Works Number: *1.10000873E8*
Facility Name: *MISSISSIPPI MILLS WASTEWATER TREATMENT FACILITY*
Facility Owner: *Municipality: Municipality of Mississippi Mills*
Facility Classification: *Class 3 Wastewater Treatment*
Receiver: *Mississippi River*
Service Population:
Total Design Capacity: *14100.0 m3/day*
Period Being Reported: 01/01/2018 12/01/2018

Note: all parameters in this report will be derived from the Bslq Station

Month	Total Sludge Hauled (m3)	Avg. Total Solids (mg/L)	Avg. Volatile Solids (mg/L)	Avg. Total Phosphorus (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Ammonia + Nitrate (mg/L)	Potassium (mg/L)
Site	**Site Name**									
Station	**Bslq Station only**									
Parameter Short Name	**HauledVol**	**TS**	**VS**	**TP**	**NH3p_NH4p_N**	**NO3-N**	**NO2-N**	**TKN**	**calculation in report - no T/S**	**K**
T/s	**IH Month.Total**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**		**Lab Published Month Mean**
Jan		33,450.000	18,900.000	1,165.000	7.860	7.350	0.100	1,540.000	7.605	
Feb		37,650.000	21,950.000	1,115.000	101.030	0.300	0.300	1,930.000	50.665	
Mar		33,050.000	19,800.000	1,050.000	4.060	1.000	0.100	1,750.000	2.530	
Apr		34,900.000	21,050.000	1,160.000	8.490	17.300	0.100	2,285.000	12.895	
May		35,450.000	21,150.000	944.500	13.265	0.250	0.100	1,320.000	6.758	
Jun		36,700.000	20,650.000	1,305.000	5.315	1.550	0.100	1,770.000	3.433	
Jul		29,050.000	16,400.000	808.500	5.900	0.250	0.100	983.000	3.075	
Aug		32,100.000	17,150.000	1,150.500	2.885	0.300	0.100	1,325.000	1.593	
Sep		34,900.000	18,500.000	1,295.000	2.870	8.050	0.200	1,505.000	5.460	

Oct		35,600.000	19,300.000	1,031.000	2.360	12.800	0.100	1,044.000	7.580	
Nov		34,800.000	19,600.000	1,121.500	8.180	0.150	0.100	1,440.000	4.165	
Dec		32,000.000	18,200.000	1,125.000	9.485	0.350	0.200	1,585.000	4.918	
Average		34,137.500	19,387.500	1,105.917	14.308	4.138	0.133	1,539.750	9.223	
Total	0.000	409,650.000	232,650.000	13,271.000	171.700	49.650	1.600	18,477.000	110.675	0.000

Ontario Clean Water Agency
Biosolids Quality Report - Liquid
Digestor Type: AEROBIC
Solids and Nutrients

Facility: MISSISSIPPI MILLS WASTEWATER TREATMENT FACILITY
Works: 5678
Period: 01/01/2018 to 12/01/2018

Facility Works Number: *1.10000873E8*
Facility Name: *MISSISSIPPI MILLS WASTEWATER TREATMENT FACILITY*
Facility Owner: *Municipality: Municipality of Mississippi Mills*
Facility Classification: *Class 3 Wastewater Treatment*
Receiver: *Mississippi River*
Service Population:
Total Design Capacity: *14100.0 m3/day*
Period Being Reported: 01/01/2018 12/01/2018

Note: all parameters in this report will be derived from the Bslq Station

Month	Total Sludge Hauled (m3)	Avg. Total Solids (mg/L)	Avg. Volatile Solids (mg/L)	Avg. Total Phosphorus (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Ammonia + Nitrate (mg/L)	Potassium (mg/L)
Site	**Site Name**									
Station	**Bslq Station only**									
Parameter Short Name	**HauledVol**	**TS**	**VS**	**TP**	**NH3p_NH4p_N**	**NO3-N**	**NO2-N**	**TKN**	**calculation in report - no T/S**	**K**
T/s	**IH Month.Total**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**		**Lab Published Month Mean**
Jan		35,850.000	20,850.000	1,125.000	16.000	30.500	0.100	1,715.000	23.250	
Feb		35,700.000	21,600.000	1,100.000	12.405	0.100	0.100	1,875.000	6.253	
Mar		35,450.000	21,750.000	1,275.000	9.360	10.350	0.100	2,535.000	9.855	
Apr		36,350.000	22,050.000	1,315.000	11.940	43.200	0.100	2,375.000	27.570	
May		35,150.000	21,050.000	784.500	10.775	0.150	0.100	979.500	5.463	
Jun		32,950.000	18,650.000	1,250.000	4.500	0.150	0.100	1,640.000	2.325	
Jul		30,800.000	17,000.000	1,002.000	1.870	29.300	0.100	1,080.000	15.585	
Aug		33,300.000	17,600.000	1,185.000	4.360	0.100	0.100	1,605.000	2.230	
Sep		35,300.000	18,450.000	1,475.000	6.200	0.150	0.100	1,425.000	3.175	

Oct		36,200.000	19,350.000	1,123.500	12.365	7.650	0.100	1,256.000	10.008	
Nov		33,600.000	18,900.000	971.000	7.620	0.200	0.100	1,400.000	3.910	
Dec		31,900.000	18,400.000	1,022.500	6.905	0.350	0.450	1,515.000	3.628	
Average		34,379.167	19,637.500	1,135.708	8.692	10.183	0.129	1,616.708	9.438	
Total	0.000	412,550.000	235,650.000	13,628.500	104.300	122.200	1.550	19,400.500	113.250	0.000

Ontario Clean Water Agency
Biosolids Quality Report - Liquid
Digestor Type: AEROBIC
Solids and Nutrients

Facility: MISSISSIPPI MILLS WASTEWATER TREATMENT FACILITY
Works: 5678
Period: 01/01/2018 to 12/01/2018

Facility Works Number: *1.10000873E8*
Facility Name: *MISSISSIPPI MILLS WASTEWATER TREATMENT FACILITY*
Facility Owner: *Municipality: Municipality of Mississippi Mills*
Facility Classification: *Class 3 Wastewater Treatment*
Receiver: *Mississippi River*
Service Population:
Total Design Capacity: *14100.0 m3/day*
Period Being Reported: 01/01/2018 12/01/2018

Note: all parameters in this report will be derived from the Bslq Station

Month	Total Sludge Hauled (m3)	Avg. Total Solids (mg/L)	Avg. Volatile Solids (mg/L)	Avg. Total Phosphorus (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Ammonia + Nitrate (mg/L)	Potassium (mg/L)
Site	**Site Name**									
Station	**Bslq Station only**									
Parameter Short Name	**HauledVol**	**TS**	**VS**	**TP**	**NH3p_NH4p_N**	**NO3-N**	**NO2-N**	**TKN**	**calculation in report - no T/S**	**K**
T/s	**IH Month.Total**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**		**Lab Published Month Mean**
Jan		36,100.000	19,250.000	1,460.000	7.345	0.250	0.100	1,665.000	3.798	
Feb		35,550.000	20,550.000	1,080.000	0.685	0.400	0.100	1,500.000	0.543	
Mar		33,250.000	19,050.000	907.500	0.650	0.150	0.100	1,415.000	0.400	
Apr		34,700.000	20,150.000	1,030.000	2.905	1.950	0.100	1,775.000	2.428	
May		34,650.000	20,250.000	787.000	4.070	0.300	0.100	857.000	2.185	
Jun		34,700.000	19,300.000	1,075.000	4.655	0.100	0.100	1,265.000	2.378	
Jul		30,200.000	16,500.000	1,030.000	3.195	5.150	0.100	1,011.500	4.173	
Aug		30,300.000	15,200.000	1,076.000	2.525	0.300	0.100	1,325.000	1.413	
Sep		30,800.000	15,700.000	1,110.000	4.175	0.150	0.200	1,190.000	2.163	

Oct		34,500.000	17,600.000	1,110.000	1.235	3.950	0.100	994.500	2.593	
Nov		36,700.000	19,850.000	1,097.500	6.165	0.100	0.100	1,300.000	3.133	
Dec		31,700.000	17,300.000	1,025.000	3.485	0.300	0.100	1,308.000	1.893	
Average		33,595.833	18,391.667	1,065.667	3.424	1.092	0.108	1,300.500	2.258	
Total	0.000	403,150.000	220,700.000	12,788.000	41.090	13.100	1.300	15,606.000	27.095	0.000

Appendix D

Calibration Records

CapitalControls

Electrical/Control Panels – PLC/SCADA Programming – Instrumentation Calibrations

830 Industrial Ave. Ottawa, ON K1G-4B8 Ph. 613 248-1999 Fax: 613 248-1997

Mississippi Mills

Instrument Verification

Site Report May, 2018

Site

Mississippi Mills

W.W.T.P. Final Effluent Flow Meter

Prepared For: O.C.W.A.

Calibration Date: April 13, 2018

Calibration Due: April 13, 2019

Verifications performed: by Tim Stewart

Report Prepared by: Tim Stewart

CapitalControls
Electrical/Control Panels – PLC/SCADA Programming – Instrumentation Calibrations
830 Industrial Ave. Ottawa, ON K1G-4B8 Ph. 613 248-1999 Fax: 613 248-1997

Mississippi Mills Verification:

CapitalControls
Electrical/Control Panels – PLC/SCADA Programming – Instrumentation Calibrations
830 Industrial Ave. Ottawa, ON K1G-4B8 Ph. 613 248-1999 Fax: 613 248-1997

1 Calibration Equipment

1.1 *Fluke 725 Process Calibrator*

Fluke 725 Documenting Process Calibrator.

Analytical Variable vs. Current Output:

Any current measurement in a process can be compared to the theoretical calibration curve for that device by knowing the "range" of the device (example 0 to 200 l/s) and the respective measured current out associated with that variable.

$$\mathbf{I_{(theoretical)}mA = ((PV/Full\ Scaled) \times 16mA) + 4\ mA}$$

For example a flow meter is reading 75 l/s @ 10.00mA and the range is 0-200l/sec, then ((75/200)x16)+4 = 10.00mA is the expected or theoretical current for a PV of 75 l/s.

Error tolerances are typically in the range in the order of 5% (municipal water and wastewater treatment plants) and are expressed in % error of full scale. Therefore;

$$\mathbf{(I_{(Measured)} - I_{(theoretical)})/16)x100 = \%\ Error\ of\ full\ Scale}$$

((9.75 mA – 10.0 mA)/16)100 = -1.56% Error of full scale

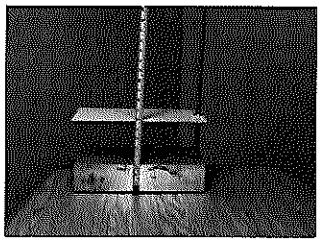
Fluke 725 Documenting Process Calibrator Certificates: included in calibration certificates.

830 Industrial Ave. Ottawa, ON K1G-4B8 Ph. 613 248-1999 Fax: 613 248-1997

1.2 *Parshall Flume Calibration by means of Simulating Channel Level*

By use of a mechanical level simulating tool installed introduced in the Parshall Flume, an exact level can be simulated causing the transmitter to display flow based on the simulator adjusted level.

Shown below is a picture of a simple level simulator used to simulate flows/levels in a Parshall Fume. By adjusting the reflector upward from the bottom ridge of the base, which will sit on the floor of the flume directly under the level sensor, the flow meter will



transmit and display the flow proportional to the simulated level. In this case a 24 inch Parshall flume with the simulator set to 240 mm can be verified by looking at the chart below. The flow on the transmitter should be comparable to 156.4 l/s.

CapitalControls
Electrical/Control Panels – PLC/SCADA Programming – Instrumentation Calibrations
830 Industrial Ave. Ottawa, ON K1G-4B8 Ph. 613 248-1999 Fax: 613 248-1997

FLOW CHART
GREYLINE INSTRUMENTS INC.
24" Parshall Flume

Formula: Q = KH^n,
where: Q = Flow in Liters per Second.
K = 0.031982
H = Head in Millimeters.
n = 1.5500
H maximum: 750.0 Millimeters
H increment: 5 Millimeters

mm	L/s	mm	L/s	mm	L/s	mm	L/s
5.000	0.3875	195.0	113.4	385.0	325.4	575.0	605.9
10.00	1.135	200.0	117.9	390.0	331.9	580.0	614.1
15.00	2.127	205.0	122.5	395.0	338.6	585.0	622.3
20.00	3.323	210.0	127.2	400.0	345.2	590.0	630.6
25.00	4.696	215.0	131.9	405.0	351.9	595.0	638.9
30.00	6.229	220.0	136.7	410.0	358.7	600.0	647.2
35.00	7.911	225.0	141.5	415.0	365.5	605.0	655.6
40.00	9.730	230.0	146.4	420.0	372.3	610.0	664.0
45.00	11.68	235.0	151.4	425.0	379.2	615.0	672.5
50.00	13.75	240.0	156.4	430.0	386.2	620.0	681.0
55.00	15.94	245.0	161.5	435.0	393.2	625.0	689.5
60.00	18.24	250.0	166.6	440.0	400.2	630.0	698.1
65.00	20.65	255.0	171.8	445.0	407.3	635.0	706.7
70.00	23.16	260.0	177.1	450.0	414.4	640.0	715.3
75.00	25.78	265.0	182.4	455.0	421.5	645.0	724.0
80.00	28.49	270.0	187.7	460.0	428.7	650.0	732.7
85.00	31.30	275.0	193.1	465.0	436.0	655.0	741.5
90.00	34.20	280.0	198.6	470.0	443.3	660.0	750.2
95.00	37.19	285.0	204.1	475.0	450.6	665.0	759.1
100.0	40.26	290.0	209.7	480.0	458.0	670.0	767.9
105.0	43.43	295.0	215.3	485.0	465.4	675.0	776.8
110.0	46.67	300.0	221.0	490.0	472.8	680.0	785.8
115.0	50.00	305.0	226.8	495.0	480.3	685.0	794.8
120.0	53.41	310.0	232.6	500.0	487.9	690.0	803.8
125.0	56.90	315.0	238.4	505.0	495.5	695.0	812.8
130.0	60.47	320.0	244.3	510.0	503.1	700.0	821.9
135.0	64.11	325.0	250.2	515.0	510.8	705.0	831.0
140.0	67.83	330.0	256.2	520.0	518.5	710.0	840.2
145.0	71.62	335.0	262.3	525.0	526.2	715.0	849.3
150.0	75.48	340.0	268.4	530.0	534.0	720.0	858.6
155.0	79.42	345.0	274.5	535.0	541.8	725.0	867.8
160.0	83.43	350.0	280.7	540.0	549.7	730.0	877.1
165.0	87.50	355.0	286.9	545.0	557.6	735.0	886.5
170.0	91.64	360.0	293.2	550.0	565.6	740.0	895.8
175.0	95.86	365.0	299.5	555.0	573.5	745.0	905.2
180.0	100.1	370.0	305.9	560.0	581.6	750.0	914.7
185.0	104.5	375.0	312.4	565.0	589.6		
190.0	108.9	380.0	318.8	570.0	597.7		

Figure 1: 24" Parshall Flume chart depicting Level verses flow.

CapitalControls
Electrical/Control Panels – PLC/SCADA Programming – Instrumentation Calibrations
830 Industrial Ave. Ottawa, ON K1G-4B8 Ph. 613 248-1999 Fax: 613 248-1997

2 Mississippi W.W.T.P.

Site Report May, 2018

CapitalControls

Electrical/Control Panels – PLC/SCADA Programming – Instrumentation Calibrations

830 Industrial Ave. Ottawa, ON K1G-4B8 Ph. 613 248-1999 Fax: 613 248-1997

2.1 Plant Influent Flow Meter

FIELD EQUIPMENT VERIFICATION / CALIBRATION

DATE: **April 13 / 2018**

DESCRIPTION : **Plant Influent Flow**	MODEL: **OCM III**	TAG: **Influent Flow Meter**
MANUFACTURER : **Greyline**	Serial #	

Client Name: **Almonte W.W.T.P.** Device Output Signal : **4.00 - 20.0 mA**

INSTALLATION INSPECTION

	DESCRIPTION	FINDINGS				COMMENTS
		OK	FIXED	N/A	FAULTY	
	GENERAL					**12" Parshall flume**
1	TAGGING			X		**Mode = Flow**
2						
	MECHANICAL					P3= exponential device
3	MOUNTING: check for proper fastening, etc.	X				P4=ratiometric
4	ORIENTATION: check for proper angle, etc.)	X				P6= range 21554 m3/day
5	POSITION: relative position to other components (i.e. for proper flow, blanking distance), etc.	X				P7= height of max head 51.20 cm
6						
	ELECTRICAL					
7		X				
8	WIRE TAGGING: (exists and proper wire type)	X				
9	QUALITY OF CONNECTIONS:	X				
10	GROUNDING:	X				
11	SHIELDING: (check if grounded only at PLC end of wire)	X				
12	CERTIFICATION CSA, ULC:	X				
13						

SET-UP/CALIBRATION

	DIGITAL		ADJUSTMENT USING	VERIFIED USING	SETPOINT / RANGE
14	SETPOINT ADJUSTMENT	MECHANICAL TYPE		Level Stand	
		ELECTRONIC TYPE	Fluke 725 calibrator S/N 8759025		0 – 21554 m3/day = 4.00 to 20.0 mA

Configuration Parameters:	Current Values	Calibration Data Test Tolerance: 5.00% Display	Calculated	% Error	Status	Notes
Level stand set to 2.75 cm	4.18 mA	249 m3/day	232 m3/day	0.08%	Passed	
Level stand set to 6.4 cm	4.75 mA	974 m3/day	860 /m3/day	0.53%	Passed	
Level stand set to 12.7 cm	5.80 mA	2430 m3/day	2487 m3/day	0.26%	Passed	
Level stand set to 19.5 cm	7.77 mA	5074 m3/day	4836 m3/day	1.10%	Passed	

Error (% Full Scale) = ((Displayed Output - Calculated *Variable*) / Full Scale) * 100
= ((5074-4836) / 21554)*100
= 1.10 % *of full scale*

Checked By: *Tim Stewart*

Cell: 613-325-9213
Email: tim.stewart@capitalcontrols.ca

3 Calibration Certificates

3.1 Fluke Calibration Certificate

www.pylonelectronics.com

PYLON
Calibration Technologies

Pylon Electronics Inc.
147 Colonnade Road
Ottawa, ON K2E 7L9

Page 1 of 1

CERTIFICATE OF CALIBRATION

Description	MULTI FUNCTION PROCESS	Work Order	H49740
Model Number	725	Serial Number	8759025
Instrument Id	SIA	Cal Procedure	SEE TEST DATA SHEET
Manufacturer	FLUKE	Cal Date	18 Jul 2017
Customer Name	CAPITAL CONTROLS	Result Cycle	52 Weeks
Purchase Order	CC1521-P1	Next Cal Date	18 Jul 2018

Calibration Environment: Temperature 23.1 °C Relative Humidity 38.6 %RH

Received Condition: Within Tolerance

Completed Condition: Within Tolerance

Standards Used to Establish Traceability

Instrument Type	Model	Asset #
CALIBRATOR WITH SCOPE OPTION	5522A-SC1100	13583
8.5 DIGIT MULTIMETER	3458A	13468

Pylon certifies that at the time of calibration, the above listed instrument meets or exceeds all of the specifications defined on the Test Data Sheet (TDS) unless otherwise indicated. The Certificate received and completed conditions and the TDS specifications are based on the procedure(s) and/or specification(s) referenced on the TDS unless otherwise indicated. Any statement of compliance is made without taking measurement uncertainty into account and is based on the instrument's performance against the test limits documented on the test data sheet.

The above listed instrument has been calibrated using standards that are traceable to the International System of Units (SI) through a National Metrological Institute (such as NRC or NIST). Pylon's quality system meets the requirements of ISO/IEC 17025:2005. Unless otherwise specified, Pylon maintains a minimum of 4:1 TUR between the equipment under test and the measurement system.

This report consists of two parts with separate page numbering schemes, the Certificate of Calibration and the Test Data Sheet (TDS). Copyright of this work is owned by the issuing laboratory and may not be reproduced, other than in full, except with the prior written permission of the issuing laboratory.

Test data As Found and Final (as left) results are the same unless noted otherwise. Certificate remarks identify if adjustments were performed.

Metrologist: 015 Quality Assurance: 001 Date of Issue: 18 Jul 2017 Page 1 of 5

HALIFAX MONTREAL OTTAWA TORONTO

PYLON

Calibration Test Data

Description: MULTI FUNCTION PROCESS CALIB Work order: H49740
Model: 725 Serial: 8759025

TEST REF	TEST DESCRIPTION	RESULTS MIN	AS FOUND	FINAL	MAX
P. 29	**LOWER DISPLAY mA MEASUREMENT TESTS**				
	APPLIED (A)	A	A	A	A
	4.000 m	3.997 m	3.999 m		4.003 m
	12.000 m	11.995 m	12.000 m		12.005 m
	24.000 m	23.993 m	24.000 m		24.007 m
P. 30	**LOWER DISPLAY FREQUENCY MEASUREMENT TESTS**				
	APPLIED FRQ (Hz)	Hz	Hz	Hz	Hz
	1 V P-P SQ 10 k	9.98 k	10.00 k		10.02 k
P. 31	**LOWER DISPLAY FREQUENCY SOURCE TEST**				
	TI OUTPUT (Hz)	Hz	Hz	Hz	Hz
	10 k	9.975 k	10.000 k		10.025 k
P. 32	**LOWER DISPLAY 4-W RESISTANCE MEASUREMENT TESTS**				
	APPLIED (Ω)	Ω	Ω	Ω	Ω
	15	14.90	14.99		15.10
	350	349.90	350.03		350.10
	500	499.5	500.0		500.5
	1500	1499.5	1500.1		1500.5
	3200	3199.0	3200.2		3201.0
P. 33	**LOWER DISPLAY 3-WIRE RTD MEASUREMENT TESTS**				
	APPLIED (Ω)	Ω	Ω	Ω	Ω
	350	349.80	349.99		350.20

CapitalControls
Electrical/Control Panels – PLC/SCADA Programming – Instrumentation Calibrations
830 Industrial Ave. Ottawa, ON K1G-4B8 Ph. 613 248-1999 Fax: 613 248-1997

PYLON

Calibration Test Data

Description: MULTI FUNCTION PROCESS CALIBI Work order: H49740
Model: 725 Serial: 8758025

TEST REF.	TEST DESCRIPTION		RESULTS MIN	AS FOUND	FINAL	MAX
P. 34	LOWER DISPLAY T/C MEASUREMENT TESTS					
	APPLIED (°C)	(V)	°C	°C	°C	°C
	0	0.000 m	-0.7	0.0		0.7
P. 35	LOWER DISPLAY T/C SOURCE TEST					
	APPLIED (°C)		°C	°C	°C	°C
	0		-0.7	0.2		0.7
P. 36	LOWER DISPLAY mA SOURCE TESTS					
	OUTPUT (A)		A	A	A	A
	4 m		3.9972 m	3.9994 m		4.0028 m
	12 m		11.9958 m	11.9991 m		12.0044 m
	24 m		23.9932 m	23.9978 m		24.0068 m
P. 37	LOWER DISPLAY mV SOURCE TESTS					
	OUTPUT (V)		V	V	V	V
	0.00 m		-0.020 m	0.001 m		0.020 m
	45.00 m		44.970 m	45.001 m		45.030 m
	100.00 m		99.960 m	100.003 m		100.040 m
	LOWER DISPLAY VOLTAGE SOURCE TESTS					
	OUTPUT (V)		V	V	V	V
	0.000		-0.002	0.000		0.002
	5.000		4.9970	5.0001		5.0030
	10.000		9.9960	10.0002		10.0040

CapitalControls
Electrical/Control Panels – PLC/SCADA Programming – Instrumentation Calibrations
830 Industrial Ave. Ottawa, ON K1G-4B8 Ph. 613 248-1999 Fax: 613 248-1997

PYLON

Calibration Test Data

Description: MULTI FUNCTION PROCESS CALIB Work order: H49740
Model: 725 Serial: 8759025

	TEST DESCRIPTION	RESULTS MIN	AS FOUND	FINAL	MAX
P: 38	LOWER DISPLAY RESISTANCE SOURCE TESTS				
	OUTPUT (Ω)	Ω	Ω	Ω	Ω
	15	14.9	15.0		15.1
	380	359.9	380.0		380.1
	500	499.5	500.0		500.5
	1500	1499.5	1500.2		1500.5
	3200	3199.0	3200.1		3201.0
P: 39	PRESSURE MODULE INPUT				
	(WITH 700 SERIES PRESSURE MODULE)				
	TI DISPLAY SHOWS (PSI)	Pass / Fail	n/a		