Mississippi Mills Wastewater System

2022 Annual Report

January 1, 2022 – December 31, 2022

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 #1637-AC8NT7 dated August 8, 2016.

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1 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	3	See Bypass and Overflow section
Community Complaints	0	There were no Community Complaints during the reporting period
Spills	2	Two (2) spill during the reporting period. See spill section
Operating Issues	0	There were no operating issues during the reporting period

2 System/Process Description

Flow enters the Wastewater treatment plant 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.
Flow then moves to secondary treatment which consists of two (2) treatment trains using the extended aeration activated sludge process. Each train is equipped with an aeration tank, anoxic zone and a secondary clarifier. Chemicals are added to the process for phosphorus control. Tertiary treatment is achieved using Five (5) filter trains with three (3) filtration cells in each. Disinfection is provided using Ultraviolet (UV) lights.

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Waste Activated Sludge (WAS) is transferred from the secondary clarifiers and thickened via rotary disk thickeners. Thickened WAS sludge is pumped into an ATAD for further sludge breakdown and then transferred via pump to the SNDR for stabilization. Digested sludge is pumped to the Fournier press to process cake for future land disposal.

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.

2.1 Notice of Modifications - Proposed Alterations, Extensions, or Replacement to Works

There were no modifications, proposed alterations, extensions or replacements that would affect Schedule A subsection 1 and subsection 3 of the Certificate of Approval.

3 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.

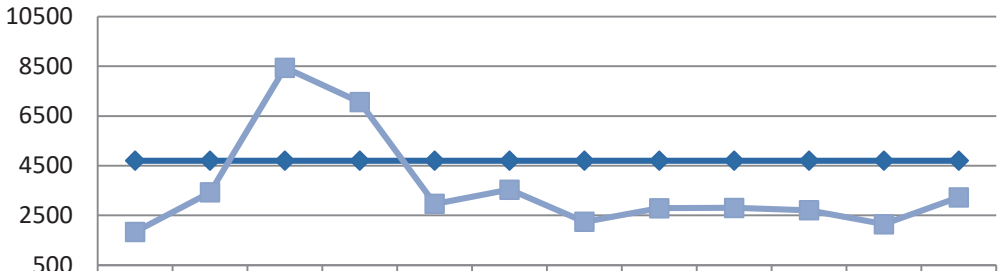
OCWA has additional "Value Added" and operational support services that the Municipality of Mississippi Mills benefits from including:

- 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

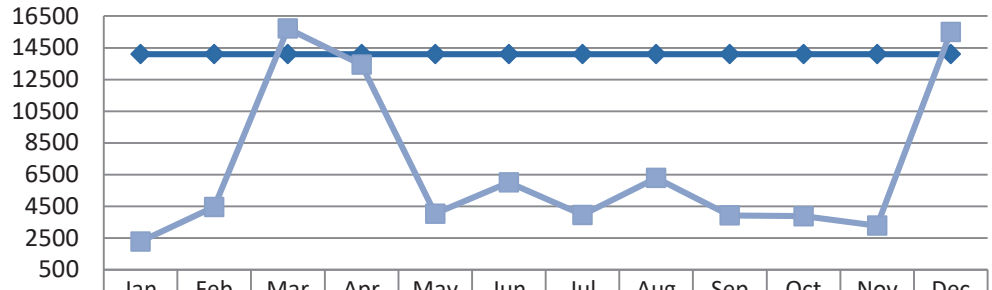
4 Treatment Flows

4.1 Raw Flow (m³/d)

Compliance is calculated as an annual average flow. The annual average flow for 2022 was 3,598.5 m³/d, which is in compliance with the limit of 4,700 m³/d. The flow spikes are associated to wet weather events such as heavy rain and seasonal changes such as the spring snow melt.

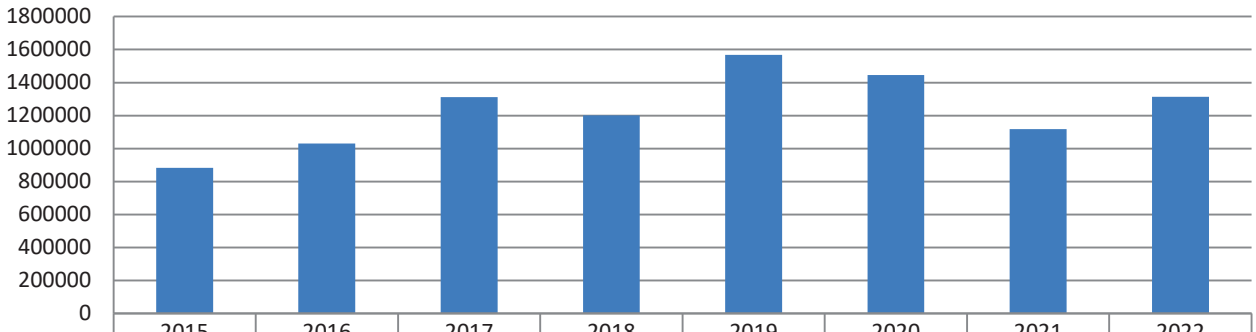


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Design Average (m³/d)	4700	4700	4700	4700	4700	4700	4700	4700	4700	4700	4700	4700
Average Daily Flow (m³/d)	1838	3429	8440	7059	2968	3540	2248	2793	2802	2706	2151	3228



	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)	2277	4464	15713	13439	4040	6000	3951	6283	3928	3872	3282	15490

4.2 Annual Comparison (m³)



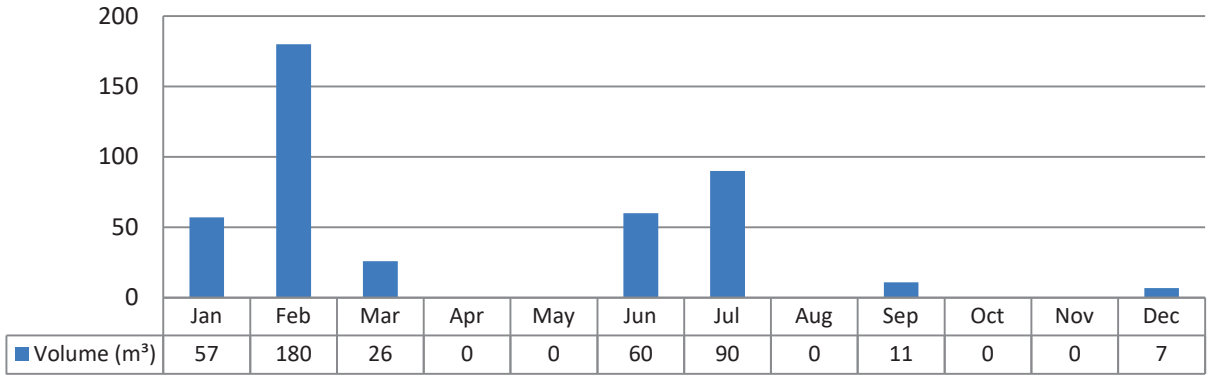
	2015	2016	2017	2018	2019	2020	2021	2022
Total Annual Flow	884055	1031585	1312674	1201247	1566983	1446310	1118526	1313442

4.3 Septage Volumes

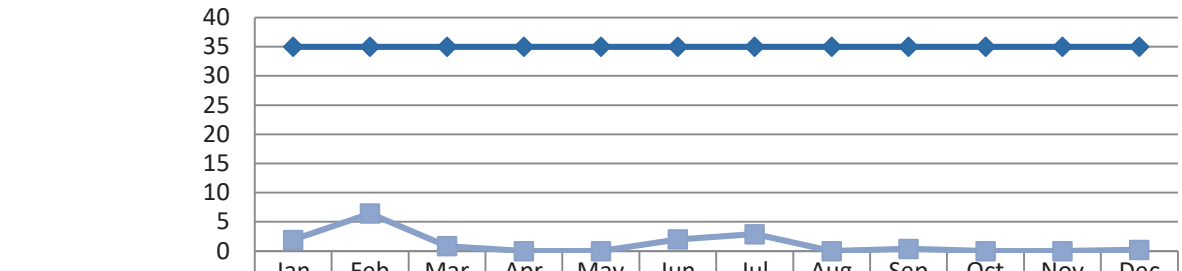
Average daily flow for 2022 = 1.2 m^3/d
Total Volume for 2022 = 430.8 m^3

Septage flows are included in the Raw Flows as it enters the influent stream prior to the raw flow meter.

Total Monthly Volume Received



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Volume (m^3)	57	180	26	0	0	60	90	0	11	0	0	7



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Design Avg Flow	35	35	35	35	35	35	35	35	35	35	35	35
Avg Daily Flow	1.9	6.4	0.8	0.0	0.0	2.0	2.9	0.0	0.4	0.0	0.0	0.2

5 Raw Sewage Quality

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

6 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.

6.1 Effluent Exceedance Summary

Date	Parameter	Exceedance	Limit	Value	Corrective Action
There were no effluent exceedances during the reporting period					

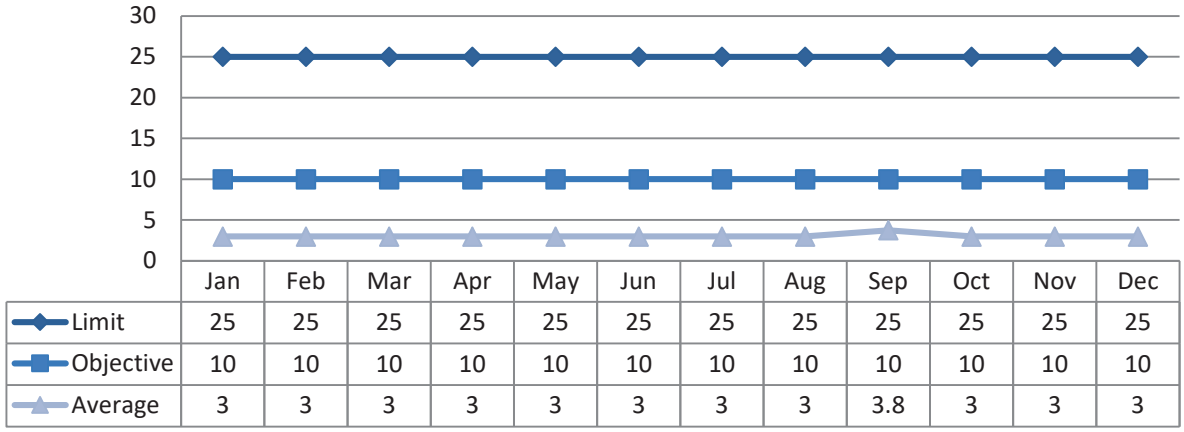
6.2 Other Effluent Sampling Issues

Sample	Legislation	Date	Details	Response
The were no effluent sampling issues during the reporting period				

7 Effluent Parameter Summary

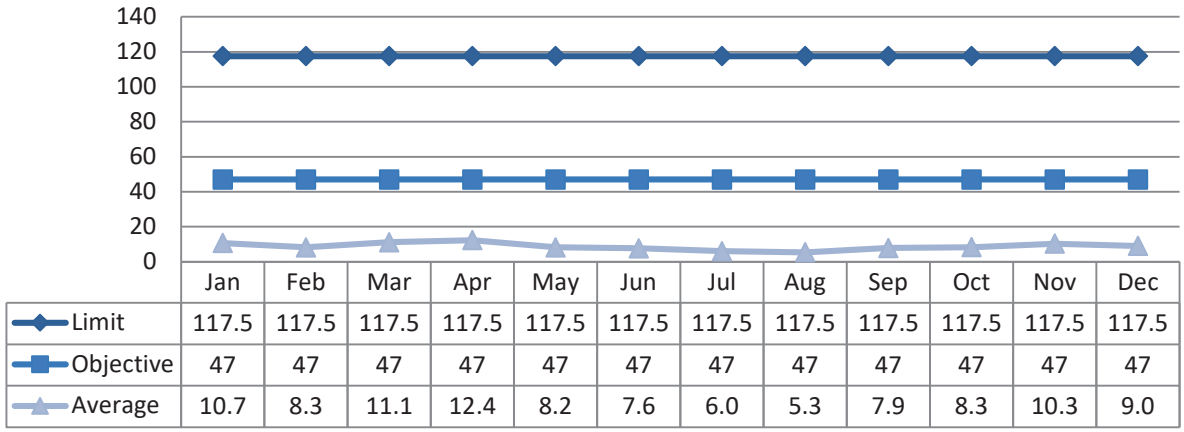
7.1 CBOD5

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	3.8	3	3	3

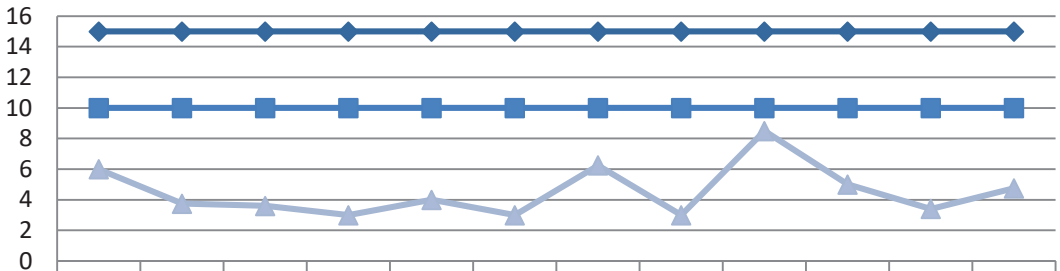
Loading (kg/d)



	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	10.7	8.3	11.1	12.4	8.2	7.6	6.0	5.3	7.9	8.3	10.3	9.0

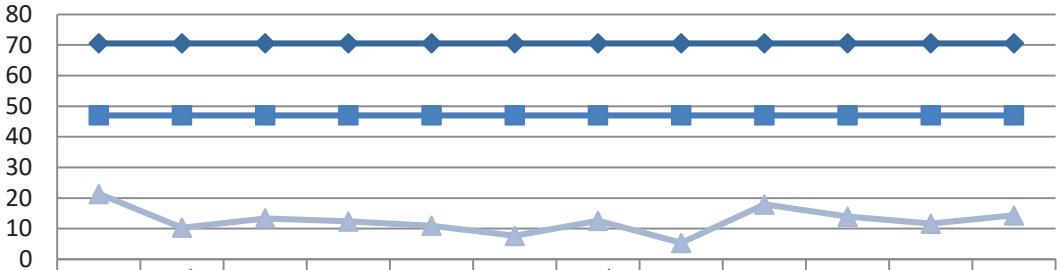
7.2 Total Suspended Solids

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	6.0	3.8	3.6	3.0	4.0	3.0	6.3	3.0	8.5	5.0	3.4	4.8

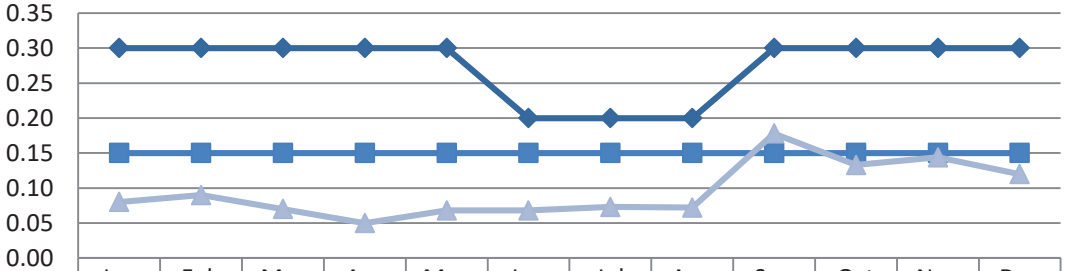
Loading (kg/d)



	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	21.3	10.3	13.4	12.4	10.9	7.6	12.6	5.3	17.9	13.9	11.6	14.3

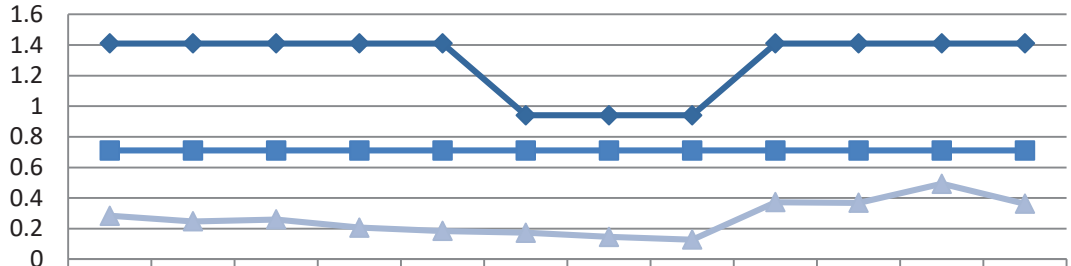
7.3 Total Phosphorus

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	0.08	0.09	0.07	0.05	0.07	0.07	0.07	0.07	0.18	0.13	0.14	0.12

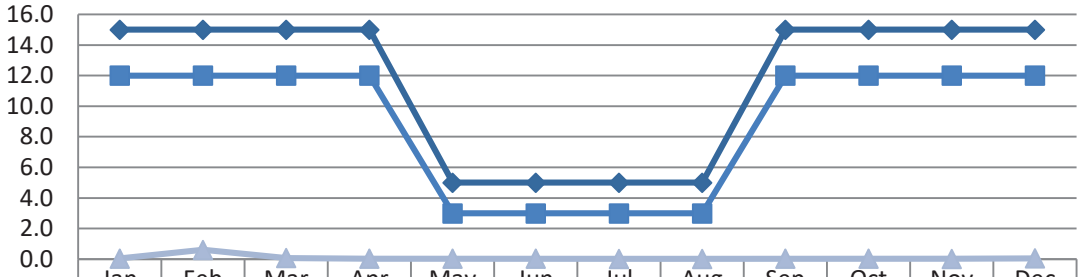
Loading (kg/d)



	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	0.28	0.25	0.26	0.21	0.18	0.17	0.15	0.13	0.37	0.37	0.49	0.36

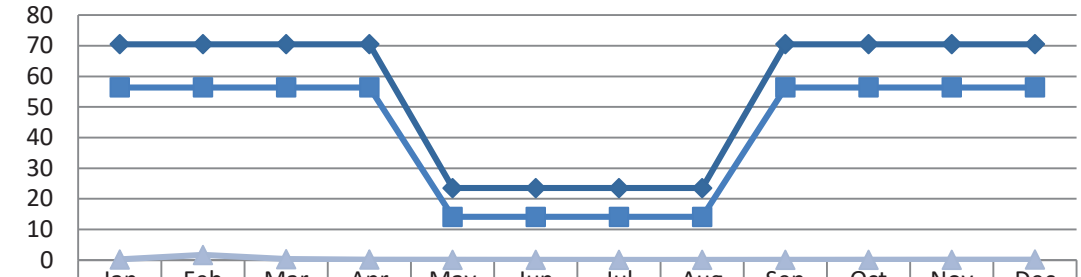
7.4 Total Ammonia Nitrogen

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	0.05	0.61	0.08	0.04	0.04	0.04	0.02	0.03	0.04	0.04	0.03	0.06

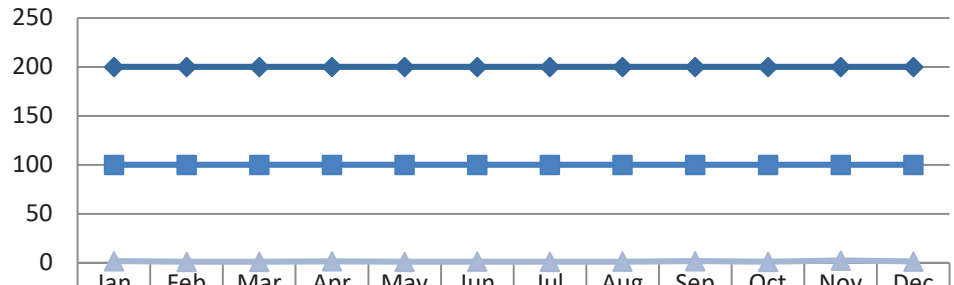
Loading (kg/d)



	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	0.19	1.68	0.31	0.14	0.10	0.09	0.04	0.05	0.08	0.10	0.09	0.17

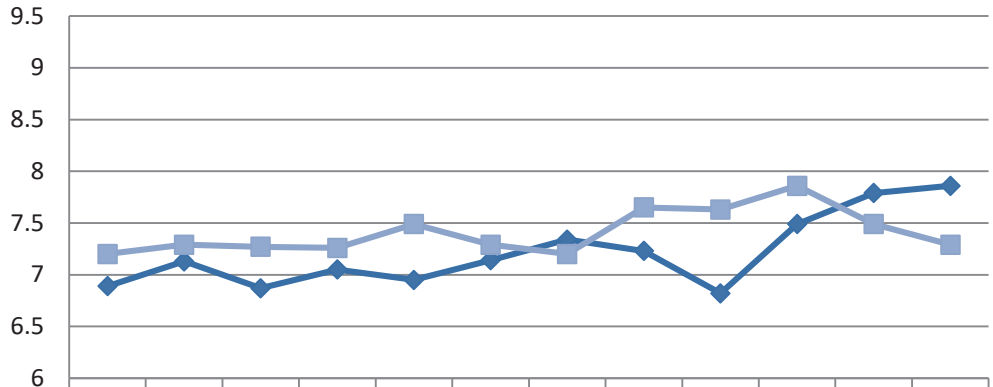
7.5 E-coli

Geometric Mean Average



	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	1.6	1.0	1.0	1.5	1.0	1.1	1.0	1.1	1.7	1.0	2.3	1.4

7.6 pH



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Min Monthly pH	6.89	7.13	6.87	7.05	6.95	7.14	7.34	7.23	6.82	7.49	7.79	7.86
Max Monthly pH	7.2	7.29	7.27	7.26	7.49	7.29	7.2	7.65	7.63	7.86	7.49	7.29

7.7 Acute Lethality

There were four (4) samples collected in 2022 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%

8 Septage Quality

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

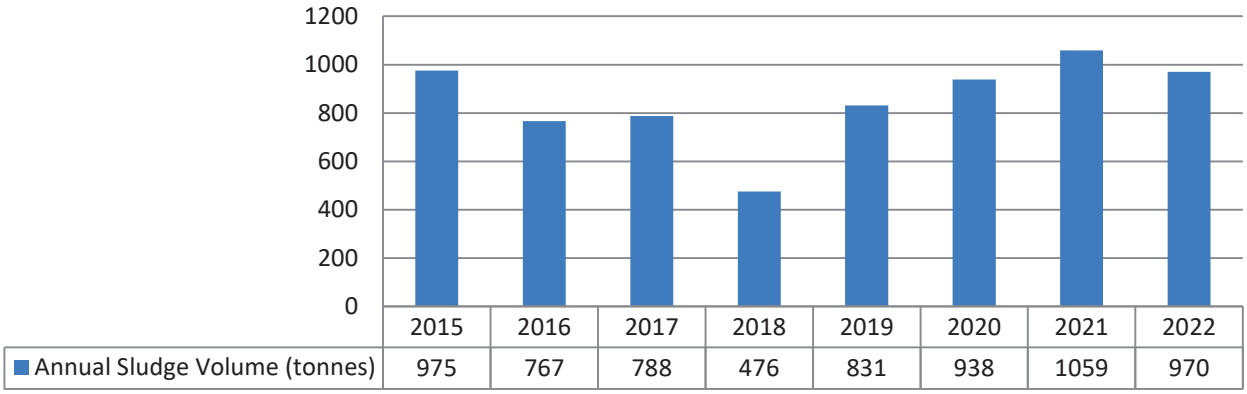
9 Biosolids

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.

9.1 Biosolids Disposal Summary

Date	Site	NASM Plan number	Volume (MT)
May 13-25, 2022	Cochran – Steele Farm	23782	568.57
October 24-25 2022	Cochran – Steele Farm	23782	401.67
		Total	970.24

9.2 Annual Comparison



9.3 Quality

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

10 Summary of Complaints

Date	Location	Details
There were no community complaints for the reporting period.		

11 Summary of Bypass/Overflows

Date	Event	Details of Events
08-Aug-2022	Gemmill's Bay SPS Overflow	Heavy rain event
17-Dec-2022	Mississippi Mills WWT UV	Power outage occurred and the generator ran to maintain operations. Upon returning to line power, the SCADA system showed the UV system as operational. During Monday rounds, operations staff noticed the UV system was not in operation. Power and communications were was reset to the UV system
31-Dec-2022	Gemmill's Bay SPS Overflow	An extreme rain event and snow melt caused a sudden spike in the flow

12 Summary of Spills/Abnormal Discharges

Date	Event	Details of Events
19-Mar-2022	Effluent Spill	A spill at the Mississippi Mills WWTF occurred due to a root infiltration of the outfall pipe. The spill was from a manhole along the final effluent outfall pipe. The root infiltration would not allow the full capacity of flow to pass and caused the spill
26-Mar-2022	Effluent Spill	Due to root infiltration maintenance along the outfall pipe, flows were diverted to attenuation pond Cell A. Prolonged maintenance and diversion brought Cell A to full capacity. With MECP's approval, staff pumped raw sewage overland from Cell A to Cell B.

13 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.

13.1 Maintenance Highlights

WO #	Summary
2869261	Capital #1 Blower Replacement
2872290	Capital Alum Pump Head Replacement Kits
2872292	Capital Portable Hach Meters Servicing
2923093	Capital Compressor Service
2963297	Capital Replacement Parts for Compressor #2
2965655	Capital SCADA Programmer Site Visit
3015764	Capital Installed Davit Stand For Mixer for Aeration Tank 1
3016406	Capital Replacement Impeller for Anoxic Mixer
3016681	Capital Hot Water Tank Repairs
3017069	Miscellaneous Capital Items < $200
3018310	Capital Portable Hach Meter pH Probe
3066173	Capital Main Office AC not working
3107140	Capital Replacement Polymer Injection Check Valve Fournier Press
3107151	Capital Disk Thickener Polymer Panel Check Valve
3145670	Capital Annual Septage Receiving Website Invoice
2634512	Capital WAS Pump Motor Replacement
2635018	Capital UV Sensor Probe
2635039	Capital Hach Technician On Site UVT
2637697	Capital Boiler 1 troubleshooting
2638131	Capital Miscellaneous Items < $200
2638561	Capital SPS Cleanout by Pump Truck
2638613	Capital CP 7 communications
2676549	Capital Blower 1 - Inverter Fault Alarm
2678121	Capital New Fan Motor for Heater in Blower Room
2680401	Capital UPS battery back up
2681152	Capital Ignition Assembly
2681414	Capital Disk Thickener #2 Pump Motor Faulting
2725647	Capital Alum Panel Replacement Parts
2774261	Capital ATAD valve not responding
2774286	Capital Flow Meter Fault Sludge 2 flow meter
2824015	Capital IR Scan for all roofs
2824892	Capital SCADA Programmer site visit
2867012	Capital Sand Filter Parts
2869324	Capital Backflow Prevention Service and Repair
2871281	Main Breaker Communication Lost
2872288	Capital UV Sensor Assay
2874357	Capital Final Effluent pH Electrode
2921178	Capital Main Office and Lab AC units not working
2923084	Capital Final Effluent pH Probe
2962278	Capital O_2 Sensor
2962610	Capital Replacement parts for Compressor #2
2963247	Capital Annual Website Registration Fee
3014832	Capital RP Backflow
3015765	Capital Installed Davit Stand for Mixer for Aeration Tank 2
3016126	Capital Replacement Impeller for Anoxic Mixer

WO #	Summary
3016661	Capital New Propeller for Anoxic Mixer 2
3148218	Capital Capital Controls Chain & Flight Control Issues and UV Dosage Alarm

13.2 Calibration

The flow meters were calibrated on January 19th 2022. 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.

14 Collection Highlights

Collection Highlights were provided by the Municipality of Mississippi Mills.

14.1 Collection Highlights

- One (1) quarter of sewage collection system flushed and inspected via CCTV
- Regular sewer inspection program
- Several repairs – main lines and laterals
- Preventative flushing
- Sewer lining on
- New sewer mains commissioned on Mill Street (Phase 1 and 2), 36 Main Street East, and 333 Country Street

14.2 Planning Initiatives

- Water and Wastewater Master Plan
- Union Street North Infrastructure Upgrade Design
- Princess Street Infrastructure Upgrade Design