Chesterville Wastewater System

Sewage Works # 110000114

Annual Report

Prepared for: Township of North Dundas

Reporting Period of January 1st – December 31st 2024

Issued: March 28, 2024

Revision: 0

Operating Authority:

OCWA

ONTARIO CLEAN WATER AGENCY
AGENCE ONTARIENNE DES EAUX

This report has been prepared to meet the requirements set out in:

Document	Document #	Issue Date	Issue Number
Facility ECA	6657-BPYPVL	June 1, 2020	n/a
ECA for Municipal Sewage Collection System	180-W601	October 27, 2022	1

Table of Contents

1 Revision History

Date	Rev#	Revisions
2025-03-28	0	Annual Report Issued

2 Operations and Compliance Reliability Indices

Compliance Event	# of Events
Environment Canada Inspections	0
Ministry of Environment Inspections	0
Ministry of Labour Inspections	0
Non-Compliance	0
Community Complaints	0
Spills/Overflows/Bypass'	0/0/0
Sewer Main Blockages	0

3 System Process Description

Chesterville's wastewater system consists of a gravity fed sanitary sewage collection system with three pumping stations and a wastewater treatment lagoon. The main pumping station is located on Water Street and discharges directly to the lagoon. There is also a pumping station located on Lori Lane which was constructed in the early 1990's to service the Thompson subdivision. A third pumping station is located at the lagoon and services the industrial site located at 171 Main Street North. This pumping station is currently offline.

Chesterville's sewage treatment system was originally constructed in the 1970's and included only one lagoon cell until a second cell was added in 1981. Substantial upgrades to the system took place between 2014 and 2015. A second wet well was added at the main pumping station, increasing the pumping capacity to 145 l/s, and a continuous chemical feed system for phosphorus removal was added along a new forcemain from the pumping station to the lagoons. The lagoon system was expanded by incorporating the former Nestle lagoon cells, creating a five cell system, and the existing municipal lagoon cells were converted to polishing/effluent storage ponds with the addition of aeration to both cells.

The lagoon system's design capacity was increased from 1046 m^3/d to 1660 m^3/d following the upgrades. However, the Ministry required that testing be undertaken to confirm the lagoon would be able to perform to the required effluent criteria when the facility reached the new rated capacity. The testing took place and a report was submitted, but not deemed by the Ministry to provide enough evidence that the lagoon would be able to meet all necessary requirements when operating at full capacity. Rather than extend the timeline to continue the testing, the Ministry removed the performance testing requirement from the ECA and replaced it with a requirement in the annual report to review performance as flows

increase. The amended ECA # 6657-BPYPVL was issued June 1, 2020.

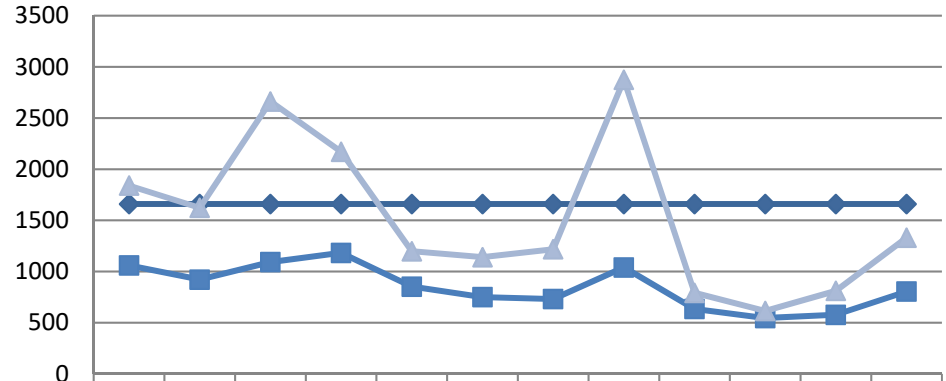
Effluent from the lagoons is discharged in the spring and in the fall via a 600 mm diameter pipe which extends from the treatment facility to an outlet in the South Nation River.

4 Wastewater System Flows

The hydraulic flows reaching the sewage lagoons in 2024 averaged 650 m^3/day which represents 39% of the 1,660 m^3/day design capacity.

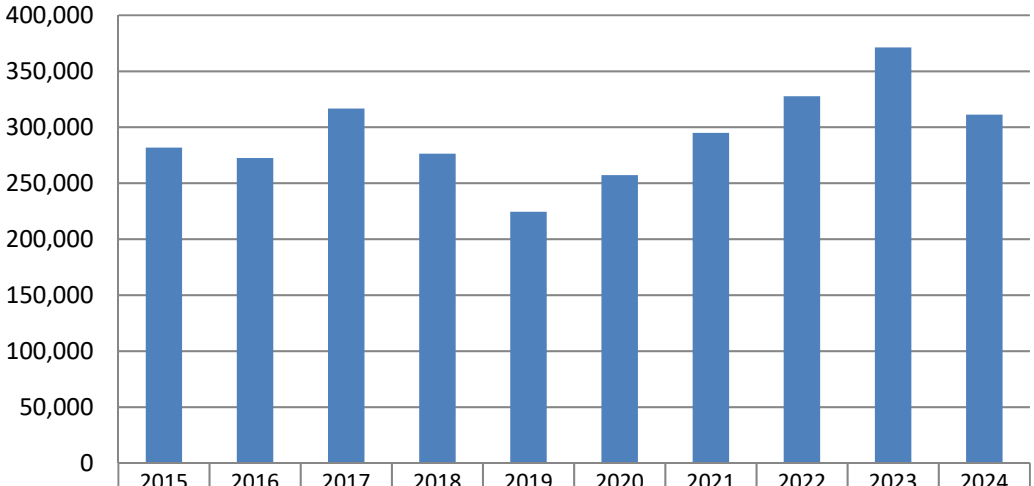
4.1 Raw Flows

2024 Raw Flows (m^3/d):



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Design Capacity (m3/d)	1660	1660	1660	1660	1660	1660	1660	1660	1660	1660	1660	1660
Avg Flow (m3/d)	1061	922	1093	1183	853	750	732	1041	635	546	578	806
Max Flow (m3/d)	1840	1623	2662	2171	1199	1141	1218	2874	792	615	812	1331

Annual Raw Flow Comparison (m^3):



	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Total Annual Flow (m3)	281,749	272,447	316,626	276,312	224,439	257,195	294,953	327,589	371,256	311,229

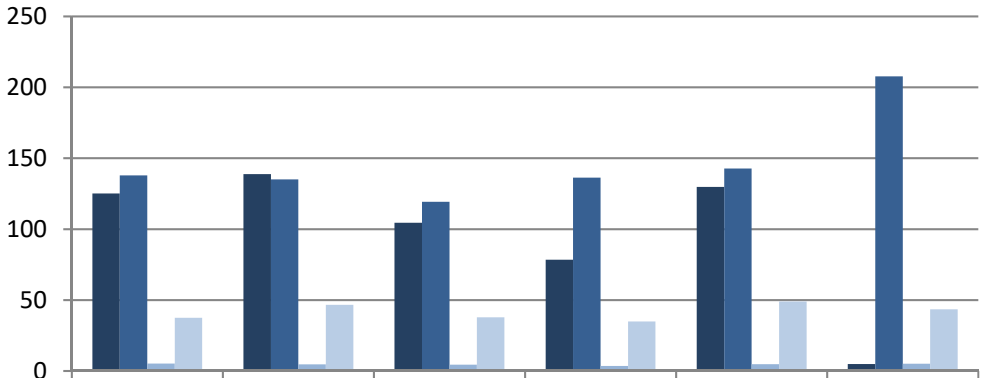
4.2 Effluent Flow

Discharge Period	Start Date	End Date	Volume Discharged (m^3)
Spring Discharge	March 25, 2024	April 8, 2024	115,117
Fall Discharge	November 6, 2024	November 15, 2024	120,564
		Total Flow Discharged	235,681

5 Raw Sewage Quality

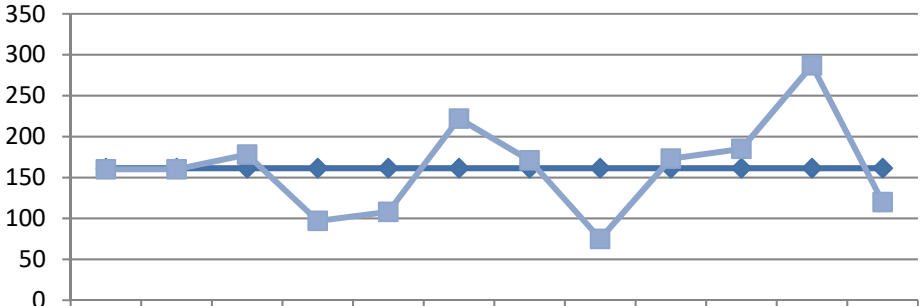
2024 monthly results are available in Appendix A – Performance Assessment Reports.

Annual Comparison (mg/L):



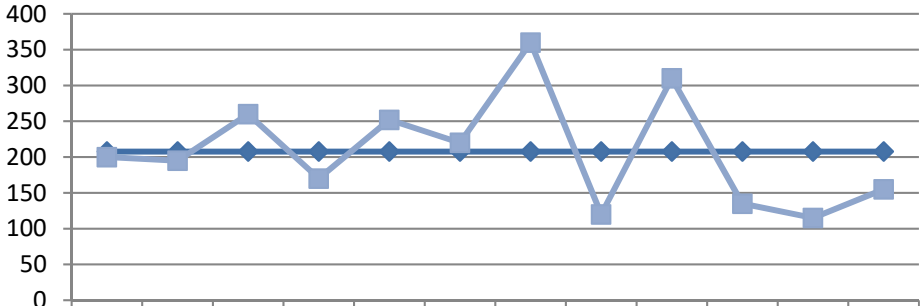
	2019	2020	2021	2022	2023	2024
BOD5 Annual Average	125	139	104	78	130	5
TSS Annual Average	138	135	119	136	143	208
TP Annual Average	5.2	4.6	4.4	3.5	4.7	5.1
TKN Annual Average	37.5	46.5	37.8	34.8	48.9	43.5

5.1 Biochemical Oxygen Demand (5-Day)



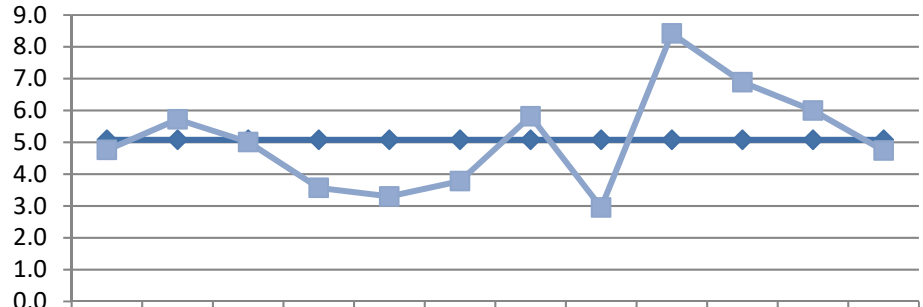
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Annual Average (mg/L)	161	161	161	161	161	161	161	161	161	161	161	161
Monthly Results (mg/L)	160	160	178	97	108	222	171	75	173	185	287	120

5.2 Total Suspended Solids



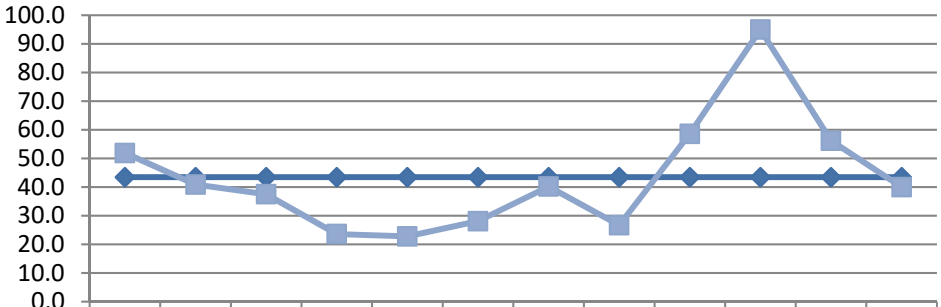
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Annual Average (mg/L)	208	208	208	208	208	208	208	208	208	208	208	208
Monthly Results (mg/L)	200	195	260	170	252	220	360	120	310	135	115	155

5.3 Total Phosphorus



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Annual Average (mg/L)	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
Monthly Results (mg/L)	4.8	5.7	5.0	3.6	3.3	3.8	5.8	3.0	8.4	6.9	6.0	4.7

5.4 Total Kjeldahl Nitrogen



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Annual Average (mg/L)	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
Monthly Results (mg/L)	51.9	40.9	37.5	23.6	22.8	28.1	40.2	26.7	58.6	95.0	56.2	40.0

6 Effluent Quality

The average concentrations of carbonaceous biochemical oxygen demand (CBOD5), total phosphorus (TP) and total ammonia nitrogen (TAN) remained below the effluent limits and objectives outlined in the facility's ECA during both the spring and fall lagoon discharges in 2024. The average concentration of total suspended solids (TSS) in the effluent exceeded the limit during the spring discharge, but remained below both the limit and the objective during the fall discharge. The annual average daily effluent loading calculated for TP in 2024 exceeded the ECA Limit.

Effluent pH remained below the limit but exceeded the objective in four out of five samples collected during the spring discharge in 2024, but remained below the limit and objective for all samples collected during the fall discharge. The objective level of 'non-detectable' was exceeded for undissociated hydrogen sulphide (H2S) during the spring discharge period although the measured concentration of all samples remained below the limit.

The results from the spring and fall discharge periods are tabulated below. Please refer to the Performance Assessment Reports in Appendix A for details.

6.1 Effluent Quality Assurance or Control Measures

This system is part of the Ontario Clean Water Agency's Nation Valley Cluster. The cluster is supported by the Eastern Regional Hub and corporate resources. Operational Services are provided by OCWA employees who work in the community. The system is operated to meet compliance with applicable regulations. The system has comprehensive manuals detailing operations, maintenance, instrumentation, and emergency procedures. All procedures are treated as active documents and are updated as required. These documents are also part of OCWA's Quality & Environmental Management System.

Effluent control measures include pre-discharge sampling and testing of lagoon cell contents prior to seasonal discharges. The samples are collected by OCWA's 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".

All effluent samples collected during the reporting period to meet legislated sampling requirements were submitted to Caduceon Environmental Laboratories in Ottawa for analysis, with the exception of pH, temperature and unionized ammonia. 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, OCWA is ensuring appropriate control measures are undertaken during laboratory testing.

The pH and temperature parameters were analyzed in the field at the time of sample collection by certified operators to ensure accuracy and precision of the results obtained. Un-ionized ammonia was calculated using the total ammonia nitrogen concentration, pH and temperature as required by the facility's ECA.

OCWA uses several computer systems which include:

- Process Data Management (PDM)
  - This database program consolidates all operational data from a variety of sources including field data, online instrumentation, and electronic receipt of lab test results for reporting, tracking and analysis.
- Maximo – OCWA's Work Management System (WMS)
  - This program is used to track and schedule maintenance activities for all equipment in the system. It is also used to assign tasks for specific operational tasks.
- Wonderware (OUTPOST5)
  - Wide-area SCADA system allows for process optimization and data logging, process trending, remote alarming.

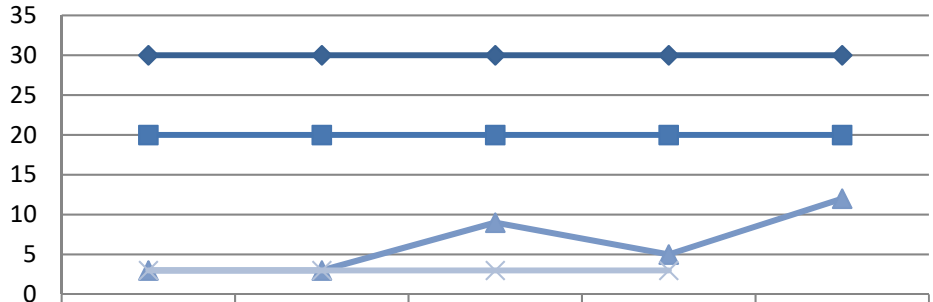
The operations team also has access to a network of operational compliance and process specialists to assist for emerging process issues.

Detailed individual sample results for both raw sewage and final effluent can be requested from the operating authority.

6.2 Carbonaceous Biochemical Oxygen Demand (5-Day)

Discharge Period	Seasonal Average (mg/L)	Objective (mg/L)	Objective Exceedance (Y/N)	Limit (mg/L)	Limit Exceedance (Y/N)
Spring	6.4	20	N	30	N
Fall	3.0	20	N	30	N

Effluent $CBOD_5$ Results:



	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
ECA Limit (mg/L)	30	30	30	30	30
ECA Objective (mg/L)	20	20	20	20	20
Result - Spring (mg/L)	3	3	9	5	12
Result - Fall (mg/L)*	3	3	3	3	

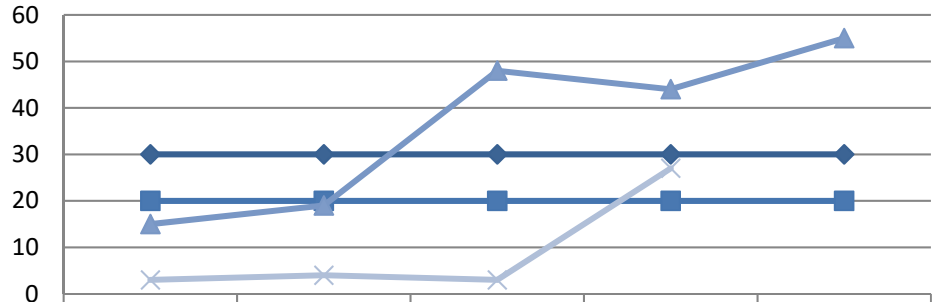
** A total of four samples were collected during the fall discharge*

6.3 Total Suspended Solids

Discharge Period	Seasonal Average (mg/L)	Objective (mg/L)	Objective Exceedance (Y/N)	Limit (mg/L)	Limit Exceedance (Y/N)
Spring	36.2	20	Y*	30	Y*
Fall	9.25	20	N	30	N

**Please refer to the 'Operating Issues' section of this report for details.*

Effluent TSS Results:



	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
ECA Limit (mg/L)	30	30	30	30	30
ECA Objective (mg/L)	20	20	20	20	20
Result - Spring (mg/L)	15	19	48	44	55
Result - Fall (mg/L)*	3	4	3	27	

** A total of four samples were collected during the fall discharge*

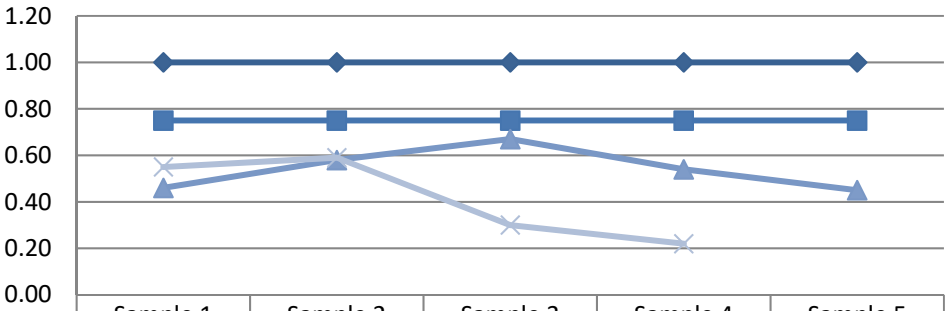
6.4 Total Phosphorus

Discharge Period	Seasonal Average (mg/L)	Objective (mg/L)	Objective Exceedance (Y/N)	Limit (mg/L)	Limit Exceedance (Y/N)
Spring	0.54	0.75	N	1.00	N
Fall	0.42	0.75	N	1.00	N

Discharge Period	Annual Average (mg/L)	Limit (kg/d)	Exceedance (Y/N)
2024	3.26	1.66	Y*

**Please refer to the 'Operating Issues' section of this report for details.*

Effluent TP Results:



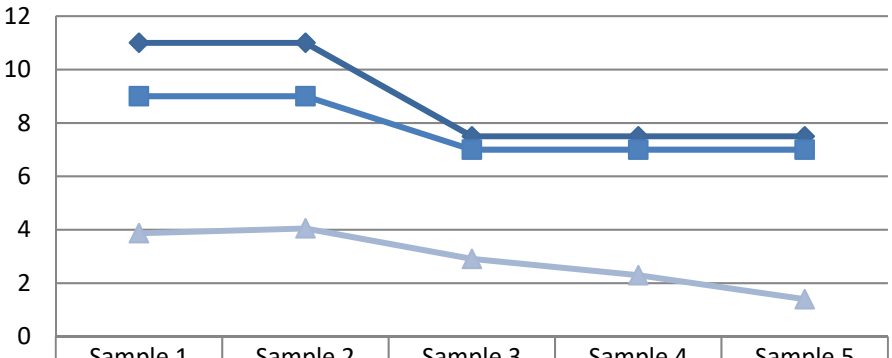
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
ECA Limit (mg/L)	1.00	1.00	1.00	1.00	1.00
ECA Objective (mg/L)	0.75	0.75	0.75	0.75	0.75
Result - Spring (mg/L)	0.46	0.58	0.67	0.54	0.45
Result - Fall (mg/L)*	0.55	0.59	0.3	0.22	

** A total of four samples were collected during the fall discharge*

6.5 Total Ammonia Nitrogen

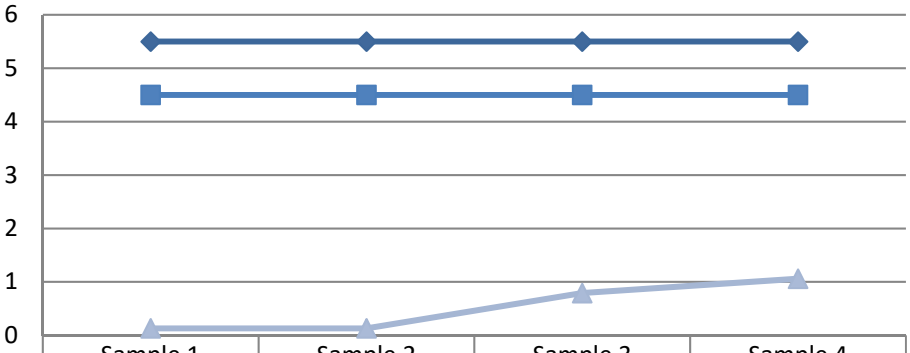
Discharge Period	Seasonal Average (mg/L)	Objective (mg/L)	Objective Exceedance (Y/N)	Limit (mg/L)	Limit Exceedance (Y/N)
Spring (Mar 1 – Mar 31)	4.0	9.0	N	11.0	N
Spring (Apr 1 – Apr 30)	2.2	7.0	N	7.5	N
Fall (Nov 1 – Dec 16)	0.5	4.5	N	5.5	N

Effluent TAN Results for Spring Discharge Period:



	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
ECA Limit - Spring (mg/L)	11	11	7.5	7.5	7.5
ECA Obj - Spring (mg/L)	9.0	9.0	7.0	7.0	7.0
Result - Spring (mg/L)	3.87	4.05	2.91	2.3	1.4

Effluent TAN Results for Fall Discharge Period:



	Sample 1	Sample 2	Sample 3	Sample 4
ECA Limit - Fall (mg/L)	5.5	5.5	5.5	5.5
ECA Obj - Fall (mg/L)	4.5	4.5	4.5	4.5
Result - Fall (mg/L)	0.13	0.13	0.79	1.06

6.6 Undissociated Hydrogen Sulphide

Discharge Period	Seasonal Average (mg/L)	Objective (mg/L)	Objective Exceedance (Y/N)	Limit (mg/L)	Limit Exceedance (Y/N)
Spring	0.002	Non-Detectable	Y*	0.02	N
Fall	Non-Detectable	Non-Detectable	N	0.02	N

**Please refer to the 'Operating Issues' section of this report for detail.*

** A total of four samples were collected during the fall discharge*

Effluent Undissociated H_2S Results for Spring Discharge Period:

	25-Mar	28-Mar	03-Apr	04-Apr	08-Apr	Average
S^{2-} (mg/L)	0.16	0.16	0.16	0.4	0.16	0.10
pH	8.68	8.46	9.0	9.05	9.09	8.86
Temp	8.1	8.1	7.4	7.4	14	N/A
% Undissociated H_2S (from table)	3.20	4.97	1.63	1.66	1.071	N/A
Undissociated H_2S (mg/L)	0.0026	0.0040	0.0013	0.0033	0.0009	0.0024

Effluent Undissociated H_2S Results for Fall Discharge Period:

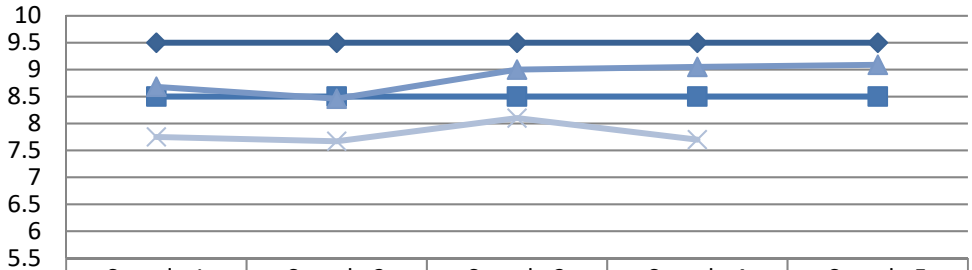
	06-Nov	08-Nov	12-Nov	15-Nov	Average
S^{2-} (mg/L)	0.01	0.01	0.08	0.08	0.05
pH	7.75	7.67	8.1	7.7	7.8
Temp	14.1	11.6	10.7	6.7	N/A
% Undissociated H_2S (from table)	21.38	22.70	10.77	25.87	N/A
Undissociated H_2S (mg/L)	ND	ND	ND	ND	ND

6.7 pH

Discharge Period	Seasonal Average	Objective	Objective Exceedance (Y/N)	Limit	Limit Exceedance (Y/N)
Spring	8.86	6.5 – 8.5	Y*	6.0 – 9.5	N
Fall	7.81	6.5 – 8.5	N	6.0 – 9.5	N

**Please refer to the 'Operating Issues' section of this report for detail.*

Effluent pH Results:



	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
ECA Top Limit	9.5	9.5	9.5	9.5	9.5
ECA Top Objective	8.5	8.5	8.5	8.5	8.5
Result - Spring	8.68	8.46	9	9.05	9.09
Result - Fall*	7.75	7.67	8.1	7.7	

** A total of four samples were collected during the fall discharge*

6.8 Acute Lethality

Two samples were collected in 2024 and tested for acute lethality to Rainbow Trout and Daphnia Magna. In accordance with the ECA, sampling has been reduced to once annually (alternating spring and fall) after four consecutive discharges indicated the effluent was not lethal. Results are displayed as % mortality. An adverse result is a >50% mortality rate.

Sample Period	Rainbow Trout	Daphnia Magna
Spring Discharge - Start	0 %	0 %
Spring Discharge - End	0 %	0 %

7 Operating Issues

The annual average daily effluent loading calculated for Total Phosphorus exceeded the ECA limit of 1.66 kg/d in 2024 although the TP concentration of all samples remained below both the limit and objective specified in the ECA throughout the spring and fall lagoon discharge periods. The annual average daily effluent loading is calculated based on the total number of days that effluent is discharged during the year.

The ECA Limit for TSS was exceeded during the spring discharge in 2024. The elevated TSS in the samples can be attributed to wind action resulting in some berm erosion in proximity to the polishing Cell #4 effluent discharge chamber. In 2023, the level in the polishing cells was kept low to promote vegetation growth along the berms. Unfortunately this tactic was unsuccessful in reducing berm erosion during the 2024 spring discharge. OCWA is continuing to investigate berm rehabilitation along the polishing cells.

Effluent pH remained within the limits but exceeded the objective specified in the ECA in four (4) of the effluent samples collected during the spring discharge in 2024, all other samples remained below the objective.

7.1 Effluent Quality Non-Compliance Summary

Date	Exceedance of	Limit	Value	Corrective Action
Spring Discharge	Total Suspended Solids (TSS)	30 mg/L	36.2 mg/L	The elevated TSS in the samples can be attributed to wind action resulting in some berm erosion in proximity to the polishing Cell #4 effluent discharge chamber. In 2023, the level in the polishing cells was kept low to promote vegetation growth along the berms. Unfortunately this tactic was unsuccessful in reducing berm erosion during the 2024 spring discharge. OCWA is continuing to investigate berm rehabilitation along the polishing cells.

Date	Exceedance of	Limit	Value	Corrective Action
2024	Phosphorus Loading	1.66 kg/d	4.57 kg/d	Loading is directly proportional with the total number of days that effluent is discharged during the year.

7.2 Summary of Abnormal Sewage Discharge Events

Abnormal discharge events include bypasses, overflows, and spills of sewage. No bypasses, overflows or spills of sewage occurred during the reporting period. Summary details are included in Appendix B.

7.3 Spills (Other than Sewage)

Date	Location	Details	Volume (m3)	Start Date and Time	End Date and Time
None to report.					

8 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.

OCWA uses a Workplace Maintenance System (WMS). WMS is a maintenance tracking system that can generate work orders as well as provide summaries of completed and scheduled work. During the year, the operating authority at the facility generates scheduled work orders on a planned frequency. This ensures routine and preventive maintenance is carried out. Emergency and capital repair maintenance is completed and added to the system.

Routine planned maintenance activities are scheduled in WMS and include:

- Inspect, adjust and calibrate process control equipment to ensure proper operation of sewage collection systems, pumps, chemical feeders, and all other equipment installed at the facilities.
- Carry out a routine maintenance program including greasing and oiling as specified in the lubrication schedule.

Planned maintenance activities are communicated to the person responsible for completing the task through the issuance of WMS work orders. Work orders are automatically generated on a schedule as determined based on manufacturer's recommendations and site specific operational and maintenance needs and are assigned directly to the appropriate operations personnel. This schedule is set up by the designated WMS Primary. Work orders are completed and electronically entered into WMS by the person responsible for completing the task.

Unplanned maintenance is conducted as required.

Suggested capital projects and major maintenance recommendations are provided to the Township of North Dundas by OCWA annually. This list is developed by facility staff and provides recommendations for facility components requiring upgrading or improvement.

8.1 Maintenance and Repairs Summary

Description
- Performed routine sewer flushing & wet well cleaning - Completed sewer flushing and CCTV inspection of John St. & Harper St. - Installed heater in dry well at Water St. SPS - Replaced leaking forcemain piping in blower building at lagoon - Completed annual service on standby generators - Installed new standby generator at Lori Lane SPS - Completed annual inspection of lifting devices - Repaired electrical panel at lagoon - Repaired maintenance access hole #42, 43, 80, 89 & 162

8.2 Flow Meter Calibration and Maintenance

Location	Date of Calibration	Additional Maintenance
Lagoon Effluent Flow Meter	April 19, 2024	N/A
Influent Flow Meter (Water St. SPS)	April 19, 2024	N/A
Influent Flow Meter (Emma St. SPS)	Station offline for 2024	

8.3 Authorized Alterations in Collection System

Work Order	Details	Significant Drinking Water Threat (Y/N)
None to Report		

8.4 Notice of Modifications

Date	Process	Modification	Status
None to report			

9 Sludge Generation

Sludge depth is monitored periodically, and plans for sludge removal are made as required for optimal operation of the lagoon system. Sludge levels in all ponds were measured in 2020. The measurements were as follows:

Lagoon Cell	Sludge Depth
Primary Cell No. 1	1 – 2”
Primary Cell No. 2	1 – 3”
Secondary Cell	0 – 1”
Polishing Cell (East)	0 – 4”
Polishing Cell (West)	0”

9.1 Sludge Disposal Summary

Approximately 6500 m^3 of sludge was removed from the West polishing cell in 2019. No sludge was removed or land applied in 2024.

10 Summary of Complaints

There was one complaint received from a resident on Riverside Drive. Upon investigation the issue was found to be on the resident's side of the service.

Appendix A – Performance Assessment Reports

PERFORMANCE ASSESSMENT REPORT

	FLOWS			EFFLUENT			BIOCHEMICAL O_2 DEMAND			SUSPENDED SOLIDS			PHOSPHORUS			TKN
MONTH	Total Flow (m^3)	Avg Day Flow (m^3)	Max Day Flow (m^3)	Effluent Flow (m^3)	Discharge Duration (days)	Avg. Alum Dosage* (mg/L)	Avg Raw BOD (mg/L)	Avg Eff CBOD (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 (mg/L)
JAN	29,124	939	1,611			94.5	160			200			4.76			51.9
FEB	26,743	922	1,623			-	160			195			5.72			40.9
MAR	33,895	1,093	2,662	56,602	7	-	178	3		260	17.0		5.01	0.52		37.5
APR	35,491	1,183	2,171	58,515	8	-	97	8.7		170	49.0		3.57	0.55		23.6
MAY	26,435	853	1,199			-	108			252			3.30			22.8
JUN	22,511	750	1,141			-	222			220			3.78			28.1
JUL	22,698	732	1,218			-	171			360			5.82			40.2
AUG	32,274	1,041	2,874			-	75			120			2.95			26.7
SEPT	19,062	635	792			-	173			310			8.42			58.6
OCT	16,924	546	615			-	185			135			6.89			95.0
NOV	17,341	578	812	120,564	10	-	287	1.5		115	10.8		6.00	0.42		56.2
DEC	24,976	806	1,331			-	120			155			4.74			40.0
TOTAL	307,474			235,681	25											
AVG		840					161	4.1	97.5	208	23.9	88.5	5.1	0.48	90.5	43.5
MAX			2,874			94.5	287			360			8.42			
CRITERIA		**1,660**						**30**			**30**			**1.0**		

Comments: Percent removal based on 12 months of raw composite samples
No Alum dosage from January 24 to December 13 due to leak in alum building (influent bypassing dosing location)

Effluent Sample Results

		SPRING								FALL						
	DATE	**25-Mar**	**28-Mar**	**3-Apr**	**4-Apr**	**8-Apr**	**Average**	**ECA Obj**	**ECA Limit***	**6-Nov**	**8-Nov**	**12-Nov**	**15-Nov**	**Average**	**ECA Obj**	**ECA Limit**
Sample Twice Weekly	**CBOD5 (mg/L)**	3	<3	9	5	12	**6.4**	**20**	**30**	<3	<3	<3	<3	**1.5**	**20**	**30**
	TSS (mg/L)	15	19	48	44	55	**36.2**	**20**	**30**	<3	4	<4	27	**10.8**	**20**	**30**
	TP (mg/L)	0.46	0.58	0.67	0.54	0.45	**0.54**	**0.75**	**1.0**	0.55	0.59	0.3	0.22	**0.42**	**0.75**	**1.0**
	****NH_3 (mg/L)**	3.87	4.05	2.91	2.3	1.40	**2.9**	**7.0**	**7.5**	0.13	0.13	0.79	1.03	**0.52**	**4.5**	**5.5**
	S^{2-} (mg/L)	<0.16	<0.16	<0.16	<0.40	<0.16				< 0.1	< 0.1	<0.08	<0.08			
	TKN (mg/L)	5.5	8.5	9.9	6.1	6.4				1.5	1.7	2.3	3.1			
	NO_2 (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05				<0.05	<0.05	<0.05	<0.05			
	NO_3 (mg/L)	0.15	0.20	0.2	0.51	0.61				0.21	0.28	0.77	1.04			
	***E.coli* (cfu/100mL)**	1400	2000	9100	14000	4100				110	700	150	1300			
Unioinized NH3 calculations	**On Site Temperature**	8.1	8.1	8.0	7.40	14.0				14.1	11.6	10.7	6.7			
	On Site pH	8.68	8.46	9	9.05	9.09				7.75	7.67	8.1	7.7			
	NH3-N (lab)	3.87	4.05	2.91	2.3	1.4				0.13	0.13	0.79	1.03			
	unionized NH3-N (calc)	0.275	0.178	0.398	0.333	0.332				0.002	0.001	0.019	0.008			

* ECA limit. Monthly average concentration shall not exceed the corresponding maximum concentration

** NH3 Objectives: March - 9.0 mg/L; April - 7.0 mg/L; NH3 Limits: March - 11.0 mg/L, Apr - 7.5 mg/L

Pre-Discharge Results

	Spring				Fall				
	East (5)	West (4)	East (5)	West (4)	Cell 3	Cell 2	Cell 1	East (5)	West (4)
CBOD5 (mg/L)	5	7			10	12	10	<3	9
TSS (mg/L)	9	11	25	23	30	58	21	6	70
TP (mg/L)	0.58	0.97	0.53	0.43	0.49	0.79	0.39	0.61	2.07
NH3	2.64	6.23			2.02	7.05	19.0	0.16	0.26
TKN	6.4	10.1			6.3	15.5	26.2	1.6	8.9
H2S	<0.16	<0.16			<0.4	<0.4	<0.4	<0.01	<0.16
E. Coli	1,500	12,000			170	200	80	540	99000
pH	8.3	8.5	8.8	8.7	8.8	8.7	8.0	7.8	8.0

Un-Ionized Ammonia Calculation

Sample Date	Sample Temperature (°C)	Degrees Kelvin	Dissociation Constant pKa	Sample pH on-site	Fraction of Un-ionized Ammonia	Total Ammonia (mg/L) (NH_3 +NH_4+as N)	Un-ionized Ammonia (mg/L)
25-Mar	8.1	281.25	9.80	8.68	0.0710	3.87	0.275
28-Mar	8.1	281.25	9.80	8.46	0.0440	4.05	0.178
3-Apr	8.0	281.15	9.80	9.00	0.1368	2.91	0.398
4-Apr	7.4	280.55	9.82	9.05	0.1449	2.30	0.333
8-Apr	14.0	287.15	9.60	9.09	0.2373	1.40	0.332
6-Nov	14.1	287.25	9.59	7.75	0.0141	0.13	0.002
8-Nov	11.6	284.75	9.68	7.67	0.0097	0.13	0.001
12-Nov	10.7	283.85	9.71	8.1	0.0241	0.79	0.019
15-Nov	6.7	279.85	9.85	7.7	0.0071	1.06	0.008

Appendix B – Details of Abnormal Sewage Discharge Events

Event Details Summary

Facility Bypass

Date	Location	Details	Volume (m3)	Start Time	End Time	Duration (h)	Discharge Receiver	Disinfection Provided
None to report.								

Facility Overflow

Date	Location	Details	Volume (m3)	Start Time	End Time	Duration (h)	Discharge Receiver	Disinfection Provided
None to report.								

Collection Overflow

Date	Location	Details	Volume (m3)	Start Time	End Time	Duration (h)	Discharge Receiver	Disinfection Provided
None to report.								

Spills of Sewage

Date	Location	Details	Volume (m3)	Start Time	End Time	Duration (h)	Discharge Receiver	Disinfection Provided
None to report.								

Collection System Monitoring Data

Event Date	Event Location	Volume (m3)	Parameter	mg/L	Source Loading	Any Adverse Impacts & Corrective Actions
n/a	n/a	n/a	BOD	n/a	n/a	n/a
			Total Suspended Solids	n/a	n/a	
			Total Phosphorus	n/a	n/a	
			Total Kjeldahl Nitrogen (TKN)	n/a	n/a	
			E.Coli	n/a		

Appendix C – ECA Annual Report Requirements

Facility ECA #6657-BPYPVL **Section 11(4)**	**Section in Report**
4.a. A summary and interpretation of all Influent monitoring data, and a review of the historical trend of the sewage characteristics and flow rates;	Wastewater System Flows Raw Sewage Quality Appendix A
4.b. A summary and interpretation of all Final Effluent monitoring data, including concentration, flow rates, loading and a comparison to the design objectives and compliance limits in this Approval, including an overview of the success and adequacy of the Works and projected performance as Influent flow increases;	Wastewater System Flows Effluent Quality Appendix A
4.c. A summary of all operating issues encountered and corrective actions taken;	Operating Issues
4.d. A summary of all normal and emergency repairs and maintenance activities carried out on any major structure, equipment, apparatus or mechanism forming part of the Works;	Maintenance
4.e. A summary of any effluent quality assurance or control measures undertaken;	Effluent Quality
4.f. A summary of the calibration and maintenance carried out on all Influent and Final Effluent monitoring equipment to ensure that the accuracy is within the tolerance of that equipment as required in this Approval or recommended by the manufacturer;	Maintenance
4.g. A summary of efforts made to achieve the design objectives in this Approval, including an assessment of the issues and recommendations for pro-active actions if any are required under the following situations: i. when any of the design objectives is not achieved more than 50% of the time in a year, or there is an increasing trend in deterioration of Final Effluent quality; ii. when the Annual Average Daily Influent Flow reaches 80% of the Rated Capacity;	Wastewater System Flows Effluent Quality Operating Issues
4.h. A tabulation of the measured volume of sludge accumulated in the lagoon cells in five year intervals and the estimated volume in the interim years and when sludge was disposed of during the reporting period, a summary of disposal locations and volumes of sludge disposed at each location;	Sludge Generation
4.i. A summary of any complaints received and any steps taken to address the complaints;	Summary of Complaints
4.j. A summary of all Bypasses, Overflows, other situations outside Normal Operating Conditions and spills within the meaning of Part X of EPA and abnormal discharge events;	Operating Issues Appendix B
4.k. A summary of all Notice of Modifications to Sewage Works completed under Paragraph 1.d. of Condition 10, including a report on status of implementation of all modification;	Maintenance
4.l. A summary of efforts made to achieve conformance with Procedure F-5-1 including but not limited to projects undertaken and completed in the sanitary sewer system that result in overall Bypass/Overflow elimination including expenditures and proposed projects to eliminate Bypass/Overflows with estimated budget forecast for the year following that for which the report is submitted.	Maintenance Operating Issues

Collection ECA #180-W601 **Schedule E**	
4.6.3 If applicable, includes a summary of all required monitoring data along with an interpretation of the data and any conclusion drawn from the data evaluation about the need for future modifications to the Authorized System or system operations.	Operating Issues
4.6.4 Includes a summary of any operating problems encountered and corrective actions taken.	Operating Issues
4.6.5 Includes a summary of all calibration, maintenance, and repairs carried out on any major structure, Equipment, apparatus, mechanism, or thing forming part of the Municipal Sewage Collection System.	Maintenance
4.6.6 Includes a summary of any complaints related to the Sewage Works received during the reporting period and any steps taken to address the complaints.	Summary of Complaints
4.6.7 Includes a summary of all Alterations to the Authorized System within the reporting period that are authorized by this Approval including a list of Alterations that pose a Significant Drinking Water Threat.	Maintenance
4.6.8 Includes a summary of all Collection System Overflow(s) and Spill(s) of Sewage, including: a) Dates; b) Volumes and durations; c) If applicable, loadings for total suspended solids, BOD, total phosphorus, and total Kjeldahl nitrogen, and sampling results for E.coli; d) Disinfection, if any; and e) Any adverse impact(s) and any corrective actions, if applicable.	Operating Issues Appendix B
4.6.9 Includes a summary of efforts made to reduce Collection System Overflows, Spills, STP Overflows, and/or STP Bypasses, including the following items, as applicable: a) A description of projects undertaken and completed in the Authorized System that result in overall overflow reduction or elimination including expenditures and proposed projects to eliminate overflows with estimated budget forecast for the year following that for which the report is submitted. b) Details of the establishment and maintenance of a PPCP, including a summary of project progresses compared to the PPCP's timelines. c) An assessment of the effectiveness of each action taken. d) An assessment of the ability to meet Procedure F-5-1 or Procedure F-5-5 objectives (as applicable) and if able to meet the objectives, an overview of next steps and estimated timelines to meet the objectives. e) Public reporting approach including proactive efforts.	Maintenance Operating Issues