VILLAGE OF
Oil Springs
Proud of Our Heritage
Moving Forward Together

Wastewater System
Annual Report
2025

Managed, Operated, and Maintained by:

Jacobs

February 2026

Ontario Ministry of the Environment, Conservation and Parks
1094 London Road,
Sarnia, Ontario.

MECP District Manager,

On behalf of The Village of Oil Springs, in Lambton County, OMI (Jacobs) is pleased to submit to you the annual operating report for The Village of Oil Springs Wastewater Lagoon System. Please feel free to contact the undersigned if you have any questions regarding this report.

Respectfully submitted,

Joe Bloomfield
Jacobs - **Project Manager**

cc: Martha Gawley, Clerk-Treasurer, Village of Oil Springs
Derek Daly, Lead Operator, Jacobs
Cathy Culnan, Operator II, Jacobs

The Village of Oil Springs

Wastewater System – 2025 Annual Report

The Village of Oil Springs Wastewater lagoon system is a Class I Treatment & Class I Collection operated under the **Environmental Compliance Approval Number: 5278-BEVL2F, Issued Aug 14th, 2019.**
Wastewater System Number: 110001998

The Wastewater system consists of two (2) pumping stations and two (2) facultative lagoons. The facultative lagoons are a secondary treatment consisting of a 15.5-acre waste stabilization ponds constructed into two (2) equally sized cells (730 ft X 400 ft) with a working depth of 6 ft. The total volume of each cell is approximately 49,611 m3. Sewage enters a distribution-box equipped with sluice gates to direct flow into designated lagoon. Each lagoon has an outlet structure which flows to a 600 mm outfall sewer discharging to Black Creek. (cover picture taken June 8th, 2023)

Sub-Station: is located at 2658 Oil Heritage Road and is equipped with 2 submersible pumps which alternate duty when called for. The Sub Station pumps the raw sewage via a 200 mm forcemain on easements, approximately 580 m southwesterly to a gravity sewer. The pump station also has a 200 mm (8-inch) emergency overflow pipe that discharges to Black Creek and is equipped with a cost-iron flap valve at the end to prevent backflow from Black Creek during times of extreme flooding. The pump station has 24/7 monitoring capabilities.

Main Pump Station: is located at 2601 Frederick Street and is equipped with 2 submersible pumps which alternate duty when called for. The Main Station pumps the raw sewage via a 200 mm forcemain on easements, approximately 817 m northeasterly to the lagoons. The pump station also has a 200 mm (8-inch) emergency overflow pipe that discharges to Black Creek and is equipped with a cost-iron flap valve at the end to prevent back flow from Black Creek during times of extreme flooding. For power outage emergencies the Main Station has a backup diesel generator, confined with concrete curbing for spill containment. The pump station has 24/7 monitoring capabilities.

Reports submitted to the regional Environmental Officer are the S1and S2 Municipal Utility Monitoring Program reports and the Bypass/Overflow reports. These reports are submitted quarterly to the Ontario Ministry of the Environment, Conservation & Parks (MECP)

A required, Federal quarterly ERRIS (Effluent Regulatory Reporting Information System) report is also submitted by Jacobs on behalf of The Village of Oil Springs. The Federal ERRIS inspectors were on site Nov 6, 2020; A contents sample of the "South Lagoon" was collected and analyzed for CBOD5, Unionized Ammonia and Acute lethality. An email received had determined that all the sample results were compliant with the Wastewater Systems Effluent Regulation. There has been no additional sampling requested since.

2024: Steve Volks treated and cut down the phragmites around both lagoons.

MECP performed an on-site Inspection of the Wastewater System on March 26th, 2016.

ECA, Schedule 11: Reporting

The Owner shall prepare performance reports on a calendar year basis and submit to the District Manager by March 31st of the calendar year following the period being reported upon. The reports shall contain, but are not limited to, the following information pertaining to the reporting period:

a) a summary and interpretation of all Influent & Imported Sewage monitoring data, and a review of the historical trend of the sewage characteristics and flow rates.

Total Influent flow to the Lagoons in 2025 was approximately: **39,081 m3** (2024: 44,310 m3) (2023: 55,374) with the daily average of approximately **107 m3/day** or **39.36 %** capacity (2024: 44.6 %) (2023: 49%). ECA rated capacity is 272 m3/day.

Historically the Influent flow rates increase due to infiltration during heavy rain events/storms and during the spring runoffs when the snow & ice melt. Also, a slight increase is due to new residential development in the area. The months of June, August and September were very dry in 2025 resulting in less flow to the lagoons The area has seen a rise in quick, intense rainstorms with a lot of rainfall in a short period of time. The Operating Authority monitors the rainfall (rain gauge) and includes the results in the monthly report. The total precipitation for 2025 was approximately 518 mm (20.3 inches)

In **2025:** Influent TKN was the lowest in April (23.5 mg/L) and its highest in November (84.1 mg/L)
In **2024**: Influent TKN was the lowest in March (26.1 mg/L) and seen an increase to its highest in September (76.5 mg/L)

The **2025:** Influent BOD5 results were considerably lower in April (77.0 mg/L) and the highest in May (397.0 mg/L)
The **2024:** Influent BOD5 results was the lowest in July (131 mg/L) with the highest in January (302 mg/L)

The **2025**: Influent Total Phosphorous was the lowest in April (1.55 mg/L) and the highest in November (6.98 mg/L)
The **2024:** Influent Total Phosphorous was the lowest in March (2.49 mg/L) and the highest in September (7.55 mg/L)

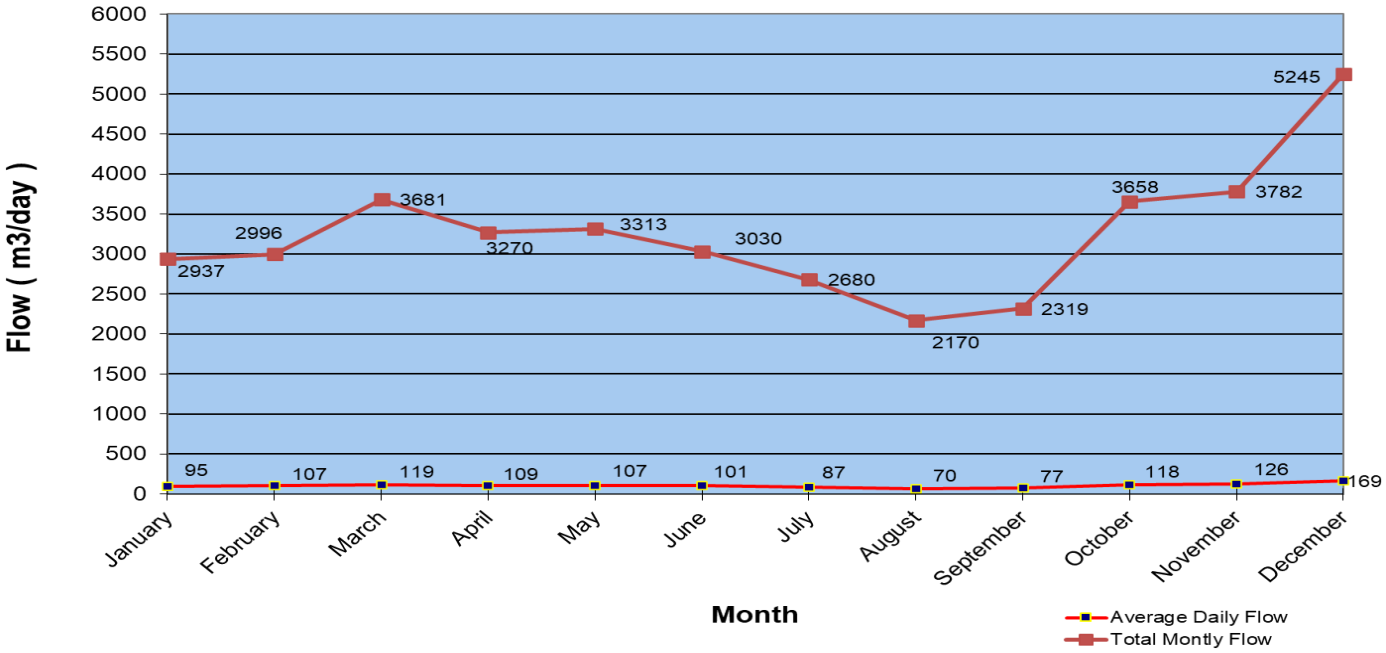
2025 Analytical Results and Lagoon Discharge

Oil Springs Lagoons
Operations Number: 110001998
Operating Authority: JACOBS (OMI)
Municipality: Village of Oil Springs

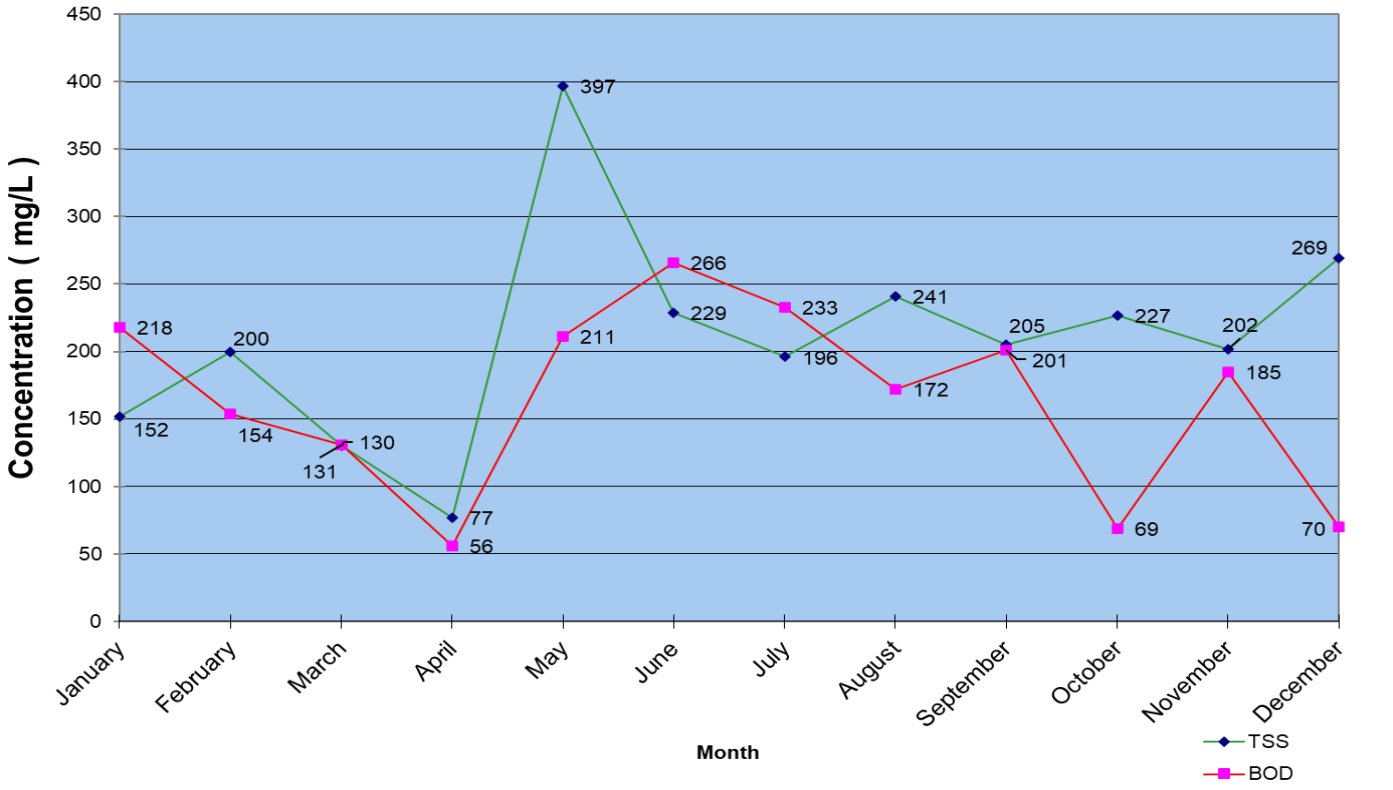
	Influent Flow		RAW - Influent Lab Data					Lagoon Discharge - Final Effluent Seasonal Average									Geomean Avg
Month	Total Flow m3	Avg. Flows m3/Day	BOD5 mg/L	S. S. mg/L	TKN mg/L	Total P mg/L	pH	CBOD5 mg/L	S. S. mg/L	TKN mg/L	Total P mg/L	Nitrite NO2 mg/L	Nitrate NO3 mg/L	pH	Ammonia NH3 mg/L	Total Sulphide	E-Coli Per 100ml
January	2937	95	152	218	40.9	4.15	7.48										
February	2996	107	200	154	31.5	3.26	7.91										
March	3681	119	130	131	34.3	3.04	6.81										
April	3270	109	77	56	23.5	1.55	7.44	17.0	24.3	3.1	0.13	0.2	1.0	8.2	1.6	0.02	15.9
May	3313	107	397	211	39.9	3.46	6.98										
June	3030	101	229	266	36.0	4.35	7.84										
July	2680	87	196	233	35.8	3.58	7.35										
August	2170	70	241	172	58.4	5.90	7.26										
September	2319	77	205	201	37.3	3.65	6.97										
October	3658	118	227	69	42.4	3.16	7.10										
November	3782	126	202	185	84.1	6.98	7.27	5.0	7.0	1.1	0.06	0.03	0.08	8.27	0.10	n/a	20
December	5245	169	269	70	32.6	2.84	7.50										
Total Flow	39,081	107															

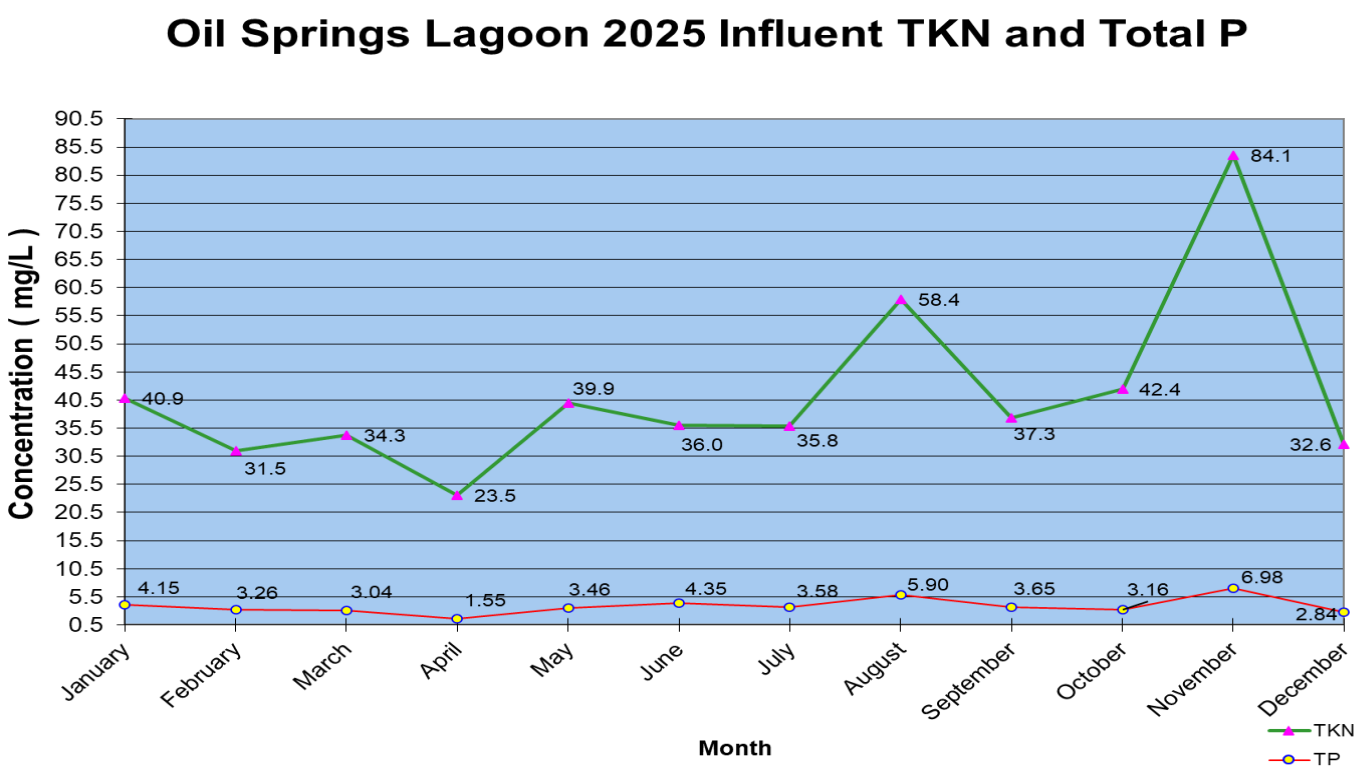
Lagoon Effluent shows a monthly average - ECA limits are based on "Seasonal Average"

Oil Springs Lagoon Influent 2025 Flows



Oil Springs Lagoons 2025 Influent BOD and T.S.S.





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.

Effluent Parameter	Design Objectives	Compliance Limits
CBOD5	10 mg/L	20 mg/L
TSS	15 mg/L	25 mg/L
Total Phosphorous	0.5 mg/L	1.0 mg/L
Total Ammonia Nitrogen	5.0 mg/L	
E-coli	150 CFU/100 mL	200 CFU/100 mL
Unionized Sulphide	0.02 mg/L (spring only)	

South Lagoon was discharged from April 10th to April 30th with approximately 44,096 m3 deposited into Black Creek.

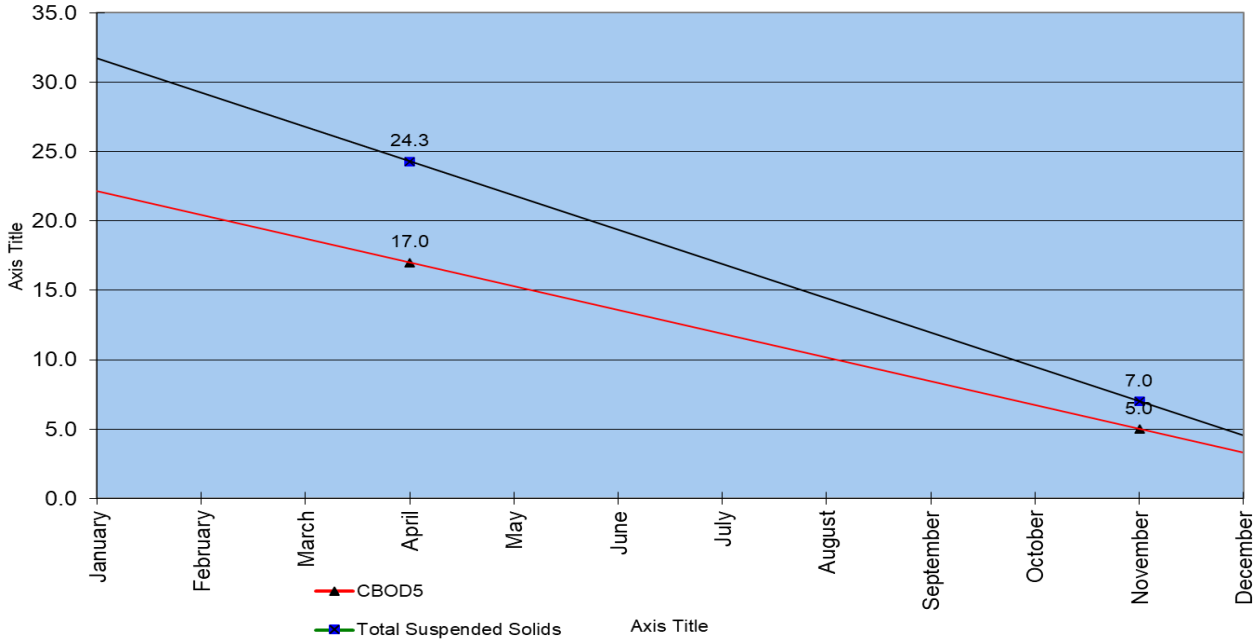
North Lagoon was discharged from Nov 6th to Nov 28th with approximately 44,785 m3 deposited into Black Creek

Lagoon system is operated in parallel with Final Effluent seasonally discharged into Black Creek during the months of April and November as per the ECA. Each cell can be discharged once per year. Lagoon Effluent compliance limits are based on a "Seasonal Average."

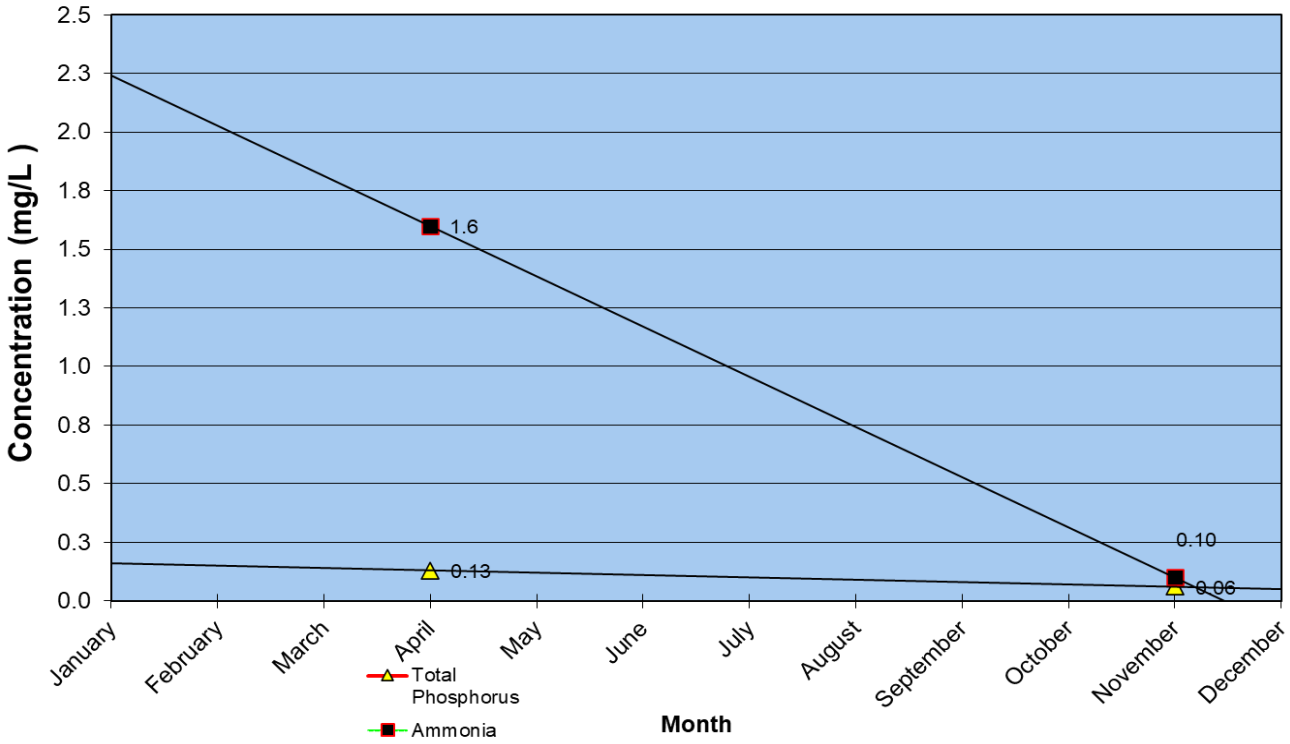
Effluent flow rates are monitored & achieved by manually regulating the discharge gate valve at the outlet structure. The Lagoon Effluent samples are analyzed for CBOD5, TSS, Total Phosphorous, Total Ammonia Nitrogen, Total Kjeldahl Nitrogen, Nitrate, Nitrite and E-coli. The Total Sulphide is analyzed only for the "spring" season discharge.

The pH, Temperature and Reactive Phosphorus are analyzed on site by the Operator.

Oil Springs Lagoons 2025 Effluent CBOD and TSS



Oil Springs Lagoons 2025 Effluent Total P & Ammonia



Oil Springs South Lagoon Seasonal Discharge - 2025

Date	CBOD5 mg/L	S. S. mg/L	TKN mg/L	Total P mg/L	pH	Nitrite NO2 mg/L	Nitrate NO3 mg/L	Ammonia NH3 mg/L	E-Coli Per cfu/100 mL	Total Sulphide mg/L Spring Only
Apr 10th Start-Discharge	13	20	3.1	0.03	8.71	0.18	1.63	2.20	1	0.02
April 15th Discharge	12	16	3.0	0.06	8.22	0.22	1.77	1.50	11	0.02
April 17th Discharge	11	14	2.6	0.08	8.24	0.24	1.72	1.20	2	0.02
April 22nd Discharge	13	19	2.6	0.19	8.23	0.15	0.58	1.10	34	0.02
April 25th Discharge	21	25	2.4	0.13	8.43	0.03	0.06	0.90	46	0.02
April 30th Stop Discharge	32	52	5.0	0.29	7.57	0.06	0.06	2.60	473	0.02
ECA Limits	**20**	**25**		**1.0**					**200 CFU/100 mL**	
Design Objectives	**10**	**15**		**0.50**				**5.0**	**150 CFU/100 mL**	
Seasonal Average	17.0	24.3	3.1	0.13	8.23	0.15	1.0	1.6	15.9	0.02

Lagoon discharge is deposited into Black Creek. There was approximately 44,096 m3 released and discharged for 20 days (480 hours)

Lagoon Effluent Flow is calculated by measuring the level (in inches) fom the lagoon freeboard at the Start of discharge and then again at the Stop of discharge - for the calculation, the formula is 689 m3/inch - each lagoon holds approximately 50,000 m3

An " E-coli - UAL" result - means the sample age exceeds the normal limit of 48 hours holding time

Oil Springs North Lagoon Seasonal Discharge - 2025

Date	CBOD5 mg/L	S. S. mg/L	TKN mg/L	Total P mg/L	pH	Nitrite NO2 mg/L	Nitrate NO3 mg/L	Ammonia NH3 mg/L	E-Coli	Total Sulphide mg/L Spring Only
Nov 6th Start-Discharge	**4**	**5**	**1.1**	**0.04**	**8.22**	**0.03**	**0.08**	**0.10**	**98**	
Nov 12th Discharge	**4**	**6**	**1.0**	**0.04**	**8.39**	**0.03**	**0.08**	**0.10**	**85**	
Nov 14th Discharge	**4**	**6**	**1.0**	**0.03**	**8.41**	**0.03**	**0.07**	**0.10**	**16**	
Nov 18th Discharge	**4**	**7**	**1.0**	**0.03**	**8.34**	**0.03**	**0.07**	**0.10**	**24**	
Nov 21st Discharge	**4**	**2**	**1.1**	**0.04**	**8.42**	**0.03**	**0.06**	**0.10**	**7**	
Nov 25th Discharge	**5**	**5**	**1.1**	**0.04**	**8.03**	**0.03**	**0.06**	**0.10**	**5**	
Nov 28th Stop Discharge	**8**	**16**	**1.3**	**0.16**	**8.00**	**0.03**	**0.11**	**0.10**	**57**	
ECA Limits	**20**	**25**		**1.0**					**200 CFU/100 mL**	
Design Objectives	**10**	**15**		**0.50**				**5.0**	**150 CFU/100 mL**	
Seasonal Average	5	7	1.1	0.06	8.27	0.03	0.08	0.10	20	#DIV/0!

Lagoon discharge is deposited into Black Creek. There was approximately 44,785 m3 released and discharged for 22 days (527 hours)

Lagoon Effluent Flow is calculated by measuring the level (in inches) fom the lagoon freeboard at the Start of discharge and then again at the Stop of discharge - for the calculation, the formula is 689 m3/inch - each lagoon holds approximately 50,000 m3

An " E-coli - UAL" result - means the sample age exceeds the normal limit of 48 hours holding time

c) a summary of any deviation from the monitoring schedule and reasons for the current reporting year and a schedule for the next reporting year:

South Lagoon: Pre-discharge sample was over the limit for TSS. (limit: 25 mg/L and the result was 29 mg/L) Operating Authority received permission from the MECP to release the lagoon. Extra Alum shall be added when flow is directed into the South lagoon.

Raw: samples consist of a 4-hour composite sample collected once per month at the Main Pumping station and analyzed for: BOD5, TSS, Total Phosphorus, TKN. The Operator analyzes the pH & Temperature on-site.

Spring: Lagoon Effluent discharge can commence no earlier than April 1st and continues for not less than twenty (20) days and terminating no later than April 30th.

Fall: Lagoon Effluent discharge can commence no earlier than November 1st and continues for not less than twenty (20) days and terminating no later than November 30th.

d) a summary of all operating issues encountered, and corrective actions taken

There are ongoing issues with high flows due to infiltration during storm events/heavy rains, spring runoff and ice & snow melt. The Operating Authority has placed Manhole Inflow dishes throughout the system where infiltration through the Manhole covers can be the most problematic (in low lying areas, in ditches, in water ponding areas)

A new spare sewage wet well pump is kept on site to replace a pump in the wetwell should one fail. This will lessen the likelihood of a sewage backup into a residential home and/or an overflow occurring at the pump station wetwell due to only having one pump in operation and the likelihood it would not keep up with heavy flows.

e) 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

- Albert's Generator Services performs all the quarterly service/inspection of the diesel generator at the Main pump station: 2025 Inspection Dates: Jan 10h, April 22nd, July 11th, Oct 29th
- Albert's Generator Services also performs the annual maintenance/inspection of the diesel generator which includes oil change, filter change, battery inspection, tank inspection, pressure gauge testing and running "on-load" to ensure operations during an emergency.
- Operating Authority's Operators exercise the generator monthly to ensure operations during a power outage
- March 5th – high level alarm, Operator monitored levels – due to rains throughout the area
- April 2nd – two (2) high level alarms, Operator monitored levels – due to heavy spring rains
- April 3rd – high level alarm with an Overflow occurrence at Main pumping station – due to heavy spring rains
- April 24th – high level alarm, Operator monitored levels – due to spring rains
- May – cut down brush overgrowth around the wetwell overflow/bypass pipe at the Sub-station
- June 24th – high level alarm, Operator monitored levels – due to a quick rainstorm throughout the area
- July 11th – high level alarm, Operator monitored levels – due to a fast downpour with 21 mm of rain
- August 11th – Zelus on-site inspecting lifting devices
- August – manhole inspections was conducted (checking for blockages, benching, proper sewage flow)
- September 12th – both pumps pulled at sub-station for inspection (no pumps were plugged) DMW Electrical was on-site for electrical repairs with overload
- September 24th – Gillier H-VAC on-site and flushed parts of the collection system
- September 29th – high level alarm, Operator monitored levels – due to rains throughout the area

- Oct 1st – Nevtro on-site to replace guideposts on pump # 2 at main pump station
- Oct 1st – Hurricane HVAC on-site and cleaned Main pump station wet-well and Lagoon Distribution box and Operating Authority received multiple alarms post cleaning (air locked, grit, debris such as rag clumps) the check valves were exercised manually to try and clear the force main – no alarms have occurred subsequently

f) a summary of any effluent quality assurance or control measures undertaken.

During discharge, the samples are comprised of a representative grab sample at a frequency of twice per week with a minimum of five (5) samples during discharge that captures the beginning of the seasonal discharge at a 25%, 50% and 75% drawdown and at the end of the seasonal discharge.

The Lagoon Effluent Discharge flow is controlled by throttling a sluice gate valve to achieve a flow that has minimal impact on the environment. (Black Creek)

To reinforce Effluent quality from the Lagoons, Alum is injected into the forcemain at the Main pumping station and five (5) loads of Alum were received in 2025.

- January – 6340 kg
- March – 6386 kg
- May – 6870 kg
- July – 6390 kg
- October – 6710 kg

SOP - "Lagoon Discharge Sampling & Monitoring" can be referenced for compliance parameters and release timelines, ensuring effluent quality meets the regulated parameter limits.

g) a summary of the calibration and maintenance carried out on all Influent monitoring equipment to ensure that the accuracy is within the tolerance of that equipment as required in this Approval or recommended by the manufacturer.

A flow meter calculates the Influent flow received at the main pump station. The meter is calibrated annually by Pierce Services. Calibration was performed on June 10, 2025. The in-house meter for pH is calibrated by the Operators as per the manufacturer's recommendations.

h) 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:

- **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**
- **When the Annual Average Daily influent Flow reaches 80% of the Rated Capacity**

To meet the design objectives of the ECA, phosphorous and solids removal is achieved by the addition of aluminum sulphate (alum) from two (2) metering pumps that inject directly into the forcemain at the main pumping station which then pumps to the lagoon system. The alum is stored in a 5867-litre insulated double walled outdoor tank within a fenced in enclosure. The tank is equipped with an immersion heater and a heat trace system to prevent freezing of the alum lines. The Total volume of Alum used for 2025 was **32,696 kg** (2024: 28,730 Litres).

A pre-discharge sample must be collected at least 7 days prior to discharge, and the results must be within the compliance limits listed in Schedule C of the ECA. At a minimum, the sample must be made up of three (3) grab samples collected from the surface, middle and bottom of the lagoon at a location representative of the cell content and composited as one sample.

i) an estimate of the sludge volumes in the lagoon cells. Sludge volume is to be measured every five (5) years. But it may be estimated in the interim years.

The lagoon cells are manually measured for sludge levels throughout the lagoon cell (boat & sludge judge).

The North Lagoon's sludge depth is approximately 24 inches.

The South lagoon estimated sludge depth is approximately 24 inches.

The Influent flow to the lagoons has no screening equipment and when the sewage flow enters the pipe located at the East end of each lagoon, the sludge, rags and debris deposit directly at the base of the pipe causing a buildup. The wind, waves and gravity help distribute the accumulated debris throughout the lagoon, but the Influent end is where the majority collects and is the deepest, therefore there is more sludge buildup at the Influent portion of the lagoons.

In 1998 Brandon Excavating removed sludge and compacted berms in the "South" Lagoon.
In 1999 Van Bree Drainage removed sludge and compacted berms in the "North" Lagoon.
There has been no sludge removal since.

j) a summary of any complaints received, and any steps taken to address the complaint.

No Complaints for 2025

k) a summary of all Bypasses, Overflows, other situation outside Normal Operating Conditions and spills within the meaning of Part X of EPA and abnormal discharge events.

April 3rd: at 01:45 am, an Overflow occurred at Main pumping station due to heavy rains throughout the area. Creeks were overflowing and local flooding occurred.

- SAC, MOH & MECP were notified – Incident # 1-N79L3Q
- Event duration was 3.5 hours with approximately 290 m3 being released to Black Creek
- Grab samples were collected and analyzed for: BOD5, TSS, TKN, Total Phosphorous as per ECA - Schedule 5 (5) (b) page 10.

l) a summary of all Notice of Modifications to Sewage Works completed under the Paragraph 1.d. of Condition 10, including a report on status of implementation of all modification.

There were no Notice of Modifications submitted.

m) 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.

The Operating Authority annually inspects the collection system at each manhole – checking for blockages, build-up on benching and confirming flow through the channels. Also, parts of the collection system are flushed annually to ensure optimum flow throughout the system.

The stand-by generator (which keeps the pumps operational during a power outage) is exercised monthly by the Operating Authority to confirm proper performance during an emergency. Alberts Generator performs quarterly inspections and completes the annual maintenance (oil change, on-load testing)

Each sewage pump station is equipped with an 8-inch Overflow pipe which consists of a cast iron flap valve at the end to prevent backflow from Black Creek entering the pump station wet-well. The flapping mechanism is inspected annually to confirm operations.

Pump station wet wells are inspected and cleaned when required using a contracted Hydrovac/Spray system which rids the wet well of FOG (Fat, Oil, Grease) that can build-up on monitoring equipment (floats, transducers) impeding proper operations. The cleaning of the wet wells also eliminates the buildup of sediment on the bottom that can reduce capacity.