CANTON
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TOWNSHIP
EARLTON

Village of Earlton Sewage System

Annual & Performance REPORT
FOR THE YEAR
2025

MOE ECA, NUMBER 1369-ALYHHP

COUNCIL MEMBERS SIGNATURES

MAYOR: _____

COUNCILOR: _____

COUNCILOR: _____

COUNCILOR: _____

COUNCILOR: _____

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January 07, 2026

ECA NUMBER 1369-ALYHHP

Annual & Performance Report

System Type; The system consists of three lagoon cells, (three [3] facultative lagoons {Cells #2 and 3} each with a SWD of 1.8 m and a freeboard of 0.6 m, having working volumes of 47,220 cub. m, and area of 3.38 ha. and one [1] {Cell #1} having working volumes of 47,620 cub. m, and area of 3.80 ha. respectively.) It also has one [1] aeration Cell 73 m by 58 m (top of berm) with a SWD of 2.85 m and a freeboard of 0.6 m having a working volume of 5,415 cubic meter, equipped with an air diffusion grid system, it is operated as a seasonal discharge system to coincide with higher receiving stream flows and create less of an impact on the environment. Allowable discharge periods on the ECA are April 01 to May 31, and September 15 to November 31 of each year, however, these entire periods are not necessarily required for discharge. The ECA for the system, limits the raw sewage flow into the lagoon to 743 m^3/day (calculated on an average annual basis) and the

flow out of the lagoon to a maximum of 3,024 m^3/day (35 L/s) during the discharge period.

We are introducing Alum Sulphate to the raw sewage coming in to the lagoon cells at a rate of .22 L/min, or per 4.5 m^3 (approx.).

Pump Station is equipped with a generator back up, which is manually operated and tested to run the plant every week as part of a maintenance program. Pumps consist of two electric 30 HP, belt driven centrifugal pumps, pumping at a rated capacity of 80 to 85 L/sec. at a TDH of 15.0 meters. Pump automatically alternate at each start up. The pump station status is being checked daily (weekends and Holidays also). Periodically, as part of regular maintenance, (every 3 months) the raw sewage screening basket is inspected and debris is removed as required. Once every six months, an inspection in the wet well area is done and the control floats and the sample injection line are cleaned and inspected. The Impellers and wear plates were replaced in November 2025. Flow records and time pump runs are being checked daily and logged at the plant, and compared with the ones that come in on the SCADA system, at the office for accuracy references.

Raw Sewage sampling is done monthly, usually done mid-month; sampling location is at the pumping station, using a 24-hour programmable composite sampler. Parameter for raw sewage is CBOD5, Total Suspended Solids, Total Phosphorous, and Total Kjeldahl Nitrogen. Sample data results can be viewed at the Water/Wastewater office, and page 8 of this Report.

Effluent Monitoring sampling normally consists of 4 grab samples prior to seasonal discharge, to be analyze for Hydrogen Sulphide and E-coli, CBOD5, Total Suspended Solids, Total Phosphorous, and Total Ammonia Nitrogen (Ammonia plus Ammonium). One sample is then taken at the start of the discharge process, then at 25%, 50%, 75%, and at the End of the discharge process. Samples are analyzed for CBOD5, Total Suspended Solids, Total Phosphorous, and Total Ammonia Nitrogen (Ammonia plus Ammonium), Hydrogen Sulphide, Un-ionized Ammonia and PH at 15˚.Also pH and Temperature in the field at the time of sampling. Total amount of flow going out to the environment is to be monitored and logged at the time of each sampling.

Sample data result copies for the year 2025 can be viewed at the Water/Wastewater Office.

Post-Aeration System consist of an earthen cell with a working volume of 5415 m^3, a small blower building, housing three positive displacement blowers, each rated to deliver 4.25 m^3/min of air at 97.88 kPa absolute pressure; and piping and diffusers to deliver air into the effluent as it passes through the cell.

It is not intended that the post-aeration cell be used for storage, but rather, for retention time during discharge and, therefore, it should not be drained down except for maintenance purposes.

The aeration cell's sole purpose is to strip Hydrogen Sulphide (H_2S) prior to effluent discharge. Hydrogen Sulphide builds up under a lagoon's ice cover during the winter and is toxic to aquatic life, even at low concentrations, and, therefore, must be removed prior to discharge.

Flow meters are calibrated yearly and Alum Sulphate chemical pump flows are calibrated and logged monthly. The duty on the Alum sulphate pumps rotates after each start and Tank levels and pump percentages are logged daily in rounds sheets. Manhole near Alum building, where Alum sulphate is being injected, is being checked monthly to make sure it is working properly and not leaking.

The collection system is entirely flushed in three separate steps, in a three-year period. The entire collection system has been videoed by Ray Lachapelle (Private eye). Records of the sewer main section that has been flushed this year is kept in with the maintenance book records. Manholes are being inspected for structural damage in the summer months, and upgrade as needed.

Note: CCTV done October 7 & 8, 2024
On some of the most problematic lines.
Last Flushing: September 15, 2025

The collection system is a CLASS 2 System and requires Operators to write a Class 2 collection certification exam. Currently there are 3 operators who hold a Class 2 Collection and 1 Operator holds a Class 2 Treatment facility license. There are also two (2) Operators in Training for the system.

2025 Spring Discharge Results

- **Total Spring Discharge: 88057 m³**
- **Flow Duration was 766 hours = 31.92 days**
- **Average Flow was 31.93 l/sec. = 2758.75 m³/day**

Loading = $\frac{\text{Flow (m3/day) x concentration (mg/l)}}{1000}$ = kg/day

CBOD5 =37.74 kg/day

Total Suspended Solids = 28.97 kg/day

Total Phosphorous = 0.45 kg/day

Total Ammonia Nitrogen = 2.36 kg/day

The measuring station situated on the Blanche River was not operational for the discharge period. After consulting with MECP inspector and Hydrologist, the alternative solution was for us to set up a measuring station on the St. Jean Baptisse Creek and take measures every 2 days or weekly depending on the flows for the duration of the discharge period.

We had to end discharge November 04, 2025 due to ice buildup on the Lagoons.

2025 Fall Discharge Results

Total Fall Discharge 116031 m³

Flow Duration was 1152 hours. = 48 Days

Average Flow Rate was 27.98 l/sec. = 2417.31 m³/day

Loading = $\frac{\text{Flow (m3/day) x concentration (mg/l)}}{1000}$ = kg/day

CBOD5 =1.63 kg/day

Total Suspended Solids = 33.42 kg/day

Total Phosphorous = 0.71 kg/day

Total Ammonia Nitrogen = 0.55 kg/day

3 Fall Samples had H2S and were reported to SAC and MECP inspector.

2025 Monthly Raw Sewage														
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec		
cBOD5 mg/l	65.5	240	<3	76	28	120	19	120	77.5	75	130	62.3	1013.3	92.11818
Total Phosphorous mg/l	2.32	4.03	3.64	2.21	1.38	3.18	0.97	4.58	2.4	3.48	2.74	3.24	34.17	2.8475
TSS mg/l	85	133	98	31.7	83	136	20	157	122	137	115	125	1242.7	103.5583
Total Kjeldahl Nitrogen (TKN)	21.6	31.8	27.7	16	12.9	27.8	10.3	38.0	20.4	30	25.5	34.5	296.5	24.70833
													Total	Average

Influent Samples taken from Raw sewage remains consistent to expected results as per recent years

Description of Design Objectives of ECA, NUMBER 1369-ALYHHP

DESIGN OBJECTIVES

1. The Owner shall design and operate the Sewage Treatment Plant in accordance with the following objectives:

a. Final Effluent parameters design objectives listed in the table(s) included in Schedule B;
b. Final Effluent is essentially free of floating and settable solids and does not contain oil or any other substance in amounts sufficient to create a visible film or sheen or foam or discolouration on the receiving waters.
c. Annual Average Daily Influent Flow is within the Rated Capacity of the Sewage Treatment Plant.

2. The Owner shall make an assessment of the issues and recommendations for pro-active actions if any is required under the following situations and include in the annual report to the Water Supervisor:

a. when any of the design objectives is not achieved more than 50% of the time in a year;
b. when the Annual Average Daily Influent Flow reaches 80% of the Rated Capacity.

Schedule B

Final Effluent Design Objectives

Concentration Objectives

Final Effluent Parameter	Averaging Calculator	Objective (milligrams per litre unless otherwise indicated)
CBOD5	Seasonal Average Effluent Concentration	15.0 mg/L
Total Suspended Solids	Seasonal Average Effluent Concentration	15.0 mg/L
Total Phosphorus	Seasonal Average Effluent Concentration	0.5 mg/L
Total Ammonia Nitrogen	Monthly Average Effluent Concentration	10.0 mg/L (Apr 1 - Apr 30) 5.0 mg/L (May 1 - May 31) 5.0 mg/L (Sep 1 - Nov 30)
pH	Single Sample Result	6.5 - 8.5 inclusive
Hydrogen Sulphide	Single Sample Result	Non-detactable

1-**Design Objectives of Final Effluent was exceeded for H2S on 3 occasions in the Fall.**

The spring and fall discharge, prior to discharge samples include sampling at all four (4) lagoons as per request from Ministry

The following tables show the spring and fall Effluent results.

2025 Spring effluent discharge										C of A	C of A
	Prior	Start	25%	50%	75%	End	mg/l	mg/l	KG/Day		
cBOD5 mg/l	1.8	2.5	52	7.1	5.5	1.3	68.4	13.68	37.74	<30 mg/l	91.0 kg/d
Total Phosphorous mg/l	0.565	0.17	0.251	0.198	0.141	0.063	0.823	0.1646	0.45	1.0 mg/l	3.02 kg/d
TSS mg/l	12.5	6	7.5	13	20	6	52.5	10.5	28.97	<30 mg/l	91.0 kg/d
Total Ammonia mg/l	0.04	<0.01	1.88	1.11	0.26	0.17	3.42	0.855	2.36	10 mg/l	30.2 kg/d
							Total	Average	Average	accepted/average	accepted/average
WSER. Spring 2023	Every 2 Weeks										
pH (15 deg. C)		8.1	7.92	8.13	8.42	8.02					
Un-Ionized Ammonia	<0.002	<0.002	0.03	0.054	0.021	0.003					
Hydrogen Sulphide	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02					

2025 Fall effluent discharge										**C of A**	C of A
	Prior	Start	25%	50%	75%	End	mg/l	mg/l	KG/Day		
cBOD5 mg/l	1.1	0.7	0.8	0.6	0.6	<0.5	2.7	0.675	1.63	<30 mg/l	91.0 kg/d
Total Phosphorous mg/l	0.525	0.514	0.379	0.301	0.172	0.108	1.474	0.2948	0.71	1.0 mg/l	3.02 kg/d
TSS mg/l	<0.67	<1	1.5	1.3	10.5	42	55.3	13.825	33.42	<30 mg/l	91.0 kg/d
Total Ammonia mg/l	0.01	<0.01	0.31	0.26	0.07	0.27	0.91	0.2275	0.55	10 mg/l	30.2 kg/d
							Total	Average	Average	accepted/average	accepted/average
WSER. Fall 2023	Every 2 Weeks										
pH (15 deg. C)		7.96	7.71	8.04	7.78	7.74					
Un-Ionized Ammonia	<0.002	<0.002	0.008	0.004	<0.002	0.011					
Hydrogen Sulphide	<0.02	<0.02	0.03	0.04	0.03	<0.02					

Note:
Due to H2S exceedances during Fall Discharge the Township had to report to Spills Action Centre and investigate the causes to ensure that the post-aeration system is being operated and maintained to achieve compliance with the Environmental Compliance Approval.

Different Options are being studied by the Operators to find the root cause of the exceedances.

7-year averages show that the results from testing are consistent and within accepted average and that they are meeting the design objectives in many of the parameters.

Annual Spring effluent discharge											C of A	C of A	C of A
	2019	2020	2021	2022	2023	2024	2025	mg/l	mg/l	KG/Day	accepted /average	Design objectives	
cBOD5 mg/l	5.5	3.52	4.4	5.28	4.72	5.68	5.68	34.812	4.973143	16.36	<30 mg/l	15.0 mg/l	91.0 kg/d
Total Phosphorous mg/l	0.41	0.267	0.2012	0.4238	0.3272	0.364	0.364	2.3572	0.336743	0.82	1.0 mg/l	0.5 mg/l	3.02 kg/d
TSS mg/l	9.2	19	7.2	8.9	7.84	18	18	88.14	12.59143	30.64	<30 mg/l	15.0 mg/l	91.0 kg/d
Total Ammonia mg/l	3.75	1.154	0.1375	1.82	1.548	0.248	0.248	8.9055	1.272214	3.62	10 mg/l	10mg/l 5.0 mg/l	30.2 kg/d
								Total	Average	Average			accepted /average
WSER.													
pH (15 deg. C)	8.05	8.16	7.86	7.81	8.04	8.108	8.108			6.5-8.5			
Un-Ionized Ammonia	0.082	0.0172	0.0025	0.0355	0.035	0.0074	0.0074						
Hydrogen Sulphide	<0.02	<0.02	<0.02	0.02	0.02	0.022	0.022			Non-detectable			

Annual Fall effluent discharge											C of A	C of A	C of A
	2019	2020	2021	2022	2023	2024	2025	mg/l	mg/l	KG/Day	accepted /average	Design objectives	
cBOD5 mg/l	1.6	2.14	2.72	1.3	1.74	1.06	0.675	11.215	1.602143	3.73	<30 mg/l	15.0 mg/l	91.0 kg/d
Total Phosphorous mg/l	0.13	0.447	0.4702	0.5814	0.29	0.3984	0.2948	2.6118	0.373114	0.85	1.0 mg/l	0.5 mg/l	3.02 kg/d
TSS mg/l	1.87	10.9	6.6	9.5	57.2	3.9	13.825	103.795	14.82786	37.24	<30 mg/l	15.0 mg/l	91.0 kg/d
Total Ammonia mg/l	0.47	1.042	0.604	3.47	1.372	0.496	0.2275	7.6815	1.097357	2.55	10 mg/l	10mg/l 5.0 mg/l	30.2 kg/d
								Total	Average	Average			accepted /average
WSER.													
pH (15 deg. C)	8.11	7.27	7.66	7.84	7.64	7.97	7.85			6.5-8.5			
Un-Ionized Ammonia	0.004	0.008	0.0062	0.06525	0.02275	0.005	0.005						
Hydrogen Sulphide	<0.02	<0.02	0.02	0.02	<0.02	<0.02	0.028			Non-detectable			

In Conclusion the Lagoons and treatment process are performing well and are normal to above normal for some aspects Except for recent issues with H2S.

2- Design objectives for Annual Average Daily Influent Flow being below 80% of the Rated Capacity:

As per previous years the Township of Armstrong has been repairing the collection system to restrict the infiltration of rain and snow melt in and around manholes and letters have been sent to residents on how to minimize the flow of water from their properties.

There is a negative effect on Influent Flow during the spring thaw in 2025 and also after major rain events throughout the year which affects the annual average considerably.

The following is the Table of Annual Influent Flow.

2025 Raw sewage flow Monitoring (cub.meters)

	Total	Average	Maximum	Total allow.	Over	%
Jan.	13048	421	934	23033	-9985	56.65%
Feb.	8285	295	351	21547	-13262	39.82%
Mar.	21114	681	3812	23033	-1919	91.67%
April	48013	1600	3438	22290	25723	215.40%
May	20042	647	1505	23033	-2991	87.01%
June	14291	476	1201	22290	-7999	64.11%
July	23182	748	2578	23033	149	100.65%
Aug.	10773	347	625	23033	-12260	46.77%
Sept.	8830	294	381	22290	-13460	39.61%
Oct.	14375	464	2413	23033	-8658	62.41%
Nov.	15764	525	1405	22290	-6526	70.72%
Dec.	12293	397	547	23033	-10740	53.37%
Total	210010			271195	-61185	
Average	17500.83	574.58	1599.17			77.35%
Maximum	48013	1600	3812			
Minimum	8285	294	351			

Annual average: 2015-----87% of rated capacity
2016-----86% of rated capacity
2017-----92% of rated capacity
2018-----74.41% of rated capacity
2019-----91.91% of rated capacity
2020-----81.47% of rated capacity
2021-----76.36% of rated capacity
2022-----79.05% of rated capacity
2023-----83.40% of rated capacity
2024------82.42% of rated capacity
2025------ 77.35% of rated capacity

Operating Issues:

The Annual average which is a concern is being monitored by Operators and repairs to manhole infiltration has been ongoing since 2013 with more effort on public education on best practices in 2025.

Results show a lower % for the year 2025.

No major breaks or repairs had to be done in 2025.

The Maintenance and inspection of equipment & structure is covered in the description of the system on pages 2, 3, 4 and 5 of this Report.

All Manholes were inspected and photos and full descriptions of work to be done were documented in 2024 and some issues will be addressed in the next few years.

Sludge:

A plan has been developed and the sludge was measured and recorded for all three Lagoons in 2016. Measurements have been done before Fall discharge every year since program was started.

2025 results showed a slight increase from previous year.

Sludge results from 2025.

Cell #1 Average Sludge = 8.0”

Cell #2 Average Sludge = 4.375”

Cell #3 Average Sludge = 3.875”

Complaints:
There have been no complaints in 2025. Operators were called on a few occasions to investigate some residences but problems were the responsibility of the homeowners as the issues were found to be on their properties. We however supplied residents with parts and directions, when needed, as per their requests.

Modifications:
No modifications were done in 2025. As previously stated, pages 2,3,4 and 5 of this report cover maintenance schedule for the works. Maintenance follows the schedule kept in Wastewater office and is only performed by trained and competent Operators.

Bypasses, Overflows, Spills:
As per the C of A, a record of any Bypasses, Overflows or Spills within the meaning of part X of EPA are logged and reported to the MECP Spill Action Centre. A log book is kept indicating the time, duration, quantity of bypass and/or other and reason for occurrence.

There was no Bypass, Overflow Or Spills within the meaning of part X of EPA and no abnormal discharge events or abnormal operating conditions for the sewage system in 2025.

Calibrations:
Calibrations of Flow meters and Auto Sampler were done in August 2025 by qualified operators and were showed to be in manufacturer's specifications.

Other considerations:

The Township of Armstrong is committed to have Certified Operators and provide the necessary training through courses and on-the-job training while performing inspections and maintenance.

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