

Ripley Wastewater Treatment Facility  
2023 Operation and Maintenance  
Annual Report

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# Ripley Wastewater Treatment Facility Annual Report

For the 2023 Operating Year

## EXECUTIVE SUMMARY:

This report is a summary of the Ripley Wastewater Treatment Facility's performance in accordance with the Ministry of the Environment, Conservation and Parks (MECP) Amended Certificate of Approval (C. of A) No. 3-0724-88-006, Issued: September 18, 2009, and the Federal Wastewater Systems Effluent Regulations (WSER) for the 2023 operating year.

*In late 2022, a new Amended Environmental Compliance Approval No. 0667-C8DN2F, Issued : November 29, 2022, was received. This Amended ECA replaces the Amended C. of A.*

## DESCRIPTION OF FACILITIES:

**Works Number: 110002773**

### Component

### Location

Sewage Pumping Station	59 Park St (Lot 56, Plan 100)
Stabilization Ponds (Lagoons)	76 Park St (Lot 14, Concession 7)
Outfall to South Pine River	Lot 14, Concession 6
Streamflow Monitoring Station	Sideroad No. 10, at South Pine River Crossing
Collection System	Village of Ripley

## SEWAGE PUMPING STATION

- Wet well structure (2.4 m diameter x 10.4 m deep)
- Two (2) raw sewage pumps (11hp each)
- Miltronics level sensor and volume totalizer
- Standby generator (30hp), diesel fuel tank and containment
- Aluminum sulphate storage tank (27,000 L) and containment
- Two (2) chemical feed pumps (30L/h each, max)
- Force Main: 467 m x 150 mm diameter

## WASTE STABILIZATION PONDS (CONVENTIONAL FACULTATIVE LAGOON SYSTEM)

- Cell No. 1: 36,500 m<sup>3</sup>
- Cell No. 2: 43,200 m<sup>3</sup>
- Cell No. 3: 43,200 m<sup>3</sup>
  - Three cells sized for a minimum retention time of 200 days at annual average influent design flow of 600 m<sup>3</sup>/d
- Aeration Cell 4: 10,400 m<sup>3</sup> (12 hours retention at peak discharge rate of 5,338 m<sup>3</sup>/d)
- Blower: Hick Hargreaves HH4063: 540 - 1,080 m<sup>3</sup>/h (at 57 kPa)
- Electrically operated knife gate valve (Rotorx)
- Discharge control structure: 90° V-Notch weir and Milltronics level sensor
- Outfall pipe: 550 m x 375 mm diameter
- Stream flow gauge at the South Pine River (maintained by Saugeen Valley CA)

Ripley Sewage Process Schematic

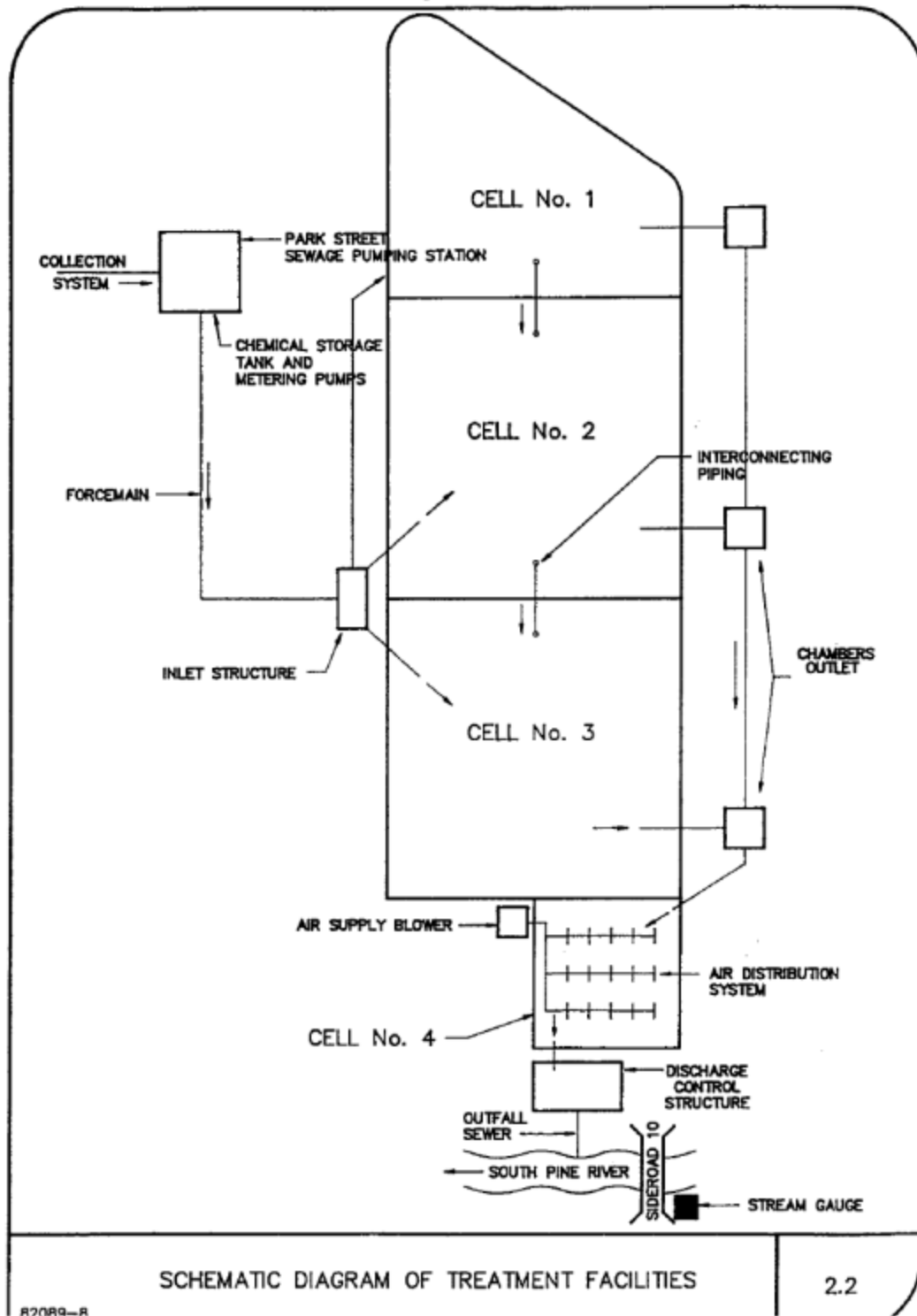


Figure 3

Ripley Sewage Lagoon Aeration Cell Schematic

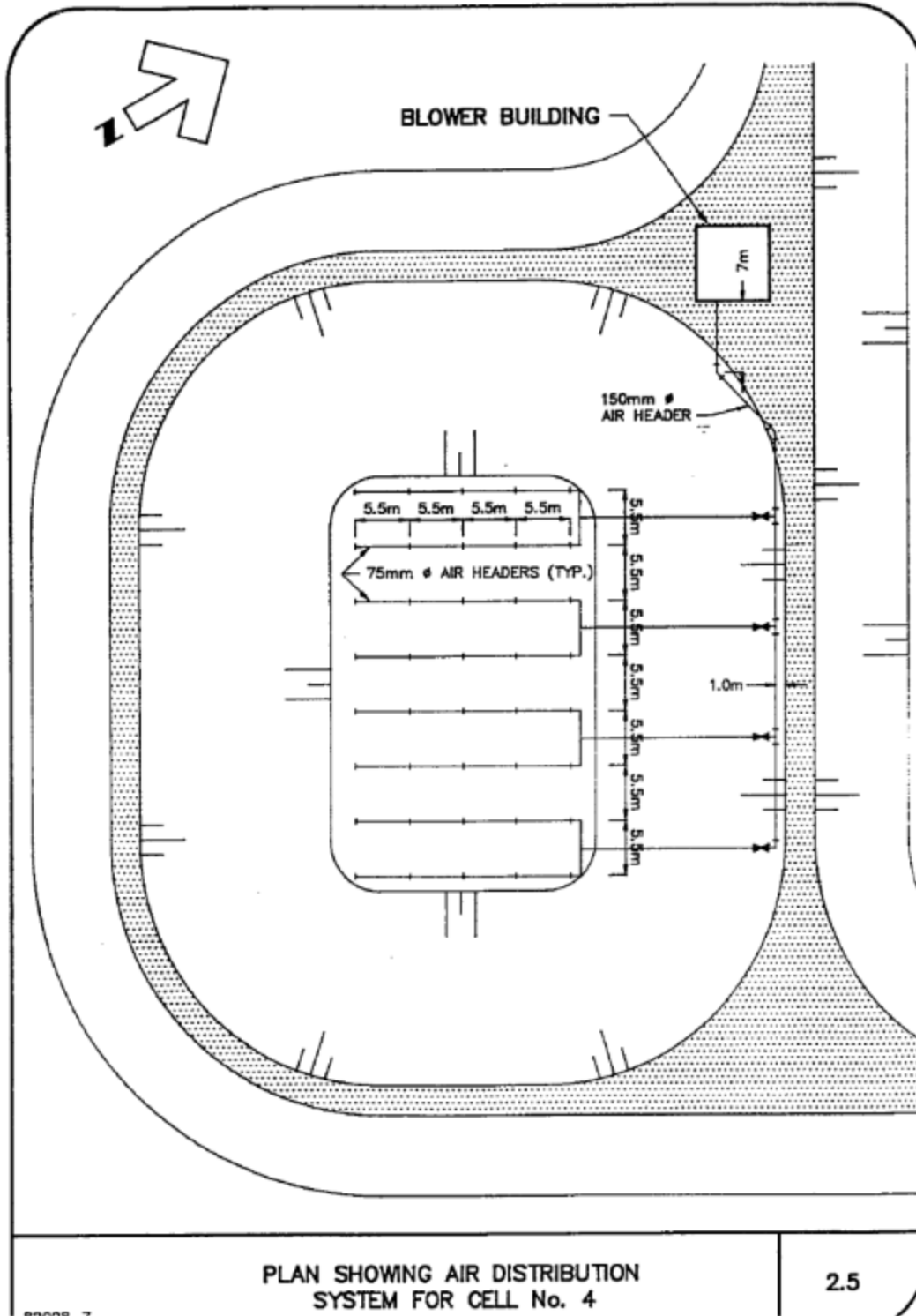


Figure 4

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## UNIT PROCESS:

In 2023, the Ripley Wastewater Treatment System was operated as follows:

Raw sewage from the collection system flowed to the wet well structure at the Sewage Pumping Station. Aluminum sulphate (alum) was added to promote phosphorus removal before it was pumped to Lagoon Cell No. 1 via the forcemain. The Lagoon Cells worked in series (i.e. Cell 1 --> Cell 2 --> Cell 3), with water depths between 0.3 - 1.8 m..

The Ministry C. of A. and the new Amended ECA allow the treated effluent to be discharged between October 15th to May 1st. When discharge is permitted, the effluent was directed from Cell 3 to Aeration Cell 4, where a blower was used to supply air through a submersible diffuser system. The treated effluent was then directed to the discharge control structure, where the flow was measured prior to entering the outfall pipe to the South Pine River.

## REQUIREMENTS - EFFLUENT:

**Condition 3. (1)** Subject to Subsection (2), the sewage treatment facilities should be designed, constructed and operated such that the concentrations of the materials named below as Effluent Parameters shall not be exceeded in the effluent from the facilities, calculated in accordance with Subsection (3) as shown in Table 1.

Effluent Parameters	Design Objectives	Non-Compliance (Average Over Discharge Period)
BOD-5	15.0 mg/L	25.0 mg/L
Suspended Solids	15.0 mg/L	30.0 mg/L
Total Phosphorus	0.5 mg/L	0.8 mg/L
Free Ammonia	Fall: 3.0 mg/L Spring: 6.0 mg/L	Fall: 6.0 mg/L Spring: 10.0 mg/L
Hydrogen Sulphide	Absent	--

## Wastewater Systems Effluent Regulations (WSER)

Prescribed Deleterious Substances	Authorization to Deposit - Conditions (Average Concentration per Section 6 (3))
CBOD	25 mg/L
Suspended Solids	25 mg/L
Total Chlorine Residual	0.02 mg/L max
Un-ionized Ammonia	1.25 mg/L

Note: The laboratory reports Provincial Unionized Ammonia which is calculated from total ammonia, field pH and temperature provided on the Chain of Custody form and is the same as Free Ammonia. The Federal Unionized Ammonia (WSER) is calculated using total ammonia and laboratory pH measured at 15°C.

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## AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL # 0667-C8DN2F

### Schedule B and C : Final Effluent Concentration Limits (Oct 15 - May 1)

Final Effluent Parameters	Averaging Calculator	Design Objective	Compliance Limit
CBOD5	Seasonal Average	15.0 mg/L	25.0 mg/L
Total Suspended Solids (TSS)	Seasonal Average	15.0 mg/L	30.0 mg/L
Total Phosphorus (TP)	Seasonal Average	0.5 mg/L	0.8 mg/L
Total Ammonia Nitrogen (TAN)	Seasonal Average	Fall : 3.0 mg/L Spring : 6.0 mg/L	Fall : 6.0 mg/L Spring : 10 mg/L
E.Coli	Monthly Geometric Mean	150 cfu/100 mL	200 cfu/100 mL
pH	Single Sample Results	6.5 - 8.5	6.0 - 9.5
Hydrogen Sulphide (H <sub>2</sub> S)	Single Sample Results	Not detectable	absent

#### Condition 6 : Design Objectives

- Exceedance of the Design Objective concentrations for CBOD5, TSS, TP and TAN is deemed to have occurred when the arithmetic mean of analytical results of at least four (4) consecutive grab samples is greater than the corresponding concentration in the table.
- Exceedance of the Design Objective concentrations for H<sub>2</sub>S is deemed to have occurred when a positive result from any single sample is greater than the corresponding concentration in the table.

#### Condition 7 : Compliance Limits

- Exceedance of the Compliance concentrations for CBOD5, TSS, TP and TAN is deemed to have occurred when the arithmetic mean of analytical results of at least four (4) consecutive grab samples is greater than the corresponding concentration in the table.
- Exceedance of the Compliance concentrations for H<sub>2</sub>S is deemed to have occurred when a positive result from any single sample is greater than the corresponding concentration in the table.
- The unionized ammonia concentration in the South Pine River after mixing with the lagoons' discharge (downstream) should not exceed 0.02 mg/L in accordance with Provincial Water Quality Objectives (PWQOs).

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## Effluent (Grab) Sample Results (mg/L) - Weekly during discharge

Date	BOD-5	CBOD	Total Suspended Solids	Total Phosphorus	Total Ammonia	Calculated Unionized Ammonia (WSER)
Mar 22	5	5	11	0.06	1.8	0.065
Mar 27	6	7	20	0.10	6.2	0.257
Mar 30	7	7	35	0.08	5.9	0.226
Apr 3	6	7	20	0.1	6.1	0.331
Apr 5	8	5	23	0.07	5.7	0.425
Apr 10	8	4	15	0.07	5.6	0.41
Apr 13	20	11	22	0.10	5.4	0.419
Apr 17	12	7	14	0.06	4.7	0.139
Apr 20	7	6	18	0.05	4	0.260
Apr 24	9	7	28	0.07	3.5	0.258
Apr 27	8	7	36	0.08	3.2	0.250
Dec 20	4	< 4	13	< 0.03	0.5	0.170
Dec 21	4	< 4	8	< 0.03	1.0	0.040
Dec 27	4	< 4	7	< 0.03	1.2	0.050
Dec 28	4	< 4	7	0.03	1.3	0.040
Min	4	< 4	7	< 0.03	0.5	0.040
Max	20	11	36	0.10	6.2	0.425
Annual Avg	7.5	5.9	18.5	0.06	3.7	0.223
# Samples	15	15	15	15	15	15
Objectives	15	--	15	0.5	Fall: 3 Spring: 6	--
Non-Compliance <sup>1</sup>	25	--	30	0.8	Fall: 6 Spring: 10	--
WSER <sup>2</sup>	--	25	25	--	--	1.25
Compliant	YES	YES	YES	YES	YES	YES

Seven sample results exceeded the C. of A. maximum for Total Suspended Solids (TSS) objectives however, the arithmetic mean for each discharge period (i.e. Spring and Fall) was within compliance :

- Spring Average : 19.5 mg/L
- Fall Average : 9 mg/L

The annual average TSS (18.5 mg/L) was in compliance with the WSER limit.

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Notes: <sup>1</sup> For compliance to the Certificate of Approval:  
Exceedance of the concentration for BOD-5 and Suspended Solids is deemed to have occurred when the arithmetic mean of analytical results of at least four (4) consecutive grab samples or a single sample is greater than the corresponding concentrations set out in Table 1.

<sup>2</sup> For compliance to WSER:  
The average concentration of CBOD, and Suspended Solids did not exceed the corresponding concentrations set out in Table 2, and the maximum concentration of un-ionized ammonia in the effluent was less than 1.25 mg/L, expressed as Nitrogen (N), at 15°C ± 1°C.

## REQUIREMENTS - RAW FLOWS:

**Condition 3. (2)** The Ripley sewage treatment works are approved to treat sewage at an average flow of 600 cubic meters per day. Average flows for the year not to exceed 600 m<sup>3</sup> per day, based on the arithmetic mean of 365 consecutive days flow, and have no negative impact on the receiving stream.

### Flows: Raw Sewage Collected at Sewage Pumping Station

Date	Volume, m <sup>3</sup>	Daily Max, m <sup>3</sup>	Daily Min, m <sup>3</sup>	Average, m <sup>3</sup>
January	15,369	1,174	247	496
February	18,631	3,513	241	665
March	14,685	860	236	474
April	13,880	1,337	85	479
May	12,546	881	230	433
June	10,468	517	217	349
July	10,607	654	199	342
August	10,352	457	219	334
September	8,003	448	38	267
October	11,108	777	181	358
November	11,419	685	169	381
December	15,449	1,172	244	498
<b>Total</b>	152,517	---	---	---
<b>Maximum</b>	18,631	3,513	---	---
<b>Minimum</b>	8,003	---	38	---
<b>Average Month</b>	12,710	---	---	---
<b>Arithmetic Mean*</b>	---	---	---	377
<b>Compliant</b>	---	---	---	<b>YES</b>

Note: \* Arithmetic mean of 365 days flow.



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Rated Capacity (average): 600 m<sup>3</sup>/day

Performance (average): 63.0%

**Condition 3. (9)(ii):** The *Owner* shall, when annual average flows reach 500 m<sup>3</sup>/day (83.3% capacity), further examine the lagoon performance and receiving stream and confirm, in writing to the *District Manager* and the *Director*, that the rated capacity of 600 m<sup>3</sup>/day will have no negative impact on the receiver.

In 2023, the annual average flow was below 500 m<sup>3</sup>/d, except in February.

## REQUIREMENTS - EFFLUENT FLOWS:

**Condition 3. (3)** The effluent volume from the Treatment Works shall be adjusted according to the stream flow available in the South Pine River.

### Flows: Effluent Discharged to South Pine River

Date	Volume, m <sup>3</sup>	Daily Max, m <sup>3</sup>	Daily Min, m <sup>3</sup>	*Average, m <sup>3</sup>
January	–	–	–	–
February	543	543	0	1,881
March	48,095	6,237	0	3,206
April	89,818	5,543	0	3,455
May	–	–	–	–
June	–	–	–	–
July	–	–	–	–
August	–	–	–	–
September	–	–	–	–
October	–	–	–	–
November	–	–	–	–
December	44,860	6,876	2	3,738
<b>Total</b>	183,316			
<b>Maximum</b>		6,876		
<b>Minimum</b>			0	
<b>Monthly Average</b>				3,900.34
<b>Annual Average</b>				502
<b>Total # days discharged</b>	47			

Notes:

\* The monthly average is calculated using the total monthly volume (m<sup>3</sup>) divided by the number of days discharged in that same month.

\*\* The annual average is calculated using the annual total volume (m<sup>3</sup>) divided by 365 consecutive days flow as per WSER reporting.

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## Flows: South Pine River Streamflow (m<sup>3</sup>), during discharge periods

(Data taken from Sideroad 10 Streamflow Monitoring Station - Saugeen Valley Conservation Authority)

2023	March	April	December
Min	3179	2764	7,344
Max	24,365	95,901	38,362
Avg	12,173.50	12,730	15,741

## CERTIFICATE OF APPROVAL # 3-0724-88-006 REQUIREMENTS - UNIONIZED AMMONIA:

**Condition 3. (4)** The unionized ammonia concentration in the South Pine River after mixing with the discharge should not exceed 0.02 mg/L in accordance with the Ministry's Water Management Goals, Policies and Objectives. In order to comply with this criterion, the effluent discharge rate shall be controlled by the Operating Authority by varying the discharge rate in relation to stream flow in the South Pine River, considering such factors as pH and temperature of the receiving stream.

The discharge samples are sent to the laboratory where they are analyzed for Total Ammonia and Free Ammonia. The Free Ammonia is the same as the Provincial Unionized Ammonia, which is calculated from the Total Ammonia, field temperature and field pH.

## Spring Discharge (Grab) Sample Results (mg/L): Weekly sampling

Date	Upstream Result Unionized Ammonia	Effluent Result Unionized Ammonia	Downstream Result Unionized Ammonia
March 22	–	0.065	–
March 27	<0.03	0.257	0.011
March 30	–	0.226	–
April 3	–	0.331	–
April 5	–	0.425	–
April 10	0.004	0.410	0.036
April 13	–	0.419	–
April 17	–	0.139	–
April 20	–	0.260	–
April 24	<0.007	0.258	0.008
April 27	–	0.250	–
Maximum	< 0.007	0.425	0.0360
MAC	--	--	< 0.02
Compliant	--	--	NO

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Spring effluent discharging was conducted during the following periods :

- February 16
- From March 16 to April 27.

The Spring discharge total volume was **137,913 m<sup>3</sup>** in 34 days.

## Fall Discharge (Grab) Sample Results (mg/L):      Weekly sampling

Date	Upstream Result Unionized Ammonia	Effluent Result Unionized Ammonia	Downstream Result Unionized Ammonia
Dec 4	< 0.001	–	< 0.001
Dec 20	< 0.001	0.17	0.0030
Dec 21	< 0.001	0.04	00.020
Dec 27	< 0.001	0.05	< 0.001
Dec 28	< 0.001	0.04	< 0.001
Maximum	<b>&lt;0.001</b>	<b>0.17</b>	<b>0.0030</b>
MAC	--	--	<b>&lt; 0.02</b>
Compliant	--	--	<b>YES</b>

Fall discharge began on December 20 until December 31.

The Fall discharge total volume was **44,860 m<sup>3</sup>** in 11 days.

**GRAND TOTAL DISCHARGE VOLUME: 182,773 m<sup>3</sup>** in 46 days

## ECA # 0667-C8DN2F REQUIREMENTS - EFFLUENT SAMPLING:

### Condition 4.

Grab samples of the final effluent (discharge) shall be collected twice per week with a minimum of five (5) samples during discharge that captures the beginning of the seasonal discharge, at 25%, 50% and 75% drawdown and at the end of the seasonal discharge and analyzed for at least the following parameter:

- CBOD-5
- Total Suspended Solids
- Total Kjeldhal Nitrogen (TKN)
- Nitrite
- Nitrate
- Total Phosphorus (TP)
- Temperature
- pH
- Hydrogen Sulphide (H<sub>2</sub>S)
- E. coli
- Total Ammonia Nitrogen

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Exceedance of the concentration of the parameter is deemed to have occurred when the arithmetic mean of analytical results of at least four (4) consecutive grab samples OR a single sample is greater than the corresponding concentrations set out in Subsection (1).

## Effluent (Grab) Sample Results (mg/L):

## Weekly sampling during discharge

Date	DO	Temp. (°C)	pH	CBOD5	TSS	Nitrite	Nitrate	TP	H2S	E.Coli	TKN	Total Ammonia
Mar 22	13.17	4.9	8.47	5	11	<0.03	0.40	0.06	<0.02	< 2	2.6	1.8
Mar 27	12.35	8.2	8.43	–	20	<0.03	0.23	0.10	<0.02	10	6.4	6.2
Mar 30	11.66	7.7	8.41	7	35	<0.03	0.27	0.08	<0.02	25	7.7	5.9
Apr 3	12.05	10.2	8.48	7	20	<0.03	0.35	0.10	<0.02	4	8.8	6.1
Apr 5	10.72	11.5	8.59	5	23	<0.03	0.42	0.07	<0.02	6	6.9	5.7
Apr 10	10.80	13.7	8.50	4	15	<0.03	0.55	0.07	<0.02	4	9.0	5.6
Apr 13	10.07	17.4	8.41	11	22	0.09	0.76	0.10	<0.02	11	8.3	5.4
Apr 17	10.98	14.1	8.08	7	14	0.12	1.01	0.06	<0.02	< 2	5.7	4.7
Apr 20	11.24	12.7	8.48	6	18	0.08	0.89	0.05	<0.02	22	5	4.0
Apr 24	10.78	13.2	8.53	7	28	0.06	1.06	0.07	<0.02	4	4.8	3.5
Apr 27	10.90	12.7	8.56	7	36	0.06	0.97	0.08	<0.02	3	4.5	3.2
Dec 20	12.11	6.0	8.40	<4	13	0.03	1.42	<0.03	<0.02	20	2.0	0.5
Dec 21	11.47	6.8	8.44	<4	8	0.06	1.73	<0.03	<0.02	38	4.5	1.0
Dec 27	42.00	8.5	8.41	<4	7	0.06	2.07	1.37	<0.02	42	3.0	1.2
Dec 28	24.00	8.3	8.31	<4	7	0.06	2.06	0.03	<0.02	24	3.1	1.3
Minimum	10.07	17.4	8.59	<4	7	<0.03	0.23	<0.03	<0.02	42	9	6.2
Maximum	42	4.9	8.08	11	36	0.12	2.07	1.37	<0.02	< 2	2	0.5
Average	14.28	10.4	8.43	5.14	18.47	<0.053	0.95	<0.15	<0.02	14.5	5.5	3.7
# Samples	15	15	15	14	15	15	15	15	15	15	15	15

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## ECA # 0667-C8DN2F REQUIREMENTS - RAW SEWAGE SAMPLING:

**Condition 5.** Grab samples of the raw sewage shall be collected at least every two weeks. In addition, 24-hour composite samples of the raw sewage must also be collected every two months. All raw sewage samples must be analyzed for at least the following parameters:

- BOD-5
- Total Suspended Solids
- Total Kjeldhal Nitrogen (TKN)
- Total Phosphorus

### Raw Sewage (Grab) Sample Results (mg/L): Bi-weekly sampling

Date	BOD-5	CBOD	TKN	TP	TSS
January	119	99	27.7	2.85	138
February	217	254	18.7	2.16	123
March	88	63	15.4	1.69	105
April	111	79	15.2	1.46	60
May	192	152	30.6	3.44	139
June	180	149	39.9	4.14	141
July	151	137	33.2	3.56	129
August	280	250	40.6	5.01	525
September	192	219	36.4	3.86	140
October	128	118	23.3	2.28	116
November	185	186	19.8	3.06	128
December	254	188	11.1	2.37	155
Minimum	88	63	11.1	1.46	60
Maximum	280	254	40.6	5.01	525
Average	174.8	157.8	25.9	2.99	158.3
# Samples	27	25	27	27	27

### Raw Sewage (Composite) Sample Results (mg/L): Bi-monthly sampling

Date	CBOD	BOD5	TSS	TP	TKN
March	–	82	84	2	18
May	34	–	53	2	19
July	99	121	140	3	31
September	84	70	48	2	25
November	29	40	35	2	21
Minimum	29	40	35	2	19
Maximum	99	121	140	3	31
Average	66	78	72	2	23
# Samples	5	4	5	5	5

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## Aluminum Sulphate Liquid (48.5%) Usage and Dosage

Aluminum Sulphate (alum) acts as a coagulant and flocculant that adsorbs and precipitates soluble phosphorus and other compounds such as organic matter, forming clumps that settle to the bottom of the lagoon. Typical alum dosages for wastewater treatment are between 50 - 200 mg/L.

Month	Total Alum Usage, L	Total Alum Usage, kg	Average Alum Dosage, mg/L
January	1,935	1,252	91
February	1,575	1,019	81
March	2,115	1,369	100
April	1,876	1,214	98
May	1,575	1,019	115
June	1,237	801	104
July	1,444	935	103
August	1,102	714	77
September	1,062	688	92
October	1,399	906	135
November	1,821	1,179	111
December	3,775	2,444	203
<b>Total</b>	<b>20,916</b>	<b>13,540</b>	<b>1,310</b>
<b>Average</b>	<b>1,743</b>	<b>1,128</b>	<b>109</b>

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## Environmental Compliance Approval #0667-C8DN2F REQUIREMENTS - Operational

### Section 12. Reporting

#### Operational Problems, Corrective Actions, and Maintenance:

Date	Comments
Feb. 10	High Flows
March 4	Iconix Calibrated flow meters, <i>24hr Composite sample taken</i>
March 17	High Flows
April 5	Power Outage and overflow (Spill) due to storm - Hauled 3 loads @ 18m <sup>3</sup> (54m <sup>3</sup> total) Ref. # 1-34LQXQ
April 17	Plant was running continuously - troubleshoot with Brame Electric - running fine
June 2	Power outage
June 30	High level alarm
July 6	Mag mater calibrated by Advanced Meter Calibrations
July 10	Backflow testing completed by Ferguson
July 18	<i>24hr Composite sample taken</i>
July 28	Pump #1 failed
August 1	Pollock Electric checked pump #1 - there was a wiring issue between pump and panel
August 2	Pollock Electric onsite to fix Pump #1 - has to order a new cable
August 3	Sommers Generators onsite for generator maintenance
August 4	New pump #2 installed
September 12	<i>24hr Composite sample taken</i>
September 27	Pulled LIT in the wet well and cleaned/reset
September 28	Replaced LIT in the wet well
October 6	Repaired plugged alum line
October 7	Unplugged alum line
October 9	Alum line plugged
November 1	Pump #1 fail
November 7	<i>24hr Composite sample taken</i>
November 22	Check Valve replaced by Caldecott
December 11	Power outage - generator ran @ 2hrs

#### 2023 Performance Summary

The following is a summary of the overall effectiveness of the treatment of raw sewage from its entry to the Works through the effluent chamber.

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## Overall Sewage Renovation Based on Annual Averages

Parameter	Raw Sewage	Effluent	Non-Compliance	% Removal
BOD5	174.8	7.5	25.0	95.7 %
CBOD	157.8	5.9	--	96.2 %
TKN	25.9	5.5	--	78.8 %
TP	2.99	0.06	0.8	97.9 %
TSS	158.3	18.5	30.0	88.3 %

## SLUDGE ACCUMULATION

Sludge accumulates in the bottom of the lagoon cells. Fortunately, for the Ripley Sewage Treatment Facility, the lagoons have a large surface area, therefore, accumulated sludge is quite low. The amount of sludge accumulated in 2023 was estimated based on the average amount of solids processed through treatment. The following calculation is taken from the *US Army Corps and Engineers Cold Region Research & Engineering Laboratory, Special Report 84-8, Accumulation, Characterization, and Stabilization of Sludges for Cold Region Lagoons, April 1984*. No sludge was removed from Ripley Lagoons in 2023.

The annual average sludge accumulation is approximately 1.06 mm total for all cells. With this information, it was estimated that the running total accumulation since the new Cell (1) was put into service in 2009 is approximately 14.16mm (Cell#1: 12.11 mm, Cell#2: 2.27 mm, Cell#3: 0.75 mm).

### Other Observations:

- No complaints were reported for the period under review
- One sewage bypass was reported for the period under review Ref #1-34LQXQ
- No modifications to the treatment system were carried out during the period under review

## Additional Information:

### ● Imported Sewage Landfill Leachate Disposal

ECA #0667-C8DN2F:

Sect. 8.5.c

- The landfill leachate volume eventually disposed of to the Ripley Sewage Lagoons should be kept to not more than approximately 1000m<sup>3</sup>/year. The Ripley Lagoons received 455.18m<sup>3</sup> of Leachate from the Huron Landfill from April 27 to August 25, 2023.

Sect.8.5.d

- The discharge of Leachate to the Ripley Sewage Lagoons (including discharge via the Raw Sewage Pumping Station or its upstream maintenance hole) should only occur during the non-discharge period for the lagoons, and the discharge of Final Effluent to the receiver should not occur within 60 days from the last date of the landfill Leachate disposal to the Ripley Sewage Lagoons.....



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- **Municipal Utility Monitoring Program Reports (MUMPs)**

The monthly compilation forms of discharge data are submitted annually to the Ministry. The Ministry uses these forms to publicly report Municipal monitoring data. These forms are populated with appropriate data for submission directly to the Ministry's database.

- **Wastewater Systems Effluent Regulations (WSER) - On-line Reporting**

Since the Ripley Wastewater Treatment Facility discharges to the South Pine River, which is frequented by fish, we are required by WSER to submit a monitoring report through the Effluent Regulatory Reporting Information System (ERRIS) portal on an annual basis. This was submitted in March.

## CONCLUSIONS AND RECOMMENDATIONS

The following are the conclusions and recommendations resulting from the analysis of operating and monitoring data for the Ripley Wastewater Treatment Facility during 2023:

1. The annual average sewage influent flow was 354.82 m<sup>3</sup>/day in 2023, as determined by the flow measuring instrumentation in the Ripley Sewage Pumping Station. Given that the approved flow to the works is 600 m<sup>3</sup>/day, the works operated at 59.1% of the design capacity. The 2023 average daily flow is 6.35% higher than the average flow during the previous four years (333.63 m<sup>3</sup>/day).

Historically, maximum day flows will typically be greatest during spring months and be lowest during the summer months. During 2023 the maximum day trend was characteristic, with the maximum day flow of 3,513 m<sup>3</sup>/day occurring in February. Historical maximum day flows for each month provide some indication that direct inflow from storm water is occurring at times, such as rain events and spring thaw. Action should continue to be taken to identify and remove any illegal connections that exist.

2. Raw sewage average concentrations and loadings for BOD<sub>5</sub>, TSS, TKN and TP

Parameter	Typical Loadings (mg/L)	2023 Loadings (mg/L)	Historical Loadings (5-Year Average)
BOD <sub>5</sub>	170	173.3	156
TKN	35	26.1	28
TP	7	2.99	3.15
TSS	200	157.23	154

3. Based on the calculated removal rates of 78.8% to 97.9%, it is concluded that the Ripley Wastewater Treatment Facility provided excellent treatment of sewage in 2023.
4. There were no exceedances of the E.C.A. average monthly concentration limits.

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5. The new amended ECA has some new requirements for reporting overflows, spills and conducting sampling.