

Little River Pollution Control Plant

(January 01, 2023 to December 31, 2023)

ANNUAL REPORT 2023



Submitted to:

The Ministry of Environment, Conservation & Parks

March 31, 2024

TABLE OF CONTENTS

Introduction _____	1
Staff Organization _____	1
Summary of Performance _____	1
Wastewater Systems Effluent Compliance _____	3
Efforts and Results Achieve in Meeting the Effluent Objectives _____	3
Historical Trend of the Sewage Characteristics and Flow Rates _____	5
Deviation from Monitoring Schedule: _____	5
2023 Operating Corrective Actions _____	6
2023 Infrastructure Capital Improvement Projects _____	6
2023 Infrastructure Maintenance Projects _____	7
Effluent Quality Assurance or Control Measures _____	9
Calibration and Maintenance of Monitoring Equipment _____	10
Design Objectives _____	10
Biosolids - Production and Disposal _____	10
Complaints and Public Engagement _____	11
Overflow Events _____	11
Performance F-5-1 Conformance _____	12
Table 1: 2023 LRPCP Monthly Volumes.....	2
Table 2: 2023 LRPCP Combined Plant ECA Data.....	4
Table 3: 2023 LRPCP Monthly Sludge Quantities and Associated Solid Percentage.....	11
Table 4: Pontiac Pumping Station Overflow Events.....	12
Figure 1: 2023 Sewage Treated and Plant Overflow	2
Appendix A - 2023 Influent and Effluent Monitoring Data	
Appendix B - Yearly Comparisons & Historical Data	
Appendix C - Schedule - Monitoring Program 2023-2024	
Appendix D - 2023 Flow Monitoring Equipment Calibration Certificates	

Little River Pollution Control Plant 2023 Annual Report

Introduction

The Annual Report on the operation of the Little River Pollution Control Plant (LRPCP) for the 2023 calendar year, is being submitted in accordance with condition No. 11 of Environmental Compliance Approval (ECA) No. 4681-BT3L39 issued by The Ministry of Environment, Conservation and Parks (MECP).

The LRPCP has two separate activated sludge systems (Plant 1 and Plant 2) each with a separate outfall discharging to the Little River about 1 km upstream from the Detroit River. Both Plant 1 and Plant 2 each have a rated capacity of 36,400 m³/d.

All sample results are based on 24-hour composite samples collected by flow proportional automatic samplers. Reported overflow volumes are for the total plant after screening and grit removal. Plant overflow flow is chlorinated from May 1 through October 31.

Staff Organization

The Pollution Control Department employs 13 direct employees to operate and monitor the Little River Pollution Control Plant and an additional 22 supporting employees. The supporting employees include staff from the Environmental Quality Division, which carry out operational analytical requirements as outlined in the ECA of the plant.

Summary of Performance

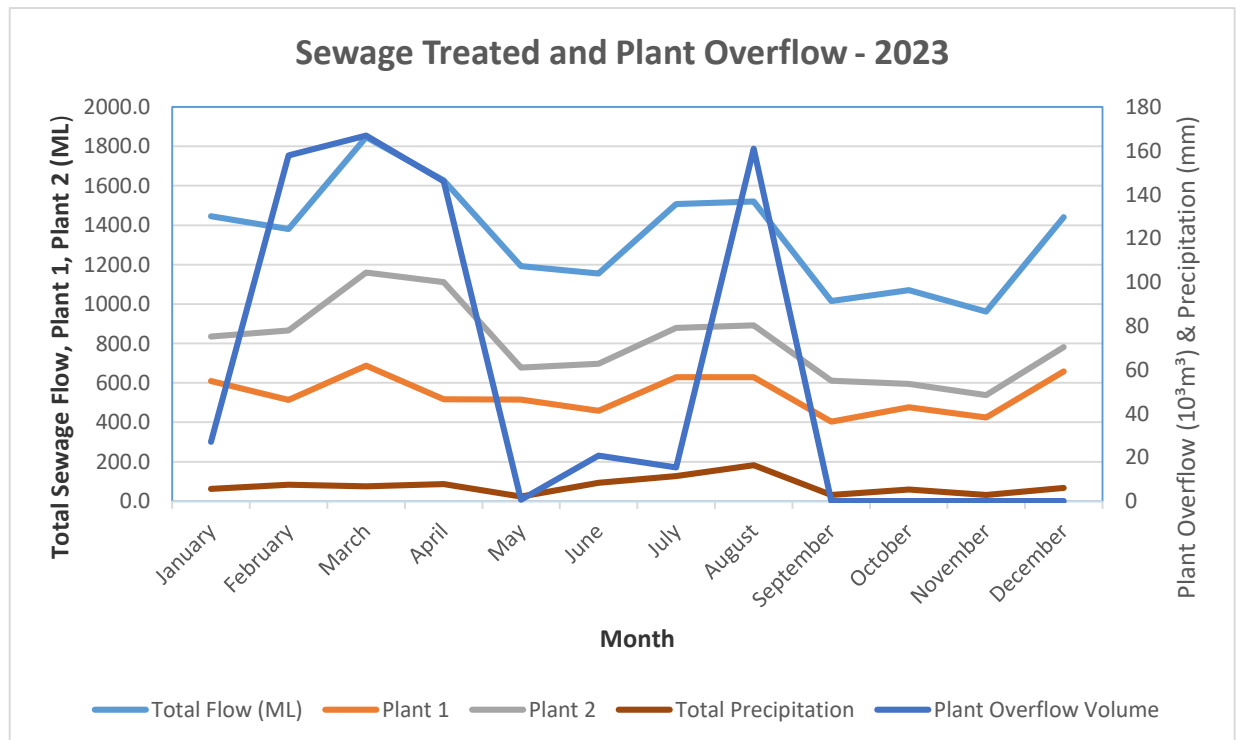
In 2023, the LRPCP treated a total of 16163.1 ML of sewage, an average of 44.3 ML/day. Plant 1 treated 6518.6 ML of sewage and Plant 2 treated 9644.5 ML of sewage. The monthly volumes of sewage treated, volumes of treatment plant overflow, and the total precipitation, as recorded at the Environment Canada Weather Station at the Windsor Airport, are listed in Table 1. Figure 1 displays this information in graphical form.

A summary of 2023, LRPCP Influent and Effluent data is found in Appendix A1 and A2.

Table 1: 2023 LRPCP Monthly Volumes

Month	Total Sewage Flow (ML)	Total Treated Sewage (ML)			Plant Overflow			Total Precipitation (mm)
		Plant 1	Plant 2	Total	Volume (10 ³ m ³)	No. of Overflows	Duration (hours)	
January	1445.20	609.60	835.60	1445.20	27.00	1	13.0	61.80
February	1380.20	514.10	866.10	1380.20	157.88	3	58.5	83.20
March	1846.80	686.60	1160.10	1846.70	166.91	2	106.1	75.00
April	1628.20	516.70	1111.50	1628.20	146.10	2	93.7	86.10
May	1192.50	514.40	678.10	1192.50	0.63	1	2.1	22.80
June	1154.50	458.30	696.20	1154.50	20.75	3	17.3	92.20
July	1508.10	628.50	879.60	1508.10	15.41	1	8.1	127.60
August	1520.60	628.90	891.70	1520.60	160.88	2	57.3	181.80
September	1014.60	403.80	610.90	1014.70	0.00	0	0.0	30.40
October	1070.70	475.40	595.30	1070.70	0.00	0	0.0	58.50
November	961.70	423.80	537.90	961.70	0.00	0	0.0	30.40
December	1440.00	658.50	781.50	1440.00	0.00	0	0.0	67.30
Total	16163.10	6518.60	9644.50	16163.10	695.56	15	356.1	917.10

Figure 1: 2023 Sewage Treated and Plant Overflow



Wastewater Systems Effluent Compliance

The LRPCP must operate within the effluent objectives outlined in The Ministry of Environment, Conservation and Parks (MECP) Environmental Compliance Approval (ECA). The ECA lists effluent limits for the following parameters: pH, Dissolved Oxygen (DO).

Final Effluent Design Objectives - Concentration Objectives

Final Effluent Parameter	Averaging Calculator	Objective (milligrams per litre unless otherwise indicated)
pH	Single Sample Result	6.5 - 9.0 inclusive
Dissolved Oxygen	Single Sample Result	greater than or equal to 4.0 mg/L

Efforts and Results Achieve in Meeting the Effluent Objectives

In addition to the Final Effluent Compliance limits, there are Concentration effluent limits, which are higher than the final effluent compliance limits. The LRPCP strives to produce effluent quality to meet these objectives. Dissolved Oxygen (DO) and pH are listed as an effluent objective. The Dissolved Oxygen effluent from the plant must be maintained greater or equal to 4 milligrams per litre at all times. The pH shall maintain to the best of our efforts the pH of the effluent within the range of 6.5 to 9.0, inclusive, at all times.

There were NO events where the pH was outside of the acceptable pH range of 6.5 to 9.0 in 2023.

There were several events in 2023 where the DO readings were below 4.0 mg/L in Plant 2. There were no events in 2023 where the DO readings were below 4.0 mg/L in Plant 1.

2023 DO Data		
Plant 2	DO Results	Reason
25 - Jan	3.8	Probe fouling
16 - Feb	1.8	Probe fouling
10 - Aug	1.9	Annual D.O. meter calibration
9 - Nov	3.3	Probe fouling
10 - Nov	3.6	Probe fouling

LRPCP was operated within the rated capacity. The effluent from LRPCP was essentially free of floating and settleable solids and did not contain oil or any other substance that created a visible film, sheen, foam or discolouration on the receiving waters.

Low DO values were a result of probe fouling (typically algae buildup) and low D.O. picked up during annual calibration of instrument. Explanations for individual results can be found in DO Data Table above.

The LRPCP must operate within the effluent limits outlined in The Ministry of Environment, Conservation and Parks (MECP) Environmental Compliance Approval (ECA). The ECA lists effluent limits for the following parameters: Total Suspended Solids (TSS), CBOD₅, Total Ammonia NH₃, Total Phosphorus (TP), E. coli and pH (single sample value only). E. coli has a seasonal limit and objective from May 1st to October 31st.

The following summarizes the performance and success of the plant relative to these limits. The average values, for these parameters are included in ECA, Table 1.1 and 1.2 below.

ECA - Table 1.1			
Effluent Parameters	Unit	Non-compliance Limits (average value)	
		Non-freezing	Freezing**
cBOD ₅	mg/L	15	15
TSS	mg/L	15	15
Total Ammonia	mg/L	6	6
Total Phosphorus	mg/L	1.0	1.0
E.coli*	counts/100mL	200	---

Note: *Represent the monthly geometric mean;

**Freezing represent period when stream temperatures are below 5 °C, or include the period from November 1 through April 30.

The following table provides the Monthly Average Effluent limits for LRPCP.

Table 2: 2023 LRPCP Combined Plant ECA Data

Month	cBOD mg/L	TSS (mg/L)	TP (mg/L)	Total Ammonia (mg/L)	ECOLI (CFU100/L)
January	4.00	3.02	0.09	0.40	NT
February	3.81	4.26	0.09	0.10	NT
March	4.04	2.50	0.06	0.10	NT
April	3.58	2.47	0.11	0.14	NT
May	3.17	3.22	0.15	0.12	79
June	3.58	3.38	0.66	0.14	29
July	3.83	4.43	0.13	0.23	19
August	2.73	2.53	0.27	0.27	20
September	3.92	4.32	0.61	0.41	47
October	4.26	4.53	0.65	0.52	62
November	3.68	3.90	0.53	0.19	NT
December	4.27	3.65	0.11	0.11	NT
Limit (Average)	15.00	15.00	1.00	6.00	200 (May to Oct.)
Limit (single sample)	25.00	25.00	1.50	8.00	1000 (May to Oct.)

The Monthly Average Concentration of the parameters cBOD₅, Total Suspended Solids (TSS), Total Ammonia Nitrogen (TAN), Total Phosphorus (TP) and E. coli did not exceed the corresponding maximum concentration limit set out in the ECA's Table 1.1 in 2023.

The following ECA Table 1.2 provides the Daily Effluent limits for LRPCP:

ECA - Table 1.2			
Effluent Parameters	Unit	Non-compliance Limits (single sample value)	
		Non-freezing	Freezing**
cBOD ₅	mg/L	25	25
TSS	mg/L	25	25
Total Ammonia	mg/L	8	8
Total Phosphorus	mg/L	1.5	1.5
E.Coli*	counts/100mL	1000	---
pH	Unitless	6.5 - 9.0	6.5 - 9.0

Note: *Represent the monthly geometric mean;

**Freezing represent period when stream temperatures are below 5 °C, or include the period from November 1 through April 30.

NOTE: There was 1 Total Phosphorous single sample result (1.63) exceedance on June 7, 2023. There were no other single sample exceedances in 2023 for cBOD₅, TSS, Total Ammonia, E. Coli or pH.

MECP was informed by email of the exceedance from June 7, 2023 on June 15, 2023 and additionally on June 20, 2023 to clarify lab data source, this was by email. We have taken steps in 2023 to ensure that future reporting of exceedances is met based on our ECA agreement.

Historical Trend of the Sewage Characteristics and Flow Rates

The amended Environmental Compliance Approval (ECA) number 4681-BT3L39 requires a review of the historical trend of the sewage characteristics and flow rates. Historical data only begins from 2021 due to the amended ECA #4681-BT3L39 dated January 29, 2021. Beginning January 2021 we changed accredited laboratories to meet the requirements of this ECA. Previous data (before 2021) were from a different accredited laboratory. The Historical sewage characteristics can be found in Appendix B2.

Deviation from Monitoring Schedule:

The 2023 and 2024 monitoring schedules are included in Appendix C.

A monitoring program has been established using a contracted certified laboratory for compliance reporting as per the plant's ECA. The Pollution Control Laboratory also maintains a separate monitoring program for plant operational purposes.

The 2023 and 2024 schedules list the day of the week/month for the scheduled sampling. As noted, the 2023 schedule was revised and updated for 2024. The revisions included a rotation of the day of the week/month for the scheduled sampling program, except when the actual scheduled monitoring frequency was three (3) or more times per week.

There were four (4) deviations from the 2023 sampling schedule due to circumstances such as holidays, sampler malfunctions, power outages and missed dates of collection.

May 30, 2023

- LRPCP weekly samples not collected due to collection error. Samples were collected and sent May 31, 2023

July 6, 2023

- LRPCP Annual Toxicity testing was changed from July 6, 2023 to July 11, 2023 as requested by Nautilus Accredited Laboratory due to acceptable arrival date of samples.

August 14, 2023

- LRPCP Storm Overflow sample was not collected on August 14, 2023 due to the duration of the event being very short.

August 24, 2023

- LRPCP Storm Overflow sample (BOD, TSS, TP) was not collected at the beginning of the event, however an E. Coli sample was collected. The BOD, TSS, TP sample was collected and was a 48 hour composite which was submitted for testing.

2023 Operating Corrective Actions

January	Dewatering Poly System B, installed laser tank level sensors to correct batching errors.
March	Changes to SCADA control of Leachate Holding Tank process to improve accuracy of volume of landfill leachate received.
April	Polyaluminum Chloride chemical addition ceased, not required in during summer months.
May	MCRT adjusted Plant 1 from 9 days to 8 days, Plant 2 from 10 days to 9 days. Flow Sharing Distribution Chamber modified to eliminate need for aeration and improve flow distribution.
June	Air flow and temp sensors added to Plant 2 aeration system to improve control of air to aeration cells.
July	Sludge Pumphouse 1 refurbish substantially complete, PST 1 & 2 returned to service, plants Overflow adjusted accordingly.
August	Annual DO calibrations performed for Plant 1 & 2 Aeration tanks and Plant 1 & 2 outfalls.
November	Raw Sewage Pump & Inlet Bar Screen control migrated from manual control panel to SCADA control system.

2023 Infrastructure Capital Improvement Projects

The following list summarizes all of the maintenance carried out on major structure, equipment, apparatus, mechanism or items forming part of the Little River Pollution Control Plant.

- Administration Building/Staff facilities renovation commenced in November. Completion estimated Spring 2025.
- Sludge Pumphouse No. 1 (SPH-1) upgrades substantially completed July 2023. Deficiencies still being addressed.
- Modifications to the influent distribution chamber completed in June 2023
- SPH-2, SPH-3 and Inlet HVAC units were replaced complete in September 2023.
- New replacement overhead crane in the Main Pumphouse was designed and tendered in December 2023.
- Plant perimeter security upgrade completed. (gates and entrances)

- Ultraviolet disinfection system upgrade design In Progress.
- Two new MV Transformers purchased - delivered in December
- Aeration blower replacement - design In Progress
- Plant Profinet cabling In Progress.
- New actuator Aeration Blower #3
- Flowmeter installed Plant 2 primary effluent channel.
- Bar Screen #1 received a complete refurbishment.
- Bar Screen #2 received a complete refurbishment.
- New Make-up Air Unit (MAU) Sludge Pumphouse 3 installed.
- Primary Sludge Pump #5 Sterling Drive rebuilt.
- Primary Sludge Pump #6 Sterling drive replaced with rebuilt drive.
- New MAU Sludge Pumphouse #2 installed.
- New MAU installed for Inlet Well MAU.
- New scumbox heaters PST 5 & 6.
- Aeration tanks 2 & 3 overflow reduced by half for better flow control.
- Temporary feed set-up for hydrogen peroxide Dewatering odour control.
- Dewatering Truck Scale B side load cells replaced.
- Aeration Mixer 13, overload replaced.
- Alum Pump 2 repaired
- Natural Gas line service upgrades complete

2023 Infrastructure Maintenance Projects

The following list summarizes the maintenance carried out on major equipment, apparatus, mechanism or items forming part of the Little River Pollution Control Plant.

General

- Concrete repair various exterior locations throughout plant - tanks/channels
- Installed safety anchor points throughout plant

Aerated Distribution

- Replaced SO-C1 sluice gate actuator
- Replaced SO-C2 sluice gate actuator
- Replaced FS-5 sluice gate actuator
- Replaced FS-C6 sluice gate actuator
- Replaced ADI-C1 sluice gate actuator
- Replaced ADI-C2 sluice gate actuator

Sludge Pumphouses 1, 2 and 3

- Repaired SR-C3 valve
- Repaired PSP05 speed control

Primary Settling Tanks/Final Settling Tanks

- Replaced many tank tray radiant heaters
- All FST's and associated inlet channels cleaned of thick scum layer
- FST #1 O/S 2 days drained for inspection and weir brush maintenance.
- FST #2 O/S 2 days drained for inspection and weir brush maintenance.
- FST #3 O/S 2 days drained for inspection and weir brush maintenance.
- FST #4 O/S 2 days drained for inspection and weir brush maintenance.
- PST's 5 & 6, inner rings grease/scum cleaned with Vac truck.
- PST 1& 2 Inlet Channel cleaned with Vac truck.
- FST #3 drained to remove debris causing over torque of rake arm

Plant One

- Replaced motor starters on Tank 1 and Tank 4 mixers
- Repaired activated sludge return Pump 5
- Replaced 3 drain valves
- Replaced DO probe cleaning system

Plant Two

- Installed three new DO probes in aeration tank
- Repaired Air Blower No 7
- Repaired Air Blower No 6 MCC disconnect

Blower Building No 2

- Replaced unit heaters (upstairs + downstairs)

Ultraviolet Building (UV)

- Replaced sampler with new units (Plant1&2)
- Repaired numerous UV lamp racks
- UV System Plant 1&2 annual maintenance to ready systems for May 1st service per performed

Dewatering

- Repaired EP-2 flow switch
- Repaired level indication for make-up water tank
- Replaced polymer tank level measuring system with new radar technology
- Dewatering Cake Pump #2 seal replaced
- Dewatering Cake Pump #2 seal replaced.
- Cake Pump 1 repaired.
- Condition assessment/inspection of Centrifuges 1, 2 & 3 performed.

Effluent Quality Assurance or Control Measures

Plant personnel monitor operational indicators routinely to ensure that appropriate process and operational adjustments are made in an effort to produce high quality effluent. All changes to plant SRT and MCRT values are referenced in the above section titled "Operating Issues and Corrective actions". Other operational/process adjustments utilized in the plant to ensure a good quality effluent are performed on an as needed basis. These adjustments include, but are not limited to, adjusting wasting rates daily, removing a primary clarifier from service during prolonged periods of low flows (summer months), making adjustments to dissolved oxygen levels in the aeration units when necessary and increasing the number of UV banks in service during higher flows to maintain appropriate levels of disinfection. Jar testing aids in the optimization of alum and polymer dosing. Microscope work is performed to ensure the presence of desired "indicator" organisms in the aeration units. Polyaluminum Chloride is added to the return flow from the final clarifiers during winter months when required to assist in settling when the presence of *Microthrix* has been identified.

Every effort is made, where possible, to minimize the number of overflow events and the volume of overflow during wet weather events. Operators have the ability, to a limited extent, to control the amount of flow that is pumped through the plant at a level just below the point at which an overflow would occur during wet weather periods. This is of course dependent upon the intensity and duration of the wet weather event as well as the projected weather forecast and the probability of additional precipitation.

Routine preventative maintenance is performed on all equipment at the LRPCP. The Antero Equipment Maintenance Program (by AllMax Software Inc.) is used to maintain an inventory of all plant equipment, and allows for the development and tracking of work orders and provides a record of all maintenance and special repairs that have been carried out. Preventative maintenance is performed to ensure that necessary equipment is available to the plant during normal operations and during emergencies. For instance, standby diesel generators are operated on a routine basis to ensure they are available during power outages. Plant operators and millwrights perform routine diesel generator maintenance. A local diesel maintenance contractor is also retained once a year to perform annual maintenance on each unit.

Under the DMAF Program we are expanding the Pontiac Pumping Station. The goal is to provide overflow relief due to inflow and infiltration in the sanitary system from the LRPCP during significant storms events, and avoid impacts to the system and local residents therefore providing a more resilient system and improved overflow management.

Calibration and Maintenance of Monitoring Equipment

Calibration and maintenance of the effluent monitoring equipment and automatic samplers were carried out by the Environmental Technologist.

Plant 1 and Plant 2 discharge channel flowmeters and Plant Overflow flowmeter were verified and calibrated in September 2023 by an external certified Instrumentation Technician. Channel 1 & 2 Influent flowmeters were verified and calibrated September 2023. Calibration Certificates can be found in Appendix D.

LRPCP does not receive any imported sewage however they do receive leachate. The volume of this leachate is measured by calculating volume received by measuring Leachate holding tank level using a Milltronics level sensor and holding total tank volume. The calculated volume is entered on the Manifests received from the haulers, additionally a flowmeter is used to meter and measure the volume introduced to the treatment process, this calibration was also performed in September 2023 and can be found in Appendix D.

Design Objectives

The design objectives for rated capacity was achieved. LRPCP Plant Rated Capacity = 72.8 ML/day (72,800 m³/d). The average daily influent flow for LRPCP is 16163.1 ML/365 = 44.3 ML/day. The comparison to the rated capacity is calculated as $44.3/72.8 = 60.8\%$ (average annual daily influent/plant capacity = % of capacity used in 2023).

Biosolids - Production and Disposal

A total of 114,724,276 litres of raw sludge (average 3.42 % solids) was dewatered during the year. A total of 9659.8 tonnes of wet sludge cake (average 26.61 % solids yielding 2570.47 dry tonnes) were produced at the LRPCP in 2023. All of Little River's biosolid production in 2023 was converted to approximately 2,600.00 tonnes of fertilizer while zero metric tonnes were sent to the landfill. For the year 2023, Synagro (Windsor) Limited operated the Windsor Biosolids Processing Facility (WBPF).

The quantities of sludge pumped, wet cake produced and associated solid percentages are listed in the following table 3.

Table 3: 2023 LRPCP Monthly Sludge Quantities and Associated Solid Percentage

Month	Sludge Pumped (L)	Sludge Solids %	Wet Cake (Tonnes)	Landfilled (Tonnes)	Processed (Tonnes)	Cake Solids (%)
January	8,939,492	3.94	830.90	0	830.90	27.39
February	7,982,982	3.80	794.60	0	794.60	25.99
March	8,455,088	3.65	808.90	0	808.90	26.25
April	7,881,512	3.53	671.10	0	671.10	26.80
May	11,344,385	3.62	1096.70	0	1096.70	25.47
June	10,149,084	3.56	835.10	0	835.10	27.41
July	9,494,668	3.48	805.40	0	805.40	27.73
August	9,527,131	3.36	726.80	0	726.80	27.12
September	9,700,174	3.10	698.00	0	698.00	27.31
October	11,503,996	2.49	801.00	0	801.00	25.28
November	10,851,040	3.05	816.70	0	816.70	26.36
December	8,894,724	3.51	774.60	0	774.60	26.22
Total	114,724,276	3.42 (avg)	9659.80	0	9659.80	26.61 (avg)

Complaints and Public Engagement

One odour complaint was received from the public during the year regarding the operation of the LRPCP. Complainant was contacted and advised that our odour control system had some operational issues for a short time which may have resulted in increased odours for 2 to 3 hours. Resident was encouraged to notify the City of any further issues.

LRPCP normally engages area students through a number of Plant Tours with various educational institutions as well as engaging area residents by hosting an open house Bi-annually. This year 3 tours of the LRPCP were conducted, two were from a local grade school and one from a university engineering program.

Overflow Events

Throughout 2023, the plant experienced a number of plant overflows events. Over the course of the year, approximately 695.56 million litres of wastewater overflowed receiving screening, grit removal and seasonally disinfection with sodium hypochlorite. High flow events, caused by the spring snowmelt and heavy rain events accounted for 100% of the overflows. When applicable, the overflows were disinfected sodium hypochlorite. All overflow and spill events were reported to the MECP -Spills Action Center following the established reporting protocol. Plant overflows are listed in Table 1 - Monthly Volumes. Figure 1 displays the plant overflows in graphical form.

In 2023 there were six (6) Emergency Bypasses to Pontiac Pumping Station and were reported to the MECP as “Pump Station Overflows”, as seen in Table 4.

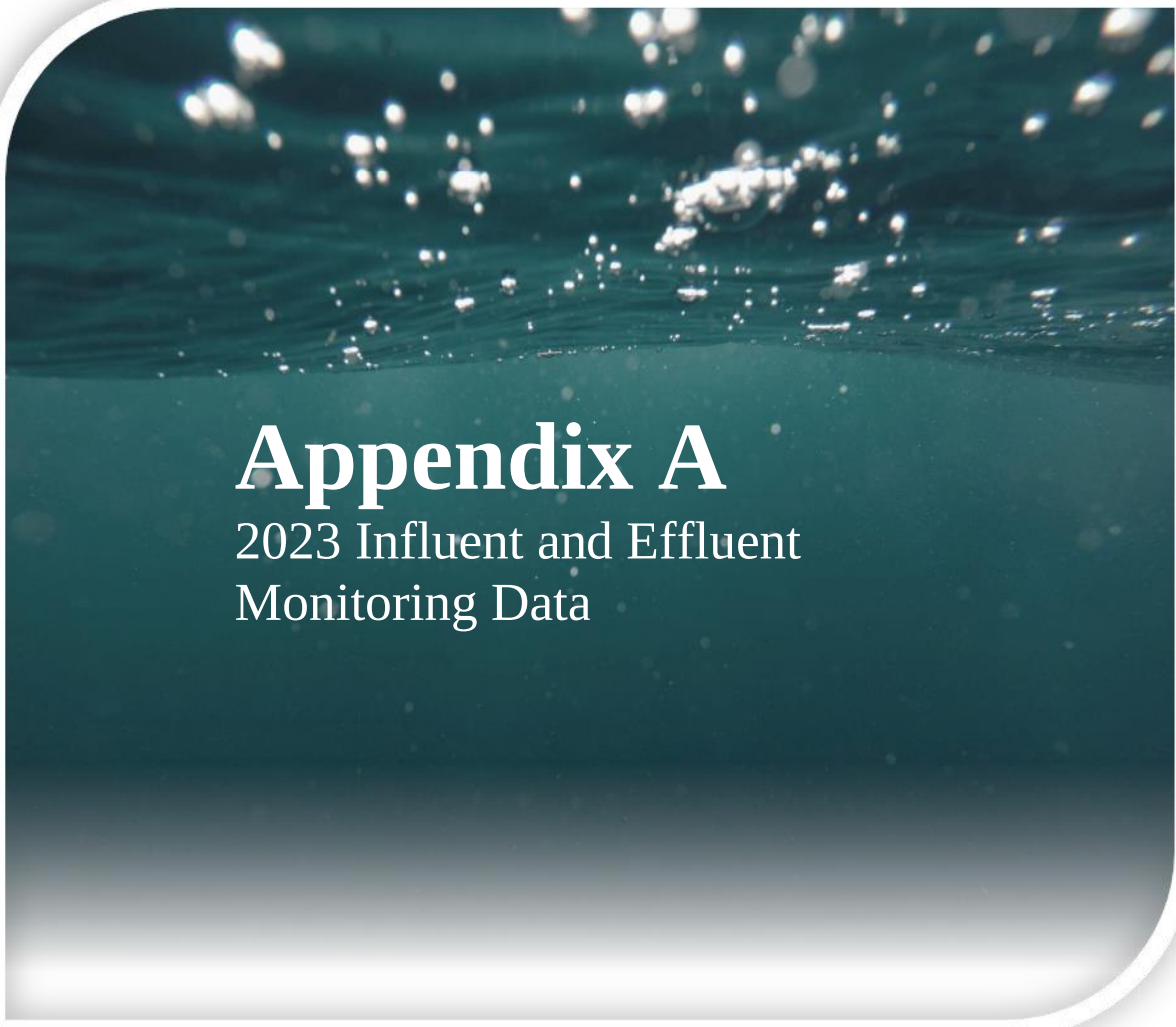
Table 4: Pontiac Pumping Station Overflow Events

Event #	Event Summary	Event Type	Date Occurred	Facility Name
#1-2GN7WW	Pontiac PS	Bypass	Jan 19, 2023	LRPCP
#1-320KQV	Pontiac PS	Bypass	Feb 27, 2023	LRPCP
#1-346915	Pontiac PS	Bypass	Apr 1, 2023	LRPCP
#1-346TGB	Pontiac PS	Bypass	Apr 1, 2023	LRPCP
#1-3RN8MF	Pontiac PS	Bypass	Aug 24, 2023	LRPCP
#13RTVHY	Pontiac PS	Bypass	Aug 25, 2023	LRPCP

Performance F-5-1 Conformance

The City’s Engineering Department is in the progress of implementing a Sewer Master Plan at a cost of approximately \$5,000,000,000.00 that is intended to identify short and long-term solutions to reduce the risks of basement, surface and coastal flooding in the City. This work includes public engagement, sewer system modeling, on site flow monitoring, sewer inflow & infiltration investigation, pumping station requirements, additional storm water storage, foundation drains and downspout disconnection. The Sewer Master Plan’s recommendations were endorsed by Council in late 2020 with implementation efforts planned over the next 50 plus years.

The implementation of the Sewer Master Plan is anticipated to directly affect flows to the LRWRP and LRPCP over the short and long term. The City is continuing to implement this Master Plan which includes reducing wet weather flow in the sanitary and combined sewage systems, anticipated to reduce the associated peak rate and volume of wet weather flow conveyed to the LRWRP and LRPCP.

An underwater photograph showing numerous bubbles rising towards the surface, with light rays filtering through the dark green water. The image is framed with rounded corners and a white border.

Appendix A

2023 Influent and Effluent
Monitoring Data

Appendix A: Influent Monitoring Data

Table A1 - LRPCP 2023 Influent Wastewater Characteristics from ECA report

MONTH	INFLUENT											
	BOD (mg/L)			SS (mg/L)			TP (mg/L)			TKN (mg/L)		
	avg.	max.	min.	avg.	max.	min.	avg.	max.	min.	avg.	max.	min.
Jan	128.50	212.00	64.00	120.00	250.00	55.00	2.83	5.10	2.10	22.95	32.00	17.50
Feb	114.60	148.00	90.00	95.00	136.00	64.00	2.78	4.20	1.00	22.84	33.40	7.80
Mar	96.20	144.00	50.00	80.00	111.00	49.00	1.78	2.70	1.00	16.90	26.70	8.50
Apr	86.00	125.00	66.00	88.00	112.00	59.00	2.12	3.20	1.30	19.90	29.70	11.10
May	163.30	221.00	67.00	89.00	150.00	48.00	3.33	4.60	1.50	25.97	35.40	12.80
Jun	155.00	263.00	19.00	211.00	320.00	139.00	68.64	326.00	0.80	27.12	38.20	8.70
Jul	93.20	138.00	70.00	89.00	142.00	19.00	2.58	3.40	1.90	22.26	27.20	16.10
Aug	105.70	168.00	29.00	91.00	136.00	45.00	2.82	4.30	1.30	23.65	29.10	12.10
Sep	180.20	272.00	128.00	147.00	183.00	77.00	3.66	4.30	2.80	27.56	31.80	20.00
Oct	145.00	237.00	27.00	130.00	170.00	75.00	3.97	5.40	2.00	30.28	32.70	23.30
Nov	151.60	193.00	124.00	125.00	274.00	51.00	4.04	4.70	3.60	33.44	37.70	31.60
Dec	165.60	209.00	124.00	117.00	182.00	72.00	2.96	3.20	2.40	26.32	33.70	22.80
Avg.	132.08	194.17	71.50	115.17	180.50	62.75	8.46	30.93	1.81	24.93	32.30	16.03
Max.	180.20	272.00	128.00	211.00	320.00	139.00	68.64	326.00	3.60	33.44	38.20	31.60
Min.	86.00	125.00	19.00	80.00	111.00	19.00	1.78	2.70	0.80	16.90	26.70	7.80

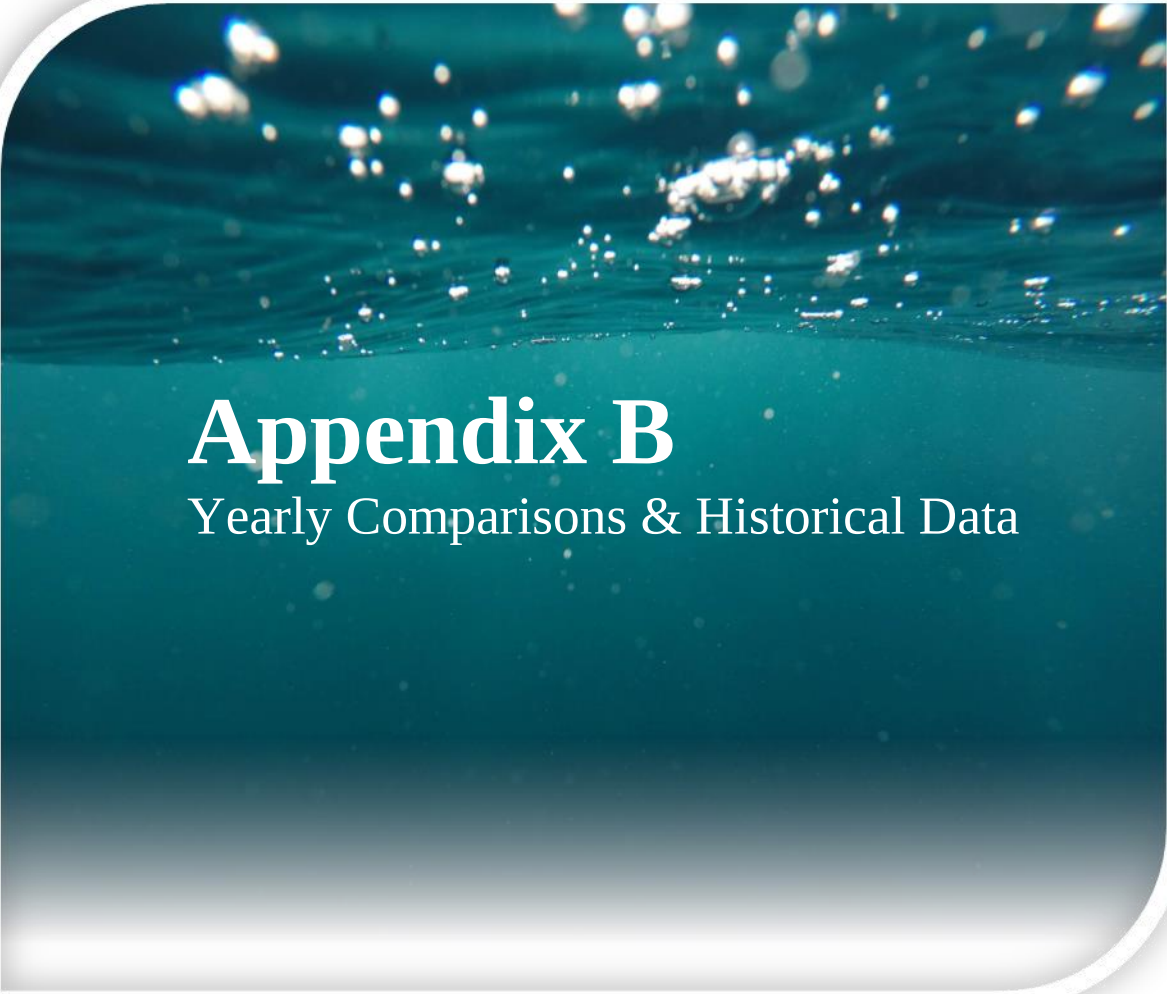
MONTH	INFLUENT							
	NH3 (mg/L)			Alkalinity (mg/L)			pH	
	avg.	max.	min.	avg.	max.	min.	max.	min.
Jan	19.13	28.10	11.60	225.50	248.00	194.00	7.42	7.04
Feb	18.66	26.20	5.50	243.40	272.00	201.00	7.52	7.02
Mar	13.02	21.50	5.50	234.40	263.00	190.00	7.48	7.17
Apr	16.60	25.30	8.80	240.00	245.00	231.00	7.40	7.20
May	22.43	31.90	11.60	245.50	269.00	196.00	7.55	7.25
Jun	25.03	32.10	7.60	242.80	286.00	199.00	7.48	7.12
Jul	18.62	23.30	14.00	248.00	260.00	229.00	7.51	7.18
Aug	19.58	24.30	10.10	257.17	274.00	219.00	7.61	7.28
Sep	24.34	30.80	18.90	251.20	268.00	226.00	7.59	7.24
Oct	26.65	30.80	18.20	255.83	263.00	244.00	7.49	7.19
Nov	28.96	33.60	26.60	257.80	266.00	250.00	7.54	7.09
Dec	21.74	27.10	19.30	258.20	264.00	254.00	7.55	7.15
Avg.	21.23	27.92	13.14	246.65	264.83	219.42	7.51	7.16
Max.	28.96	33.60	26.60	258.20	286.00	254.00	7.61	7.28
Min.	13.02	21.50	5.50	225.50	245.00	190.00	7.40	7.02

Appendix A: Effluent Monitoring Data

Table A2 - LRPCP 2023 Effluent Wastewater Characteristics from ECA report

MONTH	FINAL EFFLUENT												
	cBOD (mg/L)			SS (mg/L)			TP (mg/L)			NH3 (mg/L)			eCOLI
	avg.	max.	min.	avg.	max.	min.	avg.	max.	min.	avg.	max.	min.	cfu/100 ml (AVG)
Jan	4.00	4.00	4.00	3.02	4.00	2.00	0.09	0.14	0.04	0.40	1.17	0.10	NT *
Feb	3.81	7.80	2.00	4.26	6.00	2.00	0.09	0.16	0.03	0.10	0.10	0.10	NT *
Mar	4.04	4.60	3.20	2.50	3.00	2.00	0.06	0.08	0.05	0.10	0.10	0.10	NT *
Apr	3.58	4.00	2.60	2.47	4.00	2.00	0.11	0.28	0.04	0.14	0.24	0.10	NT *
May	3.17	4.00	2.00	3.22	4.00	2.00	0.15	0.37	0.05	0.12	0.20	0.10	79.00
Jun	3.58	4.00	2.70	3.38	6.00	2.00	0.66	1.63	0.04	0.14	0.27	0.10	29.00
Jul	3.83	4.40	2.80	4.43	6.00	3.00	0.13	0.17	0.07	0.23	0.70	0.10	19.00
Aug	2.73	4.00	2.00	2.53	4.00	2.00	0.27	0.42	0.14	0.27	0.92	0.10	20.00
Sep	3.92	5.60	2.00	4.32	6.00	2.00	0.61	0.93	0.38	0.41	1.46	0.10	47.00
Oct	4.26	5.00	4.00	4.53	8.00	3.00	0.65	0.95	0.23	0.52	2.54	0.10	62.00
Nov	3.68	4.00	2.40	3.90	7.00	2.00	0.53	1.05	0.23	0.19	0.49	0.10	NT *
Dec	7.27	6.20	3.10	3.65	4.00	3.00	0.11	0.13	0.09	0.11	0.14	0.10	NT *
Avg.	3.99	4.80	2.73	3.52	5.17	2.25	0.29	0.53	0.12	0.23	0.69	0.10	42.67
Max.	7.27	7.80	4.00	4.53	8.00	3.00	0.66	1.63	0.38	0.52	2.54	0.10	79.00
Min.	2.73	4.00	2.00	2.47	3.00	2.00	0.06	0.08	0.03	0.10	0.10	0.10	19.00

* NT = not tested

An underwater photograph showing numerous bubbles rising towards the surface, illuminated by bright light rays filtering down from above. The water is a deep teal color.

Appendix B

Yearly Comparisons & Historical Data

Appendix B: Yearly Comparisons & Historical Data



Little River Pollution Control Plant ECA#4681-BT3L39 Regulated Sampling Results - 2023

Table B1

Sludge Holding Tank/Truck Loading Bay - Quarterly Grab Sample					
Parameter	Unit	6-Feb-23	1-May-23	8-Aug-23	14-Nov-23
Arsenic	mg/kg	3.0	5.0	3.0	3.0
Cadmium	mg/kg	0.4	0.7	0.6	0.4
Chromium	mg/kg	16.0	33.0	25.0	9.0
Cobalt	mg/kg	0.8	2.0	0.2	1.0
Copper	mg/kg	140	240	210	150
Lead	mg/kg	4.0	17.0	10.0	6.0
Molybdenum	mg/kg	2.0	7.0	8.0	6.0
Nickel	mg/kg	5.0	14.0	9.0	6.0
Phosphorus	mg/kg	11000	18000	18000	16000
Potassium	mg/kg	1800	3100	2400	2500
Selenium	mg/kg	3.0	5	4.0	3.0
Zinc	mg/kg	220	420	420	270
Mercury	mg/kg	0.17	0.31	0.28	0.34
Solids	%	3.47	5.20	3.17	2.91
Ammonia as N (KCl Extr)	µg/g	6940	3640	2380	6290
Nitrate as N (10:1)	µg/g	0.3	0.3	3	3

Final Effluent Acute Lethality Mean Mortality - Annual Grab Sample				
Parameter	Unit	11-Jul-23		
Daphnia Magna	%	0.0		
Rainbow Trout	%	0.0		

Final Effluent Outside Normal Operating Conditions (Bypass-Composite/Overflow-Grab)	
(Bypass of Unit Processes/Overflows except for Raw and Primary Overflows)	
Parameter	Unit
Carbonaceous BOD	mg/L
Total Suspended Solids	mg/L
NH3	mg/L
TKN	mg/L
Nitrate	mg/L
Nitrite	mg/L
Total Phosphorous	mg/L

Chamber Sampling Point Overflows - Composite Sample												
Parameter	Unit	19-Jan-23	9-Feb-23	22-Feb-23	23-Feb-23	27-Feb-23	28-Feb-23	4-Mar-23	7-Mar-23	8-Mar-23	31-Mar-23	5-Apr-23
BOD5	mg/L	87.0	84.0	59.0	56.0	115.0	46.0	60.0	23.0	83.0	116.0	162.0
Total Suspended Solids	mg/L	214.0	179.0	61.0	87	224	67	72	19	114	182	256
Total Phosphorous	mg/L	1.07	1.39	0.99	0.70	1.23	0.80	0.70	0.60	1.13	1.35	1.22
E.Coli	cfu/100mL	109,000	2,200,000	1,730,000		200,000		400,000			1,600,000	2,500,000

Chamber Sampling Point Overflows - Composite Sample									
Parameter	Unit	29-Apr-23	20-May-23	11-Jun-23	13-Jun-23	26-Jun-23	2-Jul-23	23-Aug-23	25-Aug-23
BOD5	mg/L	92.0	240.0		144.0	124.0	110.0	271.0	17.0
Total Suspended Solids	mg/L	240	168		392.0	245	224	442	22
Total Phosphorous	mg/L	1.12	3		1.66	1.42	1.29	1.95	0.31
E.Coli	cfu/100mL	1,500,000	<1000000	<100000	1,000,000	500,000	200,000	2,000,000	

Appendix B: Yearly Comparisons & Historical Data

Table B2 - LRWRP YEARLY COMPARISONS/PRIMARY TOTAL OVERFLOWS
2021 - 2023

	Influent Concentration (mg/L) Average				Effluent Concentration (mg/L) Average				Percent Removal (%) Average			Flow Data								
YEAR	BOD	SS	TP	NH3	cBOD	SS	TP	NH3	SS	TP	NH3	Effluent Flow (ML)	BW Return Flow (ML)	Total Treated Flow (ML)	Total Overflow (ML)*	Total Overflow Occ.*	Total Overflow Hrs.*	Avg. Daily flow (ML/D)	Avg. Daily Flow (MGD)	Max Daily Flow (ML/D)
2021	151.00	87.00	1.90	10.40	4.00	5.00	0.23	0.12	97.48	93.77	99.75	15440	0	15440	1079.68	23	416.0	42.3	9.3	113
2022	188.03	180.58	3.58	26.97	3.40	4.39	0.34	0.44	97.65	93.77	99.74	13601	0	13601	138.88	8	74.1	37.3	8.2	115
2023	132.08	115.17	8.46	21.23	3.70	3.65	0.11	0.11	97.99	91.04	99.39	16163.1	0	16163	695.56	15	356.1	44.3	9.7	121

An underwater photograph showing a sandy ocean floor in the foreground and a water surface with many bubbles in the background. The text is overlaid on the sandy part of the image.

Appendix C

Schedule – Monitoring Program 2023-2024

2023 LRWRP/LRPCP MECP ECA & ECCC WSER Testing Schedule

Jan-23	Feb-23	Mar-23
Sunday, 1 January 2023	Wednesday, 1 February 2023	Wednesday, 1 March 2023
Monday, 2 January 2023 1	Thursday, 2 February 2023 4	Thursday, 2 March 2023 4
Tuesday, 3 January 2023 3 5	Friday, 3 February 2023	Friday, 3 March 2023
Wednesday, 4 January 2023	Saturday, 4 February 2023	Saturday, 4 March 2023
Thursday, 5 January 2023 4	Sunday, 5 February 2023	Sunday, 5 March 2023
Friday, 6 January 2023	Monday, 6 February 2023 8 9 2B	Monday, 6 March 2023 2B
Saturday, 7 January 2023	Tuesday, 7 February 2023 3 5	Tuesday, 7 March 2023 3 5
Sunday, 8 January 2023	Wednesday, 8 February 2023 2A 7	Wednesday, 8 March 2023 2A 7
Monday, 9 January 2023 2B	Thursday, 9 February 2023 4	Thursday, 9 March 2023 4
Tuesday, 10 January 2023 3 5	Friday, 10 February 2023	Friday, 10 March 2023
Wednesday, 11 January 2023 2A 7	Saturday, 11 February 2023	Saturday, 11 March 2023
Thursday, 12 January 2023 4	Sunday, 12 February 2023	Sunday, 12 March 2023
Friday, 13 January 2023	Monday, 13 February 2023	Monday, 13 March 2023
Saturday, 14 January 2023	Tuesday, 14 February 2023 3 5	Tuesday, 14 March 2023 3 5
Sunday, 15 January 2023	Wednesday, 15 February 2023	Wednesday, 15 March 2023
Monday, 16 January 2023	Thursday, 16 February 2023 4	Thursday, 16 March 2023 4
Tuesday, 17 January 2023 3 5	Friday, 17 February 2023	Friday, 17 March 2023
Wednesday, 18 January 2023	Saturday, 18 February 2023	Saturday, 18 March 2023
Thursday, 19 January 2023 4	Sunday, 19 February 2023	Sunday, 19 March 2023
Friday, 20 January 2023	Monday, 20 February 2023 1	Monday, 20 March 2023
Saturday, 21 January 2023	Tuesday, 21 February 2023 3 5	Tuesday, 21 March 2023 3 5
Sunday, 22 January 2023	Wednesday, 22 February 2023	Wednesday, 22 March 2023
Monday, 23 January 2023	Thursday, 23 February 2023 4	Thursday, 23 March 2023 4
Tuesday, 24 January 2023 3 5	Friday, 24 February 2023	Friday, 24 March 2023
Wednesday, 25 January 2023	Saturday, 25 February 2023	Saturday, 25 March 2023
Thursday, 26 January 2023 4	Sunday, 26 February 2023	Sunday, 26 March 2023
Friday, 27 January 2023	Monday, 27 February 2023	Monday, 27 March 2023
Saturday, 28 January 2023	Tuesday, 28 February 2023 3 5	Tuesday, 28 March 2023 3 5
Sunday, 29 January 2023		Wednesday, 29 March 2023
Monday, 30 January 2023		Thursday, 30 March 2023 4
Tuesday, 31 January 2023 3 5		

1 - Holiday

2A - Composite - Monthly - LRWRP & LRPCP Influent/Effluent

2B - Composite - Monthly - LRWRP & LRPCP Sludge

3 - Composite - Weekly - LRWRP & LRPCP Influent/Effluent

4 - Composite - 2nd Weekly - LRWRP Effluent (CBOD & TSS)

5 - Grab - Weekly - LRWRP & LRPCP Effluent - E. Coli **

6 - Grab - Annual - LRWRP/LRPCP Effluent Toxicity

7 - Grab - Monthly - LRWRP Imported Sewage

8 - Composite - Quarterly - LRWRP Effluent Industrial Wastewater Related

9 - Grab - Quarterly - LRWRP Effluent Leachate Related

10 - Grab - Annual - LRWRP/LRPCP Sludge & Influent/Effluent (Trace Organics)

** LRWRP - WSER Acute Lethality RT testing is quarterly unless of test failure (>50% mortality), then testing reverts to monthly as per WSER (federal regulation)

** LRWRP - ECA Acute Lethality RT & DM testing is annually unless of test failure (>50% mortality), then testing reverts to quarterly as per MECP ECA (provincial regulation), see LRWRP ECA Condition 9(4) & Schedule D for details

**LRPCP - Effluent E. Coli must be monitored during the disinfection period from May 1 through October 31

Note: In the event of a holiday or a missed sample, the scheduled sampling date shall be moved to the next available date.

LRWRP - Plant operations outside of Normal Operating Conditions - occurs when primary or secondary daily flow exceeds the available capacity for the day

Effluent Composite - CBOD TSS TP NH3 TKN NO2 NO3

LRWRP - Raw Sewage or Primary Overflow

BOD TSS TP TKN

LRPCP - Primary Overflow

BOD TSS TP E. Coli



2023 LRWRP/LRPCP MECP ECA & ECCC WSER Testing Schedule

Apr-23	May-23	Jun-23
Friday, 31 March 2023	Monday, 1 May 2023	Thursday, 1 June 2023
Saturday, 1 April 2023	Tuesday, 2 May 2023	Friday, 2 June 2023
Sunday, 2 April 2023	Wednesday, 3 May 2023	Saturday, 3 June 2023
Monday, 3 April 2023	Thursday, 4 May 2023	Sunday, 4 June 2023
Tuesday, 4 April 2023	Friday, 5 May 2023	Monday, 5 June 2023
Wednesday, 5 April 2023	Saturday, 6 May 2023	Tuesday, 6 June 2023
Thursday, 6 April 2023	Sunday, 7 May 2023	Wednesday, 7 June 2023
Friday, 7 April 2023	Monday, 8 May 2023	Thursday, 8 June 2023
Saturday, 8 April 2023	Tuesday, 9 May 2023	Friday, 9 June 2023
Sunday, 9 April 2023	Wednesday, 10 May 2023	Saturday, 10 June 2023
Monday, 10 April 2023	Thursday, 11 May 2023	Sunday, 11 June 2023
Tuesday, 11 April 2023	Friday, 12 May 2023	Monday, 12 June 2023
Wednesday, 12 April 2023	Saturday, 13 May 2023	Tuesday, 13 June 2023
Thursday, 13 April 2023	Sunday, 14 May 2023	Wednesday, 14 June 2023
Friday, 14 April 2023	Monday, 15 May 2023	Thursday, 15 June 2023
Saturday, 15 April 2023	Tuesday, 16 May 2023	Friday, 16 June 2023
Sunday, 16 April 2023	Wednesday, 17 May 2023	Saturday, 17 June 2023
Monday, 17 April 2023	Thursday, 18 May 2023	Sunday, 18 June 2023
Tuesday, 18 April 2023	Friday, 19 May 2023	Monday, 19 June 2023
Wednesday, 19 April 2023	Saturday, 20 May 2023	Tuesday, 20 June 2023
Thursday, 20 April 2023	Sunday, 21 May 2023	Wednesday, 21 June 2023
Friday, 21 April 2023	Monday, 22 May 2023	Thursday, 22 June 2023
Saturday, 22 April 2023	Tuesday, 23 May 2023	Friday, 23 June 2023
Sunday, 23 April 2023	Wednesday, 24 May 2023	Saturday, 24 June 2023
Monday, 24 April 2023	Thursday, 25 May 2023	Sunday, 25 June 2023
Tuesday, 25 April 2023	Friday, 26 May 2023	Monday, 26 June 2023
Wednesday, 26 April 2023	Saturday, 27 May 2023	Tuesday, 27 June 2023
Thursday, 27 April 2023	Sunday, 28 May 2023	Wednesday, 28 June 2023
Friday, 28 April 2023	Monday, 29 May 2023	Thursday, 29 June 2023
Saturday, 29 April 2023	Tuesday, 30 May 2023	Friday, 30 June 2023
	Wednesday, 31 May 2023	

1 - Holiday

2 - Composite - Monthly - LRWRP & LRPCP Influent/Effluent

2 - Composite - Monthly - LRWRP & LRPCP Sludge

3 - Composite - Weekly - LRWRP & LRPCP Influent/Effluent

4 - Composite - 2nd Weekly - LRWRP Effluent (CBOD & TSS)

5 - Grab - Weekly - LRWRP & LRPCP Effluent - E. Coli **

6 - Grab - Annual - LRWRP/LRPCP Effluent Toxicity

7 - Grab - Monthly - LRWRP Imported Sewage

8 - Composite - Quarterly - LRWRP Effluent Industrial Wastewater Related

9 - Grab - Quarterly - LRWRP Effluent Leachate Related

10 - Grab - Annual - LRWRP/LRPCP Sludge & Influent/Effluent (Trace Organics)

** LRWRP - WSER Acute Lethality RT testing is quarterly unless of test failure (>50% mortality), then testing reverts to monthly as per WSER (federal regulation)

** LRWRP - ECA Acute Lethality RT & DM testing is annually unless of test failure (>50% mortality), then testing reverts to quarterly as per MECP ECA (provincial regulation), see LRWRP ECA Condition 9(4) & Schedule D for details

**LRPCP - Effluent E. Coli must be monitored during the disinfection period from May 1 through October 31

Note: In the event of a holiday or a missed sample, the scheduled sampling date shall be moved to the next available date

LRWRP - Plant operations outside of Normal Operating Conditions - occurs when primary or secondary daily flow exceeds the available capacity for the day

Effluent Composite - CBOD TSS TP NH3 TKN NO2 NO3

LRWRP - Raw Sewage or Primary Overflow

BOD TSS TP TKN

LRPCP - Primary Overflow

BOD TSS TP E. Coli

2023 LRWRP/LRPCP MECP ECA & ECCC WSR Testing Schedule

Jul-23	Aug-23	Sep-23
Saturday, 1 July 2023	Tuesday, 1 August 2023	Friday, 1 September 2023
Sunday, 2 July 2023	Wednesday, 2 August 2023	Saturday, 2 September 2023
Monday, 3 July 2023	Thursday, 3 August 2023	Sunday, 3 September 2023
Tuesday, 4 July 2023	Friday, 4 August 2023	Monday, 4 September 2023
Wednesday, 5 July 2023	Saturday, 5 August 2023	Tuesday, 5 September 2023
Thursday, 6 July 2023	Sunday, 6 August 2023	Wednesday, 6 September 2023
Friday, 7 July 2023	Monday, 7 August 2023	Thursday, 7 September 2023
Saturday, 8 July 2023	Tuesday, 8 August 2023	Friday, 8 September 2023
Sunday, 9 July 2023	Wednesday, 9 August 2023	Saturday, 9 September 2023
Monday, 10 July 2023	Thursday, 10 August 2023	Sunday, 10 September 2023
Tuesday, 11 July 2023	Friday, 11 August 2023	Monday, 11 September 2023
Wednesday, 12 July 2023	Saturday, 12 August 2023	Tuesday, 12 September 2023
Thursday, 13 July 2023	Sunday, 13 August 2023	Wednesday, 13 September 2023
Friday, 14 July 2023	Monday, 14 August 2023	Thursday, 14 September 2023
Saturday, 15 July 2023	Tuesday, 15 August 2023	Friday, 15 September 2023
Sunday, 16 July 2023	Wednesday, 16 August 2023	Saturday, 16 September 2023
Monday, 17 July 2023	Thursday, 17 August 2023	Sunday, 17 September 2023
Tuesday, 18 July 2023	Friday, 18 August 2023	Monday, 18 September 2023
Wednesday, 19 July 2023	Saturday, 19 August 2023	Tuesday, 19 September 2023
Thursday, 20 July 2023	Sunday, 20 August 2023	Wednesday, 20 September 2023
Friday, 21 July 2023	Monday, 21 August 2023	Thursday, 21 September 2023
Saturday, 22 July 2023	Tuesday, 22 August 2023	Friday, 22 September 2023
Sunday, 23 July 2023	Wednesday, 23 August 2023	Saturday, 23 September 2023
Monday, 24 July 2023	Thursday, 24 August 2023	Sunday, 24 September 2023
Tuesday, 25 July 2023	Friday, 25 August 2023	Monday, 25 September 2023
Wednesday, 26 July 2023	Saturday, 26 August 2023	Tuesday, 26 September 2023
Thursday, 27 July 2023	Sunday, 27 August 2023	Wednesday, 27 September 2023
Friday, 28 July 2023	Monday, 28 August 2023	Thursday, 28 September 2023
Saturday, 29 July 2023	Tuesday, 29 August 2023	Friday, 29 September 2023
Sunday, 30 July 2023	Wednesday, 30 August 2023	Saturday, 30 September 2023
Monday, 31 July 2023	Thursday, 31 August 2023	

1 - Holiday

2 - Composite - Monthly - LRWRP & LRPCP Influent/Effluent

2 - Composite - Monthly - LRWRP & LRPCP Sludge

3 - Composite - Weekly - LRWRP & LRPCP Influent/Effluent

4 - Composite - 2nd Weekly - LRWRP Effluent (CBOD & TSS)

5 - Grab - Weekly - LRWRP & LRPCP Effluent - E. Coli **

6 - Grab - Annual - LRWRP/LRPCP Effluent Toxicity

7 - Grab - Monthly - LRWRP Imported Sewage

8 - Composite - Quarterly - LRWRP Effluent Industrial Wastewater Related

9 - Grab - Quarterly - LRWRP Effluent Leachate Related

10 - Grab - Annual - LRWRP/LRPCP Sludge & Influent/Effluent (Trace Organics)

** LRWRP - WSR Acute Lethality RT testing is quarterly unless of test failure (>50% mortality), then testing reverts to monthly as per WSR (federal regulation)

** LRWRP - ECA Acute Lethality RT & DM testing is annually unless of test failure (>50% mortality), then testing reverts to quarterly as per MECP ECA (provincial regulation), see LRWRP ECA Condition 9(4) & Schedule D for details)

**LRPCP - Effluent E. Coli must be monitored during the disinfection period from May 1 through October 31

Note: In the event of a holiday or a missed sample, the scheduled sampling date shall be moved to the next available date

LRWRP - Plant operations outside of Normal Operating Conditions - occurs when primary or secondary daily flow exceeds the available capacity for the day

Effluent Composite - CBOD TSS TP NH3 TKN NO2 NO3

LRWRP - Raw Sewage or Primary Overflow

BOD TSS TP TKN

LRPCP - Primary Overflow

BOD TSS TP E. Coli



2023 LRWRP/LRPCP MECP ECA & ECCC WSER Testing Schedule

Oct-23	Nov-23	Dec-23
Sunday, 1 October 2023	Wednesday, 1 November 2023	Friday, 1 December 2023
Monday, 2 October 2023 1	Thursday, 2 November 2023 4	Saturday, 2 December 2023
Tuesday, 3 October 2023 3 5 2B	Friday, 3 November 2023	Sunday, 3 December 2023
Wednesday, 4 October 2023 2A 7	Saturday, 4 November 2023	Monday, 4 December 2023 2B
Thursday, 5 October 2023 4	Sunday, 5 November 2023	Tuesday, 5 December 2023 3 5
Friday, 6 October 2023	Monday, 6 November 2023	Wednesday, 6 December 2023 2A 7
Saturday, 7 October 2023	Tuesday, 7 November 2023 3 5	Thursday, 7 December 2023 4
Sunday, 8 October 2023	Wednesday, 8 November 2023 8 9	Friday, 8 December 2023
Monday, 9 October 2023 1	Thursday, 9 November 2023 4	Saturday, 9 December 2023
Tuesday, 10 October 2023 3 5	Friday, 10 November 2023	Sunday, 10 December 2023
Wednesday, 11 October 2023	Saturday, 11 November 2023	Monday, 11 December 2023
Thursday, 12 October 2023 4	Sunday, 12 November 2023	Tuesday, 12 December 2023 3 5
Friday, 13 October 2023	Monday, 13 November 2023 1	Wednesday, 13 December 2023
Saturday, 14 October 2023	Tuesday, 14 November 2023 3 5 2B	Thursday, 14 December 2023 4
Sunday, 15 October 2023	Wednesday, 15 November 2023 2A 7	Friday, 15 December 2023
Monday, 16 October 2023	Thursday, 16 November 2023 4	Saturday, 16 December 2023
Tuesday, 17 October 2023 3 5	Friday, 17 November 2023	Sunday, 17 December 2023
Wednesday, 18 October 2023	Saturday, 18 November 2023	Monday, 18 December 2023
Thursday, 19 October 2023 4	Sunday, 19 November 2023	Tuesday, 19 December 2023 3 5
Friday, 20 October 2023	Monday, 20 November 2023	Wednesday, 20 December 2023
Saturday, 21 October 2023	Tuesday, 21 November 2023 3 5	Thursday, 21 December 2023 4
Sunday, 22 October 2023	Wednesday, 22 November 2023	Friday, 22 December 2023
Monday, 23 October 2023	Thursday, 23 November 2023 4	Saturday, 23 December 2023
Tuesday, 24 October 2023 3 5	Friday, 24 November 2023	Sunday, 24 December 2023
Wednesday, 25 October 2023	Saturday, 25 November 2023	Monday, 25 December 2023 1
Thursday, 26 October 2023 4	Sunday, 26 November 2023	Tuesday, 26 December 2023 1 3
Friday, 27 October 2023	Monday, 27 November 2023	Wednesday, 27 December 2023 5
Saturday, 28 October 2023	Tuesday, 28 November 2023 3 5	Thursday, 28 December 2023 4
Sunday, 29 October 2023	Wednesday, 29 November 2023	Friday, 29 December 2023
Monday, 30 October 2023	Thursday, 30 November 2023 4	Saturday, 30 December 2023
Tuesday, 31 October 2023 3 5		Sunday, 31 December 2023

1 - Holiday

2 - Composite - Monthly - LRWRP & LRPCP Influent/Effluent

2 - Composite - Monthly - LRWRP & LRPCP Sludge

3 - Composite - Weekly - LRWRP & LRPCP Influent/Effluent

4 - Composite - 2nd Weekly - LRWRP Effluent (CBOD & TSS)

5 - Grab - Weekly - LRWRP & LRPCP Effluent - E. Coli **

6 - Grab - Annual - LRWRP/LRPCP Effluent Toxicity

7 - Grab - Monthly - LRWRP Imported Sewage

8 - Composite - Quarterly - LRWRP Effluent Industrial Wastewater Related

9 - Grab - Quarterly - LRWRP Effluent Leachate Related

10 - Grab - Annual - LRWRP/LRPCP Sludge & Influent/Effluent (Trace Organics)

** LRWRP - WSER Acute Lethality RT testing is quarterly unless of test failure (>50% mortality), then testing reverts to monthly as per WSER (federal regulation)

** LRWRP - ECA Acute Lethality RT & DM testing is annually unless of test failure (>50% mortality), then testing reverts to quarterly as per MECP ECA (provincial regulation),

see LRWRP ECA Condition 9(4) & Schedule D for details)

**LRPCP - Effluent E. Coli must be monitored during the disinfection period from May 1 through October 31

Note: In the event of a holiday or a missed sample, the scheduled sampling date shall be moved to the next available date

LRWRP - Plant operations outside of Normal Operating Conditions - occurs when primary or secondary daily flow exceeds the available capacity for the day

Effluent Composite - CBOD TSS TP NH3 TKN NO2 NO3

LRWRP - Raw Sewage or Primary Overflow

BOD TSS TP TKN

LRPCP - Primary Overflow

BOD TSS TP E. Coli



2024 LRWRP/LRPCP MECP ECA & ECCC WSER Testing Schedule

Jan-24	Feb-24	Mar-24
Monday, 1 January 2024	Thursday, 1 February 2024	Friday, 1 March 2024
Tuesday, 2 January 2024	Friday, 2 February 2024	Saturday, 2 March 2024
Wednesday, 3 January 2024	Saturday, 3 February 2024	Sunday, 3 March 2024
Thursday, 4 January 2024	Sunday, 4 February 2024	Monday, 4 March 2024
Friday, 5 January 2024	Monday, 5 February 2024	Tuesday, 5 March 2024
Saturday, 6 January 2024	Tuesday, 6 February 2024	Wednesday, 6 March 2024
Sunday, 7 January 2024	Wednesday, 7 February 2024	Thursday, 7 March 2024
Monday, 8 January 2024	Thursday, 8 February 2024	Friday, 8 March 2024
Tuesday, 9 January 2024	Friday, 9 February 2024	Saturday, 9 March 2024
Wednesday, 10 January 2024	Saturday, 10 February 2024	Sunday, 10 March 2024
Thursday, 11 January 2024	Sunday, 11 February 2024	Monday, 11 March 2024
Friday, 12 January 2024	Monday, 12 February 2024	Tuesday, 12 March 2024
Saturday, 13 January 2024	Tuesday, 13 February 2024	Wednesday, 13 March 2024
Sunday, 14 January 2024	Wednesday, 14 February 2024	Thursday, 14 March 2024
Monday, 15 January 2024	Thursday, 15 February 2024	Friday, 15 March 2024
Tuesday, 16 January 2024	Friday, 16 February 2024	Saturday, 16 March 2024
Wednesday, 17 January 2024	Saturday, 17 February 2024	Sunday, 17 March 2024
Thursday, 18 January 2024	Sunday, 18 February 2024	Monday, 18 March 2024
Friday, 19 January 2024	Monday, 19 February 2024	Tuesday, 19 March 2024
Saturday, 20 January 2024	Tuesday, 20 February 2024	Wednesday, 20 March 2024
Sunday, 21 January 2024	Wednesday, 21 February 2024	Thursday, 21 March 2024
Monday, 22 January 2024	Thursday, 22 February 2024	Friday, 22 March 2024
Tuesday, 23 January 2024	Friday, 23 February 2024	Saturday, 23 March 2024
Wednesday, 24 January 2024	Saturday, 24 February 2024	Sunday, 24 March 2024
Thursday, 25 January 2024	Sunday, 25 February 2024	Monday, 25 March 2024
Friday, 26 January 2024	Monday, 26 February 2024	Tuesday, 26 March 2024
Saturday, 27 January 2024	Tuesday, 27 February 2024	Wednesday, 27 March 2024
Sunday, 28 January 2024	Wednesday, 28 February 2024	Thursday, 28 March 2024
Monday, 29 January 2024	Thursday, 29 February 2024	Friday, 29 March 2024
Tuesday, 30 January 2024		Saturday, 30 March 2024
Wednesday, 31 January 2024		Sunday, 31 March 2024

1 - Holiday

2A - Composite - Monthly - LRWRP & LRPCP Influent/Effluent

2B - Composite - Monthly - LRWRP & LRPCP Sludge

3 - Composite - Weekly - LRWRP & LRPCP Influent/Effluent

4 - Composite - 2nd Weekly - LRWRP Effluent (CBOD & TSS)

5 - Grab - Weekly - LRWRP & LRPCP Effluent - E. Coli **

6 - Grab - Annual - LRWRP/LRPCP Effluent Toxicity

7 - Grab - Monthly - LRWRP Imported Sewage

8 - Composite - Quarterly - LRWRP Effluent Industrial Wastewater Related

9 - Grab - Quarterly - LRWRP Effluent Leachate Related

10 - Grab - Annual - LRWRP/LRPCP Sludge & Influent/Effluent (Trace Organics)

** LRWRP - WSER Acute Lethality RT testing is quarterly unless of test failure (>50% mortality), then testing reverts to monthly as per WSER (federal regulation)

** LRWRP - ECA Acute Lethality RT & DM testing is annually unless of test failure (>50% mortality), then testing reverts to quarterly as per MECP ECA (provincial regulation), see LRWRP ECA Condition 9(4) & Schedule D for details)

**LRPCP - Effluent E. Coli must be monitored during the disinfection period from May 1 through October 31

Note: In the event of a holiday or a missed sample, the scheduled sampling date shall be moved to the next available date

LRWRP - Plant operations outside of Normal Operating Conditions - occurs when primary or secondary daily flow exceeds the available capacity for the day

Effluent Composite - CBOD TSS TP NH3 TKN NO2 NO3

LRWRP - Raw Sewage or Primary Overflow

BOD TSS TP TKN

LRPCP - Primary Overflow

BOD TSS TP E. Coli



2024 LRWRP/LRPCP MECP ECA & ECCC WSER Testing Schedule

Apr-24	May-24	Jun-24
Monday, 1 April 2024	Wednesday, 1 May 2024	Saturday, 1 June 2024
Tuesday, 2 April 2024	Thursday, 2 May 2024	Sunday, 2 June 2024
Wednesday, 3 April 2024	Friday, 3 May 2024	Monday, 3 June 2024
Thursday, 4 April 2024	Saturday, 4 May 2024	Tuesday, 4 June 2024
Friday, 5 April 2024	Sunday, 5 May 2024	Wednesday, 5 June 2024
Saturday, 6 April 2024	Monday, 6 May 2024	Thursday, 6 June 2024
Sunday, 7 April 2024	Tuesday, 7 May 2024	Friday, 7 June 2024
Monday, 8 April 2024	Wednesday, 8 May 2024	Saturday, 8 June 2024
Tuesday, 9 April 2024	Thursday, 9 May 2024	Sunday, 9 June 2024
Wednesday, 10 April 2024	Friday, 10 May 2024	Monday, 10 June 2024
Thursday, 11 April 2024	Saturday, 11 May 2024	Tuesday, 11 June 2024
Friday, 12 April 2024	Sunday, 12 May 2024	Wednesday, 12 June 2024
Saturday, 13 April 2024	Monday, 13 May 2024	Thursday, 13 June 2024
Sunday, 14 April 2024	Tuesday, 14 May 2024	Friday, 14 June 2024
Monday, 15 April 2024	Wednesday, 15 May 2024	Saturday, 15 June 2024
Tuesday, 16 April 2024	Thursday, 16 May 2024	Sunday, 16 June 2024
Wednesday, 17 April 2024	Friday, 17 May 2024	Monday, 17 June 2024
Thursday, 18 April 2024	Saturday, 18 May 2024	Tuesday, 18 June 2024
Friday, 19 April 2024	Sunday, 19 May 2024	Wednesday, 19 June 2024
Saturday, 20 April 2024	Monday, 20 May 2024	Thursday, 20 June 2024
Sunday, 21 April 2024	Tuesday, 21 May 2024	Friday, 21 June 2024
Monday, 22 April 2024	Wednesday, 22 May 2024	Saturday, 22 June 2024
Tuesday, 23 April 2024	Thursday, 23 May 2024	Sunday, 23 June 2024
Wednesday, 24 April 2024	Friday, 24 May 2024	Monday, 24 June 2024
Thursday, 25 April 2024	Saturday, 25 May 2024	Tuesday, 25 June 2024
Friday, 26 April 2024	Sunday, 26 May 2024	Wednesday, 26 June 2024
Saturday, 27 April 2024	Monday, 27 May 2024	Thursday, 27 June 2024
Sunday, 28 April 2024	Tuesday, 28 May 2024	Friday, 28 June 2024
Monday, 29 April 2024	Wednesday, 29 May 2024	Saturday, 29 June 2024
Tuesday, 30 April 2024	Thursday, 30 May 2024	Sunday, 30 June 2024
	Friday, 31 May 2024	

1 - Holiday

2 - Composite - Monthly - LRWRP & LRPCP Influent/Effluent

2 - Composite - Monthly - LRWRP & LRPCP Sludge

3 - Composite - Weekly - LRWRP & LRPCP Influent/Effluent

4 - Composite - 2nd Weekly - LRWRP Effluent (CBOD & TSS)

5 - Grab - Weekly - LRWRP/LRPCP Effluent - E. Coli **

6 - Grab - Annual - LRWRP/LRPCP Effluent Toxicity

7 - Grab - Monthly - LRWRP Imported Sewage

8 - Composite - Quarterly - LRWRP Effluent Industrial Wastewater Related

9 - Grab - Quarterly - LRWRP Effluent Leachate Related

10 - Grab - Annual - LRWRP/LRPCP Sludge & Influent/Effluent (Trace Organics)

** LRWRP - WSER Acute Lethality RT testing is quarterly unless of test failure (>50% mortality), then testing reverts to monthly as per WSER (federal regulation)

** LRWRP - ECA Acute Lethality RT & DM testing is annually unless of test failure (>50% mortality), then testing reverts to quarterly as per MECP ECA (provincial regulation),

see LRWRP ECA Condition 9(4) & Schedule D for details

**LRPCP - Effluent E. Coli must be monitored during the disinfection period from May 1 through October 31

Note: In the event of a holiday or a missed sample, the scheduled sampling date shall be moved to the next available date.

LRWRP - Plant operations outside of Normal Operating Conditions - occurs when primary or secondary daily flow exceeds the available capacity for the day

Effluent Composite - CBOD TSS TP NH3 TKN NO2 NO3

LRWRP - Raw Sewage or Primary Overflow

BOD TSS TP TKN

LRPCP - Primary Overflow

BOD TSS TP E. Coli



2024 LRWRP/LRPCP MECP ECA & ECCC WSER Testing Schedule

Jul-24	Aug-24	Sep-24
Monday, 1 July 2024	Thursday, 1 August 2024	Sunday, 1 September 2024
Tuesday, 2 July 2024	Friday, 2 August 2024	Monday, 2 September 2024
Wednesday, 3 July 2024	Saturday, 3 August 2024	Tuesday, 3 September 2024
Thursday, 4 July 2024	Sunday, 4 August 2024	Wednesday, 4 September 2024
Friday, 5 July 2024	Monday, 5 August 2024	Thursday, 5 September 2024
Saturday, 6 July 2024	Tuesday, 6 August 2024	Friday, 6 September 2024
Sunday, 7 July 2024	Wednesday, 7 August 2024	Saturday, 7 September 2024
Monday, 8 July 2024	Thursday, 8 August 2024	Sunday, 8 September 2024
Tuesday, 9 July 2024	Friday, 9 August 2024	Monday, 9 September 2024
Wednesday, 10 July 2024	Saturday, 10 August 2024	Tuesday, 10 September 2024
Thursday, 11 July 2024	Sunday, 11 August 2024	Wednesday, 11 September 2024
Friday, 12 July 2024	Monday, 12 August 2024	Thursday, 12 September 2024
Saturday, 13 July 2024	Tuesday, 13 August 2024	Friday, 13 September 2024
Sunday, 14 July 2024	Wednesday, 14 August 2024	Saturday, 14 September 2024
Monday, 15 July 2024	Thursday, 15 August 2024	Sunday, 15 September 2024
Tuesday, 16 July 2024	Friday, 16 August 2024	Monday, 16 September 2024
Wednesday, 17 July 2024	Saturday, 17 August 2024	Tuesday, 17 September 2024
Thursday, 18 July 2024	Sunday, 18 August 2024	Wednesday, 18 September 2024
Friday, 19 July 2024	Monday, 19 August 2024	Thursday, 19 September 2024
Saturday, 20 July 2024	Tuesday, 20 August 2024	Friday, 20 September 2024
Sunday, 21 July 2024	Wednesday, 21 August 2024	Saturday, 21 September 2024
Monday, 22 July 2024	Thursday, 22 August 2024	Sunday, 22 September 2024
Tuesday, 23 July 2024	Friday, 23 August 2024	Monday, 23 September 2024
Wednesday, 24 July 2024	Saturday, 24 August 2024	Tuesday, 24 September 2024
Thursday, 25 July 2024	Sunday, 25 August 2024	Wednesday, 25 September 2024
Friday, 26 July 2024	Monday, 26 August 2024	Thursday, 26 September 2024
Saturday, 27 July 2024	Tuesday, 27 August 2024	Friday, 27 September 2024
Sunday, 28 July 2024	Wednesday, 28 August 2024	Saturday, 28 September 2024
Monday, 29 July 2024	Thursday, 29 August 2024	Sunday, 29 September 2024
Tuesday, 30 July 2024	Friday, 30 August 2024	Monday, 30 September 2024
Wednesday, 31 July 2024	Saturday, 31 August 2024	

1 - Holiday

2 - Composite - Monthly - LRWRP & LRPCP Influent/Effluent

2 - Composite - Monthly - LRWRP & LRPCP Sludge

3 - Composite - Weekly - LRWRP & LRPCP Influent/Effluent

4 - Composite - 2nd Weekly - LRWRP Effluent (CBOD & TSS)

5 - Grab - Weekly - LRWRP & LRPCP Effluent - E. Coli **

6 - Grab - Annual - LRWRP/LRPCP Effluent Toxicity

7 - Grab - Monthly - LRWRP Imported Sewage

8 - Composite - Quarterly - LRWRP Effluent Industrial Wastewater Related

9 - Grab - Quarterly - LRWRP Effluent Leachate Related

10 - Grab - Annual - LRWRP/LRPCP Sludge & Influent/Effluent (Trace Organics)

** LRWRP - WSER Acute Lethality RT testing is quarterly unless of test failure (>50% mortality), then testing reverts to monthly as per WSER (federal regulation)

** LRWRP - ECA Acute Lethality RT & DM testing is annually unless of test failure (>50% mortality), then testing reverts to quarterly as per MECP ECA (provincial regulation), see LRWRP ECA Condition 9(4) & Schedule D for details

**LRPCP - Effluent E. Coli must be monitored during the disinfection period from May 1 through October 31

Note: In the event of a holiday or a missed sample, the scheduled sampling date shall be moved to the next available date

LRWRP - Plant operations outside of Normal Operating Conditions - occurs when primary or secondary daily flow exceeds the available capacity for the day

Effluent Composite - CBOD TSS TP NH3 TKN NO2 NO3

LRWRP - Raw Sewage or Primary Overflow

BOD TSS TP TKN

LRPCP - Primary Overflow

BOD TSS TP E. Coli



2024 LRWRP/LRPCP MECP ECA & ECCC WSER Testing Schedule

Oct-24	Nov-24	Dec-24
Tuesday, 1 October 2024	Friday, 1 November 2024	Sunday, 1 December 2024
Wednesday, 2 October 2024	Saturday, 2 November 2024	Monday, 2 December 2024
Thursday, 3 October 2024	Sunday, 3 November 2024	Tuesday, 3 December 2024
Friday, 4 October 2024	Monday, 4 November 2024	Wednesday, 4 December 2024
Saturday, 5 October 2024	Tuesday, 5 November 2024	Thursday, 5 December 2024
Sunday, 6 October 2024	Wednesday, 6 November 2024	Friday, 6 December 2024
Monday, 7 October 2024	Thursday, 7 November 2024	Saturday, 7 December 2024
Tuesday, 8 October 2024	Friday, 8 November 2024	Sunday, 8 December 2024
Wednesday, 9 October 2024	Saturday, 9 November 2024	Monday, 9 December 2024
Thursday, 10 October 2024	Sunday, 10 November 2024	Tuesday, 10 December 2024
Friday, 11 October 2024	Monday, 11 November 2024	Wednesday, 11 December 2024
Saturday, 12 October 2024	Tuesday, 12 November 2024	Thursday, 12 December 2024
Sunday, 13 October 2024	Wednesday, 13 November 2024	Friday, 13 December 2024
Monday, 14 October 2024	Thursday, 14 November 2024	Saturday, 14 December 2024
Tuesday, 15 October 2024	Friday, 15 November 2024	Sunday, 15 December 2024
Wednesday, 16 October 2024	Saturday, 16 November 2024	Monday, 16 December 2024
Thursday, 17 October 2024	Sunday, 17 November 2024	Tuesday, 17 December 2024
Friday, 18 October 2024	Monday, 18 November 2024	Wednesday, 18 December 2024
Saturday, 19 October 2024	Tuesday, 19 November 2024	Thursday, 19 December 2024
Sunday, 20 October 2024	Wednesday, 20 November 2024	Friday, 20 December 2024
Monday, 21 October 2024	Thursday, 21 November 2024	Saturday, 21 December 2024
Tuesday, 22 October 2024	Friday, 22 November 2024	Sunday, 22 December 2024
Wednesday, 23 October 2024	Saturday, 23 November 2024	Monday, 23 December 2024
Thursday, 24 October 2024	Sunday, 24 November 2024	Tuesday, 24 December 2024
Friday, 25 October 2024	Monday, 25 November 2024	Wednesday, 25 December 2024
Saturday, 26 October 2024	Tuesday, 26 November 2024	Thursday, 26 December 2024
Sunday, 27 October 2024	Wednesday, 27 November 2024	Friday, 27 December 2024
Monday, 28 October 2024	Thursday, 28 November 2024	Saturday, 28 December 2024
Tuesday, 29 October 2024	Friday, 29 November 2024	Sunday, 29 December 2024
Wednesday, 30 October 2024	Saturday, 30 November 2024	Monday, 30 December 2024
Thursday, 31 October 2024		Tuesday, 31 December 2024

1 - Holiday

2 - Composite - Monthly - LRWRP & LRPCP Influent/Effluent

2 - Composite - Monthly - LRWRP & LRPCP Sludge

3 - Composite - Weekly - LRWRP & LRPCP Influent/Effluent

4 - Composite - 2nd Weekly - LRWRP Effluent (CBOD & TSS)

5 - Grab - Weekly - LRWRP & LRPCP Effluent - E. Coli **

6 - Grab - Annual - LRWRP/LRPCP Effluent Toxicity

7 - Grab - Monthly - LRWRP Imported Sewage

8 - Composite - Quarterly - LRWRP Effluent Industrial Wastewater Related

9 - Grab - Quarterly - LRWRP Effluent Leachate Related

10 - Grab - Annual - LRWRP/LRPCP Sludge & Influent/Effluent (Trace Organics)

** LRWRP - WSER Acute Lethality RT testing is quarterly unless of test failure (>50% mortality), then testing reverts to monthly as per WSER (federal regulation)

** LRWRP - ECA Acute Lethality RT & DM testing is annually unless of test failure (>50% mortality), then testing reverts to quarterly as per MECP ECA (provincial regulation, see LRWRP ECA Condition 9(4) & Schedule D for details)

**LRPCP - Effluent E. Coli must be monitored during the disinfection period from May 1 through October 31

Note: In the event of a holiday or a missed sample, the scheduled sampling date shall be moved to the next available date

LRWRP - Plant operations outside of Normal Operating Conditions - occurs when primary or secondary daily flow exceeds the available capacity for the day

Effluent Composite - CBOD TSS TP NH3 TKN NO2 NO3

LRWRP - Raw Sewage or Primary Overflow

BOD TSS TP TKN

LRPCP - Primary Overflow

BOD TSS TP E. Coli

An underwater photograph showing numerous bubbles rising towards the surface, creating a dynamic and textured background. The water is a deep teal color, and the light filtering through creates a shimmering effect on the bubbles.

Appendix D

2023 Flow Monitoring Equipment
Calibration Certificates



Franklin Empire

550 Braidwood Ave., Unit #4
Peterborough ON K9J 1W1, CANADA

Tel: (705) 745-1626
Fax: (705) 745-3493
Website: www.franklinempire.com

Windsor

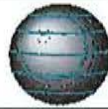
Little River WWTP

'Flow Calibrations

'September 26, 2023

Leaders in Instrumentation and Control

Find your solution at www.franklinempire.com



CERTIFICATE NUMBER: 081023-5

CUSTOMER City of Windsor Little River Pollution Control Plant
ADDRESS | PHONE 9400 Little River Rd, Windsor, Ontario. (519)947-4081
REQUESTED BY Sergio Mannina

**VISUAL AND
FUNCTIONAL
INSPECTION**

Visual Inspection – Sensors, enclosures, connections, display, switches, pushbuttons, nameplates, tags are to be checked for its presence, physical integrity, cleanliness, readability and adequacy of installation
Functional Inspection – Switches, pushbuttons, display, signal integrity, response to process variable and response to calibration standards are to be checked for functionality, response within manufacturer's and end-user specifications

The sensors were cleaned and the analyzer calibrated.

CALIBRATION DATA

PASS/FAIL CRITERIA +/- 0.3 ppm O₂

A6 Odeon		AYSIX Odeon Multiple parameter portable analyzer S/N ODEOA-2626 Sensor S/N PDOA-3009			
STANDARD	0.00 %	100%	0.00 %	100%	
	SAT	SAT	SAT	SAT	
	AS FOUND		AS LEFT		
PROBE 1	0.58%	108.5%	0.00%	100%	
DELTA	0.58%	8.5	0	0	
PASS/FAIL/COMMENTS	FAIL	FAIL	PASS	PASS	

COMMENTS

Unit was cleaned and calibrated. Only D.O. was calibrated. No faults arose.

REFERENCE STANDARDS

Zero solution - solution of water saturated with sodium sulfite.
 Span solution - Oxygen saturated clean water.

	PRINT NAME	SIGNATURE	DATE
PERFORMED BY	James Griffin		August 10 2023

Next calibration due August 2024



CERTIFICATE NUMBER: 081023-1

CUSTOMER	City of Windsor Little River Pollution Control Plant
ADDRESS PHONE	9400 Little River Rd, Windsor, Ontario. (519)947-4081
REQUESTED BY	Sergio Mannina

**VISUAL AND
FUNCTIONAL
INSPECTION**

Visual Inspection – Sensors, enclosures, connections, display, switches, pushbuttons, nameplates, tags are to be checked for its presence, physical integrity, cleanliness, readability and adequacy of installation
Functional Inspection – Switches, pushbuttons, display, signal integrity, response to process variable and response to calibration standards are to be checked for functionality, response within manufacturer's and end-user specifications

The sensors were cleaned and the analyzer calibrated.

CALIBRATION DATA

PASS/FAIL CRITERIA +/- 0.3 ppm O₂

Plant #1		AYSIX MODEL MPA48 D.O. ANALYZER S/N 48A1269			
STANDARD	0.00 PPM	7.6PPM @ 29.6°C	0.00 PPM	7.6PPM @ 29.6°C	
	AS FOUND		AS LEFT		
PROBE 1 S/N 10S6860	0.04	7.3	0.00	7.6	
DELTA	0.04	0.3	0.00	0	
PASS/FAIL/COMMENTS	PASS	PASS	PASS	PASS	
Probe cleaned and calibrated					

STANDARD	0.00 PPM	7.6PPM @ 29.6°C	0.00PPM	7.6PPM @ 29.6°C	
	AS FOUND		AS LEFT		
PROBE 2 S/N 10S7894	0.00	7.3	0.00	7.6	
DELTA	0.00	0.3	0	0	
PASS/FAIL/COMMENTS	PASS	PASS	PASS	PASS	
Probe cleaned and calibrated					

STANDARD	0.00 PPM	7.8PPM @ 29.2°C	0.00PPM	7.8PPM @ 29.2°C	
	AS FOUND		AS LEFT		
PROBE 3 S/N 10S6823	0.00	7.7	0.00	7.8	
DELTA	0.00	0.1	0	0	
PASS/FAIL/COMMENTS	PASS	PASS	PASS	PASS	
Probe cleaned and calibrated					

STANDARD	0.00 PPM	7.8PPM @ 29.2°C	0.00PPM	7.8PPM @ 29.2°C	
	AS FOUND		AS LEFT		
PROBE 3 S/N 10S6836	0.22	7.0	0.00	7.8	
DELTA	0.22	0.8	0	0	
PASS/FAIL/COMMENTS	PASS	FAIL	PASS	PASS	
Probe cleaned and calibrated					

REFERENCE STANDARDS

Zero solution - solution of water saturated with sodium sulfite.
Span solution - Oxygen saturated clean water.

	PRINT NAME	SIGNATURE	DATE
PERFORMED BY	James Griffin		August 10 2023

CALIBRATION DUE: August 2024



CERTIFICATE NUMBER: 081023-2

CUSTOMER	City of Windsor Little River Pollution Control Plant
ADDRESS PHONE	9400 Little River Rd, Windsor, Ontario. (519)947-4081
REQUESTED BY	Sergio Mannina

**VISUAL AND
FUNCTIONAL
INSPECTION**

Visual Inspection – Sensors, enclosures, connections, display, switches, pushbuttons, nameplates, tags are to be checked for its presence, physical integrity, cleanliness, readability and adequacy of installation
Functional Inspection – Switches, pushbuttons, display, signal integrity, response to process variable and response to calibration standards are to be checked for functionality, response within manufacturer's and end-user specifications

The sensors were cleaned and the analyzer calibrated.

CALIBRATION DATA

PASS/FAIL CRITERIA +/- 0.3 ppm O₂

Plant #2		AYSIX MODEL MPA48 D.O. ANALYZER S/N 48A1283			
STANDARD	0.00 PPM	7.8PPM @ 28.6 °C	0.00 PPM	7.8PPM @ 28.6 °C	
	AS FOUND		AS LEFT		
PROBE 1 S/N 10S10765	0.34	8.0	0.00	7.8	
DELTA	0.34	0.2	0	0	
PASS/FAIL/COMMENTS	FAIL	PASS	PASS	PASS	
STANDARD	0.00 PPM	7.9PPM @ 28.3 °C	0.00 PPM	7.9PPM @ 28.3 °C	
	AS FOUND		AS LEFT		
PROBE 2 S/N 10S6403	0.13	6.0	0.00	7.9	
DELTA	0.14	1.9	0	0	
PASS/FAIL/COMMENTS	PASS	FAIL	PASS	PASS	
STANDARD	0.00 PPM	7.9PPM @ 28.4 °C	0.00PPM	7.9PPM @ 28.4 °C	
	AS FOUND		AS LEFT		
18-AT-1118 PROBE 3 S/N 10S9351	0.26	8.0	0.00	7.9	
DELTA	0.26	0.1	0	0	
PASS/FAIL/COMMENTS	PASS	PASS	PASS	PASS	
Sensor is scratched and will need to be rebuilt in the future					
STANDARD	0.00 PPM	8.1PPM @ 26.9 °C	0.00 PPM	8.1PPM @ 26.9 °C	
	AS FOUND		AS LEFT		
PROBE 4 S/N 10S6999	0.46	6.0	0.00	8.1	
DELTA	0.46	2.1	0.00	0	
PASS/FAIL/COMMENTS	FAIL	FAIL	PASS	PASS	
STANDARD	0.00 PPM	8.2PPM @ 26.0 °C	0.00 PPM	8.2PPM @ 26.0 °C	
	AS FOUND		AS LEFT		
PROBE 5 S/N 10S10719	0.00	8.0	0.00	8.2	
DELTA	0.00	0.2	0	0	
PASS/FAIL/COMMENTS	PASS	PASS	PASS	PASS	

STANDARD	0.00 PPM	8.4PPM @ 25.1 °C	0.00PPM	8.4PPM @ 25.1 °C
	AS FOUND		AS LEFT	
PROBE 6 S/N 10S10775	0.17	7.4	0.00	8.4
DELTA	0.17	1.0	0	0
PASS/FAIL/COMMENTS	PASS	FAIL	PASS	PASS

REFERENCE STANDARDS

Dissolver Oxygen

Zero solution - solution of water saturated with sodium sulfite.

Span solution – Oxygen saturated clean water.

	PRINT NAME	SIGNATURE	DATE
PERFORMED BY	James Griffin		August 10 2023

Next calibration due August 2024



CERTIFICATE NUMBER: 081023-3

CUSTOMER	City of Windsor Little River Pollution Control Plant
ADDRESS PHONE	9400 Little River Rd, Windsor, Ontario. (519)947-4081
REQUESTED BY	Sergio Mannina

**VISUAL AND
FUNCTIONAL
INSPECTION**

Visual Inspection – Sensors, enclosures, connections, display, switches, pushbuttons, nameplates, tags are to be checked for its presence, physical integrity, cleanliness, readability and adequacy of installation
Functional Inspection – Switches, pushbuttons, display, signal integrity, response to process variable and response to calibration standards are to be checked for functionality, response within manufacturer's and end-user specifications

The sensor was cleaned and the analyzer calibrated.

CALIBRATION DATA

PASS/FAIL CRITERIA +/- 0.3 ppm O₂

Plant 1 UV		AYSIX MODEL 1000 D.O. ANALYZER S/N 10A2885			
STANDARD	0.00 PPM	7.8PPM @ 29.1 °C	0.00PPM	7.8PPM @ 29.1 °C	
	AS FOUND		AS LEFT		
PROBE 1 S/N 10S6853	0.04	7.2	0.00	7.8	
DELTA	0.04	0.6	0	0	
PASS/FAIL/COMMENTS	PASS	FAIL	PASS	PASS	

COMMENTS

REFERENCE STANDARDS

Zero solution - solution of water saturated with sodium sulfite.
 Span solution – Oxygen saturated clean water.

	PRINT NAME	SIGNATURE	DATE
PERFORMED BY	James Griffin		August 10 2023

Next calibration due August 2024



CERTIFICATE NUMBER: 081023-4

CUSTOMER	City of Windsor Little River Pollution Control Plant
ADDRESS PHONE	9400 Little River Rd, Windsor, Ontario. (519)947-4081
REQUESTED BY	Sergio Mannina

**VISUAL AND
FUNCTIONAL
INSPECTION**

Visual Inspection – Sensors, enclosures, connections, display, switches, pushbuttons, nameplates, tags are to be checked for its presence, physical integrity, cleanliness, readability and adequacy of installation
Functional Inspection – Switches, pushbuttons, display, signal integrity, response to process variable and response to calibration standards are to be checked for functionality, response within manufacturer's and end-user specifications

The sensor was cleaned and the analyzer calibrated.

CALIBRATION DATA

PASS/FAIL CRITERIA +/- 0.3 ppm O₂

Plant 2 UV		AYSIX MODEL 1000 D.O. ANALYZER S/N 10A2886			
STANDARD	0.00 PPM	7.8PPM @ 29.0 °C	0.00PPM	7.8PPM @ 29.0 °C	
	AS FOUND		AS LEFT		
PROBE 1 S/N 10S9366	0.11	7.4	0.00	7.8	
DELTA	0.11	0.4	0	0	
PASS/FAIL/COMMENTS	PASS	FAIL	PASS	PASS	

COMMENTS

REFERENCE STANDARDS

Zero solution - solution of water saturated with sodium sulfite.
 Span solution – Oxygen saturated clean water.

	PRINT NAME	SIGNATURE	DATE
PERFORMED BY	James Griffin		August 10 2023

Next calibration due August 2024



VERIFICATION REPORT

Customer Name:	City of Windsor						
Plant Name and address:	Little River PCP; 9400 Little River Road, Windsor, ON N8S 4J8						
Service Date:	12-Sep-23	Instrument Type:	FIT	W.O. Number:	230695-0001	Asset#:	NA
Due Date:	12-Sep-24	Manufacturer:	Nivus				
Follow-Up Required:	No	Model:	NF7-5M9E0A002				
As Left Status:	OK	Serial #:	2036NF72324				
Instrument Visual Inspection:		Range:	0 to 82000 m3/d		Output:	4-20 mA	
Mechanical Inspection:	OK	Tag Infomration:	FE01 (L1_UVEE_FM1)				
Electrical Inspection:	OK	Description:	Flow Measurement				
As found Display information:	OK	Process/Location Description:	Flow Measurement				

Instrument Information:	
Channel Profile:	Rectangle
Sludge Level:	0.00 m
Flow Unit:	m3/d
Sensor Type:	Wedge
Mounting Height:	0.002 m
Mounting Angle:	0.00°
Offset:	0.00 m
Velocity Unit:	m/s
Level Unit:	m

Point	Channel Width	Portable velocity (m/s)	Process flow meter Average During that Duration velocity reading (m/s)	Deviation (%)
Point 1	0.091	0.909	0.873	-4.15%
Point 2	0.274	0.830		
Point 3	0.457	0.884		
Point 4	0.640	1.086		
Point 5	0.823	0.837		
AVERAGE		0.9092	0.8730	-4.15%

Comments		Test Equipment Used	
		Name / Type	Serial and Due Date
Flow meter verified successfully and it is well within the range.		NivufLOW Nivumobile Stick	2209NFS0094
Channel Width: 0.914 m			
Channel Height: 2.369 m			
Other Outputs Tested:		Technician Name	Witness Name
Loop Check Performed:		Vishal/ Vaibhav	Yousiff
Within Specification:		Date:	Date:
		12-Sep-23	12-Sep-23



VERIFICATION

Customer Name:	City of Windsor						
Plant Name and address:	Little River WPCP; 9400 Little River Road, Windsor, ON N8S 4J8						
Service Date:	12-Sep-23	Instrument Type:	FIT	W.O. Number:	230695-0002	Asset#:	NA
Due Date:	12-Sep-24	Manufacturer:	Nivus				
Follow-Up Required:	No	Model:	NF7-5M9E0A002				
As Left Status:	OK	Serial #:	2036NF72324				
Instrument Visual Inspection:		Range:	-10000 TO 250000 m3/d		Output:	4-20 mA	
Mechanical Inspection:	OK	Tag Infomration:	FE02 (L1_UVEE_FM2)				
Electrical Inspection:	OK	Description:	Overflow Pipe				
As found Display information:	OK	Process/Location Description:	Overflow Pipe				

Instrument Information:	
Channel Profile:	Pipe
Sludge Level:	0.00 m
Flow Unit:	m3/day
Sensor Type:	Fixed
Mounting Height:	0.000 m
Offset:	0.000 m
Velocity Unit:	m/s

Point	Type	As found	As Found	As Left	As Left
Dry verification	Loop Test	4 mA	20mA	4 mA	20mA
	Checked velocity at low and high flow rate found all 16 gates reading , Checked velocity and flow at no flow and found satisfactory performace of flow meter.				

Comments		Test Equipment Used	
		Name / Type	Serial and Due Date
Channel ID : 1.067 m			
Other Outputs Tested:	Tested	Technician Name	Witness Name
Loop Check Performed:	Tested	Vishal/ Vaibhav	Yousiff
Within Specification:	Yes	Date:	12-Sep-23
		Date:	12-Sep-23



CALIBRATION REPORT

TAG NO.: FIT-FINAL EFF
REPORT NO.: 230926
DATE: 26-Sep-23

SITE: Little River WWTP (Windsor)
PROCESS AREA: UV2-Final Effluent
INSTR. TAG: L2_UVEE_FM1
MANUFACTURER: Siemens
MODEL: Sitrans Multiranger 200 HMI
SERIAL No.:
INSTR. RANGE: 0 to 80000 m³/Day

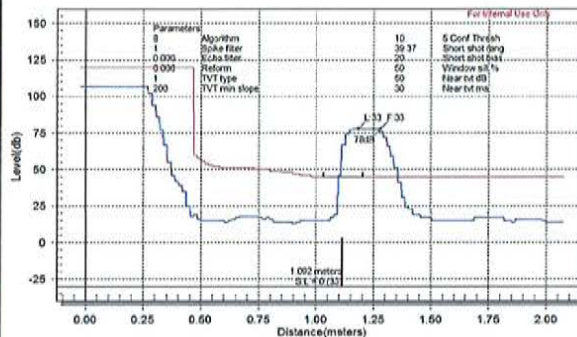
DATE: September 26, 2023

TECHNICIAN: Mike Humphries

REPORT NO.: 230926

PRIMARY DEVICE: 1.50 m Rectangular Weir
MAX FLOW: 80000 m³/Day
MAX HEAD: 20.00 in
CONSTANT: 37180.64
EXPONENT: 1.5

Output: mA Flow
Zero: 4 0.00
Max: 20 80000.0



Confidence: 33
Echo Strength: 78 dB
Noise Average: -2 dB
Empty: 49.291"
Span: 20.00"m
Transducer: XRS-5C

OCM Flow Table

Head Applied (in)	Head Displayed (in)	Error (%)	Calculated Flow (m ³ /d)	Flow Displayed (m ³ /d)	Error (%)	Calculated mA Output	Measured mA Output	Error (%)
0.00	0.00	0.00	0.00	0.00	0.00	4.00	3.99	-0.25
4.00	4	0.00	7155	7160	0.06	5.43	5.43	-0.02
8.00	8	0.00	20239	20255	0.08	8.05	8.06	0.15
12.00	12	0.00	37181	37207	0.07	11.44	11.45	0.12
16.00	16	0.00	57243	57181	-0.11	15.45	15.41	-0.25
20.00	20	0.00	80000	80000	0.00	20.00	19.99	-0.05

Totalizer As Found m³
Totalizer As Left m³

Zero As Found 49.291 in
Zero As Left 49.291 in
Change in Zero 0.000 in

Comments

AS FOUND: PASS

AS LEFT: PASS

CERTIFIED BY: Mike Humphries



CALIBRATION REPORT

TAG NO.: Channel #1
REPORT NO.: 230926
DATE: 26-Sep-23

SITE: Little River WWTP
PROCESS AREA: Influent
INSTR. TAG: LR_GRIT_FM1
MANUFACTURER: Milltronics
MODEL: Multiranger Plus
SERIAL No.: 09887914-01
INSTR. RANGE: 0 - 6000 m³/h

DATE: September 26, 2023

TECHNICIAN: Mike Humphries

REPORT NO.: 230926

PRIMARY
DEVICE: Modified Parshall Flume

MAX FLOW: 6000 m³/h
MAX HEAD: 76.20 cm
CONSTANT: 9111.5
EXPONENT: 1.537

Output: mA Flow
Zero: 4 0.00
Max: 20 6000.0

Confidence: 39
Echo Strength: 89 dB
Noise Average: 6 dB
Empty: 1.310 m
Span: 0.762 m
Transducer: ST-25

OCM Flow Table

Head Applied (cm)	Head Displayed (cm)	Error (%)	Calculated Flow (m ³ /h)	Flow Displayed (m ³ /h)	Error (%)	Calculated mA Output	Measured mA Output	Error (%)
0.00	0.00	0.00	0.00	0.00	0.00	4.00	4.00	0.00
20.00	19.90	-0.50	767.8	764	-0.50	6.05	6.02	-0.46
40.00	40.20	0.50	2228.2	2248	0.88	9.94	9.98	0.38
60.00	60.40	0.66	4155.4	4188	0.78	15.08	15.08	-0.01
76.20	76.20	0.00	6000.0	5993	-0.12	20.00	19.92	-0.40

Totalizer As Found NA m³
Totalizer As Left NA m³

Zero As Found 1.31000 m³
Zero As Left (including offset) 1.31000 m³
Change in Zero 0.00000 cm

Comments

Unable to stop flow at time of service.

AS FOUND: PASS

AS LEFT: PASS

CERTIFIED BY: Mike Humphries



CALIBRATION REPORT

TAG NO.: Channel #2
REPORT NO.: 230926
DATE: 26-Sep-23

SITE: Little River WWTP
PROCESS AREA: Influent
INSTR. TAG: LR_GRIT_FM2
MANUFACTURER: Milltronics
MODEL: Multiranger Plus
SERIAL No.: 09883111-01
INSTR. RANGE: 0 - 7100 m³/h

DATE: September 26, 2023

TECHNICIAN: Mike Humphries

REPORT NO.: 230926

PRIMARY
DEVICE: Modified Parshall Flume

MAX FLOW: 7100 m³/h
MAX HEAD: 76.20 cm
CONSTANT: 10802.4
EXPONENT: 1.544

Output: mA Flow
Zero: 4 0.00
Max: 20 7100.0

Confidence: 22
Echo Strength: 81 dB
Noise Average: -4 dB
Empty: 1.357 m
Span: 0.762 m
Transducer: ST-25

OCM Flow Table

Head Applied (cm)	Head Displayed (cm)	Error (%)	Calculated Flow (m ³ /h)	Flow Displayed (m ³ /h)	Error (%)	Calculated mA Output	Measured mA Output	Error (%)
0.00	0.00	0.00	0.00	0.00	0.00	4.00	3.97	-0.76
20.00	20.20	0.99	900.1	911	1.19	6.03	6.02	-0.14
40.00	39.70	-0.76	2624.8	2609	-0.61	9.92	9.84	-0.76
60.00	60.30	0.50	4908.9	4950	0.83	15.06	15.14	0.51
76.20	76.50	0.39	7100.0	7192	1.28	20.00	20.04	0.20

Totalizer As Found NA m³
Totalizer As Left NA m³

Zero As Found 1.35700 m³
Zero As Left (including offset) 1.35700 m³
Change in Zero 0.00000 cm

Comments

Unable to stop flow at time of service.

AS FOUND: PASS

AS LEFT: PASS

CERTIFIED BY: Mike Humphries

SIEMENS MAGFLO® Verification Certificate

Customer:

Name Windsor WW-Little River
 Address 9400 Little River Road
Windsor, ON

 Phone _____
 Email _____

MAGFLO® Identification:

TAG No./Name LR_LECH_FM1
 Sensor Code No. 7ME652
 Sensor Serial No. 381003H402
 Transmitter Code No. 7ME691
 Transmitter Serial No. N1P7080153
 Location Little River WWTP

Results:

Verification file name or No. _____

Transmitter _____

Sensor Insulation _____

Magnetic Circuit _____

Leachate Flow

Passed

Passed

Passed

Velocity	Current Output			Frequency Output		
Theoretical	Theoretical	Actual	Deviation	Theoretical	Actual	Deviation
0.5m/s	4.800mA	4.803mA	0.31%	0.500kHz	0.500kHz	0.02%
1.0m/s	5.600mA	5.603mA	0.17%	1.000kHz	1.000kHz	0.04%
3.0m/s	8.800mA	8.805mA	0.10%	3.000kHz	3.002kHz	0.06%

Current Output 4-20mA

Frequency Output 0-10kHz

Transmitter Settings:

Basic Qmax. 600.000 l /min
 Flow Direction Positive
 Low flow Cut-off 1.50%
 Empty Pipe ON

Output Current Output ON (4-20mA)
 Time Constant 5.0 Sec.
 Relay Output Error Level
 Digital Output Pulse
 Frequency Range N/A
 Time Constant N/A
 Volume/pulse 0.99999953 US G/p
 Pulse width 0.066 sec.
 Pulse polarity Positiv

Totalizer 1 value before test 1.14629209 m³
 Totalizer 1 value after test 1.16151547 m³
 Totalizer 2 value before test 0.55838597 m³
 Totalizer 2 value after test 0.56141973 m³
 Operating time in days 0

Sensor Details:

Size DN 40 1 1/2 IN

Cal. Factor 1.40000892

Correction Factor 1.0

Excitation Freq. 15.0Hz

Vericator Details (083F5060)

Serial No. 000811N218

Device No. 91739

Software Version 1.40

PC-Software Version 5.00

Cal. date 2022.12.29

ReCal. date 2023.12.29

Comments

These tests verify that the flowmeter is functioning within 2% deviation of the original test parameters.

Verification is traceable to National and International Standards.

Date and signature

2023.09.26

Mike Humphries