

Lou Romano Water Reclamation Plant

(January 01, 2023 to December 31, 2023)



ANNUAL REPORT 2023

Submitted to:

The Ontario Ministry Environment, Conservation and Parks (MECP)

March 31, 2024

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Introduction

This Annual Report on the operation of the Lou Romano Water Reclamation Plant (LRWRP) covers the calendar year 2023 and is being submitted to the Ontario Ministry of the Environment, Conservation and Parks (MECP).

The LRWRP is a secondary, biological-physical - chemical pollution control plant that discharges its effluent through a 2750 mm box sewer directly to the Detroit River.

The plant has a rated maximum capacity of 273,000 m³/d (60 MGD) for primary treatment and 218,000 m³/d (48 MGD) for secondary treatment. The design capacities are twice the rated capacities, as indicated in the following Table contained on page one of the Environmental Compliance Approval.

Design Capacity with all Treatment Trains in Operation	Upon Issuance of this Approval
Rated Capacity	218,000 m ³ /d
Primary Treatment Capacity	545,000 m ³ /d
Secondary Treatment Capacity	436,000 m ³ /d

During the year of 2023, the plant was operating under the Environmental Compliance Approval (ECA) No. 1853-B43PVC dated September 28, 2018.

All samples are based on ECA sampling criteria and results are from an Accredited External Laboratory.

Summary of Performance

In 2023, the LRWRP provided primary treatment to 49112.79 ML and secondary treatment to 48513.66 ML of sewage, an average of 132.91 ML/day of secondary treated flow. The monthly volumes of sewage treated, treatment plant overflow and the total precipitation, as recorded at the Environment Canada Weather Station at the Windsor Airport are listed in Tables 1 (Raw Overflows) and Table 2 (Primary Overflows).

Influent and Imported Sewage

The influent sewage data is contained in Appendix Table A1.

There were no incidences in 2023 where the daily average flow exceeded the design capacity at Lou Romano Water Reclamation Plant.

The LRWRP reported plant flows for 2023 using the effluent flow meter (less process water) as per ECA condition 9(5)b and recommended by MECP per inspection report received February 14th, 2022.

The following Tables and Figures 1 & 2 include Total Flow, Precipitation, Raw Overflow and Primary Overflow volumes respectively.

Table 1: Total Flow, Raw Overflow & Precipitation - 2023

Month	Total Flow (ML)		Raw Overflow			Precipitation (mm)
	Total	Treated	Volume (ML)	# of events	Duration Hours	
January	4210.23	4210.23	0.00	0	0.0	61.80
February	4205.88	4205.88	0.00	0	0.0	83.20
March	5848.16	5848.16	0.00	0	0.0	75.00
April	5018.55	5018.55	0.00	0	0.0	86.10
May	3651.35	3651.35	0.00	0	0.0	22.80
June	3478.98	3478.98	0.00	0	0.0	92.20
July	4796.48	4796.48	0.00	0	0.0	127.60
August	4879.68	4879.68	0.00	0	0.0	181.80
September	3088.05	3088.05	0.00	0	0.0	30.40
October	3308.62	3308.62	0.00	0	0.0	58.50
November	2818.77	2818.77	0.00	0	0.0	30.40
December	3808.04	3808.04	0.00	0	0.0	67.30
Totals	49112.79	49112.79	0.00	0	0.0	917.10

Figure 1: Total Flow, Raw Overflow & Precipitation - 2023

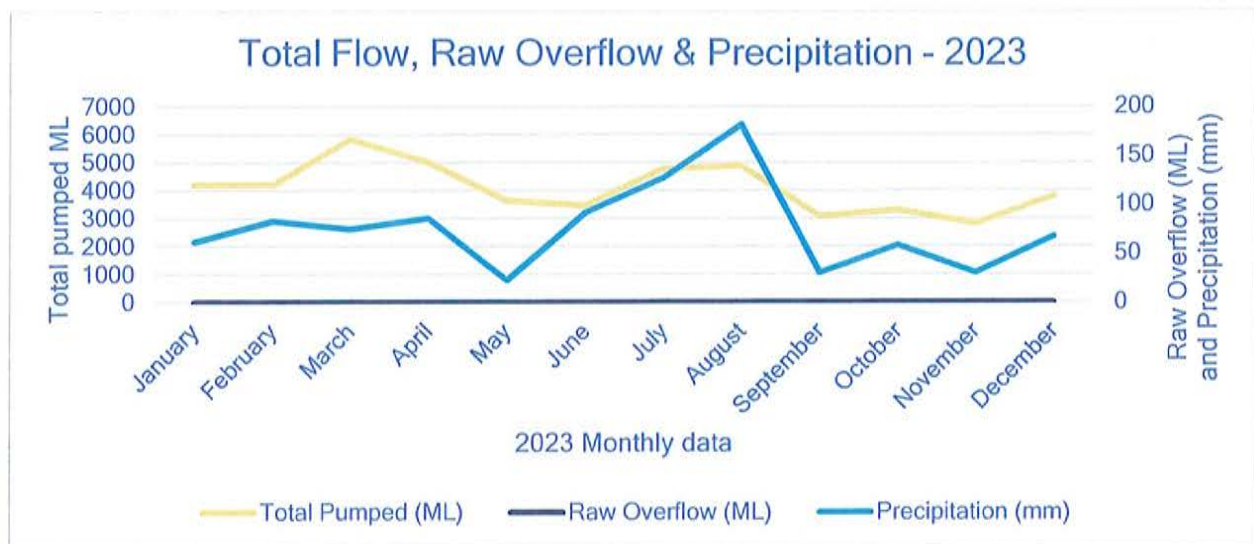
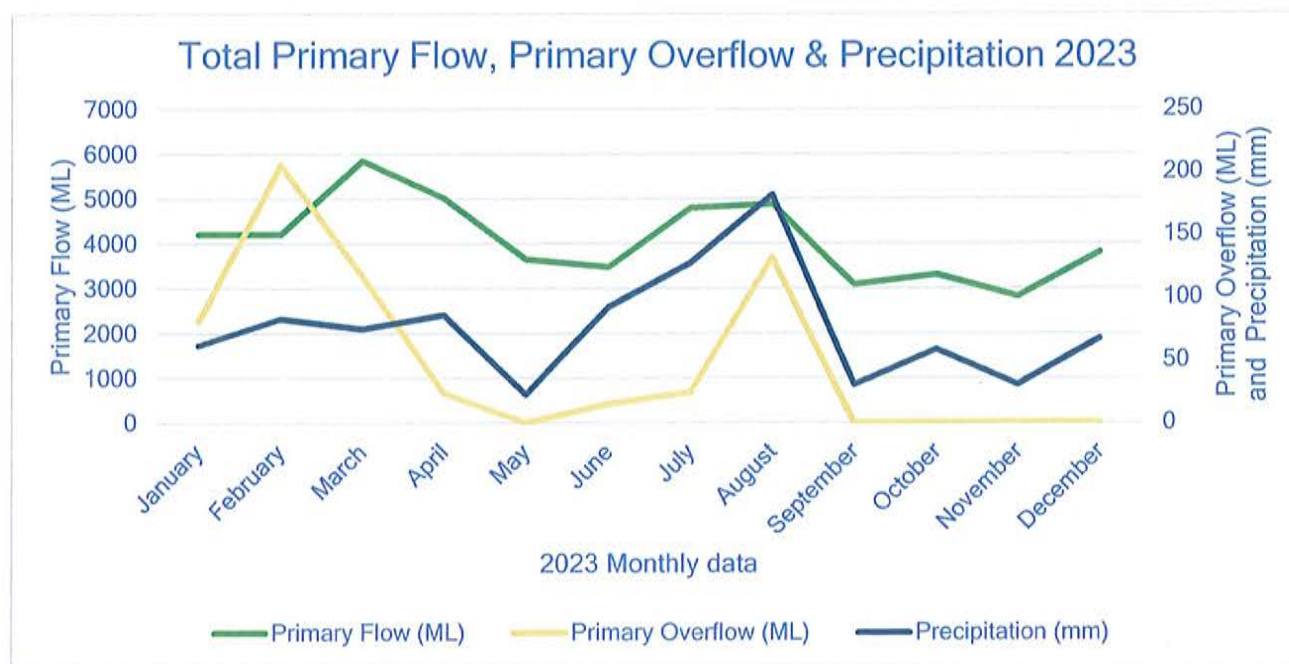


Table 2: Total Primary Flow, Primary Overflow & Precipitation - 2023

Month	Primary Flow (ML)		Primary Overflow (ML)			Precipitation (mm)
	Total	Treated	Volume (ML)	# of events	Duration Hours	
January	4210.23	4129.09	81.14	1	18.3	61.80
February	4205.88	4000.38	205.50	3	32.2	83.20
March	5848.16	5730.93	117.23	3	36.6	75.00
April	5018.55	4994.85	23.70	1	6.4	86.10
May	3651.35	3651.35	0.00	0	0.0	22.80
June	3478.98	3463.97	15.01	3	5.6	92.20
July	4796.48	4771.90	24.58	1	9.6	127.60
August	4879.68	4747.71	131.97	2	27.7	181.80
September	3088.05	3088.05	0.00	0	0.0	30.40
October	3308.62	3308.62	0.00	0	0.0	58.50
November	2818.77	2818.77	0.00	0	0.0	30.40
December	3808.04	3808.04	0.00	0	0.0	67.30
Totals	49112.79	48513.66	599.13	14	136.4	917.10

Figure 2: Total Primary Flow, Primary Overflow & Precipitation - 2023



Annual average wastewater characteristics and flow data for the past five years are presented in Appendix B, Tables B1 & B2. Appendix B, Tables B3 & B4 show the total volume of LRWRP bypasses (prior to 2018 ECA) and/or overflows from the years 2014- 2023 and the associated amount of precipitation. There were no Raw Plant Overflows in 2023. Appendix C includes the information on the imported sewage data.

Final Effluent - Design Objectives and Compliance Limits

Objectives

The Lou Romano Water Reclamation Plant undertook everything practicable to operate the plant in accordance with the following objectives:

Final Effluent Parameter	Averaging Calculator	Objective
cBOD5	Monthly average effluent concentration	10.0 mg/L
Total Suspended Solids	Monthly average effluent concentration	10.0 mg/L
Total Phosphorus	Monthly average effluent concentration	0.40 mg/L
E. Coli	Monthly Average effluent concentration	100 CFU/100mL
pH	Single Sample Result	Between 6.5 - 9.0 inclusive
Unionized Ammonia	Monthly average effluent concentration	0.08 mg/L

Table 3: 2023 Monthly Plant Effluent Concentrations - Compliance Objectives

Month	cBOD5	TSS (mg/L)	TP (mg/L)	E.Coli *** (CFU/100 mL)	UIA (mg/L)
January	8.3	11.1	0.17	84	0.04
February	8.8	11.9	0.22	122	0.04
March	7.0	9.7	0.25	203	0.02
April	8.6	9.5	0.22	104	0.01
May	7.0	9.6	0.23	28	0.01
June	6.9	8.4	0.24	43	0.01
July	6.7	6.7	0.09	22	0.01
August	5.2	6.8	0.11	40	0.01
September	5.8	6.7	0.16	38	0.01
October	7.8	10.1	0.30	54	0.02
November	6.9	8.5	0.33	49	0.02
December	5.7	7.1	0.15	25	0.02
Objectives	10.0 mg/L	10.0 mg/L	0.40 mg/L	100 CFU/100mL	.08 mg/L

*** E. Coli Results ***

We have identified 3 months of E. Coli data that exceed the objective. The above monthly geometric Mean Density are the 2023 results.

The E. Coli results from January and February are from SGS Canada and Caduceon Laboratories Inc. The results from March to December are from Caduceon Laboratories, only, which is our current Accredited Laboratory for E. Coli analysis. SGS Canada is our Accredited Laboratory for all other testing.

There were six (6) incidents where the averaging calculation exceeded the objectives, as seen in Table 3.

- January (1 incident) - The TSS monthly average effluent concentration was 11.1 mg/L which is above the 10 mg/L objective.
- February (2 incidents) - The TSS monthly average effluent concentration was 11.9 mg/L which is above the 10 mg/L objective. The E. Coli monthly geometric mean density was 122 CFU/100 mL which is above the 100 CFU/100mL objective.
- March (1 incident) - The E. Coli monthly geometric mean density was 203 CFU/100 mL which is above the 100 CFU/100mL objective.

- April (1 incident) - The E. Coli monthly geometric mean density was 104 CFU/100 mL which is above the 100 CFU/100mL objective.
- October (1 incident) - The TSS monthly geometric mean density was 10.1 mg/L which is above the 10 mg/L objective.

There was one (1) single sample in Table 4, where the pH result that was not in the compliance objective range of 6.5 - 9.0. The ranges of values of plant final effluent pH recorded in 2023 ranged from 6.45 to 7.54.

Table 4: Plant Final Effluent pH Recorded in 2023

Date	pH Single Sample Result
June 5, 2023	6.45

There were no exceedances of the monthly average concentration objectives for Total Phosphorous, cBOD5 and Unionized Ammonia (UIA) in 2023, as shown in Table 3.

Effluent Quality

The Lou Romano Water Reclamation Plant was operated and maintained in a manner that ensured compliance limits for the Final Effluent parameters, shown below were satisfactorily met.

Concentration Limits

Final Effluent Parameter	Averaging Calculator	Limit (maximum unless otherwise indicated)
cBOD5	Monthly average effluent concentration	15.0 mg/L
Total Suspended Solids	Monthly average effluent concentration	15.0 mg/L
Total Phosphorus	Monthly average effluent concentration	0.50 mg/L
E. Coli	Monthly Average effluent concentration	*200 CFU/100mL
pH	Single Sample Result	Between 6.0 - 9.5 inclusive
Toxicity to Rainbow Trout and Daphnia magna	Single Sample Result	Non-acutely lethal (no more than 50% mortality)
Unionized Ammonia	Monthly average effluent concentration	0.1 mg/L

*If the MPN method is utilized for E.coli analysis the limit shall be 200 MPN/100mL.

There was 1 incident in 2023 where the averaging calculation exceeded the Compliance Limit, as seen in Table 5.

Table 5: 2023 Monthly Plant Effluent Concentrations Compliance Limits

Month	cBOD5 (mg/L)	TSS (mg/L)	TP (mg/L)	E. coli (CFU/100mL)	UIA (mg/L)
January	8.3	11.1	0.17	84	0.04
February	8.8	11.9	0.22	122	0.04
March	7.0	9.7	0.25	203	0.02
April	8.6	9.5	0.22	104	0.01
May	7.0	9.6	0.23	28	0.01
June	6.9	8.4	0.24	43	0.01
July	6.7	6.7	0.09	22	0.01
August	5.2	6.8	0.11	40	0.01
September	5.8	6.7	0.16	38	0.01
October	7.8	10.1	0.30	54	0.02
November	6.9	8.5	0.33	49	0.02
December	5.7	7.1	0.15	25	0.02
Limits	15.0 mg/L	15.0 mg/L	0.50 mg/L	200 CFU/100ml	.10 mg/L

The values of plant final effluent pH recorded in 2023 ranged from 6.45 to 7.54.
There were no pH values in 2023 that were outside of the compliance limit range of 6.0 - 9.5.

There was one (1) incident where effluent data exceeded compliance limits in 2023:

- March (1 incident) - The E. Coli monthly geometric mean density was 203 CFU/100 mL which is above the 200 CFU/100mL compliance limits.

There were no exceedances of the monthly average concentration limits for cBOD5, Total Suspended Solids (TSS), Total Phosphorous (TP), Unionized Ammonia (UIA) or pH.

Loading Limits

Final Effluent Parameter	Averaging Calculator	Limit (maximum unless otherwise indicated)
cBOD5	Monthly average effluent concentration	3,270 kg/d
Total Suspended Solids	Monthly average effluent concentration	3,270 kg/d
Total Phosphorus	Monthly average effluent concentration	109 kg/d

There were no exceedances of monthly loading limits for cBOD5, Total Suspended Solids or Total Phosphorous included in Table 6.

Table 6: 2023 Loading Limit Data

Final Effluent Parameter	Averaging Calculator	Limit (maximum unless otherwise indicated)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
cBOD5 (kg)	Monthly average effluent concentration	3,270 kg/d	1127	1319	1321	1443	824	800	1032	816	597	832	648	696
Total Suspended Solids (kg)	Monthly average effluent concentration	3,270 kg/d	1508	1786	1830	1589	1131	974	1032	1073	690	1078	799	874
Total Phosphorus (kg)	Monthly average effluent concentration	109 kg/d	23	33	47	37	27	28	14	18	16	32	31	18

The influent water quality parameters for the LRWRP are listed in Appendix Table A1.

The Compliance Testing for final effluent toxicity results are shown in the following Table 7.

Table 7: 2023 Final Effluent Toxicity Results

Date	Daphnia Magna Mean Mortality (%)	Rainbow Trout Mean Mortality (%)	Limits
July 11, 2023	0.0	0.0	Non-Acutely Lethal

As per the Environmental Compliance Approval, the minimum monitoring frequency with respect to acute lethality to Rainbow Trout and Daphnia Magna shall, after eight (8) consecutive quarters of monitoring results not indicating acute lethality, be reduced to annually. If any Final Effluent sample indicates acute lethality to Rainbow Trout or Daphnia magna, the monitoring frequency shall revert to quarterly. The results for toxicity at LRWRP, for 2023, was not in exceedance of ECA limits. LRWRP plant is currently testing annually for toxicity.

The Lou Romano Water Reclamation Plant was operated and maintained such that the Final Effluent was disinfected continuously year-round in 2023.

Deviation from Monitoring Schedule

The Department of Infrastructure Services operates the Pollution Control Laboratory through its Environmental Quality Division. A monitoring program has been established using a contracted certified laboratory for compliance reporting as per the plant's ECA, Schedule D. The Pollution Control Laboratory also maintains a separate monitoring program for plant operational purposes. The established compliance schedule-monitoring program of collecting samples at the required sampling points, frequency, specified sample type and analysis can be found in Appendix D.

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 nine (9) deviations from the 2023 sampling schedule due to circumstances such as holidays, sampler malfunctions and power outages.

May 16, 2023

- LRWRP Effluent weekly sample collected on May 16, 2023 resulted in invalid results from SGS Accredited Laboratory. The sample was re-collected and submitted May 25, 2023.

June 29, 2023

- Sample date was changed from June 29 to June 28, 2023 to accommodate holiday schedule at SGS Laboratories.

July 6, 2023

- LRWRP toxicity sampling date was changed from July 6, 2023 to July 11, 2023 to accommodate the receiving laboratory's (Nautilus) testing and shipping schedule.

August 2, 2023

- LRWRP Quarterly Effluent Industrial Related Sampling was changed from August 2, 2023 to August 10, 2023 due to collection error.

August 24, 2023

- LRWRP 2nd weekly sample date was changed from August 24, 2023 to August 28, 2023 due to shipping error.

September 8, 2023

- LRWRP UV Bypass sample not collected due to equipment failure. Monthly Sample Collection was scheduled for September 13, 2023 but was collected September 18, 2023, due to a collection error.

September 13, 2023

- Monthly Sample Collection was scheduled for September 13, 2023 but was collected September 18, 2023, due to a collection error.

December 21, 2023

- LRWRP 2nd weekly effluent samples scheduled for December 21, 2023 was collected December 20, 2023 to accommodate SGS Laboratory's holiday schedule.

December 28, 2023

- LRWRP 2nd weekly scheduled for December 28, 2023 was collected December 27, 2023 to accommodate SGS Laboratory's holiday schedule.

Issues and Corrective Actions

The following is a summary of all operating issues encountered and corrective actions that were taken to maintain plant performance in order to ensure effluent quality standards were achieved.

- For the majority of the year in 2022, the LRWRP UV disinfection system struggled to reduce E.coli in the effluent to levels below the limit of 200 CFU/100 ml. The monthly geometric mean limit was exceeded seven times in 2022. A comprehensive review of the disinfection system was performed over the course of 2022 to resolve the issue. Several variables were investigated including the Trojan UV disinfection system itself, influent and effluent wastewater characteristics and laboratory testing procedures. Mechanical improvements made based on the recommendations stemming from a site visit by the UV system manufacturer included adjustments to the hydraulic pump that drives the sleeve wiping system, the installation of new lamps and wiping system components and the replacement of worn wiper cylinders and fouled quartz lamp sleeves on all 62 racks in Channel 1. The above maintenance/repairs were completed in early November of 2022. New hydraulic wiping cylinders were also installed on all racks in Bank B in Channel 3 late in the same year. Throughout 2023, new hydraulic wiping cylinders were installed on all racks in Bank A in Channel 3 as well as in Banks A and B in Channel 2. While investigating the source of the issue in 2022, it was discovered through a review of scientific literature that landfill leachate additions to plant influent can significantly reduce UV light transmissivity. The LRWRP accepts large volumes of leachate from the Regional landfill. The LRWRP stopped accepting leachate deliveries at the end of November 2022 in order to investigate the link between leachate and UV light transmissivity. Significant increases in UV light transmissivity were observed during this period. December 2022 effluent E. coli levels were the lowest of any month in the reporting period. Leachate deliveries to the LRWRP, at reduced volumes, resumed in early 2023 with the stipulation that no additional increases in deliveries would be accepted until the “strength” of the leachate was reduced to acceptable levels. Throughout 2023, reductions in the “strength” of the leachate received from the Regional Landfill were achieved through operational improvements and equipment upgrades in their lagoon system. Additional deliveries are now being accepted. Leachate “strength” continues to be closely monitored. In March of 2022, The LRWRP contracted a new accredited lab to evaluate plant effluent for a variety of parameters including E.coli.. Noticeable increases in E. coli levels were observed immediately. A lengthy investigation ensued, and following consultation with the MECF the decision to return to the lab service provider previously used for E. coli testing was made effective March 2023. Effluent E.coli levels were significantly lower in 2023 in comparison to 2022 levels.
- Various plant equipment is cycled in and out of service over the course of the year based on influent flow rates. Alum and anionic polymer dosing rates are adjusted as necessary throughout the year to promote optimal solids settling and phosphorous removal. BAFF cell refurbishing continued through 2023. Cell 8 was returned to service following refurbishment. Efforts continue on refurbishing cell 12. To date, cells 1,3,6,7,8,10,11,14 and 16 have been refurbished. BAFF cell filtration durations are varied seasonally. Filtration durations refer to the time between backwash cycles. During winter months, cell filtration durations are increased to allow for the growth of additional microorganisms. This is done to compensate for the reduction in microbiological activity attributed to colder water temperatures. During the summer months, cell filtration durations are reduced as the microorganisms become more active. In 2023 BAFF filtration durations ranged from 20 hours to 16 hours throughout the course of the year. Defoamer application rates were adjusted as needed to combat foaming issues in the BAFF cells.

Repairs and Maintenance - Mechanical - 2023

Administration Building:

- Replaced seals and packing of all the effluent pumps
- Laboratory fume hoods - fan repairs
- Alum unloading station repairs

Main Pumphouse:

- CBS-1 repairs
- Hydraulic units #1 and #4 upgrades
- Raw Sewage Pump # 2 refurbishment
- Effluent piping replacement (tunnel)

Grit Removal Facility:

- Grit emergency by-pass actuator replacement
- Replaced two hydronic heaters
- Aerated blower No. 2 repair
- Bar screen #4 climber repaired

Chemical Building:

- Alum tank drain repairs

Primary Settling Tanks:

- PST-5 Drive unit replacement
- Repairs to rake arm- PST-5
- PST Nos. 1,2 and 3 valve repairs
- Epoxy injection repair to PST influent channel

Sludge Pumphouses:

- Miscellaneous Sludge pump refurbishments: PSP #2, #4, #6, #7, #8
- Suction pipe replacement -PSP #3

Biological Aerated Filtration Facility (BAFF):

- BAFF Cell 11 refurbishment
- BAFF Cell 14 refurbishment
- Installation of Back Wash Pump 2 check valve, repairs to pump shaft

Primary Effluent Pumping Station (PEP):

- PEPs screw #2 motor removal and re installation- (bearing change)
- PEP #2 lower bearing replacement

Dewatering Facility:

- SFP #1 -installation of new pump
- SFP #2- Lobe changes
- Repairs to the EF-3 at Dewatering Fan Room
- Refurbishment of sludge cake Live Bottom Unloader No. 3.
- Replacement of Make-up Air Unit #2 at Dewatering Lower level
- Centrifuge #1 repairs (back drive motor table and isolators)
- Polymer system valve repairs

UV:

- UV Wipers - hydraulic concerns (multiple) - replaced filters, disassembled and cleaned pre-filter, replaced pressure relief valve.

Repairs and Maintenance - Electrical - 2023

Administration Building

- Replaced shower light fixtures with new LED recessed lighting
- Installed radio antennas for Synagro communication
- Rewired training room when converted to office space
- Installed access control on storage room in lunchroom

Main Pump House (MPH)

- Installed infrared inspection windows around MCCs for thermography PMs
- Replaced faulty cable on actuator RSB-C10
- Repaired RSP2 VFD
- Repaired RSP1 VFD
- Repaired door access control system
- Replaced power meters for side1 and side2 ATS controls
- Repaired inlet light fixtures
- Repaired EF3 controls
- Added fault monitoring for HYD1 through HYD4
- Disconnect/reconnect RSP2 motor

Grit Removal Facility/Primary Settling Tanks/Sludge Pumphouses

- Replaced many faulty radiant heaters
- Replaced MCC4 power meter
- Replaced South Grit PLC UPS
- Replaced hydronic heater1 and 10
- Replaced North Grit PLC UPS
- Repaired PSP05-DC2 position indicator
- Repaired PSP03 and PSP04 VFDs
- Repaired GRP03 VFD
- PRI7-C01 actuator sent out for repair/re-installed
- Replaced H2S gas sensor in north building
- Replaced SPH2 UPS
- Reconnected repaired FBS02OC2 actuator
- Installed service disconnects on PST5 and PST6 cathodic systems
- Replace O2 gas sensor in truck bay
- Repaired GRP01 VFD
- Repaired GRP04 VFD
- Repaired power source for effluent sampler
- Reconnected repaired GFP-2

Biological Aeration Filtration Facility (BAFF)

- Replaced HMI screens on Process Blowers1-4
- Replaced positioners on IC2 valves for cell5, 6, 11, and 12
- Replaced Process Blower4 PLC
- Repaired IC2 on cell9
- Replaced SFN3 motor in MCC room and repaired conduit
- Installed filter bank on electrical distribution room air intake
- Electrical distribution equipment thoroughly cleaned and tested
- Installed new PLC for ACP08
- Replaced PLC card on Process Blower4
- Replaced VFDs for BWP01 and BWP02
- Replaced PEPS sump pumps and level instrument
- Repaired PEPS2 motor
- Repaired HVAC issue for blower building
- Reset cell5 IC4 actuator limits
- Replaced cell5 DC1 actuator
- Repair door access control system
- Replaced ACP08 PLC
- Install new air dryer in blower building]
- Replaced louver control for SFN05
- Replaced PEPS4 ETM

Ultraviolet Disinfection Facility (UV)

- Repaired numerous UV racks and changed numerous control boards
- Repaired sampler feedback signal to PLC
- Replaced EF1 motor

Dewatering Facility

- Replaced Centrifuge2 lube pump VFD
- Added new MCC section for larger live bottom unloaders
- Rewired screw conveyor2&4 feeder circuits
- Installed new actuator and positioner on screw conveyor 2
- Reconnected Live Bottom Unloader3
- Repaired/replaced multiple emergency lighting fixtures
- Repaired Centrifuge3 panel disconnect
- Replaced dry polymer bin sensor
- Replaced emergency exit light fixture
- Replaced PLC network switch
- Repaired booster pump controls
- Replace HIM for Centrifuge1 bowl VFD
- Replaced hydronic pump1 motor

Site

- Installed test panels and repair equipment in Electrical Shop

Laboratory

- Rewired some receptacles for wash area
- Repaired Muffle Furnace
- Replaced roof exhaust fan motor
- Repaired still
- Repaired fume hood fan

Effluent Quality Assurance or Control Measures

The effluent quality assurance and control measures that were undertaken at the plant included the following:

- Operational lab data collected daily
- CALA certified laboratory retained for ECA compliance testing
- Computerized preventative maintenance schedule and log
- Treatment chemical feed pump calibration (alum & anionic polyelectrolyte)
- Flow measurement device calibration
- Exercise schedule for plant equipment
- Staff training
- Public education & outreach - provided several tours at LRWRP in 2023

Equipment Calibration

The LRWRP monitored and recorded the flow rate and daily quantity using flow measuring devices, calibrated to an accuracy within plus or minus 10 percent (+/- 10%) of the actual flow rate of the following:

The Plant effluent flow was measured using an open channel flow meter positioned within the UV influent channel downstream of the BAFF facility.

A new effluent flow meter and control panel was installed in August 2020. As per ECA Condition 9(5)b, the LRWRP started to report plant flows to the MECP in 2021 using the values collected from this instrument from which was subtracted the Plant Effluent Water Pumping Station measured flow. The LRWRP continued to report plant flows for 2023 using this calculated value.

Plant influent flow to the Sewage Treatment Plant was continuously measured by the plant influent flow meters located in the Modified Parshall Flumes (used to balance the flow between primary settling tanks 1-4 and 5-9) and the plant's secondary treatment backwash return flow meter. The secondary backwash value was subtracted from the sum of the two Modified Parshall Flume flow meter values. Flow volumes from these two flow meters are used for process control only.

Annual inspections of the Final Effluent and Plant Effluent Pumping Station flow monitoring units are performed in order to assess their performance. Calibration test certificates of the influent and effluent monitoring equipment are included in Appendix E.

Design Objectives

The design objectives for the effluent parameter E.coli did meet the 50% of the design objective for the reporting period. The design objective for E.coli is 100 CFU/100 ml. The design objective for E.coli was exceeded in 3 months out of 12 in 2023. All other design objectives were met and there was no increasing trend in the deterioration of the final effluent quality in 2023. LRWRP Plant Rated Capacity = 218 ML. 80% of rated capacity = 174.4 ML. The average daily flow for the LRWRP in 2023 was 132.9 ML. The Annual Average Daily Influent flow did not reach 80% of the Rated Capacity.

Sludge Generated

A total of 214,643,998 litres of raw sludge (average 5.27 % solids) was dewatered during the year. A total of 30,240 tonnes of wet sludge cake (average 27.95 % solids) was produced at the LRWRP in 2023. All of the Lou Romano Water Reclamation Plant's biosolid production in 2023 was converted to approximately 8,452 tonnes of fertilizer while zero 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 8. There are no anticipated change in biosolids production in 2024.

Table 8: 2023 Volume of Sludge Processed for LRWRP

Month	Sludge Pumped (L)	Sludge Solids %	Wet Cake (Tonnes)	Landfilled (Tonnes)	Processed (Tonnes)	Cake Solids (%)
January	13,839,956	6.29	2517.17	0	2517.17	28.27
February	15,617,756	6.17	2670.46	0	2670.46	26.42
March	14,365,723	6.75	2767.53	0	2767.53	29.04
April	13,767,409	6.60	2546.85	0	2546.85	29.13
May	20,772,298	5.44	3136.49	0	3136.49	27.84
June	20,141,301	4.92	2649.50	0	2649.50	27.64
July	19,137,935	5.02	2399.12	0	2399.12	28.25
August	21,692,891	4.82	2707.04	0	2707.04	27.45
September	17,859,297	4.26	2066.72	0	2066.72	27.53
October	21,478,246	4.10	2328.14	0	2328.14	28.03
November	19,867,711	4.19	2246.25	0	2246.25	28.68
December	16,103,475	4.70	2204.73	0	2204.73	27.14
Total	214,643,998	5.27(average)	30,240	0	30,240	27.95 (average)

Additional sludge monitoring data can be found in Appendix Table F1 and F2.

Complaints

In 2023, Pollution Control did not receive any 311 service requests that resulted from the LRWRP Operations. The Lab staff were dispatched for investigation purposes, along with the Fire Department, Operations, The Building Department, Enbridge and/or others to resolve 19 service requests for odour from sewers. None of these "odour from sewers" Service Requests (SR) were the direct result of the plant operations. In addition, to the above service requests, the lab staff attended 57 incidents involving "vehicles leaking fluids" and "Disposal - liquid" due to accidents. None of these incidents were related to the plant operations.

Overflows

As noted in Table 9 below, a total of 0 ML of raw sewage to the LRWRP overflowed to the Detroit River. Primary plant overflow was 599.13 ML as noted in Table 9. These primary overflows represent 1.22% of the primary total flow (ML), for the LRWRP in 2023. All primary plant overflows pass through coarse and fine bar screening, grit removal and disinfection. Plant overflow is currently initiated when the flow to the LRWRP exceeds 436,000 m³/d, (2.00 times the rated capacity of 218,000 m³/d). There were 14 primary treatment overflows in 2023.

Table 9 : 2023 Primary & Raw Treatment Overflow

Month	Raw Sewage Overflow			Primary Treatment Overflow			Precipitation (mm)
	Volume (ML)	# of Events	Duration (Hours)	Volume (ML)	# of events	Duration (Hours)	
January	0.000	0	0.00	81.140	1	18.30	61.80
February	0.000	0	0.00	205.500	3	32.20	83.20
March	0.000	0	0.00	117.230	3	36.60	75.00
April	0.000	0	0.00	23.700	1	6.40	86.10
May	0.000	0	0.00	0.000	0	0.00	22.80
June	0.000	0	0.00	15.010	3	5.60	92.20
July	0.000	0	0.00	24.580	1	9.60	127.60
August	0.000	0	0.00	131.970	2	27.70	181.80
September	0.000	0	0.00	0.000	0	0.00	30.40
October	0.000	0	0.00	0.000	0	0.00	58.50
November	0.000	0	0.00	0.000	0	0.00	30.40
December	0.000	0	0.00	0.000	0	0.00	67.30
Totals	0.000	0	0.00	599.130	14	136.40	917.10

There were 12 spills/UV bypasses in 2023 at the LRWRP, as noted in Table 10. All UV bypasses receive disinfection with sodium hypochlorite.

Table 10: 2023 Spills/UV Bypasses

Event #	Event Summary	Event Type	Date Occurred	Facility Name	Volume Discharge (ML)
#1-329NIY	UV bypass	Spills	March 3	LRWRP	2.196
#1-3I5B92	UV bypass	Spills	June 2	LRWRP	10.368
#1-3TH7MU	UV bypass	Spills	September 8	LRWRP	3.487
#1-48H3U7	UV bypass	Spills	November 2	LRWRP	0.255
#1-49GKD0	UV bypass	Spills	November 3	LRWRP	0.051
#1-4DCAAD	UV bypass	Spills	November 8	LRWRP	0.051
#1-4GMK3O	UV bypass	Spills	November 29	LRWRP	2.300
#1-4GPI18	UV bypass	Spills	November 30	LRWRP	0.473
#1-4HONTZ	UV bypass	Spills	December 14	LRWRP	0.243
#1-4HONTZ	UV bypass	Spills	December 14	LRWRP	0.328
#1-4HSZ9J	UV bypass	Spills	December 16	LRWRP	0.183
#1-4HTFLG	UV bypass	Spills	December 17	LRWRP	0.014

Modifications to Sewage Works

There were no Notice of Modifications to Sewage Works completed under Paragraph 1.d. of Condition 10 for the 2023 reported year.

Procedure 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.

Construction Schedule

The following Capital Improvement projects were completed or begun in 2023.

Administration Building:

- Plant Perimeter Security upgrades - Completed
- Mechanical Workshop Fire Safety Upgrade - In Progress
- Server Room Fire Safety & Security Upgrade - In Progress

Main Pumphouse:

- Replacement of Raw Sewage Pump VFDs - In Progress
- Refurbishment of Raw Sewage Pump No. 2 (RSP-2) - In Progress

Chemical Building:

- New Sodium Hypochlorite disinfection System - In Design
- Alum unloading station damaged in 2022 was replaced in 2023

Sludge Pumphouses:

- Miscellaneous Sludge pump refurbishments:

Biological Aerated Filtration Facility (BAFF):

- Backwash Waste pumps VFD replacement - Completed
- Refurbishment of BAFF Cells 11 and 14 - Complete
- Refurbishment of BAFF Cells 4, 5, 9 and 12 - In Progress

Primary Effluent Pumping Station (PEP):

- PEP #2 lower bearing replacement

Dewatering Facility:

- Centrifuge No. 1 VFD replaced - Completed
- Upsizing sludge hopper unloader motor and controls - In Progress
- Centrifuge No. 2 VFD replacement - In Progress
- Dewatering Pump Room level Make-up Air Unit No. 2 (MAU-2) replaced

Ultraviolet Disinfection Facility (UV)

- UV Module Replacement - Purchased/In Progress



APPENDIX A

Influent Sewage Data

Appendix A: Influent Sewage Data

Table A1 - 2023 LRWRP Influent Wastewater Characteristics

MONTH	INFLUENT													
	BOD (mg/L)			TSS (mg/L)			TP (mg/L)			TKN (mg/L)			pH	
	avg.	max.	min	avg.	max.	min	avg.	max.	min.	avg.	max.	min.	max	min
Jan	179	317	99	250	349	179	4.1	6.5	2.0	21.4	29.4	10.8	7.19	6.65
Feb	192	305	69	233	286	145	4.1	6.5	2.2	20.6	25.2	8.9	7.22	6.87
Mar	134	200	58	203	252	158	3.0	4.4	1.7	14.6	19.3	8.5	7.22	6.90
Apr	125	149	72	231	371	101	3.3	4.6	1.9	16.6	24.7	10.5	7.13	6.62
May	199	273	104	265	434	96	4.7	6.4	2.8	21.5	28.4	13.0	7.54	6.54
Jun	201	307	100	267	314	183	5.7	8.6	2.6	22.3	28.3	15.9	7.00	6.45
Jul	149	229	114	216	253	194	3.8	4.4	3.1	18.9	21.2	15.7	7.11	6.68
Aug	164	235	74	228	330	132	4.1	4.8	3.1	19.0	22.4	12.1	7.27	6.76
Sep	237	385	134	270	298	225	4.1	5.0	3.2	24.5	27.5	19.2	7.08	6.69
Oct	271	355	184	255	345	215	5.0	5.5	3.5	28.2	29.8	25.6	7.03	6.62
Nov	210	289	117	319	469	173	4.7	6.6	0.5	30.6	38.0	19.1	7.02	6.70
Dec	165	233	108	241	290	184	3.5	4.4	2.3	25.0	34.5	16.3	7.06	6.76
Avg.	186	273	103	248	333	165	4.2	5.6	2.4	21.9	27.4	14.6	7.16	6.69
Max.	271	385	184	319	469	225	5.7	8.6	3.5	30.6	38.0	25.6	7.54	6.90
Min.	125	149	58	203	252	96	3.0	4.4	0.5	14.6	19.3	8.5	7.00	6.45



APPENDIX B

Yearly Comparisons & Historical Data

Appendix B: Yearly Comparisons & Historical Data

Table B1 - LWRRP YEARLY COMPARISONS/RAW OVERFLOW 2019- 2023

	Influent Concentration (mg/L)				Effluent Concentration (mg/L)				Percent Removal			FLOW DATA									
YEAR	BOD	SS	TP	NH3/TKN	cBOD5	SS	TP	NH3	SS	TP	NH3	Total Flow (ML)	Total Treated Flow (ML)	Raw Overflow (ML)	Raw Overflow Occ.	Raw Overflow Hours	Avg. Daily Flow (ML/D)	Avg. Daily Flow (IMGD)	Max. Daily Flow (ML/D)	Effluent Avg. Daily Flow (ML/D)	Effluent Daily Flow (IMGD)
2019	153	209	4.2	14.9	6.0	9.5	0.30	3.87	94	92	75	73864	73843	21.25	3	26	202.4	44.5	600	200.7	44.1
2020	158	223	4.5	15.3	6.0	10.1	0.33	3.44	95	93	78	63551	63483	68	7	62	171.0	37.6	525	173.3	38.1
2021	124	209	4.1	20.6	10.6	11.9	0.32	5.14	94	91	61	52453	60754	43.72	6	42.95	143.5	31.6	347	138.8	30.5
2022	189	249	4.4	30.6	7.5	9.0	0.20	9.76	96	94	47	43973	53034	0	0	0	120.5	26.5	244	119.8	26.4
2023	186	248	4.2	21.9	7.1	8.8	.21	6.78	96	93	57	49113	49113	0	0	0	134.6	29.6	477	134.6	29.6

Table B2 - LRWRP YEARLY COMPARISONS/PRIMARY TOTAL OVERFLOWS 2019 - 2023

YEAR	Influent Concentration (mg/L)				Effluent Concentration (mg/L)				Percent Removal			Flow Data							
	BOD	SS	TP	NH3	cBOD5	SS	TP	NH3	SS	TP	NH3	Effluent Flow (ML)	Total Treated Flow (ML)	Total Overflow (ML)*	Total Overflow Occ.*	Total Overflow Hrs.*	Avg. Daily flow (ML/D)	Avg. Daily Flow (IMGD)	Max Daily Flow (ML/D)
2019	153	209	4.2	14.9	6.0	9.5	0.30	3.87	94	92	75	65607	73843	618.70	25	149	202.4	44.5	600
2020	158	223	4.5	15.3	6.0	10.1	0.33	3.44	95	93	78	55558	63483	954.02	25	236	171.0	37.6	525
2021	124	209	4.1	20.6	10.6	11.9	0.32	5.14	94	91	61	51399	59744	746.08	16	188	140.6	30.9	343
2022	189	249	4.4	30.6	7.5	9.0	0.20	9.76	96	94	47	43973	53034	240.71	11	66	120.7	26.6	244
2023	186	248	4.2	21.9	7.1	8.8	.21	6.78	96	93	57	49113	49113	599.13	14	136.4	134.6	29.6	477

Appendix B: Yearly Comparisons & Historical Data

Table B3: Historical Raw Plant Overflow (ML) and Total Precipitation (mm) 2014- 2023

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Average	Maximum	Minimum
January	0.00	0.00	0.00	0.00	0.00	0.00	13.00	0.00	0.00	0.00	1.30	13.00	0.00
February	0.00	0.00	0.00	0.40	7.80	0.00	0.00	0.00	0.00	0.00	0.82	7.80	0.00
March	0.00	0.00	21.60	0.00	0.00	0.00	3.29	0.00	0.00	0.00	2.49	21.60	0.00
April	0.00	0.00	0.00	0.00	0.00	5.65	0.00	0.00	0.00	0.00	0.57	5.65	0.00
May	0.00	15.00	0.00	10.60	2.10	15.61	0.02	0.00	0.00	0.00	4.33	15.61	0.00
June	0.00	12.00	0.00	0.00	0.00	0.00	0.00	6.06	0.00	0.00	2.79	12.00	0.00
July	1.00	0.20	0.00	0.00	0.00	0.00	7.01	19.99	0.00	0.00	3.98	19.99	0.00
August	19.70	0.00	5.60	95.00	0.00	0.00	43.04	4.91	0.00	0.00	16.83	95.00	0.00
September	40.70	17.70	16.30	0.00	0.00	0.00	1.79	10.35	0.00	0.00	8.68	40.70	0.00
October	0.10	0.00	0.00	15.40	0.00	0.00	0.00	2.40	0.00	0.00	1.79	15.40	0.00
November	2.80	0.00	0.00	42.90	0.00	0.00	0.00	0.00	0.00	0.00	4.57	42.90	0.00
December	0.00	23.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	23.50	0.00
Totals	64.30	68.40	43.50	164.30	9.90	21.26	68.15	43.71	0.00	0.00	48.35	164.30	0.00
Total Precip (mm)	1059.80	981.30	1020.00	1080.50	927.80	814.90	814.10	816.10	596.20	917.10	902.78	1080.5	596.20

Table B4: Historical Primary Plant Overflow (ML) and Total Precipitation (mm) 2014-2023

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Average	Maximum	Minimum
January	21.30	14.60	0.00	2.80	2.10	47.94	203.30	0.00	0.00	81.14	37.32	203.30	0.00
February	16.20	0.00	49.10	52.60	352.60	15.45	0.00	0.00	47.48	205.50	73.89	352.60	0.00
March	16.60	16.90	211.10	98.70	34.80	85.05	153.11	48.57	10.26	117.23	79.23	211.10	10.26
April	0.00	42.80	5.00	2.50	199.70	262.13	0.00	0.00	7.90	23.70	54.37	262.13	0.00
May	139.20	86.30	5.00	104.60	158.00	8.45	34.74	3.64	18.90	0.00	55.88	158.00	0.00
June	44.60	173.10	0.40	0.00	0.00	0.00	35.97	110.09	8.06	15.01	38.72	173.10	0.00
July	13.50	36.10	0.20	0.00	0.00	2.56	90.36	174.07	0.03	24.58	34.14	174.07	0.00
August	131.80	52.40	48.70	226.10	0.00	13.13	246.02	62.12	0.23	131.97	91.25	246.02	0.00
September	79.00	79.60	231.80	0.00	116.20	18.69	114.24	180.96	0.00	0.00	82.05	231.80	0.00
October	14.00	20.50	0.00	40.90	29.40	125.07	5.28	140.21	0.00	0.00	37.54	140.21	0.00
November	96.00	1.00	16.70	132.30	131.10	0.20	2.85	0.00	37.38	0.00	41.75	132.30	0.00
December	21.00	98.20	48.40	0.00	1.50	18.78	0.00	26.42	110.47	0.00	32.48	110.47	0.00
Totals	593.20	621.50	616.40	660.50	1025.40	597.45	885.87	746.08	240.71	599.13	658.62	1025.40	240.71
Total Precip (mm)	1059.80	981.30	1020.00	1080.50	927.80	814.90	814.10	816.10	596.20	917.10	902.78	1080.50	596.20



APPENDIX C

Imported Sewage Data

Appendix C: Imported Sewage Data

2023 Lou Romano Water Reclamation Plant ECA Non-Regulated Test Results

Imported Sewage

Imported Sewage - Monthly

Parameter	Unit	Imported Sewage											
		11-Jan-23	8-Feb-23	3-Mar-23	4-Apr-23	3-May-23	7-Jun-23	5-Jul-23	9-Aug-23	3-Sep-23	4-Oct-23	15-Nov-23	6-Dec-23
BOD ⁵	mg/L	30.00	4120.00	2940.00	1770.00	849.00	219.00	200.00	37.00	263.00	176.00	58.00	632.00
Total Suspended Solids	mg/L	65.00	300.00	106.00	256.00	735.00	74.00	39.00	24.00	40.00	72.00	80.00	70.00
Total Kjeldahl Nitrogen	mg/L	18.60	1450.00	1090.00	892.00	361.00	712.00	386.00	136.00	250.00	493.00	890.00	1040.00
Total Phosphorous	mg/L	3.50	14.40	16.20	8.20	10.00	10.40	7.00	0.60	11.60	8.20	11.40	9.10

Leachate

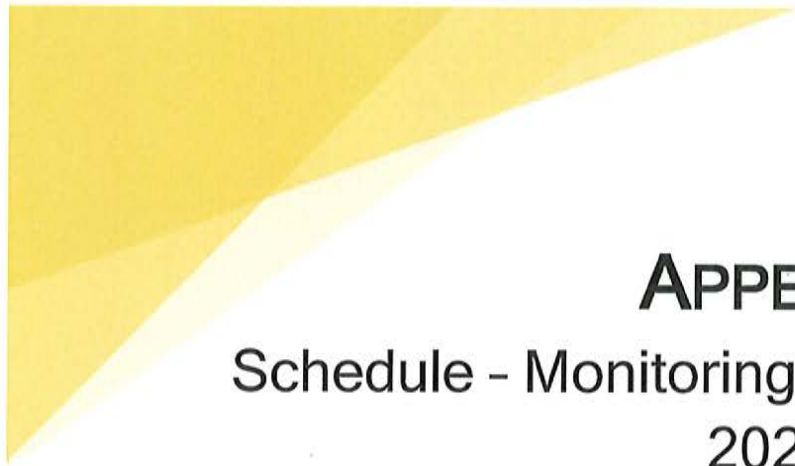
Leachate Related Metals - Quarterly

Parameter	Unit	LRWRP Effluent			
		6-Feb-23	1-May-23	2-Aug-23	8-Nov-23
Boron (Total)	mg/L	0.186	0.134	0.221	0.214
Cobalt (Total)	mg/L	0.000194	0.000174	0.00029	0.000299
Magnesium (Total)	mg/L	18.6	17.60	15.80	13.9
Manganese (Total)	mg/L	0.039	0.025	0.051	0.045
Potassium (Total)	mg/L	10.50	6.44	11.40	19.00
Strontium (Total)	mg/L	0.934	1.130	0.971	0.73
Bis(2-Ethylhexyl)phthalate	µg/L	<2	<2	<2	<2

Industrial waste

Industrial Water Related Organics Outlet of UV Disinfection - Quarterly Composite Samples

Parameter	Unit	LRWRP Effluent			
		6-Feb-23	1-May-23	10-Aug-23	8-Nov-23
Lindane	µg/L	<.01	<.01	<.01	0.01
Aldrin	µg/L	<.01	<.01	<.01	0.01
Chlordane	µg/L	<.02	<.02	<.02	0.02
Dieldrin	µg/L	<.01	<.01	<.01	0.01
Hexachlorobenzene	µg/L	<.1	<.01	<1	1.00
Benzo(a)pyrene	µg/L	<.01	<.01	<.01	0.01
PCBs	µg/L	<.04	<0.04	<.04	0.0
Cadmium (Total)	mg/L	0.000	0.000021	0.000006	0.000007
Mercury (Total)	mg/L	<.00001	<.00001	<.00001	0.00001



APPENDIX D

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 Leschate 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)

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**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

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

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9 - Grab - Quarterly - LRWRP Effluent Leachate Related

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**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)

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** 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)

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** 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
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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
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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
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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

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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

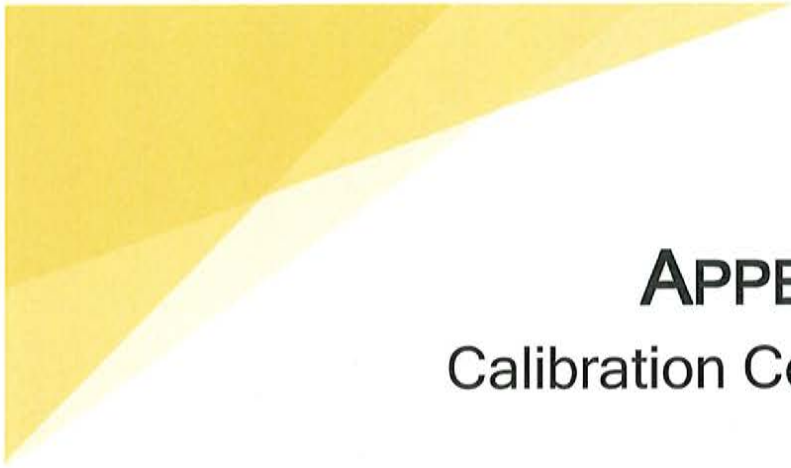
BOD TSS TP E. Coli



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
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Wednesday, 16 October 2024	Saturday, 16 November 2024	Monday, 16 December 2024
Thursday, 17 October 2024	Sunday, 17 November 2024	Tuesday, 17 December 2024
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Saturday, 19 October 2024	Tuesday, 19 November 2024	Thursday, 19 December 2024
Sunday, 20 October 2024	Wednesday, 20 November 2024	Friday, 20 December 2024
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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
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2 - Composite - Monthly - LRWRP & LRPCP Sludge
3 - Composite - Weekly - LRWRP & LRPCP Influent/Effluent
4 - Composite - 2nd Weekly - LRWRP Effluent (CBOD & TSS)
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**LRPCP - Effluent E. Coli must be monitored during the disinfection period from May 1 through October 31
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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



APPENDIX E

Calibration Certificates

	CALIBRATION REPORT	Report No.: 230926 WW_ADMN_EW_FM1
		Date: 27-Sep-23

SITE: Lou Romano WWTP
PROCESS AREA: Biosolids Flow
INSTR. TAG: WW_ADMN_EW_FM1
MANUFACTURER: Krohne
MODEL: IFC 300
SERIAL No.: C09 1407
INSTR. RANGE: 0-100 l/s

SERVICE DATE: September 27, 2023
TECHNICIAN: Mike Humphries
JOB REFERENCE: 230926

Input (Test)			Output (Signal)		Output (Process)	
Type:	GS 8 (X val)		Type or EGU:	mA	l/s	
Min:	0.00		Min:	4.00	0.00	
Max:	1.72		Max:	20.00	140.00	
DN (mm):	300					
GK=1 GKL=2	1					
GK:	3.7836					
Constant:	4177.44					
			Before Calibration		After Calibration	
Input (Y pos)	Knob Setting	Calc. O/P (mA)	Output (mA)	%Error	Output (mA)	%Error
0.00	0	4.00	4.00	0.00%	4.00	0.00%
0.50	A	8.66	8.68	0.23%	8.68	0.23%
1.00	B	13.32	13.34	0.15%	13.34	0.15%
2.00	C	22.63				
5.00	D	50.58				
10.00	E	97.16				

Calibration Equipment			
Type:	DMM	Flow Simulator	
Manufacturer:	Fluke	Krohne	
Model:	Model 87	GS8 B	
Serial No.:	94140067	U1127700020705	
Last Cal. Date:	March 16, 2023	March 27, 2023	

Comments: Totalizer: AF: 14121568 m³, AL: 14121580 m³
 Coil 133.5

AS FOUND: **PASS**

AS LEFT: **PASS**

CERTIFIED BY: Mike Humphries



CALIBRATION REPORT

TAG NO.: WW_PSTS_FM14
REPORT NO.: 230926
DATE: 27-Sep-23

SITE: Lou Romano WWTP
PROCESS AREA: Parshall Flume
INSTR. TAG: WW_PSTS_FM14
MANUFACTURER: Siemens
MODEL: Sitrans MR200 HMI, XRS-5C
SERIAL No.:
INSTR. RANGE: 0 - 272 MI/d

DATE: September 27, 2023

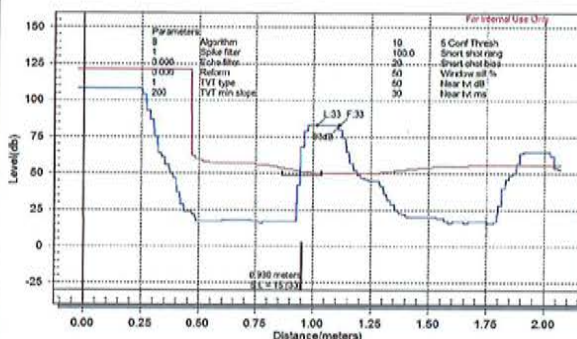
TECHNICIAN: Mike Humphries

REPORT NO.: 230926

PRIMARY DEVICE: Modified Parshall Flume

MAX FLOW: 272 MI/d
MAX HEAD: 89.91 cm
CONSTANT: 322.58
EXPONENT: 1.587

Output: mA Flow
Zero: 4 0.00
Max: 20 272.0



Confidence: 33
Echo Strength: 83 dB
Noise Average: -3 dB
Empty: 122.00 cm
Span: 89.91 cm
Transducer: XRS-5C

OCM Flow Table

Head Applied (cm)	Head Displayed (cm)	Error (%)	Calculated Flow (MI/d)	Flow Displayed (MI/d)	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	19.97	-0.15	25.1	25.0	-0.45	5.48	5.45	-0.47
40.00	40.05	0.12	75.4	75.5	0.23	8.43	8.45	0.21
60.00	60.10	0.17	143.4	143.5	0.07	12.44	12.45	0.12
89.81	NA	#VALUE!	272.0	NA	#VALUE!	20.00	NA	#VALUE!
		0.00	0.0		0.00	4.00		#DIV/0!

Totalizer As Found NA m³
Totalizer As Left NA m³

Zero As Found 122.00000 cm
Zero As Left (including offset) 122.00000 cm
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



VERIFICATION REPORT

Customer Name:	City of Windsor						
Plant Name and address:	Lou Romano Water Reclamation Plant; 4155 Ojibway Parkway, Windsor, ON N9C 4C3						
Service Date:	12-Sep-23	Instrument Type:	FIT	W.O. Number:	230695-0003	Asset#:	NA
Due Date:	12-Sep-24	Manufacturer:	Nivus				
Follow-Up Required:	No	Model:	NF7-5M3E0A001				
As Left Status:	OK	Serial #:	2020NF72192				
Instrument Visual Inspection:		Range:	0 to 545 MI/d		Output:	4-20 mA	
Mechanical Inspection:	OK	Tag Infomration:	MP1 (WW_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:	MI/d
Sensor Type:	Wedge
Mounting Height:	0.050 m
Mounting Angle:	0.00°
Distance Center v1:	+0.410 m
Distance Center v2:	-0.410 m
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	0.123	0.516	0.563	-0.02%
Point 2	0.368	0.569		
Point 3	0.613	0.554		
Point 4	0.858	0.503		
Point 5	1.102	0.532		
Point 6	1.347	0.583		
Point 7	1.592	0.568		
Point 8	1.837	0.650		
Point 9	2.082	0.607		
Point 10	2.328	0.549		
AVERAGE		0.5631	0.5630	-0.02%

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: 2.450 m			
Channel Height: 2.146 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

Flowmeter Verification Certificate Transmitter

City of Windsor

Customer

Backwash

Order code

PROMAG 50 W DN600

Device type

81080719000

Serial number

V2.00.00

Software Version Transmitter

27.09.2023

Verification date

WWTP

LRWRP

Plant

WW_BAFF_BWP_FM1

Tag Name

1.2871 - 1.2871

K-Factor

-2

Zero point

V1.04.00

Software Version I/O-Module

09:53

Verification time

Verification result Transmitter: Passed

Test item	Result	Applied Limits
Amplifier	Passed	Basis: 0.55 %
Current Output 1	Passed	0.05 mA
Test Sensor	Passed	

FieldCheck Details

550149

Production number

1.07.10

Software Version

04/2023

Last Calibration Date

Simubox Details

Production number

1.00.01

Software Version

04/2023

Last Calibration Date

Date

Operator's Sign

Inspector's Sign

Overall results:

The achieved test results show that the instrument is completely functional, and the measuring results lie within +/- 1% of the original calibration. ¹⁾

The calibration of the Fieldcheck test system is fully traceable to national standards.

¹⁾ Prerequisite is an additional proof of electrode integrity with a high voltage test.

FieldCheck - Result Tab Transmitter

Customer	City of Windsor	Plant	WWTP LWRP
Order code	Backwash	Tag Name	WW_BAFF_BWP_FM1
Device type	PROMAG 50 W DN600	K-Factor	1.2871 - 1.2871
Serial number	81080719000	Zero point	-2
Software Version Transmitter	V2.00.00	Software Version I/O-Module	V1.04.00
Verification date	27.09.2023	Verification time	09:53

Verification Flow end value (100 %): 4071.504 m3/h

Flow speed 4.00 m/s

Passed / Failed	Test item	Simul. Signal	Limit Value	Deviation
	Test Transmitter			
✓	Amplifier	203.576 m3/h (5%)	1.50 %	0.65 %
✓		407.151 m3/h (10.0%)	1.00 %	0.73 %
✓		2035.753 m3/h (50.0%)	0.60 %	0.02 %
✓		4071.505 m3/h (100%)	0.55 %	-0.02 %
✓	Current Output 1	4.000 mA (0%)	0.05 mA	0.003 mA
✓		4.800 mA (5%)	0.05 mA	0.002 mA
✓		5.600 mA (10.0%)	0.05 mA	-0.010 mA
✓		12.000 mA (50.0%)	0.05 mA	0.006 mA
✓		20.000 mA (100%)	0.05 mA	0.009 mA
		Start value	Limits range	Measured value
	Test Sensor			
✓	Coil Curr. Rise	46.400 ms	0.000..81.000 ms	52.623 ms
✓	Coil Curr. Stability		---	---
✓	Electrode Integrity	mV	0.0..300.001 mV	26.242 mV

Legend of symbols

✓	✗	—	?	!
Passed	Failed	not tested	not testable	Attention

FieldCheck: Parameters Transmitter

Customer	City of Windsor	Plant	WWTP <i>LKWRP</i>
Order code	Backwash	Tag Name	WW_BAFF_BWP_FM1
Device type	PROMAG 50 W DN600	K-Factor	1.2871 - 1.2871
Serial number	81080719000	Zero point	-2
Software Version Transmitter	V2.00.00	Software Version I/O-Module	V1.04.00
Verification date	27.09.2023	Verification time	09:53

Current Output	Assign	Current Range	Value 0_4mA	Value 20 mA		
Terminal 26/27	VOLUME FLOW	4-20 mA active	0.0 m3/h	4000.01 m3/h		

Actual System Ident.

121.0



APPENDIX F

Sludge Monitoring Data

Appendix F: Sludge Monitoring Data

Table F1 - 2023 Lou Romano Sludge - Monthly

Parameter	Unit	Date Sample was Collected											
		9-Jan-23	6-Feb-23	6-Mar-23	3-Apr-23	1-May-23	5-Jun-23	4-Jul-23	8-Aug-23	11-Sep-23	3-Oct-23	14-Nov-23	4-Dec-23
Arsenic	mg/kg	3.0	3.0	6.0	6.0	6.0	3.0	5.0	4.0	4.0	6.0	4.0	5.0
Cadmium	mg/kg	0.4	0.3	0.5	0.5	0.6	0.4	0.6	0.5	0.3	0.4	1.0	0.5
Chromium	mg/kg	39.0	33.0	48.0	33.0	44.0	31.0	40.0	45.0	27.0	33.0	36.0	42.0
Cobalt	mg/kg	2.0	2.0	5.0	4.0	4.0	3.0	4.0	4.0	2.0	7.0	4.0	7.0
Copper	mg/kg	210	110	170	130	230	180	210	240	120	220	210	270
Lead	mg/kg	11.0	8.0	19.0	27.0	26.0	9.0	28.0	17.0	8.0	12.0	10.0	19.0
Molybdenum	mg/kg	7.0	3.0	5.0	5.0	8.0	7.0	6.0	9.0	6.0	13.0	8.0	7.0
Nickel	mg/kg	20.0	14.0	32.0	26.0	39.0	27.0	29.0	45.0	20.0	23.0	23.0	23.0
Phosphorous	mg/kg	17000	8400	13000	9400	17000	18000	14000	19000	13000	24000	21000	17000
Potassium	mg/kg	1500	920	2100	1500	2200	1700	1600	1500	1200	2400	2200	2200
Selenium	mg/kg	2.0	2.0	2.0	2.0	4.0	3.0	3.0	3.0	2.0	3.0	3.0	2.0
Zinc	mg/kg	390	280	360	340	470	360	500	660	270	410	340	420
Mercury	mg/kg	0.17	0.20	0.23	0.50	0.32	0.27	0.34	0.23	0.14	0.21	0.19	0.18
Solids	%	5.92	5.87	6.54	8.82	7.31	4.86	5.65	3.99	4.43	3.84	3.72	5.61
Ammonia as N (KCL Extr)	ug/g	1150	1470	947	642	822	2400	685	1210	2170	3600	3130	1190
Nitrate as N (10:1)	ug/g	3	0.3	0.3	0.3	0.3	3	3	3	3	3	3	3

Results reported on a dry weight basis

Ammonia on sludge is not an accredited analysis. Reporting of results approved by MECP, Sean Morrison, District Manager Sarnia/Windsor Region in email dated February 4, 2020

Appendix F: Sludge Monitoring Data



Lou Romano Water Reclamation Plant ECA#1853-B43PVC Non-Regulated Sampling Results - 2023

Date: December 31, 2023

Table F2

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	6.0	4.0	4.0
Cadmium	mg/kg	0.3	0.6	0.5	1
Chromium	mg/kg	33.0	44.0	45.0	36.0
Cobalt	mg/kg	2.0	4.0	4.0	4.0
Copper	mg/kg	110	230	240	210
Lead	mg/kg	8.0	26.0	17.0	10.0
Molybdenum	mg/kg	3.0	8.0	9.0	8.0
Nickel	mg/kg	14.0	39.0	45.0	23.0
Phosphorus	mg/kg	8400	17000	19000	21000
Potassium	mg/kg	920	2200	1500	2200
Selenium	mg/kg	2.0	4	3.0	3.0
Zinc	mg/kg	280	470	660	340
Mercury	mg/kg	0.20	0.32	0.23	0.19
Solids	%	5.87	7.31	3.99	3.72
Ammonia as N (KCl Extr)	µg/g	1470	822	1210	3130
Nitrate as N (10:1)	µg/g	0.3	0.3	3	3

Final Effluent Acute Lethality Mean Mortality - Quarterly 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	2-Jun-23	8-Sep-23	2-Nov-23	3-Nov-23	29-Nov-23	30-Nov-23	14-Dec-23	15-Dec-23	16-Dec-23
Carbonaceous BOD	mg/L	8.00	4.00	6.00	4.00	10.00	13.00	12.00	11.00	9.00
Total Suspended Solids	mg/L	10.00	8.00	5.00	7.00	7.00	10.00	20.00	13.00	13.00
NH3	mg/L	6.20	1.20	7.40	6.00	8.00	10.70	12.80	12.40	8.80
TKN	mg/L	6.40	1.30	10.30	6.60	10.50	13.20	13.70	14.90	10.80
Nitrate	mg/L	7.32	11.80	8.78	10.70	8.84	8.13	8.88	8.74	9.16
Nitrite	mg/L	0.38	0.20	0.24	0.26	0.55	0.58	0.18	0.24	0.15
Total Phosphorous	mg/L	0.32	0.11	0.24	0.29	0.23	0.31	0.39	0.32	0.28

Primary Treated Overflows - Grab Sample															
Parameter	Unit	19-Jan-23	20-Jan-23	20-Jan-23	9-Feb-23	9-Feb-23	22-Feb-23	27-Feb-23	27-Feb-23	28-Feb-23	3-Mar-23	4-Mar-23	4-Mar-23	5-Mar-23	5-Mar-23
BOD5	mg/L	74.0	12.0	31.0	128.0	32.0	90.0	33.0	62.0	58.0	82.0	23.0	64.0	38.0	26.0
Total Suspended Solids	mg/L	71.0	70.0	54.0	73	84	60	56	121	47	56	43	108	25.0	31.0
Total Phosphorous	mg/L	0.61	0.32	0.72	0.88	0.41	1.86	0.69	1.03	0.60	0.44	0.55	0.96	0.44	0.70
TKN	mg/L	12.40	5.20	4.10	8.40	17.40	12.10	4.40	12.90	4.30	17.20	5.80	10.40	5.10	8.60

Primary Treated Overflows - Grab Sample															
Parameter	Unit	31-Mar-23	1-Apr-23	1-Apr-23	1-Apr-23	28-Apr-23	26-Jun-23 (00:33)	26-Jun-23 (16:26)	26-Jun-23 (21:27)	2-Jul-23	3-Jul-23	24-Aug-23	24-Aug-23	24-Aug-23	25-Aug-23
BOD5	mg/L	104.0	44.0	38.0	27.0	66.0	144.0	38.0	55.0	17.0	25.0	79.0	39.0	61.0	39.0
Total Suspended Solids	mg/L	533.0	75	44	33	117	112	80	89	56	46	105.0	64.0	89.0	53
Total Phosphorous	mg/L	1.79	0.61	0.77	0.46	1.70	1.46	0.95	0.84	0.54	0.60	0.86	0.61	0.68	0.49
TKN	mg/L	8.40	4.70	5.10	2.60	8.30	10.70	10.90	8.50	7.00	5.20	8.70	3.80	6.20	2.30