Ontario Clean Water Agency
Agence Ontarienne Des Eaux

West Lorne Wastewater Treatment Plant

Operations Report

First Quarter 2024

Ontario Clean Water Agency, Southwest Region

Sam Smith, Senior Operations Manager

Date: May 9, 2024

Facility Description

Name:	Township of West Elgin Distribution System
Hub Name:	Southwest Region – SWM/Alvinston Cluster
Regional Hub Manager:	Dale Le Britton (519) 476-5898
Senior Operations Manager:	Sam Smith (226) 377-1540
Business Development Manager:	Robin Trepanier (519) 791-2922
Facility Type:	Municipal
Classification:	Class 1 Water Distribution
Drinking Water System Category:	Large Municipal Residential

Operational Description:

The village of West Lorne is served by an extended aeration Wastewater Treatment Plant, comprised of aeration, clarification, filtration, disinfection and sludge disposal. Also included is the collection system with one pumping station and a sanitary sewer system. The operations are in accordance to ECA # 5873-B4RLEJ, which covers the entire plant including the pumping stations.

The collection system consists of sewers and one submersible pumping station. The treatment facility main elements are an extended aeration process designed for combined carbon removal and nitrification. The discharge of secondary clarifier: effluent is filtered and disinfected with ultraviolet light before being reaerated and discharged to the Zoller Drain and then Brocks Creek. The waste activated sludge is discharged to a lagoon for storage. Dual-point chemical addition alum: is used for phosphorus removal. Sodium hydroxide is added for control of alkalinity.

SECTION 1: COMPLIANCE SUMMARY

FIRST QUARTER:

There were no compliance or exceedance issues to report during the first quarter.

SECTION 2: INSPECTIONS

FIRST QUARTER:

There were no MECP or MOL inspections conducted in the first quarter.

SECTION 3: QEMS UPDATE

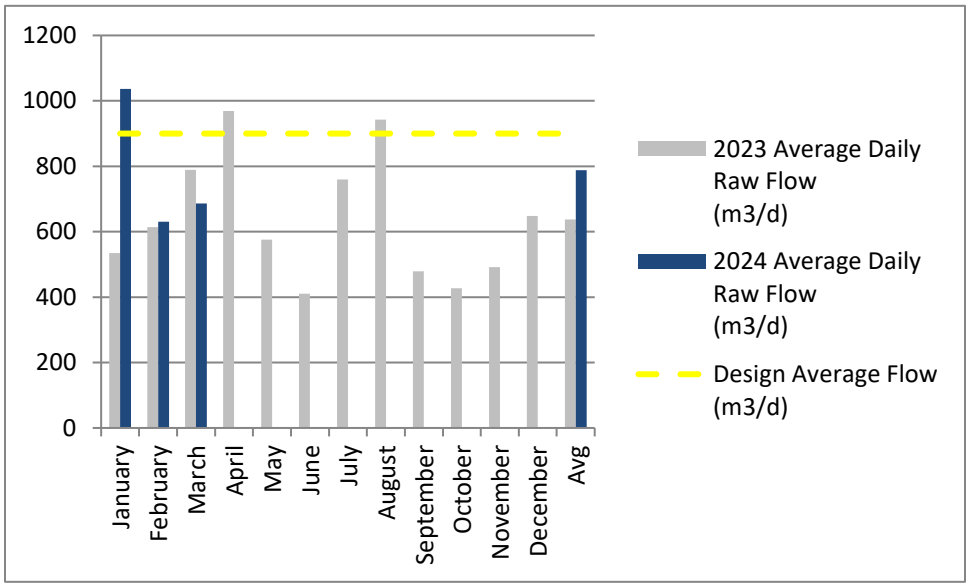
FIRST QUARTER:

No updates to the QEMS were required during the first quarter.

SECTION 4: PERFORMANCE ASSESSMENT REPORT

The average daily raw flow for the wastewater treatment plant so far in 2024 was 788m^3/d. The average daily flow in 2023 was 637.5 m^3/d, therefore the flow for 2024 is up 24% when compared to 2023. The plant is currently at 87.5 % of its rated capacity of 900m^3/d.

Chart 1. Raw flows in 2024 Compared to 2023 Flows



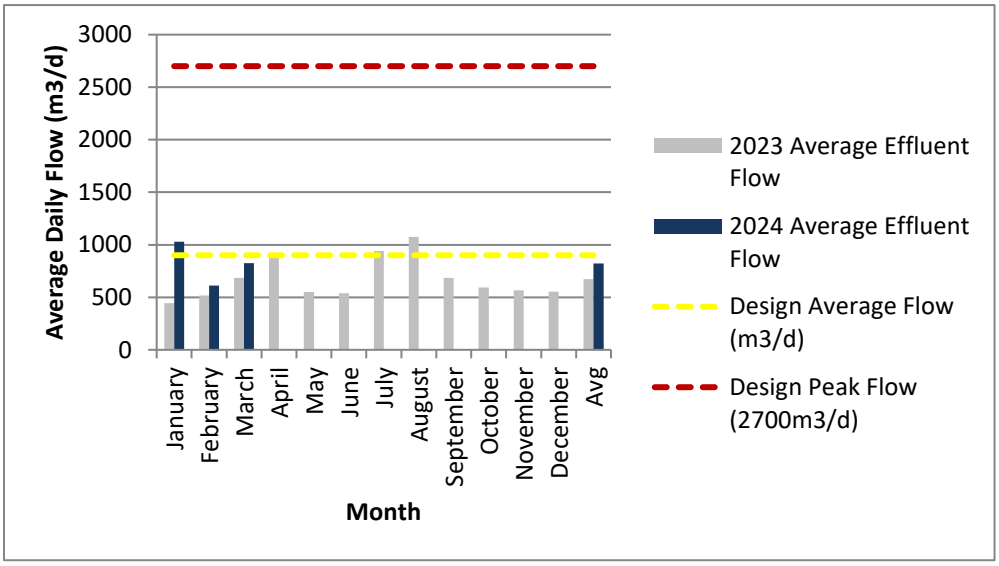
Raw samples are taken on a bi-weekly basis following the ECA requirements. The table below shows the raw sample results for 2024.

Table 1. Raw Water Sample Results for 2024.

	BOD5 (mg/L)	TKN (mg/L)	TP (mg/L)	TSS (mg/L)	Alkalinity (mg/L)
January Results	43.5	19.8	1.56	40	291.5
February Results	47	17.1	1.4	57.5	251.5
March Results	46	8.45	0.645	50.5	191.5
April Results	-	-	-	-	-
May Results	-	-	-	-	-
June Results	-	-	-	-	-
July Results	-	-	-	-	-
August Results	-	-	-	-	-
September Results	-	-	-	-	-
October Results	-	-	-	-	-
November Results	-	-	-	-	-
December Results	-	-	-	-	-
Annual Average	**45.5**	**15.1**	**1.2**	**49.3**	**244.8**

The average daily effluent flow for the wastewater treatment plant so far in 2024 was 821.1m^3/d. The average daily flow in 2023 was 671.8 m^3/d, therefore the flow for 2024 is up 22% when compared to 2023.

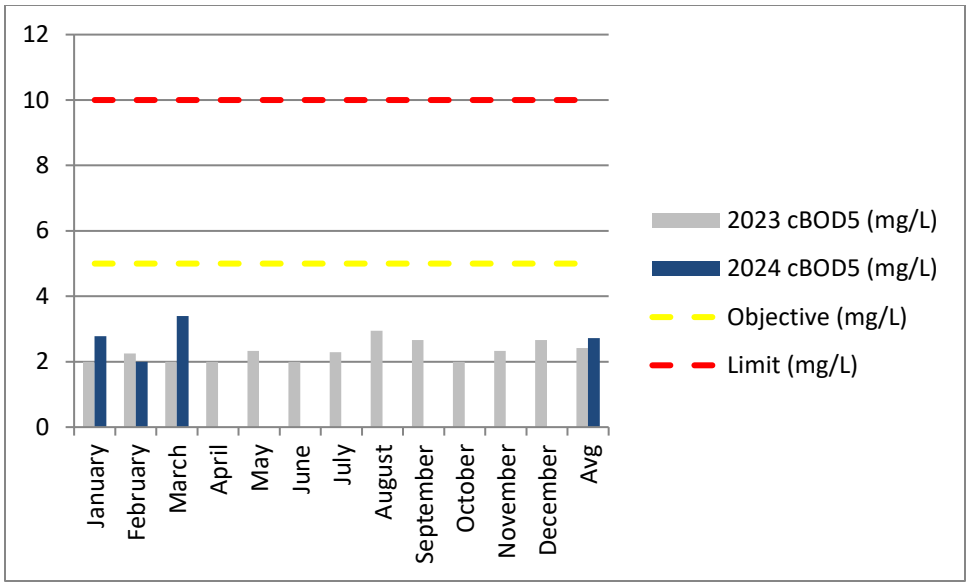
Chart 2. Raw flows in 2024 Compared to 2023 Flows



The effluent is sampled on a bi-weekly basis following the requirements of the ECA.

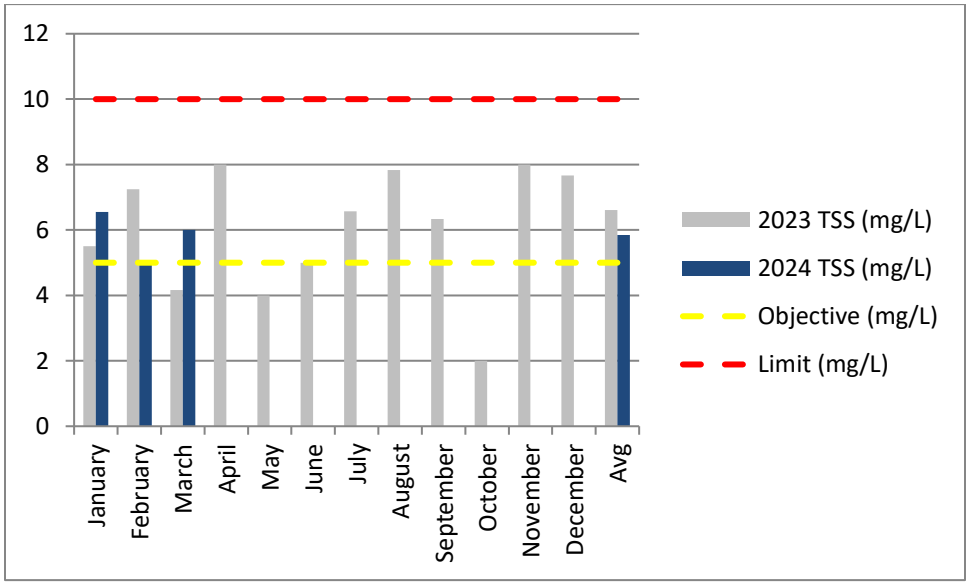
The average effluent cBOD5 so far for 2024 wass 2.7mg/L, meeting the objectives and limits identified in the ECA. The annual average result for cBOD5 in 2023 was 2.4mg/L, therefore the results so far for 2024 are up by 12.6% when compared to 2023 (refer to Chart 3).

Chart 3. Average Monthly Effluent cBOD5 Results for 2024 Compared to 2023



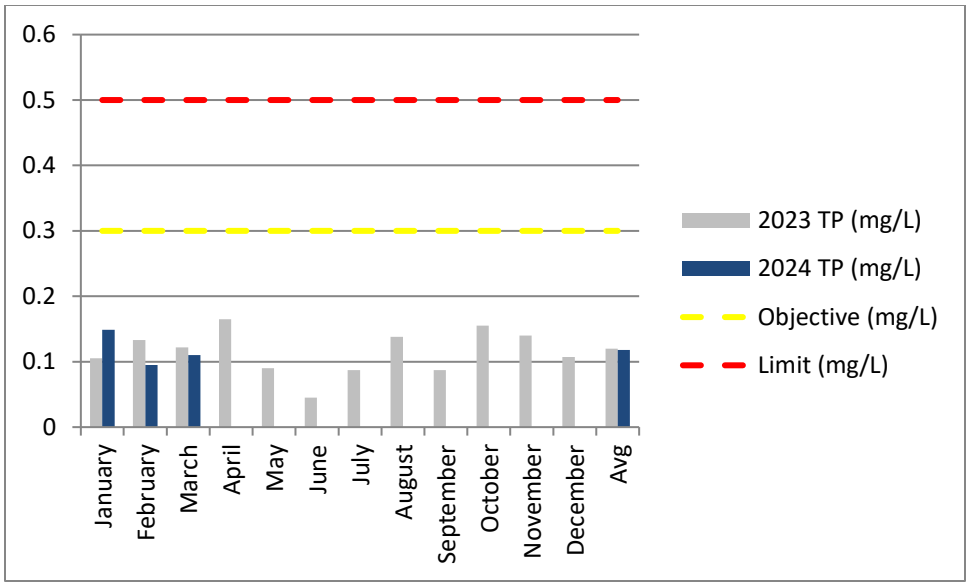
The average effluent TSS so far for 2024 wass 5.9mg/L, meeting the effluent limits identified in the ECA but exceeding the objective in January and March due to high flows. The annual average result for TSS in 2023 was 6.6mg/L; therefore, the results for 2024 are down by 11% when compared to 2023 (refer to Chart 4).

Chart 4. Average Monthly Effluent Total Suspended Solids Results for 2024 Compared to 2023



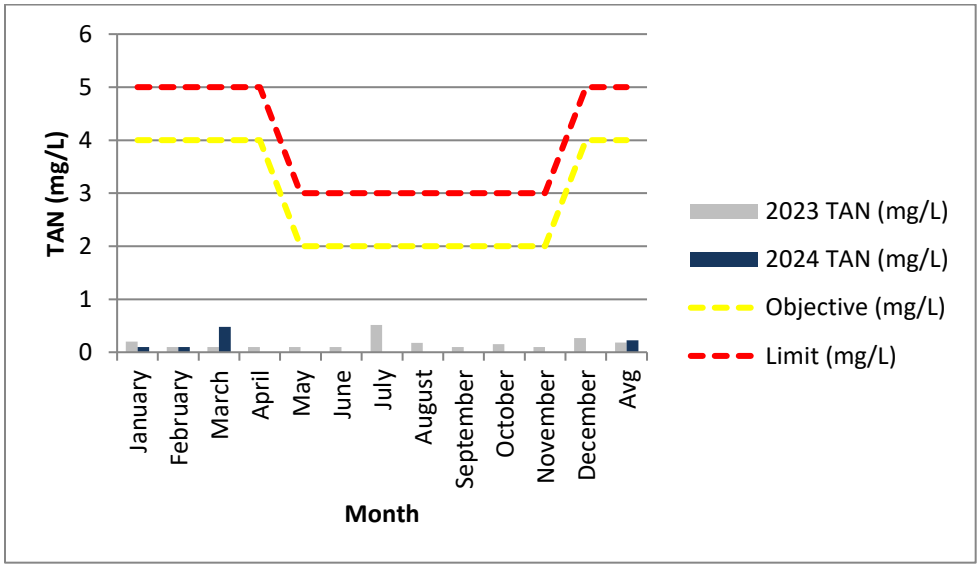
The average effluent TP so far for 2024 was 0.12 mg/L, meeting effluent objectives and limits identified in the ECA. The annual average result for TP in 2023 was 0.12mg/L, therefore the results for 2024 is the same when compared to 2023 (refer to Chart 5).

Chart 5. Average Monthly Effluent Total Phosphorus Results for 2024 Compared to 2023



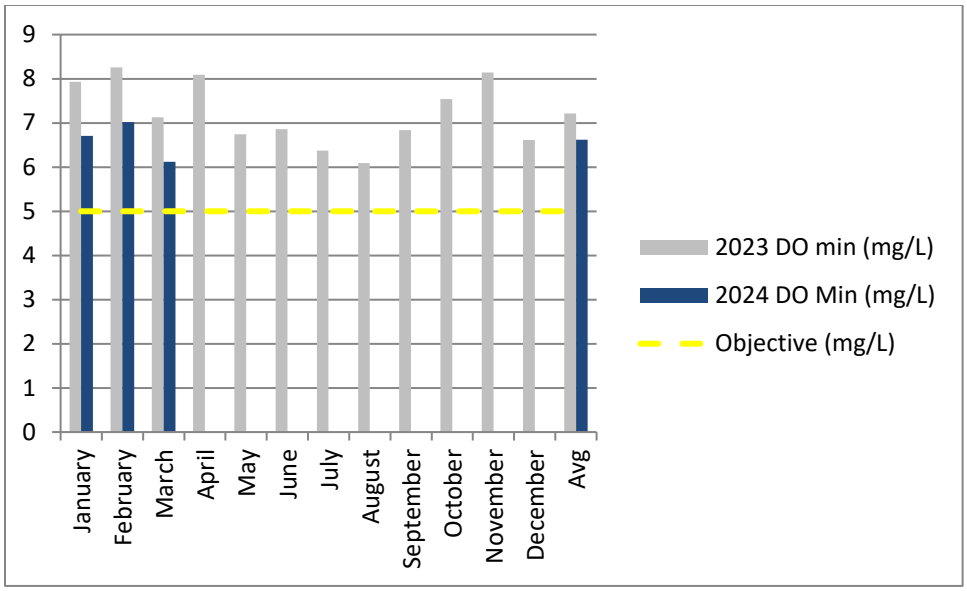
The average effluent TAN so far for 2024 was 0.23mg/L, meeting both effluent objectives and limits identified in the ECA. The annual average result for TAN in 2023 was 0.18mg/L, therefore the results for 2024 are up 26% compared to 2023 (refer to Chart 6).

Chart 6. Average Monthly Effluent Total Ammonia Nitrogen Results for 2024 Compared to 2023



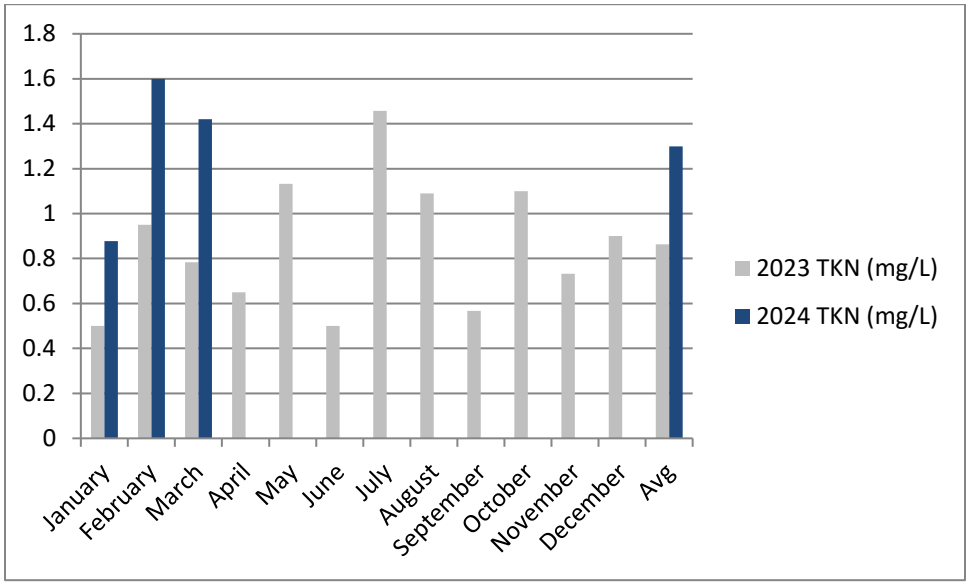
Dissolved oxygen (DO) inthe effluent is measured on site in accordance with the ECA. The ECA identifies an objective of a minimum of 5 mg/L. The chart below (chart 7) shows the minimum DO concentrations.

Chart 7. Minimum Dissolved Oxygen (DO) Results for 2024 Compared to 2023



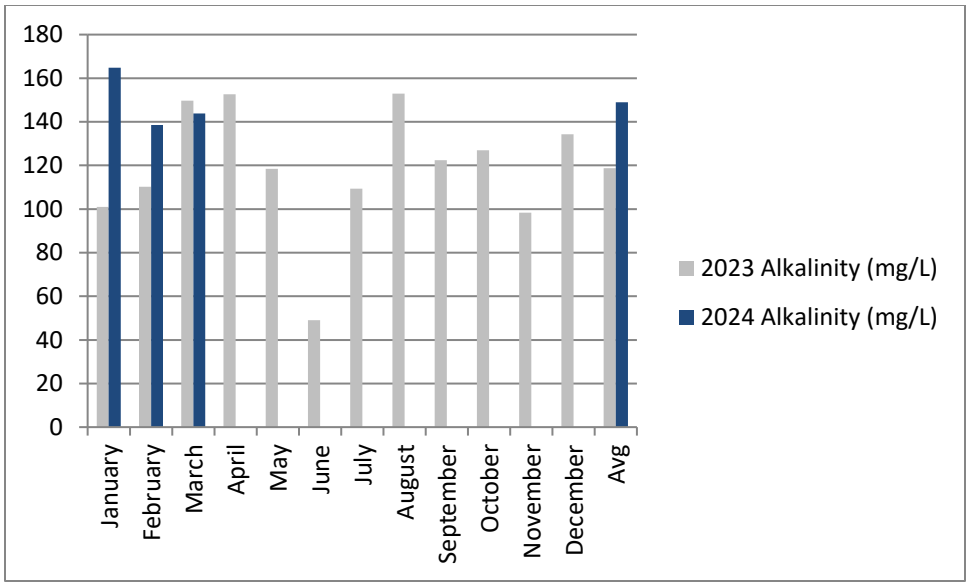
Total Kjeldahl Nitrogen (TKN) is sampled bi-weekly in accordance with the ECA; there are no objectives or limits imposed on this parameter. The average effluent TKN so far for 2024 was 1.3mg/L. The annual average result for TKN in 2023 was 0.86mg/L, therefore the results for 2024 are up by 50% when compared to 2023 (refer to Chart 8).

Chart 8. Average TKN Results for 2024 Compared to 2023



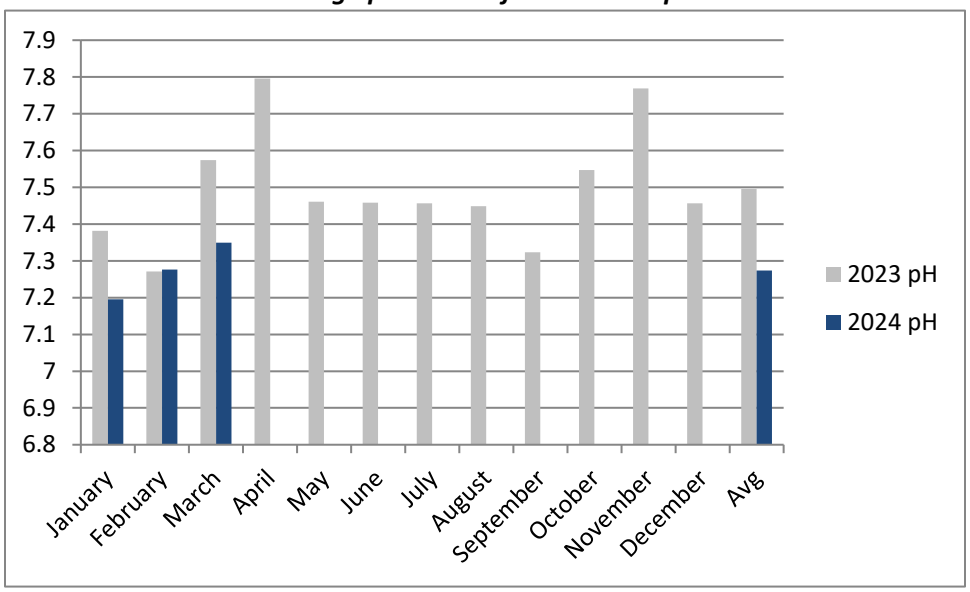
Alkalinity is sampled bi-weekly in accordance with ECA requirements; there are no objectives or limits imposed on this parameter. It is recommended that at least 50mg/L is present in the effluent. The average effluent alkalinity so far for 2024 was 149mg/L. The annual average result for alkalinity in 2023 was 119mg/L, therefore the results for 2024 are up by 25% when compared to 2023(refer to Chart 9).

Chart 9. Average Alkalinity Results for 2024 Compared to 2023



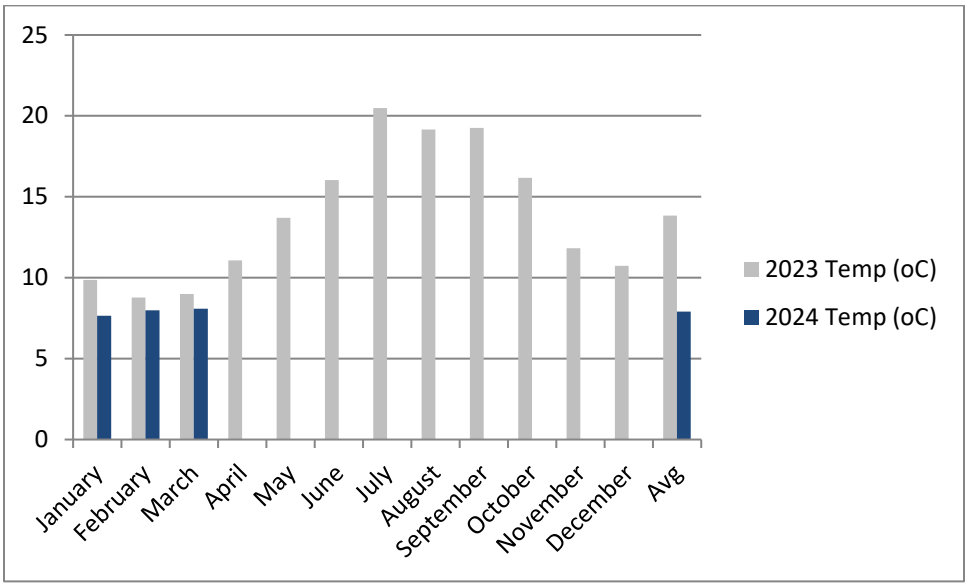
pH is sampled at least bi-weekly in accordance with ECA requirements; there are no objectives or limits imposed on this parameter. It is recommended that the pH be maintained between 6.5 and8.5. The average effluent pH so far for 2024 was 7.27. The annual average result for pH in 2023 was 7.50, therefore the results for 2024 are down by 3% when compared to 2023 (refer to Chart 10).

Chart 10. Average pH Results for 2024 Compared to 2023



Temperature is measured at least bi-weekly in accordance with ECA requirements; there are no objectives or limits imposed on this parameter. The temperature of the effluent fluctuates based on outdoor temperatures. The average effluent temperature so far for 2024 was 7.9ºC. The annual average temperature in 2023 was 13.8ºC, therefore the results for 2024 are down by 43% when compared to 2023 (refer to Chart 11).

Chart 11. Average Temperature Results for 2024 Compared to 2023



SECTION 5: OCCUPATIONAL HEALTH & SAFETY

FIRST QUARTER

There were no Health & Safety issues identified during the first quarter.

SECTION 6: GENERAL MAINTENANCE

FIRST QUARTER:

JANUARY

10: High flow samples were collected due to heavy rain weather events in the area.
12: Collected high flow samples due to heavy rain and snow melt in the area.
15: Collected high flow samples for the weekend flows due to heavy rain in the area.
16: Gerber Electric on-site to remove heater fan motors in the lab and garage for repair.
17: Collected high flow samples due to heavy rain in the area.
24: Gerber Electric on-site to install new fan motor for one (1) of the heaters in the garage.
24: Completed installation of new 3" check valves on both sanitary pump lines in the grit room as they had failed. Also replaced 90˚ on sanitary line as it had cracked when replacing check valves.
26: Gerber Electric on-site to install second heater motor in the garage and lab.
26: Penny's Plumbing on-site to replace toilet.
29: High flow sampled collected due to heavy rain events over the weekend.
31: Collected high flow samples.

FEBRUARY

01: T&T Power and Gerber Electric on-site to program PLC panels to allow filter backwash pumps to work in auto.

02: Completed new plumbing for drain and effluent pumps in basement.
13: Received alum delivery.

MARCH
06: Gerber Electric on-site to wire in effluent pump P110.
11: Collected high flow samples due to rain events.
14: Waddick Fuels on-site to put diesel fuel into the WPCP generator.
15: Nevtro Mechanical on-site to work on blower 101.
15: High flow samples taken.
19: Konecranes on-site for annual lift inspections.
20: High flow samples taken.
21: Brought third sand filter online in consultation with SOM/SPC managers to maximize the overall plant capacity, and to reduce high flow sampling.

SECTION 7: ALARMS

FIRST QUARTER:

JANUARY
26: On-call operator notified day time operator of alarms at the West Lorne Pump Station and WPCP, as they were dealing with more emergent alarms in other areas. WPCP was found to have backwash tank level transmitter fault, drained tank and cleared alarm. The West Lorne Pump Station was found to be in high level due to heavy rain and snow melt. Both pumps on and keeping up with the flow.

FEBRUARY
17: On-call operator received call at 2201 for zone 2 general alarm. Arrived on-site and found a bar screen fault. Reset fault and ran in manual, forward and backward rotations for several minutes. Put back in auto, watched two run cycles and all appears ok at this time.

MARCH
10: On-call operator received alarm at 2158 for back wash tank high level. Arrived on-site, put second pump in hand to allow it to pump down and catch up.
19: On-call operator received alarm at 2109 for back wash tank high level. Arrived on-site, put second pump in hand to allow it to pump down and catch up.
27: Received alarm call for bar screen fault at 23:37. Cycled back and forth from forward to reverse at bar screen panel to remove large debris caught in the screen. Set back to auto, no other faults.

SECTION 8: COMPLAINTS & CONCERNS

FIRST QUARTER:
There were no complaints or concerns reported during the first quarter.