

West Lorne Wastewater Treatment Plant  
& Collection System  
Operations Report  
Fourth Quarter 2019

Submitted by:  
Ontario Clean Water Agency  
Date: February 10, 2020

### **Facility Information:**

Facility Name: West Lorne Wastewater Treatment Plant & Collection System  
Facility Type: Municipal  
Classification: Class 2 Wastewater Collection, Class 2 Wastewater Treatment

### **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 # 3-0442-90-938, 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.

### **Service Information**

Areas Served: Village of West Lorne

### **Design Capacity:**

Total Design Capacity: 900 m<sup>3</sup>/day  
Total Annual Flow (2017 Data): 181,074 m<sup>3</sup>/year  
Average Day Flow (2017 Data): 496 m<sup>3</sup>/day  
Maximum Day Flow (2017 Data): 1,512 m<sup>3</sup>/day

### **Treatment Process Features:**

Effluent Receiver:	Zoller Drain to Brocks Creek to Lake Erie
Major Process:	Extended aeration
Phosphorus Removal:	Continuous, Alum addition
Additional Treatment:	Effluent filtration
Discharge Mode:	Continuous discharge
Effluent Disinfection Practice:	UV Disinfection
Sludge Stabilization:	Lagoon storage

### **Contacts:**

Regional Manager:	Dale LeBritton	519-476-5898
Sr. Operations Manager:	Sam Smith	226-377-1540
Business Development Manager:	Susan Budden	519-318-3271

## **SECTION 1: COMPLIANCE SUMMARY**

### **FIRST QUARTER:**

There were no non-compliances reported for the first quarter.

### **SECOND QUARTER:**

There were no non-compliances reported for the second quarter.

### **THIRD QUARTER:**

There were no non-compliances reported for the third quarter.

### **FOURTH QUARTER:**

On December 16<sup>th</sup> a spill was reported to SAC that occurred due to overload of the temporary barscreen during commissioning.

## **SECTION 2: INSPECTIONS**

### **FIRST QUARTER:**

There were no MECP or MOL inspections during the first quarter.

### **SECOND QUARTER:**

There were no MECP or MOL inspections during the first quarter.

### **THIRD QUARTER:**

There were no MECP or MOL inspections during the first quarter.

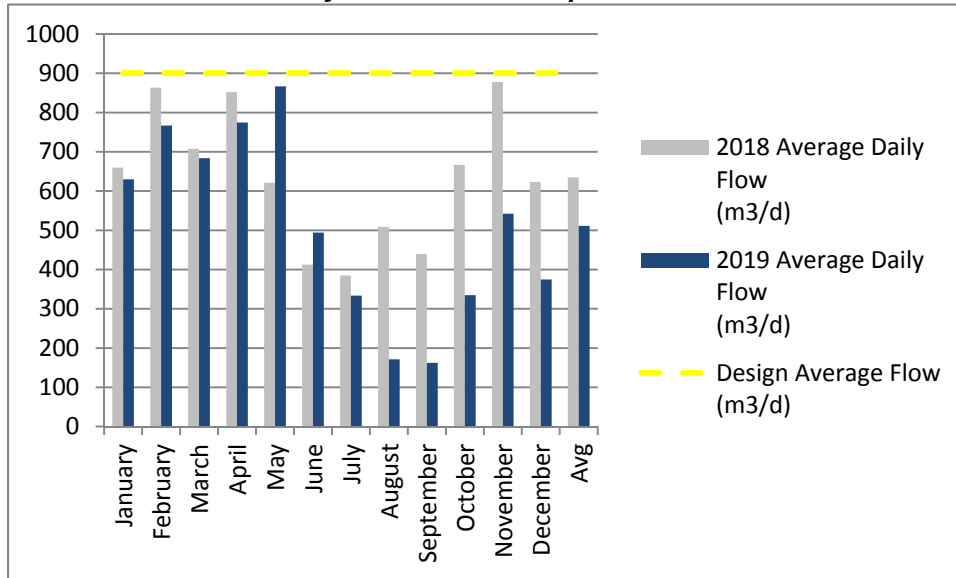
### **FOURTH QUARTER:**

There were no MECP or MOL inspections during the fourth quarter.

### SECTION 3: PERFORMANCE ASSESSMENT REPORT

The average daily raw flow for the wastewater treatment plant in 2019 is 511.26 m<sup>3</sup>/d. The average daily flow in 2018 was 634.8 m<sup>3</sup>/d, therefore the flow for 2019 is down 19.4% when compared to 2018. The plant is currently at 56 % of its rated capacity of 900m<sup>3</sup>/d. **July 26<sup>th</sup> the raw flow was diverted to the lagoons for plant upgrades with commissioning happening in December.**

**Chart 1. Raw flows in 2019 Compared to 2018 Flows**



Raw samples are taken on a biweekly basis following the ECA requirements. The table below shows the raw sample results for 2018 so far.

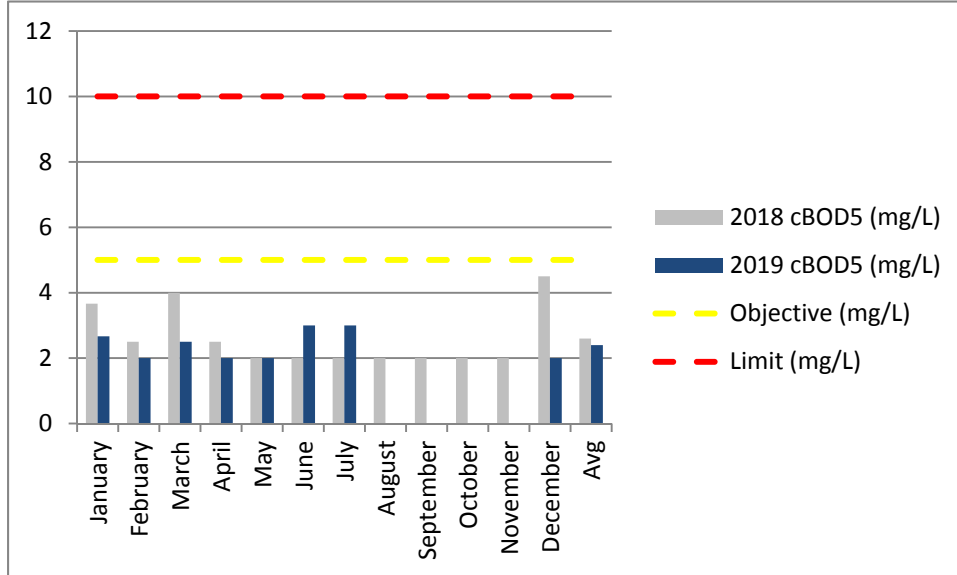
**Table 1. Raw water Sample Results for 2019.**

	BOD5 (mg/L)	TKN (mg/L)	TP (mg/L)	TSS (mg/L)	Alkalinity (mg/L)
January Results	78.333	32.13	3.687	124.67	282.4
February Results	98.5	23.35	2.54	73	247
March Results	148	35.5	4.375	317	209
April Results	38	20.95	1.93	71.5	282
May Results	33.5	13.15	1.305	37	280
June Results	45	16.7	1.535	54	304.5
July Results	93.5	28.9	2.54	101	299
August Results	172.7	47.63	4.553	208.3	303
September Results	148	71	6.495	132	379
October Results	87	4.75	3.99	64.5	299.5
November Results	106	38.35	3.14	106.5	249
December Results	86.7	33.6	3.13	111.3	315
<b>Annual Average</b>	<b>96.6</b>	<b>34.27</b>	<b>3.33</b>	<b>120.22</b>	<b>302</b>

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

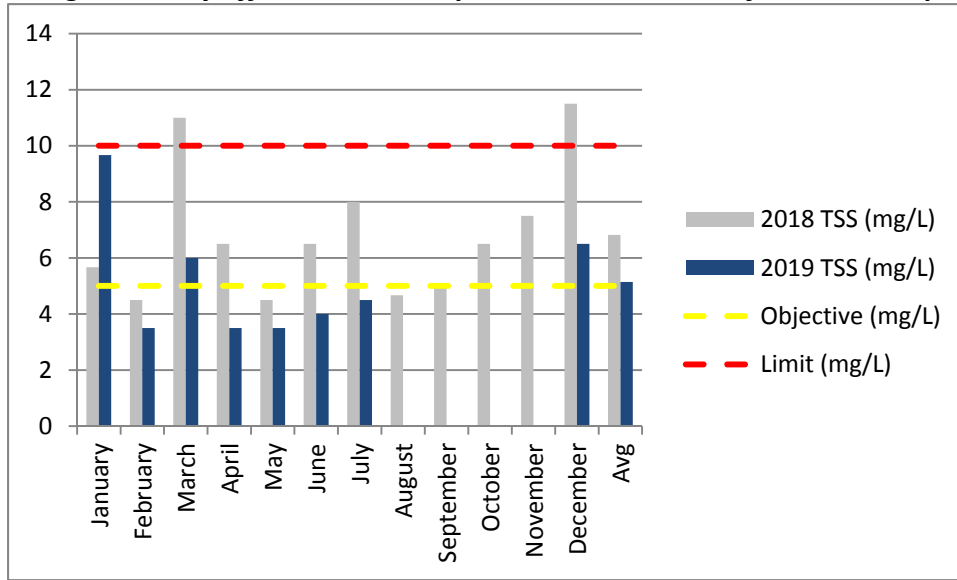
The average effluent cBOD5 for 2019 is 2.4 mg/L, meeting both effluent objectives and limits identified in the ECA. The annual average result for BOD5 in 2018 was 2.6mg/L, therefore the results for 2019 are down by 7.8% when compared to 2018 (refer to Chart 2).

**Chart 2. Average Monthly Effluent BOD5 Results for 2019 Compared to 2018**



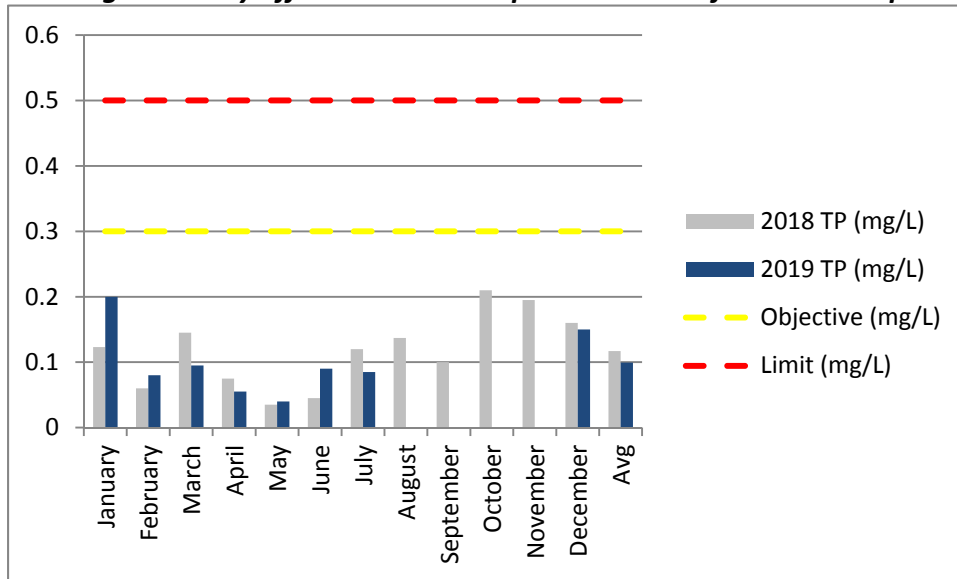
The average effluent TSS for 2019 is 5.1mg/L, meeting effluent limits identified in the ECA and exceeding the effluent objective in January and March due to wasting and alum dosage adjustments, Also in December as the new filters were being commissioned. The annual average result for TSS in 2018 was 6.8mg/L, therefore the results for 2019 are down by 25% when compared to 2018 (refer to Chart 3).

**Chart 3. Average Monthly Effluent Total Suspended Solids Results for 2019 Compared to 2018**



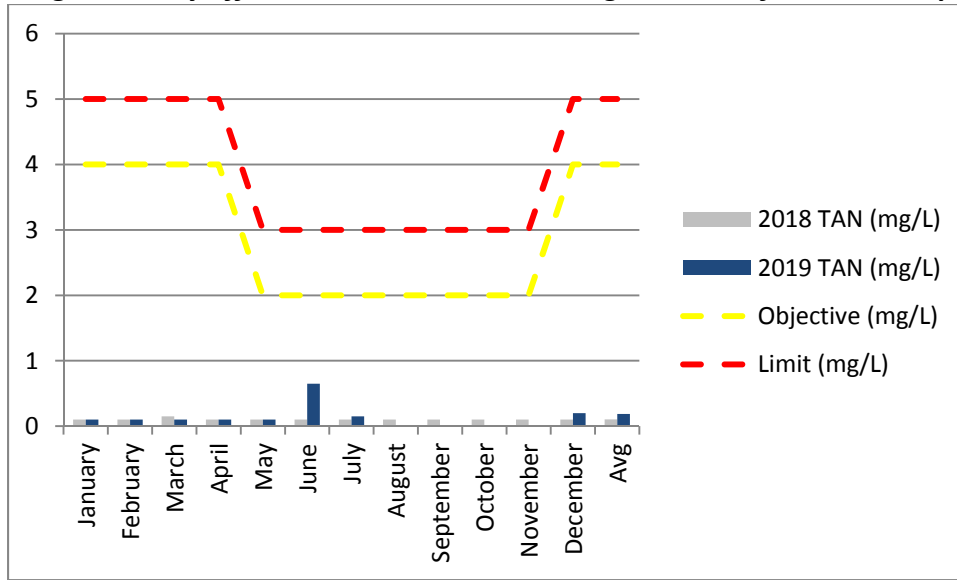
The average effluent TP for 2019 is 0.10 mg/L, meeting effluent limits and objectives identified in the ECA. The annual average result for TP in 2018 was 0.12mg/L, therefore the results for 2019 is down 15% when compared to 2018 (refer to Chart 4).

**Chart 4. Average Monthly Effluent Total Phosphorus Results for 2019 Compared to 2018**



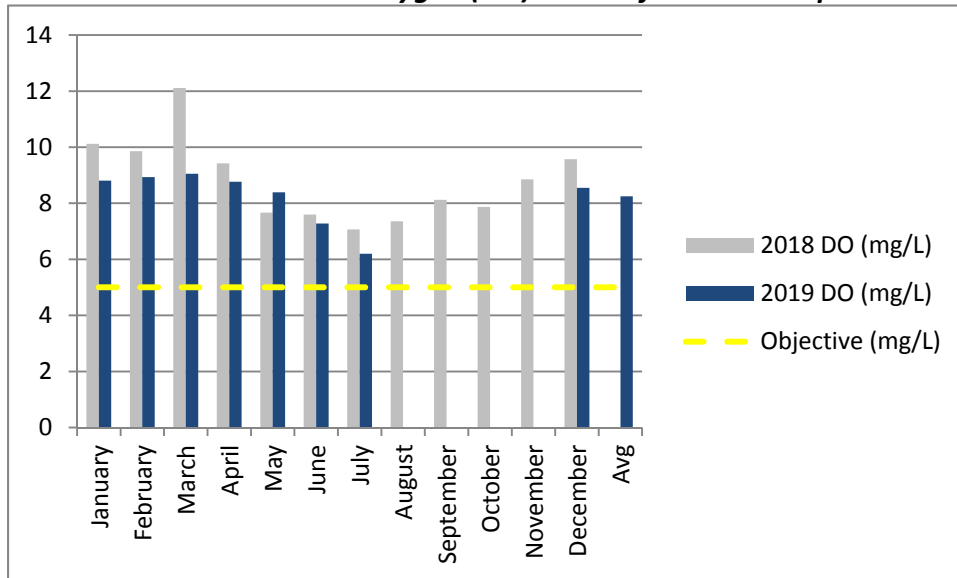
The average effluent TAN for 2019 is 0.19mg/L, meeting both effluent objectives and limits identified in the ECA. The annual average result for TAN in 2018 was 0.104mg/L, therefore the results for 2019 are up 80% compared to 2018 (refer to Chart 5).

**Chart 5. Average Monthly Effluent Total Ammonia Nitrogen Results for 2019 Compared to 2018**



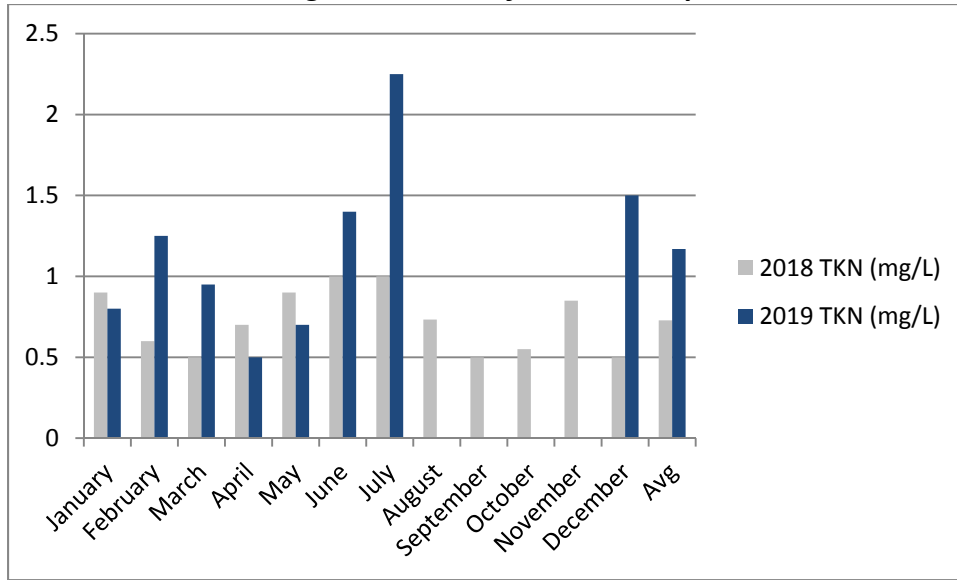
Dissolved oxygen (DO) of the effluent is tested on site at the plant, the ECA identifies a minimum level required as an objective. This objective is 5mg/L. The chart below (chart 7) shows the minimum DO concentrations; there have been no objective exceedances.

**Chart 7. Minimum Dissolved Oxygen (DO) Results for 2019 Compared to 2018**



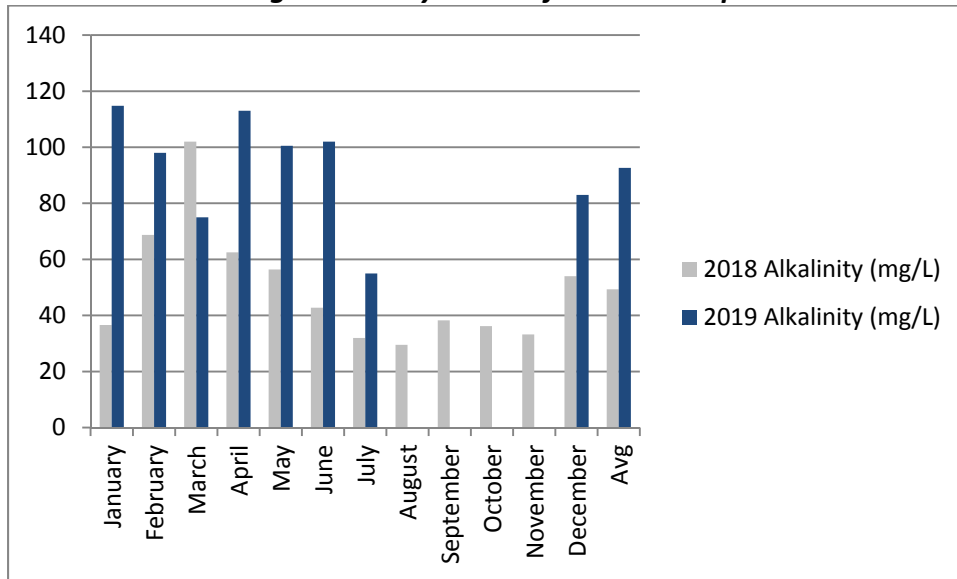
Total Kjeldahl Nitrogen (TKN) is sampled biweekly in accordance with ECA requirements; there are no objective or limits imposed on this parameter. The average effluent TKN for 2019 is 1.17mg/L. The annual average result for TKN in 2018 was 0.72mg/L, therefore the results for 2019 are up by 60% when compared to 2018 (refer to Chart 8).

**Chart 8. Average TKN Results for 2019 Compared to 2018**



Alkalinity is sampled at least biweekly in accordance with ECA requirements; there are no objective or limits imposed on this parameter. It is recommended that at least 50mg/L is present in the effluent. The average effluent alkalinity for 2019 is 93mg/L. The annual average result for alkalinity in 2018 was 49mg/L, therefore the results for 2019 are up by 88% when compared to 2018(refer to Chart 9).

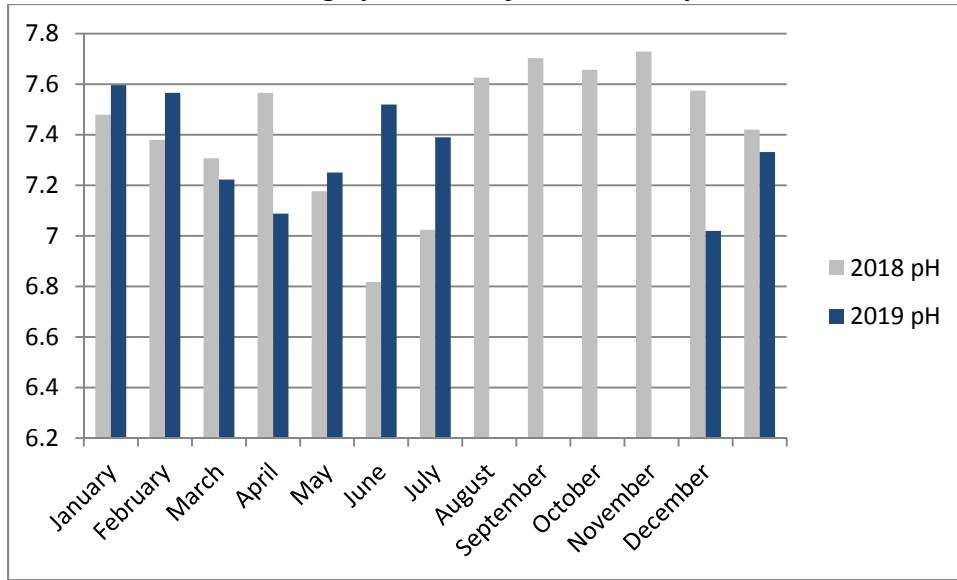
**Chart 9. Average Alkalinity Results for 2019 Compared to 2018**



pH is sampled at least biweekly in accordance with ECA requirements; there are no objective or limits imposed on this parameter. It is recommended that the pH is in the range of 6.5-8.5. The average effluent pH for 2019 is 7.33. The annual average result for pH in 2018 was 7.42, therefore the results for 2019 are down by 1.2% when compared to 2018 (refer to Chart 10).

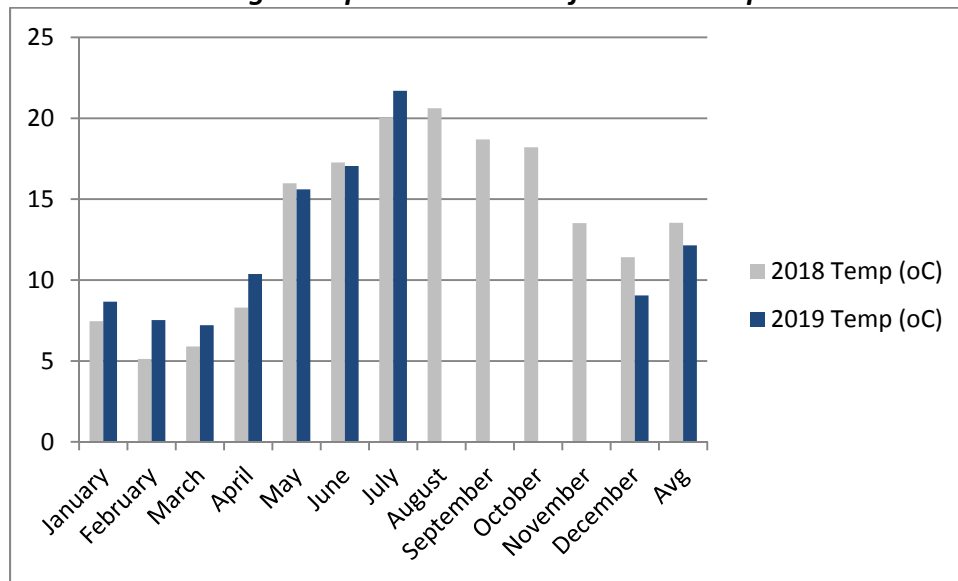


**Chart 10. Average pH Results for 2019 Compared to 2018**



Temperature is measured at least biweekly in accordance with ECA requirements; there are no objective or limits imposed on this parameter. The temperature of the effluent fluctuates based on outdoor temperatures. The average effluent temperature for 2019 is 12.1°C. The annual average temperature in 2018 was 13.54°C, therefore the results for 2019 are down by 10% when compared to 2018 (refer to Chart 11).

**Chart 11. Average Temperature Results for 2019 Compared to 2018**



## **SECTION 4: OCCUPATIONAL HEALTH & SAFETY**

### **FIRST QUARTER:**

There were no Health and Safety concerns this quarter.

### **SECOND QUARTER**

Emergency lights need repaired

### **THIRD QUARTER**

There were no Health and Safety concerns this quarter.

### **FOURTH QUARTER:**

There were no Health and Safety concerns this quarter.

## **SECTION 5: GENERAL MAINTENANCE**

### **FIRST QUARTER:**

#### **JANUARY:**

- 07: Completed cleaning on clarifiers & v-notches. Completed cleaning of UV channel.
- 08: RVA Anderson on site today to inspect / tour facility in prep for facility upgrade project.
- 11: K&L Contracting on site to measure grit system hopper & clarifiers.
- 14: Completed cleaning on clarifiers & v-notches. Completed cleaning of UV channel.
- 16: Nevtro on site to deliver effluent pump.
- 18: Gerber Electric on site to repair inoperable scum scraper flight system; replaced melted coil & replaced burnt fuses in electrical panel causing issues.
- 22: Chemtrade on site for alum delivery.

#### **FEBRUARY:**

- 01: Adjust wasting times to maintain proper operation in plant.
- 04: Pump down west clarifier, to view where flight chain has fallen off and realign to sprockets.
- 05: Replaced blown fuses on bar screen and got bar screen operating.
- 06: Gerber Electric on site for pump repair P106; pump has leak causing to trip and fault out.
- 07: East clarifier blocked off till ras/was pumps are replaced or repaired.
- 11: Gloverhills contractor on site compressor 1 removed for repairs. Hollen controls on site to isolate compressor power supply until it is returned.
- 12: Power out at water treatment plant, generator running in emergency 3hours.
- 15: Start Lagoon decant to prep lagoons for plant upgrades.
- 26: Glover Contracting on site to take measurements and obtain serial numbers for blower 1

#### **MARCH:**

- 08: Completed monthly OSHA inspections for fire extinguishers, eye wash stations, emergency light systems & first aid stations.
- 11: Completed cleaning on clarifier, overflow weirs & effluent channels.
- 14: Nevtro on site to deliver pump.
- 25: Gerber Electric on site to diagnose/repair inoperable RAS pump P107.

- 27: Geber Electric on site to replace parts on RAS pump P107.
- 31: Power failure at plant; ran on emergency power for 12.0 hours.

## **SECOND QUARTER:**

### **APRIL:**

- 01: Gerber Electric on site to fix RAS pump.
- 03: Health and Safety inspections
- 11: Chemtrade was on site to deliver alum
- 15: Chemtrade was on site to deliver alum
- 18: Flowmetrix was on site to calibrate flow meter
- 24: Keengsway was on site to deliver new pumps
- 26: Gerber Electric was on site to fix coil in sprayers pump

### **MAY:**

- 01: Albert's Generator on site to do maintenance on generator
- 06: Contractors on site to install new blower 1
- 27: Contractors on site to work on blower 2
- 28: ORO and engineers on site to estimate major renovation cost for all equipment

### **JUNE:**

- 04: Contractor install new scum trough on east clarifier
- 06: Chemtrade on site to deliver alum
- 07: Flowmetrix on site to check WAS and RAS flowmeter

## **THIRD QUARTER:**

### **JULY:**

- 12: Installed new sign on front and rear gate.
- 29: Flowmetrix was on site to install new flow meter on RAS and WAS line

### **AUGUST:**

- 01: Hurricane was on site to do quotes for cleaning aeration tanks
- 08: Hurricane was on site to cleaning aeration tanks
- 09: Hurricane was on site to cleaning aeration tanks

### **SEPTEMBER:**

- 20: Aerzen Canada was on site to test three blowers

## **FOURTH QUARTER:**

### **OCTOBER:**

- 24: Started flow to plant, Started blower.
- 30: Century sanitation was on site to deliver bacteria

NOVEMBER:

Plant still undergoing upgrades; plant is being ran and circulated back to lagoons until all parts of plant are commissioned and operating properly.

6-13: Received several loads of sludge to seed plant from various locations by Central Sanitation

DECEMBER:

Plant still under upgrades, plant is being ran and circulated back to lagoons until all parts of plant are commissioned and operating properly.

02: Giles janitorial services on site to clean the floors

09: Hurricane hydro vac is on site to flush collection system

16: Spill found from barscreen area of raw water. SAC called and reported as a spill.

**SECTION 6: ALARM SUMMARY**

**FIRST QUARTER:**

JANUARY:

No alarms this month.

FEBRUARY:

02: Channel 7 alarm, RAS chamber flooded, operator pumped pit out.

03: Channel 7 alarm, RAS chamber flooded, operator pumped pit out.

24: Channel 18; RAS flow issues, reset pumps and monitored system.

MARCH:

20: Channel 7 alarm, RAS chamber flooded, operator pumped pit out.

24: Channel 21 alarm, no RAS flow for 1.0 hr. operator reset faulted pumps.

27: Channel 21 alarm, no RAS flow for 1.0 hr. operator reset faulted pumps.

31: Power failure at plant, ran on emergency power for 12.0 hours

**SECOND QUARTER:**

No alarms to report this quarter.

**THIRD QUARTER:**

**JULY:**

27: Power failure caused by a single phase at the road being tripped. Operator called Hydro One who later came to re-install it. Ran on generator, but was unable to get blower running. Gerber Electric called in to assess. Blower was taken off line and unable to start second blower due to construction.  
Operators diverted pump station flow to the lagoons. Operator notified ORO and compliance.

**AUGUST:**

No alarms this month.

**SEPTEMBER:**

No alarms this month.

**FOURTH QUARTER:**

**OCTOBER:**

No alarms this month.

**NOVEMBER:**

No alarms this month.

**DECEMBER:**

16: General Alarm Received; Operator reported to site and completed a walk-through of the plant to ensure all systems were running normal.

**SECTION 7: COMMUNITY COMPLAINTS & CONCERNS**

**FIRST QUARTER:**

There were no complaints or concerns this quarter.

**SECOND QUARTER:**

There were no complaints or concerns this quarter.

**THIRD QUARTER:**

There were no complaints or concerns this quarter.

**FOURTH QUARTER:**

There were no complaints or concerns this quarter.