# Killaloe Wastewater System

Waterworks #110001532

# Annual Report

Prepared For: The Township of Killaloe, Hagarty and Richards

Reporting Period of January 1st – December 31st 2023

Issued: February 5th, 2024

Revision: 0

Operating Authority:

OCWA

ONTARIO CLEAN WATER AGENCY
AGENCE ONTARIENNE DES EAUX

This report has been prepared as a general summary of results and events as the Certificate of Approval governing this facility does not require an annual report to be prepared, or define effluent objectives and limits. It is there by operated based solely on provincial guidelines. This report has been prepared to meet the requirements set out in the collection system ECA listed below.

| Document | Document # | Issue Date | Issue Number |
|---|---|---|---|
| Facility ECA | 1-575-78-005 | 1978-08-22 | N/A |
| ECA for Municipal Sewage Collection System | 259-W601 | 2022-03-03 | 1 |

# Table of Contents

# 1 Revision History

| Date | Rev# | Revisions | Revised By |
|---|---|---|---|
| 2024-02-05 | 0 | Annual Report Issued | Kaylee Saar, OCWA |

# 2 Operations and Compliance Reliability Indices

| Compliance Event | Details |
|---|---|
| Ministry of Environment Inspections | 0 |
| Ministry of Labour Inspections | 0 |
| Non-Compliance | 0 |
| Community Complaints | 1 - See Summary of Complaints for details |
| Spills | 0 |
| Overflows | 0 |
| Bypass | 0 |
| Sewer Main Blockages | 0 - Sewer main blockages<br>1 - Lateral blockages, See Summary of Complaints for details |

# 3 Process Description

The Killaloe Wastewater Treatment System consists of a sewage treatment plant and one sewage pumping station. Wastewater from the Village of Killaloe is collected at the Henry Street pumping station and is then pumped to the Class II Wastewater Treatment Facility located at 113 Keetch Street. Upon entering the facility, the incoming wastewater receives preliminary treatment by passing through two grit removal channels equipped with proportional weirs, an emergency by-pass bar screen and a three inch Parshall Flume for measuring the influent flow.

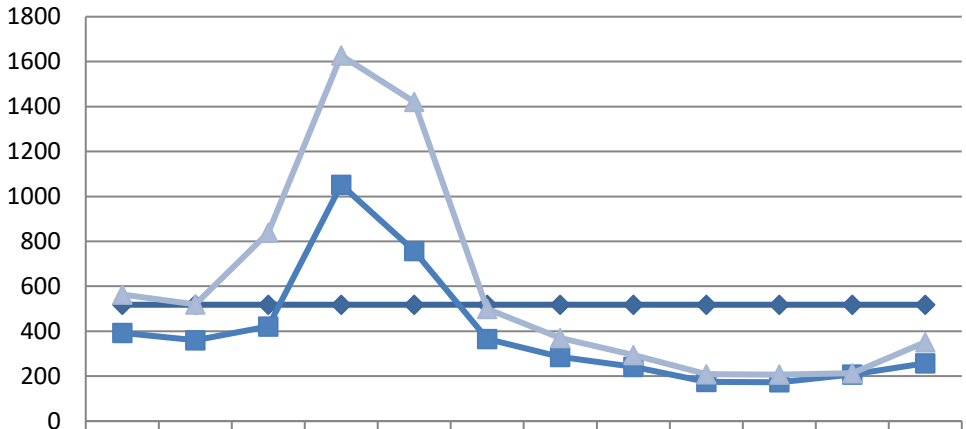
Primary and secondary treatment is achieved through the Extended Aeration Process consisting of a comminutor, a clarifier with the chemical addition of PAS-8 for phosphorus removal, an aeration chamber with fine bubble aeration, and an aerated sludge holding tank/digester. The activated sludge which settles to the bottom of the clarifier is either returned to the head of the aeration tank or is diverted to the digester. Bio-solids are aerobically digested, stored on site and later land applied under the Nutrient Management Act. The treated effluent overflows the clarifier weirs and is collected and sent to the chorine contact chamber. Disinfection is achieved in the contact chamber with the addition of sodium hypochlorite prior to being de-chlorinated by calcium thiosulfate in the 12 inch diameter outfall sewer before discharging into Brennan's Creek and ultimately Golden Lake.

# 4 Treatment Flows

The annual average daily flow for 2023 was 391 $m^3/d$, which represents 75% of the facility's 518 $m^3/d$ rated capacity.

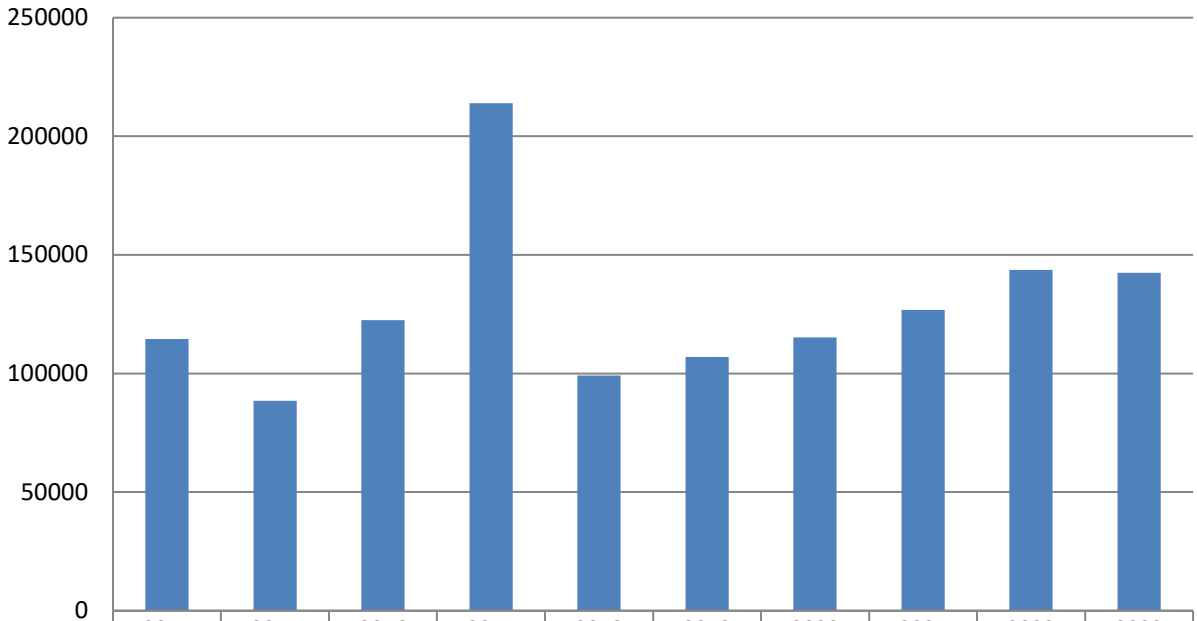
## 4.1 Raw/Treated Flow ($m^3/d$)

### *4.1.1 2023 Raw/Treated Flow*




| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Limit | 518 | 518 | 518 | 518 | 518 | 518 | 518 | 518 | 518 | 518 | 518 | 518 |
| Average Daily Flow (m3/d) | 392 | 360 | 421 | 1052 | 758 | 366 | 286 | 241 | 174 | 173 | 207 | 258 |
| Maximum Daily Flow (m3\d) | 564 | 520 | 838 | 1,627 | 1421 | 499 | 370 | 294 | 209 | 207 | 213 | 351 |

### *4.1.2 Annual Effluent Flow Comparison ($m^3$)*



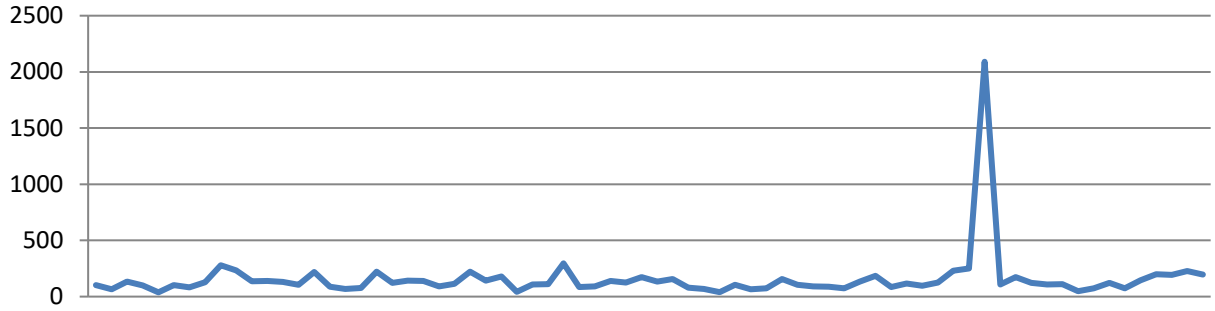

| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Annual Flow | 114491 | 88454 | 122448 | 213981 | 99094 | 106910 | 115255 | 126870 | 143679 | 142411 |

# 5 Raw Sewage Quality

5 Year Average Trends for Raw Sewage Quality are graphed below:

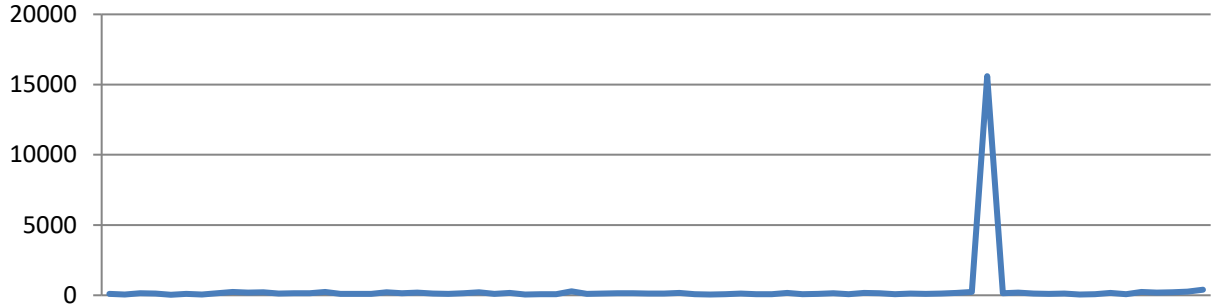
## 5.1 Biochemical Oxygen Demand (5 Day)

The graph below represents the monthly average of BOD5 measured in mg/L from 2018-2023.



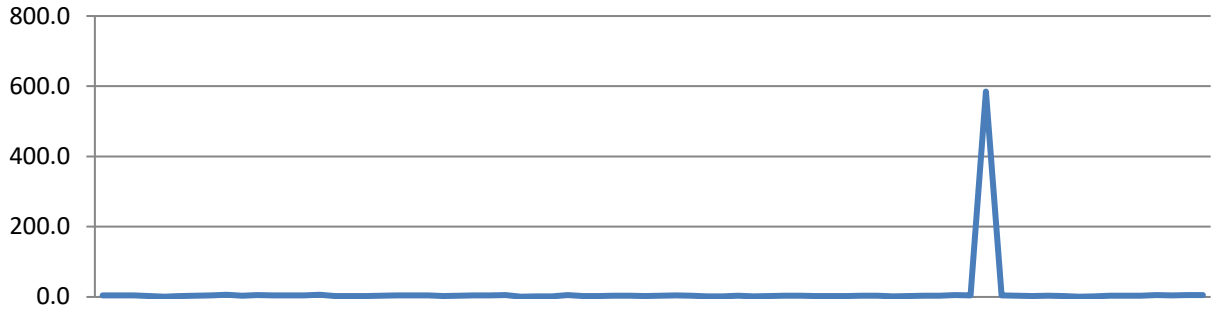

## 5.2 Total Suspended Solids

The graph below represents the monthly average of TSS measured in mg/L from 2018-2023.



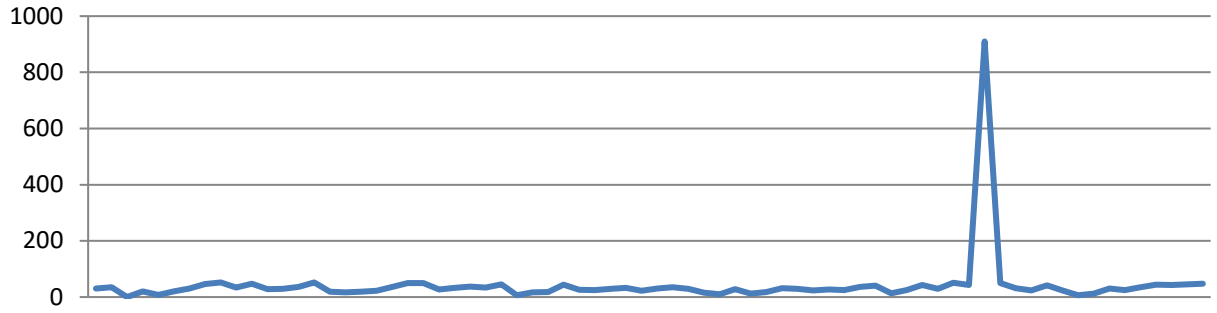

## 5.3 Total Phosphorus

The graph below represents the monthly average of TP measured in mg/L from 2018-2023.



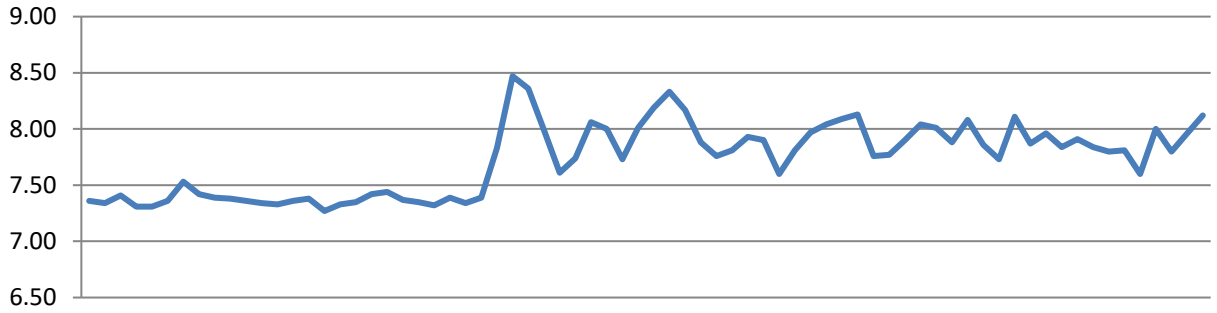
### 5.4 Total Ammonia Nitrogen

The graph below represents the monthly average of TAN measured in mg/L from 2018-2023.




### 5.5 pH

The graph below represents the monthly average of pH from 2018-2023, there is no measured unit for pH.




## 6 Effluent Quality

There are no effluent objectives or limits defined in the Certificate of Approval for this facility. This facility operates to ensure current provincial guidelines are not exceeded. However, there were four instances when the Ministry's F-Guideline Monthly Geometric Mean Density of 200 CFU/100 mL for E.Coli was exceeded in January, February, April and November in 2023. See the Operating Issues/Problems section of this report for further details.

The Federal Government also regulates the effluent flow, and the monthly average $CBOD_5$ and total suspended solids in the effluent under the Federal Fisheries Act. The results are submitted to Environment and Climate Change Canada's effluent regulatory reporting information system, under wastewater systems effluent regulations (WSER) on a quarterly basis.

Effluent results from the Killaloe wastewater treatment facility for 2023 are tabulated on pages 6-10 of this report.

## 6.1 Effluent Quality Assurance and Control Measures Taken

This system is part of OCWA's Madawaska Cluster. The cluster is supported by the Eastern Regional Hub, and corporate resources. Operational Services are delivered by OCWA staff that live and work in the community. The systems are operated to meet compliance with applicable regulations. The system has comprehensive manuals detailing operations, maintenance, instrumentation, and emergency procedures. All procedures are treated as active documents and are updated as required. These documents are also part of OCWA's Quality & Environmental Management System.

The process is reviewed and maintained by certified operators. These operator's complete in-house rounds and testing to monitor the process. All Sampling and analysis follow approved methods and protocols for sampling, analysis and recording as specified in the Ministry's Procedure F-10-1, "Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works", the Ministry's publication, "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" and the publication, "Standard Methods for the Examination of Water and Wastewater".

All final effluent samples collected during the reporting period to meet legislated sampling requirements are submitted to SGS Lakefield Research Ltd. laboratory in Lakefield, Ontario for analysis, with the exception of disinfection residuals and temperature. SGS Lakefield Research Ltd. has been deemed accredited by the Canadian Association for Laboratory Accreditation (CALA), meeting strict provincial guidelines including an extensive quality assurance/quality control program. By choosing this laboratory, the Ontario Clean Water Agency is ensuring appropriate control measures are undertaken during sample analysis. The disinfection residuals and temperature parameters are analyzed in the field at the time of sample collection by certified operators, to ensure accuracy and precision of the results obtained.

OCWA uses several computer systems which include:

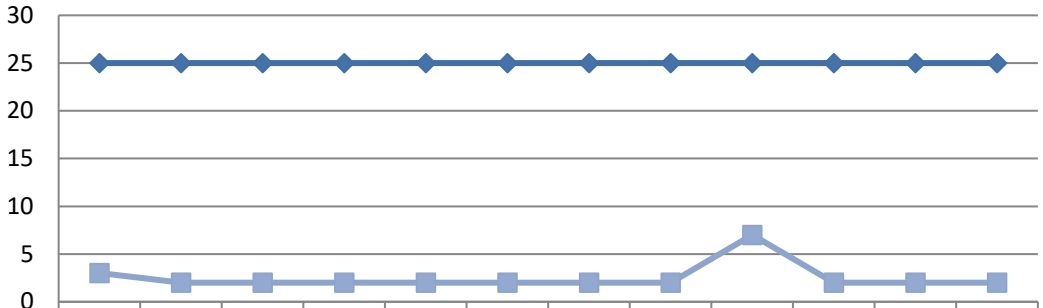
- Process Data Management (PDM)
    - This database program consolidates all operational data from a variety of sources including field data, online instrumentation, and electronic receipt of lab test results for reporting, tracking and analysis.
- Maximo – OCWA's Work Management System (WMS)
    - This program is used to track and schedule maintenance activities for all equipment in the system. It is also used to assign tasks for specific operational tasks.
- Wonderware (OUTPOST5)/SCADA
    - Wide-area SCADA system allows for process optimization and data logging, process trending, remote alarming.

The operations team also has access to a network of operational compliance and process specialists to assist for emerging process issues. This aids in establishing additional control measures to ensure a quality effluent product.

Detailed individual sample results for both raw sewage and final effluent can be requested from the operating authority.

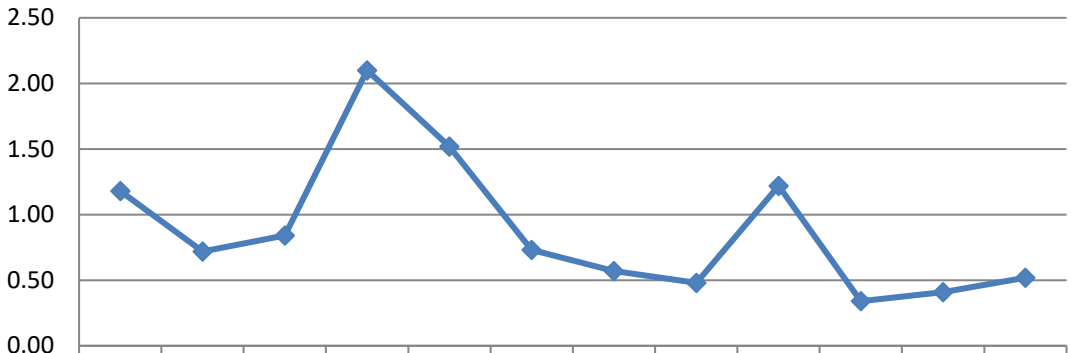
## 6.2 CBOD5

### *6.2.1 Concentration (mg/L)*




| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Guideline (mg/L) | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| Average (mg/L) | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 7 | 2 | 2 | 2 |

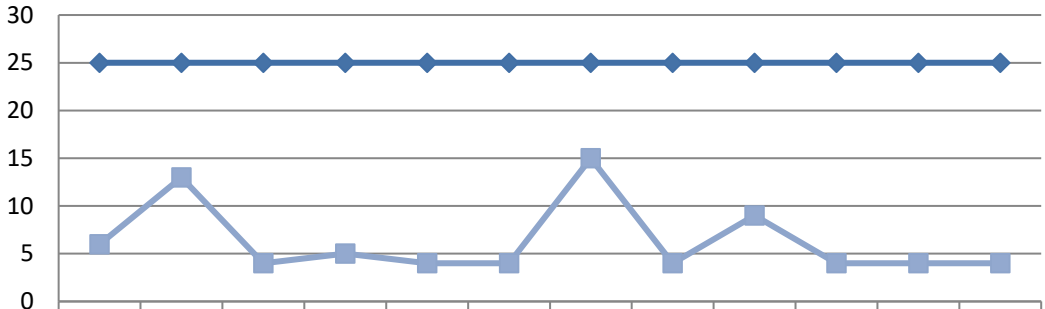
### *6.2.2 Loading (kg/d)*




| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Average (kg/d) | 1.18 | 0.72 | 0.84 | 2.10 | 1.52 | 0.73 | 0.57 | 0.48 | 1.22 | 0.34 | 0.41 | 0.52 |

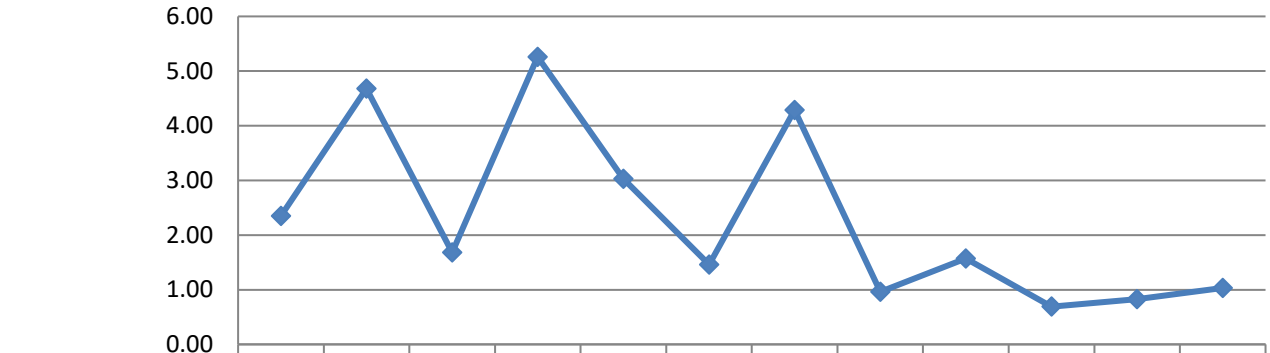
## 6.3 Total Suspended Solids

### *6.3.1 Concentration (mg/L)*




| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Guideline (mg/L) | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| Average (mg/L) | 6 | 13 | 4 | 5 | 4 | 4 | 15 | 4 | 9 | 4 | 4 | 4 |

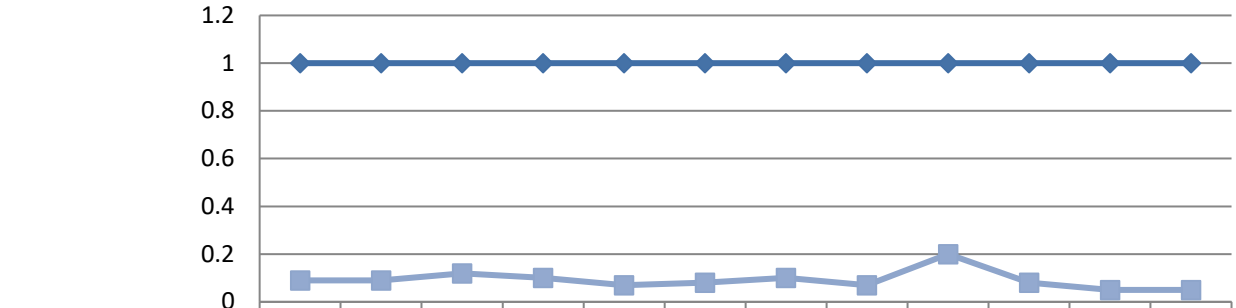
### 6.3.2 *Loading (kg/d)*




| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Average (kg/d) | 2.35 | 4.68 | 1.68 | 5.26 | 3.03 | 1.46 | 4.29 | 0.96 | 1.57 | 0.69 | 0.83 | 1.03 |

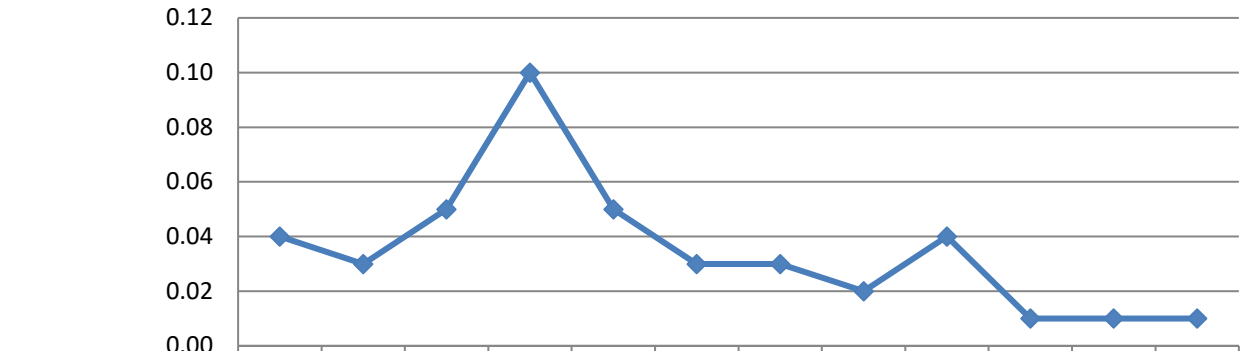
## 6.4 Total Phosphorus

### 6.4.1 *Concentration (mg/L)*




| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Guideline (mg/L) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Average (mg/L) | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 |

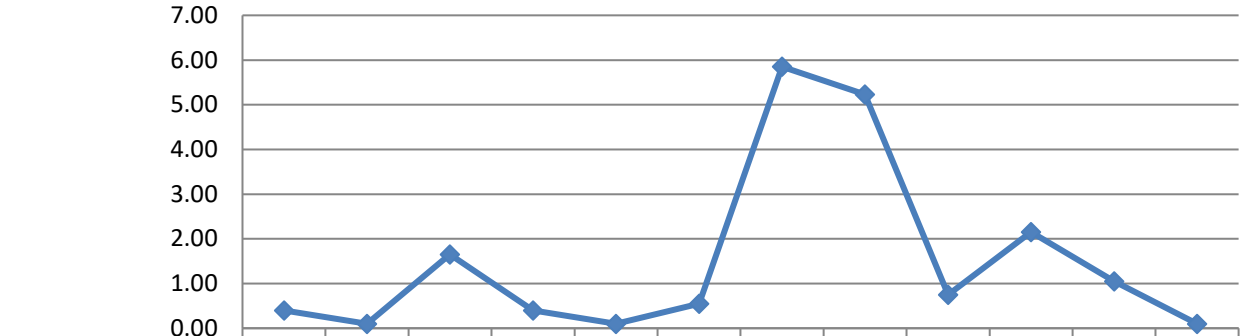
### 6.4.2 *Loading (kg/d)*




| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Average (kg/d) | 0.04 | 0.03 | 0.05 | 0.10 | 0.05 | 0.03 | 0.03 | 0.02 | 0.04 | 0.01 | 0.01 | 0.01 |

## 6.5 Total Ammonia Nitrogen

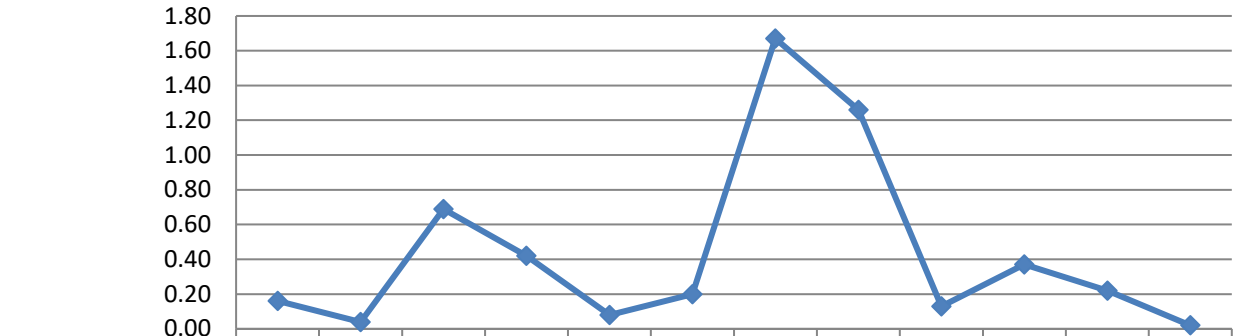
### *6.5.1 Concentration (mg/L)*




| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Average (mg/L) | 0.40 | 0.10 | 1.65 | 0.40 | 0.10 | 0.55 | 5.85 | 5.23 | 0.75 | 2.15 | 1.05 | 0.10 |

Note: There is no guideline limit on Total Ammonia Nitrogen

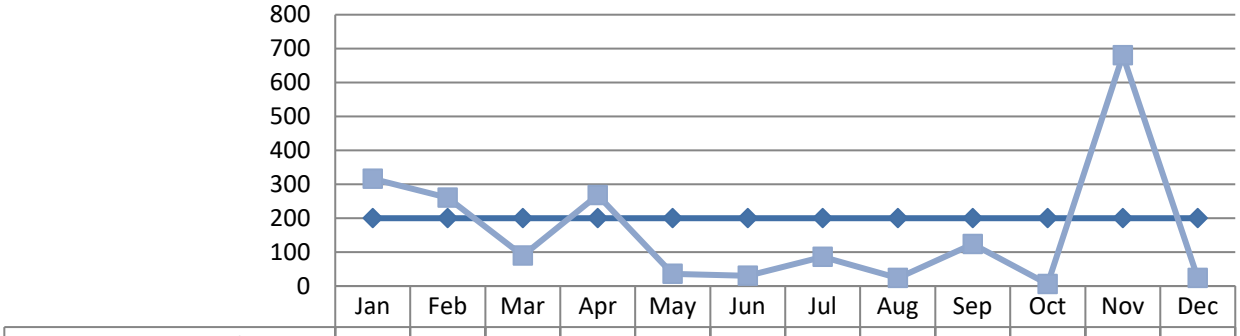
### *6.5.2 Loading (kg/d)*




| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Average (kg/d) | 0.16 | 0.04 | 0.69 | 0.42 | 0.08 | 0.20 | 1.67 | 1.26 | 0.13 | 0.37 | 0.22 | 0.02 |

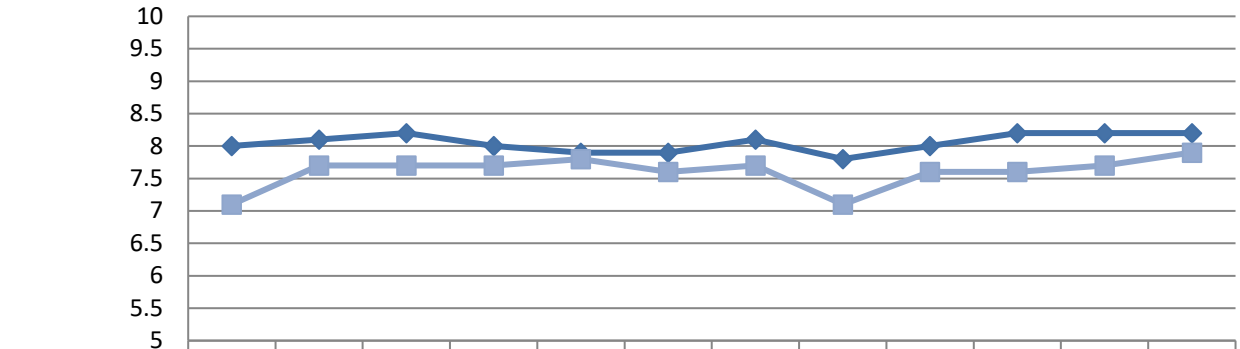
## 6.6 E-coli

### *6.6.1 Geometric Mean (CFU/100mL)*




| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Guideline (CFU/100 mL) | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| Average (CFU/100 mL) | 316 | 260 | 90 | 268 | 36 | 30 | 86 | 24 | 124 | 6 | 680 | 24 |

### 6.7 pH




| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum | 8 | 8.1 | 8.2 | 8 | 7.9 | 7.9 | 8.1 | 7.8 | 8 | 8.2 | 8.2 | 8.2 |
| Minimum | 7.1 | 7.7 | 7.7 | 7.7 | 7.8 | 7.6 | 7.7 | 7.1 | 7.6 | 7.6 | 7.7 | 7.9 |

# 7 Operating Issues/Problems

The Killaloe WPCP operated well during 2023, though there were several final effluent samples collected that lead to four exceedances of the Ministry's *E.Coli* monthly geometric mean density (GMD) guideline of 200 CFU/100 mL. Since the Killaloe WPCP Certificate of Approval does not have defined effluent limits, the GMD guideline exceedance is considered a non-conformance and is not reportable to the Ministry. Actions taken for the guideline exceedances are detailed below in section 8.1.

It should also be noted that the average daily flow for 2023 was 391 $m^3$/d, which represents 75% of the facility's 518 $m^3$/d rated capacity. The trend of increased flow from 2023 will be monitored in 2024.

## 7.1 Effluent Quality Non-Compliance Summary

The Killaloe WPCP Certificate of Approval does not have defined effluent limits, any provincial guideline parameter exceedance is considered a guideline non-conformance and is not reportable to the Ministry.

| Date | Exceedance of | Limit | Value | Corrective Action |
|---|---|---|---|---|
| January 2023 | Ministry's Guideline: F-5 Levels of Treatment for Municipal and Private Sewage Treatment Works Discharging to Surface Waters | E.Coli monthly geometric mean density (GMD) guideline of 200 CFU/100 mL | 316 CFU/100 mL | Increased chlorine feed rate to accommodate high flows, increased PAS-8 to promote sludge settling |
| February 2023 | Ministry's Guideline: F-5 Levels of Treatment for Municipal and Private Sewage Treatment Works Discharging to Surface Waters | E.Coli monthly geometric mean density (GMD) guideline of 200 CFU/100 mL | 260 CFU/100 mL | Increased chlorine feed rate to accommodate high flows, increased PAS-8 to promote sludge settling |

| Date | Exceedance of | Limit | Value | Corrective Action |
|---|---|---|---|---|
| April 2023 | Ministry's Guideline: F-5 Levels of Treatment for Municipal and Private Sewage Treatment Works Discharging to Surface Waters | E.Coli monthly geometric mean density (GMD) guideline of 200 CFU/100 mL | 268 CFU/100 mL | Increased chlorine feed rate to accommodate high flows, increased PAS-8 to promote sludge settling |
| November 2023 | Ministry's Guideline: F-5 Levels of Treatment for Municipal and Private Sewage Treatment Works Discharging to Surface Waters | E.Coli monthly geometric mean density (GMD) guideline of 200 CFU/100 mL | 680 CFU/100 mL | Sludge was hauled from storage tank to allow for additional wasting from clarifier |

### 7.2 Summary of Abnormal Sewage Discharge Events

Abnormal Discharge Events include Bypass', Overflows, Diversions and Spills of Sewage. Summary Details are included in Appendix B.

### 7.3 Spills (Other than Sewage)

| Date | Location | Details | Volume (m3) | Start Date and Time | End Date and Time |
|---|---|---|---|---|---|
| There were no spill events reported during the reporting period. | | | | | |

## 8 Maintenance

Routine planned maintenance activities are scheduled in WMS and include:

- Inspect, adjust and calibrate process control equipment to ensure proper operation of pumps, chemical feeders, and all other equipment installed at the facilities.
- Carry out a routine maintenance program including greasing and oiling as specified in the lubrication schedule.
- Perform day-to-day maintenance duties to equipment including checking machinery and electrical equipment when required.
- Maintain an equipment inventory
- Maintain accurate records of work conducted, activities, and achievements.

Planned maintenance activities are communicated to the person responsible for completing the task through the issuance of WMS work orders. Work orders are automatically generated on a schedule as determined based on manufacturer's recommendations and site specific operational and maintenance needs and are assigned directly to the appropriate operations personnel. This schedule is set up by the designated WMS Primary. Work orders are completed and electronically entered into WMS by the person responsible for completing the task. Unplanned maintenance is conducted as required.

### 8.1 Normal Maintenance and Repairs

| Work Order | Details |
|---|---|
| 3432016 | Inspected maintenance holes in entire collection system |
| 3432945 | Hauled biosolids offsite |

### 8.2 Emergency Maintenance and Repairs

| Work Order | Details |
|---|---|
| 3702961 | Replaced generator room exhaust fan motor |

### 8.3 Flow Meter Calibrations and Maintenance

| Location | Date of Calibration | Additional Maintenance |
|---|---|---|
| Influent Flow Meter | June 21, 2023 | N/A |
| Effluent Flow Meter | No effluent flow meter | N/A |
| Collection System Flow Meter | No collection system flow meter | N/A |

### 8.4 Authorized Alterations in Collection

| Work Order | Details | Significant Drinking Water Threat (Y/N) |
|---|---|---|
| There were no authorized alterations made to the collection system during the reporting period. | | |

### 8.5 Notice of Modifications

| Date | Process | Modification | Status |
|---|---|---|---|
| There were no modifications made to the treatment facility/collection system during the reporting period. | | | |

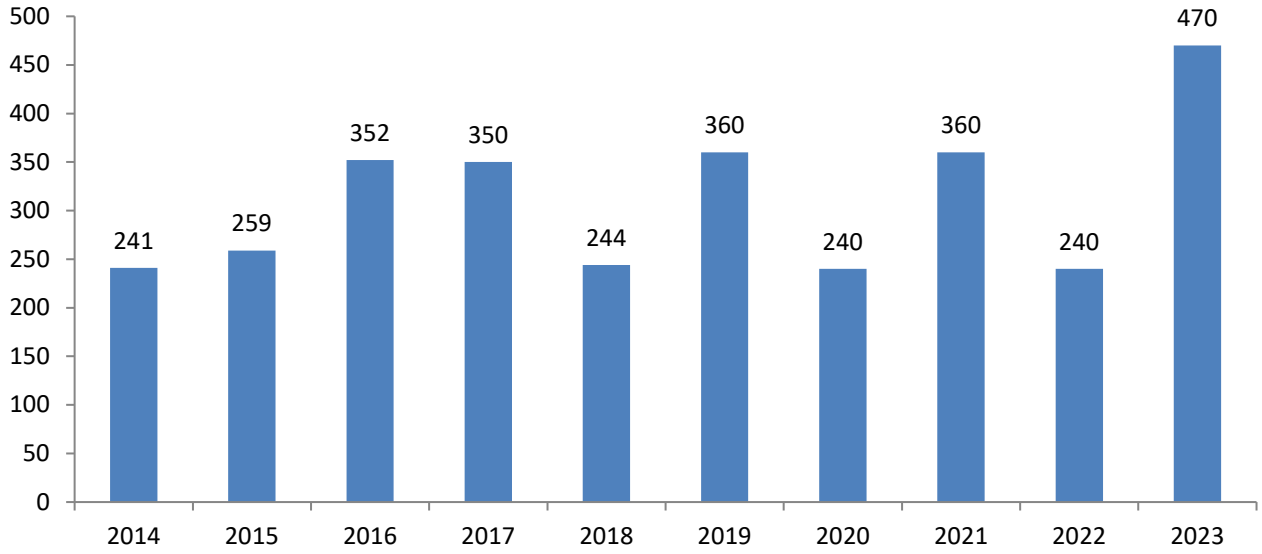
## 9 Sludge Generation

In 2023, a total of 480 $m^3$ of liquid biosolids was hauled offsite by GFL Environmental Inc. and utilized as soil conditioner or hauled to processing facility. It is anticipated that approximately the same volume of sludge will be generated in 2024.

### 9.1 Sludge Disposal Summary

| Date | Disposal Location | Approval Number | Total Volume ($m^3$) |
|---|---|---|---|
| June 9, 2023 | GFL Storage Facility | ECA# S-3708-42 | 120 |
| July 6, 2023 | GFL Storage Facility | ECA# S-3708-42 | 70 |
| September 21, 2023 | GFL Storage Facility | ECA# S-3708-42 | 40 |
| September 22, 2023 | GFL Storage Facility | ECA# S-3708-42 | 40 |
| October 20, 2023 | GFL Storage Facility | ECA# S-3708-42 | 40 |
| November 29, 2023 | Thompson, Brian - Home | NSAM #24243 | 40 |
| November 30, 2023 | Thompson, Brian - Home | NSAM #24243 | 120 |
| **Total Annual Volume ($m^3$)** | | | 470 |

### 9.2 Annual Comparison ($m^3$/year)




### 9.3 Quality

The biosolids sampling results are summarized in Appendix A. All results met the established guidelines.

## 10 Summary of Complaints

| Location | Date | Nature of Complaint | Actions Taken |
|---|---|---|---|
| 15123 Highway 60 | 10/13/2023 | Blocked Sewer | Checked sewer main above and below residence for flow, flow present, advise home owner to contact plumber |

# Appendix A

## Appendix A - Biosolids Quality Report

Ontario Clean Water Agency
Biosolids Quality Report - Liquid
Digestor Type: AEROBIC
**Solids and Nutrients**

Facility: KILLALOE WASTEWATER TREATMENT FACILITY
Works: 5539
Period: 01/01/2023 to 12/01/2023

Facility Works Number: *1.10001532E8*
Facility Name: *KILLALOE WASTEWATER TREATMENT FACILITY*
Facility Owner: *Municipality: Township of Killaloe, Hagarty & Richards*
Facility Classification: *Class 2 Wastewater Treatment*
Receiver: *Brennan Creek*
Service Population:
Total Design Capacity: *597.0 m3/day*
Period Being Reported: 01/01/2023 12/01/2023

Note: all parameters in this report will be derived from the Bslq Station

| Month | Total Sludge Hauled (m3) | Avg. Total Solids (mg/L) | Avg. Volatile Solids (mg/L) | Avg. Total Phosphorus (mg/L) | Ammonia (mg/L) | Nitrate (mg/L) | Nitrite (mg/L) | TKN (mg/L) | Ammonia + Nitrate (mg/L) | Potassium (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Site** | **KILLALOE WASTEWATER TREATMENT FACILITY** | | | | | | | | | |
| **Station** | **Bslq Station only** | | | | | | | | | |
| **Parameter Short Name** | **HauledVol** | **TS** | **VS** | **TP** | **NH3p_NH4p_N** | **NO3-N** | **NO2-N** | **TKN** | **calculation in report - no T/S** | **K** |
| **T/s** | **IH Month.Total** | **Lab Published Month Mean** | **Lab Published Month Mean** | **Lab Published Month Mean** | **Lab Published Month Mean** | **Lab Published Month Mean** | **Lab Published Month Mean** | **Lab Published Month Mean** | | **Lab Published Month Mean** |
| **Jan** | | 23,400.000 | 18,100.000 | 630.000 | 24.000 | 0.300 | 0.500 | 1,530.000 | 12.150 | 140.000 |
| **Feb** | | 24,800.000 | 19,400.000 | 690.000 | 15.400 | 0.300 | 0.700 | 1,580.000 | 7.850 | 180.000 |
| **Mar** | | 26,500.000 | 21,900.000 | 810.000 | 29.800 | 0.300 | 0.700 | 1,690.000 | 15.050 | 190.000 |
| **Apr** | | 25,400.000 | 20,400.000 | 654.000 | 32.500 | 0.300 | 0.200 | 1,480.000 | 16.400 | 163.000 |
| **May** | | 31,300.000 | 25,500.000 | 820.000 | 13.300 | 0.300 | 0.200 | 2,070.000 | 6.800 | 180.000 |
| **Jun** | 120.000 | 28,400.000 | 22,300.000 | 920.000 | 40.800 | 3.000 | 3.000 | 1,770.000 | 21.900 | 202.000 |
| **Jul** | 70.000 | 29,100.000 | 23,100.000 | 719.000 | 42.800 | 3.000 | 3.000 | 1,820.000 | 22.900 | 173.000 |
| **Aug** | | 28,750.000 | 23,100.000 | 832.000 | 26.700 | 3.000 | 3.000 | 1,880.000 | 14.850 | 208.000 |
| **Sep** | 80.000 | 22,800.000 | 17,500.000 | 648.000 | 14.800 | 3.000 | 3.000 | 1,660.000 | 8.900 | 179.000 |
| **Oct** | 40.000 | 21,800.000 | 16,800.000 | 618.000 | 9.400 | 3.000 | 3.000 | 1,360.000 | 6.200 | 161.000 |
| **Nov** | 160.000 | 16,800.000 | 13,400.000 | 533.000 | 157.000 | 3.000 | 3.000 | 938.000 | 80.000 | 161.000 |
| **Dec** | | 18,800.000 | 14,700.000 | 536.000 | 4.700 | 3.000 | 3.000 | 1,160.000 | 3.850 | 168.000 |
| | | | | | | | | | | |
| **Average** | 94.000 | 24,820.833 | 19,683.333 | 700.833 | 34.267 | 1.875 | 1.942 | 1,578.167 | 18.071 | 175.417 |
| **Total** | 470.000 | 297,850.000 | 236,200.000 | 8,410.000 | 411.200 | 22.500 | 23.300 | 18,938.000 | 216.850 | 2,105.000 |
| | | | | | | | | | | |

Ontario Clean Water Agency
Biosolids Quality Report - Liquid
Digestor Type: AEROBIC
**Metals and Criteria**

Facility: KILLALOE WASTEWATER TREATMENT FACILITY
Works: 5539
Period: 01/01/2023 to 12/01/2023

Note: all parameters in this report will be derived from the Bslq Station

| Month | Arsenic (mg/L) | Cadmium (mg/L) | Cobalt (mg/L) | Chromium (mg/L) | Copper (mg/L) | Mercury (mg/L) | Molybdenum (mg/L) | Nickel (mg/L) | Lead (mg/L) | Selenium (mg/L) | Zinc (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Site** | **KILLALOE WASTEWATER TREATMENT FACILITY** | | | | | | | | | | |
| **Station** | **Bslq Station only** | | | | | | | | | | |
| **Parameter Short Name** | **As** | **Cd** | **Co** | **Cr** | **Cu** | **Hg** | **Mo** | **Ni** | **Pb** | **Se** | **Zn** |
| **T/s** | **Lab Published Month Mean** | **Lab Published Month Mean** | **Lab Published Month Mean** | **Lab Published Month Mean** | **Lab Published Month Mean** | **Lab Published Month Mean** | **Lab Published Month Mean** | **Lab Published Month Mean** | **Lab Published Month Mean** | **Lab Published Month Mean** | **Lab Published Month Mean** |
| Jan | 0.100 | 0.024 | 0.050 | 0.240 | 30.000 | 0.008 | 0.150 | 0.320 | 0.400 | 0.100 | 18.000 |
| Feb | 0.100 | 0.022 | 0.050 | 0.250 | 29.000 | 0.010 | 0.150 | 0.310 | 0.400 | 0.100 | 13.000 |
| Mar | 0.100 | 0.024 | 0.060 | 0.300 | 36.000 | 0.008 | 0.160 | 0.410 | 0.300 | 0.100 | 16.000 |
| Apr | 0.100 | 0.024 | 0.050 | 0.250 | 28.000 | 0.008 | 0.150 | 0.350 | 0.300 | 0.100 | 14.000 |
| May | 0.100 | 0.029 | 0.050 | 0.290 | 30.000 | 0.006 | 0.170 | 0.440 | 0.400 | 0.100 | 15.000 |
| Jun | 0.100 | 0.030 | 0.060 | 0.340 | 34.000 | 0.006 | 0.200 | 0.490 | 0.400 | 0.100 | 17.000 |
| Jul | 0.100 | 0.024 | 0.050 | 0.300 | 27.000 | 0.005 | 0.150 | 0.400 | 0.400 | 0.100 | 14.000 |
| Aug | 0.100 | 0.026 | 0.050 | 0.310 | 32.000 | 0.010 | 0.170 | 0.440 | 0.400 | 0.100 | 17.000 |
| Sep | 0.100 | 0.028 | 0.040 | 0.280 | 27.000 | 0.008 | 0.130 | 0.360 | 0.400 | 0.100 | 14.000 |
| Oct | 0.100 | 0.022 | 0.040 | 0.200 | 22.000 | 0.005 | 0.100 | 0.300 | 0.300 | 0.100 | 11.000 |
| Nov | 0.100 | 0.022 | 0.040 | 0.190 | 21.000 | 0.006 | 0.110 | 0.300 | 0.300 | 0.100 | 10.000 |
| Dec | 0.100 | 0.022 | 0.030 | 0.190 | 23.000 | 0.003 | 0.110 | 0.270 | 0.300 | 0.100 | 11.000 |
| | | | | | | | | | | | |
| Average | 0.100 | 0.025 | 0.048 | 0.262 | 28.250 | 0.007 | 0.146 | 0.366 | 0.358 | 0.100 | 14.167 |
| Max. Permissible Metal Concentrations (mg/kg of | 170.000 | 34.000 | 340.000 | 2,800.000 | 1,700.000 | 11.000 | 94.000 | 420.000 | 1,100.000 | 34.000 | 4,200.000 |
| Metal Concentrations in Sludge (mg/kg) | 4.029 | 0.997 | 1.914 | 10.542 | 1,138.157 | 0.279 | 5.875 | 14.739 | 14.437 | 4.029 | 570.757 |
| | | | | | | | | | | | |

Ontario Clean Water Agency
Biosolids Quality Report - Liquid - Based on Last 4 Samples
Digestor Type: AEROBIC

Facility: KILLALOE WASTEWATER TREATMENT FACILITY
Works: 5539
Period: 01/01/2023 to 12/01/2023

Note: all parameters in this report will be derived from the Bslq Station

| Parameter Short Name | Time Series | 09/12/2023 | 10/11/2023 | 11/07/2023 | 12/05/2023 | Average | Metal Concentrations in Sludge (mg/kg): | Max. Permissible Metal Concentrations (mg/kg of Solids): |
|---|---|---|---|---|---|---|---|---|
| As (mg/L) | Lab Published | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 4.988 | 170 |
| Cd (mg/L) | Lab Published | 0.028 | 0.022 | 0.022 | 0.022 | 0.024 | 1.197 | 34 |
| Co (mg/L) | Lab Published | 0.040 | 0.040 | 0.040 | 0.030 | 0.037 | 1.845 | 340 |
| Cr (mg/L) | Lab Published | 0.280 | 0.200 | 0.190 | 0.190 | 0.215 | 10.723 | 2800 |
| Cu (mg/L) | Lab Published | 27.000 | 22.000 | 21.000 | 23.000 | 23.250 | 1,159.601 | 1700 |
| Hg (mg/L) | Lab Published | 0.008 | 0.005 | 0.006 | 0.003 | 0.006 | 0.299 | 11 |
| Mo (mg/L) | Lab Published | 0.130 | 0.100 | 0.110 | 0.110 | 0.113 | 5.636 | 94 |
| Ni (mg/L) | Lab Published | 0.360 | 0.300 | 0.300 | 0.270 | 0.308 | 15.362 | 420 |
| Pb (mg/L) | Lab Published | 0.400 | 0.300 | 0.300 | 0.300 | 0.325 | 16.209 | 1100 |
| Se (mg/L) | Lab Published | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 4.988 | 34 |
| Zn (mg/L) | Lab Published | 14.000 | 11.000 | 10.000 | 11.000 | 11.500 | 573.566 | 4200 |
| E. Coli: Dry Wt (cfu/g) | Lab Published | 578,947.000 | 2,568,807.000 | 470,238.000 | 1,808,511.000 | 1,060,479.530 | E.Coli average is the GMD | |
| TS (mg/L) | Lab Published | 22,800.000 | 21,800.000 | 16,800.000 | 18,800.000 | 20,050.000 | | |
| VS (mg/L) | Lab Published | 17,500.000 | 16,800.000 | 13,400.000 | 14,700.000 | 15,600.000 | | |
| TP (mg/L) | Lab Published | 648.000 | 618.000 | 533.000 | 536.000 | 583.750 | | |
| NO2-N (mg/L) | Lab Published | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | | |
| TKN (mg/L) | Lab Published | 1,660.000 | 1,360.000 | 938.000 | 1,160.000 | 1,279.500 | | |
| K (mg/L) | Lab Published | 179.000 | 161.000 | 161.000 | 168.000 | 167.250 | | |
| NH3p_NH4p_N (mg/L) | Lab Published | 14.800 | 9.400 | 157.000 | 4.700 | 46.475 | | |
| NO3-N (mg/L) | Lab Published | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | | |

# Appendix B

## Appendix B - Details of Abnormal Sewage Discharge Events

## Event Details Summary

*Facility Bypass*

| Date | Location | Details | Volume (m3) | Start Time | End Time | Duration (h) | Discharge Receiver | Disinfection Provided |
|---|---|---|---|---|---|---|---|---|
| There were no bypass events reported during the reporting period. | | | | | | | | |

*Facility Overflow*

| Date | Location | Details | Volume (m3) | Start Time | End Time | Duration (h) | Discharge Receiver | Disinfection Provided |
|---|---|---|---|---|---|---|---|---|
| There were no overflow events reported during the reporting period. | | | | | | | | |

*Collection Overflow*

There are no authorized overflow locations in this system.

*Spills of Sewage*

| Date | Location | Details | Volume (m3) | Start Time | End Time | Duration (h) | Discharge Receiver | Disinfection Provided |
|---|---|---|---|---|---|---|---|---|
| There were no Spill events reported during the reporting period. | | | | | | | | |

## Collection System Monitoring Data

| Event Date | Event Location | Volume (m3) | Parameter | mg/L | Source Loading | Any Adverse Impacts & Corrective Actions |
|---|---|---|---|---|---|---|
| There were no overflow or spill of sewage events in the Collection System reported during the reporting period. | | | BOD | | | |
| | | | Total Suspended Solids | | | |
| | | | Total Phosphorus | | | |
| | | | Total Kjeldahl Nitrogen (TKN) | | | |
| | | | E.Coli | | | |

# Appendix C

## Appendix C - ECA Annual Report Requirements

| Facility ECA #1-575-78-005 | Section in Report |
|---|---|
| The Certificate of Approval governing this facility does not require an annual report to be prepared, or define effluent objectives and limits. | N/A |
| **Collection ECA #259-W601<br>Schedule E** | |
| 4.6.3 If applicable, includes a summary of all required monitoring data along with an interpretation of the data and any conclusion drawn from the data evaluation about the need for future modifications to the Authorized System or system operations. | Operating Issues and Problems |
| 4.6.4 Includes a summary of any operating problems encountered and corrective actions taken. | Operating Issues and Problems |
| 4.6.5 Includes a summary of all calibration, maintenance, and repairs carried out on any major structure, Equipment, apparatus, mechanism, or thing forming part of the Municipal Sewage Collection System. | Maintenance |
| 4.6.6 Includes a summary of any complaints related to the Sewage Works received during the reporting period and any steps taken to address the complaints. | Summary of Complaints |
| 4.6.7 Includes a summary of all Alterations to the Authorized System within the reporting period that are authorized by this Approval including a list of Alterations that pose a Significant Drinking Water Threat. | Maintenance |
| 4.6.8 Includes a summary of all Collection System Overflow(s) and Spill(s) of Sewage, including:<br>a) Dates;<br>b) Volumes and durations;<br>c) If applicable, loadings for total suspended solids, BOD, total phosphorus, and total Kjeldahl nitrogen, and sampling results for E.coli;<br>d) Disinfection, if any; and<br>e) Any adverse impact(s) and any corrective actions, if applicable. | Operating Issues and Problems<br>Appendix C |
| 4.6.9 Includes a summary of efforts made to reduce Collection System Overflows, Spills, STP Overflows, and/or STP Bypasses, including the following items, as applicable:<br>a) A description of projects undertaken and completed in the Authorized System that result in overall overflow reduction or elimination including expenditures and proposed projects to eliminate overflows with estimated budget forecast for the year following that for which the report is submitted.<br>b) Details of the establishment and maintenance of a PPCP, including a summary of project progresses compared to the PPCP's timelines.<br>c) An assessment of the effectiveness of each action taken.<br>d) An assessment of the ability to meet Procedure F-5-1 or Procedure F-5-5 objectives (as applicable) and if able to meet the objectives, an overview of next steps and estimated timelines to meet the objectives.<br>e) Public reporting approach including proactive efforts. | Maintenance<br>Operating Issues and Problems |