Killaloe Wastewater System

Annual Report

Prepared For: The Township of Killaloe, Hagarty and Richards

Reporting Period of January 1st – December 31st 2020

Issued: March 19th, 2021

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. There is no Certificate of Approval governing this facility to provide an annual report and it is thereby operated based solely on guidelines.

Table of Contents

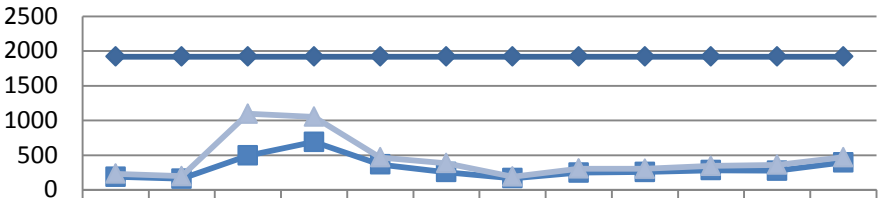
Operations and Compliance Reliability Indices

Compliance Event	# of Events	Details
Ministry of Environment Inspections	0	Last inspection completed October 8, 2014. Report received November 25, 2014.
Ministry of Labour Inspections	0	There were Ministry of Labour inspections in 2020.
Effluent Parameter Exceedances	1	E.coli Exceedance in March of 2020. See details in the Effluent Quality section of this report
Bypass/Overflows	0	There were no bypass or overflow events in 2020.
Community Complaints	0	There were no community complaints in 2020.
Spills	0	There were no spills to report in 2020.

Treatment Flows

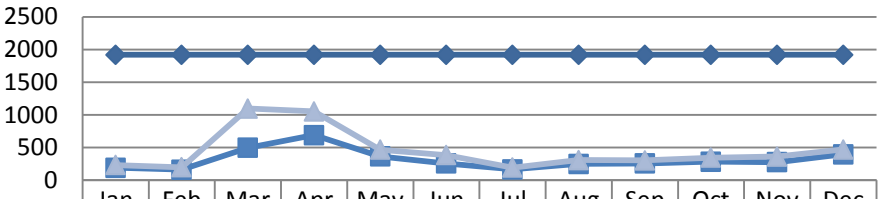
The Killaloe wastewater treatment facility is operating on average under half of its rated capacity.

Raw Flow (m3/d)



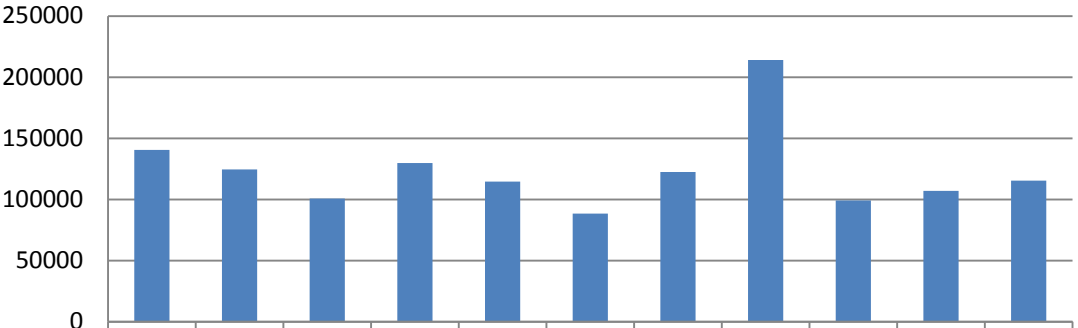
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Limit	1918	1918	1918	1918	1918	1918	1918	1918	1918	1918	1918	1918
Average Daily Flow (m3/d)	190	162	495	690	365	256	167	249	258	283	276	395
Maximum Daily Flow (m3\d)	233	198	1,096.	1,052.	468	385	192	307	304	346	362	469

Effluent Flow (m3/d)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Limit	1918	1918	1918	1918	1918	1918	1918	1918	1918	1918	1918	1918
Average Daily Flow (m3/d)	190	162	495	690	365	256	167	249	258	283	276	395
Maximum Daily Flow (m3\d)	233	198	1,096.	1,052.	468	385	192	307	304	346	362	469

Annual Comparison (m3)



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total Annual Flow	140401	124631	100748	129853	114491	88454	122448	213981	99094	106910	115255

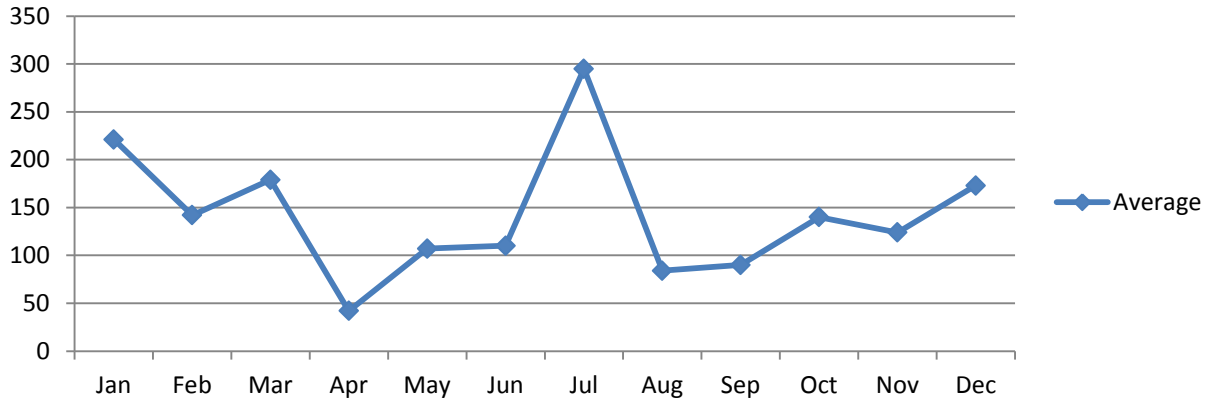
Effluent Quality Assurance or Control Measures

Effluent control measures include in-house sampling and testing for operational parameters such as suspended solids, pH, soluble phosphorus, and dissolved oxygen. In-house testing provides real time results which are then used to enhance process and operational performance. All in-house sampling and analysis is performed by certified operations staff utilizing 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*.

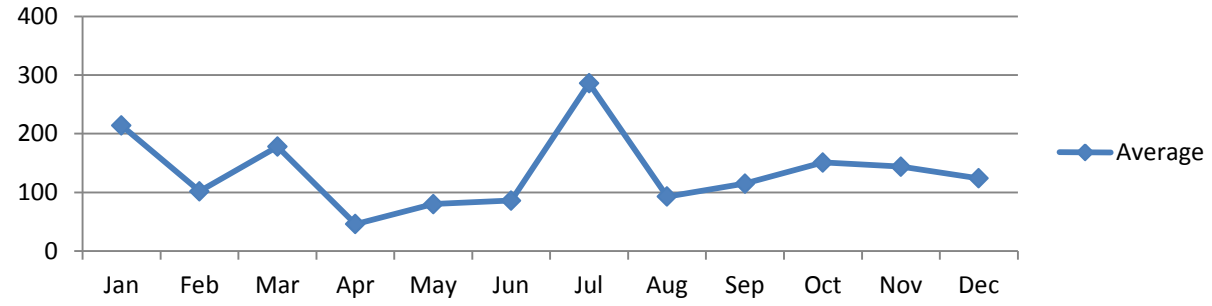
All final effluent samples collected during the reporting period to meet ECA sampling requirements were submitted to SGS Lakefield Research Ltd. laboratory for analysis, with the exception of pH, temperature, and unionized ammonia. SGS Lakefield Research has been deemed accredited by the Canadian Association 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 pH and temperature parameters were analyzed in the field at the time of sample collection by certified operators, to ensure accuracy and precision of the results obtained. The unionized ammonia was calculated using the total ammonia nitrogen concentration, pH and temperature as required by the facility Certificate of Approval.

Raw Sewage Quality

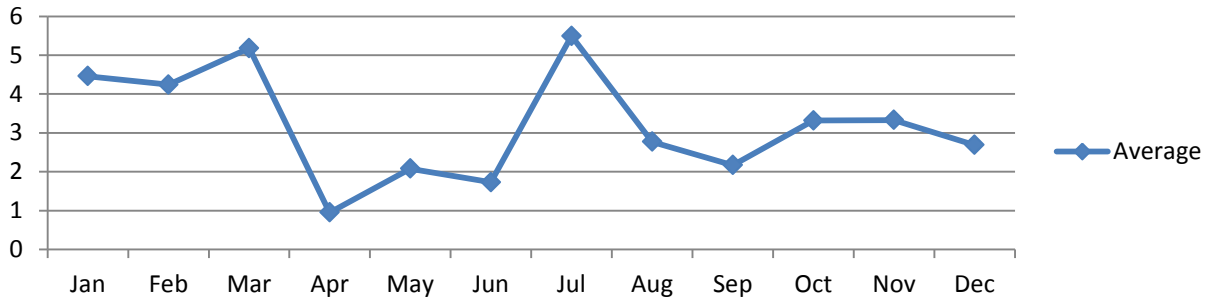
BOD5



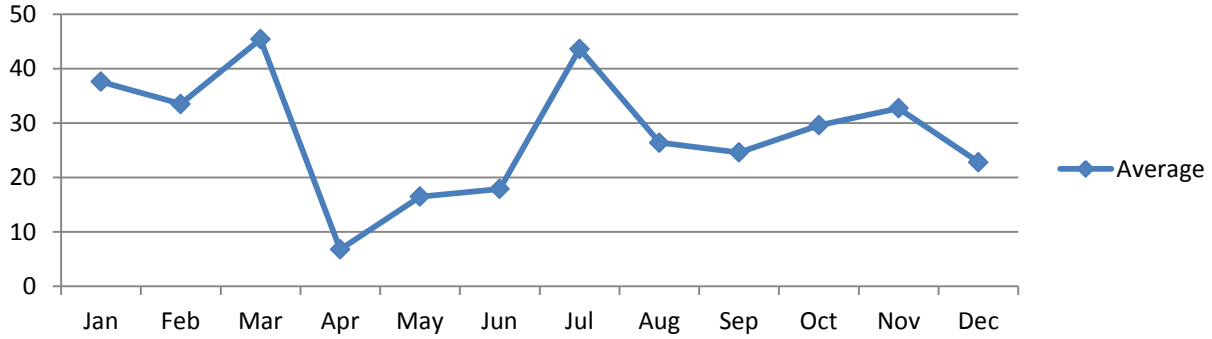
Total Suspended Solids



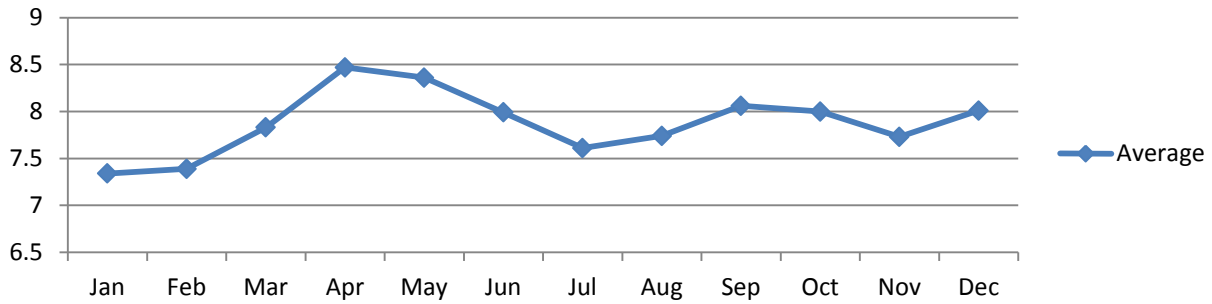
Total Phosphorus



Total Ammonia Nitrogen



pH

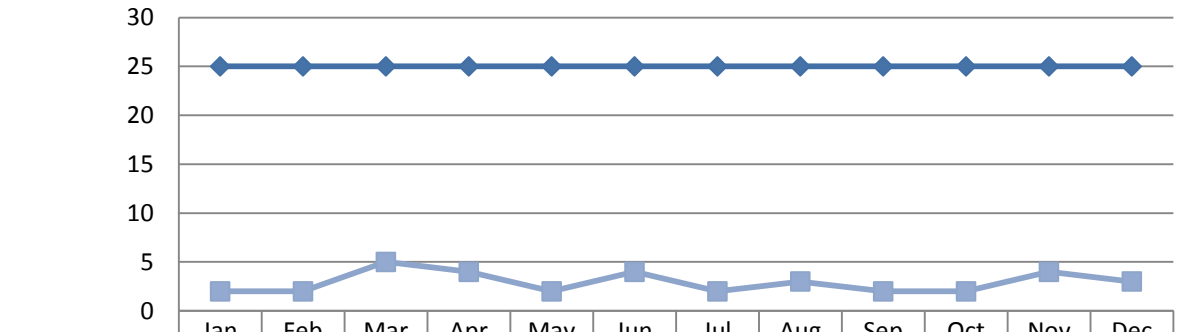


Effluent Quality

There are no effluent limits defined in the certificate of approval or Environmental Compliance Approval for this facility. This facility operates to ensure current guidelines are not exceeded.
The Federal Government also regulates certain sewage effluent parameter under the Federal Fisheries Act. The results are submitted to Environment Canada (WESR) on a quarterly basis.

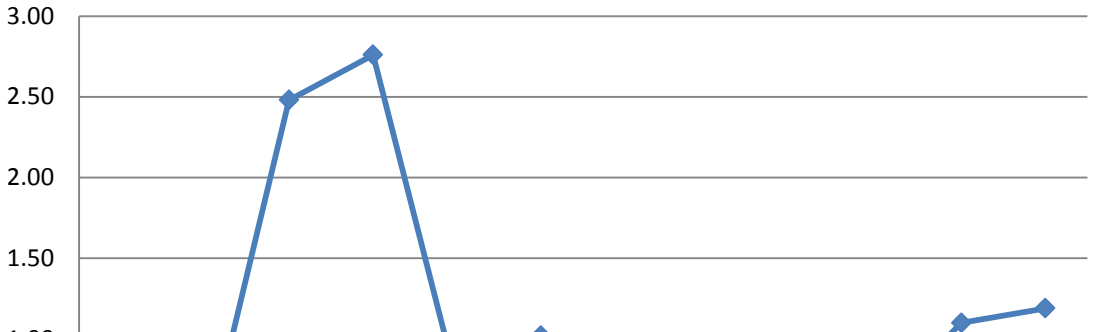
CBOD5

Concentration (mg/L)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ECA Limit	25	25	25	25	25	25	25	25	25	25	25	25
Average	2	2	5	4	2	4	2	3	2	2	4	3

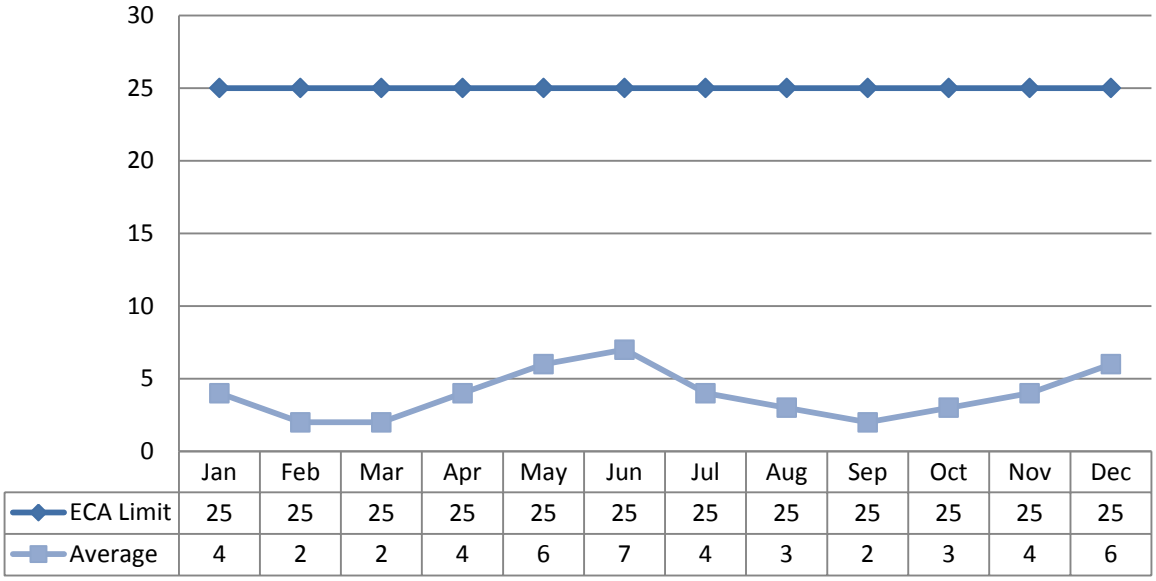
Loading (kg/d)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average	0.38	0.32	2.48	2.76	0.73	1.02	0.33	0.75	0.52	0.57	1.10	1.19

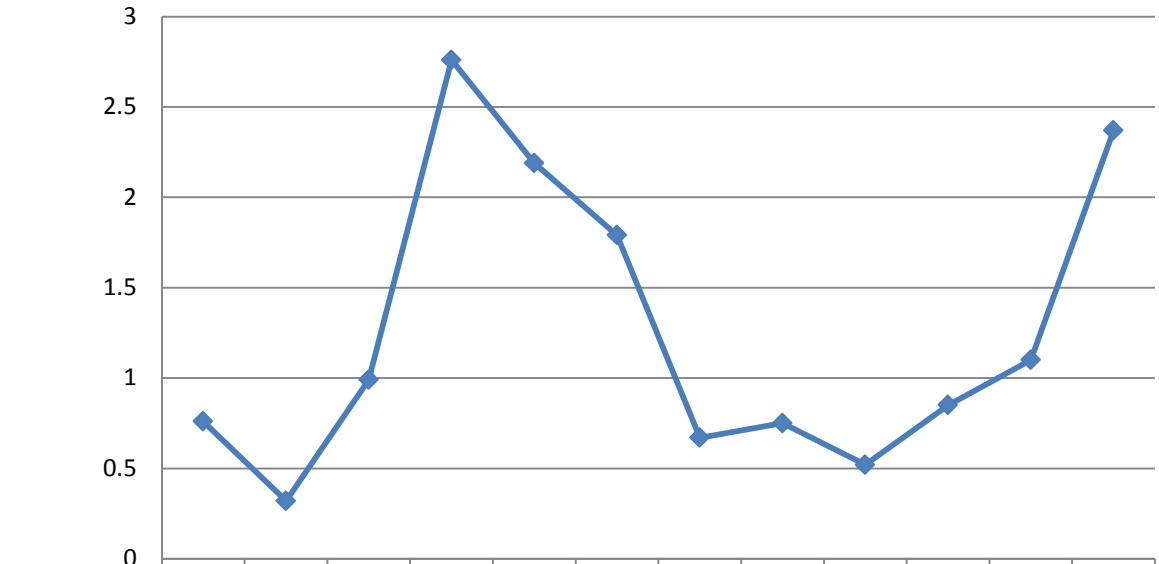
Total Suspended Solids

Concentration (mg/L)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ECA Limit	25	25	25	25	25	25	25	25	25	25	25	25
Average	4	2	2	4	6	7	4	3	2	3	4	6

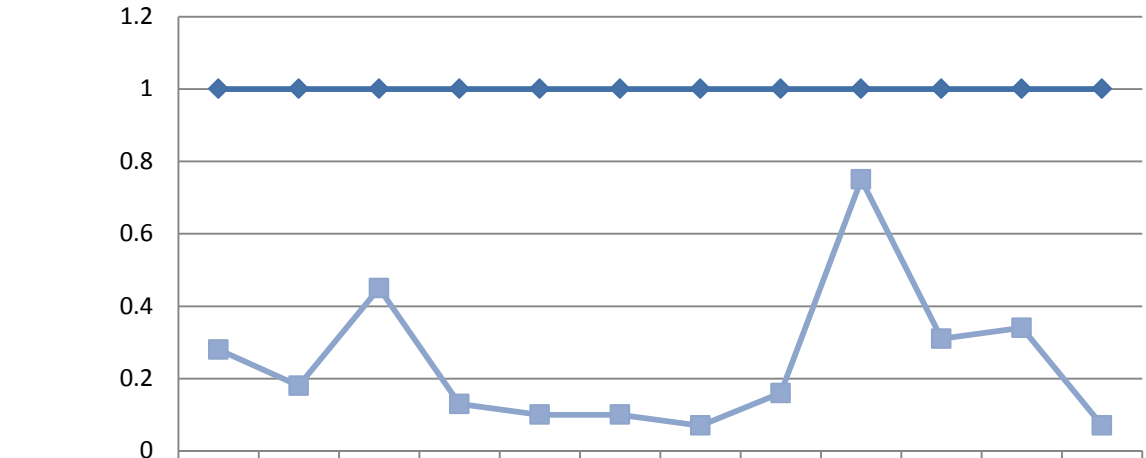
Loading (kg/d)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average	0.76	0.32	0.99	2.76	2.19	1.79	0.67	0.75	0.52	0.85	1.1	2.37

Total Phosphorus

Concentration (mg/L)



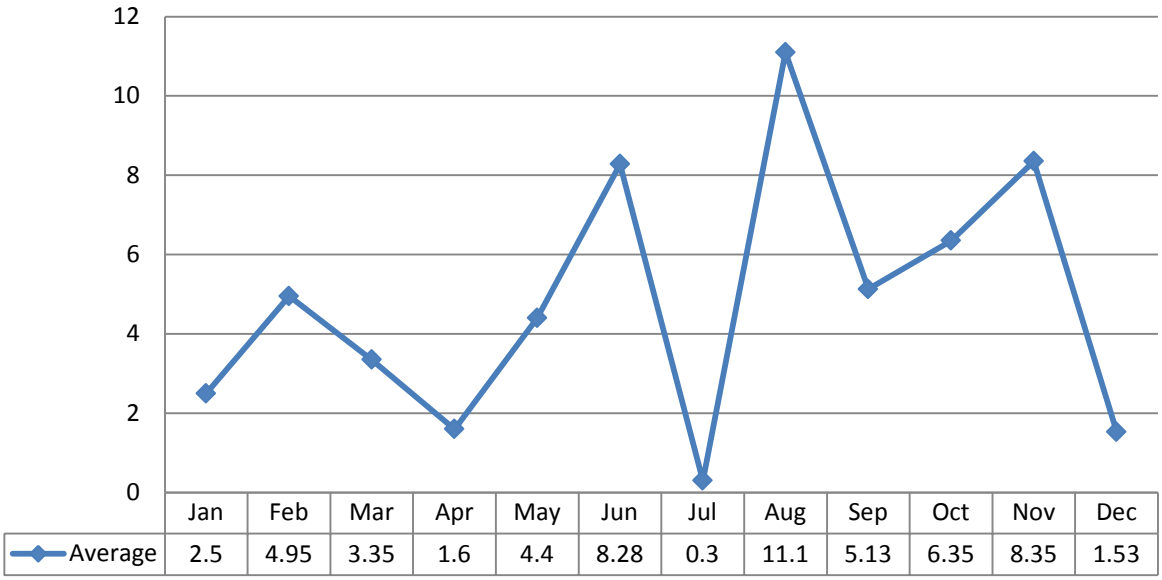
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ECA Limit	1	1	1	1	1	1	1	1	1	1	1	1
Average	0.28	0.18	0.45	0.13	0.10	0.10	0.07	0.16	0.75	0.31	0.34	0.07

Loading (kg/d)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average	0.05	0.03	0.22	0.09	0.04	0.03	0.01	0.04	0.19	0.09	0.1	0.03

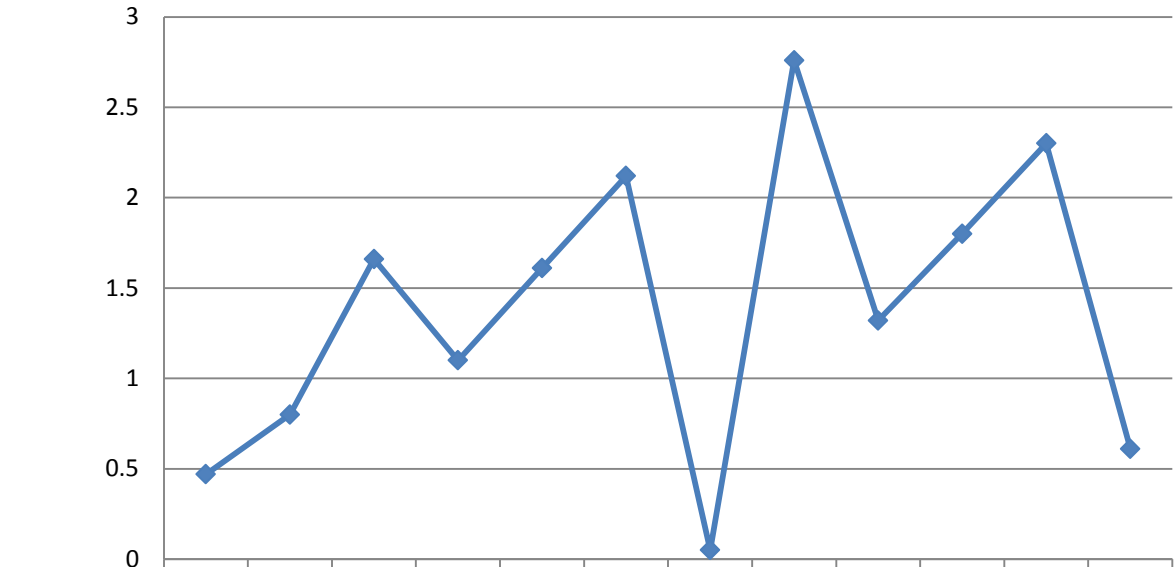
Total Ammonia Nitrogen

Concentration (mg/L)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average	2.5	4.95	3.35	1.6	4.4	8.28	0.3	11.1	5.13	6.35	8.35	1.53

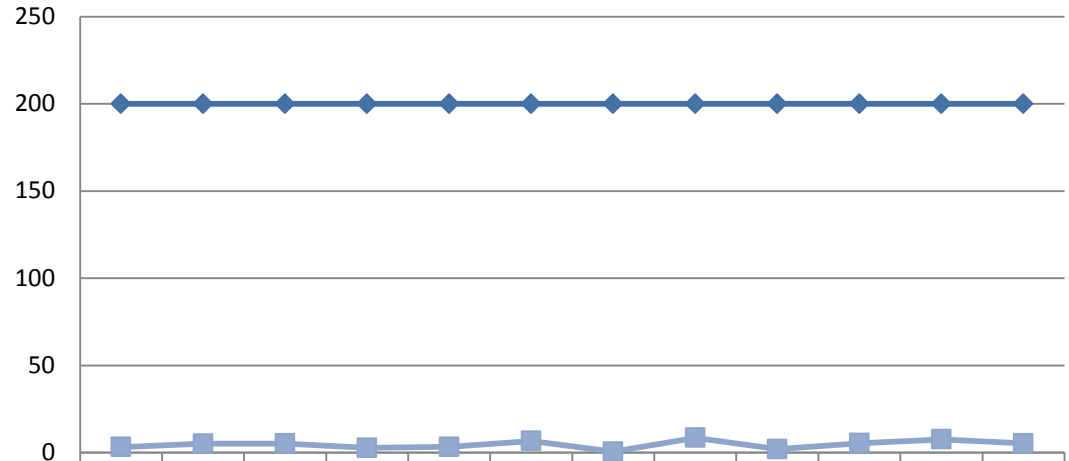
Loading (kg/d)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average	0.47	0.8	1.66	1.1	1.61	2.12	0.05	2.76	1.32	1.8	2.3	0.61

TKN

Concentration (mg/L)



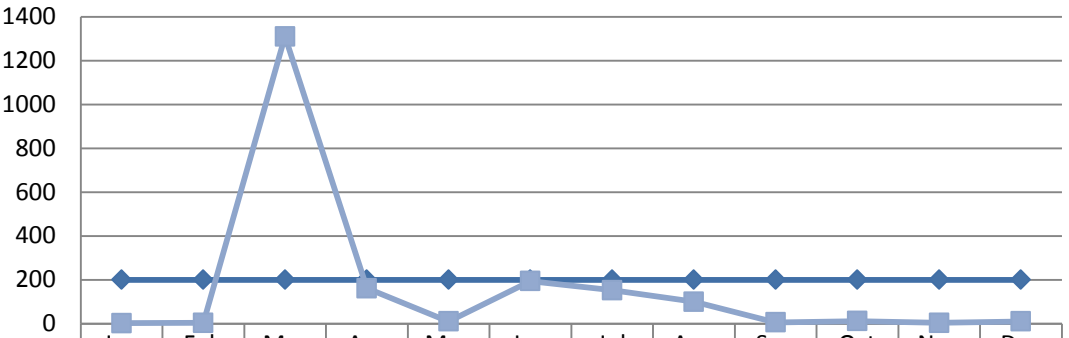
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ECA Limit	200	200	200	200	200	200	200	200	200	200	200	200
Average	3.2	5.1	5.2	2.7	3.3	6.7	0.5	8.5	2	5.4	7.6	5.3

E-coli

Compliance

Date	Exceedance of	Limit	Value	Corrective Action
March 2020	ECA limit	200 cfu/100mL	1310 cfu/100mL	• Increased sludge wasting rates • Lower the sludge level in the clarifier

Geometric Mean (cfu/100mL)

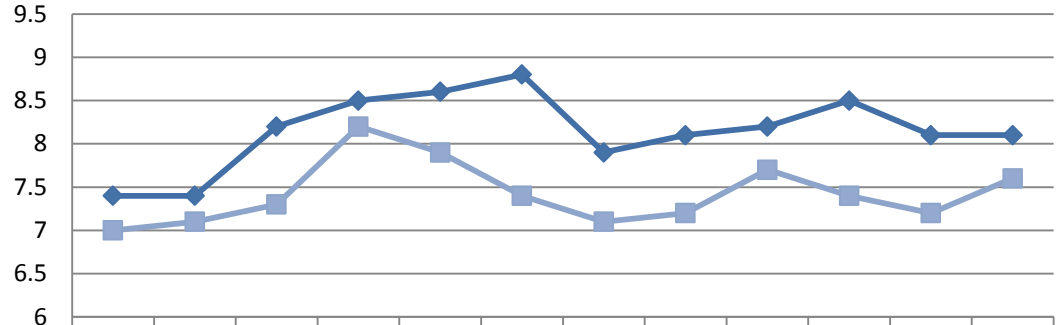


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ECA Limit	200	200	200	200	200	200	200	200	200	200	200	200
Average	2	4	1310	161	10	194	153	100	6	12	4	10

pH

Compliance

pH is to remain in the range of 6-9. Each instance the pH is outside of that range is reported as a non-compliance.



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Maximum	7.4	7.4	8.2	8.5	8.6	8.8	7.9	8.1	8.2	8.5	8.1	8.1
Minimum	7	7.1	7.3	8.2	7.9	7.4	7.1	7.2	7.7	7.4	7.2	7.6

Maintenance

OCWA uses a risk-based preventative maintenance framework that ensures assets are maintained to manufacturer's and/or industry standards. Maintenance is completed using various tools and operational supports. The Eastern Regional Hub has specialized certified staff such as Millwrights, Electricians and Instrumentation Specialists to name a few.

OCWA uses a Workplace Maintenance System (WMS). WMS is a maintenance tracking system that can generate work orders as well as give summaries of completed and scheduled work. During the year, the operating authority at the facility generates scheduled work orders on a weekly, monthly and annual basis. The service work is recorded in the work order history. This ensures routine and preventive maintenance is carried out. Emergency and capital repair maintenance is completed and added to the system.

Capital projects are listed and provided to the Township of Killaloe, Hagarty and Richards in the form of a "Capital Forecast". This list is developed by facility staff and provides recommendations for facility components requiring upgrading or improvement.

Preventative Maintenance Work Orders Completed	114
Operational Maintenance Work Orders Completed	60
Corrective Maintenance Work Orders Completed	2

Maintenance Highlights

WO#	Details
2000355	Gate valve/aeration tank repair and clean.
2037989	Clarifier Cover Repairs
1835994	New suction hose purchased
1955296	Genset battery replacement

Flow Meter Calibrations and Maintenance

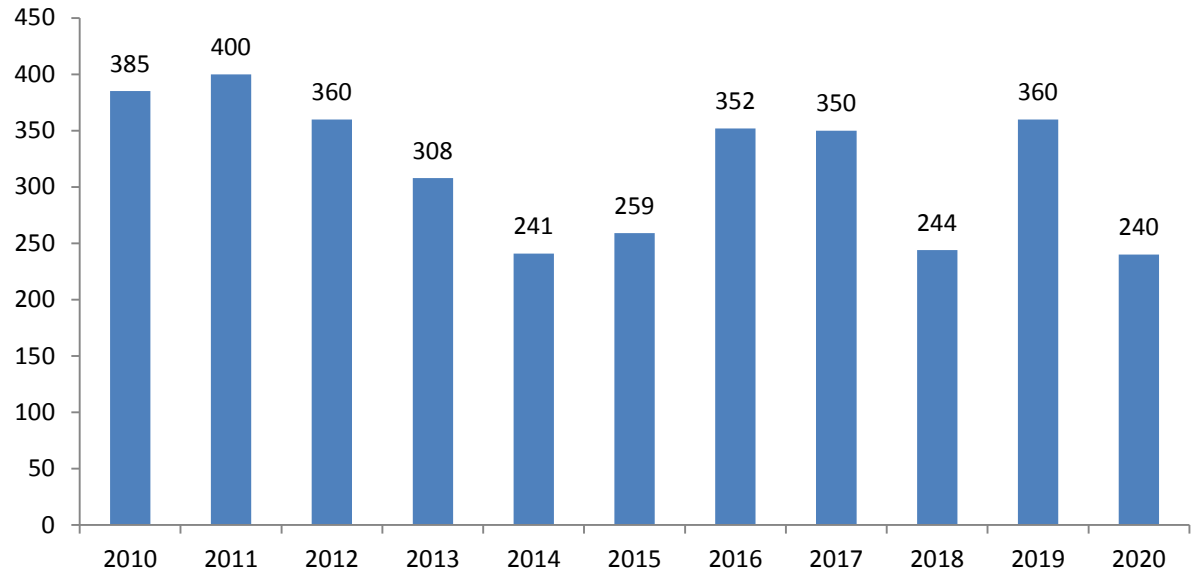
Calibration of the effluent flow meter was completed May 12th, 2020.

Sludge Generation

Sludge Disposal Summary

Date	Disposal Location	Approval Number	Total Volume (m3)
June 30	Stockdale, Cam – Home	24026	80
Aug 13	Terrapure Storage Facility	ECA # S-3708-42	40
Oct 15	Terrapure Storage Facility	ECA # S-3708-42	120

Annual Comparison (m3/year)



It is anticipated that sludge volumes in 2020 will remain similar to the 2020 volumes.

Summary of Abnormal Discharge Events

Bypass/Overflow

There were no bypass/overflow events reported in 2020.

Spills

There were no spills or abnormal discharges from this system in 2020.

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: 01/01/2020 to 12/01/2020
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: 01/01/2020 12/01/2020
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		25,400.000	19,700.000	800.000	12.600	0.300	0.400	1,690.000	6.450	210.000
Feb		26,700.000	22,100.000	920.000	7.700	0.300	0.200	1,970.000	4.000	240.000
Mar		31,600.000	24,800.000	1,200.000	15.800	0.300	0.200	2,160.000	8.050	330.000
Apr		32,600.000	26,100.000	1,200.000	38.000	0.300	0.200	2,270.000	19.150	280.000
May		39,700.000	32,500.000	1,400.000	33.800	0.300	0.200	2,640.000	17.050	340.000
Jun		38,600.000	31,000.000	1,100.000	29.800	0.300	1.400	2,620.000	15.050	280.000
Jul		39,100.000	31,300.000	1,300.000	40.900	0.300	0.200	2,960.000	20.600	370.000
Aug	40.000	26,550.000	20,700.000	940.000	21.750	0.300	0.200	1,560.000	11.025	255.000
Sep		22,800.000	17,300.000	800.000	35.900	0.300	0.200	1,880.000	18.100	220.000
Oct	120.000	23,400.000	17,400.000	900.000	328.000	0.300	0.200	1,940.000	164.150	250.000
Nov		24,700.000	18,700.000	830.000	171.000	0.400	0.600	1,720.000	85.700	250.000
Dec		26,100.000	19,600.000	770.000	6.700	1.600	0.500	1,230.000	4.150	210.000
Average	80.000	29,770.833	23,433.333	1,013.333	61.829	0.417	0.375	2,053.333	31.123	269.583
Total	160.000	357,250.000	281,200.000	12,160.000	741.950	5.000	4.500	24,640.000	373.475	3,235.000