THE CORPORATION OF THE MUNICIPALITY OF CHATHAM-KENT

CLEARVILLE PARK WASTEWATER TREATMENT PLANT

2019 PERFORMANCE REPORT

January 1 to December 31, 2019

Amended Certificate of Approval # 7957-762JAZ

Plant Description

The Clearville Park Wastewater Treatment Plant provides treatment of wastewater for Clearville Park. Wastewater is collected by a separate sanitary sewer system and conveyed to two Waterloo Bio-filter treatment units. The treated wastewater is subsequently discharged to Clear Creek.

During April 2005, the PUC was contracted by the Municipal Parks and Recreation Department to operate the plant.

This tertiary wastewater treatment system has a rated capacity of 30 m^3/ day, and services a seasonal campground.

The present treatment system consists of:

- Two septic tanks
- One bio-filter dosing tank and submersible pumps
- Two Waterloo Bio-filter treatment units
- UV disinfection

The effluent outfall pipe discharges to the Clear Creek.

REPORTING REQUIREMENTS
UNDER CERTIFICATE OF APPROVAL # 7957-762JAZ

Summary and Interpretation of Monitoring and Comparison to the Effluent Limits & Objectives: Condition 9 (2) (a) (b)

Tables 1 and 2 on the following pages outlines monthly average results of parameters tested compared to the limits outlined in the Certificate of Approval Tables 3 – Effluent Objectives and Table 2 - Effluent Limits.

The following criteria exceeded the effluent limits outlined in the Certificate of Approval Table 2 Effluent Limits:

Total Ammonia: May.
The Effluent Limit monthly average concentration for Total Ammonia is 5 mg/L. The monthly average Total Ammonia concentration for May was 6.92 mg/L. The plant experienced high influent sewage flows May 25 to 27 due to heavy rainfall. This resulted in an elevated total ammonia concentration on May 27 as well as for the monthly average.

The following criteria exceeded the effluent objectives outlined in the Certificate of Approval Table 3 Effluent Objectives:

Total Phosphorus concentration: August, September and October.

Total Ammonia concentration: May, June and July.

Continuing optimization of chemical feed was practiced throughout the year with the goal of achieving effluent objectives.

Success and Adequacy of the Works

During the reporting period, the annual average daily flow was 6.53 m^3/day, which represents approximately 22% of the rated capacity of 30 m^3/day. The maximum daily flow was 24.2 m^3/day, which is 81% of the rated capacity.

There were no flow exceedances based on the Average Daily Flow during this reporting period.

Overall, the Clearville Park Wastewater Treatment Plant performed well for this reporting period.

Table 1: Summary of Monitoring Data and Comparison to Effluent Limits & Objectives – Concentrations
as well as rated capacity to the sewage works

Plant Rated Capacity (m^3/day): 30
Total flow during calendar year divided by the number of days during which sewage was flowing (measured on the effluent pipe discharging to the outfall)

Month	Total Monthly Flow m^3	Avg Daily Flow /Month m^3/day	Avg Daily Flow /Year m^3/day	% of Plant Capacity	$CBOD_5$ mg/l	Total S.S. mg/l	Total Ammonia mg/l	Total P mg/l	pH	E.Coli /100ml CFU
Limits	**None**	**None**	**30**	**100**	**15**	**15**	**5.0**	**0.7**	**6.0 – 9.5**	**200**
Objectives	**None**	**None**	**30**	**100**	**10**	**10**	**3.0**	**0.3**	**6.0 – 9.5**	**100**
Jan										
Feb										
Mar										
Apr										
May	264.6	8.535			4.0	1.0	6.92	0.22	8.20	10
Jun	263.9	8.797			2.0	1.0	3.15	0.18	7.90	10
Jul	248.6	8.019			2.0	3.0	3.40	0.17	7.86	10
Aug	123.6	3.987			2.0	2.0	0.76	0.34	8.08	10
Sept	99.8	3.327			2.0	2.0	0.65	0.46	8.28	10
Oct	51.1	1.893			2.0	3.0	0.35	0.58	8.29	10
Nov										
Dec										
Year			6.532	22%						
	Yearly Total Flow m^3	**Yearly Maximums**								
	1051.6	8.797			4.0	3.0	6.92	0.58	8.29	10

Table 2: Summary of Monitoring Data and Comparison to Effluent Limits – Loadings

Date	Avg Daily Effluent Flow /Month m^3/day	$CBOD_5$ kg/day	Total S.S. kg/day	Total Ammonia kg/day	Total P kg/day
Limits	**30**	**0.45**	**0.45**	**0.15**	**0.021**
Jan					
Feb					
Mar					
Apr					
May	8.535	0.34	0.11	0.06	0.002
Jun	8.797	0.02	0.01	0.03	0.002
Jul	8.019	0.02	0.02	0.03	0.001
Aug	3.987	0.01	0.01	0.003	0.001
Sep	3.327	0.01	0.01	0.002	0.002
Oct	1.893	0.004	0.01	0.001	0.001
Nov					
Dec					
		Yearly Maximums			
		0.34	0.11	0.06	0.002

Summary of Maintenance Activities:
Condition 9 (2)(c)

Routine maintenance was performed throughout the reporting period. Chatham-Kent PUC utilises an electronic preventative maintenance program to track preventative maintenance. In addition to the routine maintenance, the following additional maintenance activities and equipment replacement was completed for the reporting period:

No significant expenditures incurred for additional maintenance activities and equipment replacement during the reporting period.

Operating Problems and Corrective Action:
Condition 9 (2)(d)

There were no significant operating problems encountered during this reporting period.

Quality Assurance and Control Measures:

The Chatham-Kent Public Utilities Commission followed a sampling schedule developed in accordance with the Certificate of Approval and applicable regulations for this reporting period.

Composite chemistry samples of the effluent were collected using an auto sampler. Chemistry samples were submitted weekly to an accredited laboratory for analysis of $CBOD_5$, Total Suspended Solids, Total Kjeldhal Nitrogen, Total Phosphorus and Total Ammonia Nitrogen, Alkalinity, pH, Nitrite and Nitrate.

Bacteriological samples of the effluent were collected weekly according to the Sampling Program. Bacteriological samples were submitted weekly to an accredited laboratory for analysis.

Calibration and Maintenance on Effluent Monitoring Equipment

Monitoring equipment calibration/verification report(s) included for the following:

- Effluent flow meter

Community Complaints:

There were no Customer Complaints received during the reporting period.

By-pass, Spill, or Abnormal Discharge Events:

There were no by-pass, spill, or abnormal discharge events for the reporting period beyond the May exceedance discussed under Non-compliance Issues.

Other Information the District Manager Requires:

No other information was required from the District Manager during this reporting period.

APPENDIX A

Monthly and Yearly Operational Data Summary for the Reporting Period

CHATHAM-KENT PUC

Clearville Park Wastewater Treatment Plant **Works # 120002843**

Operational Data Yearly Summary

YEAR **2019**

DESCRIPTION														TOTAL	AVERAGE	HIGH	LOW	MOE	Non-
MONTH		JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER					Objective	Compliance
FINAL EFFLUENT FLOW DATA																			
CLEARVILLE FLOW MONTH TOTAL	cu. m.					264.600	263.900	248.600	123.600	99.800	51.100				1051.600				
CLEARVILLE FLOW MONTH AVG.	cu. m.					8.535	8.797	8.019	3.987	3.327	1.893				5.760	8.797	1.893		30 / day
CLEARVILLE FLOW MONTH PEAK	cu. m.					22.900	23.700	24.200	7.600	7.800	8.300					24.200	7.600		
FINAL EFFLUENT CHEMICAL																			
AMMONIA	mg/l					6.92	3.15	3.40	0.76	0.65	0.35				2.54	6.92	0.35		**5**
AMMONIA	kg/day					0.06	0.03	0.03	0.003	0.002	0.001								**0.15**
CBOD5	mg/l					4	2	2	2	2	2				2.4	4.0	2.0		**15**
CBOD5	kg/day					0.34	0.02	0.02	0.01	0.01	0.004								**0.45**
TKN	mg/l					7.65	3.88	4.13	2.18	2.56	4.10				4.08	7.65	2.18		
pH						8.20	7.90	7.86	8.08	8.28	8.29				8.10	8.29	7.86		**6.9-9.5**
TOTAL P	mg/l					0.22	0.18	0.17	0.34	0.46	0.58				0.32	0.58	0.17		**0.7**
TOTAL P	kg/day					0.002	0.002	0.001	0.001	0.002	0.001								**0.021**
SS	mg/l					1	1	3	2	2	3				1.9	3.0	1.0		**15**
SS	kg/day					0.11	0.01	0.02	0.01	0.01	0.01								**0.45**
ALKALINITY	mg/l					410	453	354	495	624	760				516	760	354		
NITRITE	mg/l					0.123	0.399	0.452	0.134	0.098	0.097				0.217	0.452	0.097		
NITRATE	mg/l					12.90	41.70	53.48	61.55	76.88	75.90				53.7	76.9	12.9		
FINAL EFFLUENT (BACTERIOLOGICAL)																			
E. COLI.	cfu / 100ml					10	10	10	10	10	10								**200**

APPENDIX B

Calibration Reports for the Reporting Period

Endress Hauser
ProMag Series
Verification Report

AS FOUND CERTIFICATION

FORWARD FLOW DIRECTION

PASS

FLOWMETRIX

CLIENT DETAIL		**EQUIPMENT DETAIL**	
CUSTOMER	Municipality of Chatham-Kent	[MUT] MANUFACTURER	ENDRESS & HAUSER
CONTACT	Larry Garside	MODEL	Prosonic 91W
	Senior Operator - Ridgetown	CONVERTER S/N:	C3014E16000
	4 Tecumseh Street	FUSE	Pull Plug on Unit
	Ridgetown, Ontario		
	N0P 2C0	PLANT ID	CLWW Plant
	t: 519-674-2802	METER ID	Final Effluent Flow
	c: 519-358-6661	FIT ID	n/a
	e: larryg@chatham-kent.ca	CLIENT TAG	n/a
		OTHER	
VER. BY - FM	*Brendon Jacksic*	GPS COORDINATES	N42 27.321 W081 41.849
Quality Management Standards Information - Reference equipment and instrumentation used to conduct this verification test is found in our AC-QMS document at the time this test was		VERIFICATION DATE	March 27, 2019
		CAL. FREQUENCY	Annual
		CAL. DUE DATE	March, 2020

PROGRAMMING PARAMETERS		
DIAMETER (DN)	mm	100
F.S. FLOW - MAG	LPS	78.538
F.S. RANGE - O/P	LPS	50.000
TUBE k-FACTOR		1.0000
TUBE zero		0

FORWARD TOTALIZER INFORMATION		
AS FOUND	14770.3	M3
AS LEFT	14770.3	M3
DIFFERENCE	0	M3
TEST CRITERIA		
AS FOUND CERTIFICATION TEST	Yes	
FORWARD FLOW DIRECTION	Yes	
ALLOWABLE [%] ERROR	5	
COMPONENTS TESTED		
CONVERTER DISPLAY	yes	
mA OUTPUT	no	
TOTALIZER	yes	
ACCURACY BASED ON [% o.r.]	yes	

ERROR DOCUMENTED IN THIS REPORT; BASED ON % o.r.

FLOW TUBE SIMULATION

		0.0	**12.5**	**25.0**	**37.5**	**50.0**	**LPS**
		0.0	**15.9**	**31.8**	**47.7**	**63.7**	**% F.S. Flow**
		0.0	**25.0**	**50.0**	**75.0**	**100.0**	**% F.S. Range**
REF. FLOW RATE		**0.000**	**12.500**	**25.000**	**37.500**	**50.000**	LPS
MUT [Reading]		-0.004	12.513	25.022	37.532	50.044	LPS
MUT [Difference]		-0.004	0.013	0.022	0.032	0.044	LPS
MUT [% Error]		n/a	0.10	0.09	0.09	0.09	% O.R
mA OUTPUT							
MUT [Reading]	min. 4 mA						
MUT [Difference]	max. 20 mA						
MUT [% Error]							
TOTALIZER - REF. FLOW RATE						**50.000**	LPS
TOTALIZER [MUT]						4	M3
TEST TIME						69.87	SECONDS
CALC. TOTALIZER						3.494	M3
ERROR						0.19	%

COMMENTS

Note: mA output not used therefore not checked.

QUALITY MANAGEMENT STANDARDS INFO.

[QMS] INFORMATION	IDENT.	ID #
[REFERENCE] FTS	E&H (FC)	1
PROCESS METER	PM	n/a
ANALOG METER	AM	n/a
STOP WATCH	SW	Yes

RESULTS

TEST	AVG % o.r.	PASS FAIL
DISPLAY	0.09	PASS
mA OUTPUT	N/A	N/A
TOTALIZER - R	0.19	PASS

This report reflects the test results of the overall accuracy for the above flow converter using the specified manufacturers flow tube simulator to within the specified tolerance as identified within this report.