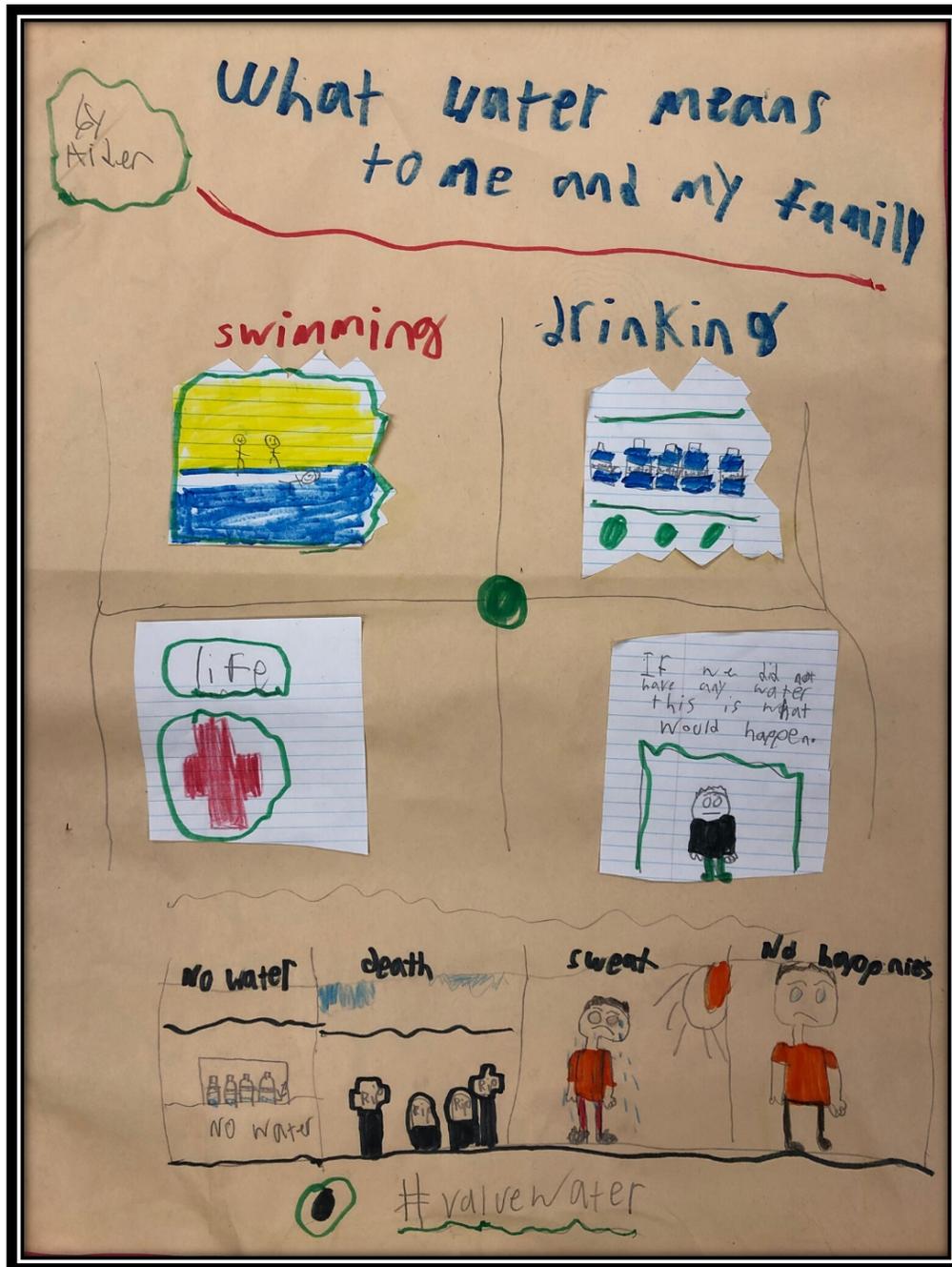


Cannington Water Pollution Control Plant

2019 Annual Performance Report





The Regional Municipality of Durham

Cannington Water Pollution Control Plant 2019 Annual Performance Report

Environmental Compliance Approval (ECA): 8730-8CYU2X Dated June 28, 2012

The Cannington Water Pollution Control Plant (WPCP) 2019 Annual Performance Report provides staff, stakeholders and customers an overview of the performance of the Cannington WPCP. Further, this report fulfills the annual reporting requirements of the Ontario Ministry of the Environment, Conservation and Parks (MECP). This report demonstrates the commitment of ensuring that the WPCP continues to deliver wastewater services to our customers in an environmentally responsible manner.

Water Pollution Control Plant Process Description

General

The Cannington WPCP located in the Community of Cannington in the Township of Brock is owned and operated by the Regional Municipality of Durham (Region). The plant is operated according to the terms and conditions of the ECA. This MECP Class 1 wastewater treatment plant is designed to treat wastewater at a rated capacity of 1,068 cubic metres per day (m³/d) and utilizes two seasonal wastewater stabilization lagoons. The Cannington WPCP services a population of approximately 2,082 residents. The treated effluent is discharged to the Beaver River in accordance with the conditions listed in the ECA.

Raw Influent Pumping

Wastewater is collected in approximately 12.6 kilometres of sanitary sewers in the Cannington service area and is conveyed to the treatment facility by a sanitary sewage pumping station (SSPS) located on Laidlaw Street. Aluminum sulphate is added at Laidlaw Street SSPS to enhance the settling of solids and phosphorus removal.

Lagoon Treatment

The Cannington WPCP is a seasonal wastewater stabilization lagoon facility consisting of a two cell lagoon system that is operated as a seasonal retention facultative waste stabilization pond providing a retention time of approximately 190 days. Flow to the Cannington WPCP is distributed to each cell through an influent distribution chamber. Each cell is equipped with an outlet chamber and one outfall pipe. The ECA permits two seasonal discharge periods per year. Spring discharge is from March 1st to May 31st and fall discharge is from October 1st to December 31st. Prior to and during discharge to the Beaver River, samples are collected to verify the effluent meets the limits established in the ECA.

Environmental Compliance Approval

Under Condition 9.(4) of ECA #8730-8CYU2X the Region of Durham must produce an annual performance report that must contain the following information:



a) Summary and interpretation of all monitoring data and a comparison to the effluent limits;

The raw wastewater flowing into the Cannington WPCP is analyzed for its chemical and physical composition. Monitoring of the raw wastewater is performed in accordance with the conditions in the ECA. Table 2 summarizes the raw wastewater characteristics during the reporting period.

The Cannington WPCP effluent was determined to be compliant with the approval limits during the reporting period. The plant operated at 91.0% of its rated capacity and received a maximum daily flow of 3,399 m³/d on April 20. The total treated effluent discharged to the Beaver River in 2019 was calculated to be 356,657 m³.

The Region initiated a Class Environmental Assessment (Class EA) Study to plan for additional sanitary sewage capacity to service the communities of Sunderland and Cannington, in the Township of Brock. The study will identify and evaluate alternative servicing approaches for increasing pumping, treatment and conveyance capacity. Additional capacity is required to support growth forecasts.

b) Description of any operating problems encountered and corrective actions taken;

No operating problems were encountered in 2019.

c) Summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the Works;

New groundwater monitoring wells were commissioned in November 2019. Wells are used for monitoring of groundwater level and water quality analysis around the lagoons.

d) Summary of any effluent quality assurance or control measures undertaken in the reporting period;

In-house lab test results are compared to the results of the Regional Environmental Laboratory on comparable samples to determine the in-house accuracy. Results were found to be in a comparable range.

e) Summary of the calibration and maintenance carried out on all effluent monitoring equipment;

- Calibration of the flow meter located at Laidlaw Street SSPS was conducted on May 29 and October 22.
- Temperature and pH are monitored in the field, all other routine process control tests are performed at the Lake Simcoe WPCP laboratory in Beaverton.

f) Estimate of the sludge settling capacity of the lagoons and its annual depletion;

The annual depletion of the sludge settling capacity is negligible. There was no removal of sludge during the reporting period.



g) Description of efforts made and results achieved in meeting the effluent objectives;

The Regional Municipality of Durham strives to achieve the best effluent quality at all times consistently remaining well below ECA limits.

- The Total Suspended Solids objective of 20 mg/L was exceeded in 4 of 50 samples (8.0%)
- The Total Phosphorus objective of 0.5 mg/L was exceeded in 2 of 50 samples (4.0%)
- The maximum effluent pH objective of 8.0 was exceeded in 1 of 36 samples (2.8%)

Best efforts will continue to be applied to maintain results below objectives.

h) Summary of any complaints received during the reporting period and any steps taken to address the complaints;

A summary of complaints received from the public is administered through a central database. No complaints were received in 2019.

i) Summary of all By-pass, Spill or Abnormal Discharge;

No by-passes, spills or abnormal discharges occurred during the reporting period.

j) Status Update of the Initial Effluent Characterization;

The initial effluent characterization report was submitted to MECP in April 2016.

k) Information required by Ministry of the Environment, Conservation and Parks (MECP) District Manager;

No additional information was requested.

MECP Inspection

The plant was last inspected by the MECP on June 12, 2018.



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Table 1 Raw Influent Flows

Month	Total Flow to Plant -metered at the Laidlaw Street Pumping Station cubic metre	Average Daily Flow cubic metre per day (m ³ /d)	Maximum Daily Flow m ³ /d
January	30,058	970	1,319
February	24,507	875	1,523
March	30,070	970	1,331
April	53,702	1,790	3,399
May	51,780	1,670	2,494
June	39,483	1,316	1,810
July	22,894	739	970
August	17,345	560	1,003
September	15,986	533	589
October	17,784	574	1,032
November	23,564	785	1,026
December	27,692	893	1,178
Total	354,865		
Annual Average	29,572	972	
Minimum	15,986		
Maximum	53,702		3,399
ECA Limit		1,068*	
Compliance Met		Yes	

*Annual Average



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Table 2 Raw Influent Analyses

Month	Carbonaceous Biochemical Oxygen Demand average (avg.) concentration (conc.) milligram per litre (mg/L)	Biochemical Oxygen Demand avg. conc. mg/L	Total Suspended Solids avg. conc. mg/L	Total Phosphorous (TP) avg. conc. mg/L	TP loading kilogram per day	Total Ammonia Nitrogen avg. conc. mg/L	pH minimum	pH maximum	Temperature Degree Celsius avg.
January	104	111	112	4.5	4	27.78	6.9	7.8	8.8
February	99	126	172	4.7	4	26.48	7.8	8.0	8.5
March	100	155	132	4.6	4	25.23	8.0	8.1	8.1
April	47	64	86	2.6	5	12.07	7.7	8.0	8.2
May	47	54	87	2.1	4	10.41	7.5	7.8	10.7
June	61	86	117	3.3	4	18.56	7.7	7.8	11.8
July	89	129	297	4.9	4	28.61	7.3	8.1	14.7
August	139	172	297	6.2	3	38.51	8.1	8.2	16.2
September	210	246	232	8.0	4	50.51	7.9	8.4	17.9
October	173	245	175	7.4	4	49.60	8.0	8.3	14.9
November	106	149	154	5.6	4	33.51	8.1	8.3	12.8
December	82	161	132	4.6	4	28.19	7.6	8.2	11.5
Average	105	141	166	4.9	5	29.12			12.0
Minimum	47	54	86	2.1	3	10.41	6.9		8.1
Maximum	210	246	297	8.0	5	50.51		8.4	17.9
Sampling Frequency Requirement Met	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes



Table 3 Calculated Effluent Flows

Month	Effluent Flow cubic metre
January	
February	
March	100,200
April	63,096
May	93,317
June	
July	
August	
September	
October	69,674
November	
December	30,370
Total	356,657
Annual Average	71,331
Minimum	30,370
Maximum	100,200



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Table 4 Final Effluent Analyses

Month	Carbonaceous Biochemical Oxygen Demand average (avg.) concentration (conc.) milligram per litre (mg/L)	Biochemical Oxygen Demand avg. conc. mg/L	Total Suspended Solids avg. conc. mg/L	Total Phosphorous (TP) avg. conc. mg/L	TP loading kilogram per day	TP loading kilogram per month
January						
February						
March	10.5	13.4	8.3	0.12	1	12
April	3.4	4.5	16.5	0.16	1	10
May	2.2	2.9	5.7	0.09	0	8
June						
July						
August						
September						
October	2.4	3.1	7.3	0.1	0	7
November						
December	10.5	7.0	16.5	0.2	1	6
Total						44**
Average	5.8	6.2	10.8	0.13	1	3
Minimum	2.2	2.9	5.7	0.09	0	6
Maximum	10.5	13.4	16.5	0.20	1	12
ECA Limit	25*		30*			117**
ECA Objective	15		20	0.5		
Lake Simcoe Phosphorus Reduction Strategy				0.25*		97**
Within Compliance	Yes		Yes	Yes		Yes
Sampling Frequency Requirement Met	Yes	Yes	Yes	Yes		

*Annual Average Concentration

**Total Annual Loading, kg/year



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Table 4 Final Effluent Analyses continued

Month	Total Ammonia Nitrogen average (avg.) concentration (conc.) milligrams per litre (mg/L)	Un-ionized Ammonia avg. conc. mg/L	pH minimum	pH maximum	Temperature Degree Celcius avg.
January					
February					
March	12.37	0.02	7.0	7.6	3.6
April	9.88	0.05	7.2	7.7	9.0
May	5.45	0.06	7.3	8.9	13.5
June					
July					
August					
September					
October	13.74	0.09	7.2	7.8	10.4
November					
December	11.88	0.04	7.3	7.7	3.5
Average	10.66	0.05			8.0
Minimum	5.45	0.02	7.0		3.5
Maximum	13.74	0.09		8.9	13.5
ECA Limit			6.0	9.5	
ECA Objective			6.5	8.0	
Within Compliance		Yes	Yes	Yes	
Sampling Frequency Requirement Met	Yes		Yes	Yes	Yes



Table 5 Chemical Usage

Month	Aluminum Sulphate litre
January	13,601
February	11,677
March	14,940
April	28,749
May	21,966
June	18,440
July	17,504
August	8,439
September	7,083
October	7,279
November	9,575
December	11,531
Total	170,783