



Cannington Water Pollution Control Plant
2018 Annual Performance Report





The Regional Municipality of Durham

Cannington Water Pollution Control Plant 2018 Annual Performance Report

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

The Cannington Water Pollution Control Plant (WPCP) 2018 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 One 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 12.5 km of sanitary sewers in the Cannington service area and is conveyed to the treatment facility by a sanitary sewage pumping station located on Laidlaw Street. Aluminum sulphate is added at Laidlaw Street Sanitary Sewage Pumping Station 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 report that must contain the following information:

a) Summary and interpretation of all monitoring data and a comparison to the effluent limits outlined in Condition 5, including an overview of the success and adequacy of the works

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 91.9% of its rated capacity and received a maximum daily flow of 4,125 m³/d on February 21, 2018. The total treated effluent discharged to the Beaver River in 2018 was calculated to be 348,929 m³.

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

No operating problems were encountered in 2018.

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

No maintenance was performed on major equipment during the reporting period.

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 Pumping Station was conducted on May 30 and October 17, 2018.
- Temperature and pH are monitored in the field, all other routine process control tests are performed at the Lake Simcoe WPCP laboratory in Beaverton. All monitoring and laboratory equipment is calibrated and maintained according to manufacturer's specifications.

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 biosolids 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.

- An Inflow and Infiltration Study was commissioned in 2017 after the annual average daily flow exceeded the rated capacity of 1,068 m³/day and is expected to be completed in 2019.
- The Total Suspended Solids objective of 20 mg/L was exceeded four times in 2018. Three times during the spring discharge and once during the fall discharge.

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 complaint

A summary of complaints received from the public is administered through a central database. No complaints were received in 2018.

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

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 in April 2016.

k) Information required by MECP District Manager

No additional information was requested.

MECP Inspection

The plant was inspected by the MECP on June 12th, 2018. No compliance items were identified in the report. The MECP did however, recommend that the Region design and implement a sludge monitoring program to be conducted on a regular basis, or as required by operation of the lagoon site.



Cannington Water Pollution Control Plant

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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	32,387	1,045	1,751
February	32,710	1,168	4,125
March	28,870	931	1,268
April	55,878	1,863	3,351
May	34,435	1,111	1,773
June	22,777	759	972
July	18,361	592	728
August	20,685	667	851
September	17,469	582	678
October	21,681	699	978
November	35,803	1,193	2,063
December	37,107	1,197	1,664
Total	358,163		
Annual Average	29,847	981	
Minimum	17,469		
Maximum	55,878		4,125
ECA Limit		1,068*	
Compliance Met		Yes	

*Annual Average



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 kilograms per day	Total Ammonia Nitrogen avg. conc. mg/L	pH minimum	pH maximum	Temperature Degree Celsius avg.
January	104	133	140	4.8	5.0	27.9	7.6	8.1	9.8
February	96	122	114	4.6	5.4	20.1	7.1	7.9	8.7
March	86	106	109	5.1	4.7	28.6	7.7	8.0	8.4
April	55	71	94	3.1	5.8	16.6	7.3	7.9	9.6
May	88	93	104	4.3	4.7	24.1	7.5	7.9	12.1
June	112	131	113	5.7	4.3	34.2	7.6	8.3	13.9
July	111	128	143	6.0	3.5	38.4	7.7	8.3	16.1
August	119	162	168	5.8	3.9	31.3	6.8	7.7	17.4
September	131	146	164	5.5	3.2	37.6	7.0	7.7	17.3
October	123	143	165	5.6	3.9	34.4	7.7	8.0	15.9
November	88	113	125	4.0	4.7	21.3	6.8	7.3	12.5
December	57	86	89	3.4	4.1	19.9	6.7	7.8	10.6
Average	97	119	127	4.8	4.7	27.9			12.7
Minimum	55	71	89	3.1	3.2	16.6	6.7		8.4
Maximum	131	162	168	6.0	5.8	38.4		8.3	17.4
Sampling Frequency Requirement Met	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes



Table 3 Calculated Effluent Flows

Month	Effluent Flow cubic metre
January	
February	
March	87,557
April	9,546
May	143,255
June	
July	
August	
September	
October	41,728
November	66,842
December	
Total	348,929
Annual Average	69,786
Minimum	9,546
Maximum	143,255



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	11.6	14.4	17.7	0.23	1.5	20.1
April	2.2	2.7	3.0	0.04	0.4	0.4
May	4.6	5.1	9.5	0.11	0.7	15.6
June						
July						
August						
September						
October	1.0	1.6	9.7	0.11	0.6	4.6
November	1.6	1.7	1.6	0.03	0.2	2.0
December						
Total						42.7**
Average	4.2	5.1	8.3	0.10	0.7	4.1
Minimum	1.0	1.6	1.6	0.03	0.2	0.4
Maximum	11.6	14.4	17.7	0.23	1.5	20.1
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		Yes

*Annual Average Concentration

**Total Annual Loading, kg/year



Table 4 Final Effluent Analyses continued

Month	Total Ammonia Nitrogen average (avg.) concentration (conc.) milligram per litre (mg/L)	Un-ionized Ammonia avg. conc. mg/L	pH minimum	pH maximum	Temperature degree Celcius avg.
January					
February					
March	13.00	0.01	6.8	7.2	4.2
April	8.93	0.04	7.4	7.4	11.4
May	7.21	0.05	6.7	7.7	17.6
June					
July					
August					
September					
October	0.84	0.00	6.8	7.5	13.4
November	9.95	0.02	6.7	7.6	4.1
December					
Average	7.98	0.02			10.1
Minimum	0.84	0.00	6.7		4.1
Maximum	13.00	0.05		7.7	17.6
ECA Limit			6.0	9.5	
ECA Objective			6.5	8.0	
Within Compliance			Yes	Yes	
Sampling Frequency Requirement Met	Yes	Yes	Yes	Yes	Yes



Table 5 Chemical Usage

Month	Aluminum Sulphate litres
January	11,876
February	10,806
March	12,090
April	21,531
May	11,131
June	8,890
July	7,481
August	7,645
September	6,782
October	8,336
November	15,128
December	14,189
Total	135,886