

**PUBLIC UTILITIES COMMISSION  
FOR THE MUNICIPALITY OF CHATHAM-KENT**

**MERLIN LAGOON**

**2020 PERFORMANCE REPORT**

**January 1 to December 31, 2020**

**Amended Certificate of Approval # 1-0192-69-753576**

## **Plant Description**

The Merlin Sewage Lagoons provide treatment of wastewater for the former Police Village of Merlin. Wastewater is collected by a separate sanitary sewer system and conveyed by one raw pump station to the Sewage Lagoons. The final effluent is subsequently discharged to the Foxtan Drain.

Approval was received from the Ministry of the Environment in 1975 for construction of sanitary sewers, a force main, a sewage pumping station, and two waste stabilisation ponds.

According to a capacity assessment prepared by R. V. Anderson Associates Limited, average daily flow of sewage into the treatment plant should not exceed 464m<sup>3</sup>/day.

The present treatment system consists of:

- One raw pumping station
- Two waste stabilisation cells
- Two effluent chambers

The effluent chambers discharge to the Foxtan Drain.

## **REPORTING**

### **Summary and Interpretation of Monitoring and Comparison to the Effluent Limits & Objectives**

The following Ministry Procedures / Guidelines apply:

Procedure F-5-1:	Minimum effluent limits BOD <sub>5</sub> , Suspended Solids
Guideline F-8:	Effluent limits Phosphorus
Procedure F-10-1:	Minimum monitoring program
Table C-1:	Monitoring, recording and reporting bypasses

Table 1 on the following page outlines monthly average results of parameters tested compared to the Effluent Guidelines & Effluent Design Objectives set out in one or more of the above Ministry Procedures /Guidelines.

The April to May discharge period had an exceedance of Total Phosphorus Concentration. The Total Phosphorus concentration limit is 1.0 mg/L. The average Total Phosphorus concentration for the entire discharge period was 1.16 mg/L. The average Total Phosphorus concentration for the month of April was 1.03 mg/L and was 1.29 mg/L for the month of May.

### ***Success and Adequacy of the Works***

During the reporting period, the annual average daily flow was 142 m<sup>3</sup>/day, which represents approximately 31% of the rated capacity of 464 m<sup>3</sup>/day.

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

**Table 1: Summary of Monitoring Data and Comparison to Effluent Guidelines & Effluent Design Objectives - Concentrations as well as rated capacity to the sewage works**

**Rated capacity: 464 m<sup>3</sup>/day**

**Total sewage flow to the works during a calendar year divided by the number of days during which sewage was flowing to the works that year**

Month	Total Monthly Flow m <sup>3</sup>	Average Daily Flow /Month m <sup>3</sup> /day	Avg Daily Flow/Year m <sup>3</sup> /day	% of Plant Capacity	BOD <sub>5</sub> mg/L	Total S.S. mg/L	Total P mg/L
Limits: without batch TP removal	None	None	464	100	30	40	1.0
Objectives: without batch TP removal	None	None	464	100	25	30	0.5 - 1.0
Limits: with batch TP removal	None	None	464	100	25	25	1.0
Objectives: with batch TP removal	None	None	464	100	15	20	0.5 - 1.0
Jan	6,026	194					
Feb	4,024	139					
Mar	5,828	188					
Apr	4,251	142			2.8	5	1.03
May	4,516	146			3.0	5	1.29
Jun	3,709	124					
Jul	3,632	117					
Aug	3,998	129					
Sept	3,646	122					
Oct	3,930	127					
Nov	4,120	137					
Dec	4,441	143					
Year			142	31%			
	Yearly Total Flow m <sup>3</sup>	Yearly Maximums					
	52,121	194			3.0	5	1.29

**Batch TP removal was not performed for the April to May discharge period.**

### **Operating Problems and Corrective Action:**

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

### **Summary of Maintenance Activities:**

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:

There were no significant expenses during the 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.

Chemistry samples of the raw flow were collected by grab samples. Chemistry samples were submitted monthly to an accredited laboratory for analysis of BOD<sub>5</sub>, Total Suspended Solids, Total Kjeldhal Nitrogen and Total Phosphorus.

Chemistry samples of the final effluent were collected by grab samples. Chemistry samples were collected and submitted during the discharge period to an accredited laboratory for analysis of BOD<sub>5</sub>, CBOD<sub>5</sub>, Total Suspended Solids, Total Kjeldhal Nitrogen, Total Phosphorus, Free Ammonia as N, Alkalinity, pH, Nitrite, Nitrate and Unionized Ammonia.

Bacteriological samples of the effluent were collected during the discharge period according to the Sampling Program. Bacteriological samples were submitted during discharge periods to an accredited laboratory for analysis.

In house samples were analysed by a licensed operator for pH and temperature.

### **Calibration and Maintenance on Effluent Monitoring Equipment**

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

- Influent flow meter

### **Community Complaints:**

There were no Customer Complaints received regarding 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.

### **Other Information the District Manager Requires:**

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

## **APPENDIX A**

### **Yearly Operational Data Summary for the Reporting Period**

## **APPENDIX B**

### **Calibration Reports for the Reporting Period**