PUBLIC UTILITIES COMMISSION

FOR THE MUNICIPALITY OF CHATHAM-KENT

WHEATLEY WATER POLLUTION CONTROL PLANT

2020 PERFORMANCE REPORT

January 1 to December 31, 2020

Certificate of Approval # 3-1602-90-927 & 1-822-83-006

Plant Description

The Wheatley Water Pollution Control Plant is located at 289 First Concession Line in Wheatley. The facility was constructed in 1985 with further plant upgrades in the 1990s. Four sewage pump stations serve the facility. The Wheatley Water Pollution Control Plant C of A limits the average daily flow to 2,752 m^3/day with a peak flow capacity of 8,500 m^3/day. The plant effluent is discharged to Lake Erie.

The existing treatment system uses the following treatment process:

- Raw sewage pumping
- Aeration tanks
- Aerobic digesters
- Sludge storage tank
- Phosphorus Removal System
- Final clarifiers
- Chlorine Contact Chamber with Chlorine for Disinfection

REPORTING REQUIREMENTS
UNDER CERTIFICATE OF APPROVAL # 3-1602-90-927 & 1-822-83-006

Summary and Interpretation of Monitoring and Comparison to the Effluent Limits & Objectives: Special Terms and Conditions

Tables 1 and 2 on the following pages outline monthly average results of parameters tested compared to the limits and objectives outlined in Provincial Guideline F-8 and the Certificate of Approval.

No criteria were exceeded during this reporting period for the effluent limits based on the average annual effluent results.

The following criteria were exceeded during this reporting period for the effluent objectives based on the average annual effluent results:

No criteria were exceeded during this reporting period for the effluent objectives based on the average annual effluent results.

Success and Adequacy of the Works

During the reporting period, the annual average daily flow was 1,903 m^3/day, which represents approximately 69% of the rated capacity of 2,752 m^3/day. The maximum daily flow of 4,438 m^3/day is 52% of the peak flow capacity of 8,500 m^3/day.

Overall, the Wheatley Water Pollution Control Plant performed well over the operating 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 of 2,752m³/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
(Avg Daily Flow, BOD, S.S and Total P calculated by 12 month arithmetic mean)

Month	Total Monthly Flow m^3	Avg Daily Flow /Month m^3/day	Avg Daily Flow/Year m^3/day	% of Plant Capacity	BOD_5 mg/L Yearly Avg	Total S.S. mg/L Yearly Avg	Total Ammonia mg/L Yearly Avg	Total P mg/L Yearly Avg	pH	E.coli/100mL CFU GeoMean
Limits	None	None	2,752	100	25	25	none	1	none	none
Objectives	None	None	2,752	100	15	15	5	1	none	none
Jan	69,173	2,231			2.08	8.6	0.19	0.36	7.03	14
Feb	56,472	1,947			2.08	8.5	0.20	0.36	7.04	10
Mar	70,371	2,270			2.08	8.6	0.20	0.36	7.32	10
Apr	52,847	1,762			2.06	7.4	0.19	0.34	7.14	10
May	55,019	1,775			2.06	7.9	0.20	0.35	7.14	20
Jun	46,838	1,561			2.06	7.4	0.21	0.30	7.00	10
Jul	47,001	1,516			2.06	7.5	0.22	0.29	6.61	10
Aug	53,536	1,727			2.06	7.9	0.28	0.28	6.72	10
Sept	60,125	2,004			2.04	7.7	0.24	0.27	7.08	14
Oct	60,452	1,950			2.08	6.9	0.22	0.26	7.00	16
Nov	60,630	2,021			2.11	7.1	0.22	0.26	7.05	22
Dec	64,188	2,071			2.08	6.4	0.22	0.25	6.81	5
Yearly Average			1,903	69%						
	Yearly Total Flow m^3	**Yearly Maximums**								
	696,652	2,270			2.11	8.6	0.28	0.36	7.32	22

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

(Avg Daily Flow, BOD, S.S and Total P calculated by 12 month arithmetic mean)

Month	Avg Daily Effluent Flow /Year m^3/day	BOD5 Kg/day	Total S.S. Kg/day	Total P Kg/day	Total Ammonia kg/day
Limits	**None**	**68.8**	**68.8**	**2.75**	**none**
Objectives	**None**	**41.3**	**41.3**	**2.75**	**13.8**

Effluent Waste Loading over any consecutive 12 month period (CofA #3-1602-90-927) reported in kg/d

	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20
BOD	5.1	5.2	5.3	5.1	5.1	4.9	4.8	4.8	4.8	4.8	4.8	4.7
Total S.S.	21.2	21.6	22.1	18.6	19.5	17.6	17.7	18.5	18.1	16.1	16.1	14.5
Total P.	0.89	0.90	0.92	0.84	0.85	0.72	0.69	0.66	0.63	0.59	0.59	0.56
Total Ammonia	0.47	0.50	0.51	0.48	0.49	0.50	0.51	0.65	0.56	0.51	0.51	0.49

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 the 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:

- Sludge Hauling $ 11,900
- New 6” Valves for RAS Pump Header on Clarifier #1 11,700
- Sludge Hauling 6,800
- Chlorine Room Maintenance 4,600
- New 6” Valves 3,900
- Maintenance of the 3 Main Pump Stations 2,800
- Chlorine Gas Detector Sensor Repair and Calibration 1,900
- New Spare Alum Pump Heads (2) 640
- New Sludge Judge 330

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 raw flow were collected using an auto sampler. Chemistry samples were submitted weekly to an accredited laboratory for analysis of BOD_5, Total Suspended Solids, Total Kjeldhal Nitrogen, Total Phosphorus, Total Ammonia Nitrogen, and pH.

Composite chemistry samples of the effluent were collected using an auto sampler. Chemistry samples were submitted weekly to an accredited laboratory for analysis of BOD_5, CBOD, Total Suspended Solids, Total Kjeldhal Nitrogen, Total Phosphorus and Total Ammonia Nitrogen, pH, Nitrite and Nitrate and Unionized Ammonia.

Bacteriological samples of the effluent were collected weekly according to the Sampling Program. Bacteriological samples were submitted weekly 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

All required probes and sensors are cleaned, maintained and/or calibrated on a monthly basis or as required by manufacturers' specifications.

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

- Influent flow meter
- Effluent flow meter
- Spectrophotometer
- pH meter

Sludge Management: Certificate of Approval 3-1602-90-927 Condition 5 (iii):

Overview of the Sludge Disposal Program:

During the reporting period, liquid sludge from the digester was transferred to the Chatham WPCP.

Tabulation of the Volume of Sludge Generated

	SLUDGE VOLUME in m^3	**TRANSFER TO LOCATION**
Total transferred during the reporting period January 1, 2020 to December 31, 2020	2,091	Chatham WPCP

Sludge Handling For the Next Reporting Period:

1. ***Proposed Sludge Handling Method***
   The sludge production and sludge handling method for the coming reporting period is anticipated to be the similar to that of this reporting period.

2. ***Anticipated Disposal Area(s)***
   Transfer to Chatham WPCP

Community Complaints:

There were no Customer Complaints received during the reporting period.

By-pass, Spill, or Abnormal Discharge Events:

There was 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

APPENDIX C

Effluent Parameter Concentration and Waste Loading Calculation Spreadsheet