PUBLIC UTILITIES COMMISSION

FOR THE MUNICIPALITY OF CHATHAM-KENT

WHEATLEY WATER POLLUTION CONTROL PLANT

2018 PERFORMANCE REPORT

January 1 to December 31, 2018

Certificate of Approval # 3-1602-90-927 and 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 and 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 the effluent limits based on the average annual effluent results.

No criteria were exceeded during this reporting period 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 1,934 m^3/day, which represents approximately 70% of the rated capacity of 2,752 m^3/day. The maximum daily flow of 5,339 m^3/day is 63% 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 2,752m^3/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	51,301	1,655			1.96	6.1	0.31	0.45	6.48	10
Feb	55,013	1,965			2.13	6.4	0.31	0.45	6.99	17
Mar	59,009	1,904			2.13	6.5	0.32	0.35	7.20	13
Apr	66,515	2,217			2.13	6.8	0.31	0.45	6.80	10
May	76,492	2,467			2.17	7.1	0.30	0.46	6.93	10
Jun	50,845	1,695			2.17	7.1	0.28	0.47	6.66	10
Jul	52,846	1,705			2.17	7.2	0.27	0.44	6.46	10
Aug	61,505	1,984			2.17	7.5	0.26	0.41	7.01	22
Sept	51,795	1,727			2.10	7.4	0.20	0.36	6.96	10
Oct	56,449	1,821			2.44	7.2	0.31	0.34	6.85	10
Nov	66,039	2,201			2.40	7.2	0.32	0.33	6.76	12
Dec	58,068	1,873			2.65	8.0	0.34	0.34	6.76	13
Yearly Average	58,823	1,934	1,934	70	2.18	7.0	0.29	0.40	6.82	12
	Yearly Total Flow m^3									
	705,877									

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-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18
BOD	4.1	4.5	4.5	4.5	4.6	4.5	4.5	4.5	4.4	5.2	5.0	5.6
Total S.S.	12.58	13.36	13.72	14.25	14.90	14.76	14.74	15.48	15.50	15.20	15.00	16.89
Total P.	0.93	0.94	0.73	0.94	0.97	0.97	0.90	0.84	0.76	0.71	0.69	0.72
Total Ammonia	0.63	0.64	0.67	0.66	0.64	0.58	0.56	0.54	0.42	0.65	0.67	0.72

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:

- New Transfer Sludge Piping $12,904
- Clarifier Scrapper repairs 16,249
- Pump Station #1 and #6 repairs 18,664
- Annual generator maintenance 2,248
- Pump #3 from station #1 rail guide replaced 558

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:

Tabulation of the Quality and Quantity of Sludge for the Period Being Reported On

MONTH	DISPOSAL AREA	SLUDGE QUALITY	SLUDGE QUANTITY LAND APPLIED m^3
July	574405 Ontario Inc. c/o Ken Koster 29164 Florence Road Zone TWP ON N0P 2K0	Within Ministry Guidelines	1,640
November	574405 Ontario Inc. c/o Ken Koster 29164 Florence Road Zone TWP ON N0P 2K0	Within Ministry Guidelines	640
Total			2,280

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)***
   574405 Ontario Inc. c/o
   Ken Koster
   29164 Florence Road
   Zone TWP ON
   N0P 2K0

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

	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	TOTAL	MAX	MIN	AVG
Raw Sewage Flow																
Total Flow $1000m^3$	51.301	55.013	59.009	66.515	76.492	50.845	52.846	61.505	51.795	56.449	66.039	58.068	**705.877**	**76.492**	**50.845**	**58.823**
Average Daily Flow $1000m^3$	1.655	1.965	1.904	2.217	2.467	1.695	1.705	1.984	1.727	1.821	2.201	1.873		**2.5**	**1.7**	**1.9**
Maximum Daily Flow $1000m^3$	3.714	4.021	3.915	5.339	5.213	2.333	2.571	2.466	2.205	2.390	4.306	2.879		**5.339**	**2.205**	**3.446**
Raw Sewage Average																
Suspended Solids mg/L	115	173	733	139	220	248	214	250	675	185	232	368		**733**	**115**	**296**
BOD mg/L	78	87	295	117	131	131	159	130	167	159	283	148		**295**	**78**	**157**
Total P mg/L	4.4	2.4	26.9	2.7	6.7	5.0	5.9	5.4	4.5	4.1	4.7	6.3		**26.9**	**2.4**	**6.6**
TKN mg/L	23.8	19.0	34.3	22.6	29.5	27.3	30.8	26.0	28.0	25.4	30.0	22.0		**34.3**	**19.0**	**26.6**
Ammonia mg/L	16.6	11.4	19.0	11.5	18.3	19.0	21.6	17.8	21.0	20.2	16.5	11.8		**21.6**	**11.4**	**17.1**
pH	7.03	7.47	7.89	7.52	7.71	7.37	7.31	7.67	7.43	7.29	7.23	7.30		**7.89**	**7.03**	**7.44**
Temperature C	11.0	11.1	11.3	11.1	14.6	16.4	19.0	19.0	19.3	17.7	14.9	12.8		**19.3**	**11.0**	**14.9**
Final Effluent Average																
Final Effluent Total Flow 1000m3	59.216	70.815	62.460	70.201	84.455	56.094	61.308	70.186	65.756	52.720	56.806	61.228	**771.245**	**84.46**	**52.72**	**64.27**
Final Effluent Avg Daily Flow 1000m3	1.910	2.529	2.015	2.340	2.724	1.870	1.978	2.264	2.192	1.701	1.894	1.975		**2.72**	**1.70**	**2.12**
Suspended Solids mg/L	5	8	6	9	11	5	4	8	9	11	9	15		**14.5**	**4.2**	**8.1**
BOD mg/L	2	2	2	2	3	2	2	2	2	6	2	5		**6**	**2**	**3**
Total P mg/L	0.23	0.23	0.22	0.35	0.67	0.54	0.17	0.33	0.21	0.31	0.20	0.68		**0.68**	**0.17**	**0.34**
TKN mg/L	0.5	0.1	0.6	0.8	1.5	1.0	0.5	0.6	0.8	2.9	1.0	1.1		**2.9**	**0.1**	**1.0**
Nitrites mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.10	0.06	0.04	0.06	0.05		**0.10**	**0.01**	**0.03**
Nitrates mg/L	16.6	14.9	15.9	15.9	19.8	24.1	19.8	16.2	12.9	7.7	6.3	14.1		**24.1**	**6.3**	**15.4**
pH	6.48	6.99	7.20	6.80	6.93	6.66	6.46	7.01	6.96	6.85	6.76	6.76		**7.20**	**6.46**	**6.82**
Ammonia mg/L	0.07	0.05	0.19	0.10	0.09	0.05	0.06	0.16	0.19	2.21	0.28	0.36		**2.21**	**0.05**	**0.32**
Unionized Ammonia mg/L (Fed)	0.0005	0.0016	0.0005	0.0005	0.0005	0.0005	0.0005	0.0050	0.0006	0.0043	0.0008	0.00		**0.01**	**0.00**	**0.00**
CBOD mg/L (Fed)	2	2	2	2	2	2	2	2	2	5	2	3		**5**	**2**	**2**
Temperature C	10.4	10.8	11.8	12.0	15.3	18.5	20.7	20.8	21.1	18.4	15.3	13.2		**21.1**	**10.4**	**15.7**
Disinfection																
Total Chlorine Used Kg	62.7	81.3	93.6	133.6	130.2	128.8	121.9	104.1	134.2	124.3	117.7	109.6	**1342.0**	**1342.0**	**62.7**	**206.5**
Chlorine Dose mg/L	1.282	1.674	1.647	2.146	1.865	2.595	2.325	1.720	2.615	2.216	1.869	1.929		**2.61**	**1.28**	**1.99**
Chlorine Residual mg/l	0.64	0.85	0.78	0.86	0.53	0.82	0.99	0.78	0.90	1.25	0.82	0.82		**1.25**	**0.53**	**0.84**
E-Coli Average /100mL	10	17	13	10	10	10	10	22	10	10	12	13		**22**	**10**	**12**
Aeration																
Aeration Flow 1000m3	51.301	55.013	59.009	66.515	76.492	50.845	52.846	61.505	51.795	56.449	66.039	58.068	**705.877**	**76.492**	**50.845**	**58.823**
# of tanks in service	2	2	2	2	2	2	2	2	2	2	2	2		**2**	**2**	**2**
Aeration Vol. 1000m3	1.65	1.96	1.90	2.22	2.47	1.69	1.70	1.98	1.73	1.82	2.20	1.87		**2.47**	**1.65**	**1.93**
BOD (Influent) mg/L	78	87	295	117	131	131	159	130	167	159	283	148		**295**	**78**	**157**
S.S. (Influent) mg/L	115	173	733	139	220	248	214	250	675	185	232	368		**733**	**115**	**296**

	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	TOTAL	MAX	MIN	AVG
Return Activated Sludge																
Total Flow 1000m3	199.05	176.17	139.92	125.69	140.70	149.45	139.27	157.32	154.18	153.88	126.59	187.61	**1849.81**	**199.05**	**125.69**	**154.15**
Plant Flow to Return %	431.21	370.64	250.84	200.44	199.47	299.47	266.21	261.30	300.71	274.68	119.49	330.12		**431.21**	**119.49**	**275.38**
Waste Activated Sludge																
Total Flow 1000m3	0.000	0.199	1.071	0.730	0.424	0.483	0.271	0.963	1.238	0.862	0.725	0.719	**7.685**	**1.238**	**0.000**	**0.640**
Septage Received																
Total Volume in m3	0	41	0	130	242	163	131	75	152	186	116	117	**1351.93**	**241.50**	**0.00**	**112.66**
Sludge Haulage																
Liquid Volume m3	0	0	0	0	0	0	1640	0	0	0	640	0	**2280**	**1640**	**0**	**190**
Sludge to Chatham m3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**	**0.00**	**0.00**
Hauled Sludge or Digester Contents (average)																
Total Solids	3.5	0.5	2.1	3.2	3.2	3.5	4.0	2.1	3.6	3.6	4.0	3.3		**4.0**	**0.5**	**3.1**
Volitile Solids	50	82	52	52	51	57	45	49	48	47	47	50		**82**	**45**	**53**
Ammonia ug/L	25	25	25	25	25	25	25	25	25	29	25	25		**29**	**25**	**25**
Nitrate ug/L	100	63	79	5	5	37	14	5	5	5	21	5		**100**	**5**	**29**
Nitrite ug/L	1.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		**1.4**	**0.5**	**0.6**
TKN ug/L	1160	207	783	1250	1270	1070	1185	664	734	1200	1307	1220		**1307**	**207**	**1004**
Potassium mg/L	170	82	120	140	130	140	167	95	120	130	137	140		**170**	**82**	**131**
Total P mg/L	850	170	560	820	740	750	1087	520	690	830	827	380		**1087**	**170**	**685**
Aresenic As ug/L	0.3	0.1	0.2	0.3	0.3	0.3	0.4	0.2	0.3	0.4	0.4	0.2		**0.4**	**0.1**	**0.3**
Cadmium Cd ug/L	0.030	0.020	0.020	0.020	0.020	0.020	0.030	0.020	0.020	0.040	0.030	0.020		**0.04**	**0.02**	**0.02**
Chromium Cr ug/L	0.6	0.1	0.4	0.6	0.5	0.6	0.7	0.3	0.02	0.6	0.7	0.4		**0.7**	**0.0**	**0.46**
Cobalt Co ug/L	0.10	0.02	0.07	0.10	0.10	0.1	0.15	0.07	0.10	0.14	0.14	0.10		**0.15**	**0.02**	**0.10**
Copper Cu ug/L	5.5	1.0	4.0	5.9	5.5	5.0	7.8	3.2	4.6	6.1	6.0	2.8		**7.8**	**1.0**	**4.8**
Lead Pb ug/L	0.3	0.1	0.2	1.0	0.4	0.5	0.3	0.2	0.3	0.4	0.5	0.2		**1.0**	**0.1**	**0.4**
Mercury Hg ug/L	0.008	0.003	0.006	0.006	0.007	0.005	0.060	0.005	0.004	0.040	0.010	0.010		**0.060**	**0.003**	**0.014**
Molybdenum Mo ug/L	0.13	0.06	0.09	0.15	0.13	0.10	0.31	0.09	0.14	0.012	0.15	0.10		**0.31**	**0.01**	**0.12**
Nickel Ni ug/L	0.46	0.10	0.30	0.49	0.46	0.50	0.63	0.30	0.48	0.58	0.60	0.30		**0.63**	**0.10**	**0.43**
Selenuim Se ug/L	0.20	0.20	0.20	2.00	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20		**2.00**	**0.20**	**0.35**
Zinc Zn ug/L	11	2	8	12	10	10	15	7	9	12	11	6		**15**	**2**	**9**
Ecoli cfu/g	200	70	310	690	100	180	17	840	340	150	377	560		**840**	**17**	**320**

Federal (Quarterly)								
Final Flow Qtr. m3	192491.0	210750.0	197250.0	170754.00				
CBOD Qtr. mg/L	2.0	2.0	2.0	3.27				
SS Qtr. mg/L	6.0	8.1	6.8	11.37				
Number of Days	90	91	92	92				

Federal WSER Acute Lethality	
Average Daily Volume Effluent (m^3):	2113

APPENDIX B

Calibration Reports for the Reporting Period

Flowmetrix
Technical Services Inc.

Western Office
2088 Jetstream Road
London, Ontario
N5V 3P6

Eastern Office
1602 Old Wooler Road
Wooler, Ontario
K0K 3M0

Parshall Flume
Verification/Calibration Report

AS FOUND CERTIFICATION

PASS

CLIENT DETAIL

CUSTOMER Municipality of Chatham-Kent
CONTACT Todd Unsworth
Chief Operator - Wheatley WTP/STP
115 Detroit Line, RR#1
Wheatley ON N0P 2P0
t. 519-825-4183; c. 519-796-6089
e. toddu@chatham-kent.ca

VER. BY - FM Paris Machuk

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

EQUIPMENT DETAIL

[MUT] MANUFACTURER	Siemens
MODEL	Sitrans LUT440
CONVERTER SERIAL NUMBER	PBD/F67220386
PLANT ID	Wheatley Pollution Control Plant
METER ID	Final Effluent
FIT ID	N/A
CLIENT TAG	N/A
OTHER	N/A
GPS COORDINATES	N42 4.569 W82 27.449
VERIFICATION DATE	March 14, 2018
CAL. FREQUENCY	Annual
CAL. DUE DATE	March, 2019

PROGRAMMING PARAMETERS

THROAT DIMENSION (DN)	inches	12
EMPTY DISTANCE	m	1.172
MAX. HEAD	m	0.281
DEAD ZONE	m	0.891
BLANKING DISTANCE	m	0.300
MAX. FLOW	LPS	100.1
F.S. RANGE - O/P	LPS	100.0

Ultrasonic sensor installed to ensure full scale flow condition

TOTALIZER

AS FOUND	2001341.39	M3
AS LEFT	2001392.72	M3
DIFFERENCE	51.33	M3

TEST CRITERIA

AS FOUND CERTIFICATION TEST	Yes
ALLOWABLE [%] ERROR	15

COMPONENTS TESTED

CONVERTER DISPLAY	Yes
mA OUTPUT	Yes
TOTALIZER	Yes
ACCURACY BASED ON [% o.r.]	No

ERROR DOCUMENTED IN THIS REPORT; BASED ON % F.S.

AS FOUND TEST RESULTS

		0.0	7.2	20.8	38.5	94.1	% F.S. Range
		0.000	0.050	0.100	0.150	0.270	m
REF. FLOW RATE		0.000	7.232	20.769	38.497	94.178	LPS
MUT [Reading]		0.000	6.970	19.930	39.050	92.620	LPS
MUT [Difference]		0.000	-0.262	-0.839	0.553	-1.558	LPS
MUT [% Error]		n/a	-0.26	-0.84	0.55	-1.56	%
mA OUTPUT		4.000	5.156	7.320	10.155	19.057	mA
MUT [Reading]	min. 4.000 mA	3.996	5.036	7.181	10.136	18.870	mA
MUT [Difference]	max. 20.000 mA	-0.004	-0.120	-0.139	-0.019	-0.187	mA
MUT [% Error]		-0.02	-0.60	-0.70	-0.09	-0.93	%
TOTALIZER - REF. FLOW RATE						94.178	LPS
TOTALIZER [MUT]						5.71	M3
TEST TIME						62.01	SECONDS
CALC. TOTALIZER						5.840	M3
ERROR						-2.28	%

COMMENTS

QUALITY MANAGEMENT STANDARDS INFO.

[QMS] INFORMATION	IDENT.	ID #
[REFERENCE] LEVEL	Sim. BOARD	n/a
PROCESS METER	DMM	2
STOP WATCH	SW	Yes

RESULTS

TEST	AVG %FS	PASS FAIL
DISPLAY	-0.53	PASS
mA OUTPUT	-0.47	PASS
TOTALIZER	-2.28	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.

Flowmetrix
Technical Services Inc.

Western Office
2088 Jetstream Road
London, Ontario
N5V 3P6

Eastern Office
1602 Old Wooler Road
Wooler, Ontario
K0K 3M0

Parshall Flume
Verification/Calibration Report

AS FOUND CERTIFICATION

PASS

CLIENT DETAIL

CUSTOMER Municipality of Chatham-Kent
CONTACT Todd Unsworth
Chief Operator - Wheatley WTP/STP
115 Detroit Line, RR#1
Wheatley ON N0P 2P0
t. 519-825-4183; c. 519-796-6089
e. toddu@chatham-kent.ca

VER. BY - FM Paris Machuk

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

EQUIPMENT DETAIL

[MUT] MANUFACTURER	Siemens
MODEL	Sitrans LUT400
CONVERTER SERIAL NUMBER	PBD/EO210328
PLANT ID	Wheatley Pollution Control Plant
METER ID	Raw Influent
FIT ID	N/A
CLIENT TAG	N/A
OTHER	N/A
GPS COORDINATES	N42 4.569 W82 27.449
VERIFICATION DATE	March 14, 2018
CAL. FREQUENCY	Annual
CAL. DUE DATE	March, 2019

PROGRAMMING PARAMETERS

THROAT DIMENSION (DN)	inches	9
EMPTY DISTANCE	m	1.093
MAX. HEAD	m	0.334
DEAD ZONE	m	0.759
BLANKING DISTANCE	m	0.300
MAX. FLOW	LPS	100.0
F.S. RANGE - O/P	LPS	100.0

TOTALIZER

AS FOUND	1628467.66	M3
AS LEFT	1628495.7	M3
DIFFERENCE	28.04	M3

TEST CRITERIA

AS FOUND CERTIFICATION TEST	Yes
ALLOWABLE [%] ERROR	5

COMPONENTS TESTED

CONVERTER DISPLAY	Yes
mA OUTPUT	Yes
TOTALIZER	Yes
ACCURACY BASED ON [% o.r.]	No

Ultrasonic sensor installed to ensure full scale flow condition

ERROR DOCUMENTED IN THIS REPORT; BASED ON % F.S.

AS FOUND TEST RESULTS

				0.0	5.5	15.8	45.6	84.9	% F.S. Range
				0.000	0.050	0.100	0.200	0.300	m
REF. FLOW RATE				**0.00**	**5.47**	**15.80**	**45.63**	**84.85**	LPS
MUT [Reading]				0.00	5.68	16.38	45.61	86.02	LPS
MUT [Difference]				**0.00**	**0.21**	**0.58**	**-0.02**	**1.17**	LPS
MUT [% Error]				**n/a**	**0.21**	**0.58**	**-0.02**	**1.17**	%
mA OUTPUT				**4.000**	**4.875**	**6.528**	**11.301**	**17.576**	mA
MUT [Reading]	min.	4.000	mA	3.998	4.899	6.624	11.430	17.801	mA
MUT [Difference]	max.	20.000	mA	**-0.002**	**0.024**	**0.096**	**0.129**	**0.225**	mA
MUT [% Error]				**-0.01**	**0.12**	**0.48**	**0.65**	**1.12**	%
TOTALIZER - REF. FLOW RATE								**84.854**	LPS
TOTALIZER [MUT]								7.09	M3
TEST TIME								81.43	SECONDS
CALC. TOTALIZER								**6.910**	M3
ERROR								**2.54**	%

COMMENTS

QUALITY MANAGEMENT STANDARDS INFO.

[QMS] INFORMATION	IDENT.	ID #
[REFERENCE] LEVEL	Sim. BOARD	Yes
PROCESS METER	DMM	2
STOP WATCH	SW	Yes

RESULTS

TEST	AVG %FS	PASS FAIL
DISPLAY	0.48	PASS
mA OUTPUT	0.47	PASS
TOTALIZER	2.54	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.

Flowmetrix
Technical Services Inc.

Western Office
2088 Jetstream Road
London, Ontario
N5V 3P6

Eastern Office
1602 Old Wooler Road
Wooler, Ontario
K0K 3M0

pH
Verification/Calibration Report

[MUT] AS FOUND **FAIL**

[MUT] AS LEFT **PASS**

CUSTOMER	Municipality of Chatham-Kent	[MUT] MANUFACTURER	HACH
CONTACT	Todd Unsworth	MODEL	HQ11d
	Chief Operator, Wheatley	SERIAL NUMBER	120800077797
	115 Detroit Line	CLIENT TAG	n/a
	Wheatley, ON N0P 2P0	LOCATION	Wheatley STP
	T. 519-825-4183	OTHER	n/a
	C. 519-796-6089		
	E. toddu@chatham-kent.ca		
VER. BY	*Randy Nichol*	TOLERANCE [pH]	0.05

Quality Management Standards Information - Standards, reference equipment, and instrumentation used to conduct this test outlining the lot#, and expiry date is found in our current

VERIFICATION DATE	March 26, 2018
CAL. FREQUENCY	Annual
CAL. DUE DATE	March-2019

pH VERIFICATION
NIST TRACEABLE (BUFFERS)

BEFORE CALIBRATION

REFERENCE BUFFER			[MUT] READINGS			
pH BUFFER	TEMP. ° C	pH CORRECTED	pH	TEMP. ° C	pH - ERROR DIFF.	PASS FAIL
4.01	19.4	4.00	4.06	19.3	0.06	FAIL
7.01	19.4	7.03	7.09	19.3	0.06	FAIL
10.01	19.4	10.06	10.13	19.3	0.07	FAIL
					RESULT	**FAIL**

AFTER CALIBRATION

REFERENCE BUFFER			[MUT] READINGS			
pH BUFFER	TEMP. ° C	pH CORRECTED	pH	TEMP. ° C	pH - ERROR DIFF.	PASS FAIL
4.01	19.4	4.00	4.01	19.4	0.01	PASS
7.01	19.4	7.03	7.06	19.4	0.03	PASS
10.01	19.4	10.06	10.10	19.4	0.04	PASS
					RESULT	**PASS**

mv offset/Assymetry	11
Slope	-56.95

COMMENTS

[QMS] INFORMATION	ITEM	ID #
[REFERENCE]		
4.01 BUFFER	pHBUFF4	1
7.01 BUFFER	pHBUFF7	1
10.01 BUFFER	pHBUFF10	1
TEMPERATURE REF.	DDTEMP	1

NIST Traceable Buffers were used to confirm the overall accuracy of this instrument. "AS FOUND" readings and "AS FOUND" readings are reported within this report. A temperature device was used to measure and record the buffer temperature to correct for pH values due to the effects related to buffer temperature.

Flowmetrix
Technical Services Inc.

Western Office
2088 Jetstream Road
London, Ontario
N5V 3P6

Eastern Office
1602 Old Wooler Road
Wooler, Ontario
K0K 3M0

Dissolved Oxygen
Verification/Calibration Report

CUSTOMER	Municipality of Chatham-Kent
CONTACT	Todd Unsworth Chief Operator, Wheatley 115 Detroit Line Wheatley, ON N0P 2P0 T. 519-825-4183 C. 519-796-6089 *E. toddu@chatham-kent.ca*
VER. BY	*Randy Nichol*

[MUT] MANUFACTURER	Aysix
MODEL	3100
SERIAL NUMBER	n/a
CLIENT TAG	n/a
LOCATION	Wheatley STP
OTHER	n/a

Quality Management Standards Information - Standards, reference equipment, and instrumentation used to conduct this test outlining the lot#, and expiry date is found in our current

VERIFICATION DATE	March 27, 2018
CAL. FREQUENCY	Annual
CAL. DUE DATE	March 2019

AS FOUND

Time	n/a
DO Concentration [%]	n/a
DO Concentration [mg/L]	9.4
Temperature	17.9
hpa	n/a

AS LEFT

Time	n/a
DO Concentration [%]	n/a
DO Concentration [mg/L]	10
Temperature	17.9
hpa	n/a

COMMENTS

Calibrated as per the manufacturers suggested practice used HQ30D as comparison.

[QMS] INFORMATION	ITEM	ID #

NIST Traceable Buffers were used to confirm the overall accuracy of this instrument. "AS FOUND" readings and "AS FOUND" readings are reported within this report. A temperature device was used to measure and record the buffer temperature to correct for pH values due to the effects related to buffer temperature.

APPENDIX C

Effluent Parameter Concentration and Waste Loading Calculation Spreadsheet

CHATHAM-KENT PUC
WHEATLEY WW
EFFLUENT PARAMETER CONCENTRATION AND WASTE LOADING

2017	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17
BOD												
# of Samples Collected	5	4	4	4	5	4	5	4	4	5	4	4
Sum of Sample Results	4	8	8	8	10	8	10	8	12	10	10	8
Total S.S.												
# of Samples Collected	5	4	4	4	5	4	5	4	4	5	4	4
Sum of Sample Results	56	17	13	21	36	17	19	14	40	63	36	17
Total P.												
# of Samples Collected	5	4	4	4	5	4	5	4	4	5	4	4
Sum of Sample Results	1.63	1.17	1.04	1.01	2.41	1.84	2.36	2.88	3.15	2.90	1.18	2.28
Total Ammonia												
# of Samples Collected	5	4	4	4	5	4	5	4	4	5	4	4
Sum of Sample Results	0.740	0.201	0.200	0.344	1.120	1.470	0.688	1.305	3.790	5.620	0.350	0.440
Average Daily Effluent Flow 1000m3	2.294	2.103	2.023	2.489	2.581	2.297	2.157	2.085	1.828	1.540	2.223	1.609

2018	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18
BOD												
# of Samples Collected	5	4	4	5	4	4	5	4	4	5	4	4
Sum of Sample Results	10	9	8	10	10	8	10	8	8	28	8	21
Total S.S.												
# of Samples Collected	5	4	4	5	4	4	5	4	4	5	4	4
Sum of Sample Results	23	31	22	43	43	20	21	30	35	53	36	58
Total P.												
# of Samples Collected	5	4	4	5	4	4	5	4	4	5	4	4
Sum of Sample Results	1.17	0.92	0.86	1.74	2.68	2.15	0.87	1.32	0.85	1.53	0.79	2.73
Total Ammonia												
# of Samples Collected	5	4	4	5	4	4	5	4	4	5	4	4
Sum of Sample Results	0.342	0.218	0.748	0.524	0.360	0.200	0.310	0.644	0.750	11.050	1.110	1.420
Average Daily Effluent Flow 1000m3	1.910	2.529	2.015	2.340	2.724	1.870	1.978	2.264	2.192	1.701	1.894	1.975

Effluent Parameter Concentration over any consectutive 12 month period (CofA #1-822-83-006) reported in mg/L

	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18
BOD	1.96	2.13	2.13	2.13	2.17	2.17	2.17	2.17	2.10	2.44	2.40	2.65
Total S.S.	6.08	6.35	6.52	6.81	7.08	7.13	7.17	7.48	7.38	7.19	7.19	7.98
Total P.	0.45	0.45	0.35	0.45	0.46	0.47	0.44	0.41	0.36	0.34	0.33	0.34
Total Ammonia	0.31	0.31	0.32	0.31	0.30	0.28	0.27	0.26	0.20	0.31	0.32	0.34

Effluent Waste Loading over any consectutive 12 month period (CofA #1-822-83-006) reported in kg/d

	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18
BOD	4.1	4.5	4.5	4.5	4.6	4.5	4.5	4.5	4.4	5.2	5.0	5.6
Total S.S.	12.58	13.36	13.72	14.25	14.90	14.76	14.74	15.48	15.50	15.20	15.00	16.89
Total P.	0.93	0.94	0.73	0.94	0.97	0.97	0.90	0.84	0.76	0.71	0.69	0.72
Total Ammonia	0.63	0.64	0.67	0.66	0.64	0.58	0.56	0.54	0.42	0.65	0.67	0.72

Wheatley WPCP-Rated Capacity-2,752m3	
Effluent Paramter Limits	
BOD	25mg/L
Total S.S.	25mg/L
Total P.	1.0 mg/L
Effluent Waste Loadings Limits	
BOD	68.8kg/d
Total S.S.	68.8kg/d
Total P.	2.75kg/d

Jan-18	2.070	Average Daily Flow over any 12 month period reported in 1000m3
Feb-18	2.106	
Mar-18	2.105	
Apr-18	2.093	
May-18	2.105	
Jun-18	2.069	
Jul-18	2.054	
Aug-18	2.069	
Sep-18	2.100	
Oct-18	2.113	
Nov-18	2.086	
Dec-18	2.116	

Effluent Concentration - 2018	MIN	MAX	AVG
BOD	1.96	2.65	2.22
Total S.S.	6.1	8.0	7.0
Total P.	0.33	0.47	0.40
Total Ammonia	0.20	0.34	0.29

Effluent Waste Loading - 2018	MIN	MAX	AVG
BOD	4.06	5.62	4.64
Total S.S.	12.6	16.9	14.70
Total P.	0.69	0.97	0.84
Ammoinia	0.42	0.72	0.61