

**PUBLIC UTILITIES COMMISSION  
FOR THE MUNICIPALITY OF CHATHAM-KENT  
DRESDEN WASTEWATER TREATMENT PLANT**

**2018 PERFORMANCE REPORT**

**January 1 to December 31, 2018**

**Amended Certificate of Approval # 8101-7QHKYR**

## **Plant Type and Brief Description:**

The Dresden Water Pollution Control Plant provides treatment of wastewater for approximately 2,500 residents of Dresden. Wastewater is collected and transported to the plant by gravity through the sanitary sewer system. As such, there are no sanitary pump stations located in Dresden.

The Dresden Water Pollution Control Plant is an Extended Aeration Plant with chemical phosphorus removal and final effluent disinfection. The plant was built in 1976 with a maximum design flow of 4,546m<sup>3</sup>/day. The plant discharges final effluent to the Sydenham River.

The existing treatment system includes the following processes:

- Raw sewage pumping
- Screening collection and removal
- Aerated Grit System
- Aeration Tanks
- Chemical phosphorus removal
- Settling Clarifiers
- Chlorine disinfection of final effluent
- Sludge collection and pumpage
- Sludge holding lagoons

Sludge from the holding lagoons is applied to agricultural land in the spring and fall each year.

## **REPORTING REQUIREMENTS**

### **UNDER CERTIFICATE OF APPROVAL # 8101-7QHKYR**

#### **Summary and Interpretation of Monitoring and Comparison to the Effluent Limits: Condition 9 (5) (a)**

Tables 1 and 2 outline monthly average results of parameters tested compared to the limits outlined in the Certificate of Approval Table 2 Effluent Limits.

No criteria were exceeded during this reporting period for the effluent limits as outlined in Condition 6 Effluent Limits of the Certificate of Approval.

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

During the reporting period, the annual average daily flow was 1,672 m<sup>3</sup>/day, which represents approximately 37% of the rated capacity of 4,546 m<sup>3</sup>/day.

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

Overall, the Dresden WPCP performed well for this reporting period.

**Table 1: Summary of Monitoring Data and Comparison to Effluent Limits & Objectives – Concentrations**

as well as rated capacity to the sewage works

**Rated Capacity: 4,546 m<sup>3</sup>/day average daily flow**

**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 Influent Flow m <sup>3</sup>	Avg Daily Influent Flow /Month m <sup>3</sup> /day	Avg Daily Influent Flow/Year m <sup>3</sup> /day	% of Plant Capacity	CBOD <sub>5</sub> mg/L	pH	Total P mg/L	Total S.S. mg/L	Total Cl <sub>2</sub> mg/L	E.coli
<b>Limits</b>	none	none	4,546	100	25	6.0 - 9.5	1.0	25		200
<b>Objectives</b>	none	none	4,546	100	15	6.0 - 9.5	0.8	15		
<b>Jan</b>	38,146	1,231			2.0	7.64	0.09	1.4	0.68	10
<b>Feb</b>	49,561	1,770			2.0	7.98	0.17	1.0	0.45	13
<b>Mar</b>	43,915	1,417			2.0	7.90	0.18	1.5	0.42	10
<b>Apr</b>	51,344	1,711			2.2	7.91	0.13	1.6	0.27	37
<b>May</b>	39,337	1,269			2.5	8.11	0.10	3.5	0.66	12
<b>Jun</b>	40,842	1,361			2.5	8.05	0.09	1.8	0.51	10
<b>Jul</b>	37,659	1,215			2.0	7.90	0.09	2.8	0.55	18
<b>Aug</b>	47,557	1,534			2.3	7.88	0.16	5.0	0.57	27
<b>Sep</b>	115,846	3,862			2.0	8.38	0.24	7.3	0.37	120
<b>Oct</b>	64,799	2,090			2.0	7.98	0.17	8.2	0.82	12
<b>Nov</b>	44,292	1,476			2.0	8.14	0.08	4.3	0.88	10
<b>Dec</b>	37,069	1,196			2.0	7.89	0.08	6.8	0.97	10
<b>Year</b>			1,672	37%						
	<b>Yearly Total Flow m<sup>3</sup></b>	<b>Yearly Maximums</b>								
	610,367	3,862			2.5	8.38	0.24	8.2	0.97	120

**Table 2: Summary of Monitoring Data and Comparison to Effluent Limits – Loadings**

<b>Month</b>	<b>Avg Daily influent Flow /Month m<sup>3</sup>/day</b>	<b>CBOD<sub>5</sub> Kg/Day</b>	<b>Total S.S. Kg/Day</b>	<b>Total P Kg/Day</b>
<b>Limits</b>	<b>none</b>	<b>113</b>	<b>113</b>	<b>4.5</b>
Jan	1,231	2.46	1.72	0.11
Feb	1,770	3.54	1.77	0.30
Mar	1,417	2.83	2.12	0.26
Apr	1,711	3.77	2.74	0.22
May	1,269	3.17	4.44	0.13
Jun	1,361	3.40	2.38	0.12
Jul	1,215	2.43	3.40	0.11
Aug	1,534	3.45	7.67	0.24
Sep	3,862	7.72	28.00	0.91
Oct	2,090	4.18	17.14	0.35
Nov	1,476	2.95	6.27	0.11
Dec	1,196	2.39	8.07	0.09
	<b>Yearly Maximums</b>			
	<b>3,861</b>	<b>7.72</b>	<b>28.00</b>	<b>0.91</b>

**Operating Problems and Corrective Action:  
Condition 9 (5) (b)**

There were no major operational problems encountered during the reporting period.

**Summary of Maintenance Activities:  
Condition 9 (5) (c)**

All regular and routine maintenance in the plant was carried out throughout the reporting period. Aeration tanks were drained and cleaned as well as inspected. 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:

• Generator Serviced	\$ 1,000
• Replace Pocket Colourimeter Replacement	610
• Wet Well Clean Out	6,100
• Replacement Portable pH probe	250
• Installation of new Equipment Lifts for all Tanks	13,000
• Main Lift pump #1 Repair	3,600
• Replace Cl <sub>2</sub> shut off valves extensions in the contact chamber	1,000
• SCADA and Processor Equipment Installation (ongoing)	45,000
• Effluent Water sampler replacement	500
• Back Flow preventers tested	200
• Generator Repair	2,100
• Side 1 seeding during canner's tomato season start up	700
• Installation of 3 Support Brackets/Cl <sub>2</sub> leak repair in Contact Chamber	100
• New Verbatim for Extra Alarms	8,000

**Quality Assurance and Control Measures:  
Condition 9 (5) (d)**

Dresden Water Pollution Plant 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 monthly to an accredited laboratory for analysis of BOD<sub>5</sub>, Total Suspended Solids, Total Phosphorus, pH and Total Kjeldahl Nitrogen.

Composite chemistry samples of the effluent were collected using an auto sampler. Chemistry samples were submitted weekly to an accredited laboratory for analysis of CBOD<sub>5</sub>, Total Suspended Solids, Total Kjeldahl Nitrogen, Total Phosphorus and Total Ammonia Nitrogen, Alkalinity, pH, Nitrite and Nitrate.

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 analyzed by a licensed operator for pH, DO, and temperature.

**Calibration and Maintenance on Effluent Monitoring Equipment:  
Condition 9 (5) (e)**

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

**Effluent Objectives:  
Condition 9 (5) (f)**

Table 1 outlines monthly average results of parameters tested compared to the objectives outlined in the Certificate of Approval Table 1 Effluent Objectives.

No criteria was exceeded during this reporting period for the effluent objectives outlined in Condition 5 Effluent Objectives of the Certificate of Approval.

**Sludge Management:  
Condition 9 (5) (g)**

During the reporting period, waste activated sludge was transferred to the sludge holding lagoons. Terratec Environmental Ltd. was contracted to land apply the sludge according to agreements listed below.

***Tabulation of the Volume of Sludge Generated  
Summary of Locations where the Sludge was Disposed***

<b>MONTH</b>	<b>SLUDGE VOLUME in m<sup>3</sup></b>	<b>TRANSFER TO LOCATION</b>	<b>AGREEMENT NUMBER</b>
May	1,332	Concession 2, Lot 6 Zone Township Chatham Kent	NASM Plan# 21741
November	1,012	Concession 2, Lot 14 Concession 2, Lot 15 Concession Block between Con 2 & 3, Lot 18 Zone Township Chatham Kent	NASM Plan# 22092
Total Sludge Applied	2,344		

***Outline of Anticipated Volumes in Next Reporting Period***

The sludge production and sludge handling method for the next reporting period is anticipated to be similar to that of this reporting period.

**Community Complaints:  
Condition 9 (5) (h)**

There were no Customer Complaints received during the reporting period.

**By-pass, Spill, or Abnormal Discharge Events:  
Condition 9 (5) (i)**

There were no by-pass or spill events for the reporting period.

**Other Information the District Manager Requires:  
Condition 9 (5) (j)**

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

**APPENDIX A**

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



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	TOTAL	MAX	MIN	AVG
<b>Raw Sewage</b>																
Total Flow 1000 m <sup>3</sup>	38.146	49.561	43.915	51.344	39.337	40.842	37.659	47.557	115.846	64.799	44.292	37.069	610.367	115.846	37.069	50.864
Avg. Daily Flow 1000 m <sup>3</sup> /d	1.231	1.770	1.417	1.711	1.269	1.361	1.215	1.534	3.862	2.090	1.476	1.196	3.862	3.862	1.196	1.672
Max Daily Flow 1000 m <sup>3</sup> /d	1.817	5.877	2.096	5.989	2.230	3.736	2.473	3.061	5.468	8.399	3.778	1.680	8.399	8.399	1.680	3.884
<b>Final Effluent</b>																
Total Flow 1000 m <sup>3</sup>	38.172	48.75	45.019	41.818	37.009	40.893	41.852	40.638	117.828	61.15	55.319	37.438	605.886	117.828	37.009	50.491
Avg. Daily Flow 1000 m <sup>3</sup> /d	1.231	1.741	1.452	1.394	1.194	1.363	1.350	1.311	3.928	1.973	1.844	1.208	3.928	3.928	1.194	1.666
Max Daily Flow 1000 m <sup>3</sup> /d	1.848	4.59	2.062	2.784	1.509	1.903	1.865	2.756	5.689	4.342	3.739	1.575	5.689	5.689	1.509	2.889
<b>Chlorine</b>																
CL2 Kgs. Used	67.3	57.3	53.2	46.4	55.0	46.8	51.3	63.6	188.1	128.6	105.1	96.2	958.90	188.10	46.36	79.908
CL2 Avg. Dosage mg/L	1.8	1.2	1.2	0.9	1.4	1.1	1.4	1.3	1.6	2.0	2.4	2.6	2.6	2.6	0.9	1.571
CL2 Avg. Residual mg/L	0.68	0.45	0.42	0.27	0.66	0.51	0.55	0.57	0.37	0.82	0.88	0.97	1.0	1.0	0.3	0.595
# of Samples	23	20	22	21	23	21	21	23	20	23	22	21	21			
<b>Aluminum Sulphate</b>																
Total Litres Used	2131.20	1375.20	3844.80	3398.40	3412.80	2282.4	3754.08	5162.40	8438.40	7790.40	4154.40	2556.00	48300.48	8438.40	1375.20	4025.040
Avg. Monthly Dosage	21.50	12.90	33.36	28.56	31.87	22.61	38.96	43.75	28.57	53.52	37.82	25.50	53.5	53.5	12.9	31.577
<b>Final Effluent Loadings</b>																
CBOD <sub>5</sub> , kg/d	2.46	3.54	2.83	3.77	3.17	3.40	2.43	3.45	7.72	4.18	2.95	2.39	7.72	7.72	2.39	3.53
Solids, Suspended kg/d	1.72	1.77	2.12	2.74	4.44	2.38	3.40	7.67	28.00	17.14	6.27	8.07	28.00	28.00	1.72	7.14
Phosphorous, Total as P, kg/d	0.11	0.30	0.26	0.22	0.13	0.12	0.11	0.24	0.91	0.35	0.11	0.09	0.91	0.91	0.09	0.25
Ammonia as N, kg/d	0.24	0.38	0.23	0.27	0.41	0.39	0.23	0.11	0.46	0.22	0.17	0.09	0.46	0.46	0.09	0.27
<b>Hauled Sludge</b>																
Volume m <sup>3</sup>					1,332						1,012		2344.0	1332.0	1012.0	1172.00
pH					7.14						7.12		7.14	7.14	7.12	7.13
Total Solids mg/l					18,000						11,000		18000.00	18000.00	11000.00	14500.00
Total P kg/m <sup>3</sup>					300.00						380.00		380.00	380.00	300.00	340.00
Nitrogen kg/m <sup>3</sup>					0.13						0.04		0.13	0.13	0.04	0.09

	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
<b>Disinfection</b>																
results are geometric means																
E.Coli Results CFU/100ml	10.00	12.60	10.00	37.28	11.89	10.00	18.21	27.36	120.00	12.46	10.00	10.00		120.00	10.00	24.15
# of Samples	5	4	4	5	4	4	5	4	4	5	4	4	52	5	4	4
<b>Raw Sewage</b>																
BOD5, mg/L	92.0	130.0	290.0	170.0	120.0	130.0	260.0	280.0	101.0	84.0	65.0	170.0		290.0	65.0	157.7
Nitrogen, T. Kjeldahl as N, mg/L	33.0	40.0	28.0	27.0	21.0	26.0	2.0	27.0	13.0	17.0	14.0	22.0		40.0	2.0	22.5
PH	7.65	7.69	7.07	7.28	7.16	7.75	7.14	6.92	7.91	7.43	7.48	7.32		7.91	6.92	7.4
Phosphorous, Total as P, mg/L	3.6	4.6	4.4	5.5	2.7	3.3	5.0	10.0	2.3	4.2	2.3	2.9		10.0	2.3	4.2
Solids, Suspended mg/L	52	150	200	190	49	160	270	250	54	170	52	160		270	49	146
# of Samples	1	1	1	1	1	1	1	1	1	1	1	1	12	1	1	1
<b>Final Effluent</b>																
Total Ammonia mg/l	0.20	0.22	0.16	0.16	0.32	0.29	0.19	0.07	0.12	0.11	0.12	0.07		0.32	0.07	0.2
Total CBOD5 mg/l	2.00	2.00	2.00	2.20	2.50	2.50	2.00	2.25	2.00	2.00	2.00	2.00		2.50	2.00	2.1
Total Kjeldahl Nitrogen (TKN) mg/l	0.70	1.08	0.66	0.57	0.72	0.53	0.62	0.84	0.84	0.86	0.57	0.73		1.08	0.53	0.7
pH (Maxxam Lab Results)	7.64	7.98	7.90	7.91	8.11	8.05	7.90	7.88	8.38	7.98	8.14	7.89		8.38	7.64	8.0
Total Phosphorus mg/l	0.09	0.17	0.18	0.13	0.10	0.09	0.09	0.16	0.24	0.17	0.08	0.08		0.24	0.08	0.1
Total Suspended Solids mg/L	1.40	1.00	1.50	1.60	3.50	1.75	2.80	5.00	7.25	8.20	4.25	6.75		8.2	1	3.8
Alkalinity (Total as CaCO3) mg/l	121.20	177.50	175.00	176.00	192.50	165.00	146.00	98.75	552.50	252.00	200.00	137.50		552.50	98.75	199.5
Nitrite mg/l	0.14	0.12	0.20	0.12	0.07	0.04	0.03	0.02	0.03	0.01	0.02	0.02		0.20	0.01	0.1
Nitrate mg/l	18.46	7.76	8.14	9.35	1.21	4.40	4.37	18.58	5.20	21.76	15.05	19.00		21.76	1.21	11.1
Temp. °C	9.54	10.45	9.91	9.97	16.10	19.13	21.45	22.44	8.02	15.97	12.45	11.51		22.44	8.02	13.9
# of Samples	5	4	4	5	4	4	5	4	4	5	4	4	52	5	4	4
Total Unionized Ammonia mg/l (Pro)	0.001	0.006	0.025	0.002	0.009	0.016	0.008	0.020	0.008	0.004	0.003	0.005		0.025275	0.001280	0.008943
<b>Federal (Quarterly)</b>																
Final Flow Qtr. m3	119720.00												153907.00			
CBOD Qtr. mg/L	2.40												2.00			
SS Qtr. mg/L	2.28												6.40			
Number of Days	91												92			

<b>Federal WSER Acute Lethality</b>
Average Daily Volume Effluent (m <sup>3</sup> ):
1660

## **APPENDIX B**

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

Western Office  
2088 Jetstream Road  
London, Ontario  
N5V 3P6

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

**AS FOUND CERTIFICATION**

**PASS**

CLIENT DETAIL		EQUIPMENT DETAIL	
CUSTOMER	Municipality of Chatham-Kent - North	[MUT] MANUFACTURER	Milltronics
CONTACT	Brian Patrick Senior/Chief Operator, OWRC Wallaceburg Pollution Control Plant 795 Gillard Street Wallaceburg, ON N8A 5G7 T: 519-627-1211 C: 519-354-5664 E: brianpa@chatham-kent.ca	MODEL	OCM III
		CONVERTER SERIAL NUMBER	N/A
		PLANT ID	Dresden Water Pollution Control Plant
		METER ID	Raw Flow (Influent)
		FIT ID	FIT-Influent
		CLIENT TAG	N/A
		OTHER	N/A
		GPS COORDINATES	N/A
		ADDRESS	699 Comden St. Dresden, ON
		VERIFICATION DATE	February 01, 2018
		CAL. FREQUENCY	Annual
		CAL. DUE DATE	February, 2019

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

PROGRAMMING PARAMETERS			TOTALIZER		
THROAT DIMENSION (DN)	inches	12	AS FOUND	5839231	M3
EMPTY DISTANCE	m	1.365	AS LEFT	5839277	M3
MAX. HEAD	m	0.293	DIFFERENCE	46	M3
DEAD ZONE	m	1.072			
BLANKING DISTANCE	m	0.300	AS FOUND CERTIFICATION TEST		Yes
MAX. FLOW	M3/D	9200.8	ALLOWABLE [%] ERROR		5
F.S. RANGE - O/P	M3/D	9200.0			

COMPONENTS TESTED	
CONVERTER DISPLAY	yes
mA OUTPUT	no
TOTALIZER	yes
ACCURACY BASED ON [% o.r.]	no
ERROR DOCUMENTED IN THIS REPORT, BASED ON % F.S.	

Ultrasonic sensor installed to ensure full scale flow condition

AS FOUND TEST RESULTS							
		22.5	36.2	56.0	78.7	96.0	% F.S. Range
		0.110	0.150	0.200	0.250	0.285	m
<b>REF. FLOW RATE</b>		<b>2074.57</b>	<b>3326.13</b>	<b>5153.43</b>	<b>7237.58</b>	<b>8834.92</b>	M3/D
MUT [Reading]		2209.61	3447.15	5273.95	7371.32	8948.20	M3/D
MUT [Difference]		135.04	121.02	120.52	133.74	113.28	M3/D
MUT [% Error]		1.47	1.32	1.31	1.45	1.23	%
<b>mA OUTPUT</b>							
MUT [Reading]	min. 4.000 mA						
MUT [Difference]	max. 20.000 mA						
MUT [% Error]							
<b>TOTALIZER - REF. FLOW RATE</b>						<b>8834.924</b>	M3/D
TOTALIZER [MUT]						7	M3
TEST TIME						67.02	SECONDS
CALC. TOTALIZER						6.853	M3
ERROR						2.10	%

COMMENTS	QUALITY MANAGEMENT STANDARDS INFO.			RESULTS			
	Note: customer not using 4-20 mA output therefore not checked.	[QMS] INFORMATION	IDENT.	ID #	TEST	AVG %FS	PASS FAIL
		[REFERENCE] LEVEL	Sim. BOARD	Yes	DISPLAY	1.33	PASS
PROCESS METER		DMM	N/A	mA OUTPUT	N/A	N/A	
	STOP WATCH	SW	Yes	TOTALIZER	2.10	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.

**Western Office**  
 2088 Jetstream Road  
 London, Ontario  
 N5V 3P6

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

### AS FOUND CERTIFICATION

## PASS

CLIENT DETAIL	EQUIPMENT DETAIL
<b>CUSTOMER</b> Municipality of Chatham-Kent - North	<b>[MUT] MANUFACTURER</b> Milltronics
<b>CONTACT</b> Brian Patrick	<b>MODEL</b> OCM III
Senior/Chief Operator, OWRC Wallaceburg Pollution Control Plant	<b>CONVERTER SERIAL NUMBER</b> N/A
795 Gillard Street	
Wallaceburg, ON N8A 5G7	
T: 519-627-1211	<b>PLANT ID</b> Dresden Water Pollution Control Plant
C: 519-354-5664	<b>METER ID</b> Effluent Flow
E: brianpa@chatham-kent.ca	<b>FIT ID</b> FIT-Effluent
	<b>CLIENT TAG</b> N/A
	<b>OTHER</b> N/A
	<b>GPS COORDINATES</b> N/A
<b>VER. BY - FM</b> Paris Machuk	<b>ADDRESS</b> 699 Camden St. Dresden, ON
Quality Management Standards Information -	<b>VERIFICATION DATE</b> February 01, 2018
Reference equipment and instrumentation used to	<b>CAL. FREQUENCY</b> Annual
conduct this verification test is found in our AC-	<b>CAL. DUE DATE</b> February, 2019
QMS document at the time this test was	

PROGRAMMING PARAMETERS			TOTALIZER	
THROAT DIMENSION (DN)	inches	12	AS FOUND	7547371 M3
EMPTY DISTANCE	m	0.875	AS LEFT	7547430 M3
MAX. HEAD	m	0.293	DIFFERENCE	59 M3
DEAD ZONE	m	0.582		
BLANKING DISTANCE	m	0.300	<b>TEST CRITERIA</b>	
MAX. FLOW	M3/D	9207.0	AS FOUND CERTIFICATION TEST	Yes
F.S. RANGE - O/P	M3/D	9206.0	ALLOWABLE [%] ERROR	5

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.	

Ultrasonic sensor installed to ensure full scale flow condition

#### AS FOUND TEST RESULTS

		25.7	36.1	56.0	78.6	96.0	% F.S. Range
		0.120	0.150	0.200	0.250	0.285	m
<b>REF. FLOW RATE</b>		<b>2368.33</b>	<b>3326.13</b>	<b>5153.43</b>	<b>7237.58</b>	<b>8834.92</b>	M3/D
MUT [Reading]		2245.77	3288.64	5108.36	7177.20	8764.60	M3/D
MUT [Difference]		-122.56	-37.50	-45.07	-60.38	-70.32	M3/D
MUT [% Error]		-1.33	-0.41	-0.49	-0.66	-0.76	%
<b>mA OUTPUT</b>		<b>8.116</b>	<b>9.780</b>	<b>12.956</b>	<b>16.578</b>	<b>19.353</b>	mA
MUT [Reading]	min. 4.000 mA	7.896	9.738	12.855	16.477	19.233	mA
MUT [Difference]	max. 20.000 mA	-0.220	-0.042	-0.101	-0.101	-0.120	mA
MUT [% Error]		-1.10	-0.21	-0.50	-0.50	-0.60	%
<b>TOTALIZER - REF. FLOW RATE</b>						<b>8834.924</b>	M3/D
TOTALIZER [MUT]						10	M3
TEST TIME						99.15	SECONDS
CALC. TOTALIZER						10.139	M3
ERROR						-1.39	%

#### 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	-0.58	PASS
mA OUTPUT	-0.58	PASS
TOTALIZER	-1.39	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.

Western Office  
2088 Jetstream Road  
London, Ontario  
N5V 3P6

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

# PASS

AS FOUND CERTIFICATION

<b>CUSTOMER CONTACT</b>	Municipality of Chatham-Kent Todd Daly Chief Operator, North East Dresden WPCP 699 Camden St. Dresden, ON N6P 1M0 c. 519-359-2815 e. toddd@chatham-kent.ca	<b>[MUT] MANUFACTURER</b>	HACH
		<b>MODEL</b>	DR3900
		<b>SERIAL NUMBER</b>	1711042
		<b>CLIENT TAG</b>	n/a
		<b>LOCATION</b>	Dresden STP
		<b>OTHER</b>	n/a
<b>VER. BY</b>	Rundy Nichol	<b>TOLERANCE [mg/L]</b>	0.05
		<b>STANDARD RECOVERY [%]</b>	90
<b>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</b>		<b>VERIFICATION DATE</b>	June 26, 2018
		<b>CAL. FREQUENCY</b>	Annual
		<b>CAL. DUE DATE</b>	June 2019

### CHLORINE [Cl<sub>2</sub>] SECONDARY STANDARDS

STANDARD	BLANK [mg/L]			READING mg/L	PASS FAIL
STD 1	0.21	+/-	0.09	0.25	PASS
STD 2	0.91	+/-	0.10	0.94	PASS
STD 3	1.66	+/-	0.14	1.68	PASS

### CHLORINE [Cl<sub>2</sub>] PRIMARY STANDARDS

STANDARD VALUE [mg/L] 27.3  
STANDARD ADDITIONS SIZE [mL] 0.200

BLANK SAMPLE SIZE [mL] 10.0  
DPD LOT# A7159  
EXPIRY DATE May-22

SAMPLE TEST #	Cl <sub>2</sub> STANDARD mL	COMBINED SAMPLE mL	REFERENCE STANDARD mg/L	REFERENCE READING mg/L	MUT READING mg/L	DIFF. ERROR mg/L	PASS FAIL	STANDARD RECOVERY %
BLANK	0	10.000	0	0	0	0	PASS	N/A
STD 1	0.200	10.200	0.54	0.53	0.53	0.00	PASS	98.1
STD 2	0.400	10.400	1.05	1.01	1.02	0.01	PASS	96.2
STD 3	0.600	10.600	1.55	1.45	1.47	0.02	PASS	93.5
<b>AVERAGE RESULTS</b>						0.01	PASS	95.9

<b>COMMENTS</b>	<b>[QMS] INFORMATION</b>	<b>ITEM</b>	<b>ID #</b>
	[REFERENCE] HACH PCII	HACH PC II	1
	10.0 mL PIPETTE	HACH-PP-10	1
	0.2 mL PIPETTE	G-PP-2	1
	SECONDARY STANDARDS	AS-CLSS	1
	PRIMARY STANDARDS	AS-CLPS	1
	ABSORBANCE STANDARDS	AS-ABS	1

ABSORBANCE CHECKS		
WAVELENGTH	TESTED	PASS/FAIL
420 nm	Yes	PASS
520 nm	Yes	PASS
560 nm	Yes	PASS
610 nm	Yes	PASS

Primary and Secondary standards were used to confirm the overall accuracy of this instrument along with conducting an analytical comparative technique against a reference meter. All values are considered "AS FOUND" readings. If the "AS FOUND" readings were not within acceptable limits, an "AS LEFT" report will be issued if the instrument was able to be calibrated to indicate the overall accuracy of the meter. If the meter was not calibrated for any reason, a comment will be issued for this instrument.