

ANNUAL REPORT

ARTHUR WASTEWATER TREATMENT PLANT

FOR THE PERIOD:
MAY 1, 2018 – APRIL 30, 2019

*Prepared for the Township of Wellington North
by the Ontario Clean Water Agency*



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1. System Description

The Arthur Wastewater Treatment System begins with the Inlet Works feeding into two (2) Grit Channels that feed towards a comminutor, complete with a bypass screen for when the comminutor is offline.

The first treatment step consists of two (2) cell annular ring type aeration tanks, equipped with fine bubble air diffusion systems. At this stage, chemicals are added for phosphorus removal via chemical metering pumps. Treated effluent is then fed into a Final Clarifier which contains sludge collection units and a scum skimming mechanism for sludge management. Effluent is then directed through an effluent filter system (granular media filter modules) and a UV Disinfection System for microbiological control. Treated effluent is then directed to an Outfall Sewer via gravity during discharge periods; when discharge is not possible, effluent is pumped towards Sewage Lagoons for storage.

A return sludge and waste sludge pumping system handles any collected sludge from the treatment stages and directs it towards two (2) aerobic sludge digestors and four (4) sludge storage tanks for approved haulage as required.

An overview of the Arthur Wastewater Treatment System can be found in the following table:

Table 1: Arthur WWTP System Overview

Facility Name	Arthur Wastewater Treatment Plant
Facility Type	Extended Aeration, Sand Filtration, Chemical Phosphorus Removal, and UV Treatment
Plant Classification	III
Works Number	110000882
Rated Capacity	1,465 m3/d
Discharge Point	Conestogo River
Environmental Compliance Approval	3773-ABJKXX (November 28, 2016)

2. Monitoring Data and Comparison to Effluent Limits

ECA 3773-ABJKXX, Section 10 (6)(a):

“a summary and interpretation of all monitoring data (including daily discharge rates of effluent and streamflows, as well as monthly discharge volumes) and a comparison to the effluent limits outlined in Condition 6, including an overview of the success and adequacy of the Works;”

2.1 Monitoring Program

The following tables outline the monitoring programs at the Arthur Wastewater Treatment Plant (WWTP) as required by the ECA that was issued for the reporting period. There are additional in-house samples taken and analyzed in-house throughout the year in order to help with process performance monitoring, adjustment, and optimization. The parameters were analyzed by an accredited analytical laboratory (SGS Canada Inc., Lakefield, Ontario).

Table 2: Influent Monitoring Program – Discharge of Inlet Sewer

Parameters	Sample Type	Frequency
Biochemical Oxygen Demand (BOD ₅)	24-hour Composite	Monthly
Total Suspended Solids (TSS)	24-hour Composite	Monthly
Total Phosphorous (TP)	24-hour Composite	Monthly
Total Kjeldahl Nitrogen (TKN)	24-hour Composite	Monthly

Table 3: Influent Monitoring Program – Pond Influent Liquid (When discharging to the Holding Pond)

Parameters	Sample Type	Frequency
Carbonaceous Biochemical Oxygen Demand (CBOD ₅)	Grab	Monthly
Total Suspended Solids (TSS)	Grab	Monthly
Total Phosphorous (TP)	Grab	Monthly
Total Ammonia Nitrogen (TAN)	Grab	Monthly
Nitrite-Nitrogen	Grab	Monthly
Total Kjeldahl Nitrogen (TKN)	Grab	Monthly
Hydrogen Sulfide (when odour present)	Grab/Probe	Monthly
Dissolved Oxygen	Grab/Probe	Monthly
pH	Grab/Probe	Monthly
Temperature	Grab/Probe	Monthly

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Table 4: Effluent Monitoring – Plant Outfall Pipe during Discharge Periods

Parameters	Sample Type	Frequency
Carbonaceous Biochemical Oxygen Demand (CBOD ₅)	Composite	Weekly
Total Suspended Solids (TSS)	Composite	Weekly
Total Phosphorous (TP)	Composite	Weekly
Total Ammonia Nitrogen (TAN)	Composite	Weekly
Nitrite-Nitrogen (NO ₂ -)	Composite	Weekly
Nitrate-Nitrogen (NO ₃ -)	Composite	Weekly
Total Kjeldahl Nitrogen (TKN)	Composite	Weekly
Hydrogen Sulfide (H ₂ S) (during odour)	Grab/Probe	Weekly
<i>E. Coli</i>	Grab	Weekly
Dissolved Oxygen (DO)	Grab/Probe	Weekly
pH	Grab/Probe	Weekly
Temperature	Grab/Probe	Weekly

Table 5: Effluent Monitoring – Pond Outfall Pipe during Emergency Discharge

Parameters	Sample Type	Frequency
Carbonaceous Biochemical Oxygen Demand (CBOD ₅)	Grab	Samples to be taken at minimum, on the first and last day of the discharge period (or more frequently as directed by the Water Supervisor), and for every 0.5 metre of draw-down in the pond cells
Total Suspended Solids (TSS)	Grab	
Total Phosphorous (TP)	Grab	
<i>E. Coli</i>	Grab	
Dissolved Oxygen (DO)	Grab/Probe	
pH	Grab/Probe	
Total Ammonia Nitrogen (TAN)	Grab	
Hydrogen Sulfide (H ₂ S)	Grab/Probe	

2.2 Sewage Characteristics

A summary of the influent laboratory results can be seen in the following tables:

Table 4: Influent Lab Analysis – Discharge of Inlet Sewer

Month & Year	TP (mg/L)	BOD ₅ (mg/L)	TSS (mg/L)	TKN (mg/L)
May 2018	3.83	122.00	115.00	23.40
June 2018	6.11	236.00	157.00	31.00
July 2018	7.52	287.00	171.00	37.90
August 2018	5.20	225.00	174.00	33.90
September 2018	6.66	157.00	196.00	32.90
October 2018	4.61	181.00	194.00	32.90
November 2018	3.98	126.00	118.00	23.00
December 2018	2.54	83.00	74.00	21.20
January 2019	5.14	140.00	118.00	34.50
February 2019	5.34	280.00	146.00	60.20
March 2019	5.51	156.00	125.00	22.10
April 2019	3.97	308.50	141.00	20.25
Annual Average	5.03	191.79	144.08	31.10

Table 5: Influent Lab Analysis – Pond Influent Liquid during Retention Period

Month & Year	CBOD ₅ (mg/L)	TSS (mg/L)	TP (mg/L)	TAN (mg/L)	NO ₃ ⁻ (mg/L)	NO ₂ ⁻ (mg/L)	TKN (mg/L)	DO (mg/L)	pH
May 2018	4.00	6.00	0.18	0.10	14.70	0.04	2.60	8.70	7.56
June 2018	2.00	4.00	0.21	0.20	16.80	0.11	0.90	8.20	7.51
July 2018	4.00	7.00	0.72	2.20	18.10	0.38	2.80	8.70	7.56
August 2018	2.00	5.00	0.38	0.10	26.70	0.03	0.70	8.30	7.56
Annual Average	3.00	5.50	0.373	0.65	19.08	0.14	1.75	8.48	7.55

Inlet Sewer lab analysis throughout the year averaged a Total Phosphorus (TP) of 5.03 mg/L, a Biochemical Oxygen Demand of 191.79 mg/L, a Total Suspended Solids (TSS) concentration of 144.08 mg/L, and a Total Kjeldahl Nitrogen concentration of 31.10 mg/L.

During influent retention periods, the pond received average concentrations of CBOD₅ at 3.00 mg/L, TSS at 5.50 mg/L, TP at 0.373 mg/L, TAN at 0.65 mg/L, NO₃⁻ at 19.08 mg/L, NO₂⁻ at 0.14 mg/L, TKN at 1.75 mg/L, DO at 8.48 mg/L and an average pH of 7.55.

2.3 Effluent Limits

The following table outlines the effluent limits at the Arthur Wastewater Treatment Plant as per its ECA. The applicable effluent parameters are either “concentrations” expressed as milligrams per litre or “loadings” expressed as kilograms per day, and they are reportable either “Annually,” “Monthly,” or “Daily.”

Table 6: Arthur WWTP Effluent Limits

Source	Parameter	Monthly Average Concentration (mg/L)	Annual Average Concentration (mg/L)	Annual Average Waste Loading (Kg/d)
Final Effluent	CBOD ₅	15	10	14.65
	Total Suspended Solids	15	10	14.65
	Total Phosphorus	1	1	1.47
	Total Ammonia Nitrogen	2.3	1.5	2.20
	<i>E. coli</i>	200	n/a	n/a
	pH	6.0 to 9.5, inclusive		

CBOD₅ = Carbonaceous Biochemical Oxygen Demand

2.4 Effluent Results During Discharge Periods

The following tables outline the Monthly Averages and Annual Averages for the 2018 – 2019 reporting period at the Arthur WWTP:

Table 7: Carbonaceous Biochemical Demand Concentrations versus ECA Limits

	Monthly Average Concentration (mg/L)	Within Monthly Limits? (15 mg/L)	Within Annual Limits? (10 mg/L)	Monthly Average Loading (kg/d)	Within Annual Limit? (14.65 kg/d)
October 2018	2.00	Yes	-	0.60	-
November 2018	3.33	Yes	-	8.30	-
December 2018	2.00	Yes	-	5.53	-
January 2019	2.00	Yes	-	5.00	-
February 2019	2.00	Yes	-	3.12	-
March 2019	12.00	Yes	-	4.03	-
April 2019	6.20	Yes	-	17.51	-
Annual Average	4.21	-	Yes	6.30	Yes

Table 8: Total Suspended Solids Concentrations versus ECA Limits

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	Monthly Average Concentration (mg/L)	Within Monthly Limits? (15 mg/L)	Within Annual Limits? (10 mg/L)	Monthly Average Loading (kg/d)	Within Annual Limit? (14.65 kg/d)
October 2018	3.75	Yes	-	1.12	-
November 2018	3.80	Yes	-	9.46	-
December 2018	3.75	Yes	-	10.36	-
January 2019	4.40	Yes	-	10.99	-
February 2019	4.00	Yes	-	6.24	-
March 2019	12.00	Yes	-	4.03	-
April 2019	12.40	Yes	-	35.03	-
Annual Average	6.30	-	Yes	11.03	Yes

Table 9: Total Phosphorus Concentrations versus ECA Limits

	Monthly Average Concentration (mg/L)	Within Monthly Limits? (1 mg/L)	Within Annual Limits? (1 mg/L)	Monthly Average Loading (kg/d)	Within Annual Limit? (1.47 kg/d)
October 2018	0.14	Yes	-	0.04	-
November 2018	0.23	Yes	-	0.57	-
December 2018	0.10	Yes	-	0.28	-
January 2019	0.09	Yes	-	0.22	-
February 2019	0.18	Yes	-	0.28	-
March 2019	0.45	Yes	-	0.15	-
April 2019	0.11	Yes	-	0.32	-
Annual Average	0.19	-	Yes	0.27	Yes

Table 10: Total Ammonia Nitrogen Concentrations versus ECA Limits

	Monthly Average Concentration (mg/L)	Within Monthly Limits? (2.3 mg/L)	Within Annual Limits? (1.5 mg/L)	Monthly Average Loading (kg/d)	Within Annual Limit? (2.2 kg/d)
October 2018	0.13	Yes	-	0.04	-
November 2018	1.04	Yes	-	2.59	-
December 2018	0.65	Yes	-	1.80	-
January 2019	2.74	No	-	6.84	-
February 2019	2.80	No	-	4.37	-
March 2019	14.00	No	-	4.70	-
April 2019	8.12	No	-	22.94	-
Annual Average	4.21	-	No	6.18	No

Table 11: *E. coli* Concentrations versus ECA Limits

	Monthly Average Concentration (CFU/100mL)	Within Monthly Limits? (200 CFU/ 100mL)
October 2018	3	Yes
November 2018	2	Yes
December 2018	2	Yes
January 2019	5	Yes
February 2019	2	Yes
March 2019	84	Yes
April 2019	36	Yes

Table 12: pH Ranges versus ECA Limits

	pH Ranges	Within Limits? (6.00 – 9.50)
October 2018	7.56 – 8.11	Yes
November 2018	7.74 – 8.20	Yes
December 2018	8.03 – 8.19	Yes
January 2019	7.87 – 8.04	Yes
February 2019	8.17 – 8.30	Yes
March 2019	8.05 – 8.05	Yes
April 2019	8.12 – 8.38	Yes

2.5 Success & Adequacy of the System

The parameters CBOD₅, Total Suspended Solids, and Total Phosphorus for effluent discharges were well within the limits outlined by the ECA, with removal rates between 87% - 98%. *E. coli* concentrations reached a maximum of 84 CFU/100mL in March 2019, well within the compliance limit. Colony counts have remained low for the majority of the reporting season.

Despite best efforts, Total Ammonia Nitrogen (TAN) concentrations were out of compliance between January 2019 and April 2019, exceeding the limit for 4 months of the reporting year. As a result, the Annual Limit for TAN was also exceeded. This set of exceedances is part of an ongoing investigation of unusual plant loading occurring at the beginning of 2019. Please refer to **Section 3** of this report for more details regarding the TAN exceedances.

Please refer to Appendix A for a detailed performance assessment report.

2.6 Effluent Flows - Discharges

The following table outlines the effluent flow discharge data for the 2018 – 2019 reporting season:

Table 12: Effluent Discharge Summary

Month	Average Daily Flow (m ³ /day)	Peak Flow (m ³ /day)	Total Flow (m ³)
September 2018	64.80	110.48	194.4
October 2018	299.71	520.55	9291.04
November 2018	2489.03	2960.30	74670.95
December 2018	2763.56	3351.10	85670.30
January 2019	2497.25	3442.40	77414.83
February 2019	1560.73	4708.20	43700.73
March 2019	335.44	1974.20	10398.50
April 2019	2824.58	4648.60	84737.36
Annual Average	1142.24	-	-
Annual Max	-	4708.20	-
Annual Total	-	-	386077.80

The average daily effluent flow for the 2018 – 2019 reporting period was 1142.24 m³/d, with the highest peak flow at 4648.60 m³/d recorded during the month of April 2019. Total discharge flow for this reporting period was 386,077.80 m³

Discharge periods occurred between the ECA-allotted time frame of September 16 to April 30, following the ammonia-based discharge curves generated by the Ministry. The design discharge limit of 6500 m³/d was not exceeded during this reporting period.

It should be noted that during the month of September 2018, due to complications involving a broken valve and a leaking gate seal, effluent was unintentionally discharged to the Conestogo River. It was found at the time of discharge that the effluent received appropriate UV disinfection and the river flow was adequate. However, sampling did not occur to confirm the effluent quality at the time of discharge. This incident was captured in the MECP inspection and resulting report conducted on March 5, 2019.

Please see Appendix B for the Daily Discharge Summary

3. Operating Problems & Corrective Actions

ECA 3773-ABJKXX, Section 10 (6)(b):

“a description of any operating problems encountered and corrective actions taken;”

Starting in January 2019, it was noted that Total Ammonia Nitrogen levels were exceeding the ECA limit due to abnormally concentrated influent, which disrupted the nitrification processes at the plant.

Golden Valley Farms, an industrial meat processing plant, has been discharging into the Sewage Collection Systems since its establishment. It was suspected that the processing plant had been contributing higher than normal loadings to the plant, causing process upsets.

Additional influent sampling was conducted during the month of February from the outfall of the Golden Valley Farms Treatment Facility. Results were relayed to the Town of Wellington North for Sewer-use Bylaw investigations. The sample results can be seen in the following table:

Table 13: Golden Valley Farms Discharge Sample Results

Date	TP (mg/L)	BOD ₅ (mg/L)	TSS (mg/L)	TKN (mg/L)
February 12, 2019	1.96	316.00	42.00	29.40
February 14, 2019	4.15	311.00	105.00	27.00
Average	3.06	313.50	73.50	28.20

It is suspected, after substantial completion of the Arthur WWTP upgrades under the new ECA (9614-B5FJV7), capacity and treatment capabilities of the plant will improve to further mitigate any future loading issues.

4. Major Maintenance Activities

ECA 3773-ABJKXX, Section 10 (6)(c):

“a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the Works;”

4.1 Work Management System

Planned maintenance, including scheduled and non-scheduled maintenance activities are scheduled using a computerized Work Management System (WMS) that allows user to:

- Enter detailed asset information
- Generate and process work orders
- Access maintenance and inspection procedures
- Plan, schedule, and document all asset related tasks and activities

- Access maintenance records and asset histories

Work Orders are automatically generated by the WMS program and are assigned to the applicable Operations staff accordingly.

4.2 Preventative Maintenance

There were a number of major maintenance tasks throughout 2018. They are as follows:

- Annual sewage pumping station cleanouts
- Annual Generator inspections and load testing

4.3 Repairs & Improvements

There were a number of repairs and/or improvements made in the 2018 – 2019 reporting period. They are as follows:

- Headworks – Outside Receptacle Repaired
- Well Street Pump Station - Pump #1 Repairs
- Well Street Pump Station - Power Meter Replaced
- Well Street Pump Station - 20HP Flange Repaired
- Well Street Pump Station - Check Valves Replaced
- Biosolids loading pipe repaired
- Decant chamber float replacements
- Return Activated Sludge Flow meter repaired

5. Effluent Quality Assurance & Control

ECA 3773-ABJKXX, Section 10 (6)(d):

“a summary of any effluent quality assurance or control measures undertaken in the reporting period;”

The Ontario Clean Water Agency (OCWA) operates the Arthur Wastewater Treatment Plant in accordance with provincial regulations.

- Use of Accredited Laboratories: analytical tests to monitor the effluent quality are conducted by a laboratory audited by the Canadian Association for Laboratory Accreditation Inc. (CALA) and accredited by the Standards Council of Canada (SCC). Accreditation ensures that the laboratory has acceptable laboratory protocols and test methods in place. It also requires the laboratory to provide evidence and assurances of the proficiency of the analysts performing the test methods. During this monitoring period (May 1, 2018, to April 30, 2019), all chemical sample analyses were conducted by SGS (Lakefield) Canada Inc.
- Operation by Licensed Operators: Arthur WWTP is operated and maintained by the Ontario Clean Water Agency’s licensed Operation Staff. The mandatory licensing program for operators of sewage treatment facilities in Ontario is regulated under the Ontario Water Resources Act (OWRA) Regulation 435/93 and Ontario Regulation 129/04. Licensing means that an individual meets the education and experience

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requirements and has successfully passed the certification exam. The Georgian Highlands Region of the Ontario Clean Water Agency operates the sewage works from their Highlands Hub Office in Shelburne, Ontario using only Licensed Operators. Refer to the following table summarizing current Operations staff licensing for the Arthur WWTP:

Table 14: Operator Licensing for the Arthur WWTP

Operator	Level	Certificate #	Expiry Date
Dwight Hallahan	WWT 2	15499	Apr 30, 2019
	WWC 1	16002	Jan 31, 2021
Dan Yake	WWT 2	57390	Jul 31, 2019
	WWC 1	69121	Jan 31, 2020
Don Irvine	WWT 1	94108	Jul 31, 2019
	WWC 1	Deemed	Jul 31, 2019
Steve Miller	WWT 4	15422	Jan 31, 2022
	WWC 2	17899	Jan 31, 2022

- Sampling and Analytical Requirements: OCWA followed a sampling and analysis schedule required by the Environmental Compliance Approval.
- Use of In-House Laboratory: in-house tests are conducted by Licensed Operators for monitoring purposes using Standard Methods. The data generated from these tests is used to determine the treatment efficiency while maintaining process control. All in-house monitoring equipment is calibrated based on the manufacturer's recommendations. The Operators of the facility will continue to use their expertise in order to meet our objective of no exceedances of the ECA Effluent Compliance Limits and future Compliance Objectives.

6. Calibration & Maintenance Procedures

ECA 3773-ABJKXX, Section 10 (6)(e):

"a summary of the calibration and maintenance carried out on all effluent monitoring equipment;"

All in-house monitoring equipment is calibrated as per manufacturer's recommendations. Monitoring and metering equipment is also calibrated by a third party on an annual basis. Preventative maintenance is scheduled for all equipment at the sewage treatment plant and pumping stations at regular frequency (frequency depends on the equipment and type of maintenance). Maintenance activities are scheduled within the work management system Maximo, upon completion, Operators set the work order to complete. On a monthly basis, preventative work orders are reviewed for completion.

Flowmetrix Technical Services Inc. successfully calibrated flow measuring equipment on September 21, 2018.

Refer to Appendix C for the Calibration Reports.

7. Sludge Generation

ECA 3773-ABJKXX, Section 10 (6)(f):

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“a tabulation of the volume of sludge generated in the reporting period, an outline of anticipated volumes to be generated in the net reporting period and a summary of the locations to where the sludge was disposed;”

The table below shows a summary of sludge haulage for the 2018-2019 reporting period:

Table 15: Sludge Haulage

NASM #	Volume Hauled (m ³)	Date	Comments
W1003	178.00	25/05/2018	Hauled by Wessuc
W1001	311.50	28/05/2018	Hauled by Wessuc
W1001	133.50	29/05/2018	Hauled by Wessuc
D3001	222.50	10/10/2018	Hauled by Wessuc
D3001	267.00	12/10/2018	Hauled by Wessuc
D3001	44.50	15/10/2018	Hauled by Wessuc
D3001	89.00	16/10/2018	Hauled by Wessuc
n/a	114	26/11/2018	Hauled by Saugeen Agri Service
n/a	114.00	21/12/2018	Hauled by Saugeen Agri Service
n/a	119	25/01/2019	Hauled by Saugeen Agri Service
n/a	39.9	18/03/2019	Hauled by Saugeen Agri Service
n/a	39.18	20/03/2019	Hauled by Saugeen Agri Service
n/a	36.71	22/03/2019	Hauled by Saugeen Agri Service
n/a	38.00	25/03/2019	Hauled by Saugeen Agri Service
n/a	38.54	28/03/2019	Hauled by Saugeen Agri Service
n/a	79.32	29/03/2019	Hauled by Saugeen Agri Service
n/a	80.00	01/04/2019	Hauled by Saugeen Agri Service
Total:	1944.65		

Digested sludge produced at the Arthur Wastewater Treatment Plant is land-applied in accordance with the Nutrient Management Act 2002 and Ontario Regulation 267/03. Additional sludge haulage is directed towards Lystek International Inc., located in Dundalk, Ontario. This facility converts biosolids into “market ready” fertilizer products.

Grab samples of digested (aerobic) sludge are collected and tested as per these guidelines. During the reporting period, sludge sample analysis was carried out by SGS Lakefield Research Limited. A summary of sludge sample results is provided in **Appendix D**.

Two haulers were used during the 2018 – 2019 reporting period:

- Wessuc Environmental Services Inc. - Certificate of Approval: Waste Management System #1603-4LGJBN
- Eden Environmental Services Ltd. - Certificate of Approval: Waste Management System #9566-6HYKC3

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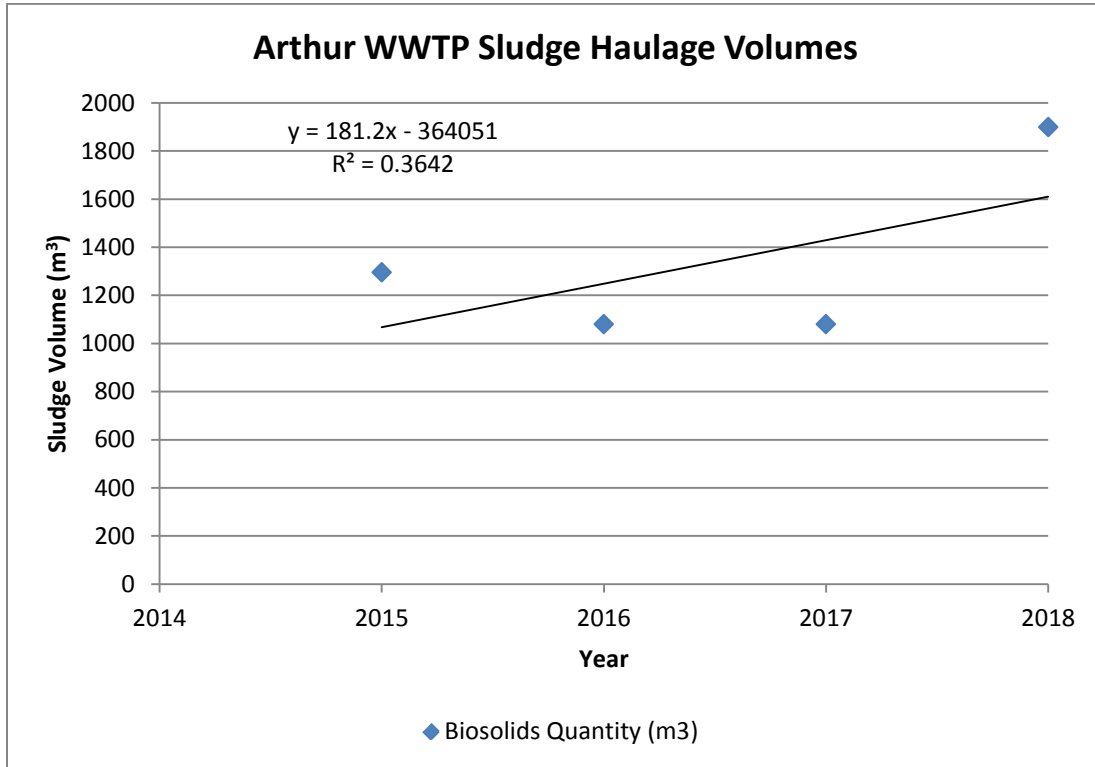
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The Certificate of Approval for the Mount Forest Sludge Storage Facility #7965-5EKNUW allows the storage of sludge from the Arthur WWTP. There was no sludge stored at the Mount Forest facility for this reporting period.

Based on the design flow, predicted sludge haulage, average wastewater quality and a linear regression with an R^2 value of 36.42%, the anticipated volume to be generated in the next reporting period is approximately 2100 m^3 .

Figure 1: Arthur WWTP Sludge Haulage Trending



9. Community Complaints

ECA 3773-ABJKXX, Section 10 (6)(g):

“a summary of any complaints received during the reporting period and any steps taken to address the complaints;”

There is a standard operating (SOP) in place that outlines the steps required for receiving and addressing community complaints. All complaints are to be discussed and/or investigated, and resolved as required. The community complaint is logged in detail in the facility logbook and then various details are entered into OCWA's electronic database system "OPEX." This database contains the history of all complaints with the relevant information enclosed.

There was one complaint registered for the Arthur WWTP during the 2018 - 2019 reporting period:

- July 27, 2018 – A noise complaint was received, with the noise source originating from the air stack in the aeration cells; the Operator purchased a muffler in response to suppress the noise significantly. No follow-up complaints were issued.

Please see Appendix E for the full OPEX Report

10. By-pass, Spill or Abnormal Discharge Events

ECA 3773-ABJKXX, Section 10 (6)(h):

"a summary of all By-pass, spill or abnormal discharge events and mitigating measures taken;"

10.1 By-pass events

There were no by-pass events during the reporting period.

10.2 Spills

There were no spills during the reporting period.

10.3 Abnormal Discharge Events

There were no abnormal discharge events during the reporting period.

11. Notice of Modifications

ECA 3773-ABJKXX, Section 10 (6)(i):

"a copy of all Notice of Modifications submitted to the Water Supervisor as a result of Schedule B, Section 1, with a status report on the implementation of each modification;"

There were no Notice of Modifications under Schedule B, Section 1 submitted during this reporting period.

12. Modification Completion Reports

ECA 3773-ABJKXX, Section 10 (6)(j):

"a report summarizing all modifications completed as a result of Schedule B, Section 3; and"

There were no modifications completed under Schedule B, Section 3 during this reporting period.

13. Water Supervisor Information Request

ECA 3773-ABJKXX, Section 10 (6)(k):

“any other information from the Water Supervisor requires from time to time.”

There were no requests from the Water Supervisor for any other information during the reporting period.



David Jorge
Process and Compliance Technician
Ontario Clean Water Agency, Highlands Hub

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Appendix A

Performance Assessment Report

May 2018 – April 2019

Ontario Clean Water Agency
Performance Assessment Report Wastewater/Lagoon

Report extracted 06/13/2019 14:44

From: 01/05/2018 to 30/04/2019

Facility: [5767] ARTHUR WASTEWATER TREATMENT PLANT

Works: [11000882]

	05/2018	06/2018	07/2018	08/2018	09/2018	10/2018	11/2018	12/2018	01/2019	02/2019	03/2019	04/2019	<--Total-->	<--Avg-->	<--Max-->	<--Criteria-->
Flows:																
Raw Flow: Total - Raw Sewage (m³)	42538.20	30106.72	27631.03	29831.76	25759.39	31127.21	40004.92	45947.10	41156.04	35750.68	53961.24	65050.00	468864.29			
Raw Flow: Avg - Raw Sewage (m³/d)	1372.20	1003.56	891.32	962.31	858.65	1004.10	1333.50	1482.16	1327.61	1276.81	1740.69	2168.33		1285.10		1465.0
Raw Flow: Max - Raw Sewage (m³/d)	2284.50	1341.40	1242.40	1593.70	1192.00	1572.27	2021.57	2066.90	2168.80	2810.90	4167.00	3605.80			4167.00	
Eff. Flow: Total - Final Effluent (m³)	0.00	0.00	0.00	0.00	194.40	9291.04	74670.95	85670.30	77414.83	43700.37	10398.50	84737.36	386077.75			
Eff. Flow: Avg - Final Effluent (m³/d)	0.00	0.00	0.00	0.00	64.80	299.71	2489.03	2763.56	2497.25	1560.73	335.44	2824.58		1069.59		
Eff. Flow: Max - Final Effluent (m³/d)	0.00	0.00	0.00	0.00	110.48	520.55	2960.30	3351.10	3442.40	4708.20	1974.20	4648.60			4708.20	
Carbonaceous Biochemical Oxygen Demand: CBOD:																
Eff: Avg cBOD5 - Final Effluent (mg/L)						2.000	< 3.333	< 2.000	2.000	2.000	12.000	6.200		< 4.219	12.000	
Eff: # of samples of cBOD5 - Final Effluent (mg/L)						2	3	2	2	1	1	5	16			
Loading: cBOD5 - Final Effluent (kg/d)						0.599	< 8.297	< 5.527	4.995	3.121	4.025	17.512		< 6.297	17.512	
Biochemical Oxygen Demand: BOD5:																
Raw: Avg BOD5 - Raw Sewage (mg/L)	122.000	236.000	287.000	225.000	157.000	181.000	126.000	83.000	140.000	280.000	156.000	308.500		191.792	308.500	
Raw: # of samples of BOD5 - Raw Sewage (mg/L)	1	1	1	1	1	1	1	1	1	1	1	2	13			
Eff: Avg BOD5 - Final Effluent (mg/L)						< 2.500	3.600	< 3.750	< 3.400	< 5.500	20.000	9.600		< 6.907	20.000	15.0
Loading: BOD5 - Final Effluent (kg/d)						< 0.749	8.961	< 10.363	< 8.491	< 8.584	6.709	27.116		< 10.139	27.116	
Percent Removal: BOD5 - Raw Sewage (mg/L)						98.619	97.143	95.482	97.571	98.036	87.179	96.888			98.619	
Total Suspended Solids: TSS:																
Raw: Avg TSS - Raw Sewage (mg/L)	115.000	157.000	171.000	174.000	196.000	194.000	118.000	74.000	118.000	146.000	125.000	141.000		144.083	196.000	
Raw: # of samples of TSS - Raw Sewage (mg/L)	1	1	1	1	1	1	1	1	1	1	1	2	13			
Eff: Avg TSS - Final Effluent (mg/L)						3.750	3.800	3.750	4.400	4.000	12.000	12.400		6.300	12.400	15.0
Eff: # of samples of TSS - Final Effluent (mg/L)						4	5	4	5	2	1	5	26			
Loading: TSS - Final Effluent (kg/d)						1.124	9.458	10.363	10.988	6.243	4.025	35.025		11.032	35.025	
Percent Removal: TSS - Final Effluent (mg/L)						98.067	96.780	94.932	96.271	97.260	90.400	91.206			98.067	
Percent Removal: TSS - Raw Sewage (mg/L)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000		
Total Phosphorus: TP:																
Raw: Avg TP - Raw Sewage (mg/L)	3.830	6.110	7.520	5.200	6.660	4.610	3.980	2.540	5.140	5.340	5.510	3.970		5.034	7.520	
Raw: # of samples of TP - Raw Sewage (mg/L)	1	1	1	1	1	1	1	1	1	1	1	2	13			
Eff: Avg TP - Final Effluent (mg/L)						0.140	0.230	0.103	0.086	0.180	0.450	0.112		0.186	0.450	1.0
Eff: # of samples of TP - Final Effluent (mg/L)						4	5	4	5	2	1	5	26			
Loading: TP - Final Effluent (kg/d)						0.042	0.572	0.283	0.215	0.281	0.151	0.316		0.266	0.572	
Percent Removal: TP - Final Effluent (mg/L)						96.963	94.221	95.965	98.327	96.629	91.833	97.179			98.327	
Nitrogen Series:																
Raw: Avg TKN - Raw Sewage (mg/L)	23.400	31.000	37.900	33.900	32.900	32.900	23.000	21.200	34.500	60.200	22.100	20.250		31.104	60.200	
Raw: # of samples of TKN - Raw Sewage (mg/L)	1	1	1	1	1	1	1	1	1	1	1	2	13			
Eff: Avg TAN - Final Effluent (mg/L)						< 0.125	< 1.040	< 0.650	2.740	2.800	14.000	8.120		< 4.211	14.000	2.3
Eff: # of samples of TAN - Final Effluent (mg/L)						4	5	4	5	2	1	5	26			
Loading: TAN - Final Effluent (kg/d)						< 0.037	< 2.589	< 1.796	6.842	4.370	4.696	22.936		< 6.181	22.936	
Eff: Avg NO3-N - Final Effluent (mg/L)						25.800	13.540	13.540	5.956	1.755	0.300	1.260		8.866	25.800	
Eff: # of samples of NO3-N - Final Effluent (mg/L)						4	5	4	5	2	1	5	26			
Eff: Avg NO2-N - Final Effluent (mg/L)						< 0.045	< 0.160	< 0.083	< 0.068	0.215	0.140	0.154		< 0.124	0.215	
Eff: # of samples of NO2-N - Final Effluent (mg/L)						4	5	4	5	2	1	5	26			
Disinfection:																
Eff: GMD E. Coli - Final Effluent (cfu/100mL)						2.632	2.000	2.000	5.073	2.000	84.000	35.933		19.091	84.000	200.0
Eff: # of samples of E. Coli - Final Effluent (cfu/100mL)						4	5	4	5	2	1	5	26			

**2018 - 2019 Annual Performance Report
Arthur Wastewater Treatment Plant
ECA 3773-ABJKXX**

Appendix B

Daily Discharge Summary

Arthur WWTP

Annual Performance Report

Daily Effluent Discharge Volumes

September 16, 2018 - April 30, 2019

SEPTEMBER 2018	
Date	Flow (m ³)
24/09/2018	25.79
25/09/2018	110.48
26/09/2018	58.13
27/09/2018	0
28/09/2018	0
29/09/2018	0
30/09/2018	0

OCTOBER 2018	
Date	Flow (m ³)
01/10/2018	214.79
02/10/2018	497.58
03/10/2018	436.79
04/10/2018	415.25
05/10/2018	373.59
06/10/2018	379.47
07/10/2018	366.67
08/10/2018	359.48
09/10/2018	360.12
10/10/2018	305.49
11/10/2018	233.45
12/10/2018	306.5
13/10/2018	520.55
14/10/2018	486.65
15/10/2018	479.84
16/10/2018	371.39
17/10/2018	293.56
18/10/2018	278.97
19/10/2018	267.64
20/10/2018	255
21/10/2018	259.74
22/10/2018	257.23
23/10/2018	236.39
24/10/2018	235.07
25/10/2018	217.73
26/10/2018	133.23
27/10/2018	4.57
28/10/2018	0
29/10/2018	0
30/10/2018	284.33
31/10/2018	459.97

NOVEMBER 2018	
Date	Flow (m ³)
01/11/2018	376.85
02/11/2018	1781.7
03/11/2018	2644.8
04/11/2018	2571.2
05/11/2018	2482.2
06/11/2018	2872.3
07/11/2018	2730.5
08/11/2018	2652.9
09/11/2018	2621.2
10/11/2018	2481.9
11/11/2018	2483.4
12/11/2018	2455.2
13/11/2018	2509.4
14/11/2018	2547.3
15/11/2018	2528.1
16/11/2018	2520.3
17/11/2018	2494.3
18/11/2018	2466.6
19/11/2018	2549.6
20/11/2018	2496.2
21/11/2018	2391.6
22/11/2018	2425.2
23/11/2018	2444.5
24/11/2018	2495.3
25/11/2018	2923.1
26/11/2018	2960.3
27/11/2018	2895.2
28/11/2018	2678.2
29/11/2018	2586.6
30/11/2018	2605

DECEMBER 2018	
Date	Flow (m ³)
01/12/2018	2609.5
02/12/2018	3294.1
03/12/2018	3295
04/12/2018	3003
05/12/2018	2815
06/12/2018	2780
07/12/2018	2660.9
08/12/2018	2622.2
09/12/2018	2584
10/12/2018	2497.7
11/12/2018	2543.9
12/12/2018	2489.6
13/12/2018	2559.8
14/12/2018	2697.4
15/12/2018	2658.6
16/12/2018	2672.9
17/12/2018	2621
18/12/2018	2662.5
19/12/2018	2720.9
20/12/2018	2574
21/12/2018	3351.1
22/12/2018	2976
23/12/2018	2760.5
24/12/2018	2567.9
25/12/2018	2534.2
26/12/2018	2521.2
27/12/2018	2528.9
28/12/2018	3345.8
29/12/2018	3021.1
30/12/2018	2849.4
31/12/2018	2852.2

JANUARY 2019	
Date	Flow (m ³)
01/01/2019	3442.4
02/01/2019	2977.1
03/01/2019	2879.6
04/01/2019	2794.6
05/01/2019	2681.8
06/01/2019	2602.3
07/01/2019	2527.7
08/01/2019	3015.3
09/01/2019	2834.3
10/01/2019	2827.7
11/01/2019	2662.1
12/01/2019	2702.2
13/01/2019	2562.3
14/01/2019	2692.6
15/01/2019	2557.4
16/01/2019	2584.9
17/01/2019	2135.7
18/01/2019	674.53
19/01/2019	0
20/01/2019	0
21/01/2019	0
22/01/2019	1157.6
23/01/2019	2837.4
24/01/2019	3133.1
25/01/2019	3401.7
26/01/2019	3308.7
27/01/2019	3303.6
28/01/2019	3240.6
29/01/2019	3336
30/01/2019	3272.8
31/01/2019	3268.8

FEBRUARY 2019	
Date	Flow (m ³)
01/02/2019	3274
02/02/2019	3152.8
03/02/2019	3389.1
04/02/2019	4708.2
05/02/2019	3618
06/02/2019	3001.7
07/02/2019	3772.3
08/02/2019	3769.5
09/02/2019	3557.1
10/02/2019	3463.9
11/02/2019	3509.7
12/02/2019	3101.9
13/02/2019	1235.5
14/02/2019	88.54
15/02/2019	58.13
16/02/2019	0
17/02/2019	0
18/02/2019	0
19/02/2019	0
20/02/2019	0
21/02/2019	0
22/02/2019	0
23/02/2019	0
24/02/2019	0
25/02/2019	0
26/02/2019	0
27/02/2019	0
28/02/2019	0

MARCH 2019	
Date	Flow (m ³)
01/03/2019	0
02/03/2019	0
03/03/2019	0
04/03/2019	0
05/03/2019	0
06/03/2019	0
07/03/2019	0
08/03/2019	0
09/03/2019	0
10/03/2019	0
11/03/2019	0
12/03/2019	0
13/03/2019	0
14/03/2019	0
15/03/2019	0
16/03/2019	0
17/03/2019	0
18/03/2019	0
19/03/2019	0
20/03/2019	0
21/03/2019	0
22/03/2019	0
23/03/2019	0
24/03/2019	0
25/03/2019	1167.9
26/03/2019	1782.9
27/03/2019	1754
28/03/2019	1912.3
29/03/2019	1974.2
30/03/2019	1807.2
31/03/2019	0

APRIL 2019	
Date	Flow (m ³)
01/04/2019	0
02/04/2019	900.16
03/04/2019	1982
04/04/2019	1883.8
05/04/2019	1853.4
06/04/2019	1813.5
07/04/2019	1989
08/04/2019	2900.9
09/04/2019	3830.6
10/04/2019	4602.6
11/04/2019	3922.5
12/04/2019	3130.8
13/04/2019	2117.3
14/04/2019	1739.7
15/04/2019	2621.6
16/04/2019	3496
17/04/2019	3459.1
18/04/2019	2933.5
19/04/2019	2960.5
20/04/2019	3327.8
21/04/2019	2889
22/04/2019	2899.8
23/04/2019	4134.4
24/04/2019	4140.7
25/04/2019	4278.5
26/04/2019	4648.6
27/04/2019	2537.3
28/04/2019	2114.6
29/04/2019	2961.1
30/04/2019	2668.6

**2018 - 2019 Annual Performance Report
Arthur Wastewater Treatment Plant
ECA 3773-ABJKXX**

Appendix C

Calibration Reports

Western Office Eastern Office
 2088 Jetstream Road 1602 Old Wooler Road
 London, Ontario Wooler, Ontario
 N5V 3P6 K0K 3M0

AS FOUND CERTIFICATION
FORWARD FLOW DIRECTION
PASS
CLIENT DETAIL

CUSTOMER OCWA - West Highlands Hub
CONTACT Don Irvine
 Process Compliance Technician
 p. 519-925-1938 x225
 c. 519-321-9474
 e. dirvine@ocwa.com

EQUIPMENT DETAIL

[MUT] MANUFACTURER Rosemount
MODEL 8712D
CONVERTER SERIAL NUMBER 0860216177

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

PLANT ID Arthur WPCP
METER ID Pond Effluent Flow
FIT ID n/a
CLIENT TAG OCWA# 122848
OTHER n/a
GPS COORDINATES N43 49 903 W080 32 948

VERIFICATION DATE September 21, 2018
CAL. FREQUENCY Annual
CAL. DUE DATE September, 2019

PROGRAMMING PARAMETERS

DIAMETER (DN) mm 150
F.S. FLOW - MAG LPS 223.7
F.S. RANGE - O/P LPS 100.000
TUBE CAL. FACTOR 0895005708809005

FORWARD TOTALIZER INFORMATION

AS FOUND 1518017 **M3**
AS LEFT 1518041 **M3**
DIFFERENCE 24 **M3**

TEST CRITERIA

AS FOUND CERTIFICATION TEST Yes
FORWARD FLOW DIRECTION Yes
ALLOWABLE [%] ERROR 5

COMPONENTS TESTED

CONVERTER DISPLAY yes
mA OUTPUT yes
TOTALIZER yes
ACCURACY BASED ON [% o.r.] yes
ERROR DOCUMENTED IN THIS REPORT, BASED ON % o.r.

VERIFICATOR CAL. FACTOR 1000015010000000
 [16-digits]

FLOW TUBE SIMULATION

	0
DISPLAY	0.00
MUT Reading	0.00
MUT % Error	n/a
mA OUTPUT	4.000
MUT Reading	3.996
MUT % Error	-0.10
TOTALIZER	
TEST Accumulation	
TIME	
CALC. Velocity	
% Error	

	3	10	30	ft/s
	3.00	10.00	30.00	ft/s
	3.00	10.00	30.02	ft/s
	0.00	0.00	0.07	%
	5.600	9.333	20.000	mA
	5.595	9.329	19.995	mA
	-0.09	-0.05	-0.02	%
			30.00	ft/s
			2448.00	ft
			81.63	seconds
			29.99	ft/s
			-0.04	%

QUALITY MANAGEMENT STANDARDS INFO.

[QMS] INFORMATION	IDENT.	ID #
[REFERENCE] FTS	ROS	1
PROCESS METER	PM	11
ANALOG METER	AM	N/A
STOP WATCH	SW	Yes

*All values are for "As Found" values.

COMMENTS
RESULTS

TEST	AVG % o.r.	PASS FAIL
DISPLAY	0.02	PASS
mA OUTPUT	-0.05	PASS
TOTALIZER	-0.04	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 Eastern Office
 2088 Jetstream Road 1602 Old Wooler Road
 London, Ontario Wooler, Ontario
 N5V 3P6 K0K 3M0

AS FOUND CERTIFICATION
FORWARD FLOW DIRECTION
PASS
CLIENT DETAIL

CUSTOMER OCWA - West Highlands Hub
CONTACT Don Irvine
 Process Compliance Technician
 p 519-925-1938 x225
 c 519-321-9474
 e dirvine@ocwa.com

EQUIPMENT DETAIL

[MUT] MANUFACTURER Rosemount
MODEL 8712D
CONVERTER SERIAL NUMBER 080220959

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

PLANT ID Arthur WPCP
METER ID Plant Effluent Flow Meter
FIT ID n/a
CLIENT TAG OCWA# 205612
OTHER n/a
GPS COORDINATES N43 49 903 W080 32 948

VERIFICATION DATE September 21 2018
CAL. FREQUENCY Annual
CAL. DUE DATE September, 2019

PROGRAMMING PARAMETERS

DIAMETER (DN) mm 150
F.S. FLOW - MAG LPS 223.7
F.S. RANGE - O/P LPS 100.000
TUBE CAL. FACTOR 0916605509025005

FORWARD TOTALIZER INFORMATION

AS FOUND 1148119 M3
AS LEFT 1148145 M3
DIFFERENCE 26 M3

TEST CRITERIA

AS FOUND CERTIFICATION TEST Yes
FORWARD FLOW DIRECTION Yes
ALLOWABLE [%] ERROR 5

COMPONENTS TESTED

CONVERTER DISPLAY yes
mA OUTPUT yes
TOTALIZER yes
ACCURACY BASED ON [% o.r.] yes
ERROR DOCUMENTED IN THIS REPORT; BASED ON % o.r.

VERIFICATOR CAL. FACTOR 1000015010000000
 [16-digits]

FLOW TUBE SIMULATION

	0	3	10	30	ft/s
DISPLAY	0.00	3.00	10.00	30.00	ft/s
MUT Reading	0.00	3.00	10.01	30.02	ft/s
MUT % Error	n/a	0.00	0.10	0.07	%
mA OUTPUT	4.000	5.600	9.333	20.000	mA
MUT Reading	4.000	5.600	9.332	19.994	mA
MUT % Error	0.00	0.00	-0.01	-0.03	%
TOTALIZER				30.00	ft/s
TEST Accumulation				2992.00	ft
TIME				99.46	seconds
CALC. Velocity				30.08	ft/s
% Error				0.27	%

QUALITY MANAGEMENT STANDARDS INFO.

[QMS] INFORMATION	IDENT.	ID #
[REFERENCE] FTS	ROS	1
PROCESS METER	PM	11
ANALOG METER	AM	n/a
STOP WATCH	SW	Yes

*All values are for "As Found" values.

COMMENTS
RESULTS

TEST	RESULTS	
	AVG % o.r.	PASS FAIL
DISPLAY	0.06	PASS
mA OUTPUT	-0.01	PASS
TOTALIZER	0.27	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 Eastern Office
2088 Jetstream Road 1602 Old Wooler Road
London, Ontario Wooler, Ontario
N5V 3P6 K0K 3M0

AS FOUND CERTIFICATION

PASS

CLIENT DETAIL		EQUIPMENT DETAIL	
CUSTOMER	OCWA - West Highlands Hub	[MUT] MANUFACTURER	Milltronics
CONTACT	Don Irvine Process Compliance Technician p 519-925-1938 x225 c 519-321-9474 e dirvine@ocwa.com	MODEL	OCM-III
		CONVERTER SERIAL NUMBER	PBD/W3100009
		PLANT ID	Arthur WPCP
		METER ID	Plant Effluent Flow
		FIT ID	n/a
		CLIENT TAG	n/a
		OTHER	n/a
		GPS COORDINATES	n/a
VER. BY - FM	Paris Machuk	VERIFICATION DATE	September 21, 2018
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		CAL. FREQUENCY	Annual
		CAL. DUE DATE	September, 2019

PROGRAMMING PARAMETERS			TOTALIZER	
THROAT DIMENSION (DN)	inches	9	AS FOUND	2198488 M3
EMPTY DISTANCE	m	0.960	AS LEFT	2198524 M3
MAX. HEAD	m	0.334	DIFFERENCE	36 M3
DEAD ZONE	m	0.626	TEST CRITERIA	
BLANKING DISTANCE	m	0.305	AS FOUND CERTIFICATION TEST	Yes
MAX. FLOW	LPS	100.0	ALLOWABLE [%] ERROR	5
F. S. RANGE - O/P	LPS	100.0		

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							
		0.0	15.8	29.4	45.6	84.9	% F.S. Range
		0.000	0.100	0.150	0.200	0.300	m
REF. FLOW RATE		0.000	15.801	29.383	45.630	84.854	LPS
MUT [Reading]		0.000	15.610	29.520	45.290	85.040	LPS
MUT [Difference]		0.000	-0.191	0.137	-0.340	0.186	LPS
MUT [% Error]		n/a	-0.19	0.14	-0.34	0.19	%
mA OUTPUT		4.000	6.528	8.701	11.301	17.576	mA
MUT [Reading]	min. 4.000 mA	4.008	6.505	8.732	11.253	17.617	mA
MUT [Difference]	max. 20.000 mA	0.008	-0.023	0.031	-0.048	0.041	mA
MUT [% Error]		0.04	-0.12	0.15	-0.24	0.20	%
TOTALIZER - REF. FLOW RATE						84.854	LPS
TOTALIZER [MUT]						16	M3
TEST TIME						187.60	SECONDS
CALC. TOTALIZER						15.919	M3
ERROR						0.51	%

COMMENTS	QUALITY MANAGEMENT STANDARDS INFO.			RESULTS		
	[QMS] INFORMATION	IDENT.	ID #	TEST	AVG %FS	PASS FAIL
	[REFERENCE] LEVEL	Sim. BOARD	n/a	DISPLAY	-0.05	PASS
	PROCESS METER	PM	11	mA OUTPUT	0.01	PASS
	STOP WATCH	SW	n/a	TOTALIZER	0.51	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 Eastern Office
 2088 Jetstream Road 1602 Old Wooler Road
 London, Ontario Wooler, Ontario
 N5V 3P6 K0K 3M0

CERTIFICATION RESULTS

AS FOUND PASS
AS LEFT PASS

CLIENT DETAIL

CUSTOMER OCWA - West Highlands Hub
CONTACT Don Irvine
 Process Compliance Technician
 p 519-925-1938 x225
 c 519-321-9474
 e dirvine@ocwa.com

EQUIPMENT DETAIL

[MUT] MANUFACTURER Milltronics
MODEL MultiRanger 200
CONVERTER SERIAL NUMBER PBD/U9180052

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

PLANT ID Arthur WPCP
METER ID River Gauge Level
FIT ID n/a
CLIENT TAG OCWA# n/a
OTHER n/a
GPS COORDINATES N43 49 903 W080 32 948

VERIFICATION DATE September 21, 2018
CAL. FREQUENCY Annual
CAL. DUE DATE September, 2019

[MUT] PROGRAMMING PARAMETERS

P001= 1 Operartion Mode (1=Level)
 P002= 1 (1=Liquid or Horizontal)
 P003= 3 Process Speed (3=Fast)
 P004= 112 Transducer Type (112=XRS-5)
 P005= 2 Units (2=cm)
 P006= 200.66 Empty Distance (Value in cm)
 P007= 167.66 Span (Value in cm)
 P065= 500 Reading Ovende Value (Value in cm)
 P212= 4 mA Output Min Limit (Value)

REFERENCE DEVICE Board Level

Condition of PASS/FAIL
 of Individual Test Results; Y
 or of Average Results; N

LEVEL COMPARISON

Reference Level (cm)	MUT Displayed Level (cm)	% ERROR
0	-0.17	n/a
10	10.12	1.200
30	29.85	-0.500
70	69.91	-0.129
100	99.88	-0.120
155	154.98	-0.013
Average		0.09

Note: This report validates the performance of the MUT only. This does not validate the setup based on process - no information available has been provided.

Note: this is also using Flowmetrix's transducer for this level test as there is not a way to provide a test like this at the location of the transducer - this only validates that the MultiRanger 200 is working as expected.

COMMENTS
QUALITY MANAGEMENT STANDARDS INFO.

[QMS] INFORMATION	IDENT.	ID #
[REFERENCE] METER	KROHNE-LAB	n/a
[REFERENCE] METER	ELSTER-LAB	n/a
[REFERENCE] METER	FLOW-LAB1	n/a
[REFERENCE] METER	Coulter	n/a
PROCESS METER	PM	n/a

Accuracy Requirements: High Flow 98.5-101.5% Medium Flow 98.5-101.5% Low Flow/Cross Over 95-101.5%

This report reflects the comparison test results at a constant test flow rate. This report reflects the "AS FOUND" and "AS LEFT" results based on the test results observed.

AS FOUND CERTIFICATION

FORWARD FLOW DIRECTION

PASS
CLIENT DETAIL
CUSTOMER OCWA - West Highlands Hub
CONTACT Don Irvine
 Process Compliance Technician
 p 519-925-1938 x225
 c 519-321-9474
 e dirvine@ocwa.com

[MUT] MANUFACTURER
MODEL
CONVERTER S/N:
FUSE
EQUIPMENT DETAIL

 ENDRESS & HAUSER
 Promag 53W
 M4053919000

PLANT ID Arthur WPCP
METER ID RAS West Flow
FIT ID n/a
CLIENT TAG OCWA# not assigned
OTHER n/a
GPS COORDINATES N43 49 903 W080 32 948

 VER. BY - FM *Pans 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

VERIFICATION DATE September 21 2018
CAL. FREQUENCY Annual
CAL. DUE DATE September 2019

PROGRAMMING PARAMETERS

DIAMETER (DN)	mm	100
F.S. FLOW - MAG	LPS	78.538
F.S. RANGE - O/P	LPS	20.000
TUBE k-FACTOR		1.3323
TUBE zero		4

FORWARD TOTALIZER INFORMATION

AS FOUND	81135.57	M3
AS LEFT	81150.62	M3
DIFFERENCE	15.05	M3

TEST CRITERIA

AS FOUND CERTIFICATION TEST	Yes
FORWARD FLOW DIRECTION	Yes
ALLOWABLE [%] ERROR	5

COMPONENTS TESTED

CONVERTER DISPLAY	yes
mA OUTPUT	yes
TOTALIZER	yes
ACCURACY BASED ON [% o.r.]	yes

ERROR DOCUMENTED IN THIS REPORT, BASED ON % o.r.

FLOW TUBE SIMULATION

		0.0	5.0	10.0	15.0	20.0	LPS
		0.0	6.4	12.7	19.1	25.5	% F.S. Flow
		0.0	25.0	50.0	75.0	100.0	% F.S. Range
REF. FLOW RATE		0.0000	5.0000	10.0000	15.0000	20.0000	LPS
MUT [Reading]		0.0057	5.0088	10.0040	15.0220	20.0150	LPS
MUT [Difference]		0.0057	0.0086	0.0040	0.0220	0.0150	LPS
MUT [% Error]		n/a	0.17	0.04	0.15	0.08	% O R
mA OUTPUT		4.000	8.000	12.000	16.000	20.000	mA
MUT [Reading]	min. 4 mA	4.002	8.003	12.009	16.009	20.014	mA
MUT [Difference]	max. 20 mA	0.002	0.003	0.009	0.009	0.014	mA
MUT [% Error]		0.05	0.04	0.08	0.06	0.07	% O R
TOTALIZER - REF. FLOW RATE						20.000	LPS
TOTALIZER (MUT)						8.1	M3
TEST TIME						403.61	SECONDS
CALC. TOTALIZER						8.072	M3
ERROR						0.34	%

COMMENTS

Note: tube and parameters programmed match.

QUALITY MANAGEMENT STANDARDS INFO.

[QMS] INFORMATION	IDENT.	ID #
[REFERENCE] FTS	E&H (FC)	1
PROCESS METER	PM	11
ANALOG METER	AM	n/a
STOP WATCH	SW	Yes

RESULTS

TEST	AVG % o.r.	PASS FAIL
DISPLAY	0.11	PASS
mA OUTPUT	0.06	PASS
TOTALIZER - R	0.34	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.

AS FOUND CERTIFICATION

FORWARD FLOW DIRECTION

PASS
CLIENT DETAIL
CUSTOMER OCWA - West Highlands Hub
CONTACT Don Irvine
 Process Compliance Technician
 p 519-925-1938 x225
 c 519-321-9474
 e dirvine@ocwa.com

[MUT] MANUFACTURER
MODEL
CONVERTER S/N:
FUSE
EQUIPMENT DETAIL
 ENDRESS & HAUSER
 Promag 53W
 M4053819000

PLANT ID Arthur WPCP
METER ID RAS East Flow
FIT ID n/a
CLIENT TAG OCWA# not assigned
OTHER n/a
GPS COORDINATES N43 49 903 W080 32 948

 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

VERIFICATION DATE September 21 2018
CAL. FREQUENCY Annual
CAL. DUE DATE September, 2019

PROGRAMMING PARAMETERS

DIAMETER (DN)	mm	100
F. S. FLOW - MAG	LPS	78.538
F. S. RANGE - O/P	LPS	20 000
TUBE k-FACTOR		1 3156
TUBE zero		4

FORWARD TOTALIZER INFORMATION

AS FOUND	119004 3	M3
AS LEFT	119013 6	M3
DIFFERENCE	9 3	M3

TEST CRITERIA

AS FOUND CERTIFICATION TEST	Yes
FORWARD FLOW DIRECTION	Yes
ALLOWABLE [%] ERROR	5

COMPONENTS TESTED

CONVERTER DISPLAY	yes
mA OUTPUT	yes
TOTALIZER	yes
ACCURACY BASED ON [% o.r.]	yes

ERROR DOCUMENTED IN THIS REPORT, BASED ON % o.r.

FLOW TUBE SIMULATION

		0.0	5.0	10.0	15.0	20.0	LPS
		0.0	6.4	12.7	19.1	25.5	% F.S. Flow
		0.0	25.0	50.0	75.0	100.0	% F.S. Range
REF. FLOW RATE		0.000	5.000	10.000	15.000	20.000	LPS
MUT [Reading]		0.000	5.004	10.003	15.003	19.999	LPS
MUT [Difference]		0.000	0.004	0.003	0.003	-0.001	LPS
MUT [% Error]		n/a	0.07	0.03	0.02	-0.01	% O R
mA OUTPUT		4.000	8.000	12.000	16.000	20.000	mA
MUT [Reading]		min. 4 mA	3.999	7.998	12.002	15.999	mA
MUT [Difference]		max. 20 mA	-0.001	-0.002	0.002	-0.001	mA
MUT [% Error]			-0.02	-0.02	0.02	-0.01	% O R
TOTALIZER - REF. FLOW RATE						20.000	LPS
TOTALIZER [MUT]						6	M3
TEST TIME						299.97	SECONDS
CALC. TOTALIZER						5.999	M3
ERROR						0.01	%

COMMENTS

Note: tube and parameters programmed match.

QUALITY MANAGEMENT STANDARDS INFO.

[QMS] INFORMATION	IDENT	ID #
[REFERENCE] FTS	E&H (FC)	1
PROCESS METER	PM	11
ANALOG METER	AM	n/a
STOP WATCH	SW	Yes

RESULTS

TEST	AVG % o.r.	PASS FAIL
DISPLAY	0.03	PASS
mA OUTPUT	-0.01	PASS
TOTALIZER - R	0.01	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.

**2018 - 2019 Annual Performance Report
Arthur Wastewater Treatment Plant
ECA 3773-ABJKXX**

Appendix D

Sludge Quality Analysis

**ARTHUR WASTEWATER TREATMENT PLANT
SLUDGE QUALITY DATA**

2018 - 2019

Day	8-May	18-Jun	11-Jul	21-Aug	13-Sep	10-Oct	15-Nov	12-Dec	23-Jan	28-Feb	28-Mar	24-Apr	
Month/Year	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	AVERAGE

Nutrients

TS	(mg/L)	34800	24200	23200	29500	25800	29300	28200	29500	37700	27700	32700	36200	29900
Ammonia+Ammonium	(mg/L)	325.0	658.0	637	381	1120	100	56.2	55.6	125.0	43.1	148.0	2370	501.6
Nitrate	(mg/L)	0.30	0.30	0.30	0.30	0.60	2.4	0.30	0.4	0.9	0.30	0.30	0.30	0.56
Ammonia + Nitrate	(mg/L)	325.3	658.3	637.3	381.3	1120.6	102.4	56.5	56.0	125.9	43.4	148.3	2370.3	502.1
TKN	(mg/L)	2330	1970	1650	934	1400	1130	1480	1700	2280	1770	2020	2370	1753
Phosphorus	(mg/L)	1500	930	960	1200	1200	1300	1300	1200	1400	1000	1100	1400	1208

Metal Concentrations

Arsenic	(mg/L)	0.20	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.20	0.17
Cadmium	(mg/L)	0.013	0.009	0.010	0.012	0.011	0.012	0.011	0.010	0.013	0.010	0.010	0.01	0.01
Cobalt	(mg/L)	0.07	0.04	0.05	0.05	0.050	0.06	0.06	0.06	0.07	0.04	0.04	0.05	0.05
Chromium	(mg/L)	1.70	0.93	0.88	1.10	1.00	0.84	0.75	1.10	1.40	1.00	0.92	1.20	1.07
Copper	(mg/L)	36.00	27.00	28.00	37.00	31.00	41.00	31.00	25.00	31.00	22.00	21.00	27.00	29.75
Mercury	(mg/L)	0.008	0.007	0.006	0.007	0.0070	0.0100	0.008	0.009	0.010	0.0070	0.010	0.006	0.008
Potassium	(mg/L)	190	150.0	140.0	140.0	140.0	110.0	100.0	110.0	140.0	160.0	150.0	170.0	142
Molybdenum	(mg/L)	0.22	0.15	0.14	0.15	0.15	0.19	0.17	0.15	0.17	0.12	0.15	0.18	0.16
Nickel	(mg/L)	0.92	0.55	0.50	0.66	0.61	0.49	0.44	0.56	0.80	0.53	0.50	0.47	0.59
Lead	(mg/L)	0.30	0.20	0.20	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.30	0.27
Selenium	(mg/L)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Zinc	(mg/L)	15.00	9.60	9.70	14.00	12.00	17.00	17.00	15.00	18.00	11.00	12.00	14.00	13.69

Bacti

E. coli (cfu/1g dried wgt)	129,310	11,983	5,603	339	388	1,706	134,752	169,492	95,491	350,181	342,508	201,657	120,284
E. coli (cfu/100mL)	450,000	29,000	13,000	1,000	1,000	5,000	380,000	500,000	360,000	970,000	1,120,000	730,000	379,917

Metal/Solids Concentration

Arsenic [170]	(mg/kg)	6	4	4	7	8	7	7	7	5	4	3	6	6
Cadmium [34]	(mg/kg)	0	0	0	0	0	0	0	0	0	0	0	0	0
Cobalt [340]	(mg/kg)	2	2	2	2	2	2	2	2	2	1	1	1	2
Chromium [2800]	(mg/kg)	49	38	38	37	39	29	27	37	37	36	28	33	36
Copper [1700]	(mg/kg)	1034	1116	1207	1254	1202	1399	1099	847	822	794	642	746	1014
Mercury [11]	(mg/kg)	0	0	0	0	0	0	0	0	0	0	0	0	0
Molybdenum [94]	(mg/kg)	6	6	6	5	6	6	6	5	5	4	5	5	5
Nickel [420]	(mg/kg)	26	23	22	22	24	17	16	19	21	19	15	13	20
Lead [1100]	(mg/kg)	9	8	9	10	12	10	11	10	8	7	6	8	9
Selenium [34]	(mg/kg)	3	4	4	3	4	3	4	3	3	4	3	3	3
Zinc [4200]	(mg/kg)	431	397	418	475	465	580	603	508	477	397	367	387	459

**2018 - 2019 Annual Performance Report
Arthur Wastewater Treatment Plant
ECA 3773-ABJKXX**

Appendix E

Community Complaints

Ontario Clean Water Agency Community Complaints

Facility ID: 5767
Facility Name: Arthur Wastewater Treatment Plant, Lagoon & Collection System
Address: P.O. Box 749
City: Arthur
Province: Ontario
Postal Code: NOG 1A0
Name of Person who filed Complaint: _____
Address: _____
Phone: _____

NOTE: If there were multiple complaints, provide the name of the person who filed the initial complaint and note the number and details in the "Description" field below

Date of Complaint: 27/07/2018
Time of Complaint: 03:41:27 PM

Nature of Complaint

- | | | |
|---|--|--|
| <input checked="" type="checkbox"/> Noise | <input type="checkbox"/> Water Supply Taste/Colour | <input type="checkbox"/> Water Pressure/No Water |
| <input type="checkbox"/> Visual | <input type="checkbox"/> Service Problem | <input type="checkbox"/> Basement Flooding |
| <input type="checkbox"/> Odour | <input type="checkbox"/> Sludge Related | |
- Other: _____

Description:

Operator advised PCT through P&C Report that Barry T (water Supervisor for Wellington North), had received a complaint regarding the noise from the air stack in the aeration cells. The current blowers are too big and have been turned down as much as they can be to eliminate too much DO in the aeration cells. The plant has just passed the 95% design review and will be replacing the blowers in the very near future

Action taken in response:

Operator as purchased a muffler from a local farm store to place on the top of the stack. The noise has almost completely disappeared at this point. The operator will monitor the noise and replace the muffler if required.

Was the source of the problem identified?: ● Yes ○ No

Was the source an OCWA facility/activity?: ● Yes ○ No If "Yes", describe:

Arthur WWTP aeration cell blow off stack

If any remedial action is required, complete action plan form

Updated By: Donald Irvine 24/08/2018 03:53:38 PM

Investigating Operator:

Comments: