

2019 Annual Compliance Report

**Operation & Maintenance
of
Paisley Wastewater System**

February 2020

13-028

**Prepared for:
Municipality of Arran-Elderslie
1925 Bruce Road 10
Box 70
Chesley, ON
N0G 1L0**

**Prepared by:
GSS Engineering Consultants Ltd.
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1.0 INTRODUCTION

The Paisley Sewage Works System, in Arran-Elderslie, is comprised of three (3) sewage pumping stations and a wastewater treatment plant. The wastewater generated within Paisley is collected into the sewer system and pumped to the wastewater treatment plant by way of a 150 mm diameter forcemain. The treatment plant consists of a flow equalization basin, grit chamber, oxidation ditch, clarifiers, phosphorous removal system, two-stage aerobic digester system, an aerated sludge storage tank and a chlorine contact chamber. A 250 mm diameter outfall sewer discharges treated effluent to the Saugeen River.

This annual report has been prepared for compliance with the amended Certificate of Approval # 9892-7BCLVP dated March 18, 2008 issued by the Ministry of Environment. Refer to **Appendix A** for the current Certificate of Approval. Various sections in this report address the requirements laid out in the Certificate of Approval for an Annual Report and includes the following items:

1. Summary and interpretation of monitoring data and a comparison to the effluent limits and objectives.
2. Summary of maintenance carried out.
3. Summary of the calibration and maintenance carried out on all effluent monitoring equipment.
4. Description of operating problems encountered and corrective actions taken.
5. Summary of the sludge generated.
6. Summary of any complaints received and any steps taken to address the complaints.
7. Summary of all by-pass, spill or abnormal discharge events.

During the reporting period of this Annual Report (January 1, 2019 to December, 2019), the Paisley Sewage Works was operated by the Municipality of Arran-Elderslie namely Mark O'Leary, who has WWT II and WWC II License, Trevor Sweiger, who has WWT I License. Chris Legge, who has WWT I and WWC I License and Ted Knapp, who has WWT III and WWCII License. Mr. Scott McLeod of Arran-Elderslie who has WWT II and WWC II Licenses, acted as the backup Overall Responsible Operator (ORO) and Mr. Rakesh Sharma, GSS Engineering Consultants Ltd. acted as the Overall Responsible Operator (ORO). This report is prepared based on the information provided by the Municipality of Arran-Elderslie.

2.0 DESCRIPTION OF FACILITIES

2.1 Sewage Pumping Stations

Ross Street Pumping Station

This main sewage pumping station is located at the southeast corner of Orchard Street and Ross Street and is equipped with two (2) submersible pumps (one duty and one standby) each rated at 48 L/s at a TDH of 12 m and a valve chamber that houses all associated valves and by-pass facilities. A 150 mm diameter forcemain carries the sewage from this pumping station to the Paisley Wastewater Treatment Plant. This pumping station is also equipped with a 35kW diesel fuel standby generator set complete with a 908 L capacity fuel tank to provide emergency power for the sewage pumps.

Albert Street Pumping Station

This is a subsidiary sewage pumping station located at the southeast corner of Water Street and Albert Street and is equipped with two (2) submersible sewage pumps (one duty, one standby) each rated at 26 L/s at a TDH of 7.5 m and a valve chamber that houses all associated valves and by-pass facilities. A 150 mm forcemain discharges sewage to the Queen Street north sanitary sewer at Water Street. This pumping station is equipped with one (1) 136 m³ capacity flow equalization basin complete with a jet aeration facility for mixing/aeration.

A 40 kW standby diesel generator set and a 908 L fuel tank is housed in the generator building which is constructed on top of the equalization basin.

Mill Street Pumping Station

This sewage pumping station is located near the South West of the intersection of Mill and Duke Streets and consist of a 3 m diameter and 9 m deep precast concrete structure with two (2) submersible pumps (one duty and one standby) each rated at 15.5 L/s at 26 m TDH. A 100 mm diameter forcemain discharges sewage to the manhole (MH4) on Victoria Street from where it is conveyed to the Paisley Wastewater Treatment Plant.

2.2 Wastewater Treatment Plant

The wastewater treatment plant has one (1) 345 m³ capacity flow equalization basin with a jet aeration facility for mixing/aeration. A flow restrictor restricts the maximum sewage flow into the grit chamber to approximately 30.3 L/s. Two (2) submersible sewage transfer pumps each rated at 15 L/s at a TDH of 4.9 m transfers the raw sewage into an oxidation ditch that measures 85.3 m centerline length. The ditch has 1.5 m water depth which provides an

approximate volume of 412 m³. The oxidation ditch is equipped with one (1) rotor aerator. Two (2) sludge transfer pumps each rated at 8.6 L/s at 2.0 m TDH transfers sludge to the digesters or for return to oxidation ditch.

The wastewater treatment plant includes two (2) clarifiers having a 7.3 m diameter, 3.05 m water depth and a two-storage aerobic digestion system equipped with air diffusers and mechanical decanting facilities. The Stage 1 and 2 digesters have a capacity of 100 m³ and 50 m³ respectively and are equipped with two (2) sludge pumps each rated at 15.14 L/s at 7.0 m TDH and one (1) submersible sewage supernatant pump rated at 15.14 L/s at 7.0 TDH. One (1) blower having an air flow rate of 91 L/s at 41.4 kPa and two (2) blowers having an air flow rate of 91 L/s at 60 kPa, supplies air to both the digesters

The Paisley Wastewater Treatment Plant also includes one (1) sludge storage tank with a storage capacity of 492 m³ and is equipped with two (2) mechanical submersible mixers and a mechanical decanting facility. All three (3) of the blowers described above are capable of supplying air to the sludge storage tank.

Additionally, the wastewater plant includes a phosphorus removal system and a seasonal chlorine disinfection system. An 18 kg/d capacity chlorinator with a weigh scale, injector and other appurtenances, injects chlorine into the chlorine contact chamber for disinfection of the treatment effluent before it is discharged to the Saugeen River via a 200 mm diameter outfall sewer.

3.0 SUMMARY OF WASTEWATER FLOWS

A summary of wastewater flows received at the sewage treatment plant is provided in **Table 1**. In 2019 the average daily flow was 431 m³/day and the maximum flow was 1792 m³/day. The maximum day flow occurred on April 26, 2019. The design capacity of the treatment plant is 705 m³/day. In 2019, the wastewater treatment plant operated at 61.1% of the design capacity.

In the enclosed **Table 1A**, capacity utilization over the years has been summarized along with Maximum day flow data. The max day flow was similar in magnitude when compared to other years from 2013 to 2019 except year 2018.

The flow meter was calibrated in April 2019, by Flowmetrix Technical services Inc. Refer to **Appendix B** for the calibration report.

TABLE 1
 Summary of Wastewater Flows: 2019
 Paisley Sewage Works
 Municipality of Arran-Elderslie

February, 2020

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Month	Total Flow (m ³)	Average Daily Flow (m ³ /day)	Maximum Daily Flow (m ³ /day)
January	13,375	431	664
February	13,204	472	1,243
March	20,194	651	1,623
April	24,189	806	1,792
May	13,714	442	788
June	12,193	406	780
July	8,126	262	395
August	6,477	209	266
September	8,142	271	648
October	9,755	315	958
November	13,575	453	709
December	14,091	455	1,245
Total	157,035		
Annual Average		431	
Maximum			1,792

TABLE 1A
 Capacity Utilization Summary
 Paisley Wastewater Treatment Plant
 Municipality of Arran-Elderslie

February, 2020

13-028

Year	Average Day Flow (m ³ /day)	Capacity Utilization %	Maximum Day Flow (m ³ /day)
2019	431	61.1	1,792
2018	449	63.7	3,968
2017	405	57.5	1,871
2016	366	51.9	2,093
2015	341	48.4	1,061
2014	411	58.3	1,970
2013	444	63.0	1,666
2012	338	47.9	808
Rated Capacity	705		

4.0 RAW SEWAGE AND TREATED EFFLUENT MONITORING

The Certificate of Approval (C of A) requires that the raw sewage be tested for BOD₅, Total Suspended Solids, Total Kjeldahl Nitrogen (TKN) and Total Phosphorous once every month. **Table 2** shows the summary of raw sewage monitoring data.

The C of A further specifies collection of an eight (8) hour composite sample of treated effluent on a bi-weekly basis and analysis for CBOD₅, Total Suspended Solids, Total Phosphorous and TKN. It also requires that a grab sample of treated effluent is collected weekly and is analyzed for E.coli, pH, Temperature as well as for Chlorine Residual during chlorination season. The unionized (free) ammonia in **Table 3** is an estimated amount, calculated as a percentage of total ammonia nitrogen based on field pH and temperature measurements.

Composite effluents samples as per C of A were collected and analyzed for CBOD₅, Total Suspended Solids, Total Phosphorous and Total Ammonia Nitrogen and are summarized in **Table 3**.

In regard to E.coli, the C of A requires that weekly samples are collected and analyzed between May 1st and Oct 31st, and the E.coli levels are reported as monthly geometric mean density. The density is not to exceed 200 organisms per 100 ml of effluent. **Table 3** provides a summary of E.coli monitoring results.

“Average waste loadings” (CBOD₅, TSS, TP) are presented in **Table 4**.

None of the effluent parameters or waste loadings exceeded the C of A limits.

TABLE 2

Summary of Raw Sewage Monitoring Data: 2019

Paisley Sewage Treatment Plant

Municipality of Arran-Elderslie

February, 2020

13-028

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Month	CBOD	Total Suspended Solids	Total Phosphorous	Total Kjeldahl Nitrogen
	(mg/L)	(mg/L)	(mg/L)	(mg/L)
January	53	56	1.43	14.0
February	109	88	1.79	13.0
March	111	128	2.61	25.0
April	49	62	1.78	17.9
May	97	134	2.81	21.4
June	113	150	1.97	24.9
July	142	140	1.95	26.7
August	182	215	3.13	18.1
September	326	693	9.40	55.6
October	182	115	3.98	38.2
November	90	106	2.64	28.7
December	78	91	1.81	18.6

TABLE 3

Summary of Treated Effluent Monitoring Data - 2019
Paisley Sewage Treatment Plant
Municipality of Arran-Elderslie

February, 2020

13-028

Month	Average Concentration									
	CBOD ₅	TSS	Total Phosphorous	Total Ammonia Nitrogen	E.Coli Geometric Mean	Unionized Ammonia	Average pH	Avg. Temp.	Avg. Cl ₂ Residual	Max. Cl ₂ Residual
	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(cts/100mL)	(mg/L)		(°C)	(mg/L)	(mg/L)
CofA Effluent Limits (mg/L)	25	25	1		200 (May 1 to Oct 31)		6.0-9.5			
January	4	3	0.12	0.15	16444	0.000	7.17	7.6		
February	4	4	0.12	3.70	8394	0.010	7.16	6.3		
March	7	3	0.10	0.30	1652	0.001	7.13	7.2		
April	4	2	0.08	0.30	11428	0.001	7.16	9.2	0.10	0.10
May	4	2	0.10	0.10	3	0.000	6.74	13.3	0.68	1.55
June	5	2	0.13	0.10	9	0.000	6.77	17.2	0.51	1.31
July	4	3	0.24	0.25	4	0.001	6.84	21.7	0.48	0.96
August	4	3	0.20	0.20	10	0.001	6.86	22.9	0.77	0.87
September	3	3	0.24	0.80	9	0.002	6.94	21.6	0.59	0.61
October	2	3	0.12	0.10	7	0.000	6.90	13.8	0.81	1.20
November	4	2	0.13	0.10	51613	0.000	7.18	11.3		
December	2	2	0.10	0.15	4023	0.000	6.89	10.3		
Compliance with (CofA) Effluent Limits	Y	Y	Y		Y		Y			

TABLE 4

Monthly Summary of Average Waste Loadings to Receiver - 2019

Paisley Wastewater Treatment Plant

Municipality of Arran-Elderslie

February, 2020

13-028

Month	CBOD	Total Suspended Solids	Total Phosphorous
	(kg/day)	(kg/day)	(kg/day)
January	1.7	1.3	0.05
February	1.9	1.9	0.06
March	4.6	2.0	0.07
April	3.2	1.6	0.07
May	1.8	0.9	0.04
June	2.0	0.8	0.05
July	1.1	0.8	0.06
August	0.8	0.6	0.04
September	0.8	0.8	0.07
October	0.6	0.9	0.04
November	1.8	0.9	0.06
December	0.9	0.9	0.05
Cof A Effluent Limits	17.6	17.6	0.71
Compliance with CofA Effluent Limits	Y	Y	Y

5.0 SUMMARY OF MAINTENANCE

January:

- North Clarifier motor was repaired. Frieburger made a new pulley for clarifier.
- South Clarifier motor was replaced.

February:

- Oil and air filter on blower #3 were changed. Checked belt tension and condition which were found to be OK.
- Oil and air filter on blower #1 were changed. Checked belt tension and condition which were found to be OK.

April:

- Guide wheel on South Clarifier was changed.

May:

- Mechanical seal on North Return Activated Sludge pump was changed.

July:

- Approx. 53m³ of digested sludge was pumped into geotube.

August:

- Spill occurred due to supernatant pump not working during sludge transfer to geotube. SAC, MOH, MECP were notified. Approx. 300L of spill occurred.
- Mike Livingstone from Dewars replaced contactor for supernatant pump.
- Approx. 125m³ of sludge was pumped into geotube.
- Lightning strike hit sewage treatment plant. Pulsar raw flow meter, level sensor and blower motor #1 were damaged.

September:

- A new electric motor was installed for blower #1.
- Mechanical seal on South Return Activated Sludge pump was rebuilt.
- Pump #1 at Albert St. lift station was replaced with new pump.
- Approximately 75 m³ of digested sludge was pumped into geotube.

October:

- Approximately 155 m³ digested sludge was pumped into geotube.

November:

- Belt on South Clarifier was replaced.
- Belt was replaced and adjustments made to motor and scum arm.

- Approximately 92 m³ of digested sludge was pumped into geotube.

December:

- New UPS for dialer was provided at Mill Drive pumping station.
- U-Joint on O2 aerator was greased.
- Replaced 5/5 diffusers in digester 1.17 duckbills. Also replaced and pivot arm was greased.
- Both alum pumps were calibrated using calibration column.
- New mixer pump, Flight Model 3153 LT was installed by Dewars in Oxidation Ditch.

Note: A total of approximately 500 m³ of sludge was pumped into geotube in Year 2019.

6.0 SUMMARY OF COMPLAINTS RECEIVED

No complaints were received during 2019.

7.0 SEWAGE BY-PASS

There were no sewage by-passes from any of the three (3) Paisley pumping stations in 2019.

8.0 LAND APPLICATION OF DIGESTED SLUDGE

In 2019, no digested sludge was hauled to the sludge spreading site and incorporated into the soil. Instead the sludge was pumped and held in geotubes for further dewatering. As per the operations records, a total of 500 m³ of sludge was removed from sludge storage tanks and pumped into geotubes at the plant. The supernatant was recycled back to headworks for further treatment.

9.0 MINISTRY OF THE ENVIRONMENT INSPECTION AND COMPLIANCE

The Ministry of the Environment did not conduct an inspection of the Paisley Sewage Treatment Plant in 2019.

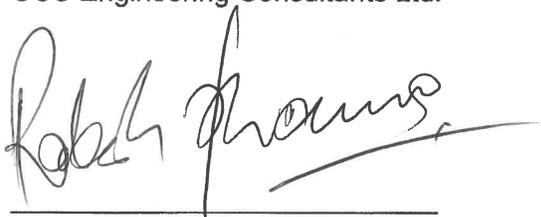
10.0 RECOMMENDATIONS

We present the following recommendations:

1. Continue to operate the sewage works in accordance with the Certificate of Approval and Regulations.
2. The flow meter calibration should be done before April 2020.
3. Sludge should be hauled/pumped in geotubes on an as-needed basis and an account of sludge pumped into geotubes should be maintained.
4. Ensure that discharge data including flows, bypasses, raw and effluent data is reported to MECP under the Municipal Monitoring Program on a quarterly basis.
5. The Municipality is advised to continue to participate in the Municipal utility monitoring program and submit the required data to the MECP.

Respectfully submitted:

GSS Engineering Consultants Ltd.



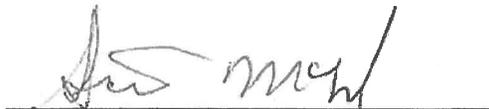
Rakesh Sharma, P. Eng., M.A.Sc.
Class IV License, WWC and WWT

Municipality of Arran-Elderslie



Mark O'Leary, Water & Sewer Foreman
Class II License, WWC and WWT

Municipality of Arran-Elderslie



Scott McLeod, Public Works Manager
Class II WWC & Class II WWT, Backup
ORO

Appendix A
Certificate of Approval



Ministry of the Environment
Ministère de l'Environnement

AMENDED CERTIFICATE OF APPROVAL
MUNICIPAL AND PRIVATE SEWAGE WORKS
NUMBER 9892-7BCLYP
Issue Date: March 18, 2008

The Corporation of the Municipality of Arran-Elderslie
1925 Bruce Road 10
Post Office Box, No. 70
Chesley, Ontario
N0G 1L0

RECEIVED
MAR 28 2008
ARRAN-ELDERSLIE

Site Location: Paisley Sewage Treatment Plant
322 George St N
Arran-Elderslie Municipality, County of Bruce

You have applied in accordance with Section 53 of the Ontario Water Resources Act for approval of:

Alterations to the existing municipal sewage works at the above site location for the collection, transmission, treatment and disposal of sewage with a *Rated Capacity* of 705 m³/d, consisting of the following:

PROPOSED WORKS

Paisley Water Pollution Control Plant

- a chlorine control panel comprising two (2) dosing control systems, one automatic flow-paced with a capacity of 0 - 4.5 kg/d for fine tuning at lower residual and one (future) manually adjustable with a capacity of 0.5 - 4.5 kg/d for supplementary feed for high flows or high chlorine demands;
- an ultrasonic flowmeter on the V-notch weir at the outlet of the chlorine contact tank;
- all other controls, electrical equipment, instrumentation, piping, pumps, valves and appurtenances essential for the proper operation of the aforementioned sewage works;

EXISTING WORKS

Sanitary Sewers

- sanitary sewers on Victoria Street South, Victoria Street North, Queen Street South, Queen Street North, Albert Street, Ross Street, Alma Street, Inkerman Street, Goldie Street, Water Street South, Church Street, Cambridge Street, Mill Street and Rowe Street;

Albert Street Sewage Pumping Station (off-site)

- a subsidiary sewage pumping station located at the southeast corner of Water Street and Albert Street, equipped with two (2) submersible sewage pumps (one standby), each rated at 26 L/s at a

- T.D.H. of 7.5 m, including a valve chamber to house all the associated valves and by-pass facility and a 150 mm dia. forcemain discharging to the Queen Street North sanitary sewer at Water Street;
- one (1) 136 m³ capacity flow equalization basin complete with a jet aeration facility for mixing/aeration and two (2) submersible sewage transfer pumps, one rated at 26 L/s at 7.5 m T.D.H. and the other rated at 17 L/s at a T.D.H. of 8 m;
- a 40 kW diesel generator set and a 908 L fuel tank housed in the generator building (5 m x 6 m) constructed on top of the equalization basin;

Ross Street Sewage Pumping Station (off-site)

- a main sewage pumping station located at the southeast corner of Orchard Street and Ross Street, equipped with two (2) submersible pumps each rated at 48 L/s at a T.D.H. of 12 m including a valve chamber to house all the associated valves and by-pass facility and a 150 mm dia. forcemain along Orchard Street and George and discharging to the Paisley Water Pollution Control Plant;
- a 35 kW diesel generator set;

Paisley Water Pollution Control Plant

- one (1) 345 m³ capacity Flow Equalization Basin, complete with a jet aeration facility for mixing/aeration, two (2) submersible sewage transfer pumps each rated at 15 L/s at a T.D.H. of 4.9 m and a flow control device to restrict the maximum flow into the grit channel to approximately 30.3 L/s;
- grit chamber;
- an Oxidation Ditch of approx. 85.3 m centreline length, 1.52 m water depth and approx. volume of 412 m³ and equipped with one (1) rotor aerator;
- two (2) 7.3 m dia. x 3.05 m SWD Final Clarifiers;
- a 4 m x 1.6 m x 1.6 m SWD Chlorine Contact Chamber, with approx. 11.5 m³ capacity,
- a 18 kg/d capacity chlorinator located in the Control Building, complete with weigh scale, ejector and associated equipment and appurtenances;
- a phosphorus removal system comprising one (1) 27,000 L capacity chemical storage tank and one (1) 9.5 L/h capacity chemical feed pump located in the Chemical Storage Building, including chemical feed pipe, valves and appurtenances;
- a two-stage Aerobic Digestion System with a 100 m³ capacity Stage 1 Digester and a 50 m³ capacity Stage 2 Digester, equipped with air diffusers and mechanical decanting facilities for each digester, two (2) submersible sewage sludge pumps (one standby) each rated at 15.14 L/s at 7.0 m TDH, one (1) submersible sewage supernatant pump rated at 15.14 L/s at 7.0 m TDH;
- an Aerated Sludge Storage Tank with a 492 m³ storage capacity, equipped with air diffusers, two (2) mechanical submersible mixers and mechanical decanting facility;
- two (2) sludge handling pumps located in the Control Building, each rated at 8.6 L/s at 2.0 m TDH for transfer of sludge to the Digesters or for return to Oxidation Ditch;
- one (1) blower having an air flow rate of 91 L/s at 41.4 kPa for the Digesters and two (2) blowers (one standby) each having an air flow rate of 91 L/s at 62.0 kPa, located in the Blower Building;
- a 250 mm dia. Effluent Outfall Sewer from the Chlorine Contact Chamber to the Saugeen River;

Miscellaneous

- all other controls, electrical equipment, instrumentation, piping, pumps, valves and appurtenances essential for the proper operation of the aforementioned sewage works;

all in accordance with the following submitted supporting documents:

1. Final plans and specifications prepared by Gamsby and Mannerow Limited, Consulting Engineers.
2. Application for Approval of Municipal and Private Sewage Works submitted by Matt Prentice of Henderson, Paddon & Associates Limited received dated December 10, 2007, including design calculations, engineering plans and specifications.

For the purpose of this Certificate of Approval and the terms and conditions specified below, the following definitions apply:

Act " means the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended;

"Average Daily Flow " means the cumulative total sewage flow to the sewage works during a calendar year divided by the number of days during which sewage was flowing to the sewage works that year;

"BOD5 " (also known as TBOD₅) means five day biochemical oxygen demand measured in an unfiltered sample and includes carbonaceous and nitrogenous oxygen demand;

"By-pass" means any discharge from the *Works* that does not undergo any treatment or only receives partial treatment before it is discharged to the environment;

"CBOD5 " means five day carbonaceous (nitrification inhibited) biochemical oxygen demand measured in an unfiltered sample;

"Certificate " means this entire certificate of approval document, issued in accordance with Section 53 of the *Act* , and includes any schedules;

"Daily Concentration " means the concentration of a contaminant in the effluent discharged over any single day, as measured by a composite or grab sample, whichever is required;

"Director " means any *Ministry* employee appointed by the Minister pursuant to section 5 of the *Act* ;

"District Manager " means the District Manager of the Barrie District Office of the Ministry;

"E. Coli " refers to the thermally tolerant forms of *Escherichia* that can survive at 44.5 degrees Celsius;

"Existing Works " means those portions of the sewage works previously constructed and existing

on-site on the date of issuance of this *Certificate* ;

"*Geometric Mean Density* " is the nth root of the product of multiplication of the results of n number of samples over the period specified;

"*Ministry* " means the Ontario Ministry of the Environment;

"*Monthly Average Concentration* " means the arithmetic mean of all *Daily Concentrations* of a contaminant in the effluent sampled or measured, or both, during a calendar month;

"*Monthly Average Daily Flow* " means the cumulative total sewage flow to the sewage works during a calendar month divided by the number of days during which sewage was flowing to the sewage works that month;

"*Monthly Average Loading* " means the value obtained by multiplying the *Monthly Average Concentration* of a contaminant by the *Monthly Average Daily Flow* over the same calendar month;

"*Owner* " means the Corporation of the Municipality of Arran-Elderslie and includes its successors and assignees;

"*Proposed Works* " means the sewage works described in the *Owner* 's application, this *Certificate* and in the supporting documentation referred to herein, to the extent approved by this *Certificate* ;

"*Rated Capacity* " means the *Average Daily Flow* for which the *Works* are approved to handle;

"*Regional Director* " means the Regional Director of the Southwestern Region of the Ministry; and

"*Works* " means the sewage works described in the *Owner* 's application, this *Certificate* and in the supporting documentation referred to herein, to the extent approved by this *Certificate* and includes both *Existing Works* and *Proposed Works* .

You are hereby notified that this approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. GENERAL PROVISIONS

(1) The *Owner* shall ensure that any person authorized to carry out work on or operate any aspect of the *Works* is notified of this *Certificate* and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

(2) Except as otherwise provided by these Conditions, the *Owner* shall design, build, install, operate and maintain the *Works* in accordance with the description given in this *Certificate* , the application for approval of the works and the submitted supporting documents and plans and specifications as listed in this *Certificate* .

(3) Where there is a conflict between a provision of any submitted document referred to in this *Certificate* and the Conditions of this *Certificate*, the Conditions in this *Certificate* shall take precedence, and where there is a conflict between the listed submitted documents, the document bearing the most recent date shall prevail.

(4) Where there is a conflict between the listed submitted documents, and the application, the application shall take precedence unless it is clear that the purpose of the document was to amend the application.

(5) The requirements of this *Certificate* are severable. If any requirement of this *Certificate*, or the application of any requirement of this *Certificate* to any circumstance, is held invalid or unenforceable, the application of such requirement to other circumstances and the remainder of this certificate shall not be affected thereby.

(6) The approval granted by this *Certificate* is based upon a review of the *Works* in the context of its effect on the environment, its process performance and general principles of wastewater engineering. The review did not include a consideration of the architectural, mechanical, electrical or structural components and minor details of the *Works* except to the extent necessary to review the *Works*.

2. EXPIRY OF APPROVAL

The approval issued by this *Certificate* will cease to apply to those parts of the *Works* which have not been constructed within five (5) years of the date of this *Certificate*.

3. CHANGE OF OWNER

(1) The *Owner* shall notify the *District Manager* and the *Director*, in writing, of any of the following changes within 30 days of the change occurring:

(a) change of *Owner* ;

(b) change of address of the *Owner* ;

(c) change of partners where the *Owner* is or at any time becomes a partnership, and a copy of the most recent declaration filed under the Business Names Act, R.S.O. 1990, c.B17 shall be included in the notification to the *District Manager* ;

(d) change of name of the corporation where the *Owner* is or at any time becomes a corporation, and a copy of the most current information filed under the Corporations Information Act, R.S.O. 1990, c. C39 shall be included in the notification to the *District Manager* ;

(2) In the event of any change in ownership of the *Works*, other than a change to a successor municipality, the *Owner* shall notify in writing the succeeding owner of the existence of this

Certificate , and a copy of such notice shall be forwarded to the *District Manager* and the *Director* .

4. RECORD DRAWINGS

(1) A set of as-built drawings showing the *Works* "as constructed" shall be kept up to date through revisions undertaken from time to time and copy shall be retained at the *Works* for the operational life of the *Works* .

5. BY-PASSES

(1) Any *By-pass* of sewage from any portion of the *Works* is prohibited, except where:

(a) it is necessary to avoid loss of life, personal injury, danger to public health or severe property damage;

(b) the *District Manager* agrees that it is necessary for the purpose of carrying out essential maintenance and the *District Manager* has given prior written acknowledgment of the *by-pass* ; or

(c) the *Regional Director* has given prior written acknowledgment of the *By-pass* .

(2) The *Owner* shall collect at least one (1) grab sample of the *By-pass* and have it analyzed for the parameters outlined in Condition 7 using the protocols in Condition 10.

(3) The *Owner* shall maintain a logbook of all *By-pass* events which shall include, at a minimum, the time, location, duration, quantity of *By-pass* , the authority for *By-pass* pursuant to subsection (1), and the reasons for the occurrence.

6. EFFLUENT OBJECTIVES

(1) The *Owner* shall use best efforts to design, construct and operate the *Works* with the objective that the concentrations of the materials named below as effluent parameters are not exceeded in the effluent from the *Works* .

Effluent Parameter	Average Concentration (milligrams per litre unless otherwise indicated)
Column 1	Column 2
<i>CBOD5</i>	20.0
Total Suspended Solids	20.0
Total Phosphorus	0.8

(2) The *Owner* shall use best efforts to:

(a) maintain the pH of the effluent from the *Works* within the range of 6.5 to 9.0, inclusive,

at all times;

(b) operate the works within the *Rated Capacity* of the *Works* ;

(c) ensure that the effluent from the *Works* is essentially free of floating and settleable solids and does not contain oil or any other substance in amounts sufficient to create a visible film or sheen or foam or discolouration on the receiving waters.

(3) The *Owner* shall include in all reports submitted in accordance with Condition 10 a summary of the efforts made and results achieved under this Condition.

7. EFFLUENT LIMITS

(1) The *Owner* shall operate and maintain the *Works* such that the concentrations of the materials named below as effluent parameters are not exceeded in the effluent from the *Works* .

Effluent Parameter	Average Concentration (milligrams per litre unless otherwise indicated)	Average Waste Loading (kilograms per day unless otherwise indicated)
Column 1	Column 2	Column 3
<i>CBOD5</i>	25.0	17.6
Total Suspended Solids	25.0	17.6
Total Phosphorus	1.0	0.71
pH of the effluent maintained between 6.0 to 9.5, inclusive, at all times		

(2) For the purposes of determining compliance with and enforcing subsection (1):

(a) The *Monthly Average Concentration* of a parameter named in Column 1 of subsection (1) shall not exceed the corresponding maximum concentration set out in Column 2 of subsection (1).

(b) The *Monthly Average Loading* of a parameter named in Column 1 of subsection (1) shall not exceed the corresponding maximum waste loading set out in Column 3 of subsection (1).

(c) The pH of the effluent shall be maintained within the limits outlined in subsection (1), at all times.

(3) Notwithstanding subsection (1), the *Owner* shall operate and maintain the *Works* such that the effluent is continuously disinfected during the period between May 1 and October 31 of each year so that the monthly *Geometric Mean Density* of *E. Coli* does not exceed 200 organisms per 100 millilitres of effluent discharged from the *Works* .

(4) Paragraphs (a), (b) and (c) of subsection (2) shall apply upon the issuance of this certificate.

(5) The effluent limit set out in subsection (3) shall apply upon the issuance of this certificate.

8. OPERATION AND MAINTENANCE

(1) The *Owner* shall exercise due diligence in ensuring that, at all times, the *Works* and the related equipment and appurtenances used to achieve compliance with this *Certificate* are properly operated and maintained. Proper operation and maintenance shall include effective performance, adequate funding, adequate operator staffing and training, including training in all procedures and other requirements of this *Certificate* and the *Act* and regulations, adequate laboratory facilities, process controls and alarms and the use of process chemicals and other substances used in the *Works* .

(2) The *Owner* shall maintain an operations manual, that includes, but not necessarily limited to, the following information:

(a) operating procedures for routine operation of the *Works* ;

(b) inspection programs, including frequency of inspection, for the *Works* and the methods or tests employed to detect when maintenance is necessary;

(c) repair and maintenance programs, including the frequency of repair and maintenance for the *Works* ;

(d) procedures for the inspection and calibration of monitoring equipment;

(e) a spill prevention control and countermeasures plan, consisting of contingency plans and procedures for dealing with equipment breakdowns, potential spills and any other abnormal situations, including notification of the *District Manager* ; and

(f) procedures for receiving, responding and recording public complaints, including recording any followup actions taken.

(3) The *Owner* shall maintain the operations manual current and retain a copy at the location of the *Works* for the operational life of the *Works* . Upon request, the *Owner* shall make the manual available to *Ministry* staff.

(4) The *Owner* shall provide for the overall operation of the *Works* with an operator who holds a licence that is applicable to that type of facility and that is of the same class as or higher than the class of the facility in accordance with Ontario Regulation 129/04.

9. EFFLUENT MONITORING AND RECORDING

The *Owner* shall, upon commencement of operation of the *Works* , carry out the following monitoring program:

(1) All samples and measurements taken for the purposes of this *Certificate* are to be taken at a time and in a location characteristic of the quality and quantity of the effluent stream over the time period being monitored.

(2) For the purposes of this condition, the following definitions apply:

- (a) Weekly means once each week;
- (b) Bi-weekly means once every two weeks; ~~————~~
- (c) Monthly means once every month;

(3) Samples shall be collected at the following sampling points, at the frequency specified, by means of the specified sample type and analyzed for each parameter listed and all results recorded:

Table 3 - Raw Sewage Monitoring	
Frequency	Monthly
Sample Type	Grab or Composite
Parameters	<i>BOD5</i> , Total Suspended Solids, Total Phosphorus, Total Kjeldahl Nitrogen

Table 4 - Effluent Monitoring		
Parameters	Sample Type	Frequency
<i>CBOD5</i>	Composite	Bi-weekly
Total Suspended Solids	Composite	Bi-weekly
Total Phosphorus	Composite	Bi-weekly
Total Ammonia Nitrogen	Composite	Bi-weekly
<i>E. Coli</i>	Grab	Weekly
pH	Grab	Bi-weekly
Temperature	Grab	Bi-weekly
Total Chlorine Residual	Grab	Daily (during disinfection period)

(4) The methods and protocols for sampling, analysis and recording shall conform, in order of precedence, to the methods and protocols specified in the following:

- (a) the Ministry's Procedure F-10-1, "Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works (Liquid Waste Streams Only), as amended from time to time by more recently published editions;
- (b) the Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" (January 1999), ISBN 0-7778-1880-9, as amended from time to time by more recently published editions;
- (c) the publication "Standard Methods for the Examination of Water and Wastewater" (20th

edition), as amended from time to time by more recently published editions;

(5) The temperature and pH of the effluent from the *Works* shall be determined in the field at the time of sampling for Total Ammonia Nitrogen. The concentration of un-ionized ammonia shall be calculated using the total ammonia concentration, pH and temperature using the methodology stipulated in "Ontario's Provincial Water Quality Objectives" dated July 1994, as amended, for ammonia (un-ionized).

(6) The measurement frequencies specified in subsection (2) in respect to any parameter are minimum requirements which may be modified by the *District Manager* in writing from time to time.

(7) The *Owner* shall install and maintain continuous flow measuring device(s), to measure the flowrate of the influent to or effluent from the Paisley Water Pollution Control Plant with an accuracy to within plus or minus 15 per cent (+/- 15%) of the actual flowrate for the entire design range of the flow measuring device, and record the flowrate at a daily frequency.

10. REPORTING

(1) Ten (10) days prior to the date of a planned *By-pass* being conducted pursuant to Condition 4 and as soon as possible for an unplanned *By-pass*, the *Owner* shall notify the *District Manager* (in writing) of the pending start date, in addition to an assessment of the potential adverse effects on the environment and the duration of the *By-pass*.

(2) The *Owner* shall report to the *District Manager* or designate, any exceedence of any parameter specified in Condition 6 orally, as soon as reasonably possible, and in writing within seven (7) days of the exceedence.

(3) In addition to the obligations under Part X of the Environmental Protection Act, the *Owner* shall, within 10 working days of the occurrence of any reportable spill as defined in Ontario Regulation 675/98, bypass or loss of any product, by-product, intermediate product, oil, solvent, waste material or any other polluting substance into the environment, submit a full written report of the occurrence to the *District Manager* describing the cause and discovery of the spill or loss, clean-up and recovery measures taken, preventative measures to be taken and schedule of implementation.

(4) The *Owner* shall, upon request, make all manuals, plans, records, data, procedures and supporting documentation available to *Ministry* staff.

(5) The *Owner* shall prepare, and submit to the *District Manager*, a performance report, on an annual basis, within ninety (90) days following the end of the period being reported upon. The first such report shall cover the first annual period following the commencement of operation of the *Works* and subsequent reports shall be submitted to cover successive annual periods following thereafter. The reports shall contain, but shall not be limited to, the following information:

(a) a summary and interpretation of all monitoring data and a comparison to the effluent

limits outlined in Condition 7, including an overview of the success and adequacy of the *Works* ;

(b) a description of any operating problems encountered and corrective actions taken;

(c) a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the *Works* ;

(d) a summary of any effluent quality assurance or control measures undertaken in the reporting period;

(e) a summary of the calibration and maintenance carried out on all effluent monitoring equipment; and

(f) a description of efforts made and results achieved in meeting the Effluent Objectives of Condition 6.

(g) a tabulation of the volume of sludge generated in the reporting period, an outline of anticipated volumes to be generated in the next reporting period and a summary of the locations to where the sludge was disposed;

(h) a summary of any complaints received during the reporting period and any steps taken to address the complaints;

(i) a summary of all *By-pass* , spill or abnormal discharge events; and

(j) any other information the *District Manager* requires from time to time.

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is imposed to ensure that the *Works* are built and operated in the manner in which they were described for review and upon which approval was granted. This condition is also included to emphasize the precedence of Conditions in the *Certificate* and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review. The condition also advises the Owners their responsibility to notify any person they authorized to carry out work pursuant to this *Certificate* the existence of this *Certificate* .
2. Condition 2 is included to ensure that the *Works* are constructed in a timely manner so that standards applicable at the time of Approval of the *Works* are still applicable at the time of construction, to ensure the ongoing protection of the environment.
3. Condition 3 is included to ensure that the *Ministry* records are kept accurate and current with respect to the approved works and to ensure that subsequent owners of the *Works* are made aware of the *Certificate* and continue to operate the *Works* in compliance with it.

4. Condition 4 is included to ensure that record drawings of the *Works* "as constructed" are maintained for future references.
5. Condition 5 is included to indicate that by-passes of untreated sewage to the receiving watercourse is prohibited, save in certain limited circumstances where the failure to *By-pass* could result in greater injury to the public interest than the *By-pass* itself where a *By-pass* will not violate the approved effluent requirements, or where the *By-pass* can be limited or otherwise mitigated by handling it in accordance with an approved contingency plan. The notification and documentation requirements allow the *Ministry* to take action in an informed manner and will ensure the *Owner* is aware of the extent and frequency of *By-pass* events.
6. Condition 6 is imposed to establish non-enforceable effluent quality objectives which the *Owner* is obligated to use best efforts to strive towards on an ongoing basis. These objectives are to be used as a mechanism to trigger corrective action proactively and voluntarily before environmental impairment occurs and before the compliance limits of Condition 6 are exceeded.
7. Condition 7 is imposed to ensure that the effluent discharged from the *Works* to the Sauble River meets the *Ministry*'s effluent quality requirements thus minimizing environmental impact on the receiver and to protect water quality, fish and other aquatic life in the receiving water body.
8. Condition 8 is included to require that the *Works* be properly operated, maintained, funded, staffed and equipped such that the environment is protected and deterioration, loss, injury or damage to any person or property is prevented. As well, the inclusion of a comprehensive operations manual governing all significant areas of operation, maintenance and repair is prepared, implemented and kept up-to-date by the owner and made available to the *Ministry*. Such a manual is an integral part of the operation of the *Works*. Its compilation and use should assist the *Owner* in staff training, in proper plant operation and in identifying and planning for contingencies during possible abnormal conditions. The manual will also act as a benchmark for *Ministry* staff when reviewing the *Owner*'s operation of the work.
9. Condition 9 is included to enable the *Owner* to evaluate and demonstrate the performance of the *Works*, on a continual basis, so that the *Works* are properly operated and maintained at a level which is consistent with the design objectives and effluent limits specified in the *Certificate* and that the *Works* does not cause any impairment to the receiving watercourse.
10. Condition 10 is included to provide a performance record for future references, to ensure that the *Ministry* is made aware of problems as they arise, and to provide a compliance record for all the terms and conditions outlined in this *Certificate*, so that the *Ministry* can work with the *Owner* in resolving any problems in a timely manner.

This Certificate of Approval revokes and replaces Certificate(s) of Approval No. 7098-659N8A issued on February 5, 2005.

In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days

after receipt of this Notice, require a hearing by the Tribunal. Section 101 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the works are located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
2300 Yonge St., Suite 1700
P.O. Box 2382
Toronto, Ontario
M4P 1E4

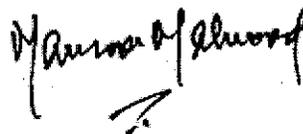
AND

The Director
Section 53, Ontario Water Resources Act
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca

The above noted sewage works are approved under Section 53 of the Ontario Water Resources Act.

DATED AT TORONTO this 18th day of March, 2008



Mansoor Mahmood, P.Eng.
Director
Section 53, Ontario Water Resources Act

FL/

c: District Manager, MOE Owen Sound
Matt G. Prentice, Henderson Paddon & Associates Limited
Water Standards Section, MOE Standards Development Branch

Appendix B

Flow Meter Calibration Report



AS FOUND CERTIFICATION

PASS

CLIENT DETAIL

CUSTOMER Municipality of Arran-Elderslie
CONTACT Mark O'leary
Water Foreman
T: 519-363-3039
C: 519-270-1929
E: water@arran-elderslie.ca

EQUIPMENT DETAIL

[MUT] MANUFACTURER Pulsar
MODEL FLOW3
CONVERTER SERIAL NUMBER F048933
FUSE N/A
PLANT ID Paisley WWTP
METER ID SLC-6 Sewage Plant Flow Meter (Influent)
FIT ID N/A
CLIENT TAG N/A
OTHER N/A
GPS COORDINATES N44 18.941 W081 16.327

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 April 24, 2019
CAL. FREQUENCY Annual
CAL. DUE DATE April, 2020

PROGRAMMING PARAMETERS

THROAT DIMENSION (DN)	inches	6
EMPTY DISTANCE	m	101.080
MAX. HEAD	m	0.450
DEAD ZONE	m	100.630
BLANKING DISTANCE	m	0.120
MAX. FLOW	LPS	108.0
F.S. RANGE - O/P	LPS	108.0

TOTALIZER

AS FOUND	978.47	M3
AS LEFT	1023	M3
DIFFERENCE	44.53	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

Ultrasonic sensor installed to ensure full scale flow condition

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

AS FOUND TEST RESULTS

		0.0	9.3	27.8	52.7	96.5	% F.S. Range
		0.000	0.100	0.200	0.300	0.440	m
REF. FLOW RATE		0.000	10.027	29.976	56.886	104.186	LPS
MUT [Reading]		0.000	10.447	30.401	57.710	105.648	LPS
MUT [Difference]		0.00	0.42	0.42	0.82	1.46	LPS
MUT [% Error]		n/a	0.39	0.39	0.76	1.35	%
mA OUTPUT		4.000	5.486	8.443	12.431	19.442	mA
MUT [Reading]	min. 4.000 mA	4.012	5.550	8.487	12.521	19.637	mA
MUT [Difference]	max. 20.000 mA	0.012	0.064	0.044	0.090	0.195	mA
MUT [% Error]		0.06	0.32	0.22	0.45	0.98	%
TOTALIZER - REF. FLOW RATE						104.186	LPS
TOTALIZER [MUT]						9.48	M3
TEST TIME						89.53	SECONDS
CALC. TOTALIZER						9.328	M3
ERROR						1.61	%

COMMENTS

QUALITY MANAGEMENT STANDARDS INFO.

[QMS] INFORMATION	IDENT.	ID #
[REFERENCE] LEVEL	Sim. BOARD	Yes
PROCESS METER	PM	11
STOP WATCH	SW	Yes

RESULTS

TEST	AVG %FS	PASS FAIL
DISPLAY	0.73	PASS
mA OUTPUT	0.40	PASS
TOTALIZER	1.61	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

PASS

CLIENT DETAIL

CUSTOMER Municipality of Arran-Elderslie
CONTACT Mark O'leary
Water Foreman
T: 519-363-3039
C: 519-270-1929
E: water@arran-elderslie.ca

EQUIPMENT DETAIL

[MUT] MANUFACTURER Milltronics
MODEL Multi-Ranger PLUS
CONVERTER SERIAL NUMBER 7ML10203EA04

PLANT ID Paisley WWTP
METER ID Effluent
FIT ID N/A
CLIENT TAG N/A
OTHER N/A
GPS COORDINATES N44 18.941 W081 16.327

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 April 24, 2019
CAL. FREQUENCY Annual
CAL. DUE DATE April, 2020

PROGRAMMING PARAMETERS

NOTCH ANGLE (φ)	inches	90
EMPTY DISTANCE, TX to notch	m	0.786
TRANSDUCER (TX), to sump flt	m	N/A
SUMP LEVEL, zero flow	m	n/a
MAX. HEAD	m	0.195
BLANKING DISTANCE	m	0.610
DEAD ZONE	m	-0.020
MAX. FLOW	LPS	23.2
F.S. RANGE - O/P	LPS	23.2

		TOTALIZER
AS FOUND	72047.4	M3
AS LEFT	72053.7	M3
DIFFERENCE	6.3	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

Ultrasonic Sensor is not installed high enough, to ensure full scale flow conditions

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

AS FOUND TEST RESULTS

		0.0	3.3	18.8	51.9	93.7	% F.S. Range
		0.000	0.050	0.100	0.150	0.190	m
REF. FLOW RATE		0.00	0.77	4.36	12.03	21.72	LPS
MUT [Reading]		0.00	0.77	4.16	11.59	20.62	LPS
MUT [Difference]		0.00	0.00	-0.20	-0.44	-1.10	LPS
MUT [% Error]		0.0	0.0	-0.9	-1.9	-4.7	%
mA OUTPUT		4.000	4.533	7.013	12.304	18.994	mA
MUT [Reading]	min. 4.000 mA	4.001	4.487	6.860	12.003	18.237	mA
MUT [Difference]	max. 20.000 mA	0.001	-0.046	-0.153	-0.301	-0.757	mA
MUT [% Error]		0.01	-0.23	-0.77	-1.50	-3.78	%
TOTALIZER - REF. FLOW RATE						21.715	LPS
TOTALIZER [MUT]						3.0	M3
TEST TIME						147.45	SECONDS
CALC. TOTALIZER						3.202	M3
ERROR						-6.73	%

COMMENTS

Noticed Temperature Compensator for transducer is not wired in. The Temp Sensor is next to the transducer but unsure where the wire runs to. Investigate where it runs and have it hooked up in transmitter for better accuracy.
NOTE: use the TS-3 Temp Sensor with the red sensor wire not the TS-2 grey unit as it is not compatible with this transmitter. Also have both the temperature sensor & transducer blocked from direct sunlight - this will cause skewed measurements.

QUALITY MANAGEMENT STANDARDS INFO.

[QMS] INFORMATION	IDENT.	ID #
[REFERENCE] LEVEL	Sim. BOARD	Yes
PROCESS METER	PM	11
STOP WATCH	SW	Yes

RESULTS

TEST	AVG %FS	PASS FAIL
DISPLAY	-1.87	PASS
mA OUTPUT	-1.26	PASS
TOTALIZER	-6.73	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.