

**2018 Annual Compliance Report**

**Operation & Maintenance  
of  
Paisley Wastewater System**

**March 2019**

**13-028**

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

**Prepared by:  
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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, 2018 to December, 2018), 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 Stations**

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 m<sup>3</sup> 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 m<sup>3</sup> 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 m<sup>3</sup>. 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 m<sup>3</sup> and 50 m<sup>3</sup> 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 m<sup>3</sup> 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 2018 the average daily flow was 449 m<sup>3</sup>/day and the maximum flow was 3968 m<sup>3</sup>/day. The maximum day flow occurred on February 20, 2018. The design capacity of the treatment plant is 705 m<sup>3</sup>/day. In 2018, the wastewater treatment plant operated at 63.7% of the design capacity.

In the enclosed **Table 1A**, capacity utilization over the years has been summarized along with Maximum day flow data. It is noted that a significantly high flow on February 20, 2018 indicates a sewer inflow/infiltration problem in collection system.

The flow meter was calibrated in April 2018, by Flowmetrix Technical services Inc. Refer to **Appendix B** for the calibration report.

**TABLE 1**  
**Summary of Wastewater Flows: 2018**  
**Paisley Sewage Works**  
**Municipality of Arran-Elderslie**

March, 2019



13-028

Month	Total Flow (m <sup>3</sup> )	Average Daily Flow (m <sup>3</sup> /day)	Maximum Daily Flow (m <sup>3</sup> /day)
January	16,569	534	1,371
February	21,011	750	3,968
March	13,965	450	663
April	20,239	675	1,505
May	12,371	399	533
June	8,296	277	365
July	8,390	271	706
August	10,821	349	750
September	7,979	266	358
October	10,604	342	601
November	14,857	495	727
December	17,893	577	1,245
<b>Total</b>	<b>162,995</b>		
<b>Annual Average</b>		<b>449</b>	
<b>Maximum</b>			<b>3,968</b>

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

March, 2019

13-028

Year	Average Day Flow (m <sup>3</sup> /day)	Capacity Utilization %	Maximum Day Flow (m <sup>3</sup> /day)
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
<b>Rated Capacity</b>	<b>705</b>		



#### **4.0 RAW SEWAGE AND TREATED EFFLUENT MONITORING**

The Certificate of Approval (C of A) requires that the raw sewage be tested for BOD<sub>5</sub>, 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 CBOD<sub>5</sub>, 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 CBOD<sub>5</sub>, 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 1<sup>st</sup> and Oct 31<sup>st</sup>, 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” (CBOD<sub>5</sub>, 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: 2018

Paisley Sewage Treatment Plant

Municipality of Arran-Elderslie

March, 2019

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	128	107	3.91	33.7
February	133	130	2.35	22.0
March	62	67	1.61	16.1
April	141	169	3.58	32.4
May	84	100	2.03	17.2
June	173	230	3.05	31.1
July	205	218	3.25	29.4
August	114	139	2.41	23.8
September	94	117	1.81	22.4
October	155	179	2.86	30.7
November	170	180	1.79	18.7
December	33	52	1.02	12.1

**TABLE 3**

Summary of Treated Effluent Monitoring Data - 2018  
Paisley Sewage Treatment Plant  
Municipality of Arran-Elderslie

March, 2019

13-028

Month	Average Concentration									
	CBOD <sub>5</sub>	TSS	Total Phosphorous	Total Ammonia Nitrogen	E.Coli Geometric Mean	Unionized Ammonia	Average pH	Avg. Temp.	Avg. Cl <sub>2</sub> Residual	Max. Cl <sub>2</sub> 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	2	0.12	0.47	44125	0.001	7.02	8.5		
February	3	2	0.11	0.10	45765	0.001	6.90	10.1		
March	4	2	0.07	0.10	34748	0.000	6.93	11.0		
April	3	2	0.09	0.13	5046	0.002	7.09	10.5	0.35	0
May	3	2	0.16	0.10	14	0.000	7.00	17.1	0.48	0.68
June	4	2	0.25	0.10	22	0.000	6.93	18.5	0.48	0.52
July	4	2	0.21	0.15	78	0.001	6.89	26.8	0.40	0.48
August	4	2	0.24	0.06	19	0.001	6.86	26.1	0.39	0.59
September	3	2	0.22	0.10	35	0.000	6.85	19.8	0.48	0.77
October	3	2	0.12	0.10	25	0.000	6.99	14.4	0.43	0.56
November	4	2	0.13	0.10	8936	0.000	7.13	10.3		
December	4	2	0.14	0.10	4354	0.000	7.25	9.5		
Compliance with (CofA) Effluent Limits	Y	Y	Y		Y		Y			

**TABLE 4**

Monthly Summary of Average Waste Loadings to Receiver - 2018

Paisley Wastewater Treatment Plant

Municipality of Arran-Elderslie

March 2019

13-028

Month	CBOD	Total Suspended Solids	Total Phosphorous
	(kg/day)	(kg/day)	(kg/day)
January	2.1	1.1	0.06
February	2.3	1.5	0.1
March	1.8	0.9	0.03
April	2.7	2.0	0.1
May	1.2	0.8	0.06
June	1.1	0.6	0.07
July	1.1	0.5	0.06
August	1.4	0.7	0.08
September	0.8	0.5	0.06
October	1.0	0.7	0.04
November	2.0	1.0	0.06
December	2.3	1.2	0.09
Cof A Effluent Limits	17.6	17.6	0.71
Compliance with CofA Effluent Limits	Y	Y	Y

## 5.0 SUMMARY OF MAINTENANCE

### January:

- The coupler was replaced on the North Return Activated Sludge pump.

### February:

- Oil and air filters were changed on blowers #1 & #3 at the Paisley Sewage Plant.
- The belt on the North clarifier's drive was replaced.
- The Dissolved Oxygen handheld analyzer was provided with new RDO cap.

### March:

- Lab-Scale and handheld phosphorus analyzer were calibrated by Flowmetrix
- Guide wheel on North clarifier was replaced.

### April:

- Flowmetrix was on site to calibrate the Influent and Effluent flow meters at the Paisley Sewage Treatment Plant.
- Troy's Plumbing and Heating was on site to test and certify backflow preventors.

### July:

- Caldecott Millwrights re-welded shaft on North clarifier.
- The belt on North clarifier's drive was replaced.

### August:

- The belt on North clarifier's drive was replaced.

### September:

- Flushing of the Paisley Collection System was completed by emptying municipal truck and tank.

### October:

- Caldecott Millwrights completed re-building of the south clarifier at the Paisley Sewage Treatment Plant. This capital project included removal and replacement of components within the clarifier.

### December:

- The belt on South clarifier's drive was replaced.

## **6.0 SUMMARY OF COMPLAINTS RECEIVED**

No complaints were received during 2018.

## **7.0 SEWAGE BY-PASS**

There were no sewage by-passes from any of the three (3) Paisley pumping stations in 2018.

## **8.0 LAND APPLICATION OF DIGESTED SLUDGE**

In 2018, 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 362 m<sup>3</sup> 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 2018.

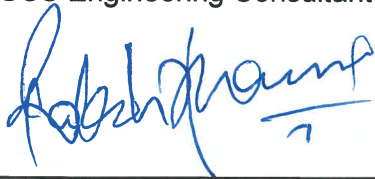
## 10.0 RECOMMENDATIONS

The following recommendations are presented for continued compliance with ECA:

1. The air filters on the blower intake should be checked for dust accumulation twice a year and the filters should be replaced as required.
2. The plant operators are advised to continue to inform GSS Engineering Consultants Ltd. and MECP immediately when the ECA limits are exceeded.
3. Operators require 40 hours of training per year in accordance with Regulation 435/93. Records must be kept.
4. The revised contingency plan for sewage bypasses which was prepared by Oweson Water Services (A Division of WSP Inc.) in February 2010, should continue to be followed in the event of sewage bypasses. It is recommended that the capacity of the pumps at Riverside Park Sewage Pumping Station is checked before spring melt and early fall to ensure that pumps are reliable.
5. ECA requires the recording of leachate flow into Lagoon #1. Since no flow recording devices exists or can be installed cost effectively, operators are advised to undertake a few pumping tests at different liquid depths in the manhole and develop a calibration chart. Once the chart is developed, a dip stick can be used to estimate the leachate flow.

Respectfully submitted:

GSS Engineering Consultants Ltd.



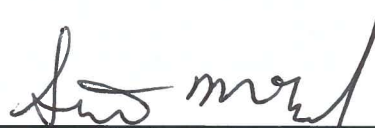
Rakesh Sharma, P. Eng., M.A.Sc.  
Class 4 License, WWC and WWT

Municipality of Arran-Elderslie



Mark O'Leary, Water & Sewer Foreman  
Class 2 License, WWC and WWT

Municipality of Arran-Elderslie



Scott McLeod, Public Works Manager  
Class II WWT & Class II WWC, 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 m<sup>3</sup>/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 m<sup>3</sup> 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 m<sup>3</sup> 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 m<sup>3</sup> 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 m<sup>3</sup> 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 m<sup>3</sup> capacity Stage 1 Digester and a 50 m<sup>3</sup> 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 m<sup>3</sup> 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;

*"BOD<sub>5</sub> "* (also known as TBOD<sub>5</sub>) 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;

*"CBOD<sub>5</sub> "* 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* .

<b>Effluent Parameter</b>	<b>Average Concentration</b> (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* .

<b>Effluent Parameter</b>	<b>Average Concentration</b> (milligrams per litre unless otherwise indicated)	<b>Average Waste Loading</b> (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:

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

<b>Table 4 - Effluent Monitoring</b>		
<b>Parameters</b>	<b>Sample Type</b>	<b>Frequency</b>
<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

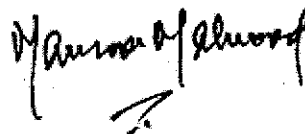
AND

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](http://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



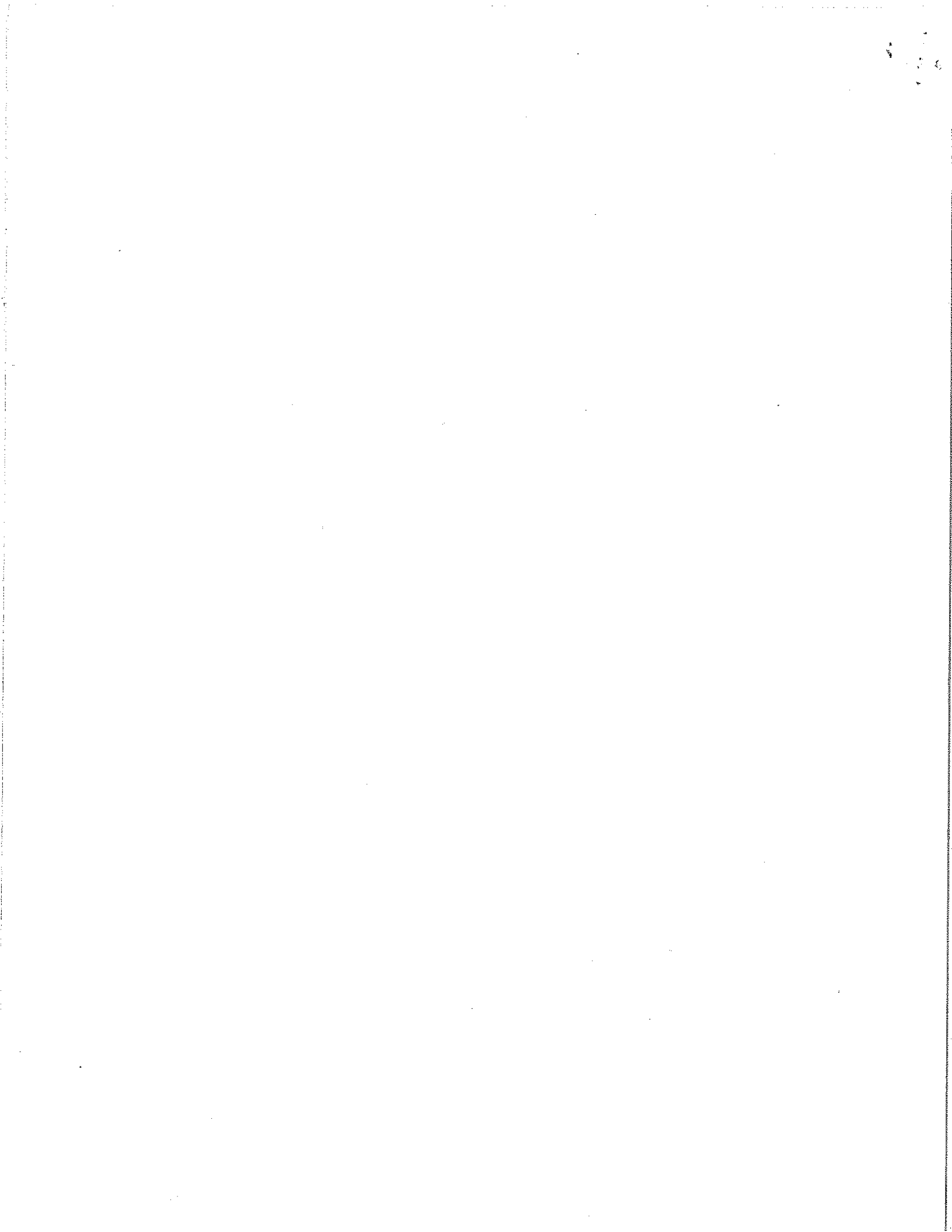
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Mansoor Mahmood, P.Eng.  
Director  
Section 53, Ontario Water Resources Act

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**

**CLIENT** Municipality of Arran-Elderslie

Apr-18

**LOCATION** Chesley, Paisley and Tara

Summary - Equipment List										
	LOCATION	DESCRIPTION	MANUFACTURER	MODEL	SERIAL NUMBER	TAG ID	VERIFICATION INFO.			
							DATE	FREQ.	DUE	PASS/FAIL
1	Chesley Lagoon	Influent Meter	Milltronics	OCM-III	n/a	n/a	23-Apr-18	Annual	Apr-19	PASS
2	Chesley WTP	Distribution	Endress + Hauser	Promag 50W	79051D16000	FIT-5	23-Apr-18	Annual	Apr-19	PASS
3	Chesley WTP	Well #1 Raw Water	Endress + Hauser	Promag 50W	7903D616000	FIT-1	23-Apr-18	Annual	Apr-19	PASS
4	Chesley WTP	Well #2 Raw Water	Endress + Hauser	Promag 50W	79051A16000	FIT-2	23-Apr-18	Annual	Apr-19	PASS
5	Chesley WTP	Well #3 Raw Water	Endress + Hauser	Promag 50W	7051B16000	FIT-3	23-Apr-18	Annual	Apr-19	PASS
6	Riverside Lift Station	Lift Station Flow	Endress + Hauser	Promag 53W	E20151160	n/a	23-Apr-18	Annual	Apr-19	PASS
7	Distribution Boundary Meter	Boundary Meter 3	Endress + Hauser	Promag 50W	7A045816000	n/a	23-Apr-18	Annual	Apr-19	PASS
8	Paisley WWTP	Influent Meter	Pulsar	Flow3	F048933	n/a	23-Apr-18	Annual	Apr-19	PASS
9	Paisley WWTP	Effluent Meter	Milltronics	Multi-Ranger Plus	7ML10203EA04	n/a	23-Apr-18	Annual	Apr-19	PASS
10	Tara Sewage PS	Station Flow	ABB	WaterMaster	3K220000229674	n/a	23-Apr-18	Annual	Apr-19	PASS
11	Tara Well House #2	Treated Flow Meter	Endress + Hauser	Promag 53W	83037416000	n/a	23-Apr-18	Annual	Apr-19	PASS
12	Tara Well House #3	Treated Flow Meter	Endress + Hauser	Promag 53W	H603A516000	n/a	23-Apr-18	Annual	Apr-19	PASS
13	Tara Well House #4	Treated Flow Meter	Endress + Hauser	Promag 50W	C5026216000	n/a	23-Apr-18	Annual	Apr-19	PASS
14										
15										
16										
17										
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19										
20										
21										
22										
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24										
25										
<p>This Instrument Verification Certificate of Completion summary sheet identifies all instruments tested that PASSED verification/calibration testing during our service contract. Any instrument that does not PASS verification or cannot be calibrated during this contract is highlighted for quick identification. Further information should be identified within the body of our report.</p>										