Arran-Elderslie Water Works
13-028

2019 Operation and Maintenance Annual Report
January 2020

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

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1.0 INTRODUCTION AND BACKGROUND

The purpose of the 2019 Annual Compliance Report is to document the operation and maintenance data for the Arran-Elderslie Water Works for review by the Ministry of the Environment and Climate Change (MOECC) in accordance with O. Reg. 170/03. The drinking water system is categorized as a large municipal residential system.

The Arran-Elderslie Water Treatment Plant was operated by Mr. Mark O'Leary, back-up Overall Responsible Operator (ORO), Water/Sewer Foreman, who has a Class II Water Treatment and Class III Water Distribution Certificate; Mr. Chris Legge, who has a Class II Water Distribution Certificate along with his Class I Water Treatment Certificate; Mr. Trevor Sweiger, who holds a Class I Water Distribution and a Class I Water Treatment Certificate, and Mr. Ted Knapp, who has a Class III Water Treatment and Class II Water Distribution Certificate. Rakesh Sharma, P. Eng., who has a Class IV Certificate for Water Treatment and Class IV Certificate for Water Distribution is the Overall Responsible Operator (ORO) and Scott McLeod, who has a Class II Certificate for Water Treatment and Class IV Certificate for Water Distribution is the backup ORO. The Arran-Elderslie WTP is classified as Water Treatment Subsystem Class 1. The Arran-Elderslie distribution system (Chesley distribution system, Chesley to Paisley trunk watermain and the Paisley distribution system) is classified as a Water Distribution subsystem Class 3).

The operating authority for the plant is:

Municipality of Arran-Elderslie
P.O. Box 170, 1925 County Road #10
Chesley, Ontario
N0G 1L0
Telephone: 519-363-3039
Fax: 519-363-2203

ORO service is provided by:

GSS Engineering Consultants Ltd.
Unit 104D, 1010 9th Ave. W.
Owen Sound, ON
N4K 5R7
Telephone: 519-372-4828

Water Works	Permit # 079-202 Issue 4	Issued May 19/2017
Water Woks	License # 079-102 Issue 3	Issued Jan14/2016
PTTW	# 3655-A3RPJL	Issued Nov13/2015

2.0 DESCRIPTION OF WATER SYSTEM

The Arran-Elderslie Water Treatment Plant comprises of the following:

Community Park Well (CPW 1)

- 340 mm dia., 20 m deep drilled groundwater well known as the Community Park Well #1, located in Lot 32, Concession 2, (UTM Zone 17, 4906102; 4904691N).

- The well is provided with a new pitless adaptor and

- A submersible well pump rated at 20.82 L/s at a TDH of 80.96 m and raw water piping routed to the treatment plant.

Community Park Well (CPW2)

- A 324 mm dia., 24.38 m deep drilled groundwater Community Park Well CPW2 (UTM Zone 17. 492828 m E., 4904726 m N.) equipped with a submersible well pump rated at 24.61 L/s at a TDH of 80.12m, pitless adaptor, and all necessary raw water piping routed to the treatment plant.

Community Park Well (CPW3)

- A 254 mm dia., 38.1 m deep drilled groundwater Community Park Well CPW3 (UTM Zone 17, 493123 m E., 4904783 m N) equipped with a submersible well pump rated at 34.07 L/s at a TDH of 96.43 m, pitless adaptor and all necessary raw water piping routed to the treatment plant.

Chesley Standpipe

- A 2,725 m^3 capacity concrete water storage tank is located at the north end of Chesley on Tower Road. It has an operating capacity of 1,360 m^3 between the minimum and maximum operating water elevations, designed for peak hour water demand equalization, fire and emergency storage.

Paisley Standpipe

- The Paisley Standpipe has a capacity of 2,430 m^3. Modifications to the Paisley standpipe performed in 2006 allows the water to enter the standpipe at approximately 2/3 of the standpipe height and discharge into the Paisley distribution system form the bottom of the standpipe.

Booster Chlorination at the Paisley Standpipe

- Two (2) (1+1) chlorine feed pumps rated at a minimum of 1.4 L/h and one (1) 200 L sodium hypochlorite solution tank with a secondary containment tank.

Trunk Watermain

- There is approximately 15.7 km of 300 mm watermain connecting the Chesley water distribution system to the Paisley standpipe complete with all associated valving and metering.

Arran-Elderslie Water Treatment Plant in Chesley

- The Arran-Elderslie Water Treatment Plant was commissioned in May 2006. The Plant treats the raw water supply from all three (3) Community Parks Wells. It includes three (3) pressure filtration vessels (2 duty, 1 standby) for iron/manganese removal, an unbaffled two (2) cell, filtered water groundwater storage tank for storage of water for backwashing of the filters, two (2) filter backwash pumps, a sodium hypochlorite feed system and three (3) storage tanks, post chlorination system, one (1) backwash wastewater holding tank and all associated instrumentation and analyzers including a SCADA system.

Refer to **Appendix C** for the Municipal Drinking License and the Drinking Water Works Permit.

3.0 SUMMARY OF WATER QUALITY MONITORING

3.1 WATER TREATMENT EQUIPMENT OPERATION AND MONITORING

3.1.1 POINT OF ENTRY CHLORINE RESIDUAL

In 2019, Point of Entry (POE) treated water samples were collected and analyzed for Free Chlorine Residual by way of on-line analyzer. **Table 1** shows the minimum-maximum monthly range of free chlorine residual values. All free Chlorine residuals from the Arran-Elderslie Water Treatment Plant were greater than 0.7 mg/L.

The alarm set point is 0.64 mg/L, which is for flow contributed by Well 1, 2 and 3. However, if only one or two wells are operating, minimum chlorine that must be maintained is lower.

3.1.2 DISTRIBUTION CHLORINE RESIDUAL

In 2019, a Total of 365 grab samples were collected in the Chesley distribution system. Chlorine residual was monitored on-line at Paisley Water tower. **Table 2** shows that all free chlorine distribution samples were well above 0.05 mg/L threshold in Chesley distribution system as well as at Paisley Water Tower.

3.1.3 TURBIDITY

The Ontario Drinking Water Quality Standards (ODWQS) have set a Maximum Acceptable Concentration of 5.0 NTU for treated water in the distribution system.

The POE treated water turbidity was measured by an on-line turbidity analyzer. The raw water and distribution grab samples were also collected weekly and analyzed for turbidity.

Table 3 provides a summary of POE turbidity results.

3.2 MICROBIOLOGICAL SAMPLING

3.2.1 DISTRIBUTION SYSTEM

Schedule 10 of Ontario Regulation 170/03 requires that at least eleven (11) distribution samples be collected monthly and tested for E. coli, Total Coliform and 25% of samples for Heterotrophic Plate Count (HPC). In 2019, a total of 131 distribution samples were collected and analyzed. Refer to **Appendix A** (**Table 9**) for weekly microbiological results. All results were within compliance. None of the samples had high HPC count in distribution samples.

TABLE 1

Summary of Treated Water Quality – Free Chlorine (POE)

Arran-Elderslie Water Treatment Plant

January 1, 2019 to December 31, 2019

Month	# of Samples	Min.	Max.
January	31	0.75	1.62
February	28	0.74	1.81
March	31	0.69	1.41
April	30	0.75	2.0
May	31	0.78	1.45
June	30	0.90	1.62
July	31	0.73	1.86
August	31	0.84	1.59
September	30	0.85	1.68
October	31	0.7	1.38
November	30	0.76	1.49
December	31	0.87	1.96

Note: Analysis results were recorded by on-line analyzer

TABLE 2

Summary of Water Quality – Free Chlorine (Distribution)

Arran-Elderslie Water Treatment Plant

January 1, 2019 to December 31, 2019

Month	Chesley Distribution System (mg/L)			Paisley Water Tower (mg/L)		
	# of Samples	Min.	Max.	# of Samples	Min.	Max.
January	31	0.38	1.14	31	0.76	1.31
February	28	0.50	1.11	28	0.68	1.27
March	31	0.53	1.01	31	0.81	1.27
April	30	0.62	1.20	30	0.56	1.22
May	31	0.45	1.20	31	0.86	1.22
June	30	0.41	1.15	30	0.56	1.27
July	31	0.43	1.36	31	0.62	1.19
August	31	0.43	1.14	31	0.60	1.15
September	30	0.28	1.12	30	0.59	1.12
October	31	0.32	1.12	31	0.57	1.12
November	30	0.29	1.29	30	0.32	1.19
December	31	0.32	1.16	31	0.72	1.32
Total	**365**			**365**		
MIN		**0.28**			**0.32**	
MAX			**1.36**			**1.32**

***** During Cl_2 analyzer maintenance

TABLE 3

Summary of Water Quality – Turbidity (POE)

Arran-Elderslie Water Treatment Plant

January 1, 2019 to December 31, 2019

Month	# of Samples	Avg.	Max.
January	31	0.01	0.36
February	28	0.02	2.00*
March	31	0.01	0.36
April	30	0.01	1.19
May	31	0.01	0.93
June	30	0.00	0.76
July	31	0.00	1.16
August	31	0.18	2.00*
September	30	0.014	2.00*
October	31	0.05	0.76
November	30	0.00	0.40
December	31	0.00	0.88

***** High reading was due to air containment in the sample lines.

3.2.2 RAW WATER SAMPLES

Schedule 10 of Ontario Regulation 170/03 requires that at least one (1) raw water sample be collected weekly and analyzed for Total Coliform and E. coli. In 2019, a total of 152 samples were collected from the wells No. 1, 2 and 3 and analyzed. Refer to **Appendix A** (**Table 9**).

Well #1 tested positive for TC on April 12th, April 24th and December 2nd. Well #2 tested positive for TC on March 20th, April 8th, April 24th and June 24th. And well #3 tested positive for TC on October 7th. These incidences are more than previous years.

3.2.3 TREATED WATER (POINT OF ENTRY) SAMPLES

Schedule 10 of Ontario Regulation 170/03 requires that at least one (1) treated water sample be collected weekly from the Point of Entry and analyzed for Total Coliform, E. coli and HPC. A total of 52 treated water sampled were collected and all were found to be safe. Two (2) samples had high HPC Count (440 and 50). Refer to **Appendix A** (**Table 9**) for microbiological sampling and analysis results.

3.3 CHEMICAL SAMPLING & TESTING AS PER SCHEDULE 13, O. REG. 170/03

3.3.1 INORGANICS

Schedule 13-2 of Ontario Regulation 170/03 requires that at least one (1) water sample is taken every 36 months, if the system obtains water from a groundwater supply that has been deemed non-GUDI. The samples for the Arran-Elderslie Water Treatment Plant were collected on November 18, 2018 and submitted to the laboratory for analysis of inorganics as listed in Schedule 13. All parameters were found to be within compliance. No samples were collected in 2019. Inorganics are required to be sampled and analyzed again on or before November 2021.

3.3.2 LEAD

Schedule 15.1 of Ontario Regulation 399/07 requires that samples be taken at various sampling points, twice a year: once between December 15 and April 15 and once between June 15th and October 15th. In Chesley, 24 samples were collected from 12 locations and received by lab on April 8, 2019 as well as on October 5, 2018. In Paisley, a total of 24 samples (13 locations) were collected and received by lab on April 12, 2019 and again on October 5, 2019. None of the samples had lead exceedances (MAC 10 µg/L) except 2nd sample collected from 274 Albert St.

in March, which had a concentration of 130 µg/L. This location was resampled, and results were 6.21 µg/L and 7.07 µg/L, which is acceptable. Refer to **Appendix B** for laboratory results.

3.3.3 ORGANICS

Schedule 13-4 of Ontario Regulation 170/03 requires that at least one (1) water sample is taken every 36 months if the system obtains water from a groundwater supply that has been deemed non-GUDI. The samples were collected and received by lab on November 19, 2018. All parameters were found to be within compliance. No samples were collected in 2019. Organics are required to be sampled and analyzed again on or before November 2021.

3.3.4 TRIHALOMETHANES AND HALO ACETIC ACID

Schedule 13-6 of Ontario Regulation 170/03 requires that at least one (1) distribution sample is taken every three (3) months from a point in the distribution system and tested for Trihalomethanes (THMs) and Halo Acetic Acid (HAA). In 2019, samples were collected during the months of February, May, August and November. The Ontario Drinking Water Quality Standard (ODWQS) have set a Maximum Allowable Concentration (MAC) of 100 µg/L for TTHM and it is expressed as a running annual average. In 2019, the average THM was found to be 21.5 µg/L, in Chesley and 20.8 µg/L in Paisley which is within compliance. Average HAA was 5.3 µg/L in Chesley and 7.43 µg/L in Paisley. Refer to **Table 4** for the Summary of Trihalomethanes and Halo Acetic Acids and **Appendix B** for analytical results. In 2020, samples should be collected in February, May, August and November.

3.3.5 NITRATE & NITRITE

Schedule 13-7 of Ontario Regulation 170/03 requires that at least one (1) water sample is taken every three (3) months and tested for nitrate and nitrite. Samples were collected during the months of February, May, August and November. The analytical results were found to be within compliance. Refer to **Appendix B**. In 2019, samples should be collected in February, May, August and November.

3.3.6 SODIUM

Schedule 13-8 of Ontario Regulation 170/03 requires that at least one (1) water sample is collected every 60 months and tested for Sodium. The Ontario Drinking Water Standards (ODWQS) have set a Maximum Acceptable Concentration (MAC) of 200 mg/L for Sodium and requires the Medical Office of Health be notified if the concentration exceeds 20 mg/L. These

Table 4

Summary of Trihalomethanes (THMs) and

Halo Acetic Acid (HAA)

Arran-Elderslie Water Treatment Plant

January 1, 2019 – December 31, 2019

Sample Date	Chesley (µg/L)		Paisley (µg/L)	
	(THM)	(HAA)	(THM)	(HAA)
February 2019	17	5.3	12	5.3
May 2019	16	5.3	16	5.3
August 2019	26	5.3	27	12.9
November 2019	27	5.3	28	6.2
Average	21.5	5.3	20.8	7.43
MAC (µg/L)	100	80 (µg/L)	100	80 (µg/L)

samples were collected on November 3, 2019 and were found to be 16.1 mg/L at CP Well #1 & 2 and 12.5 mg/L at CP Well #3, which are below 20 mg/L. The water sample for Sodium should be collected and analyzed on or before November 3, 2024.

3.3.7 FLUORIDE

Schedule 13-9 of Ontario Regulation 170/03 requires that a water sample be collected at least once in every 60 months and tested for Fluoride. The Ontario Drinking Water Quality Standards (ODWQS) have set a MAC of 1.5 mg/L. On November 3, 2019, samples were collected for this analysis. The samples were found to have a concentration of 0.41 mg/L at CP Well #1 & 2 and 0.72 mg/L at CP Well #3, which is within compliance. The water sample for Fluoride should be collected and analyzed on or before November 3, 2024.

3.4 FILTER BACKWASH TREATED EFFLUENT

The license requires a backwash effluent sample to be collected monthly and analyzed for Total Suspended Solids (TSS) when decant effluent is discharged to the Saugeen River. The criteria limit is 25 mg/L. The samples were collected monthly from January to December. The monthly TSS results were 3, 2, 4, 2, 4, 3, 4, 4, 4, 4, 4, 10 and 4 to an average of 4.0 mg/L which is well within the limits.

Dechlorination of decant was undertaken by employing Formula 2156. An annual average dosage of 2.47 mg/L was utilized. The dechlorination chemical annual usage was 29.66 L

4.0 WATER USAGE

The treated water quantity supplied to the distribution system in 2019 is summarized in **Table 5.** The Table provides a breakdown of the monthly flow provided to the distribution system. Refer to **Table 5.** In 2019, the water works operated at 31.7% of Rated Capacity of the plant. Refer to **Table 6** for comparison with previous years. Capacity utilization is consistent with previous years, except for Year 2017, when it was much lower at 25.8%.

From January 1, 2019 to December 31, 2019, 4,323.7 litres of sodium hypochlorite (NaOCl) was used to treat the water that was provided to the distribution system with an average dosage of 1.70 mg/L. Refer to **Table 7.**

Table 7 also provides a summary of monthly water usage from each of the municipal wells.

Flow meters were calibrated in April 2019 by Flowmetrix Technical Services Inc. and were found to be acceptable. Refer to **Appendix D** for the calibration reports summary sheet.

The full calibration report is available in municipal records. The water meters should be calibrated again by April 2020.

4.1 WATER SUPPLY TO THE PAISLEY STANDPIPE

During 2019, a total of 101,813 m^3 of treated water was provided to the Paisley distribution system by way of the gravity trunk watermain which was about 5% lower than 2018. The flows were recorded by a flow meter installed on the trunk watermain. Refer to **Table 8.**

The average day demand to the Paisley distribution system was 279 m^3/day (298 m^3/day in 2018 and 274 m^3/day in 2017) and the maximum day demand was 703m^3/day (498 m^3/day in 2018 and 693 m^3/day in 2017). The maximum day demand occurred on January 14, 2019.

Table 8 provides a summary of disinfectant chemical used for the booster chlorination of water supplied to Paisley water system from the Paisley water tower. The average chemical dosage is also indicated in the table.

Table 5
Summary of Treated Water Flow
Municipality of Arran-Elderslie
Arran-Elderslie Water Treatment Plant
January 1, 2019 to December 31, 2019

Month	Treated Flow (m^3)		
	Total	Average Daily	Daily Maximum
January	25,095	810	1,240
February	23,299	832	997
March	23,809	768	1,229
April	21,689	723	817
May	26,722	862	1,364
June	30,166	1,006	1,765
July	30,183	974	1,146
August	28,358	915	1,099
September	24,208	807	916
October	28,205	910	1,118
November	22,212	740	916
December	23,225	768	1,039
Annual	**307,171**	**843**	**1,765**

Table 6
Rated Capacity Utilization
Arran-Elderslie Water Works
Municipality of Arran-Elderslie

Year	Max Day (m^3/day)	% Rated Capacity
2019	1,765	31.7%
2018	1,778	32.0%
2017	1,436	25.8%
2016	1,905	34.2%
2015	1,851	33.3%
2014	1,862	33.5%
2013	1,720	30.9%
2012	1,939	34.8%
Rated Capacity of Water Works		**5,564 m^3/day**

TABLE 7
Summary of Disinfectant Chemical Used and Raw Water Supply From Each Well
Arran-Elderslie Water Treatment Plant
January 1, 2019 to December 31, 2019

Month	Volume of Sodium Hypochlorite Used (L)	Average Chlorine Dosage (mg/L)	Raw Water Supply from Wells			
			CPW1	CPW2	CPW3	Total (m^3)
January	366.8	2.31	3,619	11,915	10,294	25,828
February	261.7	1.33	122	9,342	14,167	23,631
March	264.6	1.30	0	6,964	17,443	24,407
April	293.6	1.58	3,710	9,170	9,422	22,302
May	387.1	1.70	8,109	10,431	8,897	27,437
June	438.8	1.70	8,608	11,559	11,007	31,174
July	435.4	1.69	9,947	10,997	10,299	31,243
August	411.9	1.69	9,073	11,324	8,949	29,346
September	355.3	1.72	9,144	7,796	8,007	24,947
October	416.7	1.72	9,602	10,646	8,872	29,120
November	336.9	1.80	7,853	7,871	7,015	22,739
December	354.9	1.81	7,958	8,651	7,201	23,810
Total	**4,323.70**	**1.70**	**77,745**	**116,666**	**121,573**	**315,984**

TABLE 8

Summary of Disinfectant Chemical Used
At Booster Chlorination Station, Paisley
Municipality of Arran-Elderslie
January 1, 2019 to December 31, 2019

Month	Sodium Hypochlorite		Flow to Paisley Water Tower
	Volume (L)	Average Dosage (mg/L)	(m^3)
January	32.5	0.47	8,543
February	30.7	0.44	8,433
March	29.3	0.44	8,106
April	27.2	0.44	7,438
May	35	0.46	9,302
June	42.1	0.55	9,161
July	43.6	0.56	9,514
August	41.95	0.56	9,147
September	37.9	0.55	8,388
October	42.2	0.57	8,969
November	33	0.57	7,107
December	29.6	0.47	7,705
Total	**425.05**		**101,813**
Average		**0.51**	

5.0 IMPROVEMENTS TO THE SYSTEM AND ROUTINE AND PREVENTATIVE MAINTENANCE

5.1 January:

- Annual service work was performed on the Diesel Generator at the water treatment plant, which included new oil and fuel filters, and repairs to a leaking cooling line.

5.2 February:

- Frozen water service at 175 4th Street SW was thawed by employing local contractor.
- Calibration of all portable handheld units was completed by Flowmetrix.

5.3 March:

- All 13 mm tubing was replaced with ¼ Teflon tubing at Post Chlorination Panel. Both pressure gauges on the panel board were also replaced.
- Water line at the blower room was repaired due to a water leak.
- CP#2 well pump was removed and provided with a new motor. The well and camera were inspected, and video recording completed to review conditions. Iron bacteria growth was noted, but drawdown on the well remains good.
- Rehabilitation work completed on CP#1 Well by IWS. The well was also inspected. IWS spent nearly two weeks at site to complete the work.

5.4 April:

- Flowmetrix on-site of the water treatment plant to calibrate flow meter valves which included the three RWV's, Distribution valve, and the three Greensand filter inlet valves.
- Backflow preventer, devices were tested for the truck-fill station, diesel generator, and the portable device used on fire hydrants. Troy's Plumbing and Heating completed the work.
- Municipal staff installed a new water service for the Halliday House in Chesley. This line will be used for fire protection in the facility.

5.5 May:

- Annual Flushing and valve turning completed in the Chesley Distribution System. This Program began on May 8th and was concluded on June 19th.

5.6 July:

- Leak at 76 1st Ave North, Chesley, was repaired by replacing main stop and hooking up the service line.
- Repairs made to 32 mm dia. water line on Bearman Street, Chesley.

5.7 August:

- Valve on hydrant #66 was removed from service and capped hydrant. This was needed due to missing Sand wheel on valve. The problem is anticipated to be resolved in 2020.

- New water service constructed to the corner of Bearman and Thomas Street for new house being built.

5.8 October:

- Replaced curb box, and service rod at 194 7th Street SW.
- Well tiles were placed over top of all three Community Park Well sites and locked to ensure security of the aquifers.
- Leak on 25 mm water service feeding 33 & 35 Tower Road was repaired.
- New water service to property at 25 1st Ave North was provided. Work was completed to coincide with County work in 2020.

5.9 November:

- 110 meters of 150 mm water main was removed and replaced with 200 mm watermain along 4th Street NW. This work was completed due to new construction and the need to lower the water main for frost protection.
- Abandoned water service at 12 3rd St. SE was clipped during directional drilling. Repairs were made to stop service leak.

5.10 December:

- CP#2 Well was provided with new variable frequency drive.
- Both smoke detectors were replaced in the A&E water plant, and the emergency lighting was also provided with new battery charger.
- Markers were installed and hydrant inspection completed in distribution system.

6.0 MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS (MECP) INSPECTIONS AND REGULATORY ISSUES

The Ministry of Environment inspection occurred on May 31, 2019 and provided an inspection report. There were no items in “Non-compliance with Regulatory Requirements” section of the report.

MECP awarded a Final Inspection Rating of 100% and 0% Inspection Risk Rating for Arran-Elderslie Water System.

Refer to **Appendix E** for the Inspection Report

7.0 SUMMARY OF 2020 REQUIREMENTS AND OTHER CONSIDERATIONS

1. During 2020, eleven (11) distribution samples should be collected every month from the distribution system and analyzed for Total Coliform, E. Coli.

2. During 2020, one (1) raw water sample should be collected from each production well every week and analyzed for Total Coliform and E. coli.

3. During 2020, a microbiological sample should be collected from the Point of Entry every week and analyzed for Total Coliform, E. Coli and HPC.

4. Inorganics as listed in Schedule 23 are required to be sampled and analyzed on or before November 2021.

5. Lead sampling is not required in 2020 due to no lead issues in water supply. Alkalinity test is to be completed in the Fall.

6. Organics, as listed in Schedule 24, are required to be sampled and analyzed on or before November 2021.

7. During 2020, Trihalomethanes and Halo Acetic Acid (HAA) samples should be collected from the Arran-Elderslie and Paisley distribution systems every three (3) months, starting in February.

8. During 2020, Nitrite and Nitrate samples are to be collected from the Arran-Elderslie Water Treatment Plant Point of Entry every three (3) months, starting in February.

9. Sodium and Fluoride must be sampled and analyzed on or before November, 2024.

10. A composite sample of treated backwash water must be collected once a month and analyzed for Total Suspended Solids.

11. The Operation and Maintenance Manual should be reviewed with all staff who will be working in the subsystem and updated when required.

12. Renewal of the Permit to Take Water is required prior to September 22, 2025.

13. All water meters are to be calibrated by April 2020.

14. The diesel generator should be test run under full load on a monthly basis and the test results documented.

15. All alarms are to be tested on a yearly basis and the test results documented.

16. By March 31, 2020 Arran-Elderslie need to electronically submit the 2019 "Volume of Water Taking Daily" to the MOE.

Respectfully submitted:

GSS Engineering Consultants Ltd.

Rakesh Sharma, P. Eng., M.A.Sc.
Operator, Class IV WT, Class IV WD

Municipality of Arran-Elderslie

Mark O'Leary
Water/Sewer Foreman
Operator, Class II WT & Class III WD
Backup ORO

Municipality of Arran-Elderslie

Scott McLeod, Public Works Manager
Class II WT & Class IV WD,
Backup ORO

APPENDIX A

MICROBIOLOGICAL SAMPLING AND ANALYSIS

Table # 9
SUMMARY OF WATER QUALITY - MICROBIOLOGICAL
MUNICIPALITY OF ARRAN-ELDERSLIE
ARRAN-ELDERSLIE WATER SUPPLY

JANUARY 1, 2019 to DECEMBER 31, 2019

Date Rec	Well #	Raw		Point of Entry (POE)			Distribution		
		E.Coli	Total Coliform	E. Coli	Total Coliform	HPC	E. Coli	Total Coliform	HPC
JAN 03	Well #1	0	0	0	0	<10	0	0	10
	Well #2	0	0				0	0	<10
	Well #3	0	0				0	0	10
JAN 07	Well #1	0	0	0	0	<10	0	0	<10
	Well #2	0	0				0	0	
	Well #3	0	0						
JAN 16	Well #1	0	0	0	0	10			
	Well #2	0	0				0	0	10
	Well #3	0	0				0	0	<10
JAN 21	Well #1	0	0						
	Well #2	0	0	0	0	<10	0	0	
	Well #3	0	0				0	0	
JAN 29	Well #1	0	0						
	Well #2	0	0	0	0	<10	0	0	
	Well #3	0	0				0	0	
FEB 04	Well #1	0	0	0	0	<10	0	0	<10
	Well #2	0	0				0	0	10
	Well #3	0	0				0	0	<10
							0	0	<10
FEB 11	Well #1	0	0	0	0	<10	0	0	
	Well #2	0	0				0	0	
	Well #3	0	0				0	0	
FEB 20	Well #1	0	0	0	0	440			
	Well #2	0	0				0	0	
	Well #3	0	0				0	0	
FEB 27				0	0	<10	0	0	
	Well #2	0	0				0	0	
	Well #3	0	0						
MAR 04				0	0	<10	0	0	<10
	Well #2	0	0				0	0	<10
	Well #3	0	0				0	0	<10
							0	0	<10
MAR 11	Well #1	0	0	0	0	<10	0	0	
							0	0	
	Well #3	0	0				0	0	
MAR 18				0	0	<10			
							0	0	
	Well #3	0	0				0	0	
MAR 20									
	Well #2	0	1						
	Well #2(2)	0	0						
MAR 25				0	0	<10			
	Well #2	0	0				0	0	
	Well #3	0	0				0	0	
APR 01	Well #1			0	0	<10	0	0	<10
	Well #2	0	0				0	0	<10
	Well #3	0	0				0	0	<10
APR 08				0	0	<10			
	Well #2	0	5				0	0	
	Well #3	0	0				0	0	

Table # 9
SUMMARY OF WATER QUALITY - MICROBIOLOGICAL
MUNICIPALITY OF ARRAN-ELDERSLIE
ARRAN-ELDERSLIE WATER SUPPLY

JANUARY 1, 2019 to DECEMBER 31, 2019

Date Rec	Well #	Raw		Point of Entry (POE)			Distribution		
		E.Coli	Total Coliform	E. Coli	Total Coliform	HPC	E. Coli	Total Coliform	HPC
APR 12	Well #1	0	1						
	Well #1(2)	0	0						
	Well #3								
APR 15	Well #1	0	0	0	0	<10			
	Well #2	0	0				0	0	<10
	Well #3	0	0				0	0	
APR 24	Well #1	0	2	0	0	<10			
	Well #2	0	3				0	0	
	Well #3	0	0				0	0	
APR 29	Well #1	0	0	0	0	<10	0	0	
	Well #2	0	0				0	0	
	Well #3	0	0						
MAY 6	Well #1	0	0	0	0	<10	0	0	<10
	Well #2	0	0				0	0	<10
	Well #3	0	0				0	0	<10
							0	0	<10
MAY 13	Well #1	0	0	0	0	<10	0	0	
	Well #2	0	0				0	0	
	Well #3	0	0				0	0	
MAY 22	Well #1	0	0	0	0	<10			
	Well #2	0	0				0	0	<10
	Well #3	0	0				0	0	
MAY 27	Well #1	0	0	0	0	<10			
	Well #2	0	0				0	0	
	Well #3	0	0				0	0	
JUN 3	Well #1	0	0	0	0	<10	0	0	<10
	Well #2	0	0				0	0	<10
	Well #3	0	0				0	0	10
							0	0	<10
JUN 11	Well #1	0	0	0	0	<10	0	0	
	Well #2	0	0				0	0	
	Well #3	0	0				0	0	
JUN 17	Well #1	0	0	0	0	<10	0	0	
	Well #2	0	0				0	0	
	Well #3	0	0						
JUN 24	Well #1	0	0	0	0	<10			
	Well #2	0	2				0	0	
	Well #3	0	0				0	0	
JUL 3	Well #1	0	0	0	0	50	0	0	10
	Well #2	0	0				0	0	<10
	Well #3	0	0				0	0	<10
JUL 8	Well #1	0	0	0	0	<10			
	Well #2	0	0				0	0	
	Well #3	0	0				0	0	
JUL 15	Well #1	0	0	0	0	<10			
	Well #2	0	0				0	0	
	Well #3	0	0				0	0	<10
JUL 22	Well #1	0	0	0	0	<10			
	Well #2	0	0				0	0	
	Well #3	0	0				0	0	
JUL 29	Well #1	0	0	0	0	<10			
	Well #2	0	0				0	0	
	Well #3	0	0				0	0	

Table # 9
SUMMARY OF WATER QUALITY - MICROBIOLOGICAL
MUNICIPALITY OF ARRAN-ELDERSLIE
ARRAN-ELDERSLIE WATER SUPPLY

JANUARY 1, 2019 to DECEMBER 31, 2019

Date Rec	Well #	Raw		Point of Entry (POE)			Distribution		
		E.Coli	Total Coliform	E. Coli	Total Coliform	HPC	E. Coli	Total Coliform	HPC
AUG 7	Well #1	0	0	0	0	<10	0	0	<10
	Well #2	0	0				0	0	20
	Well #3	0	0				0	0	<10
							0	0	10
AUG 12	Well #1	0	0	0	0	<10	0	0	
	Well #2	0	0				0	0	
	Well #3	0	0				0	0	
AUG 19	Well #1	0	0	0	0	<10	0	0	
	Well #2	0	0				0	0	
	Well #3	0	0						
AUG 26	Well #1	0	0	0	0	<10			
	Well #2	0	0				0	0	
	Well #3	0	0				0	0	
SEPT 4	Well #1	0	0	0	0	<10	0	0	<10
	Well #2	0	0				0	0	<10
	Well #3	0	0				0	0	<10
SEPT 9	Well #1	0	0	0	0	<10	0	0	
	Well #2	0	0				0	0	
	Well #3	0	0						
SEPT 16	Well #1	0	0	0	0	<10			
	Well #2	0	0				0	0	
	Well #3	0	0				0	0	
SEPT 23	Well #1	0	0	0	0	<10			
	Well #2	0	0				0	0	
	Well #3	0	0				0	0	
OCT 01	Well #1	0	0	0	0	<10	0	0	
	Well #2	0	0				0	0	
	Well #3	0	0						
OCT 7	Well #1	0	0	0	0	<10	0	0	<10
	Well #2	0	0				0	0	<10
	Well #3	0	1				0	0	<10
							0	0	<10
OCT 16	Well #1	0	0	0	0	<10			
	Well #2	0	0				0	0	
	Well #3	0	0				0	0	
OCT 21	Well #1	0	0	0	0	<10	0	0	
	Well #2	0	0				0	0	
	Well #3	0	0				0	0	
OCT 28	Well #1	0	0	0	0	<10			
	Well #2	0	0				0	0	
	Well #3	0	0				0	0	
NOV 04	Well #1	0	0	0	0	<10	0	0	<10
	Well #2	0	0				0	0	<10
	Well #3	0	0				0	0	<10
							0	0	<10
NOV 11	Well #1	0	0	0	0	<10	0	0	<10
	Well #2	0	0				0	0	
	Well #3	0	0				0	0	<10

Table # 9
SUMMARY OF WATER QUALITY - MICROBIOLOGICAL
MUNICIPALITY OF ARRAN-ELDERSLIE
ARRAN-ELDERSLIE WATER SUPPLY

JANUARY 1, 2019 to DECEMBER 31, 2019

Date Rec	Well #	Raw		Point of Entry (POE)			Distribution		
		E.Coli	Total Coliform	E. Coli	Total Coliform	HPC	E. Coli	Total Coliform	HPC
NOV 18	Well #1	0	0	0	0	<10			
	Well #2	0	0				0	0	
	Well #3	0	0				0	0	
NOV 28	Well #1	0	0	0	0	<10	0	0	
	Well #2	0	0				0	0	
	Well #3	0	0				0	0	
DEC 02	Well #1	0	1	0	0	<10	0	0	<10
	Well #2	0	0				0	0	<10
	Well #3	0	0				0	0	<10
DEC 09	Well #1	0	0	0	0	<10	0	0	
	Well #2	0	0				0	0	
	Well #3	0	0						
DEC 16	Well #1	0	0	0	0	<10			
	Well #2	0	0				0	0	
	Well #3	0	0				0	0	
DEC 28	Well #1	0	0	0	0	<10			
	Well #2	0	0				0	0	
	Well #3	0	0				0	0	
Total of Samples		152	152	52	52	52	131	131	51

USF: Unreliable: Sample Frozen in Transit Samples Processed as Per Client Request

APPENDIX B

MONTHLY, QUARTERLY, AND ANNUAL SAMPLING

AND ANALYSIS

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - K0L 2H0
Phone: 705-652-2000 FAX: 705-652-6365

Mun of Arran Elderslie (Arran-Elderslie Supply)
Attn : Mark O'Leary

1925-10 Bruce Rd, PO Box 70
Chesley, ON
N0G 1L0, Canada

Phone: 519-363-3039 ext:122
Fax:519-363-9337

Works #: 220002725

20-February-2019

Date Rec. : 11 February 2019
LR Report: CA30078-FEB19

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: MAC	6: MDL	7: TW Community Park Well #1 & 2 Aquifer	8: TW Community Park Well #3 Aquifer	9: DW Distribution Admin Office	10: DW Distribution Sewage Plant	11: DW Distribution Water Plant Domestic	12: DW Distribution Cormack Apts
Sample Date & Time							11-Feb-19 08:20	11-Feb-19 09:30	11-Feb-19 10:35	11-Feb-19 10:00	11-Feb-19 08:50	11-Feb-19 08:40
Temperature Upon Receipt [°C]	—	—	—	—	—	—	8.0	8.0	8.0	8.0	8.0	8.0
Field Total Chlorine [mg/L]	—	—	—	—	—	—	1.09	1.18	0.72	1.11	0.98	1.19
Field Free Chlorine [mg/L]	—	—	—	—	—	—	1.00	1.12	0.68	11.1	0.92	1.18
Nitrite (as N) [mg/L]	14-Feb-19	20:38	15-Feb-19	09:49	1.0	0.003	0.003 <MDL	0.003 <MDL	—	—	—	—
Nitrate (as N) [mg/L]	14-Feb-19	20:38	15-Feb-19	09:49	10	0.006	0.664	1.43	—	—	—	—
Nitrate + Nitrite (as N) [mg/L]	14-Feb-19	20:38	15-Feb-19	09:49	—	0.006	0.664	1.43	—	—	—	—
Trihalomethanes (total) [ug/L]	14-Feb-19	16:06	20-Feb-19	11:56	100 (RAA)	0.37	—	—	17	12	—	—
Bromodichloromethane [ug/L]	14-Feb-19	16:06	20-Feb-19	11:56	–	0.26	—	—	5.4	4.0	—	—
Bromoform [ug/L]	14-Feb-19	16:06	20-Feb-19	11:56	–	0.34	—	—	0.34 <MDL	0.34 <MDL	—	—
Chloroform [ug/L]	14-Feb-19	16:06	20-Feb-19	11:56	–	0.29	—	—	9.3	5.7	—	—
Dibromochloromethane [ug/L]	14-Feb-19	16:06	20-Feb-19	11:56	–	0.37	—	—	2.6	2.4	—	—
Total Haloacetic Acids (HAA5) [ug/L]	14-Feb-19	08:55	20-Feb-19	12:28	—	5.3	—	—	—	—	5.3 <MDL	5.3 <MDL
Chloroacetic Acid [ug/L]	14-Feb-19	08:55	20-Feb-19	12:28	—	4.7	—	—	—	—	4.7 <MDL	4.7 <MDL
Bromoacetic Acid [ug/L]	14-Feb-19	08:55	20-Feb-19	12:28	—	2.9	—	—	—	—	2.9 <MDL	2.9 <MDL
Dichloroacetic Acid [ug/L]	14-Feb-19	08:55	20-Feb-19	12:28	—	2.6	—	—	—	—	2.6 <MDL	2.8
Dibromoacetic Acid [ug/L]	14-Feb-19	08:55	20-Feb-19	12:28	—	2.0	—	—	—	—	2.0 <MDL	2.0 <MDL
Trichloroacetic Acid [ug/L]	14-Feb-19	08:55	20-Feb-19	12:28	—	5.3	—	—	—	—	5.3 <MDL	5.3 <MDL

MAC - Maximum Acceptable Concentration
MDL - SGS Method Detection Limit

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 220002725

16-April-2019

Mun of Arran Elderslie (Arran-Elderslie Supply)
Attn : Mark O'Leary

1925-10 Bruce Rd, PO Box 70
Chesley, ON
N0G 1L0, Canada

Phone: 519-363-3039 ext:122
Fax:519-363-9337

Date Rec. : 08 April 2019
LR Report: **CA30123-APR19**

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Sample ID	Sample Date & Time	Temperature upon Delivery @ London Lab °C	Field pH	Alkalinity mg/L as CaCO3	Lead ug/L
1: Analysis Start Date		---	---	10-Apr-19	15-Apr-19
2: Analysis Start Time		---	---	16:10	11:04
3: Analysis Completed Date		---	---	11-Apr-19	15-Apr-19
4: Analysis Completed Time		---	---	15:02	11:46
5: MAC		---	---	---	10
6: AO/OG		---	---	30-500	---
7: MDL		---	---	2	0.01
8: TAP-PR Kitchen 251 Queen St S 1st	04-Apr-19 10:20	13.4	7.09	---	0.32
9: TAP-PR Kitchen 251 Queen St S 2nd	04-Apr-19 10:20	13.4	7.09	---	1.03
10: TAP-PR Kitchen 243 Queen St S 1st	04-Apr-19 10:25	13.4	7.06	---	0.24
11: TAP-PR Kitchen 243 Queen St S 2nd	04-Apr-19 10:25	13.4	7.06	---	0.15
12: TAP-PR Kitchen 248 Queen St S 1st	04-Apr-19 10:55	13.4	7.06	---	0.35
13: TAP-PR Kitchen 248 Queen St S 2nd	04-Apr-19 10:55	13.4	7.06	---	0.15
14: TAP-PR Kitchen 203 Queen St S 1st	04-Apr-19 11:20	13.4	7.12	---	0.52
15: TAP-PR Kitchen 203 Queen St S 2nd	04-Apr-19 11:20	13.4	7.12	---	0.36
16: TAP-PR Kitchen 209 Queen St S 1st	04-Apr-19 11:30	13.4	6.95	---	0.92
17: TAP-PR Kitchen 209 Queen St S 2nd	04-Apr-19 11:30	13.4	6.95	---	0.53
18: TAP-PR Bathroom 180 Queen St S 1st	04-Apr-19 13:40	13.4	7.02	---	0.77
19: TAP-PR Bathroom 180 Queen St S 2nd	04-Apr-19 13:40	13.4	7.02	---	0.65
20: TAP-PR Kitchen 221 Queen St S 1st	04-Apr-19 11:40	13.4	7.10	---	0.25
21: TAP-PR Kitchen 221 Queen St S 2nd	04-Apr-19 11:40	13.4	7.10	---	0.16
22: TAP-PR Kitchen 189 Queen St S 1st	04-Apr-19 13:30	13.4	7.00	---	0.72
23: TAP-PR Kitchen 189 Queen St S 2nd	04-Apr-19 13:30	13.4	7.00	---	1.33
24: TAP-NR 273 Queen St S 1st	04-Apr-19 11:05	13.4	6.94	---	0.80
25: TAP-NR 273 Queen St S 2nd	04-Apr-19 11:05	13.4	6.94	---	0.60
26: DW Hydrant Hydrant #13	04-Apr-19 11:15	13.4	7.06	266	0.02
27: DW Hydrant Hydrant #15	04-Apr-19 11:55	13.4	7.12	261	0.26
28: TAP-NR Kitchen 139 Queen St S 1st	04-Apr-19 13:30	13.4	7.10	---	1.25
29: TAP-NR Kitchen 139 Queen St S 2nd	04-Apr-19 13:30	13.4	7.10	---	0.55
30: TAP-NR Kitchen 149 Queen St S 1st	04-Apr-19 13:40	13.4	7.21	---	0.73
31: TAP-NR Kitchen 149 Queen St S 2nd	04-Apr-19 13:40	13.4	7.21	---	0.30

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 220002725

LR Report : CA30123-APR19

MAC - Maximum Acceptable Concentration
AO/OG - Aesthetic Objective / Operational Guideline
MDL - SGS Method Detection Limit

Method Descriptions

Units	Description	SGS Method Code
mg/L as CaCO3	Alkalinity by Titration	ME-CA-[ENV]EWL-LAK-AN-006
ug/L	Lead by ICP-MS Drinking Water	ME-CA-[ENV]SPE-LAK-AN-006

Patti Stark
Project Specialist,
Environment, Health & Safety

OnLa

0001716498

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 220002725

18-April-2019

Mun of Arran Elderslie (Arran-Elderslie Supply)
Attn : Mark O'Leary

1925-10 Bruce Rd, PO Box 70
Chesley, ON
N0G 1L0, Canada

Phone: 519-363-3039 ext:122
Fax:519-363-9337

Date Rec. : 12 April 2019
LR Report: **CA30203-APR19**

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Sample ID	Sample Date & Time	Temperature upon Delivery @ London Lab °C	Field pH	Alkalinity mg/L as CaCO3	Lead ug/L
1: Analysis Start Date		---	---	16-Apr-19	18-Apr-19
2: Analysis Start Time		---	---	11:26	09:20
3: Analysis Completed Date		---	---	17-Apr-19	18-Apr-19
4: Analysis Completed Time		---	---	16:32	09:38
5: MAC		---	---	---	10
6: AO/OG		---	---	30-500	---
7: MDL		---	---	2	0.01
8: TAP-PR Bathroom 117 3rd Ave SE 1st	09-Apr-19 10:55	12.7	7.24	---	0.39
9: TAP-PR Bathroom 117 3rd Ave SE 2nd	09-Apr-19 10:55	12.7	7.24	---	0.17
10: TAP-PR Kitchen 139 3rd Ave SE 1st	09-Apr-19 11:05	12.7	7.23	---	0.60
11: TAP-PR Kitchen 139 3rd Ave SE 2nd	09-Apr-19 11:05	12.7	7.23	---	0.35
12: TAP-PR Kitchen 126 3rd Ave SE 1st	09-Apr-19 11:15	12.7	7.32	---	0.38
13: TAP-PR Kitchen 126 3rd Ave SE 2nd	09-Apr-19 11:15	12.7	7.32	---	0.19
14: DW Hydrant Hydrant #47	09-Apr-19 12:05	12.7	7.29	252	0.05
15: TAP-PR Kitchen 15 3rd St SE 1st	09-Apr-19 12:15	12.7	7.22	---	0.30
16: TAP-PR Kitchen 15 3rd St SE 2nd	09-Apr-19 12:15	12.7	7.22	---	0.25
17: DW Hydrant Hydrant #46	09-Apr-19 13:10	12.7	7.31	253	0.01 <MDL
18: TAP-PR Kitchen 73 3rd St SE #1 1st	09-Apr-19 14:50	12.7	7.15	---	0.29
19: TAP-PR Kitchen 73 3rd St SE #1 2nd	09-Apr-19 14:50	12.7	7.15	---	0.17
20: TAP-PR Kitchen 95 3rd St SE #1 1st	09-Apr-19 10:45	12.7	7.74	---	0.61
21: TAP-PR Kitchen 95 3rd St SE #1 2nd	09-Apr-19 10:45	12.7	7.74	---	0.34
22: TAP-PR Kitchen 86 3rd St SE #1 1st	09-Apr-19 10:55	12.7	7.89	---	0.98
23: TAP-PR Kitchen 86 3rd St SE #1 2nd	09-Apr-19 10:55	12.7	7.89	---	0.71
24: TAP-NR Bathroom 12 3rd St SE #1 1st	09-Apr-19 11:10	12.7	7.43	---	0.67
25: TAP-NR Bathroom 12 3rd St SE #1 2nd	09-Apr-19 11:10	12.7	7.43	---	0.46
26: TAP-PR Bathroom 85 3rd St SE #1 1st	09-Apr-19 11:30	12.7	7.28	---	0.83
27: TAP-PR Bathroom 85 3rd St SE #1 2nd	09-Apr-19 11:30	12.7	7.28	---	0.54
28: TAP-PR Kitchen 79 3rd St SE #1 1st	09-Apr-19 12:20	12.7	7.22	---	0.70
29: TAP-PR Kitchen 79 3rd St SE #1 2nd	09-Apr-19 12:20	12.7	7.22	---	0.44
30: TAP-PR Kitchen 98A 3rd St SE #1 1st	09-Apr-19 12:40	12.7	7.58	---	0.11
31: TAP-PR Kitchen 98A 3rd St SE #1 2nd	09-Apr-19 12:40	12.7	7.58	---	0.11

0001719284

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 220002725

LR Report : CA30203-APR19

MAC - Maximum Acceptable Concentration
AO/OG - Aesthetic Objective / Operational Guideline
MDL - SGS Method Detection Limit

Method Descriptions

Units	Description	SGS Method Code
mg/L as CaCO3	Alkalinity by Titration	ME-CA-[ENV]EWL-LAK-AN-006
ug/L	Lead by ICP-MS Drinking Water	ME-CA-[ENV]SPE-LAK-AN-006

Carrie Greenlaw
Project Specialist,
Environment, Health & Safety

SGS Canada Inc.
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Mun of Arran Elderslie (Arran-Elderslie Supply)
Attn : Mark O'Leary

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Works #: 220002725

24-May-2019

Date Rec. : 13 May 2019
LR Report: CA30104-MAY19

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: MAC	6: MDL	7: TW Community Park Well #1 & 2 Acquifer	8: TW Community Park Well #3 Acquifer	9: DW Distribution Admin Office	10: DW Distribution Paisley North End	11: DW Distribution Arran East	12: DW Distribution Paisley Arena
Sample Date & Time							13-May-19 07:40	13-May-19 09:00	13-May-19 10:20	13-May-19 10:25	13-May-19 08:30	13-May-19 10:05
Temperature Upon Receipt [°C]	—	—	—	—	—	—	8	8	8	8	8	8
Field Total Chlorine [mg/L]	—	—	—	—	—	—	1.30	1.20	0.77	1.04	1.06	1.06
Field Free Chlorine [mg/L]	—	—	—	—	—	—	1.01	1.11	0.70	0.97	1.01	0.91
Nitrite (as N) [mg/L]	15-May-19	19:45	21-May-19	12:03	1.0	0.003	0.003 <MDL	0.003 <MDL	—	—	—	—
Nitrate (as N) [mg/L]	15-May-19	19:45	21-May-19	12:03	10	0.006	0.953	1.79	—	—	—	—
Nitrate + Nitrite (as N) [mg/L]	15-May-19	19:45	21-May-19	12:03	—	0.006	0.953	1.79	—	—	—	—
Trihalomethanes (total) [ug/L]	16-May-19	16:46	21-May-19	11:03	100 (RAA)	0.37	—	—	16	16	—	—
Bromodichloromethane [ug/L]	16-May-19	16:46	21-May-19	11:03	—	0.26	—	—	4.8	5.1	—	—
Bromoform [ug/L]	16-May-19	16:46	21-May-19	11:03	—	0.34	—	—	0.37	0.34 <MDL	—	—
Chloroform [ug/L]	16-May-19	16:46	21-May-19	11:03	—	0.29	—	—	8.2	8.2	—	—
Dibromochloromethane [ug/L]	16-May-19	16:46	21-May-19	11:03	—	0.37	—	—	2.7	2.7	—	—
Total Haloacetic Acids (HAA5) [ug/L]	18-May-19	06:53	24-May-19	14:44	—	5.3	—	—	—	—	5.3 <MDL	5.3 <MDL
Chloroacetic Acid [ug/L]	18-May-19	06:53	24-May-19	14:44	—	4.7	—	—	—	—	4.7 <MDL	4.7 <MDL
Bromoacetic Acid [ug/L]	18-May-19	06:53	24-May-19	14:44	—	2.9	—	—	—	—	2.9 <MDL	2.9 <MDL
Dichloroacetic Acid [ug/L]	18-May-19	06:53	24-May-19	14:44	—	2.6	—	—	—	—	2.6 <MDL	4.3
Dibromoacetic Acid [ug/L]	18-May-19	06:53	24-May-19	14:44	—	2.0	—	—	—	—	2.0 <MDL	2.0 <MDL
Trichloroacetic Acid [ug/L]	18-May-19	06:53	24-May-19	14:44	—	5.3	—	—	—	—	5.3 <MDL	5.3 <MDL

MAC - Maximum Acceptable Concentration
MDL - SGS Method Detection Limit

OnLine LIMS

00017582

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Fax:519-363-9337

Works #: 220002725

29-August-2019

Date Rec. : 21 August 2019
LR Report: CA30201-AUG19

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: MAC	6: MDL	7: TW Community Park Well #1 & 2 Acquifer	8: TW Community Park Well Well #3 Acquifer	9: DW Distribution-Admin Office	10: DW Distribution-Paisley North End
Sample Date & Time							19-Aug-19 08:05	19-Aug-19 09:25	19-Aug-19 10:15	19-Aug-19 10:00
Temperature Upon Receipt [°C]	---	---	---	---	---	---	16.0	16.0	16.0	16.0
Total Chlorine [mg/L]	---	---	---	---	---	---	1.22	1.21	0.54	0.84
Free Chlorine [mg/L]	---	---	---	---	---	---	1.08	1.07	0.49	0.81
Nitrite (as N) [mg/L]	23-Aug-19	11:59	26-Aug-19	09:54	1	0.003	0.003 <MDL	0.003 <MDL	---	---
Nitrate (as N) [mg/L]	23-Aug-19	11:59	26-Aug-19	09:54	10	0.006	0.733	1.86	---	---
Nitrate + Nitrite (as N) [mg/L]	23-Aug-19	11:59	26-Aug-19	09:54	---	0.006	0.733	1.86	---	---
Trihalomethanes (total) [ug/L]	21-Aug-19	16:10	26-Aug-19	11:18	100 (RAA)	0.37	---	---	26	27
Bromodichloromethane [ug/L]	21-Aug-19	16:10	26-Aug-19	11:18	-	0.26	---	---	7.7	7.7
Bromoform [ug/L]	21-Aug-19	16:10	26-Aug-19	11:18	-	0.34	---	---	0.34 <MDL	0.34 <MDL
Chloroform [ug/L]	21-Aug-19	16:10	26-Aug-19	11:18	-	0.29	---	---	15	16
Dibromochloromethane [ug/L]	21-Aug-19	16:10	26-Aug-19	11:18	-	0.37	---	---	3.5	3.4
Total Haloacetic Acids (HAA5) [ug/L]	26-Aug-19	08:36	29-Aug-19	11:50	---	5.3	---	---	---	---
Bromoacetic Acid [ug/L]	26-Aug-19	08:36	29-Aug-19	11:50	---	2.9	---	---	---	---
Chloroacetic Acid [ug/L]	26-Aug-19	08:36	29-Aug-19	11:50	---	4.7	---	---	---	---
Dichloroacetic Acid [ug/L]	26-Aug-19	08:36	29-Aug-19	11:50	---	2.6	---	---	---	---
Dibromoacetic Acid [ug/L]	26-Aug-19	08:36	29-Aug-19	11:50	---	2	---	---	---	---
Trichloroacetic Acid [ug/L]	26-Aug-19	08:36	29-Aug-19	11:50	---	5.3	---	---	---	---

MAC - Maximum Acceptable Concentration
MDL - SGS Method Detection Limit

OnLine LIMS

0001875728

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Works #: 220002725

29-August-2019

Mun of Arran Elderslie (Arran-Elderslie Supply)
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Date Rec. : 21 August 2019
LR Report: **CA30201-AUG19**

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: MAC	6: MDL	11: DW Distribution-Water Plant Domestic	12: DW Distribution-Paisley Burn Pile
Sample Date & Time							19-Aug-19 08:15	19-Aug-19 09:45
Temperature Upon Receipt [°C]	—	—	—	—	—	—	16.0	16.0
Total Chlorine [mg/L]	—	—	—	—	—	—	1.18	0.70
Free Chlorine [mg/L]	—	—	—	—	—	—	1.06	0.55
Nitrite (as N) [mg/L]	23-Aug-19	11:59	26-Aug-19	09:54	1	0.003	—	—
Nitrate (as N) [mg/L]	23-Aug-19	11:59	26-Aug-19	09:54	10	0.006	—	—
Nitrate + Nitrite (as N) [mg/L]	23-Aug-19	11:59	26-Aug-19	09:54	—	0.006	—	—
Trihalomethanes (total) [ug/L]	21-Aug-19	16:10	26-Aug-19	11:18	100 (RAA)	0.37	—	—
Bromodichloromethane [ug/L]	21-Aug-19	16:10	26-Aug-19	11:18	—	0.26	—	—
Bromoform [ug/L]	21-Aug-19	16:10	26-Aug-19	11:18	—	0.34	—	—
Chloroform [ug/L]	21-Aug-19	16:10	26-Aug-19	11:18	—	0.29	—	—
Dibromochloromethane [ug/L]	21-Aug-19	16:10	26-Aug-19	11:18	—	0.37	—	—
Total Haloacetic Acids (HAA5) [ug/L]	26-Aug-19	08:36	29-Aug-19	11:50	—	5.3	5.3 <MDL	12.9
Bromoacetic Acid [ug/L]	26-Aug-19	08:36	29-Aug-19	11:50	—	2.9	2.9 <MDL	2.9 <MDL
Chloroacetic Acid [ug/L]	26-Aug-19	08:36	29-Aug-19	11:50	—	4.7	4.7 <MDL	4.7 <MDL
Dichloroacetic Acid [ug/L]	26-Aug-19	08:36	29-Aug-19	11:50	—	2.6	3.0	6.6
Dibromoacetic Acid [ug/L]	26-Aug-19	08:36	29-Aug-19	11:50	—	2	2.0 <MDL	2.0 <MDL
Trichloroacetic Acid [ug/L]	26-Aug-19	08:36	29-Aug-19	11:50	—	5.3	5.3 <MDL	6.3

MAC - Maximum Acceptable Concentration
MDL - SGS Method Detection Limit

Method Descriptions

Units	Description	SGS Method Code
ug/L	HAA wtr - DW	ME-CA-[ENV]GC-LAK-AN-013
ug/L	VOC wtr - THM	ME-CA-[ENV]GC-LAK-AN-004
ug/L	VOC wtr - THM	ME-CA-[ENV]GC-LAK-AN-004
ug/L	HAA wtr - DW	ME-CA-[ENV]GC-LAK-AN-013
ug/L	VOC wtr - THM	ME-CA-[ENV]GC-LAK-AN-004
ug/L	HAA wtr - DW	ME-CA-[ENV]GC-LAK-AN-013
ug/L	VOC wtr - THM	ME-CA-[ENV]GC-LAK-AN-004
ug/L	HAA wtr - DW	ME-CA-[ENV]GC-LAK-AN-013
mg/L	Nitrate by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
mg/L	Total Nitrate/Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001

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Works #: 220002725

11-October-2019

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Date Rec. : 07 October 2019
LR Report: **CA30078-OCT19**

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CERTIFICATE OF ANALYSIS
Final Report

Sample ID	Sample Date & Time	Temperature upon Delivery @ London Lab °C	Field pH	Alkalinity mg/L as CaCO3
1: Analysis Start Date		---	---	09-Oct-19
2: Analysis Start Time		---	---	16:01
3: Analysis Completed Date		---	---	11-Oct-19
4: Analysis Completed Time		---	---	11:28
6: AO/OG		---	---	30-500
7: MDL		---	---	2
8: DW Sink Riverside Lift Station	07-Oct-19 10:00	3.3	7.10	280
9: DW Sample Tap Ross St SS	07-Oct-19 10:40	3.3	7.09	273

AO/OG - Aesthetic Objective / Operational Guideline
MDL - SGS Method Detection Limit

Method Descriptions

Units	Description	SGS Method Code
mg/L as CaCO3	Alkalinity by Titration	ME-CA-[ENV]EWL-LAK-AN-006

Carrie Greenlaw
Carrie Greenlaw
Project Specialist,
Environment, Health & Safety

ONLINE

0001622960

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Fax:519-363-9337

Works #: 220002725

11-November-2019

Date Rec. : 04 November 2019
LR Report: CA30016-NOV19

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: MAC	6: Half MAC	7: AO/OG	8: MDL	9: TW Community Park Well #1 & 2 Acquifer	10: TW Community Park Well #3 Acquifer	11: DW Distribution Admin Office
Sample Date & Time									04-Nov-19 08:00	04-Nov-19 09:05	04-Nov-19 11:25
Temperature upon Delivery [@ London Lab °C]	---	---	---	---	---	---	---	---	10.4	10.4	10.4
Total Chlorine [mg/L]	---	---	---	---	---	---	---	---	1.26	1.06	0.55
Field Free Chlorine [mg/L]	---	---	---	---	---	---	---	---	1.15	0.96	0.52
Fluoride [mg/L]	07-Nov-19	08:49	07-Nov-19	13:49	1.5	---	---	0.06	0.41	0.72	---
Sodium [mg/L]	08-Nov-19	12:14	11-Nov-19	11:11	20	---	200	0.01	16.1	12.5	---
Nitrite (as N) [mg/L]	06-Nov-19	22:12	08-Nov-19	09:57	1	---	---	0.003	0.003 <MDL	0.003 <MDL	---
Nitrate (as N) [mg/L]	08-Nov-19	22:12	08-Nov-19	12:36	10	---	---	0.006	0.748	1.71	---
Nitrate + Nitrite (as N) [mg/L]	06-Nov-19	22:12	08-Nov-19	12:36	---	---	---	0.006	0.748	1.71	---
Trihalomethanes (total) [ug/L]	07-Nov-19	11:18	11-Nov-19	12:44	100 (RAA)	---	---	0.37	---	---	27
Bromodichloromethane [ug/L]	07-Nov-19	11:18	11-Nov-19	12:44	--	---	---	0.26	---	---	8.0
Bromoform [ug/L]	07-Nov-19	11:18	11-Nov-19	12:44	-	---	---	0.34	---	---	0.37
Chloroform [ug/L]	07-Nov-19	11:18	11-Nov-19	12:44	-	---	---	0.29	---	---	15
Dibromochloromethane [ug/L]	07-Nov-19	11:18	11-Nov-19	12:44	-	---	---	0.37	---	---	3.4

MAC - Maximum Acceptable Concentration
AO/OG - Aesthetic Objective / Operational Guideline
MDL - SGS Method Detection Limit

OnLine LINS

0001954397

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Works #: 220002725

11-November-2019

Date Rec. : 04 November 2019
LR Report: **CA30016-NOV19**

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CERTIFICATE OF ANALYSIS
Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: MAC	8: MDL	12: DW Distribution Paisley Sewage Plant	13: DW Distribution South End	14: DW Distribution Paisley Goldie St SS
Sample Date & Time							04-Nov-19 09:30	04-Nov-19 09:45	04-Nov-19 10:15
Temperature upon Delivery [@ London Lab °C]	---	---	---	---	---	---	10.4	10.4	10.4
Total Chlorine [mg/L]	---	---	---	---	---	---	0.69	0.86	0.89
Field Free Chlorine [mg/L]	---	---	---	---	---	---	0.58	0.79	0.85
Trihalomethanes (total) [ug/L]	07-Nov-19	11:18	11-Nov-19	12:44	100 (RAA)	0.37	28	---	---
Bromodichloromethane [ug/L]	07-Nov-19	11:18	11-Nov-19	12:44	--	0.26	7.3	---	---
Bromoform [ug/L]	07-Nov-19	11:18	11-Nov-19	12:44	--	0.34	0.36	---	---
Chloroform [ug/L]	07-Nov-19	11:18	11-Nov-19	12:44	--	0.29	17	---	---
Dibromochloromethane [ug/L]	07-Nov-19	11:18	11-Nov-19	12:44	--	0.37	3.3	---	---
Total Haloacetic Acids (HAA5) [ug/L]	06-Nov-19	17:01	11-Nov-19	13:02	---	5.3	---	5.3 <MDL	6.2
Chloroacetic Acid [ug/L]	06-Nov-19	17:01	11-Nov-19	13:02	---	4.7	---	4.7 <MDL	4.7 <MDL
Bromoacetic Acid [ug/L]	06-Nov-19	17:01	11-Nov-19	13:02	---	2.9	---	2.9 <MDL	2.9 <MDL
Dichloroacetic Acid [ug/L]	06-Nov-19	17:01	11-Nov-19	13:02	---	2.6	---	2.8	6.2
Dibromoacetic Acid [ug/L]	06-Nov-19	17:01	11-Nov-19	13:02	---	2	---	2.0 <MDL	2.0 <MDL
Trichloroacetic Acid [ug/L]	06-Nov-19	17:01	11-Nov-19	13:02	---	5.3	---	5.3 <MDL	5.3 <MDL

MAC - Maximum Acceptable Concentration
AO/OG - Aesthetic Objective / Operational Guideline
MDL - SGS Method Detection Limit

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11-November-2019

Date Rec. : 04 November 2019
LR Report: CA30016-NOV19

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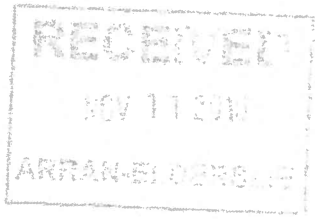


CERTIFICATE OF ANALYSIS
Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: MAC	6: Half MAC	7: AO/OG	8: MDL	9: TW Community Park Well #1 & 2 Acquifer	10: TW Community Park Well #3 Acquifer	11: DW Distribution Admin Office
Sample Date & Time									04-Nov-19 08:00	04-Nov-19 09:05	04-Nov-19 11:25
Temperature upon Delivery [@ London Lab °C]	—	—	—	—	—	—	—	—	10.4	10.4	10.4
Total Chlorine [mg/L]	—	—	—	—	—	—	—	—	1.26	1.06	0.55
Field Free Chlorine [mg/L]	—	—	—	—	—	—	—	—	1.15	0.96	0.52
Fluoride [mg/L]	07-Nov-19	08:49	07-Nov-19	13:49	1.5	—	—	0.06	0.41	0.72	—
Sodium [mg/L]	08-Nov-19	12:14	11-Nov-19	11:11	20	—	200	0.01	16.1	12.5	—
Nitrite (as N) [mg/L]	06-Nov-19	22:12	08-Nov-19	09:57	1	—	—	0.003	0.003 <MDL	0.003 <MDL	—
Nitrate (as N) [mg/L]	06-Nov-19	22:12	08-Nov-19	12:36	10	—	—	0.006	0.748	1.71	—
Nitrate + Nitrite (as N) [mg/L]	06-Nov-19	22:12	08-Nov-19	12:36	—	—	—	0.006	0.748	1.71	—
Trihalomethanes (total) [ug/L]	07-Nov-19	11:18	11-Nov-19	12:44	100 (RAA)	—	—	0.37	—	—	27
Bromodichloromethane [ug/L]	07-Nov-19	11:18	11-Nov-19	12:44	—	—	—	0.26	—	—	8.0
Bromoform [ug/L]	07-Nov-19	11:18	11-Nov-19	12:44	—	—	—	0.34	—	—	0.37
Chloroform [ug/L]	07-Nov-19	11:18	11-Nov-19	12:44	—	—	—	0.29	—	—	15
Dibromochloromethane [ug/L]	07-Nov-19	11:18	11-Nov-19	12:44	—	—	—	0.37	—	—	3.4

MAC - Maximum Acceptable Concentration
AO/OG - Aesthetic Objective / Operational Guideline
MDL - SGS Method Detection Limit

OnLine LIMS

0001954307

APPENDIX C

MUNICIPAL DRINKING WATER LICENSE AND DRINKING WATER WORKS PERMITS

Ontario

DRINKING WATER WORKS PERMIT

Permit Number: 079-202
Issue Number: 4

Pursuant to the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32, and the regulations made thereunder and subject to the limitations thereof, this drinking water works permit is issued under Part V of the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32 to:

The Corporation of the Municipality of Arran-Elderslie

PO Box 70
1925 Bruce Road #10
Chesley ON N0G 1L0

For the following municipal residential drinking water system:

Arran-Elderslie Drinking Water System

This drinking water works permit includes the following:

Schedule	Description
Schedule A	Drinking Water System Description
Schedule B	General
Schedule C	All documents issued as Schedule C to this drinking water works permit which authorize alterations to the drinking water system
Schedule D	Process Flow Diagrams

DATED at TORONTO this 19th day of May, 2017

Signature

Aziz Ahmed, P.Eng.
Director
Part V, *Safe Drinking Water Act*, 2002

Schedule A: Drinking Water System Description

System Owner	**The Corporation of the Municipality of Arran-Elderslie**
Permit Number	**079-202**
Drinking Water System Name	**Arran-Elderslie Drinking Water System**
Schedule A Issue Date	**May 19, 2017**

1.0 System Description

1.1 The following is a summary description of the works comprising the above drinking water system:

Overview

The **Arran-Elderslie Drinking Water System** consists of three (3) ground water wells, one (1) drinking water treatment plant, two (2) standpipes, one (1) rechlorination facility, a 300 mm diameter trunk watermain approximately 15.7 km long connecting the Chesley water distribution system to the Paisley system and approximately 34 kilometers of distribution watermains.

Ground Water Supplies

CPW1

Location	129, 4th Ave SE, Chesley, Ontario
UTM Coordinates	NAD 83 UTM Zone 17, 492856 m E, 4904691 m N
WWR No.	1401010
Source	Groundwater (Non-GUDI)
Description	340 mm diameter x approximately 20 m deep drilled groundwater well complete with a pitless adapter
Equipment	A submersible well pump rated at 20.8 L/s at 80.96 m TDH
Notes	

CPW2

Location	129, 4th Ave SE, Chesley, Ontario
UTM Coordinates	NAD 83 UTM Zone 17, 492848 m E, 4904726 m N
WWR No.	1407956
Source	Groundwater (Non-GUDI)
Description	324 mm diameter x 24.4 m deep drilled well complete with a pitless adapter
Equipment	A submersible well pump rated at 24.6 L/s at 80.12 m TDH
Notes	

CPW3

Location	129, 4th Ave SE, Chesley, Ontario
UTM Coordinates	NAD 83 UTM Zone 17, 493123 m E, 4904783 m N
WWR No.	1407957
Source	Groundwater (Non-GUDI)
Description	254 mm diameter x 38.1 m deep drilled well
Equipment	A submersible well pump rated at 34.1 L/s at 96.43 m TDH complete with a pitless adapter
Notes	

Treatment Facility

Arran-Elderslie Water Treatment Plant

Location	129 4th Ave. S.E., Chesley, Ontario
UTM Coordinates	NAD 83 UTM Zone 17, 492836 m E, 4904641 m N
Description	A water treatment plant building housing treatment equipment and all necessary instrumentation, controls and appurtenances
Pressure Filtration System	Three (3) pressure filtration vessels (2 duty, 1 standby) for iron and manganese removal containing approximately 300 mm of Anthracite and 500 mm of catalytic media, each vessel 2,745 mm in diameter by 1,700 mm high, providing a filtration rate of 19.6 m/h, at a rated capacity of 2,781 m^3/day per filter and discharging to the clearwell
	Two (2) filter backwash pumps (1 pump per clearwell cell) each rated at 74.5 L/s at 15.55 m TDH complete with all necessary electrical and controls
Residuals Management System	One (1) backwash wastewater holding tank approximately 7 m x 13 m x 3 m in size discharging supernatant by gravity to the storm sewer or to the Saugeen River. Settled sludge is discharged to the Chesley Lagoon System
Dechlorination System	Two calcium thiosulphate (2) chemical feed pumps, (1 duty, 1 standby) to dechlorinate filter backwash wastewater prior to disposal to the Saugeen River
	One (1) calcium thiosulphate chemical storage tank
Chlorination System	Three (3) sodium hypochlorite chemical feed pumps (1 duty, 2 standby). Feed point for iron and manganese oxidation is the common header from CPW1, CPW2, and CPW3 upstream of the filters. Feed point for primary disinfection is upstream of the chlorine contact chamber
	A post chlorination system consisting of two (2) positive displacement diaphragm type sodium hypochlorite chemical feed pumps (1 duty, 1 standby)
	Three (3) sodium hypochlorite chemical storage tanks complete with all necessary controls, piping and spill containment
Chlorine Contact Pipe	An 86 m long x 600 mm diameter watermain providing chlorine contact time located on the plant site prior to entering the distribution system
Clearwell	An unbaffled two (2) cell, filtered water underground storage tank, each cell approximately 6 m x 8.2 m x 1.8 m water depth (total storage volume of 177 m^3)
Standby Power	A 230 kW diesel generator set with a 2,000 L double wall sub-base fuel tank complete with all necessary piping and controls
Monitoring Equipment	One (1) free chlorine residual analyzer measuring the free residual at the contact chamber effluent complete with alarm
	One (1) turbidity analyzer measuring the turbidity at the contact chamber effluent complete with alarm
	Three (3) flow meters measuring the raw water flow from each well, one (1) flow meter to measure the volume and rate of backwash, one (1) flow meter measure the volume and rate of treated water leaving the plant
Notes	

Off-Site Storage and Rechlorination

Chesley Standpipe

Location	84 Tower Road, Chesley, Ontario
UTM Coordinates	NAD 83 UTM 17: 492422 m E, 4906152 m N
Total Volume	2725 m^3
Notes	

Paisley Standpipe and Rechlorination Facility

Location	281 Alma Street, Paisley, Ontario
UTM Coordinates	NAD 83 UTM 17: 478438 m E, 4905401 m N
Total Volume	2430 m^3
Re-chlorination Equipment	Two (2) sodium hypochlorite chemical feed pumps (1 duty and 1 standby)
	One (1) sodium hypochlorite solution tank with secondary containment
Notes	

Watermains

1.2 Watermains within the distribution system comprise:

1.2.1 Watermains that have been set out in each document or file identified in column 1 of Table 1.

Table 1: Watermains

Column 1 Document or File Name	Column 2 Date
Chesley Water Distribution System	July 2013
Paisley Water Distribution System	July 2013

1.2.2 Watermains that have been added, modified, replaced or extended further to the provisions of Schedule C of this drinking water works permit on or after the date identified in column 2 of Table 1 for each document or file identified in column 1.

1.2.3 Watermains that have been added, modified, replaced or extended further to an authorization by the Director on or after the date identified in column 2 of Table 1 for each document or file identified in column 1.

Schedule B: General

System Owner	**The Corporation of the Municipality of Arran-Elderslie**
Permit Number	**079-202**
Drinking Water System Name	**Arran-Elderslie Drinking Water System**
Schedule B Issue Date	**May 19, 2017**

1.0 Applicability

1.1 In addition to any other requirements, the drinking water system identified above shall be altered and operated in accordance with the conditions of this drinking water works permit and the licence.

1.2 The definitions and conditions of the licence shall also apply to this drinking water works permit.

2.0 Alterations to the Drinking Water System

2.1 Any document issued by the Director as a Schedule C to this drinking water works permit shall provide authority to alter the drinking water system in accordance, where applicable, with the conditions of this drinking water works permit and the licence.

2.2 All Schedule C documents issued by the Director for the drinking water system shall form part of this drinking water works permit.

2.3 All parts of the drinking water system in contact with drinking water which are:

2.3.1 Added, modified, replaced, extended; or

2.3.2 Taken out of service for inspection, repair or other activities that may lead to contamination,

shall be disinfected before being put into service in accordance with a procedure approved by the Director or in accordance with the applicable provisions of the following documents:

a) The ministry's Watermain Disinfection Procedure, effective November 19, 2017;
b) AWWA C652 – Standard for Disinfection of Water-Storage Facilities;
c) AWWA C653 – Standard for Disinfection of Water Treatment Plants; and
d) AWWA C654 – Standard for Disinfection of Wells.

2.4 The owner shall notify the Director within thirty (30) days of the placing into service or the completion of any addition, modification, replacement or extension of the drinking water system which had been authorized through:

2.4.1 Schedule B to this drinking water works permit which would require an alteration of the description of a drinking water system component described in Schedule A of this drinking water works permit;

2.4.2 Any Schedule C to this drinking water works permit respecting works other than watermains; or

2.4.3 Any approval issued prior to the issue date of the first drinking water works permit respecting works other than watermains which were not in service at the time of the issuance of the first drinking water works permit.

2.5 For greater certainty, the notification requirements set out in condition 2.4 do not apply to any addition, modification, replacement or extension in respect of the drinking water system which:

2.5.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03;

2.5.2 Constitutes maintenance or repair of the drinking water system; or

2.5.3 Is a watermain authorized by condition 3.1 of Schedule B of this drinking water works permit.

2.6 The owner shall notify the legal owner of any part of the drinking water system that is prescribed as a municipal drinking water system by section 2 of O. Reg. 172/03 of the requirements of the licence and this drinking water works permit as applicable to the prescribed system.

2.7 For greater certainty, any alteration to the drinking water system made in accordance with this drinking water works permit may only be carried out after other legal obligations have been complied with including those arising from the *Environmental Assessment Act*, *Niagara Escarpment Planning and Development Act*, *Oak Ridges Moraine Conservation Act, 2001* and *Greenbelt Act, 2005*.

3.0 Watermain Additions, Modifications, Replacements and Extensions

3.1 The drinking water system may be altered by adding, modifying, replacing or extending a watermain within the distribution system subject to the following conditions:

3.1.1 The design of the watermain addition, modification, replacement or extension:

a) Has been prepared by a Professional Engineer;

b) Has been designed only to transmit water and has not been designed to treat water;

c) Satisfies the design criteria set out in the Ministry of the Environment and Climate Change publication “Watermain Design Criteria for Future Alterations Authorized under a Drinking Water Works Permit – June 2012”, as amended from time to time; and

d) Is consistent with or otherwise addresses the design objectives contained within the Ministry of the Environment and Climate Change publication “Design Guidelines for Drinking Water Systems, 2008”, as amended from time to time.

3.1.2 The maximum demand for water exerted by consumers who are serviced by the addition, modification, replacement or extension of the watermain will not result in an exceedance of the rated capacity of a treatment subsystem or the maximum flow rate for a treatment subsystem component as specified in the licence, or the creation of adverse conditions within the drinking water system.

3.1.3 The watermain addition, modification, replacement or extension will not adversely affect the distribution system's ability to maintain a minimum pressure of 140 kPa at ground level at all points in the distribution system under maximum day demand plus fire flow conditions.

3.1.4 Secondary disinfection will be provided to water within the added, modified, replaced or extended watermain to meet the requirements of O. Reg. 170/03.

3.1.5 The watermain addition, modification, replacement or extension is wholly located within the municipal boundary over which the owner has jurisdiction.

3.1.6 The owner of the drinking water system consents in writing to the watermain addition, modification, replacement or extension.

3.1.7 A Professional Engineer has verified in writing that the watermain addition, modification, replacement or extension meets the requirements of condition 3.1.1.

3.1.8 The owner of the drinking water system has verified in writing that the watermain addition, modification, replacement or extension meets the requirements of conditions 3.1.2 to 3.1.6.

3.2 The authorization for the addition, modification, replacement or extension of a watermain provided for in condition 3.1 does not include the addition, modification, replacement or extension of a watermain that:

3.2.1 Passes under or through a body of surface water, unless trenchless construction methods are used;

3.2.2 Has a nominal diameter greater than 750 mm;

3.2.3 Results in the fragmentation of the drinking water system; or

3.2.4 Connects to another drinking water system, unless:

a) Prior to construction, the owner of the drinking water system seeking the connection obtains written consent from the owner or owner's delegate of the drinking water system being connected to; and

b) The owner of the drinking water system seeking the connection retains a copy of the written consent from the owner or owner's delegate of the drinking water system being connected to as part of the record that is recorded and retained under condition 3.3.

3.3 The verifications required in conditions 3.1.7 and 3.1.8 shall be:

3.3.1 Recorded on "Form 1 – Record of Watermains Authorized as a Future Alteration", as published by the Ministry of the Environment and Climate Change, prior to the watermain addition, modification, replacement or extension being placed into service; and

3.3.2 Retained for a period of ten (10) years by the owner.

3.4 For greater certainty, the verification requirements set out in condition 3.3 do not apply to any addition, modification, replacement or extension in respect of the drinking water system which:

3.4.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or

3.4.2 Constitutes maintenance or repair of the drinking water system.

3.5 The document or file referenced in Column 1 of Table 1 of Schedule A of this drinking water works permit that sets out watermains shall be retained by the owner and shall be updated to include watermain additions, modifications, replacements and extensions within 12 months of the addition, modification, replacement or extension.

3.6 The updates required by condition 3.5 shall include watermain location relative to named streets or easements and watermain diameter.

4.0 Minor Modifications to the Drinking Water System

4.1 The drinking water system may be altered by adding, modifying or replacing the following components in the drinking water system:

4.1.1 Raw water pumps and treatment process pumps in the treatment system;

4.1.2 Coagulant feed systems in the treatment system, including the location and number of dosing points;

4.1.3 Valves;

4.1.4 Instrumentation and controls, including SCADA systems, and software associated with these devices;

4.1.5 Filter media, backwashing equipment and under-drains in the treatment system; or,

4.1.6 Spill containment works.

4.2 The drinking water system may be altered by adding, modifying, replacing or removing the following components in the drinking water system:

4.2.1 Treated water pumps and associated equipment;

4.2.2 Re-circulation devices within distribution system storage facilities;

4.2.3 In-line mixing equipment;

4.2.4 Chemical metering pumps and chemical handling pumps;

4.2.5 Chemical storage tanks (excluding fuel storage tanks) and associated equipment; or,

4.2.6 Measuring and monitoring devices that are not required by regulation, by a condition in the Drinking Water Works Permit, or by a condition otherwise imposed by the Ministry of the Environment and Climate Change.

4.3 The drinking water system may be altered by replacing the following:

4.3.1 Raw water piping, treatment process piping or treated water piping within the treatment subsystem;

4.3.2 Fuel storage tanks and spill containment works, and associated equipment; or

4.3.3 Coagulants and pH adjustment chemicals, where the replacement chemicals perform the same function;

a) Prior to making any alteration to the drinking water system under condition 4.3.3, the owner shall undertake a review of the impacts that the alteration might have on corrosion control or other treatment processes; and

b) The owner shall notify the Director in writing within thirty (30) days of any alteration made under condition 4.3.3 and shall provide the Director with a copy of the review.

4.4 Any alteration of the drinking water system made under conditions 4.1, 4.2 or 4.3 shall not result in:

4.4.1 An exceedance of a treatment subsystem rated capacity or a treatment subsystem component maximum flow rate as specified in the licence;

4.4.2 The bypassing of any unit process within a treatment subsystem;

4.4.3 A deterioration in the quality of drinking water provided to consumers;

4.4.4 A reduction in the reliability or redundancy of any component of the drinking water system;

4.4.5 A negative impact on the ability to undertake compliance and other monitoring necessary for the operation of the drinking water system; or

4.4.6 An adverse effect on the environment.

4.5 The owner shall verify in writing that any addition, modification, replacement or removal of drinking water system components in accordance with conditions 4.1, 4.2 or 4.3 has met the requirements of the conditions listed in condition 4.4.

4.6 The verifications and documentation required in condition 4.5 shall be:

4.6.1 Recorded on "Form 2 – Record of Minor Modifications or Replacements to the Drinking Water System", as published by the Ministry of the Environment and Climate Change, prior to the modified or replaced components being placed into service; and

4.6.2 Retained for a period of ten (10) years by the owner.

4.7 For greater certainty, the verification requirements set out in conditions 4.5 and 4.6 do not apply to any addition, modification, replacement or removal in respect of the drinking water system which:

4.7.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or

4.7.2 Constitutes maintenance or repair of the drinking water system.

4.8 The owner shall update any drawings maintained for the drinking water system to reflect the modification or replacement of the works, where applicable.

5.0 Equipment with Emissions to the Air

5.1 The drinking water system may be altered by adding, modifying or replacing any of the following drinking water system components that may discharge or alter the rate or manner of a discharge of a compound of concern to the atmosphere:

5.1.1 Any equipment, apparatus, mechanism or thing that is used for the transfer of outdoor air into a building or structure that is not a cooling tower;

5.1.2 Any equipment, apparatus, mechanism or thing that is used for the transfer of indoor air out of a space used for the production, processing, repair, maintenance or storage of goods or materials, including chemical storage;

5.1.3 Laboratory fume hoods used for drinking water testing, quality control and quality assurance purposes;

5.1.4 Low temperature handling of compounds with a vapor pressure of less than 1 kilopascal;

5.1.5 Maintenance welding stations;

5.1.6 Minor painting operations used for maintenance purposes;

5.1.7 Parts washers for maintenance shops;

5.1.8 Emergency chlorine and ammonia gas scrubbers and absorbers;

5.1.9 Venting for activated carbon units for drinking water taste and odour control;

5.1.10 Venting for a stripping unit for methane removal from a groundwater supply;

5.1.11 Venting for an ozone treatment unit;

5.1.12 Natural gas or propane fired boilers, water heaters, space heaters and make-up air units with a total facility-wide heat input rating of less than 20 million kilojoules per hour, and with an individual fuel energy input of less than or equal to 10.5 gigajoules per hour; or

5.1.13 Emergency generators that fire No. 2 fuel oil (diesel fuel) with a sulphur content of 0.5 per cent or less measured by weight, natural gas, propane, gasoline or biofuel, and that are used for emergency duty only with periodic testing.

5.2 The owner shall not add, modify or replace a drinking water system component set out in condition 5.1 for an activity that is not directly related to the treatment and/or distribution of drinking water.

5.3 The emergency generators identified in condition 5.1.13 shall not be used for non-emergency purposes including the generation of electricity for sale or for peak shaving purposes.

5.4 The owner shall prepare an emission summary table for nitrogen oxide emissions only, for each addition, modification or replacement of emergency generators identified in condition 5.1.13.

Performance Limits

5.5 The owner shall ensure that a drinking water system component identified in conditions 5.1.1 to 5.1.13 is operated at all times to comply with the following limits:

5.5.1 For equipment other than emergency generators, the maximum concentration of any compound of concern at a point of impingement shall not exceed the corresponding point of impingement limit;

5.5.2 For emergency generators, the maximum concentration of nitrogen oxides at sensitive populations shall not exceed the applicable point of impingement limit, and at non-sensitive populations shall not exceed the Ministry of the Environment and Climate Change half-hourly screening level of 1880 ug/m^3 as amended; and

5.5.3 The noise emissions comply at all times with the limits set out in publication NPC-300, as applicable.

5.6 The owner shall verify in writing that any addition, modification or replacement of works in accordance with condition 5.1 has met the requirements of the conditions listed in condition 5.5.

5.7 The owner shall document how compliance with the performance limits outlined in condition 5.5.3 is being achieved, through noise abatement equipment and/or operational procedures.

5.8 The verifications and documentation required in conditions 5.6 and 5.7 shall be:

5.8.1 Recorded on “Form 3 – Record of Addition, Modification or Replacement of Equipment Discharging a Contaminant of Concern to the Atmosphere”, as published by the Ministry of the Environment and Climate Change, prior to the additional, modified or replacement equipment being placed into service; and

5.8.2 Retained for a period of ten (10) years by the owner.

5.9 For greater certainty, the verification and documentation requirements set out in conditions 5.6 and 5.8 do not apply to any addition, modification or replacement in respect of the drinking water system which:

5.9.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or

5.9.2 Constitutes maintenance or repair of the drinking water system.

5.10 The owner shall update any drawings maintained for the works to reflect the addition, modification or replacement of the works, where applicable.

6.0 Previously Approved Works

6.1 The owner may add, modify, replace or extend, and operate part of a municipal drinking water system if:

6.1.1 An approval was issued after January 1, 2004 under section 36 of the SDWA in respect of the addition, modification, replacement or extension and operation of that part of the municipal drinking water system;

6.1.2 The approval expired by virtue of subsection 36(4) of the SDWA; and

6.1.3 The addition, modification, replacement or extension commenced within five years of the date that activity was approved by the expired approval.

7.0 System-Specific Conditions

7.1 Not Applicable.

8.0 Source Protection

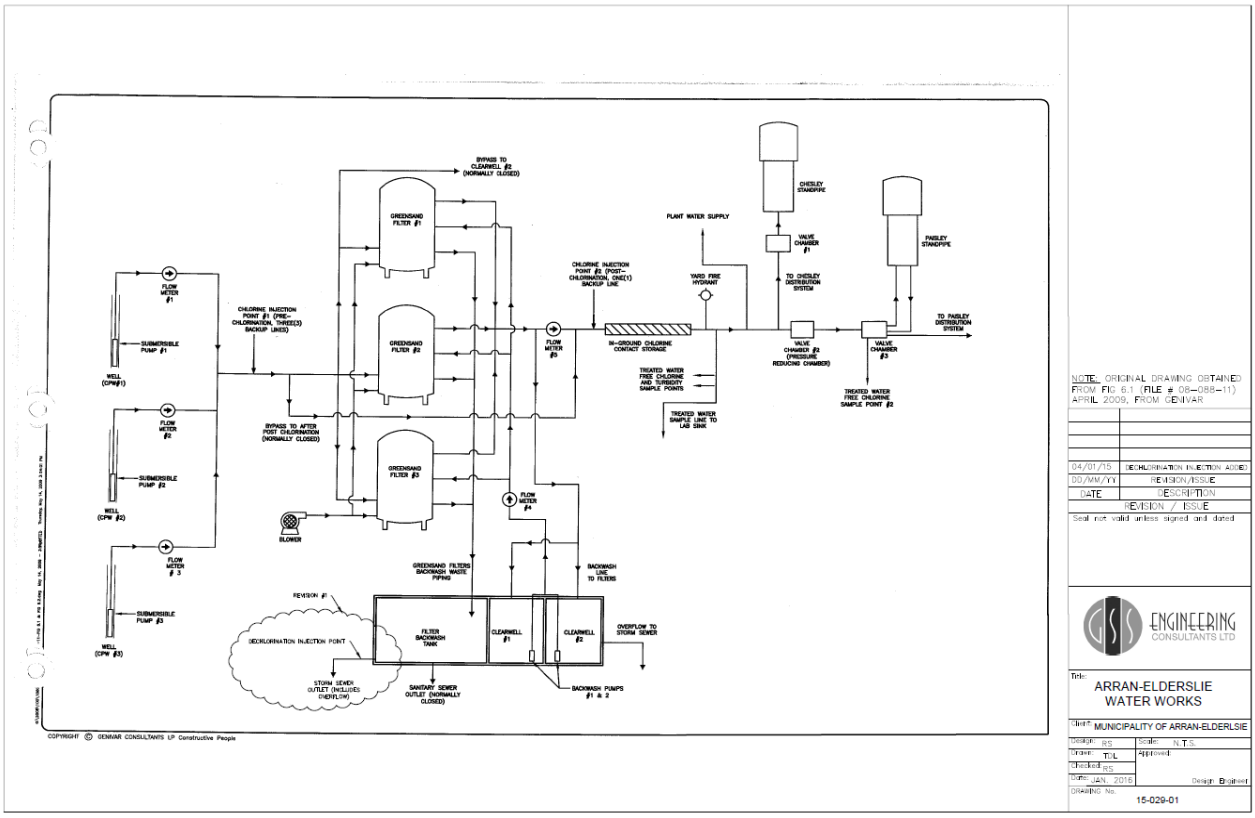
8.1 Not Applicable.

Schedule D: Process Flow Diagrams

System Owner	**The Corporation of the Municipality of Arran-Elderslie**
Permit Number	**079-202**
Drinking Water System Name	**Arran-Elderslie Drinking Water System**
Schedule D Issue Date	**May 19, 2017**

1.0 Process Flow Diagrams

Arran-Elderslie Water Treatment Plant



[Source: January 11, 2016 email from GSS Engineering Consultants Ltd. to MOECC]

Ontario

DRINKING WATER WORKS PERMIT

Permit Number: 079-202
Issue Number: 3

Pursuant to the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32, and the regulations made thereunder and subject to the limitations thereof, this drinking water works permit is issued under Part V of the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32 to:

The Corporation of the Municipality of Arran-Elderslie

PO Box 70
1925 Bruce Road #10
Chesley ON N0G 1L0

For the following municipal residential drinking water system:

Arran-Elderslie Drinking Water System

This drinking water works permit includes the following:

Schedule	Description
Schedule A	Drinking Water System Description
Schedule B	General
Schedule C	All documents issued as Schedule C to this drinking water works permit which authorize alterations to the drinking water system
Schedule D	Process Flow Diagrams

DATED at TORONTO this 14th day of January, 2016

Signature

Aziz Ahmed, P.Eng.
Director
Part V, *Safe Drinking Water Act*, 2002

Schedule A: Drinking Water System Description

System Owner	**The Corporation of the Municipality of Arran-Elderslie**
Permit Number	**079-202**
Drinking Water System Name	**Arran-Elderslie Drinking Water System**
Schedule A Issue Date	**January 14th, 2016**

1.0 System Description

1.1 The following is a summary description of the works comprising the above drinking water system:

Overview

The **Arran-Elderslie Drinking Water System** consists of three (3) ground water wells, one (1) drinking water treatment plant, two (2) standpipes, one (1) rechlorination facility, a 300 mm diameter trunk watermain approximately 15.7 km long connecting the Chesley water distribution system to the Paisley system and approximately 34 kilometers of distribution watermains.

Ground Water Supplies

CPW1

Location	129, 4th Ave SE, Chesley, Ontario
UTM Coordinates	NAD 83 UTM Zone 17, 492856 m E, 4904691 m N
WWR No.	1401010
Source	Groundwater (Non-GUDI)
Description	340 mm diameter x approximately 20 m deep drilled groundwater well complete with a pitless adapter
Equipment	A submersible well pump rated at 20.8 L/s at 80.96 m TDH
Notes	

CPW2

Location	129, 4th Ave SE, Chesley, Ontario
UTM Coordinates	NAD 83 UTM Zone 17, 492848 m E, 4904726 m N
WWR No.	1407956
Source	Groundwater (Non-GUDI)
Description	324 mm diameter x 24.4 m deep drilled well complete with a pitless adapter
Equipment	A submersible well pump rated at 24.6 L/s at 80.12 m TDH
Notes	

CPW3

Location	129, 4th Ave SE, Chesley, Ontario
UTM Coordinates	NAD 83 UTM Zone 17, 493123 m E, 4904783 m N
WWR No.	1407957
Source	Groundwater (Non-GUDI)
Description	254 mm diameter x 38.1 m deep drilled well
Equipment	A submersible well pump rated at 34.1 L/s at 96.43 m TDH complete with a pitless adapter
Notes	

Treatment Facility

Arran-Elderslie Water Treatment Plant

Location	129 4th Ave. S.E., Chesley, Ontario
UTM Coordinates	NAD 83 UTM Zone 17, 492836 m E, 4904641 m N
Description	A water treatment plant building housing treatment equipment and all necessary instrumentation, controls and appurtenances
Pressure Filtration System	Three (3) pressure filtration vessels (2 duty, 1 standby) for iron and manganese removal containing approximately 300 mm of Anthracite and 500 mm of catalytic media, each vessel 2,745 mm in diameter by 1,700 mm high, providing a filtration rate of 19.6 m/h, at a rated capacity of 2,781 m^3/day per filter and discharging to the clearwell
	Two (2) filter backwash pumps (1 pump per clearwell cell) each rated at 74.5 L/s at 15.55 m TDH complete with all necessary electrical and controls
Residuals Management System	One (1) backwash wastewater holding tank approximately 7 m x 13 m x 3 m in size discharging supernatant by gravity to the storm sewer or to the Saugeen River. Settled sludge is discharged to the Chesley Lagoon System
Dechlorination System	Two calcium thiosulphate (2) chemical feed pumps, (1 duty, 1 standby) to dechlorinate filter backwash wastewater prior to disposal to the Saugeen River
	One (1) calcium thiosulphate chemical storage tank
Chlorination System	Three (3) sodium hypochlorite chemical feed pumps (1 duty, 2 standby). Feed point for iron and manganese oxidation is the common header from CPW1, CPW2, and CPW3 upstream of the filters. Feed point for primary disinfection is upstream of the chlorine contact chamber
	A post chlorination system consisting of two (2) positive displacement diaphragm type sodium hypochlorite chemical feed pumps (1 duty, 1 standby)
	Three (3) sodium hypochlorite chemical storage tanks complete with all necessary controls, piping and spill containment
Chlorine Contact Pipe	An 86 m long x 600 mm diameter watermain providing chlorine contact time located on the plant site prior to entering the distribution system
Clearwell	An unbaffled two (2) cell, filtered water underground storage tank, each cell approximately 6 m x 8.2 m x 1.8 m water depth (total storage volume of 177 m^3)
Standby Power	A 230 kW diesel generator set with a 2,000 L double wall sub-base fuel tank complete with all necessary piping and controls
Monitoring Equipment	One (1) free chlorine residual analyzer measuring the free residual at the contact chamber effluent complete with alarm
	One (1) turbidity analyzer measuring the turbidity at the contact chamber effluent complete with alarm
	Three (3) flow meters measuring the raw water flow from each well, one (1) flow meter to measure the volume and rate of backwash, one (1) flow meter measure the volume and rate of treated water leaving the plant
Notes	

Off-Site Storage and Rechlorination

Chesley Standpipe

Location	84 Tower Road, Chesley, Ontario
UTM Coordinates	NAD 83 UTM 17: 492422 m E, 4906152 m N
Total Volume	2725 m^3
Notes	

Paisley Standpipe and Rechlorination Facility

Location	281 Alma Street, Paisley, Ontario
UTM Coordinates	NAD 83 UTM 17: 478438 m E, 4905401 m N
Total Volume	2430 m^3
Re-chlorination Equipment	Two (2) sodium hypochlorite chemical feed pumps (1 duty and 1 standby)
	One (1) sodium hypochlorite solution tank with secondary containment
Notes	

Watermains

1.2 Watermains within the distribution system comprise:

1.2.1 Watermains that have been set out in each document or file identified in column 1 of Table 1.

Table 1: Watermains

Column 1 Document or File Name	Column 2 Date
Chesley Water Distribution System	July 2013
Paisley Water Distribution System	July 2013

1.2.2 Watermains that have been added, modified, replaced or extended further to the provisions of Schedule C of this drinking water works permit on or after the date identified in column 2 of Table 1 for each document or file identified in column 1.

1.2.3 Watermains that have been added, modified, replaced or extended further to an authorization by the Director on or after the date identified in column 2 of Table 1 for each document or file identified in column 1.

Schedule B: General

System Owner	**The Corporation of the Municipality of Arran-Elderslie**
Permit Number	**079-202**
Drinking Water System Name	**Arran-Elderslie Drinking Water System**
Schedule B Issue Date	**January 14th, 2016**

1.0 Applicability

1.1 In addition to any other requirements, the drinking water system identified above shall be altered and operated in accordance with the conditions of this drinking water works permit and the licence.

1.2 The definitions and conditions of the licence shall also apply to this drinking water works permit.

2.0 Alterations to the Drinking Water System

2.1 Any document issued by the Director as a Schedule C to this drinking water works permit shall provide authority to alter the drinking water system in accordance, where applicable, with the conditions of this drinking water works permit and the licence.

2.2 All Schedule C documents issued by the Director for the drinking water system shall form part of this drinking water works permit.

2.3 All parts of the drinking water system in contact with drinking water which are:

2.3.1 Added, modified, replaced, extended; or

2.3.2 Taken out of service for inspection, repair or other activities that may lead to contamination,

shall be disinfected before being put into service in accordance with the provisions of the AWWA C651 – Standard for Disinfecting Water Mains; AWWA C652 – Standard for Disinfection of Water-Storage Facilities; AWWA C653 – Standard for Disinfection of Water Treatment Plants; or AWWA C654 – Standard for Disinfection of Wells; or an equivalent procedure.

2.4 The owner shall notify the Director within thirty (30) days of the placing into service or the completion of any addition, modification, replacement or extension of the drinking water system which had been authorized through:

2.4.1 Schedule B to this drinking water works permit which would require an alteration of the description of a drinking water system component described in Schedule A of this drinking water works permit;

2.4.2 Any Schedule C to this drinking water works permit respecting works other than watermains; or

2.4.3 Any approval issued prior to the issue date of the first drinking water works permit respecting works other than watermains which were not in service at the time of the issuance of the first drinking water works permit.

2.5 For greater certainty, the notification requirements set out in condition 2.4 do not apply to any addition, modification, replacement or extension in respect of the drinking water system which:

2.5.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03;

2.5.2 Constitutes maintenance or repair of the drinking water system; or

2.5.3 Is a watermain authorized by condition 3.1 of Schedule B of this drinking water works permit.

2.6 The owner shall notify the legal owner of any part of the drinking water system that is prescribed as a municipal drinking water system by section 2 of O. Reg. 172/03 of the requirements of the licence and this drinking water works permit as applicable to the prescribed system.

2.7 For greater certainty, any alteration to the drinking water system made in accordance with this drinking water works permit may only be carried out after other legal obligations have been complied with including those arising from the *Environmental Assessment Act*, *Niagara Escarpment Planning and Development Act*, *Oak Ridges Moraine Conservation Act, 2001* and *Greenbelt Act, 2005*.

3.0 Watermain Additions, Modifications, Replacements and Extensions

3.1 The drinking water system may be altered by adding, modifying, replacing or extending a watermain within the distribution system subject to the following conditions:

3.1.1 The design of the watermain addition, modification, replacement or extension:

a) Has been prepared by a Professional Engineer;

b) Has been designed only to transmit water and has not been designed to treat water;

c) Satisfies the design criteria set out in the Ministry of the Environment and Climate Change publication “Watermain Design Criteria for Future Alterations Authorized under a Drinking Water Works Permit – June 2012”, as amended from time to time; and

d) Is consistent with or otherwise addresses the design objectives contained within the Ministry of the Environment and Climate Change publication “Design Guidelines for Drinking Water Systems, 2008”, as amended from time to time.

3.1.2 The maximum demand for water exerted by consumers who are serviced by the addition, modification, replacement or extension of the watermain will not result in an exceedance of the rated capacity of a treatment subsystem or the maximum flow rate for a treatment subsystem component as specified in the licence, or the creation of adverse conditions within the drinking water system.

3.1.3 The watermain addition, modification, replacement or extension will not adversely affect the distribution system's ability to maintain a minimum pressure of 140 kPa at ground level at all points in the distribution system under maximum day demand plus fire flow conditions.

3.1.4 Secondary disinfection will be provided to water within the added, modified, replaced or extended watermain to meet the requirements of O. Reg. 170/03.

3.1.5 The watermain addition, modification, replacement or extension is wholly located within the municipal boundary over which the owner has jurisdiction.

3.1.6 The owner of the drinking water system consents in writing to the watermain addition, modification, replacement or extension.

3.1.7 A Professional Engineer has verified in writing that the watermain addition, modification, replacement or extension meets the requirements of condition 3.1.1.

3.1.8 The owner of the drinking water system has verified in writing that the watermain addition, modification, replacement or extension meets the requirements of conditions 3.1.2 to 3.1.6.

3.2 The authorization for the addition, modification, replacement or extension of a watermain provided for in condition 3.1 does not include the addition, modification, replacement or extension of a watermain that:

3.2.1 Passes under or through a body of surface water, unless trenchless construction methods are used;

3.2.2 Has a nominal diameter greater than 750 mm;

3.2.3 Results in the fragmentation of the drinking water system; or

3.2.4 Connects to another drinking water system, unless:

a) Prior to construction, the owner of the drinking water system seeking the connection obtains written consent from the owner or owner's delegate of the drinking water system being connected to; and

b) The owner of the drinking water system seeking the connection retains a copy of the written consent from the owner or owner's delegate of the drinking water system being connected to as part of the record that is recorded and retained under condition 3.3.

3.3 The verifications required in conditions 3.1.7 and 3.1.8 shall be:

3.3.1 Recorded on "Form 1 – Record of Watermains Authorized as a Future Alteration", as published by the Ministry of the Environment and Climate Change, prior to the watermain addition, modification, replacement or extension being placed into service; and

3.3.2 Retained for a period of ten (10) years by the owner.

3.4 For greater certainty, the verification requirements set out in condition 3.3 do not apply to any addition, modification, replacement or extension in respect of the drinking water system which:

3.4.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or

3.4.2 Constitutes maintenance or repair of the drinking water system.

3.5 The document or file referenced in Column 1 of Table 1 of Schedule A of this drinking water works permit that sets out watermains shall be retained by the owner and shall be updated to include watermain additions, modifications, replacements and extensions within 12 months of the addition, modification, replacement or extension.

3.6 The updates required by condition 3.5 shall include watermain location relative to named streets or easements and watermain diameter.

4.0 Minor Modifications to the Drinking Water System

4.1 The drinking water system may be altered by adding, modifying or replacing the following components in the drinking water system:

4.1.1 Raw water pumps and treatment process pumps in the treatment system;

4.1.2 Coagulant feed systems in the treatment system, including the location and number of dosing points;

4.1.3 Valves;

4.1.4 Instrumentation and controls, including SCADA systems, and software associated with these devices;

4.1.5 Filter media, backwashing equipment and under-drains in the treatment system; or,

4.1.6 Spill containment works.

4.2 The drinking water system may be altered by adding, modifying, replacing or removing the following components in the drinking water system:

4.2.1 Treated water pumps and associated equipment;

4.2.2 Re-circulation devices within distribution system storage facilities;

4.2.3 In-line mixing equipment;

4.2.4 Chemical metering pumps and chemical handling pumps;

4.2.5 Chemical storage tanks (excluding fuel storage tanks) and associated equipment; or,

4.2.6 Measuring and monitoring devices that are not required by regulation, by a condition in the Drinking Water Works Permit, or by a condition otherwise imposed by the Ministry of the Environment and Climate Change.

4.3 The drinking water system may be altered by replacing the following:

4.3.1 Raw water piping, treatment process piping or treated water piping within the treatment subsystem;

4.3.2 Fuel storage tanks and spill containment works, and associated equipment; or

4.3.3 Coagulants and pH adjustment chemicals, where the replacement chemicals perform the same function;

a) Prior to making any alteration to the drinking water system under condition 4.3.3, the owner shall undertake a review of the impacts that the alteration might have on corrosion control or other treatment processes; and

b) The owner shall notify the Director in writing within thirty (30) days of any alteration made under condition 4.3.3 and shall provide the Director with a copy of the review.

4.4 Any alteration of the drinking water system made under conditions 4.1, 4.2 or 4.3 shall not result in:

4.4.1 An exceedance of a treatment subsystem rated capacity or a treatment subsystem component maximum flow rate as specified in the licence;

4.4.2 The bypassing of any unit process within a treatment subsystem;

4.4.3 A deterioration in the quality of drinking water provided to consumers;

4.4.4 A reduction in the reliability or redundancy of any component of the drinking water system;

4.4.5 A negative impact on the ability to undertake compliance and other monitoring necessary for the operation of the drinking water system; or

4.4.6 An adverse effect on the environment.

4.5 The owner shall verify in writing that any addition, modification, replacement or removal of drinking water system components in accordance with conditions 4.1, 4.2 or 4.3 has met the requirements of the conditions listed in condition 4.4.

4.6 The verifications and documentation required in condition 4.5 shall be:

4.6.1 Recorded on "Form 2 – Record of Minor Modifications or Replacements to the Drinking Water System", as published by the Ministry of the Environment and Climate Change, prior to the modified or replaced components being placed into service; and

4.6.2 Retained for a period of ten (10) years by the owner.

4.7 For greater certainty, the verification requirements set out in conditions 4.5 and 4.6 do not apply to any addition, modification, replacement or removal in respect of the drinking water system which:

4.7.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or

4.7.2 Constitutes maintenance or repair of the drinking water system.

4.8 The owner shall update any drawings maintained for the drinking water system to reflect the modification or replacement of the works, where applicable.

5.0 Equipment with Emissions to the Air

5.1 The drinking water system may be altered by adding, modifying or replacing any of the following drinking water system components that may discharge or alter the rate or manner of a discharge of a compound of concern to the atmosphere:

5.1.1 Any equipment, apparatus, mechanism or thing that is used for the transfer of outdoor air into a building or structure that is not a cooling tower;

5.1.2 Any equipment, apparatus, mechanism or thing that is used for the transfer of indoor air out of a space used for the production, processing, repair, maintenance or storage of goods or materials, including chemical storage;

5.1.3 Laboratory fume hoods used for drinking water testing, quality control and quality assurance purposes;

5.1.4 Low temperature handling of compounds with a vapor pressure of less than 1 kilopascal;

5.1.5 Maintenance welding stations;

5.1.6 Minor painting operations used for maintenance purposes;

5.1.7 Parts washers for maintenance shops;

5.1.8 Emergency chlorine and ammonia gas scrubbers and absorbers;

5.1.9 Venting for activated carbon units for drinking water taste and odour control;

5.1.10 Venting for a stripping unit for methane removal from a groundwater supply;

5.1.11 Venting for an ozone treatment unit;

5.1.12 Natural gas or propane fired boilers, water heaters, space heaters and make-up air units with a total facility-wide heat input rating of less than 20 million kilojoules per hour, and with an individual fuel energy input of less than or equal to 10.5 gigajoules per hour; or

5.1.13 Emergency generators that fire No. 2 fuel oil (diesel fuel) with a sulphur content of 0.5 per cent or less measured by weight, natural gas, propane, gasoline or biofuel, and that are used for emergency duty only with periodic testing.

5.2 The owner shall not add, modify or replace a drinking water system component set out in condition 5.1 for an activity that is not directly related to the treatment and/or distribution of drinking water.

5.3 The emergency generators identified in condition 5.1.13 shall not be used for non-emergency purposes including the generation of electricity for sale or for peak shaving purposes.

5.4 The owner shall prepare an emission summary table for nitrogen oxide emissions only, for each addition, modification or replacement of emergency generators identified in condition 5.1.13.

Performance Limits

5.5 The owner shall ensure that a drinking water system component identified in conditions 5.1.1 to 5.1.13 is operated at all times to comply with the following limits:

5.5.1 For equipment other than emergency generators, the maximum concentration of any compound of concern at a point of impingement shall not exceed the corresponding point of impingement limit;

5.5.2 For emergency generators, the maximum concentration of nitrogen oxides at sensitive populations shall not exceed the applicable point of impingement limit, and at non-sensitive populations shall not exceed the Ministry of the Environment and Climate Change half-hourly screening level of 1880 ug/m^3 as amended; and

5.5.3 The noise emissions comply at all times with the limits set out in publication NPC-300, as applicable.

5.6 The owner shall verify in writing that any addition, modification or replacement of works in accordance with condition 5.1 has met the requirements of the conditions listed in condition 5.5.

5.7 The owner shall document how compliance with the performance limits outlined in condition 5.5.3 is being achieved, through noise abatement equipment and/or operational procedures.

5.8 The verifications and documentation required in conditions 5.6 and 5.7 shall be:

5.8.1 Recorded on “Form 3 – Record of Addition, Modification or Replacement of Equipment Discharging a Contaminant of Concern to the Atmosphere”, as published by the Ministry of the Environment and Climate Change, prior to the additional, modified or replacement equipment being placed into service; and

5.8.2 Retained for a period of ten (10) years by the owner.

5.9 For greater certainty, the verification and documentation requirements set out in conditions 5.6 and 5.8 do not apply to any addition, modification or replacement in respect of the drinking water system which:

5.9.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or

5.9.2 Constitutes maintenance or repair of the drinking water system.

5.10 The owner shall update any drawings maintained for the works to reflect the addition, modification or replacement of the works, where applicable.

6.0 Previously Approved Works

6.1 The owner may add, modify, replace or extend, and operate part of a municipal drinking water system if:

6.1.1 An approval was issued after January 1, 2004 under section 36 of the SDWA in respect of the addition, modification, replacement or extension and operation of that part of the municipal drinking water system;

6.1.2 The approval expired by virtue of subsection 36(4) of the SDWA; and

6.1.3 The addition, modification, replacement or extension commenced within five years of the date that activity was approved by the expired approval.

7.0 System-Specific Conditions

7.1 Not Applicable.

8.0 Source Protection

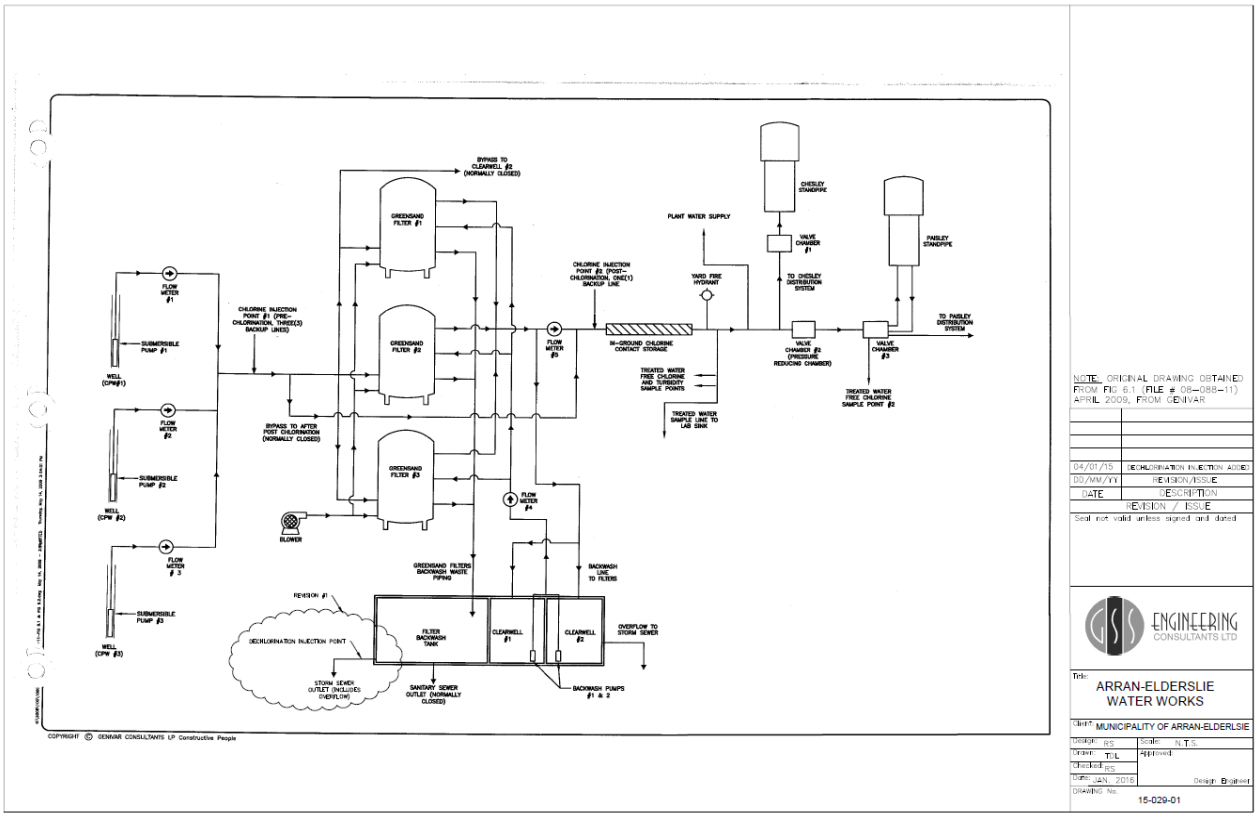
8.1 Not Applicable.

Schedule D: Process Flow Diagrams

System Owner	**The Corporation of the Municipality of Arran-Elderslie**
Permit Number	**079-202**
Drinking Water System Name	**Arran-Elderslie Drinking Water System**
Schedule D Issue Date	**January 14th, 2016**

1.0 Process Flow Diagrams

Arran-Elderslie Water Treatment Plant



[Source: January 11, 2016 email from GSS Engineering Consultants Ltd. to MOECC]

APPENDIX D

WATER METER CALIBRATION

Endress Hauser ProMag Series
Verification Report

AS FOUND CERTIFICATION

FORWARD FLOW DIRECTION

PASS

FLOWMETRIX

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

VER. BY - FM *Paris Machuk*

Quality Management Standards Information - Reference equipment and instrumentation used to conduct this verification test is found in our AC-QMS document at the time this test was

EQUIPMENT DETAIL

[MUT] MANUFACTURER	ENDRESS & HAUSER
MODEL	Promag 50W
CONVERTER S/N:	7A045816000
FUSE	On board Pull Plug
PLANT ID	Distribution Boundry Meter 3
METER ID	Distribution 25 Side Road
FIT ID	N/A
CLIENT TAG	N/A
OTHER	N/A
GPS COORDINATES	N44 17.950 W081 07.321
VERIFICATION DATE	April 23, 2019
CAL. FREQUENCY	Annual
CAL. DUE DATE	April, 2020

PROGRAMMING PARAMETERS

DIAMETER (DN)	mm	200
F.S. FLOW - MAG	LPS	314.150
F.S. RANGE - O/P	LPS	100.000
TUBE k-FACTOR		1.04550
TUBE zero		0

FORWARD TOTALIZER INFORMATION

AS FOUND	1548635	M3
AS LEFT	1548662	M3
DIFFERENCE	27	M3

TEST CRITERIA

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

COMPONENTS TESTED

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

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

FLOW TUBE SIMULATION

				0.0	25.0	50.0	75.0	100.0	LPS
				0.0	8.0	15.9	23.9	31.8	% F.S. Flow
				0.0	25.0	50.0	75.0	100.0	% F.S. Range
REF. FLOW RATE				**0.000**	**25.000**	**50.000**	**75.000**	**100.000**	LPS
MUT [Reading]				0.000	24.933	49.838	74.785	99.723	LPS
MUT [Difference]				0.000	-0.067	-0.162	-0.215	-0.277	LPS
MUT [% Error]				n/a	-0.27	-0.32	0.00	-0.28	%
mA OUTPUT				**4.000**	**8.000**	**12.000**	**16.000**	**20.000**	mA
MUT [Reading]	min.	4	mA	4.000	7.991	11.978	15.968	19.957	mA
MUT [Difference]	max.	20	mA	0.000	-0.009	-0.022	-0.032	-0.043	mA
MUT [% Error]				0.00	-0.11	-0.18	-0.20	-0.21	%

TOTALIZER			
REF. FLOW RATE	**100.000**	LPS
TOTALIZER [MUT]	10.0	M3
TEST TIME	99.96	SECONDS
TOTALIZER [REF]	9.996	M3
ERROR	0.04	%

COMMENTS

QUALITY MANAGEMENT STANDARDS INFO.

[QMS] INFORMATION	IDENT.	ID #
[REFERENCE] FTS	E&H-FC	3
PROCESS METER	DMM	11
ANALOG METER	AM	N/A
STOP WATCH	SW	Yes

RESULTS

TEST	AVG % o.r.	PASS FAIL
DISPLAY	-0.22	PASS
mA OUTPUT	-0.14	PASS
TOTALIZER	0.04	PASS

This report reflects the test results of the overall accuracy for the above flow converter using the specified manufacturers flow tube simulator to within the specified tolerance as identified within this report.

Endress Hauser ProMag Series
Verification Report

AS FOUND CERTIFICATION

FORWARD FLOW DIRECTION

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

VER. BY - FM *Paris Machuk*

Quality Management Standards Information - Reference equipment and instrumentation used to conduct this verification test is found in our AC-QMS document at the time this test was

EQUIPMENT DETAIL

[MUT] MANUFACTURER	ENDRESS & HAUSER
MODEL	Promag 50W
CONVERTER S/N:	79051D16000
FUSE	On board Pull Plug
PLANT ID	Chesley WTP
METER ID	Distribution (FIT-5)
FIT ID	FIT-5
CLIENT TAG	F-5
OTHER	N/A
GPS COORDINATES	N44 17.780 W081 5.322
VERIFICATION DATE	April 23, 2019
CAL. FREQUENCY	Annual
CAL. DUE DATE	April, 2020

PROGRAMMING PARAMETERS

DIAMETER (DN)	mm	200
F.S. FLOW - MAG	LPS	314.150
F.S. RANGE - O/P	LPS	100.000
TUBE k-FACTOR		1.05500
TUBE zero		0

FORWARD TOTALIZER INFORMATION

AS FOUND	4894070	M3
AS LEFT	4894112	M3
DIFFERENCE	42	M3

TEST CRITERIA

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

COMPONENTS TESTED

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

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

FLOW TUBE SIMULATION

				0.0	25.0	50.0	75.0	100.0	LPS
				0.0	8.0	15.9	23.9	31.8	% F.S. Flow
				0.0	25.0	50.0	75.0	100.0	% F.S. Range
REF. FLOW RATE				**0.000**	**25.000**	**50.000**	**75.000**	**100.000**	LPS
MUT [Reading]				0.000	24.981	49.972	74.977	99.949	LPS
MUT [Difference]				0.000	-0.019	-0.028	-0.023	-0.051	LPS
MUT [% Error]				n/a	-0.08	-0.06	0.00	-0.05	%
mA OUTPUT				**4.000**	**8.000**	**12.000**	**16.000**	**20.000**	mA
MUT [Reading]	min.	4	mA	3.998	7.996	11.994	15.992	19.986	mA
MUT [Difference]	max.	20	mA	-0.002	-0.004	-0.006	-0.008	-0.014	mA
MUT [% Error]				-0.05	-0.05	-0.05	-0.05	-0.07	%

TOTALIZER			
REF. FLOW RATE	**100.000**	LPS
TOTALIZER [MUT]	16.0	M3
TEST TIME	164.07	SECONDS
TOTALIZER [REF]	16.407	M3
ERROR	-2.54	%

COMMENTS

QUALITY MANAGEMENT STANDARDS INFO.

[QMS] INFORMATION	IDENT.	ID #
[REFERENCE] FTS	E&H-FC	3
PROCESS METER	DMM	11
ANALOG METER	AM	N/A
STOP WATCH	SW	Yes

RESULTS

TEST	AVG % o.r.	PASS FAIL
DISPLAY	-0.05	PASS
mA OUTPUT	-0.05	PASS
TOTALIZER	-2.54	PASS

This report reflects the test results of the overall accuracy for the above flow converter using the specified manufacturers flow tube simulator to within the specified tolerance as identified within this report.

Endress Hauser ProMag Series
Verification Report

AS FOUND CERTIFICATION

FORWARD FLOW DIRECTION

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

VER. BY - FM *Paris Machuk*

Quality Management Standards Information - Reference equipment and instrumentation used to conduct this verification test is found in our AC-QMS document at the time this test was

EQUIPMENT DETAIL

[MUT] MANUFACTURER	ENDRESS & HAUSER
MODEL	Promag 50W
CONVERTER S/N:	7903D616000
FUSE	On board Pull Plug
PLANT ID	Chesley WTP
METER ID	Raw Well #1
FIT ID	FIT-1
CLIENT TAG	F-1
OTHER	N/A
GPS COORDINATES	N44 17.780 W081 5.322
VERIFICATION DATE	April 23, 2019
CAL. FREQUENCY	Annual
CAL. DUE DATE	April, 2020

PROGRAMMING PARAMETERS

DIAMETER (DN)	mm	150
F.S. FLOW - MAG	LPS	176.709
F.S. RANGE - O/P	LPS	50.000
TUBE k-FACTOR		1.00640
TUBE zero		0

FORWARD TOTALIZER INFORMATION

AS FOUND	1528055	M3
AS LEFT	1528068	M3
DIFFERENCE	13	M3

TEST CRITERIA

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

COMPONENTS TESTED

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

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

FLOW TUBE SIMULATION

				0.0	12.5	25.0	37.5	50.0	LPS
				0.0	7.1	14.1	21.2	28.3	% F.S. Flow
				0.0	25.0	50.0	75.0	100.0	% F.S. Range
REF. FLOW RATE				**0.0**	**12.5**	**25.0**	**37.5**	**50.0**	LPS
MUT [Reading]				0.0	12.5	25.0	37.5	50.0	LPS
MUT [Difference]				0.0	0.0	0.0	0.0	0.0	LPS
MUT [% Error]				n/a	0.00	0.00	0.00	0.00	%
mA OUTPUT				**4.000**	**8.000**	**12.000**	**16.000**	**20.000**	mA
MUT [Reading]	min.	4	mA	3.998	7.999	11.992	15.985	19.985	mA
MUT [Difference]	max.	20	mA	-0.002	-0.001	-0.008	-0.015	-0.015	mA
MUT [% Error]				-0.05	-0.01	-0.07	-0.09	-0.08	%

TOTALIZER			
REF. FLOW RATE	**50.000**	LPS
TOTALIZER [MUT]	4.0	M3
TEST TIME	78.66	SECONDS
TOTALIZER [REF]	3.933	M3
ERROR	1.68	%

COMMENTS

QUALITY MANAGEMENT STANDARDS INFO.

[QMS] INFORMATION	IDENT.	ID #
[REFERENCE] FTS	E&H-FC	3
PROCESS METER	DMM	11
ANALOG METER	AM	N/A
STOP WATCH	SW	Yes

RESULTS

TEST	AVG % o.r.	PASS FAIL
DISPLAY	0.00	PASS
mA OUTPUT	-0.06	PASS
TOTALIZER	1.68	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.

Endress Hauser
ProMag Series
Verification Report

AS FOUND CERTIFICATION

FORWARD FLOW DIRECTION

PASS

FLOWMETRIX

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

VER. BY - FM *Paris Machuk*

Quality Management Standards Information - Reference equipment and instrumentation used to conduct this verification test is found in our AC-QMS document at the time this test was

EQUIPMENT DETAIL		
[MUT] MANUFACTURER	ENDRESS & HAUSER	
MODEL	Promag 50W	
CONVERTER S/N:	79051A16000	
FUSE	On board Pull Plug	
PLANT ID	Chesley WTP	
METER ID	Raw Well #2	
FIT ID	FIT-2	
CLIENT TAG	F-2	
OTHER	N/A	
GPS COORDINATES	N44 17.780	W081 5.322
VERIFICATION DATE	April 23, 2019	
CAL. FREQUENCY	Annual	
CAL. DUE DATE	April, 2020	

PROGRAMMING PARAMETERS		
DIAMETER (DN)	mm	200
F.S. FLOW - MAG	LPS	314.150
F.S. RANGE - O/P	LPS	100.000
TUBE k-FACTOR		1.04530
TUBE zero		0

FORWARD TOTALIZER INFORMATION		
AS FOUND	1711181	M3
AS LEFT	1711201	M3
DIFFERENCE	20	M3

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

COMPONENTS TESTED	
CONVERTER DISPLAY	Yes
mA OUTPUT	Yes
TOTALIZER	Yes
ACCURACY BASED ON [% o.r.]	Yes

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

FLOW TUBE SIMULATION

				0.0	25.0	50.0	75.0	100.0	LPS
				0.0	8.0	15.9	23.9	31.8	% F.S. Flow
				0.0	25.0	50.0	75.0	100.0	% F.S. Range
REF. FLOW RATE				**0.0**	**25.0**	**50.0**	**75.0**	**100.0**	LPS
MUT [Reading]				0.0	25.0	50.0	75.0	99.9	LPS
MUT [Difference]				0.0	0.0	0.0	0.0	-0.1	LPS
MUT [% Error]				n/a	0.00	0.00	0.00	-0.10	%
mA OUTPUT				**4.000**	**8.000**	**12.000**	**16.000**	**20.000**	mA
MUT [Reading]	min.	4	mA	3.998	7.994	11.995	15.993	19.991	mA
MUT [Difference]	max.	20	mA	-0.002	-0.006	-0.005	-0.007	-0.009	mA
MUT [% Error]				-0.05	-0.08	-0.04	-0.04	-0.05	%

TOTALIZER			
REF. FLOW RATE	**100.000**	LPS
TOTALIZER [MUT]	6.0	M3
TEST TIME	59.00	SECONDS
TOTALIZER [REF]	5.900	M3
ERROR	1.67	%

COMMENTS

QUALITY MANAGEMENT STANDARDS INFO.

[QMS] INFORMATION	IDENT.	ID #
[REFERENCE] FTS	E&H-FC	3
PROCESS METER	DMM	11
ANALOG METER	AM	N/A
STOP WATCH	SW	Yes

RESULTS

TEST	AVG % o.r.	PASS FAIL
DISPLAY	-0.02	PASS
mA OUTPUT	-0.05	PASS
TOTALIZER	1.67	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.

Endress Hauser
ProMag Series
Verification Report

AS FOUND CERTIFICATION

FORWARD FLOW DIRECTION

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

VER. BY - FM *Paris Machuk*

Quality Management Standards Information - Reference equipment and instrumentation used to conduct this verification test is found in our AC-QMS document at the time this test was

EQUIPMENT DETAIL

[MUT] MANUFACTURER	ENDRESS & HAUSER
MODEL	Promag 50W
CONVERTER S/N:	79051B16000
FUSE	On board Pull Plug
PLANT ID	Chesley WTP
METER ID	Raw Well #3
FIT ID	FIT-3
CLIENT TAG	F-3
OTHER	N/A
GPS COORDINATES	N44 17.780 W081 5.322
VERIFICATION DATE	April 23, 2019
CAL. FREQUENCY	Annual
CAL. DUE DATE	April, 2020

PROGRAMMING PARAMETERS

DIAMETER (DN)	mm	200
F.S. FLOW - MAG	LPS	314.150
F.S. RANGE - O/P	LPS	100.000
TUBE k-FACTOR		1.05010
TUBE zero		0

FORWARD TOTALIZER INFORMATION

AS FOUND	1814592	M3
AS LEFT	1814612	M3
DIFFERENCE	20	M3

TEST CRITERIA

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

COMPONENTS TESTED

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

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

FLOW TUBE SIMULATION

				0.0	25.0	50.0	75.0	100.0	LPS
				0.0	8.0	15.9	23.9	31.8	% F.S. Flow
				0.0	25.0	50.0	75.0	100.0	% F.S. Range
REF. FLOW RATE				**0.0**	**25.0**	**50.0**	**75.0**	**100.0**	LPS
MUT [Reading]				0.0	25.0	50.0	75.0	99.9	LPS
MUT [Difference]				0.0	0.0	0.0	0.0	-0.1	LPS
MUT [% Error]				n/a	0.00	0.00	0.00	-0.10	%
mA OUTPUT				**4.000**	**8.000**	**12.000**	**16.000**	**20.000**	mA
MUT [Reading]	min.	4	mA	3.998	7.993	11.993	15.991	19.985	mA
MUT [Difference]	max.	20	mA	-0.002	-0.007	-0.007	-0.009	-0.015	mA
MUT [% Error]				-0.05	-0.09	-0.06	-0.06	-0.08	%

TOTALIZER			
REF. FLOW RATE	**100.000**	LPS
TOTALIZER [MUT]	5.0	M3
TEST TIME	49.94	SECONDS
TOTALIZER [REF]	4.994	M3
ERROR	0.12	%

COMMENTS

QUALITY MANAGEMENT STANDARDS INFO.

[QMS] INFORMATION	IDENT.	ID #
[REFERENCE] FTS	E&H-FC	3
PROCESS METER	DMM	11
ANALOG METER	AM	N/A
STOP WATCH	SW	Yes

RESULTS

TEST	AVG % o.r.	PASS FAIL
DISPLAY	-0.02	PASS
mA OUTPUT	-0.07	PASS
TOTALIZER	0.12	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.

Endress Hauser ProMag Series
Verification Report

AS FOUND CERTIFICATION

FORWARD FLOW DIRECTION

PASS

CLIENT DETAIL

CUSTOMER	Municipality of Arran-Elderslie
CONTACT	Mark O'leary
	Foreman Water & Wastewater
	Cell: 519-270-1929
	Bus: 519-363-3039 Ext. 42
	Fax: 519-363-2203
	E-mail: water@arran-elderslie.ca

VER. BY - FM *Paris Machuk*

Quality Management Standards Information - Reference equipment and instrumentation used to conduct this verification test is found in our AC-QMS document at the time this test was

EQUIPMENT DETAIL

[MUT] MANUFACTURER	ENDRESS & HAUSER
MODEL	Promag 50W
CONVERTER S/N:	7704E016000
FUSE	On board Pull Plug
PLANT ID	Chesley WTP
METER ID	Inlet Valve #1 (FIT-9)
FIT ID	FIT-9
CLIENT TAG	F-9
OTHER	N/A
GPS COORDINATES	N44 17.780 W081 5.322
VERIFICATION DATE	April 23, 2019
CAL. FREQUENCY	Annual
CAL. DUE DATE	April, 2022

PROGRAMMING PARAMETERS

DIAMETER (DN)	mm	100
F.S. FLOW - MAG	LPS	78.538
F.S. RANGE - O/P	LPS	100.000
TUBE k-FACTOR		1.17250
TUBE zero		0

FORWARD TOTALIZER INFORMATION

AS FOUND	1696305	M3
AS LEFT	1696332	M3
DIFFERENCE	27	M3

TEST CRITERIA

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

COMPONENTS TESTED

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

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

FLOW TUBE SIMULATION

				0.0	25.0	50.0	75.0	98.2	LPS
				0.0	31.8	63.7	95.5	125.0	% F.S. Flow
				0.0	25.0	50.0	75.0	98.2	% F.S. Range
REF. FLOW RATE				**0.000**	**25.000**	**50.000**	**75.000**	**98.175**	LPS
MUT [Reading]				0.000	24.989	49.982	74.970	98.136	LPS
MUT [Difference]				0.000	-0.011	-0.018	-0.030	-0.039	LPS
MUT [% Error]				n/a	-0.04	-0.04	0.00	-0.04	%
mA OUTPUT				**4.000**	**8.000**	**12.000**	**16.000**	**19.708**	mA
MUT [Reading]	min.	4	mA	3.999	7.997	11.995	15.993	19.698	mA
MUT [Difference]	max.	20	mA	-0.001	-0.003	-0.005	-0.007	-0.010	mA
MUT [% Error]				-0.02	-0.04	-0.04	-0.04	-0.05	%

TOTALIZER			
REF. FLOW RATE	**98.175**	LPS
TOTALIZER [MUT]	10.0	M3
TEST TIME	101.47	SECONDS
TOTALIZER [REF]	9.962	M3
ERROR	0.38	%

COMMENTS

Note: max. flow capabillity for this unit size is 98.175 l/s - therefore, max flow test only to 98.175% of full scale which is 100 l/s

QUALITY MANAGEMENT STANDARDS INFO.

[QMS] INFORMATION	IDENT.	ID #
[REFERENCE] FTS	E&H-FC	3
PROCESS METER	DMM	11
ANALOG METER	AM	N/A
STOP WATCH	SW	Yes

RESULTS

TEST	AVG % o.r.	PASS FAIL
DISPLAY	-0.03	PASS
mA OUTPUT	-0.04	PASS
TOTALIZER	0.38	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.

Endress Hauser ProMag Series
Verification Report

AS FOUND CERTIFICATION

FORWARD FLOW DIRECTION

PASS

FLOWMETRIX

CLIENT DETAIL	
CUSTOMER	Municipality of Arran-Elderslie
CONTACT	Mark O'leary
	Foreman Water & Wastewater
	Cell: 519-270-1929
	Bus: 519-363-3039 Ext. 42
	Fax: 519-363-2203
	E-mail: water@arran-elderslie.ca
VER. BY - FM	*Paris Machuk*

Quality Management Standards Information - Reference equipment and instrumentation used to conduct this verification test is found in our AC-QMS document at the time this test was

EQUIPMENT DETAIL		
[MUT] MANUFACTURER	ENDRESS & HAUSER	
MODEL	Promag 50W	
CONVERTER S/N:	7704DF16000	
FUSE	On board Pull Plug	
PLANT ID	Chesley WTP	
METER ID	Inlet Valve #2 (FIT-10)	
FIT ID	FIT-10	
CLIENT TAG	F-10	
OTHER	N/A	
GPS COORDINATES	N44 17.780	W081 5.322
VERIFICATION DATE	April 23, 2019	
CAL. FREQUENCY	Annual	
CAL. DUE DATE	April, 2022	

PROGRAMMING PARAMETERS		
DIAMETER (DN)	mm	100
F.S. FLOW - MAG	LPS	78.538
F.S. RANGE - O/P	LPS	100.000
TUBE k-FACTOR		1.17320
TUBE zero		0

FORWARD TOTALIZER INFORMATION		
AS FOUND	1666331	M3
AS LEFT	1666361	M3
DIFFERENCE	30	M3

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

COMPONENTS TESTED	
CONVERTER DISPLAY	Yes
mA OUTPUT	Yes
TOTALIZER	Yes
ACCURACY BASED ON [% o.r.]	Yes

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

FLOW TUBE SIMULATION

				0.0	25.0	50.0	75.0	98.2	LPS
				0.0	31.8	63.7	95.5	125.0	% F.S. Flow
				0.0	25.0	50.0	75.0	98.2	% F.S. Range
REF. FLOW RATE				**0.000**	**25.000**	**50.000**	**75.000**	**98.175**	LPS
MUT [Reading]				0.000	24.987	49.985	74.967	98.139	LPS
MUT [Difference]				0.000	-0.013	-0.015	-0.033	-0.036	LPS
MUT [% Error]				n/a	-0.05	-0.03	0.00	-0.04	%
mA OUTPUT				**4.000**	**8.000**	**12.000**	**16.000**	**19.708**	mA
MUT [Reading]	min.	4	mA	3.999	7.998	11.998	15.995	19.702	mA
MUT [Difference]	max.	20	mA	-0.001	-0.002	-0.002	-0.005	-0.006	mA
MUT [% Error]				-0.02	-0.02	-0.02	-0.03	-0.03	%

TOTALIZER			
REF. FLOW RATE	**98.175**	LPS
TOTALIZER [MUT]	10.0	M3
TEST TIME	101.27	SECONDS
TOTALIZER [REF]	9.942	M3
ERROR	0.58	%

COMMENTS

Note: max. flow capabillity for this unit size is 98.175 l/s - therefore, max flow test only to 98.175% of full scale which is 100 l/s

QUALITY MANAGEMENT STANDARDS INFO.

[QMS] INFORMATION	IDENT.	ID #
[REFERENCE] FTS	E&H-FC	3
PROCESS METER	DMM	11
ANALOG METER	AM	N/A
STOP WATCH	SW	Yes

RESULTS

TEST	AVG % o.r.	PASS FAIL
DISPLAY	-0.03	PASS
mA OUTPUT	-0.03	PASS
TOTALIZER	0.58	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.

Endress Hauser ProMag Series

Verification Report

AS FOUND CERTIFICATION

FORWARD FLOW DIRECTION

PASS

FLOWMETRIX

CLIENT DETAIL

CUSTOMER	Municipality of Arran-Elderslie
CONTACT	Mark O'leary
	Foreman Water & Wastewater
	Cell: 519-270-1929
	Bus: 519-363-3039 Ext. 42
	Fax: 519-363-2203
	E-mail: water@arran-elderslie.ca

VER. BY - FM *Paris Machuk*

Quality Management Standards Information - Reference equipment and instrumentation used to conduct this verification test is found in our AC-QMS document at the time this test was

EQUIPMENT DETAIL

[MUT] MANUFACTURER	ENDRESS & HAUSER
MODEL	Promag 50W
CONVERTER S/N:	7704DE16000
FUSE	On board Pull Plug
PLANT ID	Chesley WTP
METER ID	Inlet Valve #3 (FIT-11)
FIT ID	FIT-11
CLIENT TAG	F-11
OTHER	N/A
GPS COORDINATES	N44 17.780 W081 5.322
VERIFICATION DATE	April 23, 2019
CAL. FREQUENCY	Annual
CAL. DUE DATE	April, 2022

PROGRAMMING PARAMETERS

DIAMETER (DN)	mm	100
F.S. FLOW - MAG	LPS	78.538
F.S. RANGE - O/P	LPS	100.000
TUBE k-FACTOR		1.20800
TUBE zero		20

FORWARD TOTALIZER INFORMATION

AS FOUND	1631553	M3
AS LEFT	1631580	M3
DIFFERENCE	27	M3

TEST CRITERIA

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

COMPONENTS TESTED

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

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

FLOW TUBE SIMULATION

				0.0	25.0	50.0	75.0	98.2	LPS
				0.0	31.8	63.7	95.5	125.0	% F.S. Flow
				0.0	25.0	50.0	75.0	98.2	% F.S. Range
REF. FLOW RATE				**0.000**	**25.000**	**50.000**	**75.000**	**98.175**	LPS
MUT [Reading]				0.000	24.976	49.954	74.931	98.082	LPS
MUT [Difference]				0.000	-0.024	-0.046	-0.069	-0.093	LPS
MUT [% Error]				n/a	-0.10	-0.09	0.00	-0.09	%
mA OUTPUT				**4.000**	**8.000**	**12.000**	**16.000**	**19.708**	mA
MUT [Reading]	min.	4	mA	3.998	7.994	11.989	15.984	19.687	mA
MUT [Difference]	max.	20	mA	-0.002	-0.006	-0.011	-0.016	-0.021	mA
MUT [% Error]				-0.05	-0.08	-0.09	-0.10	-0.11	%

TOTALIZER			
REF. FLOW RATE	**98.175**	LPS
TOTALIZER [MUT]	11.0	M3
TEST TIME	112.03	SECONDS
TOTALIZER [REF]	10.999	M3
ERROR	0.01	%

COMMENTS

Note: max. flow capabillity for this unit size is 98.175 l/s - therefore, max flow test only to 98.175% of full scale which is 100 l/s

QUALITY MANAGEMENT STANDARDS INFO.

[QMS] INFORMATION	IDENT.	ID #
[REFERENCE] FTS	E&H-FC	3
PROCESS METER	DMM	11
ANALOG METER	AM	N/A
STOP WATCH	SW	Yes

RESULTS

TEST	AVG % o.r.	PASS FAIL
DISPLAY	-0.07	PASS
mA OUTPUT	-0.08	PASS
TOTALIZER	0.01	PASS

This report reflects the test results of the overall accuracy for the above flow converter using the specified manufacturers flow tube simulator to within the specified tolerance as identified within this report.

APPENDIX E

MECP INSPECTION REPORT

Ministry of the Environment, Conservation and Parks

Drinking Water and Environmental Compliance Division

Owen Sound District Office
101 17th St. E., 3rd Floor
Owen Sound ON N4K 0A5

Ministère de l'Environnement, de la Protection de la nature et des Parcs

Division de la conformité en matière d'eau potable et d'environnement

Bureau du district de Owen Sound
101, 17e rue Est, 3e étage
Owen Sound ON N4K 0A5

Ontario

July 10, 2018

Sent by Email: clerk@arran-elderslie.ca

The Corporation of the Municipality of Arran Elderslie
1925 Bruce County Rd 10,
Chesley, ON N0G 1L0
Attention: Peggy Rouse
Clerk

Dear Ms. Rouse:

Re: 2018/2019 Inspection Report 1-IHLO6
Arran-Elderslie Drinking Water System
Drinking Water Licence **No. 079-102**
Drinking Water Works Permit **No. 079-202**

The enclosed report documents findings of the inspection that was performed on June 1, 2018.

Two sections of the report, namely "Actions Required" and "Recommended Actions", specify due dates for the submission of information or plans to my attention (if applicable).

Please note that "Actions Required" are linked to incidents of non-compliance with regulatory requirements contained within an Act, a Regulation, or site-specific approvals, orders or instructions; "Recommended Actions" convey information that the owner or operating authority should consider implementing in order to conform with existing and emerging industry standards.

The report includes an Inspection Summary Rating Record as an appendix. This record forms part of the ministry's comprehensive, risk-based inspection process. The rating provides a quantitative measure of the inspection results for this specific drinking water system for the reporting year. An inspection rating that is less than 100 per cent does not mean that the drinking water from the system is unsafe. The primary goals of this assessment are to encourage ongoing improvement of drinking water systems and to measure this progress from year to year.

I would like to remind you that Section 19 of the Safe Drinking Water Act, 2002 (Standard of Care) creates a number of obligations for individuals who exercise decision-making authority over municipal drinking water systems, including members of municipal councils. "Taking Care

of Your Drinking Water: A guide for members of municipal council", a publication found on the Drinking Water Ontario website (http://www.ontario.ca/environment-and-energy/municipal-drinking-water-systems-licencing-registration-and-permits), provides further information about these obligations.

Should you have any questions regarding the content of the enclosed report, please do not hesitate to contact me.

Yours truly,

Ron Burrell

Ron Burrell
Provincial Officer
Phone: 519-371-5617
e-mail: ron.burrell@ontario.ca

Enclosure

ec: - Dr. Hazel Lynn, Medical Officer of Health, Grey-Bruce Health Unit
- Nancy Guest, Source Water Protection AA, Saugeen Valley Conservation Authority
- Mark O'Leary, Water/Sewer Foreman, Mun. of Arran-Elderslie
- Scott McLeod, Public Works Manager, Mun. of Arran-Elderslie
- Rakesh Sharma, Overall Responsible Operator, GSS Engineering Consultants Ltd.
- John Ritchie, Drinking Water Inspections Program Supervisor, MOECC

c: File SI-BR-AE-FO-540 (2018)

Ontario

Ministry of the Environment and Climate Change

ARRAN-ELDERSLIE DRINKING WATER SYSTEM

Inspection Report

Site Number:	220002725
Inspection Number:	1-IHLO6
Date of Inspection:	Jun 01, 2018
Inspected By:	Ron Burrell

OWNER INFORMATION:

Company Name:	ARRAN-ELDERSLIE, THE CORPORATION OF THE MUNICIPALITY OF		
Street Number:	1925	**Unit Identifier:**	
Street Name:	BRUCE COUNTY ROAD 10 Rd		
City:	CHESLEY		
Province:	ON	**Postal Code:**	N0G 1L0

CONTACT INFORMATION

Type:	Owner	**Name:**	Scott Mcleod
Phone:	(519) 363-3039 x42	**Fax:**	(519) 363-9336
Email:	works@arran-elderslie.ca		
Title:	Public Works Manager		

Type:	Owner	**Name:**	Mark O'Leary
Phone:	(519) 363-3039	**Fax:**	(519) 363-2203
Email:	water@arran-elderslie.ca		
Title:	Water/Sewer Foreman		

Type:	Clerk	**Name:**	Peggy Rouse
Phone:	(519) 363-3039	**Fax:**	(519) 363-2203
Email:	clerk@arran-elderslie.ca		
Title:	Clerk		

INSPECTION DETAILS:

Site Name:	ARRAN-ELDERSLIE DRINKING WATER SYSTEM
Site Address:	129 FORTH AVE SE CHESLY N0G 1L0
County/District:	Arran-Elderslie
MOECC District/Area Office:	Owen Sound Area Office
Health Unit:	GREY BRUCE HEALTH UNIT
Conservation Authority:	Saugeen Conservation
MNR Office:	Owen Sound Regional Office
Category:	Large Municipal Residential
Site Number:	220002725
Inspection Type:	Announced
Inspection Number:	1-IHLO6
Date of Inspection:	Jun 01, 2018
Date of Previous Inspection:	May 24, 2017

COMPONENTS DESCRIPTION

Site (Name):	MOE DWS Mapping		
Type:	DWS Mapping Point	**Sub Type:**	

Site (Name): WELL 1 COMMUNITY PARK (CPW1)

Type: Source **Sub Type:** Ground Water
Comments:
The Community Park Well (CPW1) is located on Lot 32, Concession 2 and the casing extends into the Arran Elderslie water treatment plant. The well is a 340 mm diameter by 20 meter deep drilled ground water well and was completed in 1948. CPW1 was rehabilitated in 2009.
The raw water is attained from the well using a submersible well pump (rated at 20.82 liters per second at a TDH of 80.96 m) and is conveyed through the treatment process via a 150 mm diameter discharge main.

Site (Name): WELL 2 COMMUNITY PARK "BALL DIAMOND" (CPW2)
Type: Source **Sub Type:** Ground Water
Comments:
The Community Park Well (CPW2) was drilled in December of 2001 and draws from the same aquifer as CPW1. CPW2 is a 324 mm diameter by 24.38 m deep drilled single cased, screened gravel walled well. The well is equipped with a submersible pump rated at 24.61 liters per second at a TDH of 80.12 m. The well is equipped with a pitless adaptor. The clay overburden layer existing at the site is 3.66 meters in depth as compared to the 11.3 meter layer at CPW1 which is approximately 17 meters to the south. The Community Park wells are designed to utilize the overburden aquifer in the area as it is a relatively unexploited source as most other wells in the area draw from the underlying dolostone bedrock aquifer. CPW2 was brought on-line with the new water treatment plant in March 2006.

Site (Name): WELL 3 COMMUNITY PARK "RACETRACK" (CPW3)
Type: Source **Sub Type:** Ground Water
Comments:
The Community Park Well (CPW3) was drilled to provide additional system capacity for the Arran-Elderslie water treatment plant project. The well was completed in November of 2002 and is an overburden-bedrock interface with a casing diameter of 254 mm. The well was drilled to a depth of 38.1 meters and utilizes the same aquifer as the existing Victoria Park Well. The well is equipped with a submersible pump rated at 34.07 liters per second at a TDH of 96.43 m and is completed with a pitless adaptor. The overburden material in the vicinity of CPW3 includes a 25 meter thick confining layer comprised of predominantly clay with varying amounts of sand and silt. The well was grouted to a depth of 30 meters to prevent surface water infiltration. CPW3 was brought on-line with the completion of the Arran-Elderslie water treatment plant.

Site (Name): WELL VICTORIA RAW
Type: Other **Sub Type:** Other
Comments:
The Victoria Park well was taken off-line and locked out on May 31, 2006. This well has been converted into a monitoring well. Monthly static water levels are to be measured and recorded. The well is a 200 mm diameter by 38.7 meter deep drilled groundwater well and was drilled and developed in 1937.

Site (Name): TW3/91
Type: Other **Sub Type:** Other
Comments:
TW3/91 is a monitoring well identified in the Permit To Take Water #8003-639PHB and is to be monitored for static water levels on a monthly basis.

Site (Name): ARRAN-ELDERSLIE WTP
Type: Treated Water POE **Sub Type:** Pumphouse
Comments:
The Arran-Elderslie water treatment facility treats source water from three (3) raw water supplies CPW1, CPW2 and CPW3.

The treatment equipment consists of three (3) pressure filtration vessels (2 duty and 1 standby) for iron and manganese removal. These vessels are rated at 2,781 cubic meters per day per filter providing a filtration rate of 19.6 m3/h and discharge into the clearwell below via a common header.
There is an unbaffled two (2) cell, filtered water underground storage tank with a total storage volume of 177 cubic meters.
Two (2) filter backwash pumps (1 per clearwell) rated at 74.5 L/s at 15.55 m TDH pump water for the backwashing of the pressure filters.
A sodium hypochlorite feed system used for iron and manganese oxidation and primary disinfection consists of three (3) positive displacement diaphragm type chemical feed pumps (2 duty and 1 standby) each pump rated at a minimum of 3 L/h.
A post chlorination system consists of two (2) positive displacement diaphragm type chemical feed pumps (1 duty and 1 standby). Each pump is rated at 1.4 L/h.
Three (3) sodium hypochlorite storage tanks each capable of storing a maximum of 1000 L are present for oxidation and disinfection purposes.
One (1) backwash wastewater holding tank (7 m x 13 m x 3 m) discharges supernatant by gravity to the storm sewer and the settled sludge to the municipal sewer.
A continuous on-line analyzer for turbidity and free chlorine residual monitors plant effluent quality.
All systems are provided with back-up power a 230 kW diesel generator set with a 2,000 L double wall sub-base fuel tank.
Chlorine contact time is achieved via a 86 m long, 600 mm diameter section of watermain located on the water treatment plant site prior to the treated water entering the distribution system.

Site (Name): STANDPIPE (CHESLEY)
Type: Other **Sub Type:** Reservoir
Comments:
A 2,725 cubic meter capacity concrete water storage tank situated in the north end of Chesley. The standpipe provides emergency and fire storage as well. It is designed for peak demand equalization.
An internal video inspection of this standpipe was conducted in August of 2014 with favourable results and no major items of concern identified. Prior to this, the standpipe had a conditional survey completed in May 2009, in which repair work was completed on the concrete interior as a result of the survey.

Site (Name): STANDPIPE (PAISLEY)
Type: Other **Sub Type:** Reservoir
Comments:
The standpipe located in Paisley has a total storage capacity of 2,300 cubic meters and effective volume of 1,137 cubic meters. This tower provides storage for fire fighting, as well as, flow equalization during times of increased demand. Modification to the Paisley standpipe in conjunction with the new water treatment project allows for water to enter the standpipe at approximately 2/3 of the standpipe height and discharge into the Paisley distribution system from the bottom of the standpipe. Cathodic protection was installed in this standpipe in May of 2006.
Paisley's Standpipe was repainted on the interior and exterior in July and August of 2009.

Site (Name): BOOSTER CHLORINATION STATION
Type: Other **Sub Type:** Booster Station
Comments:
The booster chlorination station consists of two (2) chlorine feed pumps rated at a minimum of 1.4 L/h and two (2) double-walled storage tanks. This station is located at the Paisley standpipe maintaining secondary disinfection throughout the distribution system in Paisley.

Site (Name): DISTRIBUTION SYSTEM
Type: Other **Sub Type:** Other

Comments:
The distribution system contains watermains in Chesley and Paisley and associated trunk watermain connecting distribution system piping from Chesley to the Paisley standpipe.
The Chesley distribution system serves approximately 2,187 residents. The watermains within the Chesley distribution system range in size from 25 mm diameter to 300 mm diameter. The total length of watermains in the Town of Chesley is 20,390 meters (~13% are less than 100 mm diameter, ~70% are between 100 and 200 mm diameter, ~18% are greater than 200 mm diameter). System pressure is provided by a standpipe. The Chesley portion of the distribution system also contains 99 fire hydrants, 319 valves as well as, six (6) blow offs to allow for dead-end flushing. The distribution system is also equipped with five (5) sampling stations.
The Paisley distribution system serves approximately 1,200 residents. The appurtenances on the system include 59 fire hydrants, 208 water valves including nine (9) blow-offs plus twelve (12) sample stations and one (1) standpipe equipped with a booster chlorination system.
The trunk watermain installed connecting the two distribution systems is approximately 15.7 km of 300 mm watermain. This watermain connects the Chesley distribution system to the Paisley standpipe, thus connecting the distribution systems.

Site (Name): VALVE CHAMBER
Type: Other **Sub Type:** Other
Comments:
The valve chamber is designed to lower the pressure in the watermain from 90 psi to 50 psi. The chamber includes a pressure reducing valve and a flow meter.

INSPECTION SUMMARY:

Introduction

- **The primary focus of this inspection is to confirm compliance with Ministry of the Environment and Climate Change (MOECC) legislation as well as evaluating conformance with ministry drinking water related policies and guidelines during the inspection period. The ministry utilizes a comprehensive, multi-barrier approach in the inspection of water systems that focuses on the source, treatment and distribution components as well as management practices.**

  This drinking water system is subject to the legislative requirements of the Safe Drinking Water Act, 2002 (SDWA) and regulations made therein, including Ontario Regulation 170/03, "Drinking Water Systems" (O.Reg. 170/03). This inspection has been conducted pursuant to Section 81 of the SDWA.

  This report is based on a "focused" inspection of the system. Although the inspection involved fewer activities than those normally undertaken in a detailed inspection, it contained critical elements required to assess key compliance issues. This system was chosen for a focused inspection because the system's performance met the ministry's criteria, most importantly that there were no deficiencies as identified in O.Reg. 172/03 over the past 3 years. The undertaking of a focused inspection at this drinking water system does not ensure that a similar type of inspection will be conducted at any point in the future.

  This inspection report does not suggest that all applicable legislation and regulations were evaluated. It remains the responsibility of the owner to ensure compliance with all applicable legislative and regulatory requirements.

  On June 1, 2018 Provincial Officer Ron Burrell from the Owen Sound MOECC inspected the Arran Elderslie Water Treatment Plant which is located in the Municipality of Arran-Elderslie. The inspection was conducted in conjunction with Operator, Christopher Legge from the municipality. The system is classed as a Large Municipal Residential Drinking Water System. The inspection review period is from the date of the previous inspection of May 24 2017 to June 1, 2018.

Source

- **The owner was maintaining the production well(s) in a manner sufficient to prevent entry into the well of surface water and other foreign materials.**

- **Measures were in place to protect the groundwater and/or GUDI source in accordance with any the Municipal Drinking Water Licence and Drinking Water Works Permit issued under Part V of the SDWA.**

Capacity Assessment

- **There was sufficient monitoring of flow as required by the Municipal Drinking Water Licence or Drinking Water Works Permit issued under Part V of the SDWA.**

- **The owner was in compliance with the conditions associated with maximum flow rate or the rated capacity conditions in the Municipal Drinking Water Licence issued under Part V of the SDWA.**

  The rated capacity for the system specified in Schedule C of Municipal Drinking Water License No. 079-102 is 5,564 m3/day.
  Permit to Take Water No. 3655-A3RPJL limits the combined daily taking from the three (3) production wells to 6,875.98 m3. Notwithstanding this, the permit only allows combined taking from production wells CPW1 and CPW2 at a rate of 3,273 m3/day for 120 days and a further reduced rate for the remainder of the year. Average daily

Capacity Assessment

usage for the entire system is generally around 1,000 m3 or less.

Treatment Processes

- **The owner had ensured that all equipment was installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit.**

- **The owner/operating authority was in compliance with the requirement to prepare Form 1 documents as required by their Drinking Water Works Permit during the inspection period.**

  Two (2) Form 1's were issued during the review period for watermain replacement in both Paisley and Chesley.

- **Records indicated that the treatment equipment was operated in a manner that achieved the design capabilities required under Ontario Regulation 170/03 or a Drinking Water Works Permit and/or Municipal Drinking Water Licence issued under Part V of the SDWA at all times that water was being supplied to consumers.**

- **Records confirmed that the water treatment equipment which provides chlorination or chloramination for secondary disinfection purposes was operated so that at all times and all locations in the distribution system the chlorine residual was never less than 0.05 mg/l free or 0.25 mg/l combined.**

Treatment Process Monitoring

- **Primary disinfection chlorine monitoring was conducted at a location approved by Municipal Drinking Water Licence and/or Drinking Water Works Permit issued under Part V of the SDWA, or at/near a location where the intended CT has just been achieved.**

- **The secondary disinfectant residual was measured as required for the distribution system.**

- **Operators were examining continuous monitoring test results and they were examining the results within 72 hours of the test.**

- **All continuous monitoring equipment utilized for sampling and testing required by O. Reg.170/03, or Municipal Drinking Water Licence or Drinking Water Works Permit or order, were equipped with alarms or shut-off mechanisms that satisfy the standards described in Schedule 6.**

- **Continuous monitoring equipment that was being utilized to fulfill O. Reg. 170/03 requirements was performing tests for the parameters with at least the minimum frequency specified in the Table in Schedule 6 of O. Reg. 170/03 and recording data with the prescribed format.**

- **All continuous analysers were calibrated, maintained, and operated, in accordance with the manufacturer's instructions or the regulation.**

  Records reviewed indicate chlorine and turbidity analysers are consistently calibrated in house on a weekly basis or as needed. In addition, the municipality has Flowmetrix Technical Services Inc. come in annually for calibration of handheld chlorine and turbidity analysers and the flow meters at all of their municipal systems. The most recent calibrations were in March and April 2018, and March 2017 prior to that.

Operations Manuals

- **The operations and maintenance manuals contained plans, drawings and process descriptions sufficient**

Operations Manuals

for the safe and efficient operation of the system.

- **The operations and maintenance manuals met the requirements of the Drinking Water Works Permit and Municipal Drinking Water Licence issued under Part V of the SDWA.**

Logbooks

- **Records or other record keeping mechanisms confirmed that operational testing not performed by continuous monitoring equipment was being done by a certified operator, water quality analyst, or person who suffices the requirements of O. Reg. 170/03 7-5.**

Security

- **The owner had provided security measures to protect components of the drinking water system.**

  The Arran-Elderslie Water Treatment Plant in Chesley is equipped with intruder alarms, keyed entry, and an emergency contact number posted on the door. The chlorine booster station in Paisley is located in a separate room within the Township Maintenance building. The building is keyed entry and accessed by municipal employees only. All production and monitoring wells are locked in addition to lock-out security measures at the standpipes in Chesley, which is also fenced, and Paisley.

Certification and Training

- **The overall responsible operator had been designated for each subsystem.**

  The ORO used by the municipality for its municipal drinking water systems is Mr. Rakesh Sharma from GSS Engineering Consultants Ltd.

- **Operators in charge had been designated for all subsystems which comprised the drinking-water system.**

  The municipality currently designates the Operator on Call as the Operator In Charge (OIC) for both municipal residential drinking water systems within the municipality.

- **All operators possessed the required certification.**

  Review has indicated that the following certificates expire in 2018: Mark O'Leary Water Treatment Class 2 - June 30, 2018; Rakesh Sharma Water Treatment Class 4 and Water Distribution Class 4 - Both December 31, 2018; Scott McLeod Water Distribution Class 4 - December 31, 2018; and Christopher Legge Water Treatment Class 1 - July 31, 2018.
  The municipality is reminded to ensure all certifications are renewed or updated well in advance of the expiry dates.

- **Only certified operators made adjustments to the treatment equipment.**

Water Quality Monitoring

- **All microbiological water quality monitoring requirements for distribution samples were being met.**

  The Arran-Elderslie Water Treatment Plant is classified as a Large Municipal Residential Drinking Water System under Ontario Regulation 170/03. Review indicated that all microbiological water quality monitoring requirements prescribed by legislation for the distribution system were being met.

- **All microbiological water quality monitoring requirements for treated samples were being met.**

  Review indicated that all microbiological water quality requirements prescribed by legislation for treated samples

Water Quality Monitoring

were being met.

- **All inorganic water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

  Schedule 23 inorganic parameters were last sampled on November 16, 2015, and November 5, 2012 prior to that. The owner is reminded that inorganic Schedule 23 sampling is due in November 2018.

- **All organic water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

  Schedule 24 organic parameters were last sampled on November 16, 2015, and November 5, 2012 prior to that. The owner is reminded that organic Schedule 24 sampling is due in November 2018.

- **All haloacetic acid water quality monitoring requirements prescribed by legislation are being conducted within the required frequency and at the required location.**

  As of January 1, 2017, drinking water system owners/operating authorities are required to take samples quarterly and have them tested for HAAs as outlined in O. Reg. 170/03 (subsection 13-6.1 of Schedule 13).
  Guidance has indicated that HAAs will generally form at the beginning of the distribution system, usually just after the chlorination process. If there is rechlorination, high HAAs may be found just past the rechlorination point if the right humic acids are present.
  HAA samples were taken during the inspection review period on the following dates: August 14th - 5.3 ug/L at Water Plant, 14.2 ug/L at Paisley Water Tower (after re-chlor). November 13, 2017 - 5.3 ug/L at 4th St. Apartment, and also 5.3 ug/L at Albert St. February 12, 2018 - 5.3 ug/L at Distribution Water Shop and 5.3 ug/L at Albert St. May 14, 2018 5.3 ug/L at Bietz sample tap and 5.3 ug/L at Albert St. It is noted that the method detection limit for HAA's is 5.3 ug/L and therefore all sampling results taken during the inspection review period were less than the laboratory detection limit.
  In May 2018 the MOECC provided all Municipal Drinking Water System Owners with updated guidance regarding Haloacetic Acids (HAAs) Sampling Concerns. Any questions may by directed to drinking.water@ontario.ca

- **All trihalomethane water quality monitoring requirements prescribed by legislation were conducted within the required frequency and at the required location.**

  It is noted that though considered one drinking water system, the municipality samples for THM's quarterly in both Chesley and Paisley for a more accurate representation. THM sampling during the inspection review period occurred August 14 (26 and 22 ug/L), and November 13, 2017 (27 and 22 ug/L), and February 12 (18 and 17 ug/L), and May 14, 2018 (18 and 17 ug/L). The Running Annual Average (RAA) based on the four highest results for each quarter is 22.25 ug/L during the inspection review period.

- **All nitrate/nitrite water quality monitoring requirements prescribed by legislation were conducted within the required frequency for the DWS.**

  Nitrate/Nitrite sampling during the inspection review period occurred quarterly as required. Sampling was conducted on August 14, and November 13, 2017, and February 12, and May 14, 2018.

- **All sodium water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

  It is noted that a Sodium sample (required once every sixty (60) months) was taken on November 3, 2014 (18.1 and 16.8 mg/L) and November 9, 2009, prior to that.

- **All fluoride water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

  It is noted that Fluoride was last sampled on November 3, 2014 with results of 0.6 and 0.3 mg/L, below the

Water Quality Monitoring

Maximum Acceptable Concentration (MAC) of 1.5 mg/L. Prior samples were taken on November 9, 2009. Fluoride is required to be sampled once every sixty (60) months and is not due until the fall of 2019.

- **All water quality monitoring requirements imposed by the Municipal Drinking Water Licence and Drinking Water Works Permit were being met.**

- **Records confirmed that chlorine residual tests were being conducted at the same time and at the same location that microbiological samples were obtained.**

Water Quality Assessment

- **Records did not show that all water sample results taken during the inspection review period did not exceed the values of tables 1, 2 and 3 of the Ontario Drinking Water Quality Standards (O.Reg. 169/03).**

  A single lead exceedance notification AWQI No. 138886 occurred in March, 2018 as part of the municipality's required lead sampling program. Both re-samples taken came back within lead limits.

Reporting & Corrective Actions

- **Where required continuous monitoring equipment used for the monitoring of chlorine residual and/or turbidity triggered an alarm or an automatic shut-off, a qualified person responded in a timely manner and took appropriate actions.**

Other Inspection Findings

- **The following issues were also noted during the inspection:**

  A slightly complacent and somewhat unsure handling of a few recent Adverse Water Quality Incidents (AWQI's) has been observed in multiple municipalities. This, in part can be attributed to the treatment equipment in place and the excellent job operators have been performing at these facilities and within the associated distribution systems. This has resulted in AWQI's sometimes not occurring for multiple years. Due to the above factors, and though most municipalities/operating authorities are already practicing certain aspects of the recommendations below, the following blanket recommendation is being provided to all municipalities inspected by the Provincial Officer authoring this report as a due diligence reminder:
  It is highly recommended that all Operators, Designated Overall Responsible Operators, or those having any involvement with the operation or the regulatory compliance for this Municipal Drinking Water System (including any Compliance Technicians, Environmental Technicians, or Engineering Consultants with operating status) have on-site training in the following;
  1) An annual ON-SITE tour of the treatment facility and distribution components in relation to the MOECC License and Permit for the system.
  2) An annual or bi-annual training exercise running through on-site start to finish (hands on) mock exercises (including all paperwork) for individual parameters listed in Schedule 17 or Schedule 18 (Corrective Actions) of O.Reg 170/03.
  3) For all essential and regulatory required equipment necessary to achieve proper disinfection; An annual on-site, hands on alarm triggering/lock out and testing for all treatment component online alarms and paging systems; including response duties, follow up requirements for documentation such as SCADA verification print outs and alarm point re-sets.

NON-COMPLIANCE WITH REGULATORY REQUIREMENTS AND ACTIONS REQUIRED

This section provides a summary of all non-compliance with regulatory requirements identified during the inspection period, as well as actions required to address these issues. Further details pertaining to these items can be found in the body of the inspection report.

Not Applicable

SUMMARY OF RECOMMENDATIONS AND BEST PRACTICE ISSUES

This section provides a summary of all recommendations and best practice issues identified during the inspection period. Details pertaining to these items can be found in the body of the inspection report. In the interest of continuous improvement in the interim, it is recommended that owners and operators develop an awareness of the following issues and consider measures to address them.

1. **The following issues were also noted during the inspection:**

   Recommendation:

   A slightly complacent and somewhat unsure handling of a few recent Adverse Water Quality Incidents (AWQI's) has been observed in multiple municipalities. This, in part can be attributed to the treatment equipment in place and the excellent job operators have been performing at these facilities and within the associated distribution systems. This has resulted in AWQI's sometimes not occurring for multiple years. Due to the above factors, and though most municipalities/operating authorities are already practicing certain aspects of the recommendations below, the following blanket recommendation is being provided to all municipalities inspected by the Provincial Officer authoring this report as a due diligence reminder:
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   1) An annual ON-SITE tour of the treatment facility and distribution components in relation to the MOECC License and Permit for the system.
   2) An annual or bi-annual training exercise running through on-site start to finish (hands on) mock exercises (including all paperwork) for individual parameters listed in Schedule 17 or Schedule 18 (Corrective Actions) of O.Reg 170/03.
   3) For all essential and regulatory required equipment necessary to achieve proper disinfection; An annual on-site, hands on alarm triggering/lock out and testing for all treatment component online alarms and paging systems; including response duties, follow up requirements for documentation such as SCADA verification print outs and alarm point re-sets.

SIGNATURES

Inspected By: Signature: (Provincial Officer)

Ron Burrell

Reviewed & Approved By: Signature: (Supervisor)

John Ritchie

Review & Approval Date: 10/07/2018

Note: This inspection does not in any way suggest that there is or has been compliance with applicable legislation and regulations as they apply or may apply to this facility. It is, and remains, the responsibility of the owner and/or operating authority to ensure compliance with all applicable legislative and regulatory requirements.

Ontario

Ministry of the Environment and Climate Change
Drinking Water Inspection Report

APPENDIX A

INSPECTION SUMMARY RATING RECORD

Ministry of the Environment - Inspection Summary Rating Record (Reporting Year - 2018-2019)

DWS Name:	ARRAN-ELDERSLIE DRINKING WATER SYSTEM
DWS Number:	220002725
DWS Owner:	Arran-Elderslie, The Corporation Of The Municipality Of
Municipal Location:	Arran-Elderslie
Regulation:	O.REG 170/03
Category:	Large Municipal Residential System
Type Of Inspection:	Focused
Inspection Date:	June 1, 2018
Ministry Office:	Owen Sound District Office

Maximum Question Rating: 459

Inspection Module	Non-Compliance Rating
Source	0 / 28
Capacity Assessment	0 / 30
Treatment Processes	0 / 60
Operations Manuals	0 / 28
Logbooks	0 / 14
Certification and Training	0 / 42
Water Quality Monitoring	0 / 124
Reporting & Corrective Actions	0 / 21
Treatment Process Monitoring	0 / 112
TOTAL	**0 / 459**

Inspection Risk Rating	**0.00%**

FINAL INSPECTION RATING:	**100.00%**

Inspection Rating Record Generated On 10-JUL-18 (Inspection ID: 1-IHLO6).

Ministry of the Environment - Detailed Inspection Rating Record (Reporting Year - 2018-2019)

DWS Name:	ARRAN-ELDERSLIE DRINKING WATER SYSTEM
DWS Number:	220002725
DWS Owner:	Arran-Elderslie, The Corporation Of The Municipality Of
Municipal Location:	Arran-Elderslie
Regulation:	O.REG 170/03
Category:	Large Municipal Residential System
Type Of Inspection:	Focused
Inspection Date:	June 1, 2018
Ministry Office:	Owen Sound District Office

Maximum Question Rating: 459

Inspection Risk Rating	**0.00%**
FINAL INSPECTION RATING:	**100.00%**

Inspection Rating Record Generated On 10-JUL-18 (Inspection ID: 1-IHLO6).

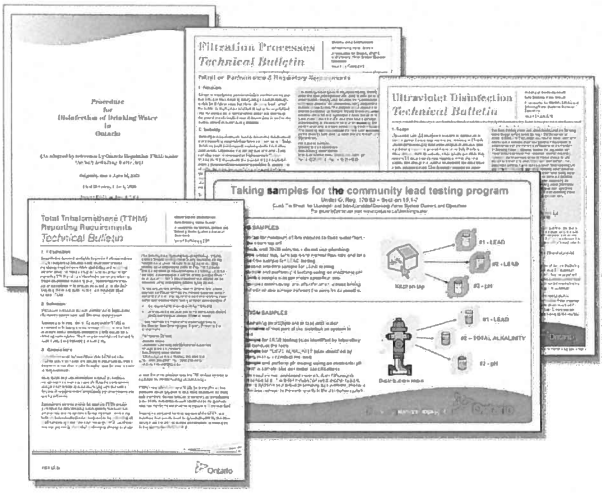
APPENDIX B

REFERENCE GUIDE FOR STAKEHOLDERS

March 2015

Key Reference and Guidance Material for Municipal Residential Drinking Water Systems

Many useful materials are available to help you operate your drinking water system. Below is a list of key materials owners and operators of municipal residential drinking water systems frequently use.



To access these materials online click on their titles in the table below or use your web browser to search for their titles. Contact the Public Information Centre if you need assistance or have questions at 1-800-565-4923/416-325-4000 or picemail.moe@ontario.ca.

For more information on Ontario's drinking water visit www.ontario.ca/drinkingwater and email drinking.water@ontario.ca to subscribe to drinking water news.

PUBLICATION TITLE	PUBLICATION NUMBER
Taking Care of Your Drinking Water: A Guide for Members of Municipal Councils	7889e01
FORMS: Drinking Water System Profile Information, Laboratory Services Notification, Adverse Test Result Notification Form	7419e, 5387e, 4444e
Procedure for Disinfection of Drinking Water in Ontario	4448e01
Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids	7152e
Total Trihalomethane (TTHM) Reporting Requirements Technical Bulletin (February 2011)	8215e
Filtration Processes Technical Bulletin	7467
Ultraviolet Disinfection Technical Bulletin	7685
Guide for Applying for Drinking Water Works Permit Amendments, Licence Amendments, Licence Renewals and New System Applications	7014e01
Certification Guide for Operators and Water Quality Analysts	
Guide to Drinking Water Operator Training Requirements	9802e
Taking Samples for the Community Lead Testing Program	6560e01
Community Sampling and Testing for Lead: Standard and Reduced Sampling and Eligibility for Exemption	7423e
Guide: Requesting Regulatory Relief from Lead Sampling Requirements	6610
Drinking Water System Contact List	7128e
Technical Support Document for Ontario Drinking Water Quality Standards	4449e01

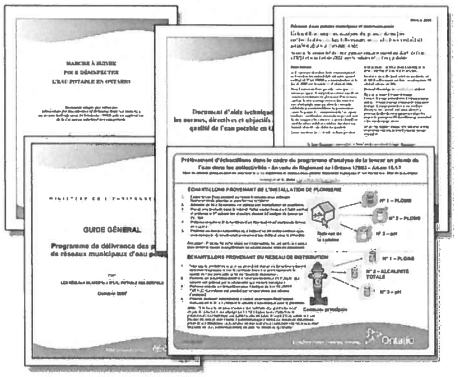
PIBS 8990b01

Ontario

Principaux guides et documents de référence sur les réseaux résidentiels municipaux d'eau potable

De nombreux documents utiles peuvent vous aider à exploiter votre réseau d'eau potable. Vous trouverez ci-après une liste de documents que les propriétaires et exploitants de réseaux résidentiels municipaux d'eau potable utilisent fréquemment.

Pour accéder à ces documents en ligne, cliquez sur leur titre dans le tableau ci-dessous ou faites une recherche à l'aide de votre navigateur Web. Communiquez avec le Centre d'information au public au 1 800 565-4923 ou au 416 325-4000, ou encore à **picemail.moe@ontario.ca** si vous avez des questions ou besoin d'aide.



Pour plus de renseignements sur l'eau potable en Ontario, consultez le site **www.ontario.ca/eaupotable** ou envoyez un courriel à **drinking.water@ontario.ca** pour suivre l'information sur l'eau potable.

TITRE DE LA PUBLICATION	NUMÉRO DE PUBLICATION
Prendre soin de votre eau potable – Un guide destiné aux membres des conseils municipaux	7889f01
Renseignements sur le profil du réseau d'eau potable, Avis de demande de services de laboratoire, Formulaire de communication de résultats d'analyse insatisfaisants et du règlement des problèmes	7419f, 5387f, 4444f
Marche à suivre pour désinfecter l'eau potable en Ontario	4448f01
Strategies for Minimizing the Disinfection Products Thrihalomethanes and Haloacetic Acids (en anglais seulement)	7152e
Total Trihalomethane (TTHM) Reporting Requirements: Technical Bulletin (février 2011) (en anglais seulement)	8215e
Filtration Processes Technical Bulletin (en anglais seulement)	7467
Ultraviolet Disinfection Technical Bulletin (en anglais seulement)	7685
Guide de présentation d'une demande de modification du permis d'aménagement de station de production d'eau potable, de modification du permis de réseau municipal d'eau potable, de renouvellement du permis de réseau municipal d'eau potable et de permis pour un nouveau réseau	7014f01
Guide sur l'accréditation des exploitants de réseaux d'eau potable et des analystes de la qualité de l'eau de réseaux d'eau potable	
Guide sur les exigences relatives à la formation des exploitants de réseaux d'eau potable	9802f
Prélèvement d'échantillons dans le cadre du programme d'analyse de la teneur en plomb de l'eau dans les collectivités	6560f01
Échantillonnage et analyse du plomb dans les collectivités : échantillonnage normalisé ou réduit et admissibilité à l'exemption	7423f
Guide: Requesting Regulatory Relief from Lead Sampling Requirements (en anglais seulement)	6610
Liste des personnes-ressources du réseau d'eau potable	7128f
Document d'aide technique pour les normes, directives et objectifs associés à la qualité de l'eau potable en Ontario	4449f01

PIBS 8990b01

Ontario

APPENDIX F

PERMIT TO TAKE WATER

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

PERMIT TO TAKE WATER

Ground Water
NUMBER 3655-A3RPJL

Pursuant to Section 34.1 of the Ontario Water Resources Act, R.S.O. 1990 this Permit To Take Water is hereby issued to:

The Corporation of the Municipality of Arran-Elderslie
1925 County Road 10
Chesley, Ontario, N0G 1L0
Canada

For the water taking from: CPW#1, CPW#2, CPW#3

Located at: Lot 32, Concession 2, Geographic Township of Elderslie
Arran-Elderslie, County of Bruce

For the purposes of this Permit, and the terms and conditions specified below, the following definitions apply:

DEFINITIONS

(a) "Director" means any person appointed in writing as a Director pursuant to section 5 of the OWRA for the purposes of section 34.1, OWRA.

(b) "Provincial Officer" means any person designated in writing by the Minister as a Provincial Officer pursuant to section 5 of the OWRA.

(c) "Ministry" means Ontario Ministry of the Environment and Climate Change.

(d) "District Office" means the Owen Sound District Office.

(e) "Permit" means this Permit to Take Water No. 3655-A3RPJL including its Schedules, if any, issued in accordance with Section 34.1 of the OWRA.

(f) "Permit Holder" means The Corporation of the Municipality of Arran-Elderslie.

(g) "OWRA " means the *Ontario Water Resources Act,* R.S.O. 1990, c. O. 40, as amended.

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

TERMS AND CONDITIONS

1. Compliance with Permit

1.1 Except where modified by this Permit, the water taking shall be in accordance with the application for this Permit To Take Water, dated July 28, 2015 and signed by Scott McLeod, and all Schedules included in this Permit.

1.2 The Permit Holder shall ensure that any person authorized by the Permit Holder to take water under this Permit is provided with a copy of this Permit and shall take all reasonable measures to ensure that any such person complies with the conditions of this Permit.

1.3 Any person authorized by the Permit Holder to take water under this Permit shall comply with the conditions of this Permit.

1.4 This Permit is not transferable to another person.

1.5 This Permit provides the Permit Holder with permission to take water in accordance with the conditions of this Permit, up to the date of the expiry of this Permit. This Permit does not constitute a legal right, vested or otherwise, to a water allocation, and the issuance of this Permit does not guarantee that, upon its expiry, it will be renewed.

1.6 The Permit Holder shall keep this Permit available at all times at or near the site of the taking, and shall produce this Permit immediately for inspection by a Provincial Officer upon his or her request.

1.7 The Permit Holder shall report any changes of address to the Director within thirty days of any such change. The Permit Holder shall report any change of ownership of the property for which this Permit is issued within thirty days of any such change. A change in ownership in the property shall cause this Permit to be cancelled.

2. General Conditions and Interpretation

2.1 Inspections

The Permit Holder must forthwith, upon presentation of credentials, permit a Provincial Officer to carry out any and all inspections authorized by the OWRA, the *Environmental Protection Act* , R.S.O. 1990, the *Pesticides Act* , R.S.O. 1990, or the *Safe Drinking Water Act,* S. O. 2002.

2.2 Other Approvals

The issuance of, and compliance with this Permit, does not:

(a) relieve the Permit Holder or any other person from any obligation to comply with any other applicable legal requirements, including the provisions of the *Ontario Water Resources Act* , and

the *Environmental Protection Act* , and any regulations made thereunder; or

(b) limit in any way any authority of the Ministry, a Director, or a Provincial Officer, including the authority to require certain steps be taken or to require the Permit Holder to furnish any further information related to this Permit.

2.3 Information

The receipt of any information by the Ministry, the failure of the Ministry to take any action or require any person to take any action in relation to the information, or the failure of a Provincial Officer to prosecute any person in relation to the information, shall not be construed as:

(a) an approval, waiver or justification by the Ministry of any act or omission of any person that contravenes this Permit or other legal requirement; or

(b) acceptance by the Ministry of the information's completeness or accuracy.

2.4 Rights of Action

The issuance of, and compliance with this Permit shall not be construed as precluding or limiting any legal claims or rights of action that any person, including the Crown in right of Ontario or any agency thereof, has or may have against the Permit Holder, its officers, employees, agents, and contractors.

2.5 Severability

The requirements of this Permit are severable. If any requirements of this Permit, or the application of any requirements of this Permit to any circumstance, is held invalid or unenforceable, the application of such requirements to other circumstances and the remainder of this Permit shall not be affected thereby.

2.6 Conflicts

Where there is a conflict between a provision of any submitted document referred to in this Permit, including its Schedules, and the conditions of this Permit, the conditions in this Permit shall take precedence.

3. Water Takings Authorized by This Permit

3.1 **Expiry**

This Permit expires on **September 29, 2025**. No water shall be taken under authority of this Permit after the expiry date.

3.2 Amounts of Taking Permitted

The Permit Holder shall only take water from the source, during the periods and at the rates and amounts of taking specified in Table A. Water takings are authorized only for the purposes specified in Table A.

Table A

	Source Name / Description:	Source: Type:	Taking Specific Purpose:	Taking Major Category:	Max. Taken per Minute (litres):	Max. Num. of Hrs Taken per Day:	Max. Taken per Day (litres):	Max. Num. of Days Taken per Year:	Zone/ Easting/ Northing:
1	CPW#1	Well Drilled	Municipal	Water Supply	1,250	24	1,800,216	365	17 492863 4904899
2	CPW#2	Well Drilled	Municipal	Water Supply	1,477	24	2,127,528	365	17 492848 4904912
3	CPW#3	Well Drilled	Municipal	Water Supply	2,046	24	2,948,240	365	17 493043 4904772
						Total Taking:	6,875,984		

3.3 Notwithstanding Table A, this Permit only allows for the combined taking of water from CPW1 and CPW2 @ 2273 L/min or (3273120 L/day) for a period of 120 days. Following this period the combined taking must not exceed 1818 L/min for the balance of the year.

4. Monitoring

4.1 The Permit Holder shall maintain a record of all water takings. This record shall include the dates of water takings, and the total measured amounts of water pumped per day for each day that water is taken under the authorization of this Permit. The Permit Holder shall keep all required records up to date and available at or near the site of the taking and shall produce the records immediately for inspection by a Provincial Officer upon his or her request. The total amounts of water pumped shall be measured using flow measuring device.

4.2 The Permit Holder shall measure and record static water levels in all production wells and observation wells (Victoria Park Well and TW3/91) on a monthly basis during the year.

4.3 The record of water takings required as per conditions 4.1 and 4.2 shall be submitted to the Ministry of the Environment Southwest Regional Office no later than 90 days prior to expiry of the permit or proposed amendment to support permit renewal or a permit amendment application.

5. Impacts of the Water Taking

5.1 Notification

The Permit Holder shall immediately notify the local District Office of any complaint arising from the taking of water authorized under this Permit and shall report any action which has been taken or is proposed with regard to such complaint. The Permit Holder shall immediately notify

the local District Office if the taking of water is observed to have any significant impact on the surrounding waters. After hours, calls shall be directed to the Ministry's Spills Action Centre at 1-800-268-6060.

5.2 For Groundwater Takings

If the taking of water is observed to cause any negative impact to other water supplies obtained from any adequate sources that were in use prior to initial issuance of a Permit for this water taking, the Permit Holder shall take such action necessary to make available to those affected, a supply of water equivalent in quantity and quality to their normal takings, or shall compensate such persons for their reasonable costs of so doing, or shall reduce the rate and amount of taking to prevent or alleviate the observed negative impact. Pending permanent restoration of the affected supplies, the Permit Holder shall provide, to those affected, temporary water supplies adequate to meet their normal requirements, or shall compensate such persons for their reasonable costs of doing so.

If permanent interference is caused by the water taking, the Permit Holder shall restore the water supplies of those permanently affected.

6. Director May Amend Permit

The Director may amend this Permit by letter requiring the Permit Holder to suspend or reduce the taking to an amount or threshold specified by the Director in the letter. The suspension or reduction in taking shall be effective immediately and may be revoked at any time upon notification by the Director. This condition does not affect your right to appeal the suspension or reduction in taking to the Environmental Review Tribunal under the *Ontario Water Resources Act* , Section 100 (4).

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

1. Condition 1 is included to ensure that the conditions in this Permit are complied with and can be enforced.

2. Condition 2 is included to clarify the legal interpretation of aspects of this Permit.

3. Conditions 3 through 6 are included to protect the quality of the natural environment so as to safeguard the ecosystem and human health and foster efficient use and conservation of waters. These conditions allow for the beneficial use of waters while ensuring the fair sharing, conservation and sustainable use of the waters of Ontario. The conditions also specify the water takings that are authorized by this Permit and the scope of this Permit.

In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, 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, as amended, provides that the Notice requiring the hearing shall state:

1. The portions of the Permit or each term or condition in the Permit 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.

In addition to these legal requirements, the Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Permit to Take Water number;
6. The date of the Permit to Take Water;
7. The name of the Director;
8. The municipality within which the works are located;

This notice must be served upon:

The Secretary
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto ON
M5G 1E5
Fax: (416) 326-5370
Email: ERTTribunalsecretary@ontario.ca

AND

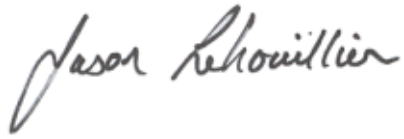
The Director, Section 34.1, Ministry of the Environment and Climate Change
733 Exeter Rd
London ON N6E 1L3
Fax: (519) 873-5020

Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal:

by Telephone at	by Fax at	by e-mail at
(416) 212-6349	(416) 326-5370	www.ert.gov.on.ca
Toll Free 1(866) 448-2248	Toll Free 1(844) 213-3474	

This Permit cancels and replaces Permit Number 8003-639PHB, issued on 2005/06/20.

Dated at London this 13th day of November, 2015.



Jason Lehouillier
Director, Section 34.1
Ontario Water Resources Act , R.S.O. 1990

Schedule A

This Schedule "A" forms part of Permit To Take Water 3655-A3RPJL, dated November 13, 2015.