

Lakeshore 2018 Annual Report

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1.0 EXECUTIVE SUMMARY

The Operating Authority, on behalf of the Owner, the Township of Huron-Kinloss, has prepared this report to satisfy the requirements of Section 11 (1) of Ontario Regulation 170/03. Section 11 (1) requires that the Owner of a drinking water system ensure that a report is prepared in accordance with Subsections (3) and (6) for the preceding calendar year, which covers from the period of January 1 to December 31, 2018. The annual report must be prepared no later than February 28 of each year. A copy of this report will be submitted to the Owner to be made available to the residents.

This report is a collection of information that demonstrates the production of safe and high-quality drinking water for the residents of the Lakeshore Drinking Water System. At no point during 2018 was improperly disinfected water directed to consumers. The Lakeshore Drinking Water System met all compliance requirements of the Safe Drinking Water Act. There were no Adverse Water Quality Indicator (AWQI) events in 2018.

In January 2018, O. Reg. 169/03 - Ontario Drinking Water Quality Standard for Arsenic was changed to 0.010 mg/L from 0.025 mg/L, making the new Half-MAC (maximum allowable concentration) 0.005 mg/L. Point Clark is the only Lakeshore site that has an Arsenic level in exceedance of the Half-MAC (0.0056 and 0.0053 mg/L), and therefore must be sampled every 3 months to satisfy O. Reg. 170/03, Schedule 13-5(1) – Increased frequency under s.s 13-2 and 13-4.

In order to prevent equipment failures from occurring, Veolia utilizes a preventative maintenance program that is managed using a CMMS (Computerized Maintenance Management System). Also, as part of the DWQMS (Drinking Water Quality Management Standard), Veolia has developed a contingency plan that includes procedures that can be followed for a number of emergency situations. These procedures are reviewed by staff annually as part of our Emergency Exercise in order to continually improve our emergency responses. In addition, the Lakeshore Drinking Water System has a number of redundancies in the event of equipment failure to ensure that the residents are always supplied with safe drinking water.

The Township of Huron-Kinloss Council Members have responsibilities to ensure safe drinking water is supplied to the Lakeshore community. Under Section 19 of the Safe Drinking Water Act (SDWA), “the Owners of a Drinking Water System shall exercise the level of care, diligence and skill in respect of a Municipal Drinking Water System that a reasonably prudent person would be expected to exercise in a similar situation and act honestly, competently and with integrity, with a view to ensuring the protection and safety of the users of the Municipal Drinking Water System.” Council Members can learn more about their role and responsibilities in ensuring safe drinking water by reading “Taking Care of Your Drinking Water: A Guide for Municipal Councilors”, a publication written by the Ministry of the Environment, Conservation and Parks (MECP). A copy of this document can be provided upon request. Additionally, the Walkerton Clean Water Centre (WCWC) offers a course called, “Standard of Care: Safe Drinking Water Act”, where Council Members and Officials can learn more about their oversight responsibilities under Section 19 of the Safe Drinking Water Act.

2.0 DESCRIPTION OF WATER SYSTEM

A summary of the Lakeshore Drinking Water System description is outlined below:

Drinking Water System Number:	220000425
Drinking Water System Name:	Lakeshore Well Water Distribution and Supply
Drinking Water System Owner:	Corporation of the Township of Huron-Kinloss
Drinking Water System Category:	Large Municipal Residential
Drinking Water System Classification:	Water Distribution and Supply Subsystem Class 3
Drinking Water System Certificate No.:	1808
Daily Maximum Water Supply Capacity:	11,636.26 m ³
Population (as per Engineer's Design notes):	3,200
Total Number of Service Connections:	2,324
Estimated Seasonal Population:	6,042 (based on Census data of 2.6 persons per household)
Average Day Demand:	1,862.38 m ³
Peak Day Demand:	5,365.22 m ³ (July 8, 2018)
Average Capacity:	16.0 %
Peak Capacity:	46.1%

The Lakeshore Drinking Water Distribution and Supply Subsystem (LDWDSS) is characterized as a "secure groundwater system". It consists of four sub-systems and its equipment deliver potable water to the Huron-Kinloss Lakeshore community, extending from Point Clark in the south, to Huronville in the north, and the subsystem supplying the Courtney/Amberley Beach subdivision in the Township of Ashfield-Colborne-Wawanosh.

The four sub-systems are: Point Clark, Blairs Grove, Huronville South, and Murdock Glen. All of these sites are located within the Municipality of Huron-Kinloss along Lake Huron. All sites are controlled, monitored, and alarmed through a Supervisory Control and Data Acquisition (SCADA) system which is connected to the main computer and server at Ripley Municipal Office. As a redundancy, each site is also equipped with an auto-dialer that is independent of the SCADA system, and is used to call out alarms in the event of communications/SCADA failure. This SCADA system provides the operator with the ability to monitor current operating status of the supply and treatment equipment throughout the water system at any given time via remote access by computer or Smartphone, and to have control over operations.

The four well systems are detailed as follows:

Site: Point Clark - 603 Tuscarora Rd

- Water Source: Groundwater, Non-GUDI
- Number of Production Wells: 2 (Well #2 – 1994; Well #3 – 2015)
- Depth of Wells: 75.6m, 82.3m
- Well Pumps: 15hp each, submersible
- Disinfection: Sodium hypochlorite (12%)
- CT Requirement: 2-log, 5°C, baffled reservoir (0.5 BF)
- Iron Sequestering: Sodium silicate (undiluted)
- High Lift Pumps: 2 @ 25hp each
- Reservoir: 65 m³
- Permit To Take Water: 1852-9YQMAY, expires November 1, 2024

Site: Blairs Grove – 28 Cathcart Street

- Water Source: Groundwater, Non-GUDI
- Number of Production Wells: 1, flowing artesian
- Depth of Well: 73.2m
- Well Pump: 10hp, submersible
- Disinfection: Sodium hypochlorite (12%)
- CT Requirement: 2-log, 5°C, baffled reservoir (0.5 BF)
- Iron Sequestering: Sodium silicate (undiluted)
- High Lift Pump: 1 @ 30hp
- Reservoir: 83 m³
- Permit To Take Water: 6154-988KDE, expires May 31, 2023

Site: Murdock Glen

- Water Source: Groundwater, Non-GUDI
- Number of Production Wells: 1 (1992)
- Depth of Well: 80.5m
- Well Pump: 25hp, submersible
- Disinfection: Sodium hypochlorite (12%)
- CT Requirement: 2-log, 5°C, contact watermain (BF 1.0)
- Iron Sequestering: Sodium Silicate (undiluted)
- High Lift Pumps: 2 @ 15hp, 2 @ 50hp
- Reservoir: 400 m³
- Standby Power: 130 kW Diesel Generator, 1,110 L fuel storage
- Permit To Take Water: 6123-A2UQBM, expires October 15, 2025

Site: Huronville South – 39 Penetangore Row South

- Water Source: Groundwater, Non-GUDI
- Number of Production Wells: 1 (1994)
- Depth of Wells: 93.3m
- Well Pumps: 30hp, submersible, soft-start
- Disinfection: Sodium hypochlorite (12%)
- CT Requirement: 2-log, 5°C, baffled reservoir (0.5 BF)
- Iron Sequestering: Sodium silicate (undiluted)
- High Lift Pumps: 2 @ 30hp each
- Reservoir: 65 m³
- Permit To Take Water: 3332-9N6H8L, expires November 1, 2024

The LDWDSS currently (January 2019) has 2,185 water connections along the Huron-Kinloss Lakeshore and 139 water connections in the Courtney/Amberley Beach Subdivision. The Lakeshore area has a large seasonal population of potentially 6,042 (based on census data of 2.6 people per household connection), and therefore, the demands are significantly higher during the cottage season.

All the Lakeshore wells are secure deep bedrock wells that penetrate limestone aquifers. Due to the depth and structure of the aquifers, the water temperature is relatively constant (<10°C), turbidity is low, and the water is relatively hard. The raw water is also relatively high in naturally-occurring sodium, fluoride, and iron, but the lead content of the raw water is well below the Half-MAC (Maximum Allowable Concentration). Iron sequestering is achieved by means of treating the chlorinated water with sodium silicate. Sequestering does not remove iron, but instead it prevents the dissolved iron from precipitating which can stain plumbing fixtures and appear as discoloration in the water. Sodium silicate can leave a slight metallic taste in the water. Those who are supplied water from the LDWDSS are made aware of the various concentrations in their drinking water by numerous means of communication from the Township of Huron-Kinloss.

A 130 kW diesel generator, located at the Murdock Glen pumphouse, includes a 1,110 L capacity fuel storage tank and is used for emergency power supply. A standpipe is situated in the Point Clark area at 3405 Concession 2, and is constructed of bolted steel. The 31 m (102 ft) high and 9.45 m (31 ft) wide standpipe has an effective storage of approximately 1,500 m³ to supply the entire Lakeshore System in emergency situations. Periodic inspections of the standpipe (exterior and interior) are conducted. In 2017, the standpipe was isolated, drained, cleaned, and had some minor repairs. After repairs, it was disinfected, flushed, sampled, and put back into service.

The Township of Huron-Kinloss has an agreement with the Municipality of Kincardine, where Kincardine is the Operating Authority for a small area of Huron-Kinloss known as the Huronville Subdivision Distribution System (Plan M28). This subdivision receives all their water from the Municipality of Kincardine Water System. There is an interconnecting valve between the LDWDSS and Huronville Subdivision Distribution System, and the Town of Kincardine. This valve is normally closed and is to be used for emergency purposes only.

In January of 2018, the Operating Authority was contacted by the Municipality of Kincardine requesting supply of water during their SCADA upgrades. On January 16, 2018, Lakeshore Pressure Zone 2 was isolated from Huronville South Well House and the interconnecting valve was opened with all agencies on-site. Huronville South supplied approximately **6,239.48 m³** to Kincardine between January 16 and January 19, 2018. The only caveat during this event was that the pressure gauge installed on the fire hydrant adjacent to the interconnecting valve froze and could not be monitored. A key was provided to the Kincardine Water Department for access to the Huronville South Well House to view and record pressures. Based on the Permit to Take Water (PTTW), the annual average capacity at Huronville South Well House is 15.0%. During this event, the peak capacity at Huronville South was 55.2%.

3.0 SUMMARY OF WATER QUALITY MONITORING

3.1 Water Treatment Equipment Operation and Monitoring

3.1.1 Treated Water (Point of Entry) Chlorine Residuals

In 2018, a total of 1,460 treated water samples were collected and analyzed for Free Chlorine Residual at the Point of Entry (POE) water using a HACH pocket chlorine colorimeter. **Table 1** shows the grab sample monthly average of free chlorine residual values. **Table 2** shows the on-line continuous samples monthly average of the free chlorine residual values as recorded by the SCADA system.

3.1.2 Distribution (Grab) Free Chlorine Residuals

In 2018, a total of 675 distribution residuals were collected: 365 daily grab residuals and an additional 310 weekly grab residuals were taken in conjunction with the required weekly micro bacteriological sampling. A summary of all the residuals collected is presented in **Table 1**.

Table 1 – Average Treated and Distribution Free Chlorine (Grab) Residuals

Month	Blairs Grove	Huronville South	Murdock Glen	Point Clark	Distribution
Jan	1.48	1.63	1.69	1.63	1.45
Feb	1.41	1.36	1.55	1.59	1.42
Mar	1.40	1.58	1.62	1.61	1.40
Apr	1.43	1.64	1.71	1.61	1.45
May	1.46	1.63	1.65	1.64	1.45
Jun	1.64	1.6	1.70	1.62	1.46
Jul	1.46	1.54	1.58	1.53	1.34
Aug	1.48	1.61	1.63	1.62	1.40
Sep	1.35	1.56	1.55	1.53	1.38
Oct	1.42	1.57	1.65	1.59	1.34
Nov	1.40	1.56	1.63	1.59	1.41
Dec	1.39	1.53	1.54	1.58	1.35
Annual Min	0.49	1.45	1.10	1.01	0.82
Annual Max	2.30	1.82	1.81	1.87	1.77
Annual Avg	1.44	1.59	1.62	1.60	1.40
# Samples	365	365	365	365	675

Table 2 - Average Treated Free Chlorine (On-Line) Residuals

Month	Blairs Grove	Huronville South	Murdock Glen	Point Clark
Jan	1.51	1.61	1.70	1.65
Feb	1.41	1.63	1.57	1.60
Mar	1.53	1.56	1.63	1.63
Apr	1.47	1.63	1.73	1.63
May	1.52	1.63	1.67	1.65
Jun	1.64	1.60	1.70	1.64
Jul	1.52	1.54	1.58	1.53
Aug	1.55	1.61	1.62	1.62
Sep	1.37	1.57	1.55	1.53
Oct	1.39	1.58	1.67	1.60
Nov	1.40	1.56	1.67	1.61
Dec	1.40	1.53	1.56	1.57
Annual Min	0.21	0.11	0.21	0.36
Annual Max	2.00	2.00	1.96	2.43
Annual Avg	1.48	1.59	1.64	1.61

3.1.3 Raw and Treated Water Turbidity

Raw water and treated water grab samples were collected and analyzed for turbidity using a portable turbidity analyzer. **Table 3** provides a summary of raw water turbidity results and **Table 4** provides a summary of treated water turbidity results.

Table 3 – Raw Water Turbidity

Month	Blairs Grove	Huronville South	Murdock Glen	Point Clark W2	Point Clark W3
Jan	0.44	0.14	0.13	0.16	0.18
Feb	0.50	0.08	0.16	0.14	0.17
Mar	0.61	0.10	0.14	0.14	0.21
Apr	0.66	0.10	0.18	0.14	0.16
May	0.88	0.12	0.16	0.11	0.17
Jun	0.93	0.19	0.31	0.18	0.2
Jul	0.75	0.15	0.19	0.14	0.22
Aug	0.71	0.07	0.13	0.13	0.16
Sep	0.84	0.17	0.18	0.23	0.19
Oct	1.12	0.09	0.15	0.16	0.19
Nov	0.84	0.15	0.26	0.24	0.25
Dec	0.6	0.07	0.12	0.11	0.13
Annual Min	0.44	0.07	0.12	0.11	0.13
Annual Max	1.12	0.23	0.40	0.30	0.29
Annual Avg	0.76	0.13	0.19	0.16	0.19
# Samples	14	14	14	14	14

Table 4 – Treated Water Turbidity

Month	Blairs Grove	Huronville South	Murdock Glen	Point Clark
Jan	0.14	0.18	0.19	0.26
Feb	0.20	0.16	0.17	0.19
Mar	0.18	0.15	0.19	0.15
Apr	0.19	0.12	0.23	0.15
May	0.30	0.11	0.21	0.12
Jun	0.82	0.16	0.21	0.18
Jul	0.23	0.19	0.19	0.17
Aug	0.20	0.12	0.24	0.21
Sep	0.34	0.21	0.23	0.23
Oct	0.64	0.22	0.25	0.20
Nov	0.55	0.20	0.25	0.29
Dec	0.81	0.14	0.18	0.19
Annual Min	0.14	0.11	0.17	0.12
Annual Max	0.92	0.23	0.29	0.35
Annual Avg	0.43	0.16	0.21	0.20
# Samples	14	14	14	14

3.2 Microbiological Sampling as per Schedule 10, Ontario Regulation 170/03

3.2.1 Raw Water Samples

Raw water samples are collected every week. In 2018, a total of 260 samples were collected and analyzed for E. Coli and Total Coliform. **Table 5** provides a summary of bacteriological results performed on the raw water.

Table 5 – Microbiological Results for Raw Water

Month	Total Coliform			E. Coli		
	# Samples	# Samples "0"	# Samples ≥ 1	# Samples	# Samples "0"	# Samples ≥ 1
Jan	25	25	0	25	25	0
Feb	20	20	0	20	20	0
Mar	20	20	0	20	20	0
Apr	20	20	0	20	20	0
May	25	25	0	25	25	0
Jun	20	20	0	20	20	0
Jul	25	25	0	25	25	0
Aug	20	20	0	20	20	0
Sep	20	20	0	20	20	0
Oct	25	25	0	25	24	1
Nov	20	20	0	20	20	0
Dec	20	20	0	20	20	0
TOTAL	260	260	0	260	259	1

*Note: One sample result from Blairs Grove raw water tested positive of 1 Total Coliform on October 30, 2018. The treated sample from the same day was free of Total Coliform. Raw water is not reportable as an adverse.

3.2.2 Treated Water (Point of Entry) Samples

One (1) treated water sample from each point of entry is taken every week and analyzed for E. Coli, Total Coliform, and for Heterotrophic Plate Count (HPC). In 2018, a total of 208 treated water samples were collected and analyzed for the above parameters. Each E. Coli and Total Coliform result from the treated water was 0 cfu/100 mL. The range of HPC results were 0 – 6 cfu/100 mL. **Table 6** provides a summary of all bacteriological results performed on treated water.

3.2.3 Distribution Samples

Distribution samples are collected every week and tested for E. Coli, Total Coliform, and 25% of the samples are also analyzed for Heterotrophic Plate Count (HPC). Ontario Regulation 170/03 requires 8 distribution samples plus one additional sample for every 1,000 people served by the system. In 2018, a total of 362 distribution samples were collected and analyzed for E. Coli and Total Coliform, which is above the required number of samples (n=168, based on 6,042 potential residents). A total of 208 distribution samples were analyzed for HPC (n=42, 25% of 168). Each E. Coli and Total Coliform result was 0 cfu/100 mL. The range of HPC results were 0 – 18 cfu/100 mL. **Table 7** provides a summary of all bacteriological samples taken in the distribution system.

Table 6 – Microbiological Results for Treated Water (Point of Entry)

Month	Total Coliform			E. Coli			HPC		
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples 1 - 6
Jan	20	20	0	20	20	0	20	18	2
Feb	16	16	0	16	16	0	16	12	4
Mar	16	16	0	16	16	0	16	14	2
Apr	16	16	0	16	16	0	16	14	2
May	20	20	0	20	20	0	20	15	5
Jun	16	16	0	16	16	0	16	16	0
Jul	20	20	0	20	20	0	20	17	3
Aug	16	16	0	16	16	0	16	12	4
Sep	16	16	0	16	16	0	16	13	3
Oct	20	20	0	20	20	0	20	15	5
Nov	16	16	0	16	16	0	16	12	4
Dec	16	16	0	16	16	0	16	7	9
TOTAL	208	208	0	208	208	0	208	165	43

Table 7 – Microbiological Results for Distribution System

Month	Total Coliform			E. Coli			HPC		
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples 1 - 20
Jan	35	35	0	35	35	0	20	18	2
Feb	28	28	0	28	28	0	16	11	5
Mar	27	27	0	27	27	0	16	12	4
Apr	28	28	0	28	28	0	16	13	3
May	35	35	0	35	35	0	20	17	3
Jun	28	28	0	28	28	0	16	14	2
Jul	35	35	0	35	35	0	20	16	4
Aug	28	28	0	28	28	0	16	13	3
Sep	28	28	0	28	28	0	16	9	7
Oct	34	34	0	34	34	0	20	16	4
Nov	28	28	0	28	28	0	16	11	5
Dec	28	28	0	28	28	0	16	13	3
TOTAL	362	362	0	362	362	0	362	317	45

3.3 Chemical Sampling & Testing as per Schedule 13, Ontario Regulation 170/03

3.3.1 Inorganics (Schedule 13, Section 13-2; Schedule 23)

Treated water samples are collected every 36 months and tested for inorganics. The most recent samples for the Lakeshore Drinking Water System were collected on June 4, 2018 and submitted to the laboratory for analysis of inorganics as listed in Schedule 23 (see **Table 8**). All parameters were found to be within compliance; however, the Arsenic level at Point Clark exceeded the Half-Maximum Allowable Concentration. This site will be sampled on a quarterly basis to comply with O. Reg. 170/03, Schedule 13-5(1) – Increased frequency under s.s 13-2 and 13-4. Inorganics will be sampled and analyzed again in June 2021.

Table 8 – Inorganics (Schedule 13, Section 13-2; Schedule 23) Results

Parameter	Blairs Grove Result (µg/L)	Huronville South Result (µg/L)	Murdock Glen Result (µg/L)	Point Clark Result (µg/L)	Maximum Allowable Concentration (µg/L)	Exceedance
Antimony	0.03	0.02<MDL	0.02	0.03	6	No
Arsenic	0.4	0.4	1.6	5.6	10	No
Barium	4.65	24.6	27.1	26.3	1000	No
Boron	155	170	154	78	5000	No
Cadmium	0.004	0.003<MDL	0.018	0.003<MDL	5	No
Chromium	0.57	0.09	0.57	0.08	50	No
Mercury	0.01<MDL	0.01<MDL	0.01<MDL	0.01<MDL	1	No
Selenium	0.04<MDL	0.04<MDL	0.04<MDL	0.04<MDL	50	No
Uranium	0.359	0.269	1.27	0.437	20	No

3.3.2 Organics (Schedule 13, Section 13-4; Schedule 24)

Treated water samples are collected every 36 months and tested for schedule 24 organic parameters. The most recent samples were collected on June 4, 2018. All parameters were found to be within compliance. Organics will be sampled and analyzed again in June 2021. Sample results can be found in **Table 9**.

Table 9 - Organics (Schedule 13, Section 13-4; Schedule 24) Results

Parameter	Blairs Grove (µg/L)	Huronville South (µg/L)	Murdock Glen (µg/L)	Point Clark (µg/L)	Maximum Allowable Concentration (µg/L)	Exceedance
Benzene	0.32 <MDL	0.32 <MDL	0.32 <MDL	0.32 <MDL	1	No
Carbon Tetrachloride	0.16 <MDL	0.16 <MDL	0.16 <MDL	0.16 <MDL	2	No
1,2-Dichlorobenzene	0.41 <MDL	0.41 <MDL	0.41 <MDL	0.41 <MDL	200	No
1,4-Dichlorobenzene	0.36 <MDL	0.36 <MDL	0.36 <MDL	0.36 <MDL	5	No
1,1-Dichloroethylene	0.33 <MDL	0.33 <MDL	0.33 <MDL	0.33 <MDL	14	No
1,2-Dichloroethane	0.35 <MDL	0.35 <MDL	0.35 <MDL	0.35 <MDL	5	No
Dichloromethane	0.35 <MDL	0.35 <MDL	0.35 <MDL	0.35 <MDL	50	No
Monochlorobenzene	0.3 <MDL	0.3 <MDL	0.3 <MDL	0.3 <MDL	80	No
Tetrachloroethylene	0.35 <MDL	0.35 <MDL	0.35 <MDL	0.35 <MDL	10	No

Table 9 - Organics (Schedule 13, Section 13-4; Schedule 24) Results

Parameter	Blairs Grove (µg/L)	Huronville South (µg/L)	Murdock Glen (µg/L)	Point Clark (µg/L)	Maximum Allowable Concentration (µg/L)	Exceedance
Trichloroethylene	0.44 <MDL	0.44 <MDL	0.44 <MDL	0.44 <MDL	5	No
Vinyl Chloride	0.17 <MDL	0.17 <MDL	0.17 <MDL	0.17 <MDL	1	No
Diquat	1 <MDL	1 <MDL	1 <MDL	1 <MDL	70	No
Paraquat	1 <MDL	1 <MDL	1 <MDL	1 <MDL	10	No
Glyphosate	1 <MDL	1 <MDL	1 <MDL	1 <MDL	280	No
Polychlorinated Biphenyls	0.04 <MDL	0.04 <MDL	0.04 <MDL	0.04 <MDL	3	No
Benzo(a)pyrene	0.004 <MDL	0.004 <MDL	0.004 <MDL	0.004 <MDL	0.01	No
Alachlor	0.02 <MDL	0.02 <MDL	0.02 <MDL	0.02 <MDL	5	No
Atrazine+N-dealkylated metabolites	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	5	No
Atrazine	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	-	-
Desethyl atrazine	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	-	-
Azinphos-methyl	0.05 <MDL	0.05 <MDL	0.05 <MDL	0.05 <MDL	20	No
Carbaryl	0.05 <MDL	0.05 <MDL	0.05 <MDL	0.05 <MDL	90	No
Carbofuran	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	90	No
Chlorpyrifos	0.02 <MDL	0.02 <MDL	0.02 <MDL	0.02 <MDL	90	No
Diazinon	0.02 <MDL	0.02 <MDL	0.02 <MDL	0.02 <MDL	20	No
Dimethoate	0.03 <MDL	0.03 <MDL	0.03 <MDL	0.03 <MDL	20	No
Diuron	0.03 <MDL	0.03 <MDL	0.03 <MDL	0.03 <MDL	150	No
Malathion	0.02 <MDL	0.02 <MDL	0.02 <MDL	0.02 <MDL	190	No
Metolachlor	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	50	No
Metribuzin	0.02 <MDL	0.02 <MDL	0.02 <MDL	0.02 <MDL	80	No
Phorate	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	2	No
Prometryne	0.03 <MDL	0.03 <MDL	0.03 <MDL	0.03 <MDL	1	No
Simazine	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	10	No
Terbufos	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	1	No
Triallate	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	230	No
Trifluralin	0.02 <MDL	0.02 <MDL	0.02 <MDL	0.02 <MDL	45	No
2,4-dichlorophenoxyacetic acid	0.19 <MDL	0.19 <MDL	0.19 <MDL	0.19 <MDL	100	No
Dicamba	0.20 <MDL	0.20 <MDL	0.20 <MDL	0.20 <MDL	120	No
Diclofop-methyl	0.40 <MDL	0.40 <MDL	0.40 <MDL	0.40 <MDL	9	No
MCPA	0.00012 <MDL	0.00012 <MDL	0.00012 <MDL	0.00012 <MDL	0.1	No
Picloram	1 <MDL	1 <MDL	1 <MDL	1 <MDL	190	No
2,4-dichlorophenol	0.15 <MDL	0.15 <MDL	0.15 <MDL	0.15 <MDL	900	No
2,4,6-trichlorophenol	0.25 <MDL	0.25 <MDL	0.25 <MDL	0.25 <MDL	5	No
2,3,4,6-tetrachlorophenol	0.20 <MDL	0.20 <MDL	0.20 <MDL	0.20 <MDL	100	No
Pentachlorophenol	0.15 <MDL	0.15 <MDL	0.15 <MDL	0.15 <MDL	60	No

3.3.3 Trihalomethanes (Schedule 13, Section 13-6)

Distribution samples are taken every three months from representative points in the distribution system and tested for Trihalomethanes (THMs). In 2018, 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 this parameter and it is expressed as a running annual average. In 2018, the average THM was found to be 10.59 µg/L, which is within compliance. Refer to **Table 10** for the summary of trihalomethane results. In 2018, samples will be collected in February, May, August, and November.

Table 10 - Trihalomethane (Schedule 13, Section 13-6) Results

BLAIRS GROVE

Month	THMs	Bromodichloro methane	Bromoform	Chloroform	Dibromochloro methane	Maximum Allowable Concentration	Exceedance
	Result (µg/L)	Result (µg/L)	Result (µg/L)	Result (µg/L)	Result (µg/L)	(µg/L)	
Feb	11.0	4.0	<0.34	4.6	2.8	100	No
May	12.0	4.3	<0.34	5.5	2.5	100	No
Aug	15.0	5.1	0.39	6.4	3.2	100	No
Nov	16.0	5.2	0.41	7.0	3.2	100	No
Average	13.5	4.7	0.37	5.9	2.9		
Maximum	16.0	5.2	0.41	7.0	3.2		

HURONVILLE SOUTH

Month	THMs	Bromodichloro methane	Bromoform	Chloroform	Dibromochloro methane	Maximum Allowable Concentration	Exceedance
	Result (µg/L)	Result (µg/L)	Result (µg/L)	Result (µg/L)	Result (µg/L)	(µg/L)	
Feb	4.8	1.4	<0.34	2.4	1.0	100	No
May	6.5	2.0	<0.34	3.0	1.5	100	No
Aug	8.8	2.8	0.39	3.3	2.3	100	No
Nov	7.4	2.4	<0.34	3.1	1.8	100	No
Average	6.9	2.2	0.35	3.0	1.7		
Maximum	8.8	2.8	0.39	3.3	2.3		

MURDOCK GLEN

Month	THMs	Bromodichloro methane	Bromoform	Chloroform	Dibromochloro methane	Maximum Allowable Concentration	Exceedance
	Result (µg/L)	Result (µg/L)	Result (µg/L)	Result (µg/L)	Result (µg/L)	(µg/L)	
Feb	13.0	4.5	0.74	3.9	4.1	100	No
May	12.0	4.1	0.60	3.8	3.4	100	No
Aug	13.0	4.2	0.81	3.7	3.9	100	No
Nov	17.0	5.8	0.88	5.2	4.9	100	No
Average	13.8	4.7	0.76	4.2	4.1		
Maximum	17.0	5.8	0.88	5.2	4.9		

Table 10 - Trihalomethane (Schedule 13, Section 13-6) Results – Continued

POINT CLARK

Month	THMs	Bromodichloro methane	Bromoform	Chloroform	Dibromochloro methane	Maximum Allowable Concentration	Exceedance
	Result (µg/L)	Result (µg/L)	Result (µg/L)	Result (µg/L)	Result (µg/L)	(µg/L)	
Feb	13.0	4.2	0.34	5.1	2.9	100	No
May	5.4	1.7	<0.34	2.5	1.2	100	No
Aug	6.4	2.1	<0.34	2.6	1.6	100	No
Nov	8.1	2.7	<0.34	3.4	2.0	100	No
Average	8.2	2.7	0.34	3.4	1.9		
Maximum	13.0	4.2	0.34	5.1	2.9		

3.3.4 Haloacetic Acids (Schedule 13, Section 13-6.1)

Ontario Regulation 170/03 has been amended to include quarterly testing for Haloacetic acids (HAAs). Four distribution samples are taken every three months from representative points in the distribution system and tested for Haloacetic Acids (HAAs). In 2018, samples were collected during the months of February, May, August, and November and results are expressed as a running annual average. Results are summarized in **Table 11**.

Table 11 - Haloacetic Acid (Schedule 13, Section 13-6.1) Results

BLAIRS GROVE

Month	Total HAAs	Bromo acetic Acid	Chloro acetic Acid	Dichloro acetic Acid	Dibromo acetic Acid	Trichloro acetic Acid	Maximum Allowable Concentration	Exceedance
	Result (µg/L)	Result (µg/L)	Result (µg/L)	Result (µg/L)	Result (µg/L)	Result (µg/L)	(µg/L)	
Feb	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3	80	No
May	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3	80	No
Aug	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3	80	No
Nov	<5.3	<2.9	<4.7	4.2	<2.0	<5.3	80	No
Avg	<5.3	<2.9	<4.7	3.0	<2.0	<5.3		
Max	<5.3	<2.9	<4.7	4.2	<2.0	<5.3		

HURONVILLE SOUTH

Month	Total HAAs	Bromo acetic Acid	Chloro acetic Acid	Dichloro acetic Acid	Dibromo acetic Acid	Trichloro acetic Acid	Maximum Allowable Concentration	Exceedance
	Result (µg/L)	Result (µg/L)	Result (µg/L)	Result (µg/L)	Result (µg/L)	Result (µg/L)	(µg/L)	
Feb	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3	80	No
May	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3	80	No
Aug	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3	80	No
Nov	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3	80	No
Avg	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3		
Max	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3		

Table 11 - Haloacetic Acid (Schedule 13, Section 13-6.1) Results – Continued

MURDOCK GLEN

Month	Total HAAs	Bromo acetic Acid	Chloro acetic Acid	Dichloro acetic Acid	Dibromo acetic Acid	Trichloro acetic Acid	Maximum Allowable Concentration	Exceedance
	Result (µg/L)	Result (µg/L)	Result (µg/L)	Result (µg/L)	Result (µg/L)	Result (µg/L)	(µg/L)	
Feb	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3	80	No
May	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3	80	No
Aug	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3	80	No
Nov	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3	80	No
Avg	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3		
Max	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3		

POINT CLARK

Month	Total HAAs	Bromo acetic Acid	Chloro acetic Acid	Dichloro acetic Acid	Dibromo acetic Acid	Trichloro acetic Acid	Maximum Allowable Concentration	Exceedance
	Result (µg/L)	Result (µg/L)	Result (µg/L)	Result (µg/L)	Result (µg/L)	Result (µg/L)	(µg/L)	
Feb	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3	80	No
May	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3	80	No
Aug	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3	80	No
Nov	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3	80	No
Avg	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3		
Max	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3		

3.3.5 Nitrate and Nitrite (Schedule 13, Section 13-7)

Four treated water samples are taken every three months and tested for nitrate and nitrite. In 2018, samples were collected during the months of February, May, August, and December. The Ontario Drinking Water Quality Standard (ODWQS) have set a Maximum Allowable Concentration (MAC) of 10 mg/L for nitrates and 1 mg/L for nitrites. The results were found to be within compliance. Refer to **Table 12**. In 2018, samples will be collected in February, May, August, and December.

Table 12 – Nitrate and Nitrite (Schedule 13, Section 13-7) Results

BLAIRS GROVE

Month	Nitrite	Maximum Allowable Concentration	Exceedance	Nitrate	Maximum Allowable Concentration	Exceedance
	Result (mg/L)	(mg/L)		Result (mg/L)	(mg/L)	
Feb	<0.003	1	No	<0.006	10	No
May	<0.003	1	No	<0.006	10	No
Aug	<0.003	1	No	<0.006	10	No
Nov	<0.003	1	No	<0.006	10	No
Average	<0.003			<0.006		
Maximum	<0.003			<0.006		

Table 12 – Nitrate and Nitrite (Schedule 13, Section 13-7) Results - Continued

HURONVILLE SOUTH

Month	Nitrite	Maximum Allowable Concentration (mg/L)	Exceedance	Nitrate	Maximum Allowable Concentration (mg/L)	Exceedance
	Result (mg/L)			Result (mg/L)		
Feb	<0.003	1	No	<0.006	10	No
May	<0.003	1	No	<0.006	10	No
Aug	<0.003	1	No	<0.006	10	No
Nov	<0.003	1	No	<0.006	10	No
Average	<0.003			<0.006		
Maximum	<0.003			<0.006		

MURDOCK GLEN

Month	Nitrite	Maximum Allowable Concentration (mg/L)	Exceedance	Nitrate	Maximum Allowable Concentration (mg/L)	Exceedance
	Result (mg/L)			Result (mg/L)		
Feb	<0.003	1	No	<0.006	10	No
May	<0.003	1	No	<0.006	10	No
Aug	<0.003	1	No	<0.006	10	No
Nov	<0.003	1	No	<0.006	10	No
Average	<0.003			<0.006		
Maximum	<0.003			<0.006		

POINT CLARK

Month	Nitrite	Maximum Allowable Concentration (mg/L)	Exceedance	Nitrate	Maximum Allowable Concentration (mg/L)	Exceedance
	Result (mg/L)			Result (mg/L)		
Feb	<0.003	1	No	<0.006	10	No
May	<0.003	1	No	<0.006	10	No
Aug	<0.003	1	No	<0.006	10	No
Nov	<0.003	1	No	<0.006	10	No
Average	<0.003			<0.006		
Maximum	<0.003			<0.006		

3.3.6 Sodium (Schedule 13, Section 13-8)

One water sample is collected from each point of entry 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 samples were collected on June 21, 2016. Refer to **Table 13**. The next water sample for Sodium will be collected and analyzed on or before June 21, 2021.

3.3.7 Fluoride (Schedule 13, Section 13-9)

One water sample is collected from each point of entry 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 August 15, 2017, samples were collected for this analysis. All four samples exceeded the Maximum Allowable Concentration (MAC). This is due to naturally occurring fluoride in the aquifers. The next water samples for Fluoride will be collected and analyzed on or before August 15, 2022. Refer to **Table 13**.

Table 13 – Sodium (Schedule 13, Section 13-8) and Fluoride (Schedule 13, Section 13-9) Results

Location	Sodium			Fluoride		
	Result (mg/L)	Maximum Allowable Concentration (mg/L)	Exceedance	Result (mg/L)	Maximum Allowable Concentration (mg/L)	Exceedance
Blairs Grove	101	20	Yes	2.20	1.5	Yes
Huronville South	52.7	20	Yes	2.24	1.5	Yes
Murdock Glen	68.4	20	Yes	2.14	1.5	Yes
Point Clark	19.8	20	No	2.20	1.5	Yes

3.3.8 Lead (Schedule 15.1)

Schedule 15.1 of Ontario Regulation 170/03 requires that samples be taken during two seasons: once between December 15 and April 15 and once between June 15 and October 15. The Lakeshore Drinking Water System is currently under a reduced sampling program for lead where lead, pH and alkalinity are sampled in each season every 36 months (3 years). In the interim, pH and alkalinity are tested during each sampling season. Three pH and alkalinity samples were taken on March 27, 2018 and three pH and alkalinity samples on October 4, 2018. These parameters are required to be sampled and analyzed again between the months of December 2018 and April 2019 and again between June and October 2019. Lead samples are required next in the 2020 sampling season. 2018 results can be found in **Table 14**.

Table 14 - Lead Sampling Program (Schedule 15.1) Results

Season	Alkalinity (mg/L)	pH	Lead (mg/L)	Maximum Allowable Concentration - Lead (mg/L)	Exceedance
Dec-Apr	181	7.68	Not required in 2018	0.010	n/a
	181	7.64			
	170	7.85			
Jun-Oct	184	7.47	Not required in 2018	0.010	n/a
	176	7.69			
	185	7.55			

3.3.9 Non-Regulatory Testing – Aesthetic Objectives and Operational Guidelines

Samples were collected on November 21, 2016 and tested for parameters listed in the *MOECC Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines, June 2006, PIBS 4449e01*. Refer to **Table 15** for Aesthetic Objective/Operational Guideline results.

Table 15 – Aesthetic Objectives and Operational Guideline Results

Parameter	AO/OG	Blairs Grove Treated Water	Huronville South Treated Water	Murdock Glen Treated Water	Point Clark Treated Water
pH	6.5 – 8.5	7.89	8.10	8.17	8.07
Alkalinity (mg/L as CaCO ₃)	30 – 500	174	156	171	190
Conductivity (µS/cm)	---	1,720	694	771	709
Colour (TCU)	5	3<MDL	3<MDL	3<MDL	7
Total Dissolved Solids (mg/L)	500	1,350	494	511	534
Organic Nitrogen (mg/L)	0.15	0.05<MDL	0.05<MDL	0.05<MDL	0.05<MDL
Total Kjeldahl Nitrogen (mg/L)	---	0.05<MDL	0.07	0.05<MDL	0.05<MDL
Ammonia + Ammonium (mg/L)	---	0.04<MDL	0.04	0.07	0.05
Hydrogen Sulphide (mg/L)	0.05	<0.006	<0.006	<0.006	<0.006
Sulphide (mg/L)	0.05	0.006<MDL	0.006<MDL	0.006<MDL	0.006<MDL
Chloride (mg/L)	250	150	18	37	13
Sulphate (mg/L)	500	620	170	170	170
Hardness (mg/L as CaCO ₃)	80 – 100	765	237	246	308
Aluminum (µg/L)	100	25.5	1.0	2.8	3.3
Copper (µg/L)	1000	0.08	0.12	5.80	0.22
Iron (µg/L)	300	581	150	102	311
Manganese (µg/L)	50	3.70	2.02	3.07	4.11
Zinc (µg/L)	5000	2	4	20	4
Dissolved Organic Carbon (mg/L)	5	1<MDL	1<MDL	1<MDL	1<MDL
Methane (L/m ³)	3	0.02<MDL	0.02<MDL	0.02<MDL	0.02<MDL
Ethylbenzene (µg/L)	2.4	0.33<MDL	0.33<MDL	0.33<MDL	0.33<MDL
Toluene (µg/L)	24	0.36<MDL	0.36<MDL	0.36<MDL	0.36<MDL
Xylene (µg/L)	300	0.43<MDL	0.43<MDL	0.43<MDL	0.43<MDL
m/p-xylene (µg/L)	---	0.43<MDL	0.43<MDL	0.43<MDL	0.43<MDL
o-xylene (µg/L)	---	0.17<MDL	0.17<MDL	0.17<MDL	0.17<MDL

AO/OG – Aesthetic Objective / Operational Guideline

MDL – Laboratory Method Detection Limit

4.0 WATER AND CHEMICAL USAGE

4.1 Chemical Usage

In 2018, 2,239.60 kg of 12% sodium hypochlorite (NaOCl) was used to treat the water that was provided to the distribution system with an average dosage of 3.91 mg/L. During the same time period, 1,757.41 kg of undiluted sodium silicate (Na₂SiO₃) was used for iron sequestering with an average dosage of 3.43 mg/L. Refer to **Table 16** for sodium hypochlorite usage and **Table 17** for sodium silicate usage.

Table 16 – Sodium Hypochlorite Usage

Month	BLAIRS GROVE		HURONVILLE SOUTH		MURDOCK GLEN		POINT CLARK	
	Usage (kg)	Average Dosage (mg/L)	Usage (kg)	Average Dosage (mg/L)	Usage (kg)	Average Dosage (mg/L)	Usage (kg)	Average Dosage (mg/L)
Jan	0.98	5.21	53.82	3.41	10.65	3.56	73.72	2.87
Feb	1.96	9.47	34.76	3.75	7.99	3.40	72.88	3.08
Mar	1.26	6.43	34.76	3.39	8.69	3.56	74.71	3.09
Apr	0.70	9.46	38.12	3.52	8.27	3.45	77.09	3.00
May	1.26	6.92	67.84	3.37	9.95	3.32	113.25	2.96
Jun	17.24	4.08	105.12	3.28	18.64	3.48	142.26	3.07
Jul	48.92	3.39	135.96	3.51	32.80	3.48	166.93	3.29
Aug	10.37	4.03	92.93	3.50	17.80	3.90	139.88	3.39
Sep	2.80	5.48	72.04	3.37	11.07	3.75	112.41	3.27
Oct	8.27	4.23	45.55	3.40	7.99	3.70	104.98	3.24
Nov	4.63	4.32	28.73	3.20	9.53	3.62	82.41	3.22
Dec	7.15	3.68	30.41	3.16	8.41	3.27	81.71	3.09
TOTAL	105.54		740.04		151.79		1,242.23	
Average		5.58		3.40		3.55		3.13

Sodium Hypochlorite Grand Total Usage: 2,239.62 kg
Sodium Hypochlorite Average Dosage: 3.92 mg/L

Table 17 - Sodium Silicate Usage

Month	BLAIRS GROVE		HURONVILLE SOUTH		MURDOCK GLEN		POINT CLARK	
	Usage (kg)	Average Dosage (mg/L)	Usage (kg)	Average Dosage (mg/L)	Usage (kg)	Average Dosage (mg/L)	Usage (kg)	Average Dosage (mg/L)
Jan	0.80	4.26	37.08	2.35	18.34	6.14	86.91	3.38
Feb	0.40	1.93	22.33	2.41	11.96	5.08	79.74	3.37
Mar	0.80	4.08	19.14	1.87	12.76	5.23	83.72	3.46
Apr	0.40	5.41	15.55	1.43	12.36	5.16	61.40	2.39
May	0.40	2.20	27.91	1.39	15.95	5.32	87.31	2.28
Jun	22.33	5.29	53.82	1.68	27.51	5.13	108.44	2.34
Jul	68.17	4.73	84.12	2.17	43.86	4.77	116.81	2.30
Aug	16.35	6.36	56.21	2.12	19.14	4.20	97.28	2.36
Sep	2.79	5.46	41.46	1.94	12.76	4.33	82.13	2.39
Oct	8.77	4.69	20.33	1.52	9.17	5.71	79.34	2.45
Nov	5.98	5.58	11.96	1.33	11.16	4.24	62.99	2.46
Dec	7.97	4.10	17.54	1.83	10.37	4.03	63.79	2.42
TOTAL	135.15		407.46		205.34		1,009.87	
Average		4.50		1.84		4.82		2.63

Sodium Silicate Grand Total Usage: 1,757.80 kg
Sodium Silicate Average Dosage: 3.45 mg/L

4.2 Annual Volumes

A summary of the water supplied to the distribution system in 2018 is provided in **Table 18**. This Table provides a breakdown of the monthly volumes provided to the distribution system.

Flow meters were calibrated on July 18, 2018 by Corix Water Meter Service and were found to be acceptable. The water meters will be calibrated again by July 2019.

Table 18 – Treated Water Volume

BLAIRS GROVE

Month	Avg Daily Volume (m ³)	Max Daily Volume (m ³)	Total Monthly Volume (m ³)
Jan	6.33	26.60	196.33
Feb	8.71	45.37	243.90
Mar	4.87	17.87	150.88
Apr	2.49	14.99	74.68
May	6.20	66.30	192.25
Jun	167.23	1,288.50	5,017.03
Jul	464.44	1,277.52	14,397.54
Aug	57.43	668.93	1,780.47
Sep	16.33	326.39	489.76
Oct	60.19	470.53	1,865.78
Nov	35.92	394.15	1,077.59
Dec	62.64	790.12	1,941.83
TOTAL			27,428.04
Average	74.40		
Maximum		1,288.50	
PTTW		2,621.00	
Average Capacity			2.87%

Table 18 – Treated Water Volume - Continued

HURONVILLE SOUTH

Month	Avg Daily Volume (m ³)	Max Daily Volume (m ³)	Total Monthly Volume (m ³)
Jan	500.25	2,168.39	15,507.90
Feb	325.85	349.72	9,123.77
Mar	331.37	376.65	10,272.59
Apr	362.91	634.20	10,887.24
May	640.09	1,058.87	19,842.83
Jun	1,089.88	1,511.90	32,696.48
Jul	1,226.64	1,652.92	38,025.96
Aug	854.68	1,116.04	26,495.19
Sep	713.73	939.42	21,411.91
Oct	419.52	622.86	13,005.11
Nov	295.21	357.79	8,856.16
Dec	307.11	341.28	9,520.26
TOTAL			215,645.40
Average	588.94		
Maximum		2,168.39	
PTTW		3,927.74	
Average Capacity			15.04%

MURDOCK GLEN

Month	Avg Daily Volume (m ³)	Max Daily Volume (m ³)	Total Monthly Volume (m ³)
Jan	100.68	330.60	3,120.93
Feb	81.43	148.11	2,279.94
Mar	78.67	132.23	2,438.84
Apr	77.57	135.35	2,326.99
May	100.23	296.78	3,107.13
Jun	184.20	413.24	5,525.92
Jul	287.55	828.43	8,913.90
Aug	148.66	305.30	4,608.41
Sep	98.18	141.33	2,945.44
Oct	69.03	130.35	2,139.89
Nov	88.26	258.49	2,647.84
Dec	83.61	127.53	2,591.80
TOTAL			42,647.03
Average	116.51		
Maximum		828.43	
PTTW		1,814.40	
Average Capacity			6.44%

Table 18 – Treated Water Volume - Continued

POINT CLARK

Month	Avg Daily Volume (m ³)	Max Daily Volume (m ³)	Total Monthly Volume (m ³)
Jan	813.77	916.78	25,226.97
Feb	839.64	974.55	23,509.78
Mar	799.08	920.66	24,771.61
Apr	861.68	1,410.85	25,850.42
May	1,230.46	1,678.33	38,144.11
Jun	1,551.03	1,851.07	46,530.97
Jul	1,606.02	1,819.12	49,786.53
Aug	1,336.40	1,651.21	41,428.31
Sep	1,164.22	1,585.55	34,926.56
Oct	1,027.13	1,279.09	31,841.14
Nov	855.78	991.71	25,673.38
Dec	849.34	1,042.68	26,329.52
TOTAL			394,019.30
Average	1,077.88		
Maximum		1,851.07	
PTTW		3,273.12	
Average Capacity			32.98%

Location	Total Volume for 2018
Blairs Grove	27,428.04
Huronville South	215,645.40
Murdock Glen	42,647.03
Point Clark	394,019.30
Grand Total Flow (all sites), Actual (m ³)	679,739.77
Grand Total Rated Capacity, PTTW (m ³)	4,247,234.90
Operating Capacity, Actual %	16.00%

5.0 IMPROVEMENTS TO SYSTEM AND ROUTINE AND PREVENTATIVE MAINTENANCE

The following summarizes water system improvements and routine and preventative maintenance for the Lakeshore Drinking Water System Supply:

Point Clark:

Routine and preventative maintenance performed as per Jobs Plus schedule.

- September 2018: New flow checker
- Backflow preventer inspection
- October 2018: New chlorine day tank

5.0 IMPROVEMENTS TO SYSTEM AND ROUTINE AND PREVENTATIVE MAINTENANCE- Continued

Blairs Grove:

Routine and preventative maintenance performed as per Jobs Plus schedule.

June 2018: Well pump flow meter malfunction (air-lock)
July 2018: Communications issues – HuronTel made repairs
November 2018: Well pump flow meter malfunction (air-lock)

Murdock Glen:

Routine and preventative maintenance performed as per Jobs Plus schedule.

May 2018: Diesel generator annual service
September 2018: Overhead crane/hoist inspection
Backflow preventer inspection

Huronville South:

Routine and preventative maintenance performed as per Jobs Plus schedule.

January 2018: Supply to Kincardine – 6,239.48 m³
September 2018: Backflow preventer inspection
October 2018: Terminal strip for power factor correction capacitor malfunctioned (rewired)

All Sites:

Semi-annual flushing: April-May; October - November
Valve turning: April-May
Flow meter calibration: July 19, 2018
Fire & Safety inspections: September 7, 2018

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

- An MECP Drinking Water Inspection was conducted on December 6, 2017 and awarded a rating of 100.00% (previous rating was 99.40%).
- A list of Capital Items was submitted to the Township of Huron-Kinloss of November 1st, 2018.
- DWQMS Accreditation Audit was conducted on August 7, 2018. There were 2 minor non-conformities.
- Emergency Response Exercise was conducted as a follow-up response to a major watermain break that happened in Goderich on August 21-23, 2018, where many utilities were involved. An “After Action Report” was submitted to the utilities involved following the tabletop incident review.
- DWQMS Management Review was conducted on May 11, 2018.

7.0 REGULATORY CHANGES

Changes to Ontario Regulation 170/03 and Ontario Regulation 169/03 that strengthen standards and clarify testing requirements, new sampling and testing parameters, reporting and re-sampling requirements, and the removal of 13 pesticides came into effect January 1, 2016. Updates to standards and reporting requirements for Arsenic came into effect January 1, 2018. Over the next few years, the following amendments will be added. Subsequent phase-in dates are:

- January 1, 2020: New standards for HAAs and HAAs testing optimization rule for smaller systems will come into effect / require reporting.

7.1 Arsenic Sampling

In January 2018, O. Reg. 169/03 - Ontario Drinking Water Quality Standard for Arsenic was changed to 0.010 mg/L from 0.025 mg/L, making the new Half-MAC (maximum allowable concentration) 0.005 mg/L. Point Clark is the only Lakeshore site that has an Arsenic level in exceedance of the Half-MAC and therefore must be sampled on a quarterly basis to satisfy O. Reg. 170/03, Schedule 13-5(1) – Increased frequency under s.s 13-2 and 13-4. See **Table 19** for Point Clark Arsenic results.

Table 19 - Arsenic Sampling

Date	Arsenic Results, mg/L				Maximum Allowable Concentration, mg/L	Exceedance
	Blairs Grove	Huronville South	Murdock Glen	Point Clark		
June 4, 2018	0.004	0.004	0.0016	0.0056	0.010	No
October 2, 2018	--	--	--	0.0053	0.010	No

NOTE:

O. Reg. 170/03, Schedule 13: Increased frequency under ss. 13-2 and 13-4

13-5. (1) If a test result obtained under section 13-2 or 13-4 for a parameter exceeds half of the standard prescribed for the parameter in Schedule 2 to the Ontario Drinking Water Quality Standards, the frequency of sampling and testing for that parameter under that section shall be increased so that at least one water sample is taken and tested every three months.

8.0 WELL LEVELS

Each of the four sub-systems has a Permit To Take Water, which dictates the capacity in which each well supply is permitted to supply, as well as specific monitoring parameters. In addition to flow, static well levels are taken on a monthly basis to monitor the performance of the aquifer. **Table 20** provides a summary of the static well levels recorded for 2018.

Table 20 - Static Well Levels

Month	Blairs Grove (m)	Huronville South (m)	Murdock Glen (m)	Point Clark Well 2 (m)	Point Clark Well 3 (m)
Jan	2.11	10.97	8.83	4.57	7.01
Feb	2.09	10.67	8.81	4.87	7.01
Mar	2.46	10.06	4.34	3.96	7.32
Apr	1.94	10.36	8.54	3.96	7.92
May	2.18	10.06	8.15	6.10	7.62
Jun	2.11	10.06	9.25	4.88	7.62
Jul	1.76	10.36	9.70	4.57	7.62
Aug	1.76	11.28	10.15	5.18	8.53
Sep	2.04	10.97	9.39	4.27	7.62
Oct	1.73	11.28	10.18	7.32	7.92
Nov	1.94	10.36	9.50	9.14	10.06
Dec	2.11	10.67	8.76	14.63	7.92
Min	1.73	10.06	4.34	3.96	7.01
Max	2.46	11.28	10.18	14.63	10.06
Avg	2.02	10.59	8.80	6.12	7.85

9.0 SOURCE WATER PROTECTION

A Drinking Water Source Protection Assessment Report was generated for the Saugeen Valley Source Protection Area by the Conservation Authority Source Protection Office. This report identifies vulnerable areas, recharge areas, and potential threats to help protect existing and future sources of drinking water from contamination and overuse. This report can be found on-line at:

<http://home.waterprotection.ca/source-protection-plan/assessment-reports/saugeen-valley/>

The Well Head Protection Areas (WHPAs) within the Lakeshore Drinking Water System have 4 designations:

- WHPA-A: 100m radius around the well head
- WHPA-B: 2-year time-of-travel capture zone
- WHPA-C: 5-year time-of-travel capture zone
- WHPA-D: 25-year time-of-travel capture zone

The Lakeshore wells are **not** classified as groundwater under direct influence of surface water (GUDI).

This report states: “The WHPAs (well head protection areas) within the Township of Huron-Kinloss vary significantly in their vulnerability to contamination. A large percentage of the total area within the Blairs Grove, Murdock Glen and Point Clark WHPAs has a low intrinsic vulnerability to contamination. Blairs Grove and Point Clark have low vulnerability in over 94% of their area. Huronville South has a slightly higher vulnerability to contamination and a larger portion of moderate vulnerability.” **Table 21** shows a summary of significant drinking water threats within the Lakeshore Drinking Water System.

Table 21: Lakeshore WHPA: Summary of Significant Drinking Water Threats

WHPA A-D	Number of “are or would be significant” threats				Number of properties with “are or would be significant” threats			
	Chemical	DNAPL	Pathogen	Total	Agricultural	Residential	Others	Total
Blairs Grove	32	0	22	54	0	22	0	22
Huronville	84*	0	2*	86	0	82	2**	84
Murdock Glen	12	4	10	26	1	10	0	11
Point Clark	22	4	15	41	0	14	1	15

* One threat of the stated threat count is found in the Municipality of Kincardine.

** One property of the stated property count is found in the Municipality of Kincardine.

In conclusion, as stated in the report: “Based on available data and knowledge on raw water quality, no drinking water quality issues were identified for this water system that would result from ongoing or past activities. Also, no conditions resulting from past activities were identified within the WHPA.”

Drinking Water Issue	Parameter
None	None
Drinking Water Condition	Threat
None	None