

# Lakeshore Annual Report

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## 1.0 INTRODUCTION AND BACKGROUND

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, 2017. 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.

## 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 <sup>3</sup>
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)

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 iPhone, and to have control over operations.

The four well systems are detailed as follows:

<b>Site:</b>	<b>Point Clark - 603 Tuscarora Rd</b>
• 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 m <sup>3</sup>
• 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 m<sup>3</sup>
- 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 m<sup>3</sup>
- 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 m<sup>3</sup>
- Permit To Take Water: 3332-9N6H8L, expires November 1, 2024

The LDWDSS currently (February 2018) 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 Murdoch 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 m<sup>3</sup> 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.

### 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 2017, 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.

##### 3.1.2 Distribution (Grab) Free Chlorine Residuals

In 2017, a total of 678 distribution residuals were collected: 365 daily grab residuals and an additional 313 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	1.28	1.49	1.61	1.40	1.35
Feb	1.33	1.54	1.50	1.64	1.36
Mar	1.43	1.72	1.62	1.69	1.43
Apr	1.31	1.62	1.55	1.56	1.36
May	1.39	1.60	1.39	1.46	1.33
Jun	1.33	1.63	1.53	1.56	1.39
Jul	1.30	1.59	1.52	1.51	1.38
Aug	1.29	1.63	1.67	1.52	1.39
Sep	1.31	1.62	1.66	1.58	1.41
Oct	1.35	1.75	1.71	1.64	1.42
Nov	1.30	1.76	1.77	1.64	1.41
Dec	1.41	1.74	1.64	1.68	1.43
Annual Min	1.09	1.41	1.10	1.18	0.86
Annual Max	1.91	1.86	1.89	1.90	1.77
Annual Avg	1.34	1.64	1.60	1.57	1.39
# Samples	365	365	365	365	678

### 3.1.3 Turbidity

Drinking water turbidity was measured by a portable turbidity analyzer. Raw and treated water grab samples were collected and analyzed for turbidity. **Table 2** provides a summary of raw and treated turbidity results. The maximum turbidity measured in the raw water was 1.53 NTU and the maximum turbidity measured in the treated water was 0.55 NTU.

**Table 2 – Raw and Treated Water Turbidity**

Month	BG Raw	BG Treated	HS Raw	HS Treated	MG Raw	MG Treated	PC W2 Raw	PC W3 Raw	PC Treated
Jan	1.10	0.35	0.15	0.14	0.26	0.3	0.13	0.14	---
Feb	1.15	0.40	0.29	0.16	0.15	0.3	0.24	0.25	0.24
Mar	0.84	0.22	0.08	0.09	0.18	0.29	0.24	0.22	---
Apr	1.53	0.55	0.20	0.21	0.26	0.19	0.18	0.18	0.17
May	0.55	0.37	0.17	0.14	0.32	0.30	0.13	0.13	---
Jun	0.61	0.38	0.13	0.20	0.22	0.20	0.14	0.16	0.19
Jul	1.08	0.34	0.17	0.18	0.17	0.35	0.26	0.23	0.10
Aug	0.97	0.27	0.19	0.20	0.18	0.13	0.18	0.21	0.25
Sep	0.96	0.17	0.06	0.06	0.16	0.14	0.17	0.28	0.21
Oct	0.74	0.16	0.08	0.11	0.16	0.26	0.12	0.19	0.16
Nov	0.71	0.20	0.07	0.12	0.13	0.24	0.13	0.16	0.21
Dec	0.89	0.41	0.22	0.28	0.21	0.29	0.13	0.15	0.17
Annual Min	0.55	0.16	0.06	0.06	0.13	0.13	0.10	0.11	0.10
Annual Max	1.53	0.55	0.29	0.28	0.32	0.35	0.26	0.28	0.25
Annual Avg	0.94	0.32	0.15	0.16	0.21	0.26	0.16	0.18	0.19
# Samples	13	14	13	13	14	14	15	15	9

## 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 2017, a total of 261 samples were collected and analyzed for E. Coli and Total Coliform. **Table 3** provides a summary of bacteriological results performed on the raw water.

**Table 3 – Microbiological Results for Raw Water**

Month	E. Coli			Total Coliform		
	# 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	20	20	0	20	20	0
Aug	26	26	0	26	25	1*
Sep	20	20	0	20	20	0
Oct	25	25	0	25	25	0
Nov	20	20	0	20	20	0
Dec	20	20	0	20	20	0
TOTAL	261	261	0	261	260	1

\*Note: One sample result from Huronville South raw water tested positive of 1 Total Coliform on August 8, 2017. 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 2017, a total of 209 treated water samples were collected and analyzed for the above parameters. One sample had a total coliform of 1 cfu/100 mL, but the resample was all clear. Each E. Coli result from the treated water was 0 cfu/100 mL. The range of HPC results were 0 – 6 cfu/100 mL. **Table 4** 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 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 2017, a total of 365 distribution samples were collected and analyzed for the above parameters, which is above the required number of samples (n=156, based on 5,681 potential residents). Each E. Coli and Total Coliform result was 0 cfu/100 mL. The range of HPC results were 0 – 8 cfu/100 mL. **Table 5** provides a summary of all bacteriological samples taken in the distribution system.

**Table 4 –** Microbiological Results for Treated Water (Point of Entry)

Month	E.Coli			Total Coliform			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	11	9
Feb	16	16	0	16	16	0	16	10	6
Mar	16	16	0	16	16	0	16	12	4
Apr	16	16	0	16	16	0	16	10	6
May	20	20	0	20	20	0	20	12	8
Jun	16	16	0	16	16	0	16	7	9
Jul	16	16	0	16	16	0	16	12	4
Aug	21	21	0	21	20	1*	20	11	9
Sep	16	16	0	16	16	0	16	15	1
Oct	20	20	0	20	20	0	20	17	3
Nov	16	16	0	16	16	0	16	13	3
Dec	16	16	0	16	16	0	16	10	6
<b>TOTAL</b>	<b>209</b>	<b>209</b>	<b>0</b>	<b>209</b>	<b>209</b>	<b>1</b>	<b>208</b>	<b>140</b>	<b>68</b>

\* Note: One sample result from Murdock Glen treated water tested positive for 1 Total Coliform on August 22, 2017. This result was reported to the Grey-Bruce Health Unit and MOECC Spills Action Centre as an adverse (AWQI # 135888). The resample was free of Total Coliform.

**Table 5 –** Microbiological Results for Distribution System

Month	E.Coli			Total Coliform			HPC		
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples 1 - 8
Jan	35	35	0	35	35	0	20	13	7
Feb	28	28	0	28	28	0	16	13	3
Mar	28	28	0	28	28	0	16	9	7
Apr	27	27	0	27	27	0	16	12	4
May	35	35	0	35	35	0	21	17	4
Jun	28	28	0	28	28	0	16	8	8
Jul	28	28	0	28	28	0	16	11	5
Aug	36	36	0	36	36	0	20	7	13
Sep	28	28	0	28	28	0	16	12	4
Oct	35	35	0	35	35	0	20	18	2
Nov	29	29	0	29	29	0	16	15	1
Dec	28	28	0	28	28	0	16	14	2
<b>TOTAL</b>	<b>365</b>	<b>365</b>	<b>0</b>	<b>365</b>	<b>365</b>	<b>0</b>	<b>209</b>	<b>149</b>	<b>60</b>



### 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 10, 2015 and submitted to the laboratory for analysis of inorganics as listed in Schedule 23. All parameters were found to be within compliance. Inorganics will be sampled and analyzed again on or before June 10, 2018. Results from the June 10, 2015 samples can be found in **Table 6**.

**Table 6 –** 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	0.02 <MDL	0.02 <MDL	0.02 <MDL	0.02 <MDL	6	No
Arsenic	3.9	0.4	1.6	5.5	25*	No
Barium	24.1	24.3	26.6	25.3	1000	No
Boron	68.2	151	138	71.1	5000	No
Cadmium	0.003 <MDL	0.003 <MDL	0.012	0.003 <MDL	5	No
Chromium	0.03 <MDL	0.03 <MDL	0.08	0.03 <MDL	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	10	No
Uranium	0.419	0.305	1.47	0.431	20	No

Note \*: The Arsenic standard changes from a MAC of 25 µg/L to 10 µg/L in January 2018.

#### 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 10, 2015. All parameters were found to be within compliance. Organics will be sampled and analyzed again on or before June 10, 2018. Sample results can be found in **Table 7**.

**Table 7 -** 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	5	No
Carbon Tetrachloride	0.16 <MDL	0.16 <MDL	0.16 <MDL	0.16 <MDL	5	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	30	No
Trichloroethylene	0.44 <MDL	0.44 <MDL	0.44 <MDL	0.44 <MDL	50	No
Vinyl Chloride	0.17 <MDL	0.17 <MDL	0.17 <MDL	0.17 <MDL	2	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

**Table 7 – 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
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
2,3,4,5-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
Alachlor	0.02 <MDL	0.02 <MDL	0.02 <MDL	0.02 <MDL	5	No
Aldicarb	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	9	No
Aldrin+Dieldrin	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.7	No
Aldrin	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	-	-
Dieldrin	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	-	-
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	-	-
De-ethylated 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
Bendiocarb	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	40	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
Chlordane	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	7	No
a-chlordane	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	-	-
g-chlordane	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	-	-
Oxychlordane	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	-	-
Chlorpyrifos	0.02 <MDL	0.02 <MDL	0.02 <MDL	0.02 <MDL	90	No
Cyanazine	0.03 <MDL	0.03 <MDL	0.03 <MDL	0.03 <MDL	10	No
Diazinon	0.02 <MDL	0.02 <MDL	0.02 <MDL	0.02 <MDL	20	No
(DDT)+Metabolites	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	30	No
op-DDT	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	-	-
pp-DDD	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	-	-
pp-DDE	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	-	-
pp-DDT	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	-	-
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
Heptachlor-Heptachlor Epoxide	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	3	No
Heptachlor	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	-	-
Heptachlor epoxide	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	-	-
Lindane	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	4	No
Malathion	0.02 <MDL	0.02 <MDL	0.02 <MDL	0.02 <MDL	190	No
Methoxychlor	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	900	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
Parathion	0.02 <MDL	0.02 <MDL	0.02 <MDL	0.02 <MDL	50	No

**Table 7 –** Organics (Schedule 13, Section 13-4; Schedule 24) Results - Continued

Parameter	Blairs Grove (µg/L)	Huronville South (µg/L)	Murdock Glen (µg/L)	Point Clark (µg/L)	Maximum Allowable Concentration (µg/L)	Exceedance
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
Temephos	0.01 <MDL	0.01 <MDL	0.01 <MDL	0.01 <MDL	280	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
2,4,5-trichlorophenoxyacetic acid	0.22 <MDL	0.22 <MDL	0.22 <MDL	0.22 <MDL	280	No
Bromoxynil	0.33 <MDL	0.33 <MDL	0.33 <MDL	0.33 <MDL	5	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
Dinoseb	0.36 <MDL	0.36 <MDL	0.36 <MDL	0.36 <MDL	10	No
Picloram	1 <MDL	1 <MDL	1 <MDL	1 <MDL	190	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 2017, 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 2017, the average THM was found to be 10.94 µg/L, which is within compliance. Refer to **Table 8** for the summary of trihalomethane results. In 2018, samples will be collected in February, May, August, and November.

**Table 8 -** 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	3.5	<0.34	4.8	2.3	100	No
May	13.0	4.5	0.34	5.5	2.9	100	No
Aug	8.3	2.8	<0.34	3.6	2.0	100	No
Nov	25.0	7.7	0.50	13.0	4.2	100	No
<b>Average</b>	14.3	4.63	0.38	6.7	2.9		
<b>Maximum</b>	25.0	7.7	0.50	13.0	4.2		

**Table 8 -** Trihalomethane (Schedule 13, Section 13-6) Results - Continued

**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	8.9	2.8	<0.34	4.1	2.0	100	No
May	6.1	1.9	<0.34	2.8	1.4	100	No
Aug	5.8	1.8	<0.34	2.7	1.4	100	No
Nov	7.9	2.6	<0.34	3.4	1.9	100	No
Average	7.2	2.3	<0.34	3.3	1.7		
Maximum	8.9	2.8	<0.34	4.1	2.0		

**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	14.0	4.6	0.69	4.6	4.0	100	No
May	11.0	3.6	0.71	2.9	3.5	100	No
Aug	8.6	2.8	0.56	2.6	2.7	100	No
Nov	19.0	6.3	1.00	5.6	5.6	100	No
Average	13.2	4.3	0.74	3.9	4.0		
Maximum	19.0	6.3	1.00	5.6	5.6		

**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	6.8	2.2	<0.34	3.0	1.6	100	No
May	5.5	1.8	<0.34	2.3	1.4	100	No
Aug	5.2	1.7	<0.34	2.3	1.2	100	No
Nov	19.0	6.5	0.46	8.4	4.0	100	No
Average	9.1	3.1	0.37	4.0	2.1		
Maximum	19.0	6.5	0.46	8.4	4.0		

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 2017, 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 9**.

Table 9 - Haloacetic Acid (Schedule 13, Section 13-6.1) Results

**BLAIRS GROVE**

Month	Total HAAs	Bromoacetic Acid	Chloroacetic Acid	Dichloroacetic Acid	Dibromoacetic Acid	Trichloroacetic 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
Average	<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	Bromoacetic Acid	Chloroacetic Acid	Dichloroacetic Acid	Dibromoacetic Acid	Trichloroacetic 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
Average	<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		

**MURDOCK GLEN**

Month	Total HAAs	Bromoacetic Acid	Chloroacetic Acid	Dichloroacetic Acid	Dibromoacetic Acid	Trichloroacetic 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
Average	<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 9 -** Haloacetic Acid (Schedule 13, Section 13-6.1) Results – Continued

**POINT CLARK**

Month	Total HAAs	Bromoacetic Acid	Chloroacetic Acid	Dichloroacetic Acid	Dibromoacetic Acid	Trichloroacetic 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
Average	<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 2017, 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 8**. In 2018, samples will be collected in February, May, August, and December.

**Table 10 –** 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	<0.006	1	No	<0.003	10	No
May	<0.006	1	No	<0.003	10	No
Aug	<0.006	1	No	<0.003	10	No
Nov	<0.006	1	No	0.004	10	No
Average	<0.006			<0.003		
Maximum	<0.006			0.003		

**HURONVILLE SOUTH**

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

**Table 10 – Nitrate and Nitrite (Schedule 13, Section 13-7) Results - Continued**

**MURDOCK GLEN**

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

**POINT CLARK**

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

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 11**. 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 11**.

**Table 11 – 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 3 years. In the interim, pH and alkalinity are tested during each sampling season. Two lead, pH and alkalinity samples were taken on March 29, 2017 and three lead, pH and alkalinity samples on September 18 and 19, 2017. These parameters are required to be sampled and analyzed again between the months of December 2017 and April 2018 and again between June and October 2018. Lead samples are required next in the 2020 sampling season. 2017 results can be found in **Table 12**.

**Table 12 -** Lead Sampling Program (Schedule 15.1) Results

Season	Alkalinity (mg/L)	pH	Lead (mg/L)	Maximum Allowable Concentration - Lead (mg/L)	Exceedance
Dec-Apr	186	7.80	0.00043	0.010	No
	225	7.59	0.00035		No
	185	7.50	0.00015		No
Jun-Oct	171	7.87	0.00034	0.010	No
	181	7.51	0.00028		No
	181	7.67	0.00015		No

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 12** for Aesthetic Objective/Operational Guideline results.

**Table 13 –** 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 <sub>3</sub> )	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 <sub>3</sub> )	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



**Table 13 – Aesthetic Objectives and Operational Guideline Results - Continued**

Parameter	AO/OG	Blairs Grove Treated Water	Huronville South Treated Water	Murdock Glen Treated Water	Point Clark Treated Water
Dissolved Organic Carbon (mg/L)	5	1<MDL	1<MDL	1<MDL	1<MDL
Methane (L/m <sup>3</sup> )	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 2017, 1,830.37 kg of 12% sodium hypochlorite (NaOCl) was used to treat the water that was provided to the distribution system with an average dosage of 3.56 mg/L. During the same time period, 7,466.25 kg of undiluted sodium silicate (Na<sub>2</sub>SiO<sub>3</sub>) was used for iron sequestering. Refer to **Table 14** for sodium hypochlorite usage and **Table 15** for sodium silicate usage.

**Table 14 – 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	13.46	3.81	25.37	3.36	6.17	4.13	49.62	3.05
Feb	0.56	3.66	24.11	3.51	4.77	3.69	61.11	3.16
Mar	1.12	8.82	39.95	3.37	5.89	3.71	65.74	2.96
Apr	1.54	3.41	28.31	3.30	5.75	3.37	78.63	2.85
May	9.25	3.05	56.62	3.35	17.52	3.25	93.63	2.76
Jun	1.40	4.95	73.86	3.36	11.07	3.5	100.35	2.97
Jul	0.98	4.54	83.40	3.43	14.02	3.59	111.99	2.94
Aug	0.84	4.38	109.04	3.62	19.20	3.75	130.91	3.10
Sep	1.26	7.16	79.19	3.78	10.09	3.92	98.81	3.19
Oct	0.42	5.12	46.11	3.89	9.67	4.12	108.34	3.45
Nov	1.12	8.82	39.95	3.37	5.89	3.71	65.74	2.96
Dec	1.68	5.94	33.36	3.61	5.61	3.93	76.95	3.00
<b>TOTAL</b>	33.63	---	639.27	---	115.65	---	1,041.82	---
<b>Average</b>	2.80	5.31	53.27	3.50	9.64	3.72	86.82	3.03

**Sodium Hypochlorite Grand Total Usage:** 1,830.37 kg

**Table 15 - 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	85.03	24.09	36.24	4.80	27.88	18.67	316.44	19.48
Feb	2.79	18.24	37.64	5.48	20.91	16.20	331.77	17.14
Mar	4.18	32.91	65.52	5.52	26.49	16.68	387.53	17.44
Apr	11.15	24.72	43.21	5.03	30.67	17.99	433.53	15.72
May	44.61	14.10	92.00	5.44	96.19	17.85	448.87	13.22
Jun	4.18	14.77	122.67	5.58	55.76	17.62	536.69	15.90
Jul	4.18	19.35	153.34	6.3	71.09	18.20	637.06	16.74
Aug	2.79	14.53	239.77	7.95	96.19	18.8	717.91	17.00
Sep	4.18	23.75	143.58	6.85	50.18	19.49	532.51	17.17
Oct	1.39	16.95	55.76	4.7	44.61	19.02	561.78	17.88
Nov	4.18	32.91	65.52	5.52	26.49	16.68	387.53	17.44
Dec	5.58	19.72	64.12	6.94	27.88	19.55	306.68	11.95
<b>TOTAL</b>	174.24	---	1,119.37	---	574.34	---	5,598.30	---
<b>Average</b>	14.52	21.34	93.28	5.84	47.86	18.06	466.53	16.42

**Sodium Silicate Grand Total Usage:** 7,466.26 kg

#### 4.2 Annual Volumes

A summary of the water supplied to the distribution system in 2017 is provided in **Table 16**. This Table provides a breakdown of the monthly volumes provided to the distribution system.

Flow meters were calibrated on July 11<sup>th</sup> and 17<sup>th</sup>, 2017 by Corix Water Meter Service and were found to be acceptable. The water meters will be calibrated again by July 2018.

**Table 16 – Treated Water Volume**

#### BLAIRS GROVE

Month	Avg Daily Volume (m <sup>3</sup> )	Max Daily Volume (m <sup>3</sup> )	Total Monthly Volume (m <sup>3</sup> )
Jan	113.86	725.94	3,529.60
Feb	5.53	33.68	154.83
Mar	3.93	16.45	121.84
Apr	15.02	398.80	450.56
May	97.73	952.18	3,029.70
Jun	9.13	174.98	273.75
Jul	6.80	20.39	210.90
Aug	10.68	29.07	192.23
Sep	5.84	24.22	175.06
Oct	4.99	10.52	84.88
Nov	5.11	26.18	153.43
Dec	8.84	79.42	274.07
<b>TOTAL</b>	---	---	<b>8,650.85</b>
<b>Average</b>	23.96	---	---
<b>Maximum</b>	---	952.18	---
<b>PTTW</b>	---	2,621.00	---

Table 16 – Treated Water Volume - Continued

**HURONVILLE SOUTH**

Month	Avg Daily Volume (m <sup>3</sup> )	Max Daily Volume (m <sup>3</sup> )	Total Monthly Volume (m <sup>3</sup> )
Jan	233.72	270.13	7,245.31
Feb	240.71	273.90	6,739.81
Mar	378.19	2,174.51	11,723.83
Apr	285.08	388.91	8,552.28
May	538.09	862.10	16,680.74
Jun	733.27	1,184.12	21,998.09
Jul	785.18	994.31	24,340.70
Aug	965.75	1,912.67	29,938.36
Sep	701.46	902.56	21,043.82
Oct	370.69	643.39	11,491.25
Nov	293.94	524.28	8,818.18
Dec	297.48	338.51	9,221.90
<b>TOTAL</b>	---	---	<b>177,794.27</b>
Average	485.30	---	---
Maximum	---	2,174.51	---
PTTW	---	3,927.74	---

**MURDOCK GLEN**

Month	Avg Daily Volume (m <sup>3</sup> )	Max Daily Volume (m <sup>3</sup> )	Total Monthly Volume (m <sup>3</sup> )
Jan	48.33	147.35	1,498.15
Feb	45.87	150.82	1,284.37
Mar	53.13	160.31	1,647.06
Apr	59.12	132.68	1,773.58
May	166.39	272.98	5,157.95
Jun	107.78	196.76	3,233.37
Jul	126.70	156.51	3,927.85
Aug	160.68	567.88	4,980.98
Sep	87.13	193.81	2,613.98
Oct	76.00	313.16	2,356.03
Nov	50.81	129.23	1,524.38
Dec	45.97	73.55	1,425.08
<b>TOTAL</b>	---	---	<b>31,422.78</b>
Average	85.66	---	---
Maximum	---	567.88	---
PTTW	---	1,814.40	---

Table 16 – Treated Water Volume - Continued

**POINT CLARK**

Month	Avg Daily Volume (m <sup>3</sup> )	Max Daily Volume (m <sup>3</sup> )	Total Monthly Volume (m <sup>3</sup> )
Jan	558.51	837.64	17,313.79
Feb	695.54	884.53	19,475.10
Mar	719.74	836.79	22,311.81
Apr	930.25	1,217.36	27,907.57
May	1,076.27	1,574.81	33,364.51
Jun	1,137.06	1,821.62	34,111.89
Jul	1,228.86	1,611.34	38,094.67
Aug	1,350.83	1,860.78	41,875.67
Sep	1,047.35	1,449.30	31,420.37
Oct	997.76	1,521.94	30,930.67
Nov	788.98	1,069.98	23,669.23
Dec	838.82	1,025.76	26,003.33
<b>TOTAL</b>	---	---	<b>346,478.61</b>
<b>Average</b>	947.50	---	---
<b>Maximum</b>	---	1,860.78	---
<b>PTTW</b>	---	3,273.12	---

Location	Total Volume for 2017
Blairs Grove	8,650.85
Huronville South	177,794.27
Murdock Glen	31,422.78
Point Clark	346,478.61
Grand Total Flow, Actual (m <sup>3</sup> )	<b>564,346.51 m<sup>3</sup></b>
Grand Total Rated Capacity, PTTW (m <sup>3</sup> )	4,247,234.90 m <sup>3</sup>
Operating Capacity, Actual %	13.29%

## 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.

January 2017: Control module failure - replaced by Eramosa

May 2017: Standpipe in Point Clark was drained and cleaned

July 2017: Data gap due to a clock sync

One (1) chlorine pump and two (2) sodium silicate pumps were replaced

August 2017: Flow checker on chlorine system was replaced

September 2017: New limit switch on HLP 2

October 2017: Watermain break on Tanglewood - galvanized Tee failed

### Blairs Grove:

Routine and preventative maintenance performed as per Jobs Plus schedule.

August 2017: Communications failures - replaced modem

September 2017: HuronTel having communications problems

October 2017: Breaker switch for well pump causing problems - sourcing out a replacement

Lurgan Beach watermain construction project - continued into December

## 5.0 IMPROVEMENTS TO SYSTEM AND ROUTINE AND PREVENTATIVE MAINTENANCE- Continued

### Murdock Glen:

Routine and preventative maintenance performed as per Jobs Plus schedule.

- April 2017: New diesel tank - volume 1,110 L
- May 2017: Diesel generator annual service
- September 2017: Overhead crane/hoist inspection
- October 2017: Back-flow preventer inspection

### Huronville South:

Routine and preventative maintenance performed as per Jobs Plus schedule.

- March 2017: Supply to Kincardine - 3,609 m<sup>3</sup>
- August 2017: Emergency supply to Kincardine due to PLC failure - 1,335 m<sup>3</sup>  
Over-heating of high lift pumps during emergency supply to Kincardine
- October 2017: Back-flow preventer removed

### All Sites:

Semi-annual flushing in April - May, and again October – November.

Valve turning during spring flushing.

- April-May 2017: Eramosa visited sites for SCADA system field audit
- June 2017: SCADA Field Audit Report delivered to Township
- July 2017: SCADA Field Audit review meeting with Eramosa
- October 2017: Eramosa delivers SCADA upgrade progress report
- November 2017: Eramosa visited sites with HVAC engineer

## 6.0 MINISTRY OF THE ENVIRONMENT AND CLIMATE CHANGE INSPECTIONS AND REGULATORY ISSUES

- An MOECC Drinking Water Inspection was conducted on January 11, 2017 and awarded a rating of 99.40% (previous rating was 88.07%). Another Inspection was conducted on December 6, 2017 and is in-progress at the time of this report.
- Flow meter calibrations were conducted on July 11<sup>th</sup> and 17<sup>th</sup>, 2017.
- A list of Capital Items was submitted to the Township of Huron-Kinloss of October 31<sup>st</sup>, 2017.
- DWQMS Internal Audit was conducted on December 5<sup>th</sup> and 6<sup>th</sup>, 2017.
- Emergency Response Exercise was conducted on December 20<sup>th</sup>, 2017, and related to chemical spills around the wellhead.
- A 36-month Risk Assessment was completed on October 20, 2016. The annual review was not started until January 2018.

Two adverse water quality events occurred at the Lakeshore DWS during 2017:

- **AWQI # 135640:** August 18, 2017 - fluoride exceedances on the treated water at Point Clark, Blairs Grove, Murdock Glen, and Huronville South
- **AWQI # 135888:** August 24, 2018 - 1 Total Coliform was reported for the treated water at Murdock Glen. Resample was all clear.

## 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. These are:

- Strengthen standards for Carbon Tetrachloride, Benzene, and Vinyl Chloride;
- Adopt new standards for Chlorate, Chlorite, 1-Methyl-4-Chlorophenoxyacetic acid (MCPA) and Haloacetic Acids (HAAs); (NOTE: Chlorate and Chlorite testing is only required for Municipal Drinking Water Systems using Chlorine Dioxide treatment equipment.)
- Clarify/optimize testing, sampling and reporting requirements for Trihalomethanes (THMs) and HAAs; and
- Remove 13 pesticides from testing requirements.

Some of the aforementioned amendments have been phased in, and over the next few years, the following amendments will be added. Refer to **Table 17** for the new Regulatory Requirements. Subsequent phase-in dates are:

- January 1, 2018: Updates to standards for Arsenic come into effect / require reporting
- January 1, 2020: New standards for HAAs and HAAs testing optimization rule for smaller systems will come into effect / require reporting.

**Table 17 –** Regulatory Requirements

Parameter	Current Requirement		Amended Requirement	
	MAC	½ MAC	*New MAC	*New ½ MAC
Arsenic	25 µg/L	12.5 µg/L	10 µg/L	5 µg/L
Benzene	5 µg/L	2.5 µg/L	1 µg/L	0.5 µg/L
Carbon Tetrachloride	5 µg/L	2.5 µg/L	2 µg/L	1 µg/L
Vinyl Chloride	2 µg/L	1 µg/L	1 µg/L	0.5 µg/L

## 7.1 ARSENIC REVIEW

Historic Arsenic values were reviewed from 2003 to 2015 and are shown in **Table 18**.

**Table 18 –** Historic Arsenic Values

Date	Blairs Grove (µg/L)	Huronville South (µg/L)	Murdock Glen (µg/L)	Point Clark (µg/L)
Feb 2003	3	<2	<2	2
Jun 2003	<2	<2	<2	3
Jun 2006	1.2	0.5	1.2	7.3
Jan 2008	1.1	0.8	1.7	5.2
Jun 2009	3.3	1.6	2.7	6.7
Nov 2010	1.5	0.7	1.8	5.6
Dec 2010	3.7	0.9	2.1	5.6
Aug 2011	3.7	0.9	1.8	5.5
Nov 2011	3.7	1.0	1.9	5.7
Aug 2012	3.3	0.6	1.7	5.2
Nov 2012	1.5	0.8	2.0	5.8
Sep 2013	1.9	0.7	2.0	5.5
Nov 2013	1.4	0.6	1.7	5.1
Sep 2014	3.6	0.6	1.9	5.9
Dec 2014	0.5	0.5	1.7	6.0
Jun 2015	3.9	0.4	1.6	5.5

### 7.1.1 ARSENIC SAMPLING IMPACT

A review of the sample results between 2003 and 2015 indicates that Arsenic may be in exceedance of the amended ½ MAC requirements at the Point Clark facility (highlighted in yellow). This would require quarterly sampling to be conducted (see note below).

Historic values of the other parameters (Benzene, Carbon Tetrachloride, and Vinyl Chloride), are all below the amended standards prescribed.

Arsenic testing will commence in the first quarter of 2018.

**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, well levels are taken on a monthly basis to monitor the performance of the aquifer. **Table 19** provides a summary of the well levels recorded for 2017.

**Table 19 -** Well Levels

Month	Blairs Grove (m)	Huronville South (m)	Murdock Glen (m)	Point Clark Well 2 (m)	Point Clark Well 3 (m)
Jan	1.93	10.06	10.15	7.31	7.92
Feb	2.11	10.06	8.95	7.01	8.23
Mar	2.39	10.06	8.85	6.70	7.62
Apr	2.39	10.36	8.75	7.31	5.79
May	2.81	10.36	8.89	7.01	7.62
Jun	2.11	10.36	8.95	7.92	11.88
Jul	2.11	10.05	8.95	4.27	7.62
Aug	1.76	10.97	9.45	10.06	7.62
Sep	1.83	10.67	9.39	3.96	7.62
Oct	2.11	10.67	9.30	7.31	7.92
Nov	2.11	10.36	9.10	4.27	7.31
Dec	2.11	10.06	8.85	3.96	7.31
Min	1.76	10.05	8.75	3.96	5.79
Max	2.81	10.97	10.15	10.06	11.88
Avg	2.15	10.34	9.13	6.42	7.87