Lakeshore Drinking Water System

PREPARED BY:

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Table of Contents

List of Tables

1.0 INTRODUCTION AND BACKGROUND

The purpose of the 2024 Annual Report is to document the operation and maintenance data for the Lakeshore Well Supply for review by the Ministry of the Environment, Conservation and Parks (MECP) in accordance withO. Reg. 170/03. This report covers January 1, 2024 to December 31, 2024. A copy of this report will be submitted to the owner to be displayed to the residents.

2.0 DESCRIPTION OF THE 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
Disinfection Chemicals:	Sodium Hypochlorite, 12%
Iron Sequestering Chemicals:	Sodium Silicate (N), undiluted
Population (Stats Can):	4,270
Total Number of Service Connections:	2,441
Estimated Seasonal Population:	6,347 (based on Census data of 2.6 persons per household)
Average Day Demand:	1,490.38 m^3
Peak Day Demand:	4,208.94 m^3
Average Capacity:	12.82
Peak Capacity:	36.17%
Distribution Network:	94.4 km
Fire Hydrants:	165
Blow-offs:	46

The Lakeshore Drinking Water Distribution and Supply Subsystem (Lakeshore DWS) is characterized as a “secure groundwater system”. It consists of four sub-systems (well supplies), that deliver potable water to the Huron-Kinloss Lakeshore Community, extending from Point Clark in the south, to Huronville in the north, and to the Courtney/Amberley Beach subdivision in the Township of Ashfield-Colborne-Wawanosh. The Township of Huron-Kinloss has an agreement with The Township of Ashfield-Colborne-Wawanosh, where the Courtney/Amberley Beach Subdivision is treated as part of the Lakeshore Drinking Water System.

The four sub-systems are: Point Clark, Blairs Grove, Huronville South, and Murdoch Glen. All of these sites are located within the Township 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 controller, autodialer, and server at the Ripley Municipal Office. The desktop computer used by the system’s operators is located at the Ripley Township Shed and is connected remotely to the SCADA server. 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 Township of Huron-Kinloss also 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 received all their water from the Municipality of Kincardine Water System. There is an interconnecting valve between the Lakeshore DWS and Huronville Subdivision Distribution System, and the Town of Kincardine. This valve is normally closed and is used for emergency purposes only.

The four well supplies are detailed as follows:

Site: Point Clark - 603 Tuscarora Road

- Water Source: Groundwater, Non-GUDI
- Number of Production Wells: 2 (Well # 2 - 1994; Well # 3 - 2015)
- Depth of Wells: 75.6 m; 82.3 m
- Well Pumps: 15 hp 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 (25 hp each)
- Reservoir: 65 m^3
- Permit To Take Water: 1852-9YQMAY, ***expired November 1, 2024***

Site: Blairs Grove - 28 Cathcart Street

- Water Source: Groundwater, Non-GUDI
- Number of Production Wells: 1 (Well # 3 - 1994, flowing artesian)
- Depth of Well: 69.5 m
- Well Pump: 10 hp (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 (30 hp)
- Reservoir: 83 m^3
- Permit To Take Water: 5776-BW6SKS, expires December 17, 2030

Site: Murdoch Glen - 815 Parkplace

- Water Source: Groundwater, Non-GUDI
- Number of Production Wells: 1 (1992)
- Depth of Well: 80.5 m
- Well Pump: 25 hp (submersible)
- Disinfection: Sodium hypochlorite (12%)
- CT Requirement: 2-log, 5°C, contact watermain (BF 1.0)
- Iron Sequestering: Sodium silicate (undiluted)
- High Lift Pumps: 4 total; 2 (15 hp each), 2 (50 hp each)
- Reservoir: 400 m^3
- Standby Power: 130 kW Diesel Generator (1,100 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 Well: 93.3 m
- Well Pump: 30 hp (submersible, soft-start)
- Disinfection: Sodium hypochlorite (12%)
- CT Requirement: 2-log, 5°C, baffled reservoir (BF 0.5)
- Iron Sequestering: Sodium silicate (undiluted)
- High Lift Pumps: 2 (30 hp each)
- Reservoir: 65 m^3
- Permit To Take Water: P-300-1300819462, expires October 16, 2034

The Lakeshore DWS currently has a distribution network with a combination of PVC and polyethylene water mains, in sizes varying between 1-inch and 10-inch diameter. The Lakeshore area has a large seasonal population of potentially 6,347 (based on Census data of 2.6 people per household connection x 2,441 connections), 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 water with sodium silicate. Sequestering does not remove iron, but instead it prevents the dissolved iron from precipitating. When iron is precipitated, it can lead to stained plumbing fixtures and appear as discolouration in the water. Sodium silicate can leave a slight metallic taste in the water. Those who are supplied from the Lakeshore DWS 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 1,100 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 (1996). The 31 m (102 ft) high and 9.45 m (31 ft) diameter standpipe has an effective storage of approximately 1,500 m^3 to supply the entire Lakeshore System in emergency situations. Additionally, a standby generator connection is available at the Point Clark pumphouse. Periodic inspections of the standpipe (exterior and interior) are conducted. In 2021, the standpipe was inspected by the use of a Remotely Operated Vehicles (ROVs).

3.0 SUMMARY OF WATER QUALITY MONITORING

3.1 Water Treatment Equipment Operation and Monitoring as Per Schedule 7, O. Reg. 170/03

3.1.1 Point of Entry Free Chlorine Residuals

A total of 1,166 treated water grab samples were collected and analyzed for free chlorine residual at the point of entry (POE) using a Hach pocket chlorine colorimeter. **Table 1** shows the grab samples monthly average of free chlorine residual values. **Table 2** shows the on-line continuous samples monthly average (as collected by SCADA) of the free chlorine residual values.

3.1.2 Distribution Free Chlorine Residuals

A total of 703 distribution residuals were collected: 366 daily grab residuals and an additional 212 weekly grab residuals were taken in conjunction with the required weekly microbiological sampling. A summary of all the residuals collected is presented in **Table 2**. Courtney Subdivision in ACW is included with the distribution residuals.

Table 1 - Average Treated and Distribution Free Chlorine Residuals

Month	Blairs Grove	Huronville South	Murdoch Glen	Point Clark	Distribution
Jan	1.45	1.67	1.67	1.7	1.45
Feb	1.44	1.52	1.58	1.74	1.43
Mar	1.38	1.51	1.63	1.69	1.38
Apr	1.32	1.63	1.65	1.62	1.41
May	1.41	1.61	1.58	1.66	1.38
Jun	1.40	1.45	1.55	1.61	1.31
Jul	1.40	1.57	1.55	1.60	1.37
Aug	1.48	1.53	1.61	1.65	1.41
Sep	1.44	1.56	1.59	1.59	1.44
Oct	1.35	1.46	1.51	1.56	1.34
Nov	1.44	1.56	1.61	1.66	1.36
Dec	1.53	1.57	1.58	1.72	1.41
CT Requirement	0.22	0.44	0.26	0.32	0.20
Annual Min	1.12	0.49	1	1.24	0.91
Annual Max	1.90	1.95	1.88	2.20	1.90
Annual Avg	1.42	1.55	1.59	1.65	1.341
# Samples	344	366	366	366	212

Table 2 - Average Treated Free Chlorine Residuals (SCADA)

Month	Blairs Grove	Huronville South	Murdoch Glen	Point Clark
CT Requirement				
Annual Min	0	0.76	0.97	0.70
Annual Max	2	4.72	2	3.17
Annual Avg	1.39	1.57	1.62	1.66

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. O. Reg. 170/03 requires raw turbidity samples to be analyzed at least once per month from each well for groundwater systems.

Table 3 - Raw Water Turbidity Results

Month	Blairs Grove	Huronville South	Murdoch Glen	Point Clark W2	Point Clark W3
Jan	0.23	0.43	0.28	0.34	0.39
Feb	0.41	0.41	0.34	0.35	0.36
Mar	0.39	0.17	0.19	0.33	0.37
Apr	0.36	0.22	0.25	0.41	0.36
May	0.34	0.24	0.29	0.25	0.43
Jun	0.38	0.23	0.27	0.42	0.24
Jul	0.40	0.22	0.31	0.36	0.23
Aug	0.32	0.26	0.31	0.11	0.19
Sep	0.30	0.31	0.34	0.18	0.23
Oct	0.36	0.17	0.25	0.23	0.27
Nov	0.24	0.15	0.27	0.21	0.25
Dec	0.35	0.17	0.23	0.26	0.21
Annual Min	0.23	0.15	0.19	0.11	0.19
Annual Max	0.41	0.43	0.34	0.42	0.43
Annual Avg	0.34	0.25	0.28	0.29	0.29
# Samples	13	12	12	12	12

Table 4 - Treated Water Turbidity Results

Month	Blairs Grove	Huronville South	Murdoch Glen	Point Clark
Jan	0.20	0.43	0.24	0.20
Feb	–	0.41	0.34	–
Mar	0.33	0.21	0.22	0.27
Apr	0.35	0.26	0.27	0.24
May	0.31	0.21	0.32	0.29
Jun	0.40	0.29	0.32	0.34
Jul	0.36	0.26	0.34	0.38
Aug	0.21	0.29	0.21	0.36
Sep	0.33	0.36	0.38	0.27
Oct	0.35	0.21	0.39	0.33
Nov	0.31	0.22	0.33	0.30
Dec	0.37	0.29	0.24	0.29
Annual Min	0.20	0.21	0.21	0.20
Annual Max	0.40	0.43	0.39	0.38
Annual Avg	0.32	0.29	0.30	0.30
# Samples	11	12	12	12

3.2 Microbiological Sampling per Schedule 10, O. Reg. 170/03

3.2.1 Raw Water Samples

Raw water samples are collected every week. A total of 256 samples were collected and analyzed for E. Coli and Total Coliform. **Tables 5, 6, 7, 8 and 9** provide summaries of microbiological results performed on the raw water.

Microbiological Results for Raw Water

Table 5 - BLAIRS GROVE - RAW

Month	Total Coliform			E. Coli		
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1
Jan	5	5	0	5	5	0
Feb	4	4	0	4	4	0
Mar	4	4	0	4	4	0
Apr	5	5	0	5	5	0
May	4	4	0	4	4	0
Jun	4	4	0	4	4	0
Jul	5	5	0	5	5	0
Aug	4	4	0	4	4	0
Sep	5	5	0	5	5	0
Oct	4	4	0	4	4	0
Nov	4	4	0	4	4	0
Dec	5	5	0	5	5	0
TOTAL	**53**	**53**	**0**	**53**	**53**	**0**

Table 6 - HURONVILLE SOUTH - RAW

Month	Total Coliform			E. Coli		
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1
Jan	5	5	0	5	5	0
Feb	4	4	0	4	4	0
Mar	4	4	0	4	4	0
Apr	5	5	0	5	5	0
May	4	4	0	4	4	0
Jun	4	4	0	4	4	0
Jul	5	5	0	5	5	0
Aug	4	4	0	4	4	0
Sep	5	5	0	5	5	0
Oct	4	4	0	4	4	0
Nov	4	4	0	4	4	0
Dec	5	5	0	5	5	0
TOTAL	**53**	**53**	**0**	**53**	**53**	**0**

Microbiological Results for Raw Water Continued

Table 7 - MURDOCH GLEN - RAW

Month	Total Coliform			E. Coli		
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1
Jan	5	5	0	5	5	0
Feb	4	4	0	4	4	0
Mar	4	4	0	4	4	0
Apr	5	5	0	5	5	0
May	4	4	0	4	4	0
Jun	4	4	0	4	4	0
Jul	5	5	0	5	5	0
Aug	4	4	0	4	4	0
Sep	5	5	0	5	5	0
Oct	4	4	0	4	4	0
Nov	4	4	0	4	4	0
Dec	5	5	0	5	5	0
TOTAL	**53**	**53**	**0**	**53**	**53**	**0**

Table 8 - POINT CLARK WELL # 2 - RAW

Month	Total Coliform			E. Coli		
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1
Jan	5	5	0	5	5	0
Feb	4	4	0	4	4	0
Mar	4	4	0	4	4	0
Apr	5	5	0	5	5	0
May	4	4	0	4	4	0
Jun	4	4	0	4	4	0
Jul	5	5	0	5	5	0
Aug	4	4	0	4	4	0
Sep	5	5	0	5	5	0
Oct	4	4	0	4	4	0
Nov	4	4	0	4	4	0
Dec	5	5	0	5	5	0
TOTAL	**53**	**53**	**0**	**53**	**53**	**0**

Microbiological Results for Raw Water Continued

Table 9 - POINT CLARK WELL # 3 - RAW

Month	Total Coliform			E. Coli		
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1
Jan	5	5	0	5	5	0
Feb	4	4	0	4	4	0
Mar	4	4	0	4	4	0
Apr	5	5	0	5	5	0
May	4	4	0	4	4	0
Jun	4	4	0	4	4	0
Jul	5	5	0	5	5	0
Aug	4	4	0	4	4	0
Sep	5	5	0	5	5	0
Oct	4	4	0	4	4	0
Nov	4	4	0	4	4	0
Dec	5	5	0	5	5	0
TOTAL	**53**	**53**	**0**	**53**	**53**	**0**

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 Heterotrophic Plate Count (HPC). A total of 212 treated water samples were collected and analyzed for the above parameters. Each EC and TC result from the treated water was 0 cfu/100 mL. The range of HPC results were 0 - >2000 cfu/ 1 mL. **Table 10, 11, 12, and 13** provide summaries of all microbiological results performed on treated water.

Microbiological Results for Treated Water (Point of Entry)

Table 10 - BLAIRS GROVE

Month	Total Coliform			E. Coli			HPC		
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples safe	#samples Deteriorating
Jan	5	5	0	5	5	0	5	5	0
Feb	4	4	0	4	4	0	4	4	0
Mar	4	4	0	4	4	0	4	4	0
Apr	5	5	0	5	5	0	5	5	0
May	4	4	0	4	4	0	4	4	0
Jun	4	4	0	4	4	0	4	4	0
Jul	5	5	0	5	5	0	5	5	0
Aug	4	4	0	4	4	0	4	4	0
Sep	5	5	0	5	5	0	5	5	0
Oct	4	4	0	4	4	0	4	4	0
Nov	4	4	0	4	4	0	4	4	0
Dec	5	5	0	5	5	0	5	5	0

TOTAL	**53**	**53**	**0**	**53**	**53**	**0**	**53**	**53**	**0**

Microbiological Results for Treated Water (Point of Entry) con't

Table 11 - HURONVILLE SOUTH

Month	Total Coliform			E. Coli			HPC		
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1	# Samples	safe	# Samples Deteriorating
Jan	5	5	0	5	5	0	5	5	0
Feb	4	4	0	4	4	0	4	4	0
Mar	4	4	0	4	4	0	4	4	0
Apr	5	5	0	5	5	0	5	5	0
May	4	4	0	4	4	0	4	4	0
Jun	4	4	0	4	4	0	4	4	0
Jul	5	5	0	5	5	0	5	5	0
Aug	4	4	0	4	4	0	4	4	0
Sep	5	5	0	5	5	0	5	5	0
Oct	4	4	0	4	4	0	4	4	0
Nov	4	4	0	4	4	0	4	4	0
Dec	5	5	0	5	5	0	5	5	0
TOTAL	**53**	**53**	**0**	**53**	**53**	**0**	**53**	**53**	**0**

NDOG - Non Determined Overgrowth

Table 12 - MURDOCH GLEN

Month	Total Coliform			E. Coli			HPC		
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples safe	# Samples Deteriorating
Jan	5	5	0	5	5	0	5	5	0
Feb	4	4	0	4	4	0	4	4	0
Mar	4	4	0	4	4	0	4	4	0
Apr	5	5	0	5	5	0	5	5	0
May	4	4	0	4	4	0	4	4	0
Jun	4	4	0	4	4	0	4	4	0
Jul	5	5	0	5	5	0	5	5	0
Aug	4	4	0	4	4	0	4	4	0
Sep	5	5	0	5	5	0	5	5	0
Oct	4	4	0	4	4	0	4	4	0
Nov	4	4	0	4	4	0	4	4	0
Dec	5	5	0	5	5	0	5	5	0
TOTAL	**53**	**53**	**0**	**53**	**53**	**0**	**53**	**53**	**0**

NDOG - Non Determined Overgrowth

Microbiological Results for Treated Water (Point of Entry) con't

Table 13 - POINT CLARK

Month	Total Coliform			E. Coli			HPC		
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples Deteriorating
Jan	5	5	0	5	5	0	5	5	0
Feb	4	4	0	4	4	0	4	4	0
Mar	4	4	0	4	4	0	4	4	0
Apr	5	5	0	5	5	0	5	5	0
May	4	4	0	4	4	0	4	4	0
Jun	4	4	0	4	4	0	4	4	0
Jul	5	5	0	5	5	0	5	5	0
Aug	4	4	0	4	4	0	4	4	0
Sep	5	5	0	5	5	0	5	5	0
Oct	4	4	0	4	4	0	4	4	0
Nov	4	4	0	4	4	0	4	4	0
Dec	5	5	0	5	5	0	5	5	0
TOTAL	**53**	**53**	**0**	**53**	**53**	**0**	**53**	**53**	**0**

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. A total of 366 distribution samples were collected and analyzed for TC and EC, which is above the required number of samples (n=168, based on 6,347 potential residents). A total of 106 distribution samples were analyzed for HPC (n=42, 25% of 168). A sample was collected each week from the Courtney Subdivision distribution system and the results are included in this section. Each E.Coli and Total coliform result from the distribution water was 0 cfu/100 mL. The range of HPC results were 0 - 70 cfu/ 1 mL.

Table 14 provides a summary of all microbiological samples taken in the distribution system.

Table 14 - Microbiological Results for Distribution System

Month	Total Coliform			E. Coli			HPC		
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples safe	# Samples Deteriorating
Jan	20	20	0	20	20	0	10	10	0
Feb	16	16	0	16	16	0	8	8	0
Mar	16	16	0	16	16	0	8	8	0
Apr	20	20	0	20	20	0	10	10	0

May	16	16	0	16	16	0	8	8	0
Jun	16	16	0	16	16	0	8	8	0
Jul	20	20	0	20	20	0	10	10	0
Aug	16	16	0	16	16	0	8	8	0
Sep	20	20	0	20	20	0	10	10	0
Oct	16	16	0	16	16	0	8	8	0
Nov	16	16	0	16	16	0	8	8	0
Dec	20	20	**0**	20	20	**0**	10	10	0
TOTAL	**212**	**212**	**0**	**212**	**212**	**0**	**106**	**106**	**0**

3.3 Chemical Sampling and Testing as per Schedule 13, O. Reg. 170/03

3.3.1 Inorganics

Treated water samples are collected every 36 months and analyzed for inorganics. The most recent samples for the Lakeshore Drinking Water System were collected on June 17, 2024 and submitted to the laboratory for analysis of inorganics as listed in Schedule 23 (see **Table 15**). All parameters were found to be within compliance, however, the Arsenic level at Point Clark exceeded the Half-Maximum Allowable Concentration (half-MAC). Any half-MAC exceedance must 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 2027.

Table 15 - Inorganics Results

Parameter	Blairs Grove (µg/L)	Huronville South (µg/L)	Murdoch Glen (µg/L)	Point Clark (µg/L)	Maximum Allowable Concentration (µg/L)
Antimony	<0.6	<0.6	<0.6	<0.6	6
Arsenic	2.6	0.5	1.6	**5.6**	10
Barium	4.62	24.4	26.3	22.3	1000
Boron	136	160	135	67	5000
Cadmium	0.003 < MDL	0.005	0.015	0.005	5
Chromium	0.21	0.13	0.13	0.08 <MDL	50
Mercury	0.01 < MDL	0.01 < MDL	0.01 < MDL	0.01 < MDL	1
Selenium	0.18	0.01 < MDL	0.14	0.08	50
Uranium	0.397	0.313	1.51	0.497	20

*MDL = Laboratory Minimum Detection Limit

3.3.2 Organics

Treated water samples are collected every 36 months and tested for Schedule 24 organic parameters. The most recent samples were collected on June 17, 2024. All parameters were found to be within compliance. Organics will be sampled and analyzed again in June 2027. Samples results can be found in **Table 16 and 17**.

Table 16 - Organics Results

Parameter	Blairs Grove (µg/L)	Huronville South (µg/L)	Murdoch Glen (µg/L)	Point Clark (µg/L)	Maximum Allowable Concentration (µg/L)
Benzene	0.32 < MDL	0.32 < MDL	0.32 < MDL	0.32 < MDL	1
Carbon Tetrachloride	0.17 < MDL	0.17 < MDL	0.17 < MDL	0.17 < MDL	2
1,2-Dichlorobenzene	0.41 < MDL	0.41 < MDL	0.41 < MDL	0.41 < MDL	200
1,4-Dichlorobenzene	0.36 < MDL	0.36 < MDL	0.36 < MDL	0.36 < MDL	5
1,1-Dichloroethylene	0.33 < MDL	0.33 < MDL	0.33 < MDL	0.33 < MDL	14
1,2-Dichloroethane	0.35 < MDL	0.35 < MDL	0.35 < MDL	0.35 < MDL	5
Dichloromethane	0.35 < MDL	0.35 < MDL	0.35 < MDL	0.35 < MDL	50

Monochlorobenzene	0.3 < MDL	0.3 < MDL	0.3 < MDL	0.3 < MDL	80
Tetrachloroethylene	0.35 < MDL	0.35 < MDL	0.35 < MDL	0.35 < MDL	10
Trichloroethylene	0.44 < MDL	0.44 < MDL	0.44 < MDL	0.44 < MDL	5
Vinyl Chloride	0.17 < MDL	0.17 < MDL	0.17 < MDL	0.17 < MDL	1
Diquat	1 < MDL	1 < MDL	1 < MDL	1 < MDL	70
Paraquat	1 < MDL	1 < MDL	1 < MDL	1 < MDL	10
Glyphosate	1 < MDL	1 < MDL	1 < MDL	1 < MDL	280
Polychlorinated Biphenyls	0.04 < MDL	0.04 < MDL	0.04 < MDL	0.04 < MDL	3
Benzo(a)pyrene	0.004 < MDL	0.004 < MDL	0.004 < MDL	0.004 < MDL	0.01

Table 17 - Organics Results - Continued

Parameter	Blairs Grove (µg/L)	Huronville South (µg/L)	Murdoch Glen (µg/L)	Point Clark (µg/L)	Maximum Allowable Concentration (µg/L)
Alachlor	0.02 < MDL	0.02 < MDL	0.02 < MDL	0.02 < MDL	5
Atrazine+N-dealkylated metabolites	0.01 < MDL	0.01 < MDL	0.01 < MDL	0.01 < MDL	5
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
Carbaryl	0.05 < MDL	0.05 < MDL	0.05 < MDL	0.05 < MDL	90
Carbofuran	0.01 < MDL	0.01 < MDL	0.01 < MDL	0.01 < MDL	90
Chlorpyrifos	0.02 < MDL	0.02 < MDL	0.02 < MDL	0.02 < MDL	90
Diazinon	0.02 < MDL	0.02 < MDL	0.02 < MDL	0.02 < MDL	20
Dimethoate	0.06 < MDL	0.06 < MDL	0.06 < MDL	0.06 < MDL	20
Diuron	0.03 < MDL	0.03 < MDL	0.03 < MDL	0.03 < MDL	150
Malathion	0.02 < MDL	0.02 < MDL	0.02 < MDL	0.02 < MDL	190
Metolachlor	0.01 < MDL	0.01 < MDL	0.01 < MDL	0.01 < MDL	50
Metribuzin	0.02 < MDL	0.02 < MDL	0.02 < MDL	0.02 < MDL	80
Phorate	0.01 < MDL	0.01 < MDL	0.01 < MDL	0.01 < MDL	2
Prometryne	0.03 < MDL	0.03 < MDL	0.03 < MDL	0.03 < MDL	1
Simazine	0.01 < MDL	0.01 < MDL	0.01 < MDL	0.01 < MDL	10
Terbufos	0.01 < MDL	0.01 < MDL	0.01 < MDL	0.01 < MDL	1
Triallate	0.01 < MDL	0.01 < MDL	0.01 < MDL	0.01 < MDL	230
Trifluralin	0.02 < MDL	0.02 < MDL	0.02 < MDL	0.02 < MDL	45
2,4-Dichlorophenoxyacetic acid	0.19 < MDL	0.19 < MDL	0.19 < MDL	0.19 < MDL	100
Bromoxynil	0.33 < MDL	0.33 < MDL	0.33 < MDL	0.33 < MDL	5
Dicamba	0.20 < MDL	0.20 < MDL	0.20 < MDL	0.20 < MDL	120
Diclofop-methyl	0.40 < MDL	0.40 < MDL	0.40 < MDL	0.40 < MDL	9
MCPA	0.00012 < MDL	0.00012 < MDL	0.00012 < MDL	0.00012 < MDL	0.1
Picloram	1 < MDL	1 < MDL	1 < MDL	1 < MDL	190
2,4-Dichlorophenol	0.15 < MDL	0.15 < MDL	0.15 < MDL	0.15 < MDL	900
2,4,6-Trichlorophenol	0.25 < MDL	0.25 < MDL	0.25 < MDL	0.25 < MDL	5

2,3,4,6-Tetrachlorophenol	0.20 < MDL	0.20 < MDL	0.20 < MDL	0.20 < MDL	100
Pentachlorophenol	0.15 < MDL	0.15 < MDL	0.15 < MDL	0.15 < MDL	60

*MDL = Laboratory Minimum Detection Limit

3.3.3 Trihalomethanes

Distribution samples are taken every three months from representative points in the distribution system and tested for Trihalomethanes (THMs). Samples were collected during the months of February, May, August, and November. The Ontario Drinking Water Quality Standards (ODWQS) have set a Maximum Allowable Concentration (MAC) of 100 µg/L for this parameter and it is expressed as a running annual average (RAA).
Refer to **Tables 18, 19, 20 and 21** for the summary of Trihalomethane results.

3.3.4 Haloacetic Acids

Ontario Regulation 170/03 has been amended to include quarterly testing for Haloacetic Acids (HAAs). Four (4) distribution samples are taken every three months from representative points in the distribution system and tested for Haloacetic Acids (HAAs). Samples were collected during the months of February, May, and August and results are expressed as a running annual average (RAA). HAAs do not apply to the Courtney Subdivision distribution system.
Refer to **table 18, 19, 20 and 21** for the summary of HAA results.

3.3.5 Nitrate and Nitrite

Four treated water samples are taken every three months and tested for nitrate and nitrite. Samples were collected during the months of February, May, August and November. The Ontario Drinking Water Quality Standards (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 **Tables 19, 20, 21 and 22**.

Nitrate, Nitrite, Trihalomethanes and HAA Acids Results

Table 18 - BLAIRS GROVE

Month	Nitrite (mg/L)	Nitrate (mg/L)	THMs (µg/L)	HAAs (µg/L)
Feb	<0.003	< 0.006	17	< 5.3
May	< 0.003	<0.006	18	< 5.3
Aug	<0.003	0.010	9.7	< 5.3
Nov	< 0.003	<0.006	12.0	<5.3
Average	<0.003	<0.007	RAA 14.2	< 5.3
Maximum	<0.003	<0.0010	–	< 5.3
MAC	**1.0**	**10**	**100**	**80**

Table 19 - HURONVILLE SOUTH

Month	Nitrite (mg/L)	Nitrate (mg/L)	THMs (µg/L)	HAAs (µg/L)
Feb	< 0.003	< 0.006	8.3	< 5.3
May	< 0.003	< 0.006	9.3	< 5.3
Aug	<0.003	< 0.006	6.0	<5.3
Nov	< 0.003	<0.006	22.0	<5.3
Average	<0.003	<0.006	RAA 11.4	< 5.3
Maximum	<0.003	<0.006	–	< 5.3
MAC	**1.0**	**10**	**100**	**80**

Table 20 -MURDOCH GLEN

Month	Nitrite (mg/L)	Nitrate (mg/L)	THMs (µg/L)	HAAs (µg/L)
Feb	< 0.003	< 0.006	17.0	< 5.3
May	< 0.003	< 0.006	18.0	< 5.3
Aug	<0.003	< 0.006	11.0	< 5.3
Nov	< 0.003	<0.006	13.0	<5.3
Average	<0.003	<0.006	RAA 14.8	<5.3
Maximum	<0.003	<0.006	–	<5.3
MAC	**1.0**	**10**	**100**	**80**

Table 21 - POINT CLARK

Month	Nitrite (mg/L)	Nitrate (mg/L)	THMs (µg/L)	HAAs (µg/L)
Feb	< 0.003	< 0.006	11.0	< 5.3
May	< 0.003	< 0.006	11.0	< 5.3
Aug	<0.003	< 0.006	12.0	< 5.3
Nov	< 0.003	<0.006	13.0	<5.3
Average	<0.003	< 0.006	RAA 11.8	< 5.3
Maximum	<0.003	< 0.006		< 5.3
MAC	**1.0**	**10**	**100**	**80**

3.3.6 Sodium

One (1) water sample is collected from each of the four (4) Points of Entry (treated water) every 60 months and analyzed for Sodium. The *Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines, PIBS 4449e01, June 2006*, states: "The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets." These samples were collected on July 27, 2021. All four (4) POE (TW) samples exceeded 20 mg/L and were reported to the Grey Bruce Health Unit and the Ministry's Spills Action Centre (AWQI # 154967-154970). Results can be found in **Table 23**. The next sampling

date for Sodium will be in July, 2026.

3.3.7 Fluoride

One (1) water sample is collected from each of the four (4) Points of Entry (treated water) every 60 months and analyzed for Fluoride. The Ontario Drinking Water Quality Standards (ODWQS) have set a Maximum Allowable Concentration (MAC) of 1.5 mg/L. On September 6, 2022, samples were collected for this analysis. All four samples exceeded the MAC due to naturally occurring fluoride in the aquifers. These exceedances were reported to the Grey Bruce Health Unit and the Ministry's Spills Action Centre (AWQI # 159912, 159913, 159914 and 159915). The results are summarized in **Table 22**. The next sampling date for Fluoride is due in Sept 2027

Table 22 - Sodium and Fluoride Results

Location	Sodium		Fluoride
	Sample Date: July 27, 2021		Sample Date: September 6, 2022
	Result (mg/L)	Resample Result (mg/L)	Result (mg/L)
Blairs Grove	100	96.9	1.87
Huronville South	54.3	54.2	2.28
Murdoch Glen	63.2	62.6	2.05
Point Clark	21.8	25.3	2.19
MAC (mg/L)	**20**	**20**	**1.5**

3.3.8 Lead

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 was sampled for lead, pH and alkalinity. Samples were collected on January 8 and on July 8, 2024.
Results for 2023 can be found in **Table 23**.

Table 23 - Lead Sampling Program Results

Season	Location	Alkalinity (mg/L)	pH	Lead (µg/L)
Dec-Apr (Jan 8)	Blairs Grove	184	7.92	0.02
	Huronville South	161	8.00	0.07
	Murdoch Glen	176	8.06	1.15
	Point Clark	184	7.95	0.09
	Amberly Beach	183	7.99	0.52
	Lighthouse Rd	–	7.84	0.24
Jun-Oct (Jul 8)	Blairs Grove	192	7.92	0.02
	Huronville South	170	8.19	0.07
	Murdoch Glen	180	8.00	0.30
	Point Clark	181	8.22	0.10

Season	Location	Alkalinity (mg/L)	pH	Lead (µg/L)
	Lighthouse Rd	–	7.84	0.24
MAC (µg/L)		**–**	**–**	**10**

4.0 WATER AND CHEMICAL USE

4.1 Chemical Usage

The total amount of 12% sodium hypochlorite (NaOCl) used to treat the water supplied by the five wells in the Lakeshore Drinking Water System is tabulated in **Table 24** with the average chlorine dosage. During the same period, the total amount of undiluted sodium silicate (Na_2SiO_3) for iron sequestering is tabulated in **Table 25** with the average silicate dosage.

Table 24 - Sodium Hypochlorite Usage

Month	BLAIRS GROVE		HURONVILLE SOUTH		MURDOCH 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	0	23.41	3.30	7.85	3.53	45.27	3.16
Feb	0	0	22.85	3.27	6.73	3.61	44.71	3.12
Mar	0.80	17.33	22.15	3.22	9.67	3.72	44.85	3.14
Apr	0.00	0.00	24.67	3.36	11.07	3.35	41.49	2.94
May	0.00	0.00	51.16	3.18	13.32	3.32	68.40	3.26
Jun	2.39	7.64	86.20	3.08	14.02	3.36	103.44	3.15
Jul	0.00	0.00	120.40	3.16	22.85	3.36	158.66	3.16
Aug	0.40	6.13	123.20	3.16	22.85	3.36	152.77	3.19
Sep	0.00	0	111.29	3.41	21.72	3.52	130.21	3.21
Oct	0.80	11.56	41.63	3.00	16.26	3.38	78.07	3.18
Nov	0	0	43.03	3.43	10.79	3.39	50.74	3.22
Dec	0	0	30.81	3.23	8.69	3.52	54.38	3.37
TOTAL	4.39	–	700.80	–	165.82	–	972.99	–
Average	–	3.56	–	3.23	–	3.45	–	3.18

Sodium Hypochlorite Grand Total Usage: **1,844.00 kg**
Sodium Hypochlorite Average Dosage: **3.35 mg/L**

Table 25 - Sodium Silicate Usage

Month	BLAIRS GROVE		HURONVILLE SOUTH		MURDOCH 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	0	11.56	1.66	11.16	5.02	39.87	2.78
Feb	0	0	14.75	2.09	9.97	5.35	39.47	2.75
Mar	0	0	14.75	3.02	12.36	4.75	41.46	2.90
Apr	0	0	16.35	2.10	15.95	4.82	37.87	2.68
May	0	0	34.69	2.19	18.34	4.57	84.52	4.02
Jun	2.39	7.64	61.80	2.21	18.34	4.40	92.10	2.81
Jul	0	0	94.89	2.49	30.70	4.52	141.53	2.82
Aug	0.40	6.13	98.47	2.50	30.70	4.51	136.75	2.85
Sep	0	0	83.72	2.56	28.71	4.65	123.19	3.04
Oct	0.80	11.56	34.69	3	21.33	4.39	70.17	2.86
Nov	0	0	31.89	2.55	13.95	4.39	41.86	2.65
Dec	0	0	24.32	2.55	10.76	4.36	43.86	2.71
TOTAL	3.59	–	521.88	–	222.07	–	892.65	–
Average	–	2.11	–	2.37	–	4.64	–	2.91

Sodium Silicate Grand Total Usage: **1,640.19 kg**
Sodium Silicate Average Dosage: **3.01 mg/L**

4.2 Summary of Flow Rates, Annual Volumes and Capacities

A summary of the water supplied to the distribution system from each well supply is provided in **Tables 26, 27, 28 and 29**. The volumes reported for each well supply are taken from the SCADA continuous monitoring system. The flow meters were calibrated on the following dates:

Blairs Grove:	Raw water flow meter	July 16, 2024
Huronville South:	Treated water flow meter	July 16, 2024
Murdoch Glen:	Raw water flow meter	July 16, 2024
Murdoch Glen:	Treated water flow meter - Zone 2	July 16, 2024
Murdoch Glen:	Treated water flow meter - Zone 3	July 16, 2024
Point Clark:	Raw water flow meter	July 16, 2024

Flow Rates, Annual Volumes, and Capacities

Table 26 - BLAIRS GROVE

Month	Raw Flow Daily Max (L/s)	Raw Flow Monthly Avg (L/s)	Raw Volume Monthly Total (m^3)	Raw Volume Daily Max (m^3)	Raw Volume Monthly Avg (m^3)	Capacity Monthly Max (%)
Jan	**32.74**	1.71	50.63	**34.63**	1.63	1.3%
Feb	28.86	1.02	13.37	4.86	0.46	0.2%
Mar	28.76	1.32	45.06	36.62	1.45	1.4%
Apr	28.43	0.90	13.09	5.03	0.44	0.2%
May	28.18	1.29	10.62	2.95	0.34	0.1%
Jun	28.23	3.05	314.91	216.02	10.50	8.2%

Jul	80.00	0.97	11.18	3.48	0.36	0.1%
Aug	28.10	2.21	64.95	31.75	2.10	1.2%
Sep	27.96	1.77	49.30	28.13	1.64	1.1%
Oct	27.88	1.57	67.48	56.17	2.18	2.1%
Nov	27.86	0.99	17.05	12.67	0.57	0.5%
Dec	27.83	1.29	42.55	9.90	1.37	0.4%
PTTW Max	**30.33**	**30.33**	**79,722.08**	**2621.00**	–	–
Annual Max	**80.00**	–	–	216.02	–	8.24%
Annual Avg	–	1.51	–	–	1.91	0.07%
Annual Total	–	–	**700.19**	–	–	

Table 27 - HURONVILLE SOUTH

Month	Raw Flow Daily Max (L/s)	Raw Flow Monthly Avg (L/s)	Raw Volume Monthly Total (m^3)	Raw Volume Daily Max (m^3)	Raw Volume Monthly Avg (m^3)	Capacity Monthly Max (%)
Jan	8.26	3.35	5,749.89	230.75	185.48	5.9%
Feb	11.13	3.38	5,730.83	241.44	197.61	6.1%
Mar	8.17	3.19	5,555.38	237.87	179.21	6.1%
Apr	11.50	3.39	6,592.07	296.02	219.74	7.5%
May	44.05	6.21	15,986.13	765.22	515.69	19.5%
Jun	42.69	10.72	27,822.99	1,498.34	927.43	38.1%
Jul	43.26	13.91	37,041.57	1,668.90	1,194.89	42.5%
Aug	40.78	14.64	39,611.83	1,618.85	1,277..80	41.2%
Sep	50.20	12.56	32,312.00	1,495.38	1,077.07	38.1%
Oct	49.56	5.13	12,490.27	703.37	402.91	17.9%
Nov	36.79	5.35	11,751.59	2,449.34	391.72	62.4%
Dec	9.42	3.86	8,813.79	331.33	284.32	8.4%
PTTW Max	**45.47**	**45.47**	**119,468.76**	**3,927.74**	–	–
Annual Max	50.20	–	–	2449.34	–	62.36%
Annual Avg	–	7.15	–	–	571.16	14.61%
Annual Total	–	–	**209,458.67**	–	–	–

Flow Rates, Annual Volumes and Capacities Continued

Table 28 - MURDOCH GLEN

Month	Raw Flow Daily Max	Raw Flow Monthly Avg	Raw Volume Monthly Total	Raw Volume Daily Max	Raw Volume Monthly Avg	Capacity Monthly

	(L/s)	(L/s)	(m³)	(m³)	(m³)	Max (%)
Jan	19.92	16.26	2,194.48	138.74	70.79	7.6%
Feb	19.30	16.17	1,858.35	105.08	64.08	5.8%
Mar	19.18	16.01	2,880.55	385.88	92.92	21.3%
Apr	19.18	16.79	3,056.51	312.67	101.88	17.2%
May	19.38	17.31	3,913.14	473.96	126.23	26.1%
Jun	19.32	17.66	4,107.99	197.93	136.93	10.9%
Jul	22.98	18.08	6,487.34	328.43	216.24	18.1%
Aug	19.58	18.04	6,813.45	468.95	219.79	25.8%
Sep	19.48	17.95	6,047.13	519.70	201.57	28.6%
Oct	19.41	17.76	4,296.47	217.17	138.60	12.0%
Nov	19.43	17.32	2369.04	276.19	78.97	15.2%
Dec	19.46	16.96	2518.73	130.17	81.25	7.2%
PTTW Max	**21.00**	**21.00**	**55,188.00**	**1,814.40**	**–**	**–**
Annual Max	22.98	–	46,543.18	519.70	–	28.64%
Annual Avg	–	17.19	–	–	127.52	7.03%
Annual Total	–	–	**–**	–	–	–

*Exceedance was a start up spike (1 minute duration) following a power outage.

Table 29 - POINT CLARK

Month	Raw Flow Daily Max (L/s)	Raw Flow Monthly Avg (L/s)	Raw Volume Monthly Total (m³)	Raw Volume Daily Max (m³)	Raw Volume Monthly Avg (m³)	Capacity Monthly Max (%)
Jan	38.75	33.64	13,499.57	591.99	435.47	18.1%
Feb	37.63	33.28	13,430.57	589.59	463.12	18.0%
Mar	37.77	33.01	13,824.51	590.42	445.95	18.0%
Apr	37.53	32.21	13,200.66	654.27	440.02	20.0%
May	40.38	33.11	20,070.90	1,183.15	647.45	36.1%
Jun	39.91	32.65	31,046.64	1,460.85	1,034.89	44.6%
Jul	37.32	32.9	47,456.80	2,333.29	1,530.86	71.3%
Aug	36.49	32.70	45,880.50	2,047.91	1,480.02	62.6%
Sep	36.39	32.48	37,541.78	1,905.17	1,251.39	58.2%
Oct	37.03	32.64	21,575.38	1,082.81	695.98	33.1%
Nov	35.50	32.46	14,800.26	6100.00	493.34	18.6%
Dec	35.24	20.67	15,514.53	789.32	500.47	24.1%
PTTW Max	**37.88**	**37.88**	**99,557.40**	**3,273.12**	**–**	**–**
Annual Max	40.38	–	–	2,333.29	–	71.29%
Annual Avg	–	31.80	–	–	786.45	24.09%
Annual Total	–	–	**287,842.10**	–	–	–

4.3 System Capacity

The following is a comparison of the annual volumes to the rated capacity and flow rates approved in the systems' PTTW, DWWP and MDWL. The total system capacity represents the percentage capacity of the sum of all the water produced in relation to the total system volume permitted. A summary of the totals for all the well supplies is presented in **Table 31**.

Table 31 - Total Volumes of All Well Supplies

Location (Well Supply)	Total Volume for 2024 (m^3)
Blairs Grove	700.19
Huronville South	209,458.67
Murdoch Glen	46,543.18
Point Clark	287,842.10
Total Rated Capacity, PTTW (m^3)	
Grand Total (all well supplies), Actual (m^3)	**544,544.14**
Overall Operating Capacity, Actual %	12.82%

Water Supplied to Kincardine

Huron-Kinloss supplied water to Kincardine from November 26 to November 28, 2024.

Calculated flows (estimated to Zone 2), were determined based on the number of homes supplied by the Huronville pumphouse during this event (n=158, which included Penetangore Row South of Huronville Road, and Inverlyn Estates), and the estimated residential water usage as reported in the Residential End Uses of Water, Version 2 – Executive Report (2016) by the Water Research Foundation. It can be found at www.waterrf.org/PublicReportLibrary/4309A.pdf.

138 US gallons per day per household (gpdh) = 522 L per day per household (Lpdh)
158 households X 522 Lpdh = 82,476 L per day (~ 82.5 m3)
Therefore, we estimated that 82.5 m3 per 24-hour period was used by Huron-Kinloss residents in Zone 2 during the supply to Kincardine, and this value was subtracted from the total volume pumped.

Supply to Kincardine:

- November 26 1689.35 m3
- November 27 2366.84 m3
- November 28 868.47 m3
- **Grand Total 4924.66 m3**

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:

All Sites:

Routine and preventative maintenance performed as per Jobs Plus schedule.
Flow meter calibrations completed.
Georgian Bay Fire and Safety inspections completed.
Flushing and valve turning was completed and updated in the GIS mapping app.
Backflow preventer testing completed.
Safety inspections of each facility were completed.
UPS batteries were replaced at all the sites
Valves were cleaned of debris

Online analyzers were calibrated
Three hydrants were repaired and placed back in service
The London Rd watermain has been disconnected

Kemptons vacuumed out air relief chambers and we determined all of the chambers had noticeable heavy leaks which have been repaired by SGS. The air releases in Point Clark have insulation lids as well.

Blairs Grove:

January The well house hatch was repaired
March: Analyzer was replaced

Huronville South:

January: The well house hatch was repaired
April: The pump packing was completed
May: Generator testing was completed
July: Transfer switch was installed for the generator
Nov: Supported Kincardine with water, 26th -28th (4,924.66 m^3 was used)

Murdoch Glen:

March: HLP#1 MCC and programming was completed
April: Generator repairs were completed
May: Fuel tank inspection and upgrades were completed

Point Clark:

March: The analyzer was replaced
June: Transfer switch was installed for the generator
Sept: The standby generator was repaired

Courtney Subdivision:

Nov: Meter in the Elliot Construction pit was replaced

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

- MECP Drinking Water Inspection was conducted on October 2nd, 2024 and received a **100%** rating. The Courtney Subdivision was inspected October 2, 2024 and received a **100%** rating
- A list of Capital Items for 2024 was submitted to the Township of Huron-Kinloss in December 2023.
- DWQMS Management Review was conducted on October 24, 2024.
- DWQMS Internal Audit was conducted November 19, 2024.
- DWQMS External Audit (Re-accreditation) was conducted on August 27, 2024.
- DWQMS Complete Risk Assessment was not completed in 2024.

There was 1 instance of Adverse Water Quality in 2024:

- AWQI # 165303 - June 24th, Communication failure at Point Clark and Blairs Grove

There were 0 Instances of non-conformance:

7.0 WELL LEVELS

Each of the four sub-systems have a Permit To Take Water (PTTW), which dictates the capacity that each well 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 32** provides a summary of the static well levels recorded in 2024. It should be noted that four (4) of the wells have static levels that are below grade. One of the wells, Blairs Grove, is a flowing artesian well that has a well level that is above grade and the well level is a calculation based on its corresponding pressure reading.

Table 32 - Static Well Levels (PTTW)

	Blairs Grove (above grade, m)	Huronville South (m)	Murdoch Glen (m)	Point Clark Well 2 (m)	Point Clark Well 3 (m)
Min	1.15	7.96	4.75	4.26	4.57
Max	4.79	9.14	10.17	8.84	6.55
Avg	2.50	8.57	8.87	6.95	5.47

8.0 COURTNEY SUBDIVISION - SUMMARY OF DATA

8.1 Water Treatment Equipment, Operation and Monitoring

8.1.1 Distribution Free Chlorine Residuals (Grab Samples)

A total of 53 distribution residuals were collected in conjunction with the weekly microbiological sampling. A summary of all the residuals collected is presented in **Table 33.**

Table 33 Average Distribution Free Chlorine Residuals -Courtney Subdivision (ACW)

Month	Residual (mg/L)
Jan	1.58
Feb	1.52
Mar	1.51
Apr	1.48
May	1.57
Jun	1.42
Jul	1.51
Aug	1.45
Sep	1.37
Oct	1.31
Nov	1.55
Dec	1.46
CT REQUIREMENT	**0.20**
Annual Min	1.21
Annual Max	1.74

Annual Average	1.48

8.1.2 Microbiological Results for the Distribution System

Distribution samples are collected every week and tested for E.Coli, Total Coliform (TC) and at least 25% of the samples are also analyzed for Heterotrophic Plate Count (HPC). Courtney Subdivision is regarded as part of the Lakeshore Drinking Water System as outlined in ACW Municipal By-Law 61-2014. Results are shown in **Table 34**

Table 34 - Microbiological Results for Distribution System

Month	Total Coliform			E. Coli			HPC		
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples safe	# Samples Deteriorating
Jan	10	10	0	10	10	0	5	5	0
Feb	8	8	0	8	8	0	4	4	0
Mar	8	8	0	8	8	0	4	4	0
Apr	8	8	0	8	8	0	4	4	0
May	10	10	0	10	10	0	5	5	0
Jun	8	8	0	8	8	0	4	4	0
Jul	9	9	0	9	9	0	3	3	0
Aug	8	8	0	8	8	0	4	4	0
Sep	7	7	0	7	7	0	3	3	0
Oct	8	8	0	8	8	0	5	5	0
Nov	4	4	0	4	4	0	3	3	0
Dec	4	4	0	4	4	0	4	4	0
TOTAL	**92**	**92**	**0**	**92**	**92**	**0**	**48**	**48**	**0**

8.2 Chemical Sampling and Testing as per Schedule 13, O.Reg. 170/03

8.2.1 Trihalomethane (Schedule 13, s. 13-6)

Distribution samples are taken quarterly(every 3 months) from representative points in the distribution system and tested for Trihalomethanes (THMs). Samples were collected during the months of February, May, August and November. The Ontario Drinking Water Quality Standards (ODWQS) have set a Maximum Allowable Concentration (MAC) of 100 (µg/L) for this parameter and it is expressed as a Running Annual Average (RAA). Refer to **Table 35** for the summary of the THM results and RAA for the Courtney Subdivision samples.

Table 35 - THMs

Month	THMs (µg/L)	RAA
Feb	7.4	7.7
May	9..0	7.5
Aug	7.4	7.3
Nov	9.6	7.4
RAA	–	**8.4**
MAC	**1.0**	**10**

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. By-Law 60-2014 was amended in November 2015 to ensure that this lead sampling requirement is included in the Agreement between Ashfield-Colborne-Wawanosh and Huron-Kinloss. Samples were collected from Courtney Subdivision and analyzed for lead, pH, and

alkalinity. These results are presented in **Table 36**.

Table 36

Month	Location	Alkalinity	pH	Lead (µg/L)
January	**Amberley Beach (ACW)**	183	7.99	0.52
July	**Amberley Beach (ACW**	192	7.96	0.33
MAC (µg/L)		**1.0**	**–**	**10**

8.2.2 Summary of Flow Rates, Annual Volumes and Capacities (O. Reg. 170/03, Schedule 22-2(3))

Water supplied to Courtney Subdivision is monitored by a flow meter located in an underground vault at the municipal boundary on Ashfield-Huron Road. There are approximately 141 properties supplied by this line. Another flow meter is located at the Amberley Store. These meters are viewed quarterly. A summary of the volumes is provided in **Table 37**.

Table 37 - FLOW METER READINGS (ACW) - COURTNEY SUBDIVISION AND AMBERLEY STORE

Reading	ACW Boundary Meter	Amberley Store
1st Quarter	–	3812.3
2nd Quarter	–	4063.9
3rd Quarter	108823.6 (112316 when removed)	4321.8
4th Quarter	1,019 (meter replaced)	4545.91
TOTAL USED	**4511.4 - ??**	**733.61**
GRAND TOTAL USED	**5245.01**	

The Boundary Meter was unable to be read 1st - 2rd quarter due to it being a confined space