Ripley Drinking Water System 2024 Operation and Maintenance Annual Report

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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 Ripley Drinking Water System 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 uploaded to the township's website and can be provided to interested parties upon request.

2.0 DESCRIPTION OF WATER SYSTEM

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

Drinking Water System Number:	220002636
Drinking Water System Name:	Ripley 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 2
Drinking Water System Certificate No.:	1849
Daily Maximum Water Supply Capacity:	4,266 m^3
Disinfection Chemicals:	Sodium Hypochlorite, 12%
Population (Stats Can 2021):	640
Total Number of Service Connections:	366
Estimated Seasonal Population:	915 (based on 2021 Census of 2.5 persons per household)
Average Day Demand:	145.96 m^3
Peak Day Demand:	664.67 m^3 (May 30, 2022)
Average Capacity:	7.64%
Peak Capacity:	15.58%
Distribution Network:	4.5 km
Fire Hydrants:	35
Blow-offs:	1

The Ripley Drinking Water Distribution and Supply Subsystem (Ripley DWS) is characterized as a "secure groundwater system". It consists of two subsystems (four wells), that deliver potable water to the Village of Ripley.

The two subsystems are: Ripley Pumphouse (PH) and Ripley Elevated Tank (ET). Both of these sites are located within the Village of Ripley. The 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 two subsystems are detailed as follows:

Site: Ripley Pumphouse - 74 Huron Street

- Water Source: Groundwater, Non-GUDI
- Number of Production Wells: 2 (Well # 1 - 1947; Well # 2 - 1994)
- Depth of Wells: 84.4 m; 85.3 m
- Well Pumps: 7.5 hp; 15 hp (submersible)
- Disinfection: Sodium hypochlorite (12%)
- CT Requirement: 2-log, 5°C, contact watermain (1.0 BF)
- High Lift Pumps: 2 (25 hp each)
- Reservoir: 53 m^3
- Permit To Take Water: 4634-ANZKYM, expires May 31, 2027

Site: Ripley Elevated Tank - 93C Huron Street

- Water Source: Groundwater, Non-GUDI
- Number of Production Wells: 2 (#3, 2012, 10-inch; #4, 2011, 8-inch)
- Depth of Well: 89.9 m, 89.9 m
- Well Pumps: 2 (30 hp each, submersible)
- Disinfection: Sodium hypochlorite (12%)
- CT Requirement: 2-log, 5°C, 85 m x 600 mm ∅ contact watermain (1.0 BF)
- Elevated Tank: 1,465 m^3 total usable storage (636 m^3 fire storage)
- Permit To Take Water: 4634-ANZKYM, expires May 31, 2027

The Ripley DWS currently (December 2024) has a 8.798 km distribution network with a combination of cast iron and PVC water mains, in sizes varying between 4-inch and 6-inch diameter.

All the Ripley 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, and fluoride**, but the lead content of the raw water is well below the half-MAC (Maximum Allowable Concentration). Those who are supplied from the Ripley DWS are made aware of the various concentrations in their drinking water by numerous means of communication from the Township of Huron-Kinloss.

A 250 kW diesel generator, located at the Ripley Fire Hall, adjacent to the Ripley Pumphouse, includes a 2,273 L capacity fuel storage tank and is used for emergency power supply. A new Elevated Tank was constructed of bolted steel (2019). The 42 m (138 ft) high Elevated Tank has a total usable storage volume of approximately 1,465 m^3 to supply the Village of Ripley. Periodic inspections of the Elevated Tank (exterior and interior) are conducted. The next inspection is due in 2026. The wells located at the Ripley Elevated Tank site (Well # 3 and Well # 4), were officially put into service in August 2020. A 200 kW diesel generator, located behind the Ripley-Huron Community Centre, adjacent to the Elevated Tank site, includes a 1,423 L capacity fuel storage tank and is used for emergency power supply for the Community Centre as well as the Elevated Tank Water Supply.

3.0 SUMMARY OF WATER QUALITY MONITORING

Requirement - Drinking Water System Owner/Operating Authority

The *SDWA* also requires the Drinking Water System Owner/Operating Authority to immediately notify the MECP and the Grey Bruce Health Services office, that the laboratory notice has been received and that "corrective actions" are being initiated. The method of contact is by telephone to a person of authority. The Operating Authority also faxes Form 2A - Notices of Adverse Test Results and Issue Resolution (Schedule 16) within 24 hours to both agencies first to verify previous live communication. Once the issue has been resolved and to confirm that corrective actions have been completed, the Operating Authority also faxes Form 2B - Notices of Adverse Test Results and Issue Resolution (Schedule 16) within 7 days to the agencies. This reporting system provides assurance that the DWS Owner is complying with the applicable regulations and that appropriate corrective actions are being taken and are being reported.

3.1 Water Treatment Equipment Operation and Monitoring

3.1.1 Treated Water (Point of Entry) Free Chlorine Residuals (Grab Samples)

A total of 727 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 and the on-line continuous samples monthly average (as collected by SCADA) of the free chlorine residual values.

3.1.2 Distribution Free Chlorine Residuals (Grab Samples)

A total of 421 distribution residuals were collected: 366 daily grab residuals and an additional 55 weekly grab residuals were taken in conjunction with the required weekly microbiological sampling. A summary of all the residuals collected are also presented in **Table 1**.

Table 1 - Average Treated and Distribution Free Chlorine Residuals (Grab and SCADA Samples)

Month	Ripley Pumphouse TW (Grab)	Ripley Pumphouse (SCADA)	Ripley Elevated Tank (Grab)	Ripley Elevated Tank (SCADA)	Distribution (Grab)
Jan	1.62	1.65	1.72	1.99	1.46
Feb	1.58	1.59	1.67	1.70	4.51
Mar	1.54	1.57	1.62	1.89	1.44
Apr	1.44	1.45	1.56	1.57	1.42
May	1.28	1.26	1.50	1.48	1.36
Jun	1.13	1.10	1.65	1.60	1.19
Jul	1.32	1.30	1.58	1.61	1.45
Aug	1.56	1.62	1.56	1.57	1.46
Sep	1.54	1.57	1.50	1.52	1.43
Oct	1.54	1.57	1.49	1.49	1.39
Nov	1.76	1.77	1.69	1.62	1.55
Dec	1.80	1.82	1.83	1.81	1.59
CT Requirement					
Annual Min	0.94	0.39	1.21	0	1.08
Annual Max	1.95	5.00	2.20	3.74	1.93
Annual Avg	1.51	1.52	1.61	1.66	1.44
# Samples	361	1096	366	1098	366

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 2** provides a summary of raw and treated water turbidity results.

Table 2 - Raw and Treated Water Turbidity Results (Grab Samples)

Month	Ripley Well # 1 Not in use	Ripley Well # 2	Ripley Pumphouse Treated	Ripley Well # 3	Ripley Well # 4	Ripley Elevated Tank Treated
Jan	–	0.45	–	0.26	0.22	–
Feb	–	0.38	–	0.23	0.23	–
Mar	–	0.33	0.29	0.39	0.31	–
Apr	–	0.24	0.27	0.37	0.24	–
May	–	0.28	–	0.36	0.34	0.39
Jun	–	0.31	0.36	0.28	0.32	0.36
Jul	–	–	–	0.26	0.24	0.14
Aug	–	0.28	0.16	0.23	0.22	0.22
Sep	–	0.32	0.26	0.28	0.31	0.34
Oct	–	0.32	0.39	0.29	0.27	0.31
Nov		0.37	0.41	0.31	0.30	0.35
Dec		0.33	0.35	0.32	0.34	0.37
Annual Min		0.24	0.16	0.23	0.22	0.14
Annual Max		0.45	0.41	0.39	0.34	0.39
Annual Avg		0.33	0.31	0.30	0.28	0.31
# Samples		10	8	12	13	9

3.2 Microbiological Sampling

3.2.1 Raw Water Samples

Raw water samples are collected every week. In 2024, a total of 318 samples were collected and analyzed for E. Coli and Total Coliform. **Tables 3, 4, 5 and 6** provide a summary of microbiological results performed on each raw water source.

Table 3 - Microbiological Results - RAW WELL # 1 - NOT IN USE

Table 4 - Microbiological Results - RAW WELL # 2

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	3	1	4	4	0
Nov	4	4	0	4	4	0
Dec	5	5	0	5	5	0
TOTAL	**53**	**52**	**1**	**51**	**53**	**0**

Table 5 - Microbiological Results - RAW WELL # 3

Month	Total Coliform			E. Coli		
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1
Jan	5	5	0	5	5	0
Feb	4	2	2	4	4	0
Mar	4	4	1	4	4	0
Apr	5	4	1	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	2	3	5	1	1
TOTAL	**53**	**46**	**7**	**53**	**52**	**1**

Table 6 - Microbiological Results for Raw Water - Well # 4

Month	Total Coliform			E. Coli		
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1
Jan	5	4	1	5	5	0
Feb	4	3	1	4	4	0
Mar	4	3	1	4	4	0
Apr	5	4	1	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	3	1	4	4	0
Sep	5	4	1	5	5	0
Oct	4	4	0	4	4	0
Nov	4	4	0	4	4	0
Dec	5	2	3	5	5	0
TOTAL	**53**	**44**	**9**	**53**	**53**	**0**

3.2.2 Treated Water (Point of Entry) Samples

One (1) treated water sample from the point of entry is taken every week and analyzed for E. Coli, Total Coliform, and Heterotrophic Plate Count (HPC). In 2024, a total of 318 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 - 20 cfu/100 mL. **Tables 7 and 8** provide a summary of all microbiological results performed on treated water.

Table 7 - Microbiological Results - RIPLEY PUMPHOUSE - TREATED

Month	Total Coliform			E. Coli			HPC	
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples > 10
Jan	5	5	0	5	5	0	5	0
Feb	4	4	0	4	4	0	4	0
Mar	4	4	0	4	4	0	4	0
Apr	5	5	0	5	5	0	5	0
May	4	4	0	4	4	0	4	0
Jun	4	4	0	4	4	0	4	0
Jul	5	5	0	5	5	0	5	0
Aug	4	4	0	4	4	0	4	0
Sep	5	5	0	5	5	0	5	0
Oct	4	4	0	4	4	0	4	0
Nov	4	4	0	4	4	0	4	0
Dec	5	5	0	5	5	0	5	0
TOTAL	**53**	**53**	**0**	**53**	**53**	**0**	**53**	**0**

Table 8 - Microbiological Results - RIPLEY ELEVATED TANK - TREATED

Month	Total Coliform			E. Coli			HPC	
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples > 10
Jan	5	5	0	5	5	0	5	**0**
Feb	4	4	0	4	4	0	4	0
Mar	4	4	0	4	4	0	4	0
Apr	5	5	0	5	5	0	5	0
May	4	4	0	4	4	0	4	0
Jun	4	4	0	4	4	0	4	0
Jul	5	5	0	5	5	0	5	0
Aug	4	4	0	4	4	0	4	1
Sep	5	5	0	5	5	0	5	0
Oct	4	4	0	4	4	0	4	0
Nov	4	4	0	4	4	0	4	0
Dec	5	5	0	5	5	0	5	0
TOTAL	**53**	**53**	**0**	**53**	**53**	**0**	**53**	**1**

3.2.3 Distribution Samples

Distribution samples are collected every week and tested for E. Coli, Total Coliform. In 2024, a total of 106 distribution samples were collected and analyzed for TC and EC. A total of 53 distribution samples were analyzed for HPC. Each EC result from the distribution water was 0 cfu/100 mL. The range of HPC results were 0 - <10 cfu/100 mL. **Table 9** provides a summary of all microbiological samples taken in the distribution system.

Table 9 - Microbiological Results for Distribution System

Month	Total Coliform			E. Coli			HPC	
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples 1 - 20
Jan	10	10	0	10	10	0	5	0
Feb	8	8	0	8	8	0	4	0
Mar	8	8	0	8	8	0	4	0
Apr	10	10	0	10	10	0	5	0
May	8	8	0	8	8	0	4	0
Jun	8	8	0	8	8	0	4	0
Jul	10	10	0	10	10	0	5	0
Aug	8	8	0	8	8	0	4	0
Sep	10	10	0	10	10	0	5	0
Oct	8	8	0	8	8	0	4	0
Nov	8	8	0	8	8	0	4	0
Dec	10	10	0	10	10	0	5	0
TOTAL	**106**	**106**	**0**	**106**	**106**	**0**	**53**	**0**

3.3 Chemical Sampling and Testing

3.3.1 Inorganics

Treated water samples are collected every 36 months (3 years) and analyzed for inorganics. The most recent samples for the Ripley DWS were collected on June 25, 2024 at the Ripley Pumphouse and submitted to the laboratory for analysis of inorganics as listed in Schedule 23 (see **Table 10**). All parameters were found to be within compliance. 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 for the Ripley Elevated Tank and the Ripley Pumphouse again in June 2027.

Table 10 - Inorganics Results

Parameter	Ripley Pumphouse (µg/L)	Ripley Elevated tank Well 3 (µg/L)	Maximum Allowable Concentration (µg/L)
Antimony	0.6 < MDL	0.6<MDL	6
Arsenic	1.1	1.0	10
Barium	89.2	92.0	1000
Boron	105	102	5000
Cadmium	0.055	0.050	5
Chromium	0.14	0.12	50
Mercury	0.01 < MDL	0.01 < MDL	1
Selenium	0.50	0.48	50
Uranium	2.78	2.60	20

*MDL = Laboratory Minimum Detection Limit

3.3.2 Organics

Treated water samples are collected every 36 months (3 years) 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 for the Ripley Elevated Tank and the Ripley Pumphouse again in June 2027. Samples results can be found in **Table 11**.

Table 11 - Organics Results

Parameter	Ripley Pumphouse (µg/L)	Ripley Elevated tank (µg/L) -	Maximum Allowable Concentration (µg/L)
Benzene	0.32 < MDL	0.32 < MDL	1
Carbon Tetrachloride	0.17 < MDL	0.17 < MDL	2
1,2-Dichlorobenzene	0.41 < MDL	0.41 < MDL	200
1,4-Dichlorobenzene	0.36 < MDL	0.36 < MDL	5
1,1-Dichloroethylene	0.33 < MDL	0.33 < MDL	14
1,2-Dichloroethane	0.35 < MDL	0.35 < MDL	5
Dichloromethane	0.35 < MDL	0.35 < MDL	50
Monochlorobenzene	0.3 < MDL	0.3 < MDL	80
Tetrachloroethylene	0.35 < MDL	0.35 < MDL	10
Trichloroethylene	0.44 < MDL	0.44 < MDL	5
Vinyl Chloride	0.17 < MDL	0.17 < MDL	1
Diquat	1 < MDL	1 < MDL	70
Paraquat	1 < MDL	1 < MDL	10
Glyphosate	1 < MDL	1 < MDL	280
Polychlorinated Biphenyls (PCBs)	0.04 < MDL	0.04 < MDL	3
Benzo(a)pyrene	0.004 < MDL	0.004 < MDL	0.01
Alachlor	0.02 < MDL	0.02 < MDL	5

*MDL = Laboratory Minimum Detection Limit

Table 11 - Organics Results - Continued

Parameter	Ripley Pumphouse (µg/L) 2024	Ripley Elevated tank Well 3 (µg/L) - 2023	Maximum Allowable Concentration (µg/L)
Atrazine+N-dealkylated metabolites	0.01 < MDL	0.01 < MDL	5
Atrazine	0.01 < MDL	0.01 < MDL	/
Desethyl Atrazine	0.01 < MDL	0.01 < MDL	/
Azinphos-methyl	0.05 < MDL	0.05 < MDL	20
Carbaryl	0.05 < MDL	0.05 < MDL	90
Carbofuran	0.01 < MDL	0.01 < MDL	90
Chlorpyrifos	0.02 < MDL	0.02 < MDL	90
Diazinon	0.02 < MDL	0.02 < MDL	20
Dimethoate	0.06 < MDL	0.06 < MDL	20
Diuron	0.03 < MDL	0.03 < MDL	150
Malathion	0.02 < MDL	0.02 < MDL	190
Metolachlor	0.01 < MDL	0.01 < MDL	50
Metribuzin	0.02 < MDL	0.02 < MDL	80
Phorate	0.01 < MDL	0.01 < MDL	2
Prometryne	0.03 < MDL	0.03 < MDL	1
Simazine	0.01 < MDL	0.01 < MDL	10
Terbufos	0.01 < MDL	0.01 < MDL	1
Triallate	0.01 < MDL	0.01 < MDL	230
Trifluralin	0.02 < MDL	0.02 < MDL	45
2,4-Dichlorophenoxyacetic acid	0.19 < MDL	0.19 < MDL	100
Bromoxynil	0.33 < MDL	0.33 < MDL	5
Dicamba	0.20 < MDL	0.20 < MDL	120
Diclofop-methyl	0.40 < MDL	0.40 < MDL	9
MCPA	0.00012 < MDL	0.00012 < MDL	0.1
Picloram	1 < MDL	1 < MDL	190
2,4-Dichlorophenol	0.15 < MDL	0.15 < MDL	900
2,4,6-Trichlorophenol	0.25 < MDL	0.25 < MDL	5
2,3,4,6-Tetrachlorophenol	0.20 < MDL	0.20 < MDL	100
Pentachlorophenol	0.15 < MDL	0.15 < MDL	60

*MDL = Laboratory Minimum Detection Limit

3.3.3 Trihalomethanes and Haloacetic Acids

Two distribution samples are collected every three months from a representative point in the distribution system and tested for Trihalomethanes (THMs) and Haloacetic Acids (HAAs). In 2023, 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). The RAA for THMS was found to be 11.3 µg/L for the pumphouse and 10.7 µg/L for the elevated tank. Both results are within compliance. The HAA MAC is 80 µg/L.
Refer to **Tables 12 and 13** for the summary of trihalomethane and haloacetic acid results.

3.3.4 Nitrate and Nitrite (Schedule 12, s. 13-7)

Treated water samples are collected every three months and tested for nitrate and nitrite. In 2024, 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 12 and 13**.

Table 12 - Nitrate, Nitrite THM and HAA Results - RIPLEY PUMPHOUSE

Month	Nitrite (mg/L)	Nitrate (mg/L)	HAAs (µg/L)	THMs (µg/L)
Feb	<0.003	0.914	< 5.3	11
May	<0.003	0.687	< 5.3	12
Aug	<0.003	0.184	< 5.3	11
Nov	<0.003nov	0.071	<5.3	11
Average	<0.003	0.464	<5.3	11.3 RAA
Maximum	<0.003	0.914	<5.3	12
MAC (mg/L)	**1**	**10**	**100**	**100**

Table 13 - Nitrate, Nitrite THM and HAA Results - RIPLEY ELEVATED TANK

Month	Nitrite (mg/L)	Nitrate (mg/L)	HAAs (µg/L)	THMs (µg/L)
Feb	<0.003	0.891	< 5.3	9.3
May	<0.003	0.675	< 5.3	14
Aug	<0.003	0.310	< 5.3	9.3
Nov	<0.003	0.117	<5.3	7.6
Average	<0.003	0.498	<5.3	10.7RAA
Maximum	<0.003	0.891	<5.3	14
MAC (mg/L)	**1**	**10**	**100**	**100**

3.3.5 Sodium

One (1) water sample is collected from each Point of Entry (treated water) every 60 months and analyzed for Sodium. These samples were collected on July 27, 2021. The Sodium results for both well supplies exceeded 20 mg/L and was reported to the Grey Bruce Health Unit and the Ministry's Spills Action Centre (AWQI # 154964 and 154965). Results can be found in **Table 14**. The next sampling date for Sodium will be in 2026.

3.3.6 Fluoride

One (1) water sample is collected from each Point 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 from each treated source for this analysis. The fluoride results 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 # 159907 and 159908). The results are summarized in **Table 14**. The next sampling date for Fluoride will be in 2027.

Table 14 - Sodium and Fluoride Results for 2022

Location	Sodium	Fluoride
	Result (mg/L)	Result (mg/L)
Ripley Pumphouse Treated Water	32.1, 28.6	1.99, 2.01
Ripley Elevated Tank	30.0, 28.4	1.97, 2.19
MAC (mg/L)	20	1.50
Exceedance	Yes	Yes

3.3.7 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. Two (2) were collected on January 09, 2024 and two (2) samples were collected on July 15, 2024. These parameters are required to be sampled and analyzed again between the months of December and April 2025, and again between June and October 2025. Results for 2024 can be found in **Table 15**.

Table 15 - Lead Sampling Program Results

Season	Alkalinity (mg/L)	pH	Lead (µg/L)
Dec-Apr	224 221	7.89 7.95	0.19 0.20
Jun-Oct	209 212	8.04 7.96	0.12 0.07
MAC (µg/L)	–	–	10

4.0 WATER AND CHEMICAL USE

4.1 Chemical Usage

In 2024, the total amount of 12% sodium hypochlorite (NaOCl) used to treat the water that was provided to the distribution system is tabulated in **Table 16** with the average chlorine dosage.

Table 16 - Sodium Hypochlorite Usage

Month	Ripley Pumphouse Treated Water		Ripley Elevated Tank Treated Water	
	Usage (kg)	Average Dosage (mg/L)	Usage (kg)	Average Dosage (mg/L)
Jan	0	0	27.33	2.74
Feb	0	0	224.39	4.74
Mar	0	0	24.67	2.51
Apr	0	0	23.41	2.45
May	0	0	29.71	2.97
Jun	0	0	35.04	3.16
Jul	6.59	3.68	35.32	3.00
Aug	18.78	3.53	21.16	3.46
Sep	17.24	3.59	26.21	3.13
Oct	18.08	3.39	15.70	3.97
Nov	15.42	3.31	16.96	5.38
Dec	11.77	3.19	19.90	4.05
TOTAL	87.88	–	299.80	–
Average	–	1.72	–	3.50

Sodium Hypochlorite Grand Total Usage: 387.68 kg
Sodium Hypochlorite Average Dosage: 2.61 mg/L

4.2 Summary of Flow Rates, Annual Volumes and Capacities

A summary of the water supplied to the distribution system in 2024 from each well supply is provided in **Tables 17, 18, 19, and 20**. The volumes reported for the Ripley well supply are taken from the SCADA continuous monitoring system. Ripley Elevated Tank flow meters were calibrated on July 16, 2024.

Table 17 - Flow Rates, Annual Volumes, and Capacities - Ripley Pumphouse

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 Average (%)
Jan	16.97	0.52	17.25	17.25	0.56	0.06%
Feb	17.75	1.11	39.34	20.10	1.36	0.16%
Mar	**16.74**	0.51	14.44	14.44	0.47	0.05%
Apr	18.37	1.13	26.34	15.43	0.88	0.10%
May	18.22	0.56	16.53	16.52	0.53	0.06%
Jun	0	0	0	0	0	0.00%
Jul	20.22	4.60	1,951.13	440.72	62.94	7.28%
Aug	19.35	9.98	5,245.60	469.69	169.21	19.58%
Sep	19.67	11.53	4,538.31	446.22	151.28	17.51%
Oct	19.57	10.08	4,950.42	500.06	159.69	18.48%
Nov	19.30	14.27	4,731.31	432.87	157.71	18.25%
Dec	30.28	11.93	3,531.95	222.02	113.93	13.19%
PTTW Max	**30.30**	**30.30**	**26,280**	**864**	**–**	**–**
Annual Max	**30.28**	–	–	**500.06**	–	–
Annual Avg	–	5.52	–	–	68.21	7.95%
Annual Total	–	–	**25,062.62**	–	–	–

Table 18 - Flow Rates, Annual Volumes, and Capacities - Ripley Elevated Tank - Well # 3

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 Average (%)
Jan	22.57	12.99	7,032.47	614.72	226.85	11.3%
Feb	22.71	12.60	4,910.21	585.23	169.32	8.4%
Mar	22.78	9.48	4,023.59	599.37	129.79	6.4%
Apr	22.95	9.81	3,791.50	487.85	126.38	6.3%
May	**23.11**	10.46	5,112.76	546.06	164.93	8.2%
Jun	21.69	12.42	6,097.32	528.89	203.24	10.1%
Jul	**21.80**	12.59	5,676.87	545.03	183.12	9.1%
Aug	**21.07**	5.4	1,725.76	442.86	55.67	2.8%
Sep	**21.06**	4.31	1,222.34	415.47	40.74	2.0%
Oct	**20.76**	2.56	406.39	196.31	13.11	0.7%
Nov	**20.23**	4.24	913.98	291.04	30.47	1.51%
Dec	**21.40**	7.14	2,816.00	400.53	90.84	4.51%
PTTW Max	**23.33**	**23.33**	**61320.00**	**2016**	**–**	**–**
Annual Max	**23.10**	–	–	614.70	–	–
Annual Avg	–	8.70	–	–	119.50	5.94%
Annual Total	–	–	**43,729.2**	–	–	–

Table 19 - Flow Rates, Annual Volumes, and Capacities - Ripley Elevated Tank - Well # 4

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 Avg (%)
Jan	22.27	6.51	2353.46	664.67	75.92	5.5%
Feb	22.29	8.50	3429.78	591.43	118.27	8.5%
Mar	23.90	11.62	5117.88	592.22	165.09	11.9%
Apr	30.69	11.98	4643.95	553.15	154.80	11.2%
May	21.93	10.73	4619.67	541.56	149.02	10.8%
Jun	21.70	8.75	4517.19	538.46	15057	10.9%
Jul	21.51	10.64	4986.80	658.18	160.86	11.6%
Aug	21.21	11.52	4727.18	481.49	152.49	11.0%
Sep	21.12	14.81	4518.62	467.55	150.62	10.9%
Oct	20.92	9.24	4239.16	408.77	136.75	9.9%
Nov	20.69	15.23	3869.84	416.54	128.99	9.3%
Dec	21.13	13.09	3199.12	216.96	103.20	14%
PTTW Max	23.33	23.33	61,320.00	2016	–	–
Annual Max	30.69	–	-	664.70	–	
Annual Avg	–	11.05	–	–	137.22	10.48%
Annual Total	–	–	53,038.65	–	–	–

* NOTE: The flow exceedances in April, September and December were instantaneous peaks at pump start up.

Table 20 - Flow Rates, Annual Volumes and Capacities - RIPLEY WELLS COMBINED (1, 2, 3 and 4)

Month	Raw Volume Monthly Total (m^3)	Raw Volume Daily Max (m^3)	Raw Volume Monthly Avg (m^3)	Capacity Monthly Avg (%)
Jan	9,403.18	664.67	151.39	3.5%
Feb	8,379.33	591.43	143.79	3.4%
Mar	9,155.91	599.37	147.44	3.5%
Apr	8,461.79	553.15	140.59	3.3%
May	9,748.96	546.06	156.97	3.7%
Jun	10,614.51	538.46	176.91	4.1%
Jul	12,614.80	658.18	171.99	4.0%
Aug	11,698.54	481.49	104.08	2.4%
Sep	10,279.27	467.55	95.68	2.2%
Oct	9,595.97	500.06	74.93	1.8%
Nov	9515.13	432.87	79.73	1.9%
Dec	9547.07	414.09	307.97	7.2%
PTTW Max	130,113.00	4,266.00	–	–
Annual Max	–	664.67	–	–
Annual Avg	–	–	145.96	3.90%
Annual Total	119,014.46	–	–	–

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 21**.

Table 21 - Total Volumes of All Well Supplies

Location (Well Supply)	Total Volume for 2024 (m^3)
Ripley Pumphouse (Well #1 and #2)	**25,062.62**
Ripley Elevated Tank (Well #3)	**43,729.2**
Ripley Elevated Tank (Well # 4)	50,222.65
Total Annual Rated Capacity, PTTW (m^3)	**1,55,090.00**
Grand Total Water Taking (m^3)	**119,014.46**
Overall Operating Capacity, Actual %	10.48%

5.0 IMPROVEMENTS TO SYSTEM AND ROUTINE AND PREVENTATIVE MAINTENANCE (s. 11 (6) (e))

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

Ripley Drinking Water System:

Routine and preventative maintenance performed as per Jobs Plus schedule.
Flow meter calibrations completed.
Georgian Bay Fire and Safety inspections completed.
Sommers Generators on-site for annual servicing.
Semi-annual flushing and annual valve turning completed.
Backflow preventer testing completed.
Wellhouse doors have all been painted
New signage was posted at all sites

Ripley Pumphouse:

January	Sump line was removed from storm pipe as it was causing flooding in the basement
	Cl2 (chlorine) and POE (point of entry) analyzers were replaced
May	The well is offline due to VFD failure
	Roof was repaired
June	Manhole repairs were completed
	Flushing completed
July	Well #2 MCC replacement was completed

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

- MECP Drinking Water Inspection was conducted on August 16, 2024 and a score of **100%** was achieved
  There were no non-conformance:

- Capital Items list for 2024 was submitted to the Township of Huron-Kinloss in November, 2023.
- DWQMS Management Review was conducted on October 24, 2024.
- DWQMS Internal Audit was conducted on November 19, 2024.
- DWQMS External Audit (off-site) was conducted on August 27, 2024. There were several Opportunities For Improvement (OFIs) noted.
- DWQMS Complete Risk Assessment was started but not completed in 2024 due to staffing schedules.
- An Emergency Response Exercise was conducted by the Township on October 18, and Veolia was asked to participate.
- There were no AWQIs for 2024