

# Stirling

# Drinking Water System

## Annual Water Report

Reporting Period of January 1, 2024- December 31, 2024

This report has been prepared to satisfy the annual reporting requirements of the Provincial Regulations and Guidelines established by the Ministry of Environment and Climate Change including the section 11 and Schedule 22 reports identified in O.Reg 170/03, Drinking Water Systems Regulation and the Permit to Take Water Reports identified in O.Reg 387/04, Water taking and Transfer Regulation.

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## Report Availability

Population Served	< 10,000
Website where the annual report can be viewed by the public	www.stirling-rawdon.com
Alternate location where annual report is available free of charge.	Stirling-Rawdon Municipal Office
How the system users are notified that the annual report is available and is free of charge?	Public access/ notice via the web Public access/ notice via newspaper
Number of Designated Facilities Served	None
Has a copy of this report been provided to all Designated Facilities?	N/A
Number of Interested Parties reported to	2
Has a copy of this report been provided to all interested Parties?	Yes
The following Drinking Water Systems receive drinking water from this system	N/A
Has a copy of this report been provided to connected users?	N/A

## Compliance Report Card

<b>Drinking Water System Number</b>	<b>220001566</b>
<b>System Owner:</b>	<b>The Corporation of The Township of Stirling-Rawdon</b>
<b>Operating Authority</b>	<b>The Township of Stirling-Rawdon</b>
<b>Drinking Water System Category</b>	<b>Large Municipal Residential</b>
<b>Reporting Period</b>	<b>January 1, 2024 – December 31, 2024</b>

<b>Event Summary</b>	<b># of Events</b>	<b>Date</b>	<b>Details</b>
<b>Ministry of Environment Conservation and Parks Inspections</b>	<b>1</b>	<b>January 10, 2025</b>	<b>Announced Inspection</b>
<b>Ministry of Labour Inspections</b>	<b>0</b>		
<b>DWQMS Audits</b>	<b>2</b>	<b>(1)October 21, 2024 to November 29, 2024  (2) January 17, 2025</b>	<b>(1)Internal Audit  (2)Surveillance System Audit</b>
<b>AWQI's</b>	<b>2</b>	<b>(1)March 4, 2024 (2)April 22, 2024</b>	<b>(1)Sodium exceedance drinking water sample. (2) Loss of distribution system pressure.</b>
<b>Non-Compliance</b>	<b>0</b>	<b>None noted at the time of report submission</b>	
<b>Community Complaints</b>	<b>14</b>		<b>Each complaint was investigated and documented. The majority of the complaints dealt with plumbing issues or water quality concerns that were investigated and determined to be caused by internal plumbing issues.</b>
<b>Spills</b>	<b>0</b>		

## Quality Control Measures

The Township of Stirling-Rawdon Drinking Water and Wastewater Facilities are operated by Township of Stirling-Rawdon Staff. Each facility has comprehensive manuals that detail operations, maintenance, instrumentation and emergency procedures. All procedures are kept current and accurate through an annual review process detailed in the Municipalities Drinking Water Quality Management System (DWQMS). Additional quality control measures are exercised by:

- Tracking and implementing maintenance activities through a work order tracking system.
- Use of sampling schedules for external laboratory sampling
- Active member of the Ontario Water/Wastewater Agency Response Network
- Increased calibration frequencies to ensure equipment accuracy.

## System Process Description

### *Raw Source*

Raw water sources for the Stirling Drinking Water System are from five separate groundwater wells; Well 1,3,4,5 and 6. The groundwater wells are considered Ground Water Under The Direct Influence of Surface Water (GUDI) with effective in-situ treatment.

### *Treatment*

The Facility utilizes sodium hypochlorite, and two ultraviolet disinfection units (one duty, one standby) for a two stage primary disinfection treatment. Secondary treatment is provided from the sodium hypochlorite injection at the water treatment plant. The treatment system at the plant has on-line chlorine analyzers for pre and post chlorine residuals, an on-line turbidimeter for treated water turbidity and UV Dosage which is monitored on the individual reactor controls as well as the SCADA/PLC. The SCADA/PLC has alarming capabilities to lock the plant out during a failure of the disinfection system, analyzers or components.

### **Treatment Chemicals used in the reporting period:**

Chemical Name	Use	Supplier
Sodium Hypochlorite	Disinfection	Brenntag

## Summary of Non-Compliance

### *Adverse Water Quality Incidents*

Date	AWQI #	Cause			Corrective Action Taken
		Parameter	Result	Exceedance of	
March 4, 2024	164550	Sodium	35.4 mg/L	15.4 mg/L	MECP, Health Unit Notification, resample.

### Non-Compliance Identified in a Ministry Inspection:

*Ministry of The Environment and Conservation and Parks Inspection Report has not yet been provided to the Municipality.*

Legislation	Requirement(s) system failed to meet	Duration of the failure (i.e. date(s))	Corrective Action	Status
None				

**Non noted by the time of report submission deadline.**

## Flows

The Stirling Drinking Water System has a rated capacity of 2687 m<sup>3</sup>/day. Additional flow data can be found under the water taking and transfer data.

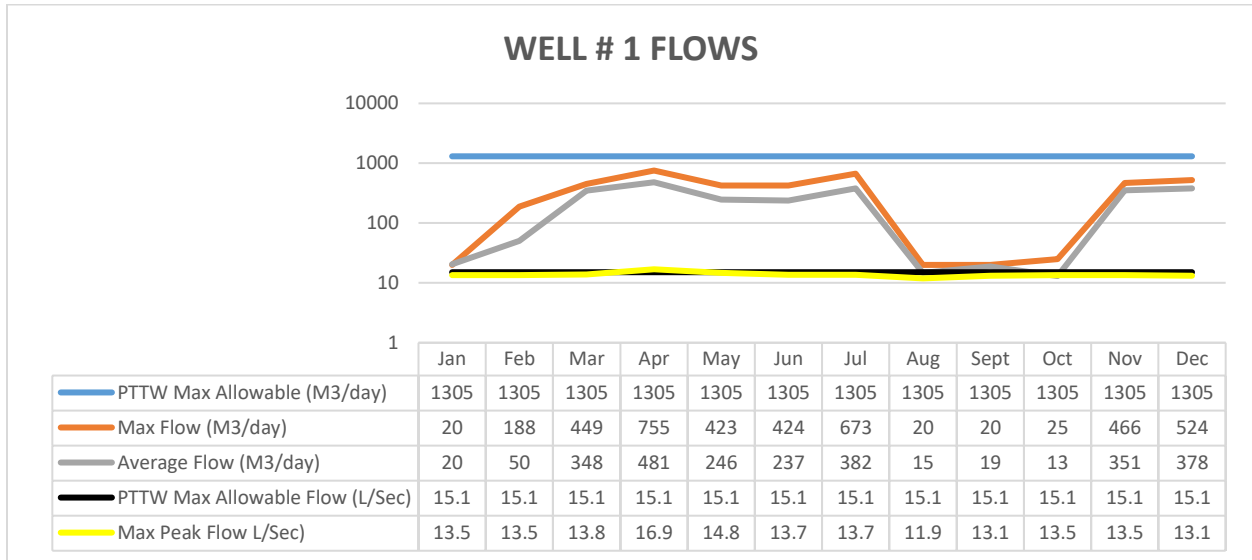
## Raw Water Flows

The Raw Water flows are regulated under Permit to Take Water

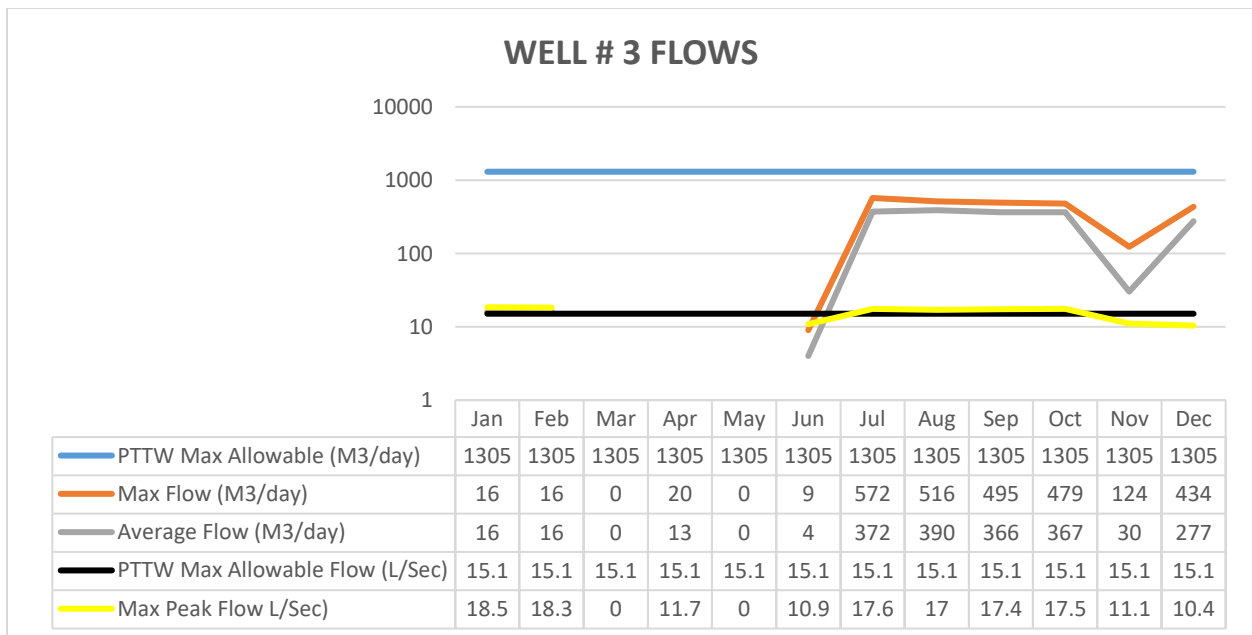
- RW1 = Raw Water Well 1
- RW3 = Raw Water Well 3
- RW4 = Raw Water Well 4
- RW5 = Raw Water Well 5
- RW6 = Raw Water Well 6

- TW = Treated Water
- DW = Distribution Water

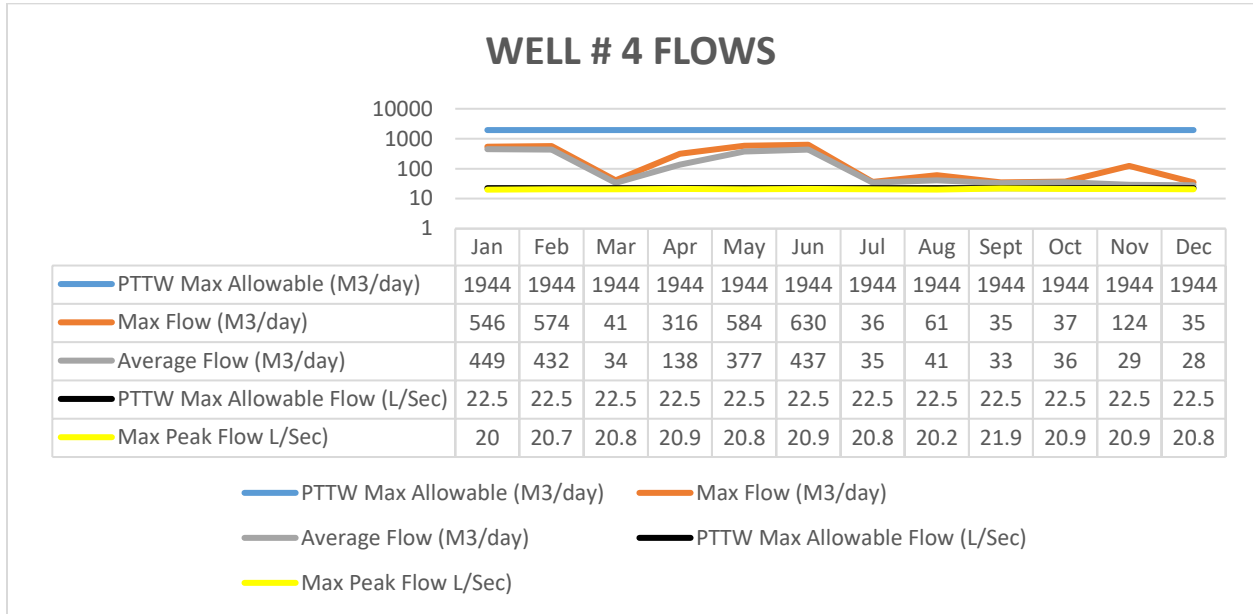
### Raw Water Daily Rate of Taking: RW 1



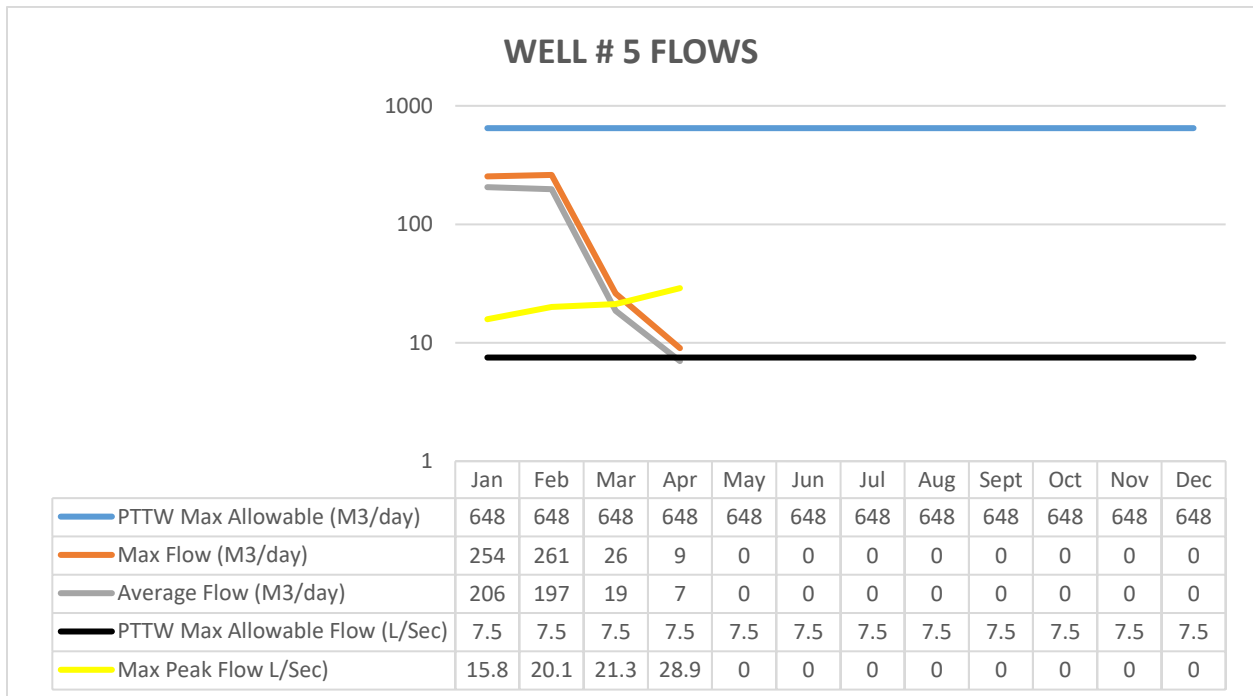
### Raw Water Daily Rate of Taking: RW 3



## Raw Water Daily Rate of Taking: RW 4

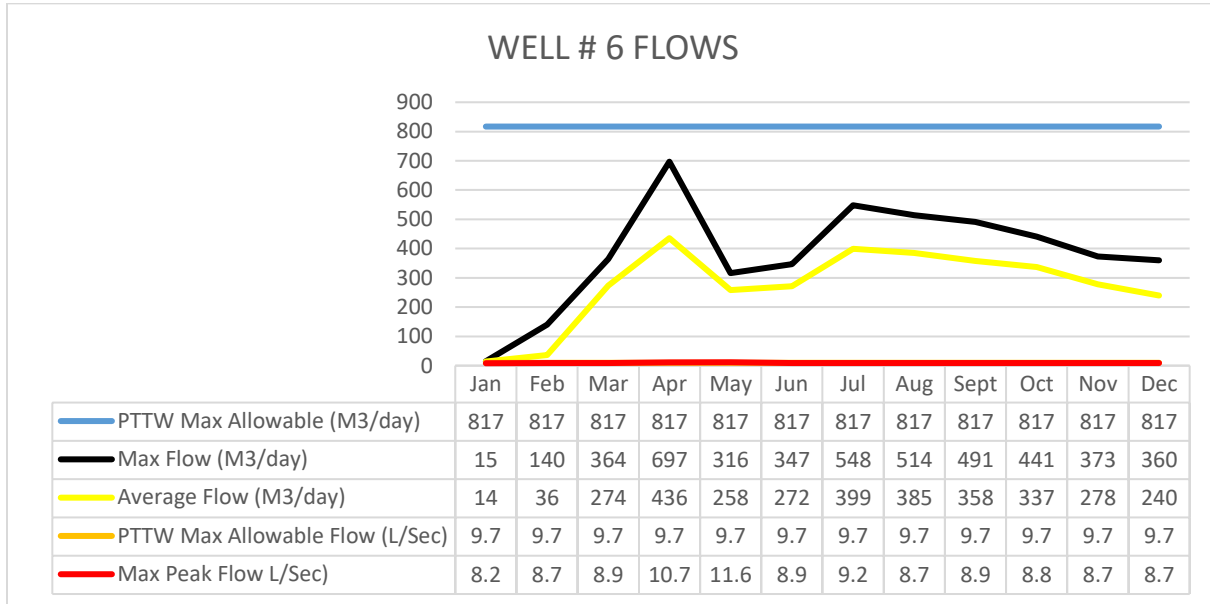


## Raw Water Daily Rate of Taking: RW 5





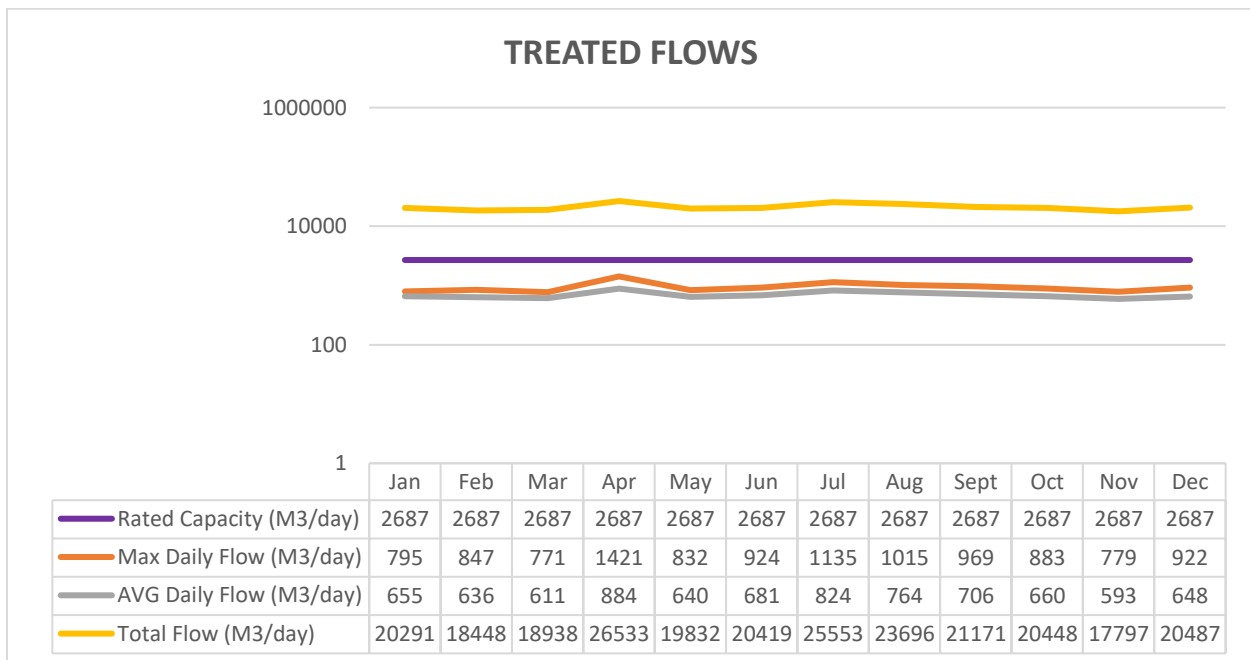
## Raw Water Daily Rate of Taking: RW 6



Peak flows exceed the PTTW Max Allowable Peak Flow instantaneously when the well pump starts and the system is pumping to waste.

## Treated Water Flows

Treated water flows are regulated under the Municipal Drinking Water Licence.



## Regulatory Sample Results Summary

### *Microbiological Testing*

Location	Number of Samples	E.Coli Results (min) – (max)	Total Coliform Results (min) – (max)	Number of HPC Samples	HPC Results (min) – (max)
Raw – RW1	54	0-0	0-21	-	-
Raw – RW3	37	0-0	0-0	-	-
Raw – RW4	54	0-0	0-0	-	-
Raw – RW5	14	0-0	0-0	-	-
Raw – RW6	54	0-0	0-0	-	-
Treated - TW	54	0-0	0-0	54	0-2
Distribution - DW	162	0-0	0-0	162	0-25

### Continuous On-Line Monitoring

Parameter	Range of Results (Min-Max Value)
Turbidity, Treated	0.019-2.047 NTU *
Treated, Free Chlorine	1.01-5.13 mg/L
Distribution, Free Chlorine	0.73-2.79 mg/L*

\*Instrument spikes and dips recorded by on-line instrumentation are result of various maintenance and calibration activities. Power interruptions may also cause instrument readings to provide inaccurate readings. All events are reviewed for compliance with O. Reg. 170/03 and if warranted, are reported to the Ministry of Environment Conservation and Parks as Adverse Water Quality Incidents.

### In- House Testing

Parameter	# of grab samples taken	Range of Results (min # - max #)
Turbidity, Raw Well 1 (NTU)	54	0.15-0.66 NTU
Turbidity, Raw Well 3 (NTU)	37	0.22-0.45 NTU

<b>Turbidity, Raw Well 4 (NTU)</b>	<b>54</b>	<b>0.16-0.49 NTU</b>
<b>Turbidity, Raw Well 5 (NTU)</b>	<b>14</b>	<b>0.19-0.52 NTU</b>
<b>Turbidity, Raw Well 6 (NTU)</b>	<b>54</b>	<b>0.15-0.58 NTU</b>
<b>Treated Turbidity (NTU)</b>	<b>365</b>	<b>0.15-0.64 NTU</b>
<b>Treated, Free Chlorine (mg/L)</b>	<b>365</b>	<b>1.15-3.40 mg/L</b>
<b>Distribution, Free Chlorine (mg/L)</b>	<b>365</b>	<b>0.85-2.00 mg/L</b>

## Lead Sampling

The lead sampling program is required under 0.Reg 170/03. This system qualified for the plumbing exemption.

Location	Date	Lead	pH	Alkalinity (mg/L) as CaCO <sub>3</sub>
-	-	10 (MAC)	6.5-8.5	30-500
Hydrant # 85	Mar 14 2024	0.36	7.69	269
Hydrant # 18	Mar 14 2024	0.92	7.79	285
Hydrant # 85	Sept 18 2024	0.92	7.79	Lab Error
Hydrant # 18	Sept 18 2024	1.58	7.81	Lab Error

Inorganic Parameters							
Parameter	Units	Sample Date	Sample Location	Result Value	MAC	Exceedance	
						MAC	1/2 MAC
Antimony	ug/L	Oct 9 2024	TW	0.60	6	No	No
Arsenic	ug/L	Oct 9 2024	TW	0.40	10	No	No
Barium	ug/L	Oct 9 2024	TW	252	1000	No	No
Boron	ug/L	Oct 9 2024	TW	17	5000	No	No
Cadmium	ug/L	Oct 9 2024	TW	0.003	5	No	No
Chromium	ug/L	Oct 9 2024	TW	0.19	50	No	No
Mercury	ug/L	Oct 9 2024	TW	0.01	1	No	No
Selenium	ug/L	Oct 9 2024	TW	0.31	50	No	No

Uranium	ug/L	Oct 09 2024	TW	1.630	20	No	No
Fluoride	mg/L	Feb 28 2023	TW	0.13	1.5	No	No
Nitrite	mg/L	Jan 13 2024	TW	0.003	1.000	No	No
Nitrite	mg/L	Apr 3 2024	TW	0.003	1.000	No	No
Nitrite	mg/L		TW		1.000	No	No
Nitrite	mg/L	Oct 25 2024	TW	0.003	1.000	No	No
Nitrate	mg/L	Jan 13 2024	TW	1.2	10.000	No	No
Nitrate	mg/L	Apr 3 2024	TW	1.86	10.000	No	No
Nitrate	mg/L		TW		10.000	No	No
Nitrate	mg/L	Oct 25 2024	TW	2.08	10.000	No	No

<b>Organic Parameters</b>							
Parameter	Units	Sample Date	Sample Location	Result Value	MAC	Exceedance	
						MAC	1/2 MAC
Alachlor	ug/l	Oct 9 2024	TW	0.02	5	No	No
Atrazine + N-dealkylated metabolites	ug/l	Oct 9 2024	TW	0.01	5	No	No
Azinphos-Methyl	ug/l	Oct 9 2024	TW	0.05	20	No	No
Benzene	ug/l	Oct 9 2024	TW	0.32	1	No	No
Benzo (a) pyrene	ug/l	Oct 9 2024	TW	0.004	0.01	No	No
Bromoxynil	ug/l	Oct 9 2024	TW	0.33	5	No	No
Carbaryl	ug/l	Oct 9 2024	TW	0.05	90	No	No
Carbofuran	ug/l	Oct 9 2024	TW	0.01	90	No	No
Carbon Tetrachloride	ug/l	Oct 9 2024	TW	0.17	5	No	No
Chlorpyrifos	ug/l	Oct 9 2024	TW	0.02	90	No	No
Diazinon	ug/l	Oct 9 2024	TW	0.02	20	No	No
Dicamba	ug/l	Oct 9 2024	TW	0.2	120	No	No
1,2-Dichlorobenzene	ug/l	Oct 9 2024	TW	0.41	200	No	No
1,4 - Dichlorobenzene	ug/l	Oct 9 2024	TW	0.36	5	No	No
1,2- Dichloroethane	ug/l	Oct 9 2024	TW	0.35	5	No	No
1,1- Dichloroethylene	ug/l	Oct 9 2024	TW	0.33	14	No	No
Dichloromethane (methylene Chloride)	ug/l	Oct 9 2024	TW	0.35	50	No	No
2,4-Dichlorophenol	ug/l	Oct 9 2024	TW	0.15	900	No	No
2,4-Dichlorophenoxy acetic acid )2,4-D)	ug/l	Oct 9 2024	TW	0.19	100	No	No

Diclofop-methyl	ug/l	Oct 9 2024	TW	0.4	9	No	No
Dimethoate	ug/l	Oct 9 2024	TW	0.06	20	No	No
Diquat	ug/l	Oct 9 2024	TW	1	70	No	No
Diuron	ug/l	Oct 9 2024	TW	0.03	150	No	No
Glyphosate	ug/l	Oct 9 2024	TW	1	280	No	No
Malathion	ug/l	Oct 9 2024	TW	0.02	190	No	No
Metolachlor	ug/l	Oct 9 2024	TW	0.01	50	No	No
Metribuzin	ug/l	Oct 9 2024	TW	0.02	80	No	No
MCPA	ug/l	Oct 9 2024	TW	0.00012	0.1	No	No
Monochlorobenzene (Chlorobenzene)	ug/l	Oct 9 2024	TW	0.3	80	No	No
Paraquat	ug/l	Oct 9 2024	TW	1	10	No	No
PCB	ug/l	Oct 9 2024	TW	0.04	3	No	No
Pentachlorophenol	ug/l	Oct 9 2024	TW	0.15	60	No	No
Phorate	ug/l	Oct 9 2024	TW	0.01	2	No	No
Picloram	ug/l	Oct 9 2024	TW	1	190	No	No
Prometryne	ug/l	Oct 9 2024	TW	0.03	1	No	No
Simazine	ug/l	Oct 9 2024	TW	0.01	10	No	No
Terbufos	ug/l	Oct 9 2024	TW	0.01	1	No	No
Tetrachloroethylene	ug/l	Oct 9 2024	TW	0.35	10	No	No
2,3,4,6- Tetrachlorophenol	ug/l	Oct 9 2024	TW	0.2	100	No	No
Triallate	ug/l	Oct 9 2024	TW	0.01	230	No	No
Trichloroethylene	ug/l	Oct 9 2024	TW	0.44	5	No	No
2,4,6-Trichlorophenol	ug/l	Oct 9 2024	TW	0.25	5	No	No
Trifluralin	ug/l	Oct 9 2024	TW	0.02	45	No	No
Vinyl Chloride	ug/l	Oct 9 2024	TW	0.17	1	No	No
Trihalomethane Total	ug/l	Jan 17 2024	DW	52	100	No	No
	ug/l	Apr 3 2024	DW	20	100	No	No
	ug/l	Jul 18 2024	DW	44	100	No	No
	ug/l	Oct 25 2024	DW	49	100	No	No
	ug/l		DW	RAA= 41.25	100	No	No
Total Haloacetic Acids	ug/l	Jan 17 2024	DW	5.3	80	No	No
	ug/l	Apr 3 2024	DW	5.3	80	No	No
	ug/l	Jul 18 2024	DW	5.3	80	No	No
	ug/l	Oct 25 2024	DW	5.3	80	No	No
				RAA= 5.3	80	No	No
60 months							
Sodium	mg/l	Feb 28 2024	TW	35.4	20	Yes	Yes
Fluoride	mg/l	Feb 28 2024	TW	0.13	1.5	No	No

- MAC= Maximum Allowable Concentration as per O.Reg 169/03
- Sodium and Fluoride were tested in 2024. Sodium exceeded and was reported to MOH,MECP as well as public notification.

### **Maintenance Summary Highlights:**

#### *Major expenses incurred to install, repair or replace required equipment*

- **Annual flow meter calibrations**
- **Annual back flow prevention device inspection**
- **Annual lifting device inspections**
- **Annual Diesel Generator Inspection**
- **Semi-annual maintenance on UV disinfection equipment**
- **Mechanical Cleaning and CCTV inspection of Municipal Well # 3, #4, #5 and #1.**
- **Replacement of riser pipe, pitless adapter and Check valve on Municipal Well # 3.**
- **Annual fire hydrant flushing, maintenance and fire flow rating**
- **Annual distribution valve turning and maintenance**

### **Maintenance Summary**

The Township of Stirling-Rawdon uses a work order tracking system to ensure work orders are complete and equipment is maintained as per manufacturer's specifications. Work orders are issued on a weekly, monthly, annual or on an as needed basis to provide the required service to the drinking water system. Capital projects are listed each year in the annual capital budget and are ranked based on priority through the Municipalities Asset Management Plan.

<b>Water Treatment and Distribution Operation/maintenance work orders completed</b>	<b>Number of complete work orders 193</b>
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### **Drinking Water Quality Management System**

The Township of Stirling-Rawdon contracted Intertek-SAI Global Canada to conduct the DWQMS Audit for the Stirling Drinking Water System. On January 17, 2025 an off-site Surveillance System Audit was conducted.

## **Water Taking and Transfer Data**

Data for the reporting period of January 1, 2024 – December 31, 2024 was submitted electronically to the Ministry of the Environment Conservation and Parks on January 21, 2025 under Permit to Take Water PTTW # 1760-C5UNBR.