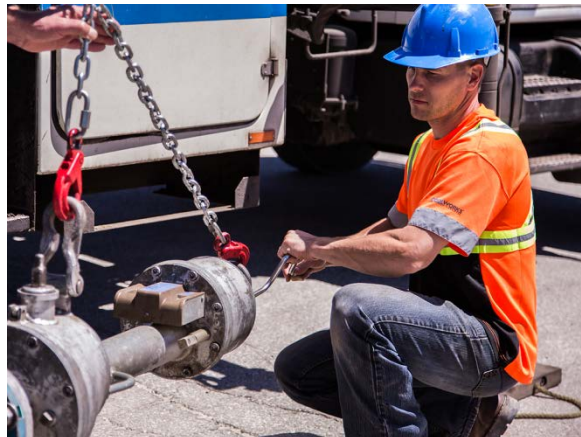




Owen Sound Drinking Water System Annual Summary Report 2024



Richard H. Neath Water Treatment Plant



"Photo by Julia Wells, Owen Sound"

Prepared by:

Troy Pelletier- Water Treatment Superintendent
Mark Hill- Water Distribution Superintendent

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 Annual Report – Required Under Ontario Regulation 170/03, Section 11 18

1.0 Introduction

Purpose

The purpose of this report is to meet the Ministry of the Environment, Conservation and Parks (MECP) annual reporting requirements set out in the Safe Drinking Water Act, Ontario Regulation 170/03 Section 11, and Schedule 22.

Under Ontario Regulation 170/03, Section 11, the following information is required.

- a brief description of the water system and a list of water treatment chemicals used.
- a summary of adverse test results and other issues associated reported to the Ministry that are non-adverse.
- a summary of corrective actions taken under Schedule 17 during the reporting period.
- a summary of test results required under this regulation, or other approvals or orders.
- provide any major expenses incurred which cover installation, repair or replacement;
- the locations where a report is available.
- a copy of this report will be given to Meaford, as Owen Sound provides water to Leith residents.

The Section 11 requirements listed above are in Appendix 2 of this report.

Under Schedule 22, the Summary Report will include;

- List of the requirements of the Safe Drinking Water Act, Ontario water regulations, permits and licenses; and any deviations from them;
- Any requirements not met, the duration of the failure and the measures that were taken to correct the failure ;
- a summary of the quantities and flow rates including monthly average and maximum day flows;
- a comparison to the rate capacity and flow rates approved by the system's approval, drinking water works permit or municipal drinking water license;
- a copy of this report shall be given to Council by March 31.

2.0 Compliance

This section will reference the list of requirements by various Acts, regulations, and licenses and any non-compliance to report.

Municipal Drinking Water License (MDWL) 094-101

Schedule B (General Conditions)

1. This License (MDWL Issue 5) is current and active since it came into effect.
2. The owner will prepare an application for renewal by the requested due date. The next renewal application is due by April 1st, 2025.
3. The owner has ensured that any persons working or operating in the system is familiar with all applicable regulations and permits associated with this drinking water system.
4. A copy of the License and Drinking Water Works Permit (DWWP) is available to all persons involved in the operation of the drinking water system.
5. The owner is following the Permit to Take Water (PTTW), as identified in Schedule A of this License.
6. The owner is following the DWWP as identified in Schedule A of this License.
7. The City has complied with the requirement of having a financial plan, and was presented to Council in 2020.
8. There was no information request by a Director or provincial officer concerning the system or its operation.
9. Records are kept beyond the 5 year requirement.
10. All chemicals used in the system meet the ANSI NSF 60/61 and NSF 372 applicable standards, and are available.
11. Plant drawings are up to date. New drawings are available with updated information, if applicable.
12. An up-to-date operation and maintenance manual is available. A lot of the original equipment is stored using a large file system, and operation manuals for newer projects are stored in project binders.
13. Copies of the CT calculations, UV validation certificate and UV validated operating conditions documentation are available in the Operations manual.

14. There are procedures to deal with emergencies, upset conditions and equipment breakdowns.
15. There are procedures for dealing with water complaints.

Schedule C (System-Specific Conditions)

1. The treatment subsystem did not exceed the rated capacity of the water plant of 27,300 m³/day.
2. For Residue Management, the annual average concentration did not exceed 25 mg/L for Total Suspended Solids, and no samples exceeded the chlorine residual of 0.00 mg/L of Free Chlorine.
3. The continuous pass-through UV dose met the required 40 mJ/cm² on all filters except for one instance it dropped to 13.2 mJ/cm² for 50 seconds on UV1, on July 13th. This was caused by a failed effluent valve, and after being reset it opened to 100% causing the event. The UV system maintains 45 mJ/cm² as a minimum requirement to help maintain any drops in UV dosage. There were several other intermittent drops in UV dose on various filters, lasting roughly 10-20 seconds per occurrence, that are linked to a calculation issue with the reactors. The UV's were working normally during these events, and our Vendor is continually working on remediating the issue. These events occurred on February 25th on UV3 (13.7mJ/cm²), March 28th on UV2(18.2 mJ/cm²), May 23rd on UV4 (19.6 mJ/cm²), August 17th on UV1(13.2 mj/cm²), and twice in November on November 9th at 14.6 mJ/cm², and November 14th at 18.0 mJ/cm², both on Filter 2. New UV reactors are currently being installed and should eliminate the calculation issue. The UV reactors are being replaced as part of a filter upgrade in 2025, and this calculation issue should be resolved.
4. The UVT monitor met the required testing frequency.
5. There were no monthly reports required to report UV alarms as per the MDWL. Critical alarms that are detected by the monitoring equipment are programmed to shut down the filter by closing the effluent valves to prevent water entering the clearwells without UV disinfection.
6. Continuous flow measurements were recorded for flow rate and daily volume on water flowing into the treatment system and water entering the distribution system.
7. Flow measuring devices were checked and calibrated. This was completed November 2024.

8. Calibration of CT Monitoring equipment is completed by staff, and a third party company for flow meter and temperature calibrations.
9. Additional sampling identified for Aluminum was checked within the stated time frame.
10. Testing of Total Suspended Solids (TSS) was conducted as per the requirements of the MDWL.
11. Harmful algal blooms have not been detected at any time at this facility and testing has not been implemented.
12. The Owner has developed a Harmful Algal Bloom monitoring, reporting and sampling plan, and was implemented by April 5th, 2021.

Schedule D (Conditions for Relief From Regulatory Requirements)

1. As per the updated MDWL issued October 20th, this section has no requirements.

Schedule E (Pathogen Log Removal/Inactivation Credits)

1. The log removal for Cryptosporidium (2), Giardia (3), and Viruses (4) was met throughout the reporting period.
2. Chemical coagulant was used at all times during this reporting period.
3. Duty UV sensors were being checked on a monthly basis as per the MDWL requirements. The master reference sensor is required to be calibrated by TrojanUV, the manufacturer, every 3 years. The last calibration was within the current 3 year period. The UV system has built-in features that if a UV reactor fails, all flow through the filter stops. Also, UV lamp status is available and all UV sensors are operating within their calibration specifications.
4. All UV system components were purchased from the UV manufacturer.
5. Sampling and testing of free chlorine were carried out by continuous monitoring equipment, and CT provided was greater than the CT required.

Drinking Water Works Permit 092-202

Requirements set out in this Permit have been complied with.

Ontario Regulation 170/03

1. Section 11 (as noted in the introduction) requires various components that are detailed in Appendix 2.
2. Schedule 22 (as noted in the introduction) is prepared within this report.

Safe Drinking Water Act, 2002

Requirements set out in this Act have been complied with.

Technical Support Document for Ontario Drinking Water Standards, Objectives and Guideline, 2006

The Operation guideline for aluminum is 0.100 mg/L, out of 53 samples checked, 1 sample exceeded this guideline, with a maximum value at 0.116 mg/L. As this technical document states; *“Medical studies have not provided clear evidence that residual aluminum has any effect on health.”*

3.0 Water Distribution Activity Summary

During 2024, the following water distribution activities occurred:

Main Breaks

- 17 main breaks

Watermain Looping

Watermain looping occurred in 2 areas of the City. This eliminated 2 dead-end watermains. Watermains were looped in the following locations;

- 6th St East to 4th St East (capital project)
- 6th Ave East to 7th Ave East

Hydrants

- 2 hydrants replaced by contractor
- 1 new city hydrants installed by contractor
- 3 new private hydrants installed by contractor
- 6 City fire hydrants rebuilt by water staff
- 1 blow off replaced by City Staff at Keppel Sarawak School

Services

- 12 new water services installed in fill lot or diameter upgrade
- 1 service running to prevent freezing of water mains/services
- 27 service box and rod corrosion replacements by city water staff
- 5 service leaks repaired, and 3 services fixed due to contractor damage
- 7 service box repairs (new tops, lower, raise, bent)
- 6 water service disconnected

Valves

- 4 line valves rebuilt by water staff
- 4 valve boxes only repaired/replaced by city water staff

New Development Involvement Commissioning/Tapping

- Freshco Site 16th St East
- Andpet 16th Ave East

Capital Construction 2024 / Projects

- Watermain Looping Project – 6th St E to 4th St E – Sturrock
- Watermain/Sewer – Alpha St West – Moorefield
- 7th Ave East Looping – 6th Ave E to 7th Ave E – City/Pickards
- 26th St W / 3rd Ave W – Remove Galv. Main – Pickards/City Staff
- Cathodic Protection on the following roads;
- 17th St East (1800 block)
- 21st St East Easement to WWTP
- 24th Street West/6th Ave West to Keppel Sarawak School
- Watermain / valve work in support of paving
- GIS updates

Water Coordinator Call Outs

There were 98 call outs consisting of customer complaints, leaks, and noisy meters. Contractor requests consist of swab blowing, pressure testing, sampling, information and requests, re-locating, site meets (62), broken water mains, frozen services, plumbing inspections, and assisting distribution staff, and all other City employees etc.

Meter Readings

There were 319, up 14 from 2023 meter readings, some of these readings include customers the City had asked to run water during winter periods to prevent freezing, or a request from the utilities administrator.

Water Pressure Complaints

- There were 13 water pressure complaints, 7 less than 2023, mostly due to galvanized pipe on private pipe or private property problems.

Meter Work

- 185 water meters replaced, 45 less than 2023
- 3 frozen meters changed out
- 12 new houses or businesses
- 2 touchpad repairs
- 2 removed from closed or demolished buildings
- 10 upgrades to radio-read device
- 1 meter tested by Evans Supply (3rd Party)

Hydro and Water Locates

- 2,099 water and 320 street lighting locates, 65 more water locates, 240 less street light locates
- 61 Traffic light locates, 37 less than 2023
- 37 emergency locates
- 4 fiber optic locates

Valve Turnings

347 turnings. Turnings of valve and curb stops are done for contractors, plumbers, customers going on vacation, non-payment, emergency leaks, etc, these turnings were 91 more than 2023.

Report Request

Copies of this Report can be found at;

- City Hall Clerk's Office – located temporarily at 945 3rd Avenue East
- City's website - <https://www.owensound.ca/en/city-hall/waterwastewater.aspx>
- Public Works office – 1900 20th Street East
- Water Treatment Plant – 2600 3rd Avenue East
- Owen Sound & North Grey Union Public Library – 824 1st Avenue West

APPENDIX 1 - WATER TREATMENT DATA

FLOW/CHEMICAL USAGE

Date	Municipal Highlift Flow <i>m3</i>	Industrial Highlift Flow <i>m3</i>	Total High Lift Flow <i>m3</i>	Total Raw Water Flow <i>m3</i>
January	202,725.02	34,025.33	236,750.35	260,981.96
February	185,821.11	33,073.17	218,894.28	241,297.81
March	190,393.12	34,020.41	224,413.53	247,320.60
April	189,181.18	32,093.60	221,274.78	247,669.63
May	191,753.09	36,913.09	228,666.18	255,843.04
June	188,809.72	34,990.58	223,800.30	247,698.46
July	198,161.69	35,456.62	233,618.31	259,976.53
August	194,675.08	37,409.17	232,084.25	257,822.40
September	184,613.70	34,094.20	218,707.90	244,516.59
October	184,598.22	33,644.64	218,242.86	243,664.73
November	171,362.14	31,862.27	203,224.41	229,473.55
December	177,492.54	33,664.09	211,156.63	236,780.45
AVERAGE	188,298.88	34,270.60	222,569.48	247,753.81
MIN	171,362.14	31,862.27	203,224.41	229,473.55
MAX	202,725.02	37,409.17	236,750.35	260,981.96
TOTAL M³	2,259,586.61	411,247.17	2,670,833.78	2,973,045.75

CHEMICAL USAGE

Chemical Usage	Dates Used	Amount Used <i>kgs</i>	Avg Dose <i>mg/L</i>
PAX XL-6	Jan 1 - Mar 19, Nov 25 - Dec 31 (115 days)	12,837.60	3.98
PAX XL-1900	Mar 19 - Nov 25 (251 days)	6,198.50	1.63
Chlorine - Pre	Year-round	1,653.70	0.56
Chlorine - Post	Year-round	6,212.40	2.20
HFS	Year-round	8,266.90	0.59

NOTES:

- PAX XL-6 and PAX XL-1900 are chemicals used during the coagulation stage.
- HFS = HydroFluorosilicic Acid – chemical used to add Fluoride to the water.

- Average raw water Fluoride residual was 0.08 mg/L
- Pre-Chlorine – refers to water that is chlorinating before filtration
- Post Chlorine – refers to chlorination after the filtration process
- Average dosage for Cl₂ is measured as Total Chlorine.

TREATED MONTHLY FLOW – MIN, MAX, and AVERAGE

Month	Treated Water Flow (m ³ /day)			% of Design Flow
	Average	Min	Max	
January	7,134.16	7,650.87	9,300.32	
February	6,673.37	7,291.91	8,091.48	
March	6,669.06	7,242.66	7,819.52	
April	6,128.48	7,373.77	8,938.17	
May	6,648.55	7,368.96	8,532.27	
June	5,935.65	7,452.41	8,622.31	
July	5,587.73	7,528.90	8,726.09	
August	6,655.64	7,478.55	8,401.83	
September	6,351.15	7,280.93	8,359.33	
October	6,542.33	7,033.05	7,726.98	
November	5,813.46	6,766.78	7,931.00	
December	5,587.73	6,804.37	7,991.86	
Average	7,272.76			26.6%
Min		5,587.73		20.5%
Max			9,300.32	34.1%

NOTE: Current Design Capacity (27,300 m³/day)

2023 Annual Flow Data

	Average	Min	Max	% of Design Flow
Average	7,740.51			25.0%
Min		5,689.82		26.2%
Max			10,930.4	40.0%

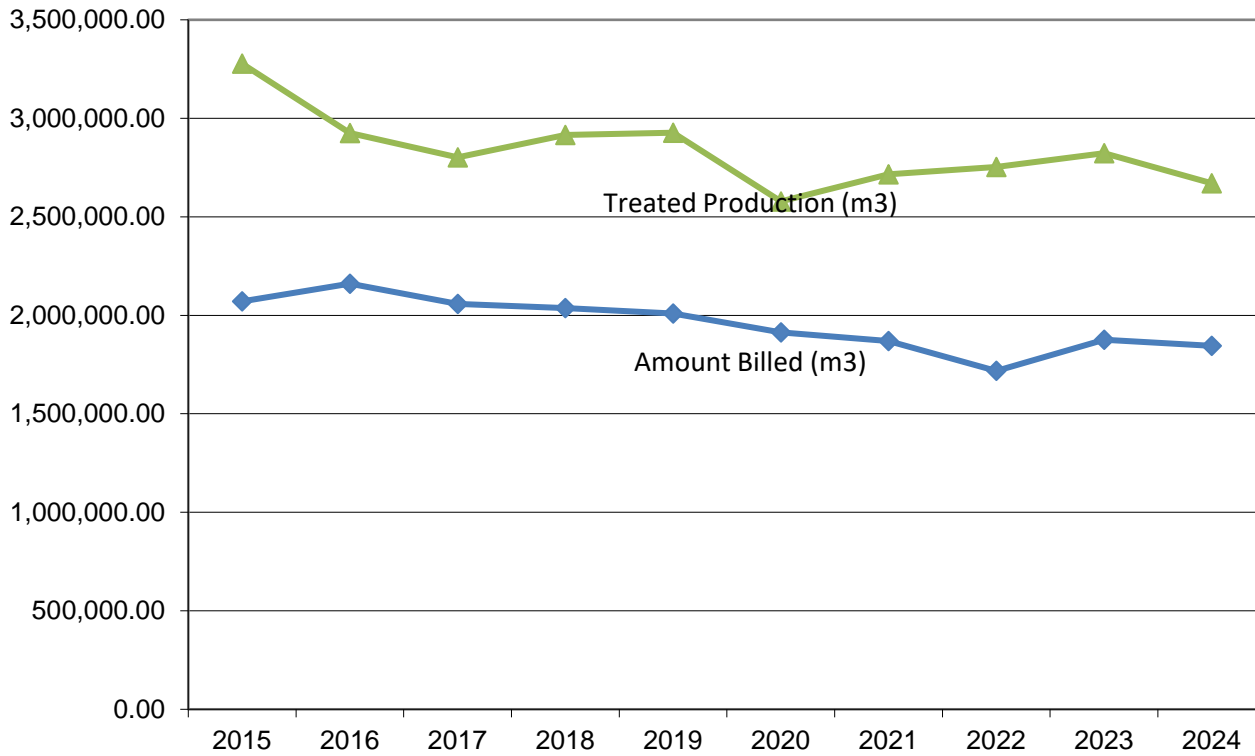
2022 Annual Flow Data

	Average	Min	Max	% of Design Flow
Average	7,559.1			27.7%
Min		6,494.2		23.8%
Max			10,726.0	39.3%

DAILY INSTANTANEOUS PEAK TREATED FLOW RATES (L/s)

Day	January	February	March	April	May	June	July	August	September	October	November	December
1	143.2	147.8	147.1	150.2	152.1	139.5	127.8	153.8	158.5	150.6	150.1	155.5
2	151.3	145.9	147.1	136.2	145.5	141.3	143.6	153.8	143.4	145.5	139.0	141.8
3	136.2	147.7	139.0	145.5	146.8	147.6	141.7	137.3	154.1	137.4	156.9	141.3
4	148.0	148.5	149.9	145.8	149.1	151.1	142.1	138.6	189.5	158.5	174.2	155.0
5	153.4	141.7	162.7	135.8	137.9	151.3	145.9	136.9	178.9	138.6	156.9	136.9
6	138.1	147.0	137.4	144.2	162.3	146.5	145.9	135.4	155.6	141.8	151.6	146.2
7	147.4	147.3	150.6	147.0	162.2	140.3	136.4	149.5	148.9	136.4	156.0	152.8
8	144.2	141.5	148.0	136.6	142.8	143.7	151.6	147.2	145.2	154.6	146.9	145.9
9	138.1	150.7	130.4	149.3	153.1	143.6	144.9	143.3	191.9	147.7	157.9	150.9
10	145.3	149.4	145.5	142.8	144.9	143.7	141.3	132.0	162.6	156.1	155.9	151.4
11	145.2	136.7	149.3	135.8	134.4	159.5	148.5	135.2	145.3	159.1	145.2	137.2
12	136.1	144.7	136.1	144.2	145.6	155.1	154.9	168.2	153.9	147.2	153.8	154.8
13	140.1	144.2	144.8	146.9	146.7	140.3	137.2	139.5	154.7	153.2	151.8	149.1
14	142.3	150.5	144.4	138.1	148.9	144.1	143.3	181.7	141.7	159.5	141.1	145.0
15	134.1	142.9	137.8	149.1	153.7	145.1	151.1	168.2	159.1	143.0	145.8	156.2
16	145.2	149.7	147.7	153.7	153.5	135.8	143.2	132.0	148.7	155.5	146.6	154.3
17	144.9	135.6	146.8	135.5	135.6	149.7	148.9	134.0	143.6	155.1	140.5	305.8
18	135.0	142.7	135.4	149.3	148.0	153.7	140.6	136.4	157.5	139.0	147.2	153.6
19	145.9	145.9	145.6	142.2	148.4	180.8	136.2	198.3	165.4	147.7	154.5	166.2
20	146.3	137.5	146.6	136.4	139.6	148.9	146.9	179.1	149.5	161.7	146.3	142.3
21	141.0	149.6	132.1	141.2	148.0	155.9	140.9	135.8	150.1	149.6	148.9	152.1
22	144.8	158.2	142.8	145.1	149.2	135.6	150.6	148.5	147.6	162.2	162.7	159.9
23	148.5	138.8	144.5	143.2	156.8	143.5	149.8	145.5	142.9	153.4	145.1	156.3
24	137.8	144.8	139.4	146.6	149.2	146.1	144.7	136.2	155.5	146.5	150.7	150.6
25	141.7	143.1	148.6	153.1	145.8	128.1	140.5	145.5	152.0	163.6	158.8	145.3
26	145.7	141.7	148.5	143.7	137.7	144.5	146.8	186.4	150.9	155.8	169.2	149.4
27	138.0	145.5	135.9	148.4	149.3	156.3	141.8	181.6	144.5	144.2	148.5	158.4
28	146.1	148.1	152.7	145.9	150.6	137.9	136.9	191.8	145.0	153.4	153.2	161.3
29	151.1	142.9	145.2	134.0	142.6	137.6	150.2	177.3	146.4	156.2	146.6	148.2
30	133.9		141.3	149.4	155.3	137.3	158.7	170.6	140.9	152.5	149.8	153.4
31	146.0		148.6		161.1		137.8	161.0		190.5		129.4
Max Day	153.4	158.2	162.7	153.7	162.3	180.8	158.7	198.3	191.9	190.5	174.2	305.8

10YR. TREATED WATER PRODUCTION vs. AMOUNT BILLED 2015– 2024



YEAR	m3 Produced	% Difference from previous yr	Amount Billed (m3)	% Difference from previous yr
2015	3,277,042	5.60	2,071,639	(4.91)
2016	2,924,898	(12.04)	2,160,640	4.12
2017	2,801,956	(4.39)	2,057,834	(5.00)
2018	2,915,204	3.88	2,036,471	(1.05)
2019	2,926,533	0.39	2,009,746	(1.33)
2020	2,578,421	(13.50)	1,912,633	(5.08)
2021	2,716,126	5.07	1,869,760	(2.29)
2022	2,752,976	1.34	1,717,658	(8.86)
2023	2,823,580	2.50	1,876,339	8.46
2024	2,670,834	(5.72)	1,844,469	(1.73)

WATER QUALITY/QUANTITY COMPLAINTS

MONTH	#
January	5
February	0
March	1
April	5
May	5
June	3
July	8
August	10
September	12
October	1
November	3
December	1
Total - 2024	54

SPECIFIC COMPLAINTS

PROBLEM	COMPLAINT REPORTED
Dirty water	28
No water/low pressure	7
Sediment in water	8
Taste complaint	2
Earthy/musty smell	10
Lead in water	1
High pressure	1
Air in line	1
Health concern	1
Grand Total	59

UNACCOUNTED FOR WATER

IN PLANT	m3/yr
Raw Water metered	2,973,045.75
Online Instruments	7,928.20
In Plant Service Water	43,475.00
Ripening Water	14,460.00
Backwash Water Used	109,126.07
Treated pH Flow	2,628.00
Total Plant Water Usage	2,795,428.48
Treated Water Metered	2,670,833.78
Unaccounted For - Plant	4.46%
(this can be caused by inaccuracies in the flow metering equipment, draining of the filters for a backwash, and/or leaking valves.)	

DISTRIBUTION SYSTEM	m3/yr
Raw water bar screen cleaning	6,574.20
Running Services - Winter	70.00
Annual Flushing Program	21,534.40
Dead-End Flushing Units	270,401.42
Watermain Breaks identified	9,650.00
Treated Billed + Accounted For (calculated)	2,152,699.02
Total billed 2024	1,844,469
Unaccounted For - Distribution	19.40%
<p>Notes: This can be caused by a variety of issues; meter read cycles, main breaks, service leaks, main leaks, which probably cause the majority of the loss, inaccurate residential, commercial water meters, dead-end flushing programs, Fire Department training, Firefighting, and construction site flushing. Also, there was 1 location running water during the Winter to prevent lines from freezing.</p>	

APPENDIX 2

ANNUAL REPORT – Required under Ontario Regulation 170/03, Section 11

(Insert Annual Report Here)



Owen Sound Drinking Water System



Annual Report 2024

Prepared by:
Troy Pelletier- Water Treatment Superintendent
Mark Hill – Water Distribution Superintendent

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Section 1 – Drinking Water System General Information

This report has been prepared in accordance with the reporting requirements set out in Ontario Regulation 170/03, Section 11 and as well as Schedule 22.

This report is to be presented to Council by the end of March each year. Copies of the report will be made available free of charge and can be found at the following locations;

- City Hall Clerk’s Office – located temporarily at 945 3rd Avenue East
- City’s website - [Water and Wastewater Department | City of Owen Sound](#)
- Public Works office – 1900 20th Street East
- Water Treatment Plant – 2600 3rd Avenue East
- Owen Sound & North Grey Union Public Library – 824 1st Avenue West

Drinking Water System #	220001799
Drinking Water System Name	Owen Sound Drinking Water System
Drinking Water System Owner	Corporation of the City of Owen Sound
Drinking Water System Category	Large Municipal Residential
City of Owen Sound Population	22,000
Water Treatment Subsystem	Class 3, Certificate # 20 issued September 15th, 2005
Water Distribution Subsystem	Class 3, Certificate # 2094 issued September 15th, 2005
Drinking Water Works Permit #	092-202 Issue # 5 issued October 2nd, 2020
Municipal Drinking Water License	094-101 Issue # 5 issued October 2nd, 2020
Permit to Take Water #	P-300-8173611786 Issued May 28 th , 2022, Expires Mar 31 st , 2032
Period of Report	2024

Other Drinking Water Systems that receive drinking water from the Owen Sound Drinking Water System are;

<u>Drinking Water System Owner</u>	<u>Drinking Water System</u>
<u>#</u>	
Municipality of Meaford (Leith)	260065312

A copy of this report will be provided to Meaford by the end of February.

Section 1.1 – Drinking Water System Description

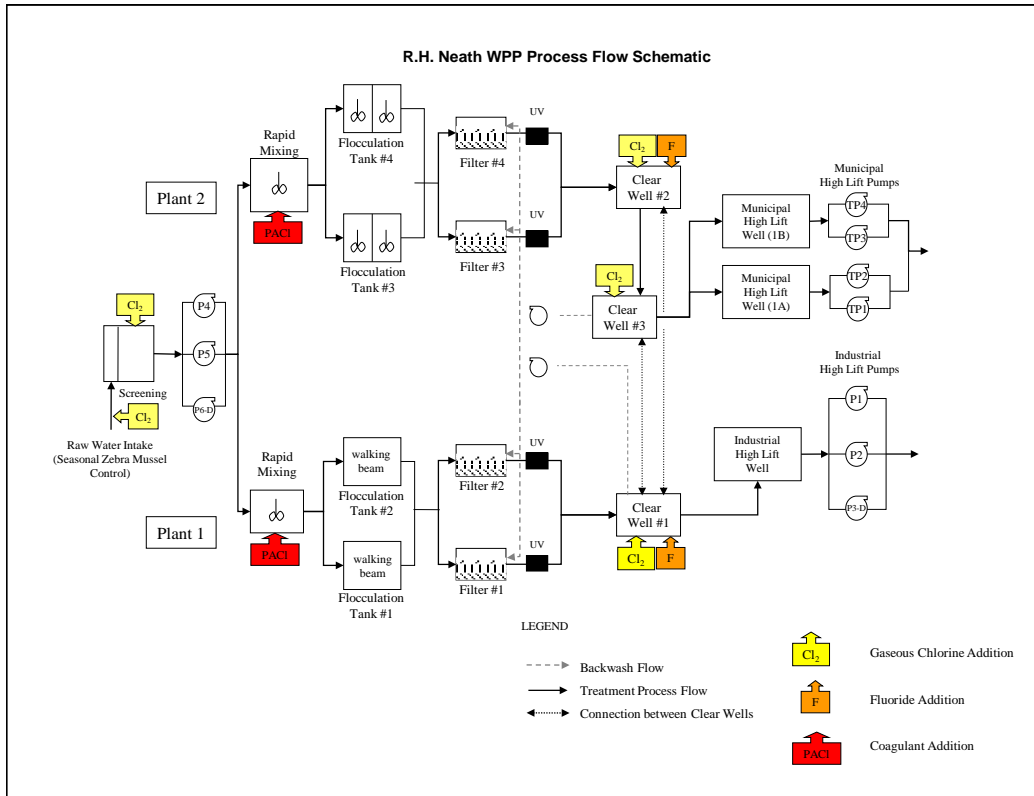
The Richard H. Neath Water Purification plant is a direct filtration surface water treatment plant that draws its water from Georgian Bay. This plant serves a population of approximately 22,000 people.

The Water plant comprises of the following processes;

- Raw water screening (removal of larger debris, fish, etc.),
- Pre chlorination (initial application of chlorine to the raw water),
- Zebra mussel control (chlorination at Intake during warmer months only, raw temperature above 10 °C),
- Flash mixing (initial addition of coagulant to the raw water through a rapid mixer),
- Coagulation/Flocculation (slower mixing of coagulant in larger tanks),
- UV disinfection (done just prior to water entering treated water wells),
- Post chlorination (adding of additional chlorine for the purpose of meeting CT requirements and having enough chlorine in the water throughout the distribution system),
- Fluoridation (added in the two main treated water wells),
- Residue management tank for treating backwash wastewater.

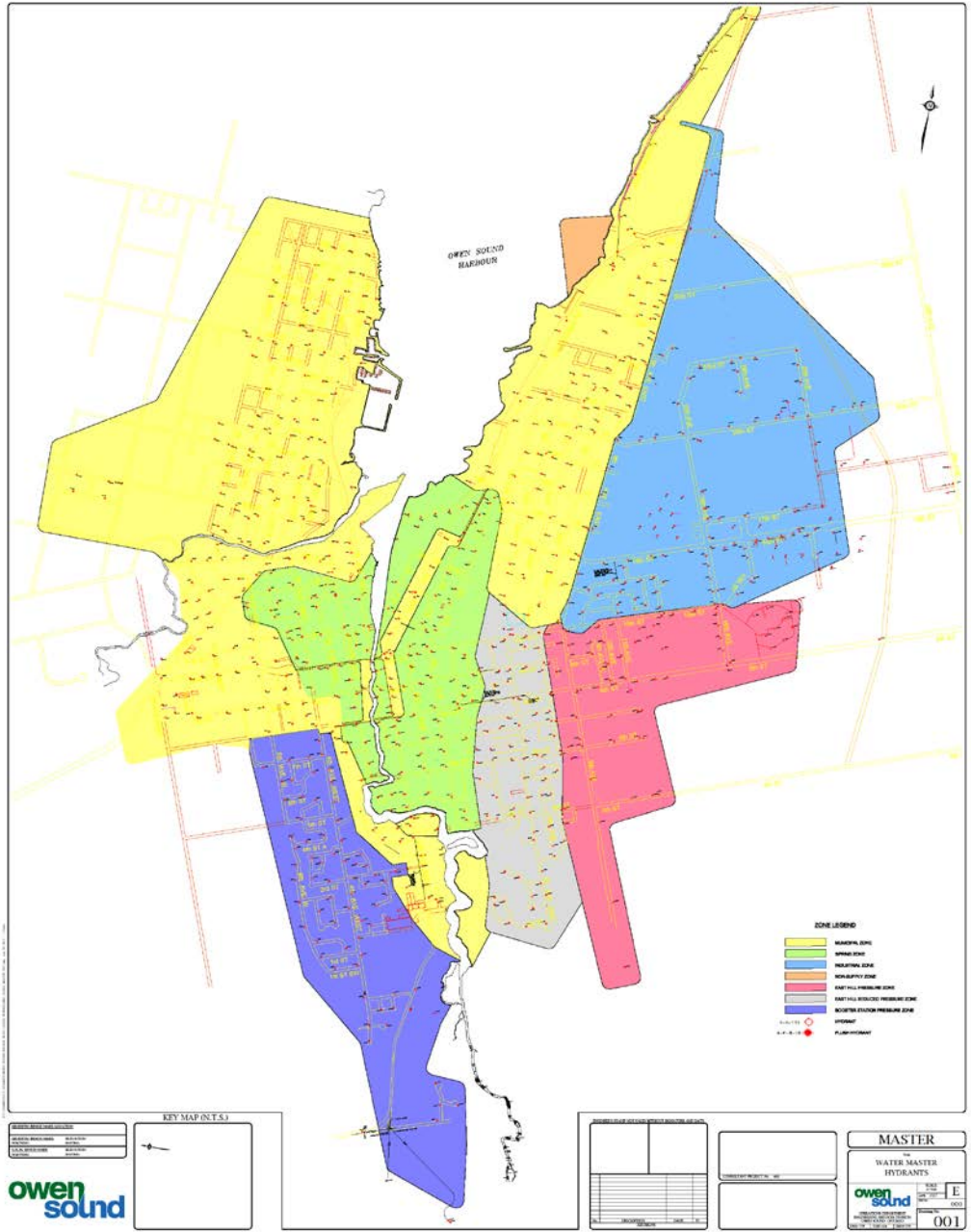
See Figure 1 below for a process schematic.

Figure 1



The City has a 22,000 m³ reservoir, 6 pressure zones (see Figure 2), 160.8 km of water mains, 11 pressure reducing /sustaining chambers, 10 check valve chambers, 678 City hydrants, 130 private hydrants, 61 flush hydrants/blow-offs/auto flushing units, and two booster stations that provides addition pressure in the Southeast and southwest portions of the City and outskirt.

Figure 2



The City also has an additional agreement with the Municipality of Meaford to provide potable water to Leith from our boundary point on East Bayshore Rd.

Section 2 – Drinking Water Inspections and Audit Summaries

1. Ministry of the Environment, Conservation and Parks (MECP) Inspection –

During 2024, there was one MECP inspection completed in February. The City received 96.25% on the Inspection report card.

2. Internal Audit/External Audit

Internal Audit—Brigitte Roth, an independent auditor, evaluated our Drinking Water Quality Management System (DWQMS) in November 2024. This consisted of a two-day on-site visit to review all 21 elements of the DWQMS, interview water staff, and test their knowledge of the DWQMS.

No non-conformances were identified, and eight opportunities for improvement (OFIs) were identified in the audit. These opportunities will be reviewed.

External Audit—In April 2024, NSF International performed the external audit and found no major non-conformances, no minor non-conformances, and three OFIs. The OFIs were reviewed, and changes were made.

Section 3 – List of Water Treatment Chemicals Used:

1. **Chlorine Gas** (68 kg cylinders) – used in pre-chlorination (treatment before filtration) and post-chlorination (treatment after filtration).
2. **Fluoride** is used to help prevent dental cavities and improve oral health. The City uses liquid Fluoride called HFS or HydroFluorosilicic Acid, which is added to the water after filtration.
3. **PAX XL-6** – is a coagulant used prior to filtration in the colder months (<10 °C). A coagulant's primary objective is to adhere to suspended particulates and make them bigger in size to allow a higher removal rate of particulates in the filtration process.

4. **PAX XL-1900** – is a coagulant used prior to filtration in the warmer months (>10 °C). A coagulant's primary objective is to adhere to suspended particulates, make them bigger in size, so to allow a higher removal rate of particulates in the filtration process.
5. **Sodium Bisulphite** – is a chemical used in the process to remove chlorine from water for the purpose of reintroducing water back to the source

(Georgian Bay). It is also used when filters are being prepared for use after a backwash called the ripening process.
6. **Polymer** – A polymer is used during a filter backwash to settle suspended particles in the wastewater detention tank, so they can be pumped to the sanitary system to be treated at the wastewater plant.

Section 4 – Significant Costs Incurred

Significant costs are costs associated with new equipment purchased, installed, repaired, or replaced.

Water Treatment

Item	Description	Cost (\$)
UV Bulbs	UV Lamps for 4 UV reactors.	\$15,000
Capital Work – Industrial Pump - Variable Frequency Drive	Purchase and installation on a variable frequency drive (VFD) for Pump 3	\$98,000
Capital Work – Flocculator Repair	Filter 1 Flocculator Failed – Flocculator to be rebuilt	\$137,900
Capital Work – UV System	New UV system ordered – Installation 2024-2025, Total cost of UV system is around \$600,000. This will commence along with Filter Upgrades	\$490,000
Capital Project – Filter Upgrade	Filter Upgrade consisting of new underdrains, air scour technology, new media, new backwash pumps, and some piping upgrades – Multi year project – Completion date Fall 2025, This is a \$4,000,000 project.	\$1,900,000
Sludge Removal	Removal of sludge in coagulant tank	\$17,500
Capital Work – Flocculator Repair	Filter 1 Flocculator Failed – Flocculator rebuilt	\$137,900

Water Distribution

Item	Description	Cost (\$)
Capital Work - New Watermain	Watermain Looping Project – Sturrock 8 th St E to 6 th St E	\$672,000 ±
Capital Work – New Watermain	Alpha St West Full Reconstruction with Water Main	\$5,200,000 ±
Butterfly Valve Repairs	Two Valve Chambers to replace Valving (parts only in 2024)	\$50,000 ±
Capital Work – Cathodic Protection	New cathodic protection installed throughout the City	\$192,000
Capital Work – New Watermain	Watermain Looping 2” PVC from 6 th Ave E to 7 th Ave E for Chlorine Residual Improvement	\$25,000 ±
Broken Watermains	17 Broken watermains occurred, estimated repair of \$10,000 each ±	\$170,000
Capital Work - New Watermain	26 th St West 300 Block (Remove Galvanized Main and replace with 2” PVC)	\$45,000±
Capital Work - New Watermain	Watermain Looping Project – Sturrock 8 th St E to 6 th St E	\$672,000 ±

Section 5 – Adverse Water Quality Incidents Reported

#	Reporting Date	AWQI #	Adverse Location	Adverse Parameter	Adverse Result	Units	Remedial Action
1	23-May	165010	Distribution Sample	Total Coliform	1	cfu/100 ml	Followed Total Coliform procedure as per MECP requirements, and flushed hydrant.
2	12-Sep	166288	Distribution System	Free Cl ₂ Residual	<0.05	mg/L	Flushed hydrant to bring the residual up. Continue to monitor location.
3	25-Sep	166438	Distribution System	Free Cl ₂ Residual	0.04	mg/L	Flushed hydrant to bring the residual up. Increased monitoring of the location. A temporary flushing unit was installed.

Section 6 – Microbiological Test Results

Microbiological testing done as required in Ontario Regulation 170/03 Schedule 10;

Location	Number of Samples	Range of E.coli Or Fecal Results (min #)- (max #)	Range of Total Coliform Results (min #)- (max #)	Number of HPC Samples	Range of HPC Results (min #)- (max #)
Raw	52	0 - 20	0 - 550	n/a	n/a
Treated	52	0 - 0	0 - 0	n/a	n/a
Distribution	472	0 - 0	0 - 1	108	<10 - 10

Section 7 – Operational Testing Results

Operational testing done as required in Ontario Regulation 170/03 Schedule 7;

Parameter	Number of Grab Samples	Range of Results (min #) - (max #)
Filter 1 Turbidity	8760	0.01 NTU – 0.95 NTU
Filter 2 Turbidity	8760	0.01 NTU – 0.78 NTU
Filter 3 Turbidity	8760	0.01 NTU – 4.99 NTU * Spike occurred on April 21 st during a power bump. Only over 1 NTU for 4 min 25 sec.
Filter 4 Turbidity	8760	0.02 NTU – 0.62 NTU
Post 1 Chlorine	8760	0.08 - 3.32* low occurred during a planned complete plant power shutdown.
Post 2 Chlorine	8760	0.03 – 4.71 * The low occurred June 3 rd during servicing of the chlorine analyzer, and the High level occurred the same day when the plant came back online.
Municipal Chlorine	8760	0.44 – 2.21 *Lower residual occurred due to a reduced flow through the analyzer, this was remedied by adjusting the flow.
Industrial Chlorine	8760	1.25 – 2.52
Municipal Fluoride	8760	0.30 – 0.90
Industrial Fluoride	8760	0.14 – 1.00 – Low residual caused by a Fluoride pump wiring issue on July 11 th .

Note: Unit of measurement is in milligrams per litre (mg/L), unless stated otherwise. The number of grab samples is expressed in hours/year, equivalent to continuous monitoring.

Section 8 – Summary of Additional Testing

A summary of additional testing and sampling carried out by an approval, order, or other legal instrument.

Legal Document	Date of Legal Instrument Issued	Parameter	Date Sampled	Result	Unit of Measure
Municipal License # 094-101	October 2 nd , 2020	Chlorine – Wastewater System / Total Suspended Solids	02-Jan	0.00 / 2.0	mg/L
Municipal License # 094-101	October 2 nd , 2020	Aluminum	15-Jan	0.060	mg/L
Municipal License # 094-101	October 2 nd , 2020	Chlorine – Wastewater System	02-Feb	0.00	mg/L
Municipal License # 094-101	October 2 nd , 2020	Chlorine – Wastewater System	04-Mar	0.00	mg/L
Municipal License # 094-101	October 2 nd , 2020	Total Suspended Solids	4-Mar	4.4	mg/L
Municipal License # 094-101	October 2 nd , 2020	Chlorine – Wastewater System	2-Apr	0.0	mg/L
Municipal License # 094-101	October 2 nd , 2020	Aluminum	22-Apr	0.023	mg/L
Municipal License # 094-101	October 2 nd , 2020	Chlorine – Wastewater System	1-May	0.00	mg/L
Municipal License # 094-101	October 2 nd , 2020	Chlorine – Wastewater System	3-Jun	0.00	mg/L
Municipal License # 094-101	October 2 nd , 2020	Total Suspended Solids	3-Jun	4	mg/L
Municipal License # 094-101	October 2 nd , 2020	Chlorine – Wastewater System	2-Jul	0.00	mg/L
Municipal License # 094-101	October 2 nd , 2020	Aluminum	22-Jul	0.031	mg/L
Municipal License # 094-101	October 2 nd , 2020	Chlorine – Wastewater System	06-Aug	0.00	mg/L
Municipal License # 094-101	October 2 nd , 2020	Chlorine – Wastewater System	02-Sep	0.00	mg/L

Municipal License # 094-101	October 2 nd , 2020	Total Suspended Solids	4-Sep	3.2	mg/L
Municipal License # 094-101	October 2 nd , 2020	Chlorine – Wastewater System	2-Oct	0.00	mg/L
Municipal License # 094-101	October 2 nd , 2020	Aluminum	21-Oct	0.0187	mg/L
Municipal License # 094-101	October 2 nd , 2020	Chlorine – Wastewater System	2-Nov	0.00	mg/L
Municipal License # 094-101	October 2 nd , 2020	Chlorine – Wastewater System	3-Dec	0.00	mg/L
Municipal License # 094-101	October 2 nd , 2020	Total Suspended Solids	5-Dec	2.8	mg/L

Section 9 – Inorganic and Organic Testing Summary

Under Ontario Regulation 170/03, Schedule 13, 13-2 and 13-4 are required to be sampled annually.

Inorganic Parameters

Parameter	Sample Date	Result Value	Unit of Measure	MAC Level	1/2 MAC	Exceedance
Antimony	15-Jan	<0.0006	mg/L	0.006	0.003	No
Arsenic	15-Jan	<0.0002	mg/L	0.01	0.005	No
Barium	15-Jan	0.0125	mg/L	1.0	0.5	No
Boron	15-Jan	0.015	mg/L	5.0	2.5	No
Cadmium	15-Jan	0.000004	mg/L	0.005	0.0025	No
Chromium	15-Jan	0.00008	mg/L	0.05	0.025	No
Mercury	15-Jan	<0.00001	mg/L	0.001	0.0005	No
Selenium	15-Jan	0.00012	mg/L	0.05	0.025	No
Sodium	13-Feb-23	9.53	mg/L	>20	>10	No
Uranium	15-Jan	0.000086	mg/L	0.02	0.01	No
Fluoride – Municipal	31-Dec	0.82	mg/L	1.50	n/a	No
Fluoride - Industrial	31-Dec	0.72	mg/L	1.50	n/a	No
Nitrite	21-Oct	<0.003	mg/L	1.0	0.5	No
Nitrate	21-Oct	0.222	mg/L	10.0	5.0	No

Note: Unit of measurement is in milligrams per litre (mg/L), unless stated otherwise.

Organic Parameters

Parameter	Sample Date	Result Value	Unit of Measure	MAC Level	1/2 MAC Level	Over MAC ?
Alachlor	15-Jan	<0.00002	mg/L	0.005	0.0025	No
Atrazine + N-dealkylated metabolites	15-Jan	0.00002	mg/L	0.005	0.0025	No
Azinphos-methyl	15-Jan	<0.00005	mg/L	0.02	0.01	No
Benzene	15-Jan	<0.00032	mg/L	0.001	0.0005	No
Benzo(a)pyrene	15-Jan	<0.000004	mg/L	0.00001	0.000005	No
Bromoxynil	15-Jan	<0.00033	mg/L	0.005	0.0025	No

Carbaryl	15-Jan	<0.00005	mg/L	0.09	0.045	No
Carbofuran	15-Jan	<0.00001	mg/L	0.09	0.045	No
Carbon Tetrachloride	15-Jan	<0.00017	mg/L	0.002	0.001	No
Chlorpyrifos	15-Jan	<0.00002	mg/L	0.09	0.045	No
Diazinon	15-Jan	<0.00002	mg/L	0.02	0.01	No
Dicamba	15-Jan	<0.0002	mg/L	0.12	0.06	No
1,2-Dichlorobenzene	15-Jan	<0.00041	mg/L	0.2	0.1	No
1,4-Dichlorobenzene	15-Jan	<0.00036	mg/L	0.005	0.0025	No
1,2-Dichloroethane	15-Jan	<0.00035	mg/L	0.005	0.0025	No
1,1-Dichloroethylene (vinylidene chloride)	15-Jan	<0.00033	mg/L	0.014	0.007	No
Dichloromethane	15-Jan	<0.00035	mg/L	0.05	0.025	No
2-4 Dichlorophenol	15-Jan	<0.00015	mg/L	0.9	0.45	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	15-Jan	<0.00019	mg/L	0.1	0.05	No
Diclofop-methyl	15-Jan	<0.0004	mg/L	0.009	0.0045	No
Dimethoate	15-Jan	<0.00006	mg/L	0.02	0.01	No
Diquat	15-Jan	<0.001	mg/L	0.07	0.035	No
Diuron	15-Jan	<0.00003	mg/L	0.15	0.075	No
Glyphosate	15-Jan	<0.001	mg/L	0.28	0.14	No
Malathion	15-Jan	<0.00002	mg/L	0.19	0.095	No
MCPA	15-Jan	<0.00012	mg/L	0.1	0.05	No
Metolachlor	15-Jan	<0.00001	mg/L	0.05	0.025	No
Metribuzin	15-Jan	<0.00002	mg/L	0.08	0.04	No
Monochlorobenzene	15-Jan	<0.0003	mg/L	0.08	0.04	No
Paraquat	15-Jan	<0.001	mg/L	0.01	0.005	No
Pentachlorophenol	15-Jan	<0.00015	mg/L	0.06	0.03	No
Phorate	15-Jan	<0.00001	mg/L	0.002	0.001	No
Picloram	15-Jan	<0.001	mg/L	0.19	0.095	No
Polychlorinated Biphenyls(PCB)	15-Jan	<0.00004	mg/L	0.003	0.0015	No
Prometryne	15-Jan	<0.00003	mg/L	0.001	0.0005	No
Simazine	15-Jan	<0.00001	mg/L	0.01	0.005	No
THM (annual average)	2024	0.0418	mg/L	0.100	0.05	No
Terbufos	15-Jan	<0.00001	mg/L	0.001	0.0005	No

Tetrachloroethylene	15-Jan	<0.00035	mg/L	0.01	0.005	No
2,3,4,6-Tetrachlorophenol	15-Jan	<0.0002	mg/L	0.10	0.05	No
Triallate	15-Jan	<0.00001	mg/L	0.23	0.115	No
Trichloroethylene	15-Jan	<0.00044	mg/L	0.005	0.0025	No
2,4,6-Trichlorophenol	15-Jan	<0.00025	mg/L	0.005	0.0025	No
Trifluralin	15-Jan	<0.00002	mg/L	0.045	0.0225	No
Vinyl Chloride	15-Jan	<0.00017	mg/L	0.001	0.0005	No
Haloacetic Acids (latest annual average)	2024	0.0206	mg/L	0.08	.04	No

List of any Inorganic and Organic parameter(s) that exceeded half of the standard prescribed in Schedule 2 of the Ontario Drinking Water Standards

*Nothing to report at this time.

Section 10 – Summary of Lead Testing

Lead testing is required as per Ontario Regulation 170/03, Schedule 15.1, and requires Municipalities to sample in areas that have a potential for higher lead levels. Since Owen Sound has no known Lead services since 2012, a reduced sampling program has been approved by the MECP, which only requires testing of the distribution system for Lead every third year.

The City tested for Lead in 2024, along with pH and alkalinity. The results are shown in the table below. The Maximum Acceptable Concentration (MAC) level for Lead is 0.010 mg/L.

Location Type	# of Samples	Range of Lead Results (min#) – (max #)	# of Exceedances
Plumbing	n/a	n/a	n/a
Distribution	8	<0.00001 – 0.00096	0