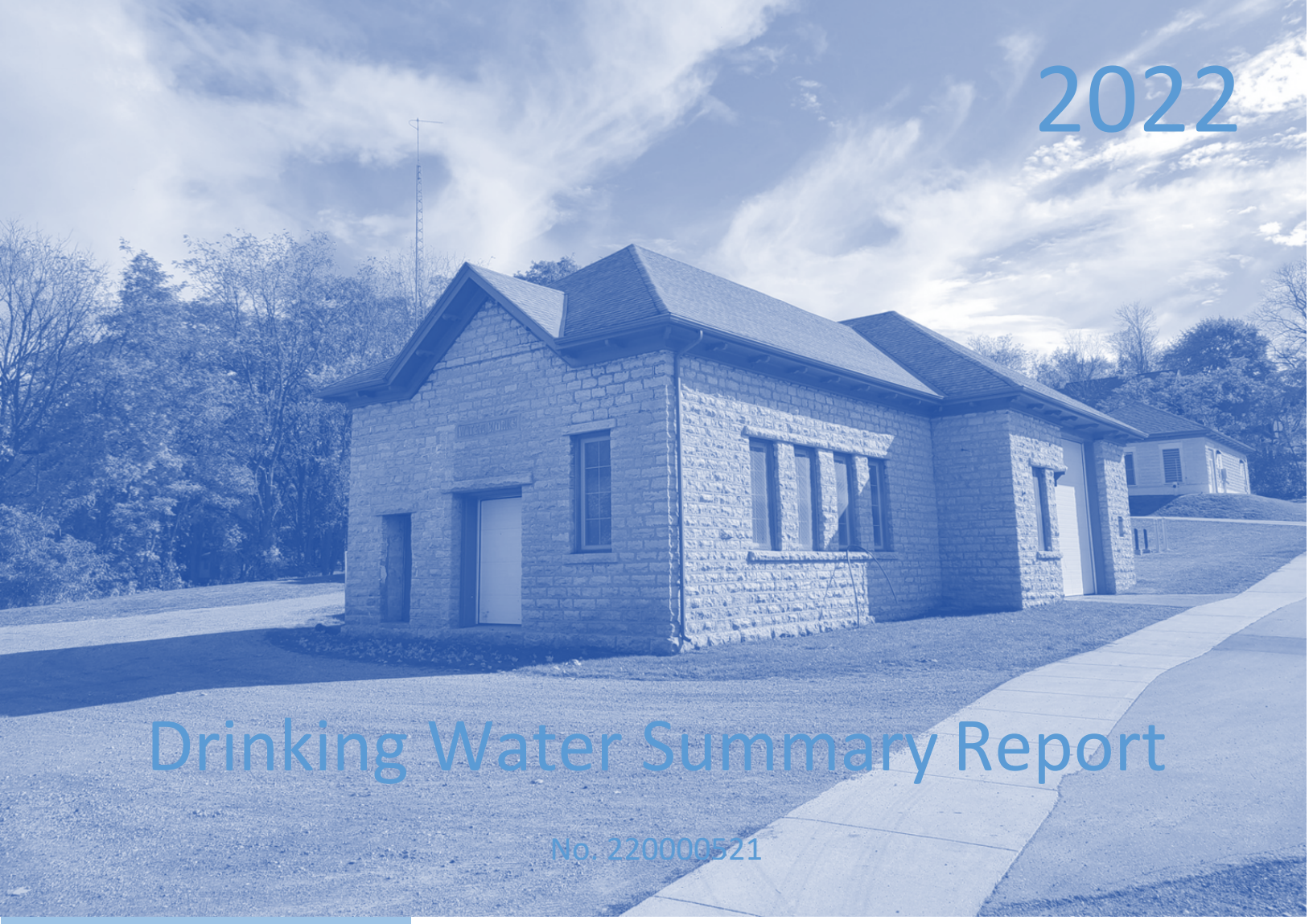


2022

Drinking Water Summary Report

No. 220000521

Reporting Period:

January 1, 2022 through December 31, 2022

Prepared By:

Lisa Benoit, Process and Compliance Technician

Ontario Clean Water Agency on behalf of the Town of St. Marys

ONTARIO CANADA ST. MARYS

townofstmarys.com

TABLE OF CONTENTS

Contents

TABLES:

APPENDICIES:

1.0 INTRODUCTION

The delivery of potable drinking water in Ontario is regulated by the Ministry of the Environment, Conservation and Parks (MECP) under the Safe Drinking Water Act (SDWA, 2002). Ontario Regulation (O.Reg.) 170/03 came into effect on June 1, 2003 which detailed requirements for owners and operators of municipal drinking water systems. Schedule 22 of O. Reg. 170/03 prescribes the need for all owners of a licensed drinking water system to produce annual Summary Reports.

The Summary Report for the reporting period must be provided to members of the Municipal Council no later than March 31 of the following year.

1.1 BACKGROUND / OVERVIEW

The raw source water supply for the Town of St. Marys is drawn from three drilled wells, referred to as Production Wells No. 1, 2A and 3. All three wells are collectively referred to as the St. Marys Drinking Water System under water works number #220000521.

The St. Marys Drinking Water System operates under a Municipal Drinking Water Licence (No. 056-101, issued October 10, 2019), Drinking Water Works Permit (No. 056-201, issued October 10, 2019) and a Permit to Take Water (PTTW) (No. 5303-AASQEC, issued June 29, 2016).

1.2 LEGISLATED REQUIREMENTS

Municipalities throughout Ontario have been required to comply with Ontario Regulation (O.Reg.) 170/03 made under the Safe Drinking Water Act (SDWA, 2002) since June of 2003. This act was enacted following the recommendations made by Commissioner O'Connor after the Walkerton Inquiry.

The Safe Drinking Water Act's purpose is to protect human health through the control and regulation of drinking-water systems. O.Reg. 170/03 specifies drinking water testing for microbiological parameters, chemical parameters, use of licensed laboratories, treatment requirements and reporting requirements.

Summary Reports for Municipalities, as stated in Schedule 22 of O.Reg. 170/03 requires Annual Reports be submitted to the owners of Large Municipal Residential Systems and Small Municipal Systems. The Summary Reports are required to be submitted to members of Council no later than March 31 of each year. The Summary Report must list the requirements of the SDWA, 2002, the regulations, the system's approval as well as any order that the system failed to meet at any time during the reporting period covered, including the duration of the failure, and the measures taken to correct the failure, if any.

The annual Summary Report for Council is one requirement under O.Reg.170/03. In addition, an annual report for the Ministry of Environment, Conservation and Parks (MECP) Drinking Water Information System is also required and must be made available to the Public. Both the annual and Summary Reports for the Town of St. Marys are available at the Municipal Operations Center, and on the Town of St. Marys official website.

1.3 ANNUAL REPORTING REQUIREMENTS

For the Town of St. Marys Drinking Water System, the MECP requires four different reports as detailed in the following table:

Report Name	Description	Legislation or Regulation	Submitted to:
Summary Report for Municipalities (Schedule 22)	• Summary well information • Description of any failure to meet requirements of an Act, regulations or the system's approval	O. Reg. 170/03, Schedule 22	Council and available for inspection by the public @ MOC & Website
Annual Report (Section 11)	• Description of system • Water quality test results • Adverse test results and corrective action • Major expenses to repair, replace or install equipment	O. Reg. 170/03, Schedule 11	Posted on the Town of St. Marys Website & MOC
Water Taking Report	• Electronic submission of water taking data	O. Reg. 387/04	Ministry of Environment, Conservation and Parks
Industrial and Commercial water usage report	• Electronic submission of water usage data for industrial and commercial users	O. Reg. 450/07	Ministry of Environment, Conservation and Parks

Table A: Town of St. Marys Drinking Water System Annual Reports

The annual Summary Report is required to list the requirements of the Act (SDWA, 2002), the requirements of the regulations, the system's approval, drinking water works permit, municipal drinking water licence, and any orders applicable to the system that were not met at any time during the period covered by the report. In addition, for each requirement referred to in clause (a) that was not met, specify the duration of the failure and the measures that were taken to correct the failure. (O.Reg. 170/03 s 22 (2)).

The report is also required to include the following information for the purpose of enabling the owner of the system to assess the capability of the system to meet existing and planned uses of the system:

- A summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flow rates; and,

- A comparison of the summary referred to in Paragraph 1 to the rated capacity and flow rates approved in the system's approval, drinking water works permit or municipal drinking water licence, or if the system is receiving all of its water from another system under an agreement pursuant to subsection 5 (4), to the flow rates specified in the written agreement.

2.0 DESCRIPTION OF WATER WORKS

2.1 OVERVIEW

The Corporation of the Town of St. Marys is the owner of a Large, Municipal, Drinking Water System supplied by a ground water source which is operated by Ontario Clean Water Agency (OCWA). The system provides potable water to approximately 3,000 residential, industrial, institutional and commercial users. A total of three (3) bedrock wells are connected to the water distribution system, each equipped with pumping, disinfection and monitoring components. The Ministry of Environment, Conservation and Parks (MECP) has classified all three wells as "GUDI" (Groundwater Under the Direct Influence of Surface Water) with effective in-situ filtration. The remainder of the system consists of a booster pump station (used only during a fire emergency) reservoir pumping station and one elevated water storage tank facility for system pressure regulation.

2.2 MUNICIPAL WELLS

The drinking water system for the Town of St. Marys is serviced by three bedrock groundwater wells. The wells are identified as Well No. 1, Well No. 2A and Well No. 3, respectively.

2.2.1 WELL NO. 1

According to Well Record #5001709, Production Well # 1 ("PW1" – identified as Well No. 1) was drilled on March 1, 1971 by International Water Supply Ltd. Well No. 1 is located south of the Trout Creek watercourse and east of St. George Street within the Town of St. Marys, Ontario. Well No. 1 is located within the 100-year flood plain of Trout Creek.

The Well Record indicates that a steel casing was installed and cemented within the borehole annulus to a depth of approximately 12.3 metres below ground surface. Below the 12.3 m steel casing, the borehole was left open within the limestone bedrock. In 2005, a Pumphouse was constructed around Well No. 1, at which time the well was extended to an elevation approximately 2 metres above the 100-year flood plain of Trout Creek.

A Hydrogeological Investigation entitled *"Town of St. Marys, Ontario, Perth County – Hydrogeologic Investigation, 2001-2002",* prepared by International Water Consultants Ltd. and International Water Supply Ltd., dated July 19, 2002 (referred to herein as "Hydrogeologic Investigation") was prepared for the Town of St. Marys.

The Hydrogeologic Investigation indicated that Production Well # 1 (Well No. 1) is periodically under the influence of surface water, and has partially effective in-situ filtration. A final technical evaluation of the Hydrogeologic Investigation and the Peer Review was conducted by the MECP and it was concluded that Well No. 1 is Groundwater Under the Direct Influence ("GUDI") of surface water with effective in-situ filtration.

Well No. 1 Component Appurtenances

The following is a summary of the appurtenances for Well No. 1:

- A 406 millimetre (mm) diameter, 45.5 m deep drilled groundwater production well is located east of the intersection of Timms Lane and St. George Street, immediately south of Trout Creek (NAD83: UTM Zone 17: 0489966 m East, 4789866 m North). The well is equipped with a line-shaft type vertical turbine well pump with variable frequency drive and pump-to-waste functionality. It is rated at a maximum flow of 3,600 litres per minute (L/min), with a 200 mm discharge line connected to the well pump header in the Pumphouse described below;

- A well Pumphouse, housing Well No. 1 and the following disinfection and control facilities, including:

    - A 200 mm diameter pump header from the well, with check valve, air relief valve, raw water flow meter, shutoff valves, and raw water and treated water sampling tap;
    - A 100 mm line to waste;
    - A 200 mm diameter treated water header having a continuous chlorine analyzer and turbidity analyzer complete with automatic shutdown of well pump capability, connected to a 200 mm diameter feeder-main supplying the distribution system

- A disinfection facility located approximately 20 m north of the well Pumphouse (inside former reservoir building), housing disinfection and control facilities including:

    - One (1) ultraviolet disinfection system capable of providing a minimum dosage of 40 mJ/cm^2 of 254 nm wavelength complete with well pump shutdown on lamp failure;
    - Gas chlorination disinfection system, rated at 24 kg/day, consisting of one dual cylinder scale, one chlorine booster pump, and duplex automatic switchover regulator;
    - 78 m of 600 mm diameter watermain, followed by 26 m of 300 mm diameter watermain to provide chlorine contact prior to first customer;

2.2.2 WELL NO. 2A

According to the Well Record (A011221), Production Well #2A (PW2A, identified as Well No. 2A) was drilled on September 29, 2005 by International Water Supply Ltd. Well No. 2A is located to the south of the Trout Creek watercourse and west of the Wellington Street Right-of-Way (ROW) within the 100-year flood plain of Trout Creek. As such, the casing for Well No. 2A has been significantly extended above the grade of the surrounding land to account for possible flooding issues.

According to information presented on the Well Record, the well is 365 mm in diameter and was drilled to a depth of approximately 46 metres. The Well Record indicates that a steel casing was installed and sealed with bentonite and sand cement grout within the borehole annulus to a depth of approximately 18 metres below grade. Below the 18 metres in depth, the borehole was left open within the limestone bedrock. Well No. 2A is classified as a GUDI well.

Well No. 2A Component Appurtenances

The following is a summary of the appurtenances for Well No. 2A:

- A 305 mm diameter, 44.5 m deep drilled groundwater production well located between the Wellington and Water Street Right-of-Ways (ROWs), north of the Queen Street ROW and immediately south of the Trout Creek watercourse (NAD 83: UTM Zone 17: 0488390 m East, 4789710 m North). Well No. 2A is equipped with a line-shaft type vertical turbine well pump, rated at 3,636 L/min at 89.2 m Total Dynamic Head (TDH), with a 200 mm discharge line connected to the well pump header in the Pumphouse described below.

- A well Pumphouse, housing disinfection and control facilities including:

    - A 200 mm diameter pump header from the well, with check valve, air relief valve, raw water flow meter, shutoff valves, and raw and treated water sampling tap;
    - A 100 mm line to waste;
    - A gas chlorination disinfection system, consisting of one dual cylinder scale, one chlorine booster pump, one chlorine regulator, rated at 22.7 kg/day with feed line discharging into the common well pump header in the Pumphouse, and one continuous chlorine residual analyzer;
    - One ultraviolet disinfection system capable of providing a minimum dosage of 40 mJ/cm^2 of 254 nm wavelength complete with pump shutdown on lamp failure;
    - A 200 mm diameter treated water header having a continuous chlorine analyzer and turbidity analyzer complete with automatic shutdown of well pump capability, connected to a 200 mm diameter feeder-main supplying the distribution system.
    - 79 metres of 600 mm diameter watermain to provide chlorine contact time prior to the first customer.

2.2.3 WELL NO. 3

According to Well Record #5003118, Production Well # 3 (PW3, identified as Well No. 3) was drilled on June 10, 1984 by International Water Supply Ltd. This well is located within approximately 50 metres of the western bank of the Thames River, located to the east of Thomas Street and to the north and south of Westover Street and Park Street respectively. The well is within the confines of Pumphouse #3. According to the information presented within the Engineer's Report, the well is 406

mm in diameter and was drilled to a depth of approximately 47.4 m. The Well Record indicates that a steel casing was installed and sealed with grout within the borehole annulus to a depth of approximately 12.3 metres below grade, below which the borehole was left open within the limestone bedrock.

The Hydrogeologic Investigation concluded that Well No. 3 is not considered to be a GUDI well, and is receiving effective in-situ filtration. The author of the Hydrogeologic Investigation did indicate that this conclusion is tempered by a lack of particle count data during significant precipitation events and more elevated total coliforms in 2002. The Peer Review that was conducted assessed Well No. 3 to be a GUDI well with effective in-situ filtration. It is inferred that the Peer Review reclassification of Well No. 3 to a GUDI well was based on a lack of particle count data during significant precipitation events.

Well No. 3 Component Appurtenances

A 406 mm diameter, 47.4m deep drilled groundwater production well located on the southeast side of Thomas Street, southwest of Park Street, adjacent to the Thames River (NAD 83: UTM Zone 17: 0488010 East, 4789040 North). Well No. 3 is equipped with a line-shaft type vertical turbine well pump with variable frequency drive and pump-to-waste functionality. Well No. 3 is rated at a maximum flow of 3,636 L/min at 89.2 TDH, with a 200 mm discharge line connected to the well pump header in the Pumphouse described below;

- A well Pumphouse, housing disinfection and control facilities including:
  - A 200 mm diameter pump header from the well, with check valve, air relief valve, raw water flow meter, shutoff valves and raw water and treated water sampling taps;
  - A 200 mm discharge to waste line with pressure relief valve and orifice plate for flow measurement;
  - One (1) ultraviolet disinfection system capable of providing a minimum dosage of 40 mJ/cm^2 of 254 nm wavelength complete with well pump shut down on lamp failure;
  - Gas chlorination disinfection system, rated at 24 kg/day, consisting of one (1) dual cylinder scale, one (1) chlorine booster pump and duplex automatic switchover regulator;
  - A 200 mm diameter treated water header having a continuous chlorine analyzer and turbidity analyzer complete with automatic shutdown of well pump capability, connected to a 200 mm diameter feeder main supplying the distribution system.
  - 171 m of 400 mm diameter watermain, followed by 40 m of 300 mm diameter watermain to provide chlorine contact prior to first customer.

2.3 ELEVATED WATER STORAGE FACILITY

The St. Marys elevated water storage facility is located on the Southern side of the Victoria Street Right-Of-Way (ROW), approximately 250 m west of James Street South in the Town of St. Marys, Ontario. It has a storage capacity of 1,820 cubic meters (m^3) and was constructed in 1986 and put

into service in 1987. The static water head from the ground level to the overflow is 37.9 m. The facility includes a valve chamber, yard piping and tele-metering control system.

2.4 RESERVOIR PUMPING STATION

A ground level reservoir and booster pumping station was completed in 2019 to add an additional 1,600 m^3 of water storage to the system. The reservoir is located next to the existing Well #1.

2.5 JAMES STREET BOOSTER STATION

The James Street Booster Station provides additional system pressure to the south industrial lands when private fire systems are activated. It has a rated capacity of 154L/s at 52 m TDH. This facility serves industrial lands within the southeast area of the Town.

2.6 DISTRIBUTION SYSTEM

The distribution system has been constructed with a combination of materials including ductile iron (main material), cast iron, small amounts of asbestos cement piping, and more recently, polyvinyl chloride (PVC) pipe. There are approximately 2,845 residential connections, 33 industrial / institutional connections and 187 commercial connections on the system which serves approximately 7,600 individuals.

3.0 ANNUAL DATA SUMMARY FOR 2022

3.1 FLOW DATA

The Town of St. Marys utilizes continuous monitoring equipment at each Pumphouse for flow measurements. The flow measuring devices are monitored by the Supervisory Control and Data Acquisition (SCADA) System and include remote system monitoring and data storage. In addition, these units are calibrated in accordance with the manufacturer's specifications at a minimum of once per year. Operations staff monitors the SCADA flow trends and review the flow and volume data for compliance with system approvals every 72 hours (as required by O.Reg. 170/03).

3.1.1 DAILY FLOW RATES

In accordance with Permit to Take Water (PTTW) No. 5303-AASQEC, Section 3.0, the Town of St. Marys drinking water system did not exceed the rated capacity for the maximum flow rates into the treatment system in 2022, set out at 3,600 Litres per minute (L/min).

3.1.2 DAILY WATER TAKING

In accordance with PTTW No. 5303-AASQEC, Condition 3.2, Table A, the Town of St. Marys Drinking Water System shall not be operated to exceed the rated capacity of 5,184 cubic metres per day (m^3/day) per well. The maximum total combined taking from any combination of Well No 1, 2A and 3 shall not exceed 10,368 m^3/day. The quantity of water which was supplied both combined and individually during the 2022 reporting period remained below the terms and conditions of the PTTW provision.

	Well #1	Well #2A	Well #3	Total
Maximum Daily Flow allowed (m^3/day)	5,184.0	5,184.0	5,184.0	10,368.0
Maximum Daily Flow (m^3)	3,165.7	3,294.2	3,106.1	5,479.3
% of Daily Volume	61.1%	63.5%	59.9%	52.8%
Annual Average (m^3/d)	1,166.3	1,092.8	674.1	3,049.8
% of Maximum Allowed	22.5%	21.1%	13.0%	29.4%
Total Annual Flow for 2022 (m^3)	425,713.1	398,859.0	246,029.7	1,070,601.8
Total Annual Flow for 2021 (m^3)	370,922.2	435,402.6	306,809.0	1,113,133.8
Total Annual Flow for 2020 (m^3)	407,291.3	372,687.8	397,535.9	1,177,514.9

The maximum combined daily volume for the calendar year of 2022 was 5479.25 m^3/day on November 17th. This represents approximately 52.8% of the maximum combined allowable usage (10,368 m^3/day for the Town of St. Marys.

A summary representation of the maximum and average daily and combined flows per well is referenced in Table 2 for the 2022 calendar year.

3.2 REGULATORY SAMPLE RESULTS SUMMARY

The Town of St. Marys is required to complete mandatory water sampling and testing throughout the course of a year as required by O.Reg. 170/03. Sample requirements consist of both chemical and microbiological parameters in addition to distribution checks. The frequencies at which the samples and distribution checks are completed are set by the MECP.

3.2.1 MICROBIOLOGICAL TESTING

Microbiological testing is conducted under Schedule 10 of O.Reg. 170/03. The following is a summary of testing completed during the 2022 reporting period. A copy of the Annual Report may be referenced in Appendix A.

OCWA collected 147 raw water samples in 2022 and of those samples, E. Coli was reported to range from 0 – 0 Colony Forming Unit (CFUs) per 100 ml. Total Coliform was reported to range from 0 – 25 cfu/100ml. Raw water samples are collected by OCWA to assess source water quality and results indicated above are for water which had not be subjected to disinfection applications.

OCWA also collected 145 treated samples in 2022. Of those samples collected and analyzed, E. Coli and Total Coliforms were not reported in any of the treated samples. OCWA also obtains treated water samples for Heterotrophic Plate Count (HPC) analysis. Results reported in 2022 indicated a range from 0–10 cfu/100ml. HPC analysis is an indicator test completed by SGS London Laboratories for water quality purposes, and is not utilized for water safety.

In addition, OCWA also collected 208 distribution samples in 2022. Of those samples collected and analyzed, E. Coli and Total Coliforms were not reported in any of the distribution samples. OCWA also obtains distribution water samples for Heterotrophic Plate Count (HPC) analysis. Results reported in 2022 indicated a range from less than 0 – 10 cfu/1ml.

A summary review of microbiological testing for the 2022 calendar year may be referenced in Appendix A in the Annual Report.

3.3 ADVERSE TEST RESULTS

In accordance with Schedule 16 of O. Reg. 170/03, all required notifications of adverse water quality incidents were provided to the Spills Action Centre (SAC) and to the Medical Officer of Health (MOH). In 2022, there were no adverse test results/incidents.

3.3.1 SODIUM

Sodium in the Town of St. Marys water supply is naturally occurring and is mostly attributed to the nature of the deep bedrock wells. The levels of sodium in the water are of interest because at higher levels it can impart a salty taste to the water and persons on sodium reduced diets need to know the sodium levels in the drinking water so that they can monitor their sodium intake. Specifically, the *Technical Support Document for Ontario Drinking Water – Standards, Objectives and Guidelines*, Ministry of the Environment and Climate Change, June 2003, indicates the following regarding sodium:

The aesthetic objective for sodium in drinking water is 200 mg/L at which it can be detected by a salty taste. Sodium is not toxic. Consumption of sodium in excess of 10 grams per day (g/day) by normal adults does not result in any apparent adverse health effects. In addition, the average intake of sodium from water is only a small fraction of that consumed in a normal diet. A maximum acceptable concentration for sodium in drinking water has, therefore, not been specified. Persons suffering from hypertension or congestive heart disease may require a sodium restricted diet, in which case, the intake of sodium from drinking water could become significant. It is therefore recommended that the measurement of sodium levels be included in routine monitoring programs of water supplies. The local Medical Officers of Health should be notified when the sodium concentration exceeds 20 mg/L, so that this information may be passed on by local physicians. Softening using a domestic water softener increases the sodium level in drinking water and may contribute to a significant percentage to the daily sodium intake for a consumer on a sodium restricted diet. It is recommended that a separate unsoften supply be retained for cooking and drinking purposes."

Sodium is a principal chemical in bodily fluids, and it is not considered harmful at normal levels of intake from combined food and drinking water sources. However, increased intake of sodium in drinking water may be problematic for people with hypertension, heart disease or kidney problems that require them to follow a low sodium diet. Residents of the Town of St. Marys on sodium restricted diets may want to discuss concerns related to sodium intake from drinking water with their doctor.

The latest available analytical results for sodium were conducted in January 2020. The results indicated that sodium concentrations ranged from 27.2 mg/L to 49.7 mg/L and are consistent with historical sampling.

3.4 DISINFECTION CHEMICALS

The Town of St. Marys employs a two stage primary disinfection process consisting of UV light (UV reactor's 254nm – equivalent UV pass through dose of at least 40 mJ/cm^2) combined with chemical disinfection so as to provide an overall 4.0 log inactivation of viruses.

Chlorine gas is released from a liquid chlorine cylinder by a pressure reducing and flow control valve operating at a pressure less than atmospheric. The gas is led to an injector in the water supply pipe where highly pressurized water is passed through a venture orifice creating a vacuum that draws the chlorine into the water stream. Adequate mixing and contact time is provided after injection to ensure complete disinfection of remaining pathogens. Secondary disinfection introduces and maintains chlorine residual in the drinking water distribution system. Given the operational benefits of secondary disinfection, operators should strive to maintain a chlorine residual throughout the system to control regrowth and to provide an indication of system integrity. Overall, a chlorine residual in the distribution system provides three main benefits:

1. It can limit the growth of biofilm within the distribution system and its associated taste and odour problems (LeChevallier, 1998; White, 1999).

2. It may provide some protection in the event of microbial contamination in the distribution system, depending on the magnitude of the event and the susceptibility of the containing microorganisms to chlorine.

3. Most importantly, a rapid drop in disinfectant residual may provide an immediate indication of treatment process malfunction or a break in the integrity of the distribution system (LeChevallier, 1998; Health Canada, 2002).

Chlorine gas usage and rates are monitored throughout the course of the year so as to provide information regarding the use and quantity being used within the treatment and distribution system.

A summary of chlorine gas (Cl_2) used during both the primary and secondary processes for Well No. 1, 2A and 3 may be referenced in Tables 3, 4 and 5, respectively. In addition, average water level and monthly precipitation data are included. Also detailed in the tables is the approximate volume (cubic metres) of water which is being produced per kg of chlorine within the treatment and distribution system.

4.0 SYSTEM FAILURES AND CORRECTIONS

Every fiscal year, the MECP conducts an inspection of the Town of St. Marys Drinking Water System. The MECP conducts on-site inspections of the various components of the municipal water system and reviews system documents and records for the previous year to verify that the Town of St. Marys and OCWA are operating the water system in compliance to MECP regulations.

4.1 SUMMARY OF NON-COMPLIANCE ITEMS

Schedule 22 of Ontario Regulation 170/03 requires that any non-compliance with applicable legislation be discussed in the Summary Report.

The last MECP inspection occurred on October 13, 2022 for the 2022-2023 reporting period; zero (0) non compliance issues were identified. MECP Inspection report 1-105857825 was received on December 1, 2022; inspection rating was 100%.

The previous MECP Inspection occurred on February 8, 2022 for the 2021-2022 reporting period. There was one (1) non-compliance issue identified in the report. The MECP Inspection Report SI-PE-SM-WE -540 was received on March 21, 2022 with an overall inspection rating of 97.34%. The non-compliance was for: All UV sensors were not checked and calibrated as required. Schedule 6-1.1 defines monthly as 20 to 40 days since previous equipment check. There were a few occasions during the inspection review period where the equipment checks were outside of the 20-40 days. This requirement has now been noted by OCWA and has been met since the requirement was identified. A work order is issued on a monthly basis by OCWA's Workplace Management System to complete UV sensor checks.

5.0 COMMUNITY LEAD TESTING PROGRAM

In 2007, the MECP amended the Drinking Water Systems Regulation (O.Reg. 170/03) made under the Safe Drinking Water Act, 2002 and introduced the new Community Lead Testing Program (Schedule 15.1 of the Regulation).

Under this program, all municipal and non-municipal drinking water systems are required to collect additional samples from private residences, non-residential buildings as well as the distribution system to check for lead in the drinking water.

Under the community Lead Testing Program, samples are collected during the period from December 15 to April 15 (under winter conditions) and June 15 to October 15 (under summer conditions). Following the completion of the community Lead Testing Program in 2009, the Town of St. Marys applied, and was granted regulatory relief for reduced sampling requirements for the community Lead Testing Program.

By obtaining regulatory relief regarding the community Lead Testing Program, the sample frequency was reduced to two consecutive periods (“winter” and “summer”) of semi-annual testing, completed once every three years.

2012 marked the return of the community lead testing program for the Town of St. Marys, with sample rounds being completed in both the “Winter” and “Summer” periods, under reduced sampling requirements. The community lead testing program was a voluntary program for residents within the Town, however enough residents participated in the program to successfully meet the Town’s sampling requirements.

Both sampling rounds in 2012 showed that no more than 10 percent (%) of plumbing samples exceeded the MECP standard of 10 µg/L. As such, given the positive results observed during two consecutive sample rounds, the Town of St. Marys is now exempt from plumbing sample requirements. Lead monitoring within the drinking water system is completed according to O.Reg. 170/03, Section 15.1-5 (10).

TABLE 1
Flow Rate Summaries

TABLE 1
2022 FLOW RATE SUMMARY (MUNICIPAL DRINKING WATER WELLS NO. 1, 2A AND 3)

Month	Well No. 1		Well No. 2A		Well No. 3	
	Average Flow (Litres/Sec)	Maximum Flow (Litres/Sec)	Average Flow (Litres/Sec)	Maximum Flow (Litres/Sec)	Average Flow (Litres/Sec)	Maximum Flow (Litres/Sec)
January	48.76	52.32	45.31	49.50	41.68	48.84
February	47.54	50.96	44.54	47.43	42.95	47.65
March	49.09	53.25	45.70	49.66	45.01	49.35
April	49.37	52.73	46.74	49.74	42.51	49.23
May	48.66	52.00	44.99	48.81	44.26	48.23
June	47.07	50.82	42.53	47.75	42.83	47.10
July	44.77	49.65	41.81	46.13	40.79	46.53
August	42.41	47.66	41.62	45.04	38.17	44.28
September	40.94	47.03	39.85	45.15	0.00	0.00
October	40.68	46.84	40.68	44.57	35.56	44.31
November	42.11	47.55	40.76	43.85	37.97	48.36
December	42.53	48.07	41.15	44.44	38.19	45.07

NOTES:

Average Flow - Average flow recorded at the well during the month

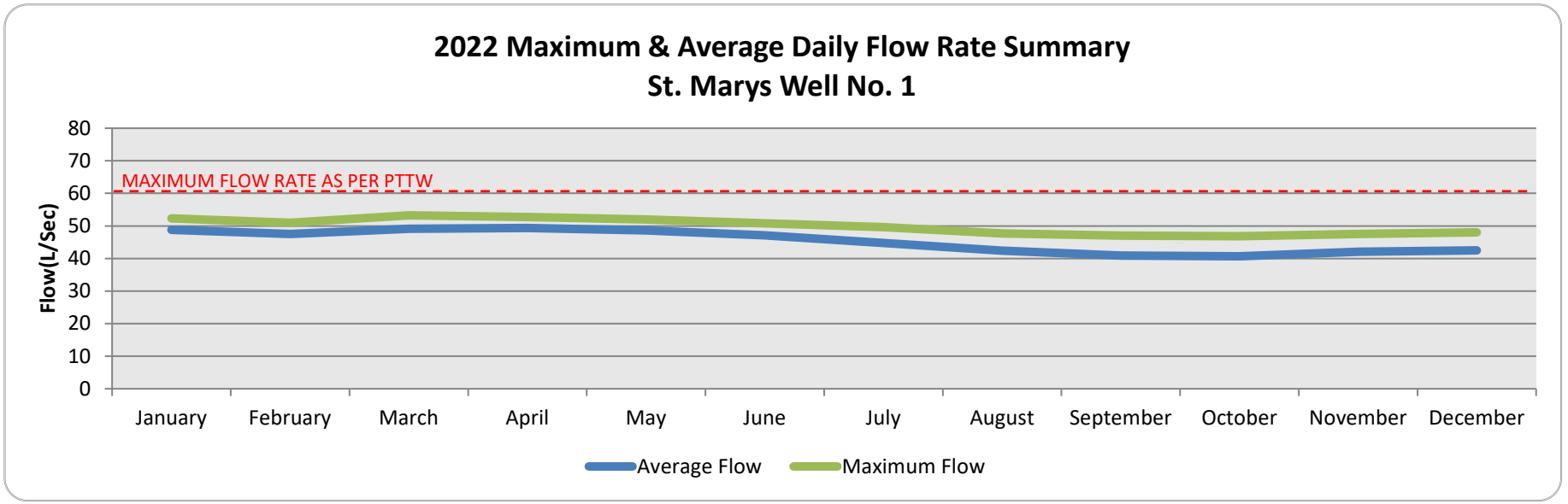
Maximum Flow - Maximum flow recorded at the well during the month

L/Sec - Litres per Second

Approved Rated Capacity - 3600 litres per minute/ 60 l/s for one minute

TABLE 1
2022 FLOW RATE SUMMARY (MUNICIPAL DRINKING WATER WELLS NO. 1, 2A AND 3)
MUNICIPAL DRINKING WATER WELL NO. 1 - FLOW COMPARISON

Month	January	February	March	April	May	June	July	August	September	October	November	December
Average	48.76	47.54	49.09	49.37	48.66	47.07	44.77	42.41	40.94	40.68	42.11	42.53
Maximum	52.32	50.96	53.25	52.73	52.00	50.82	49.65	47.66	47.03	46.84	47.55	48.07



NOTES:

Average Flow - Average flow recorded at the well during the month

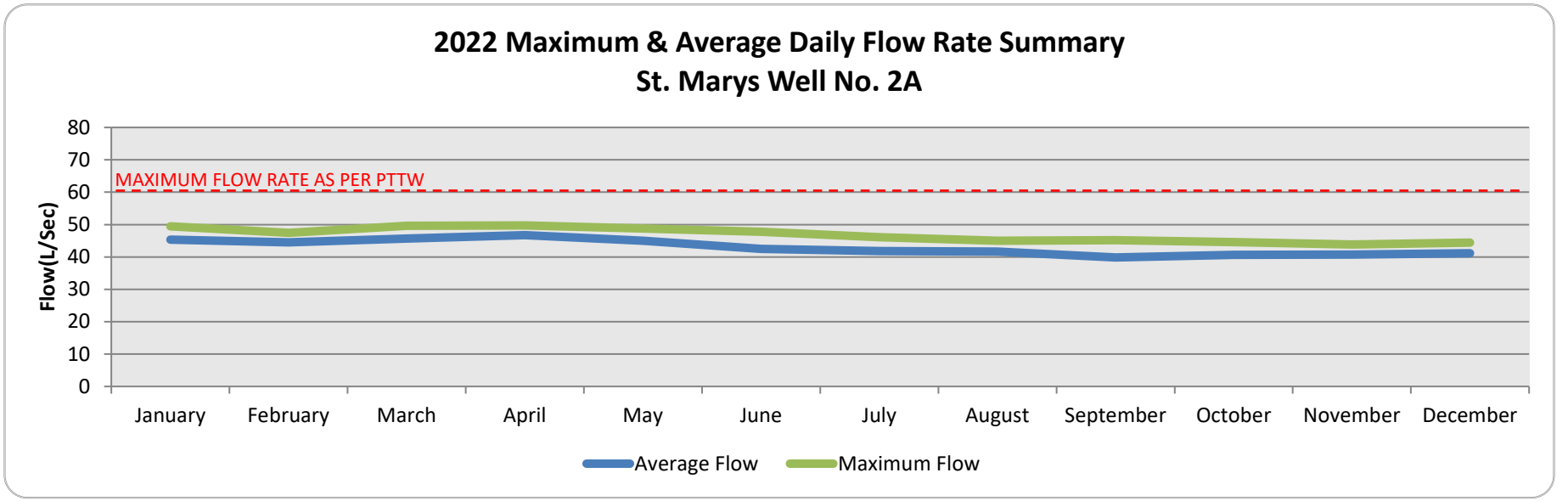
Maximum Flow - Maximum flow recorded at the well during the month

L/Sec - Litres per Second (Values presented on this page are expressed in litres per second)

Approved Rated Capacity - 3600 litres per minute/ 60 l/s for one minute

TABLE 1
2022 FLOW RATE SUMMARY (MUNICIPAL DRINKING WATER WELLS NO. 1, 2A AND 3)
MUNICIPAL DRINKING WATER WELL NO. 2A - FLOW COMPARISON

Month	January	February	March	April	May	June	July	August	September	October	November	December
Average	45.31	44.54	45.70	46.74	44.99	42.53	41.81	41.62	39.85	40.68	40.76	41.15
Maximum	49.50	47.43	49.66	49.74	48.81	47.75	46.13	45.04	45.15	44.57	43.85	44.44



NOTES:

Average Flow - Average flow recorded at the well during the month

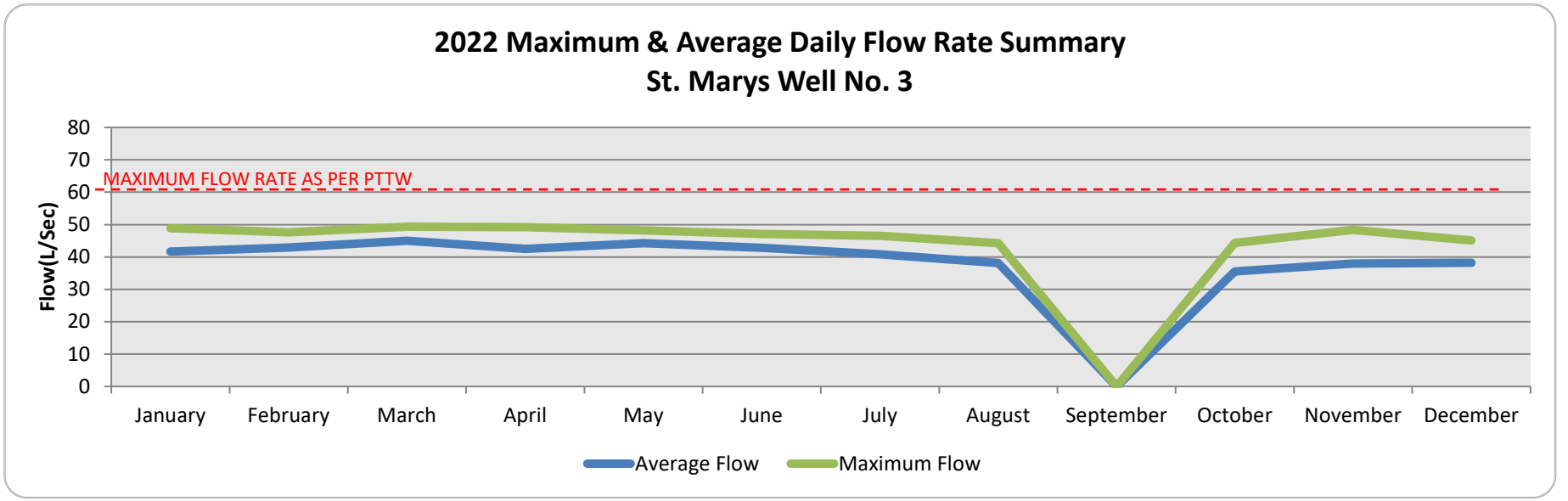
Maximum Flow - Maximum flow recorded at the well during the month

L/Sec - Litres per Second (Values presented on this page are expressed in litres per second)

Approved Rated Capacity - 3600 litres per minute/ 60 l/s for one minute

TABLE 1
2022 FLOW RATE SUMMARY (MUNICIPAL DRINKING WATER WELLS NO. 1, 2A AND 3)
MUNICIPAL DRINKING WATER WELL NO. 3 - FLOW COMPARISON

Month	January	February	March	April	May	June	July	August	September	October	November	December
Average	41.68	42.95	45.01	42.51	44.26	42.83	40.79	38.17	0	35.56	37.97	38.19
Maximum	48.84	47.65	49.35	49.23	48.23	47.10	46.53	44.28	0	44.31	48.36	45.07



NOTES:

Average Flow - Average flow recorded at the well during the month

Maximum Flow - Maximum flow recorded at the well during the month

L/Sec - Litres per Second (Values presented on this page are expressed in litres per second)

Approved Rated Capacity - 3600 litres per minute/ 60 l/s for one minute

Well 3 offline for maintenance in August to October.

TABLE 2
Annual Flow Report

Ontario Clean Water Agency
Time Series Info Report

Report extracted 02/02/2023 12:00

From: **01/01/2022 to 31/12/2022**

Facility Name: **ST MARYS DRINKING WATER SYSTEM**

Service Population: **7200.0**

Total Design Capacity: **5184.0 m3/day**

	01/2022	02/2022	03/2022	04/2022	05/2022	06/2022	07/2022	08/2022	09/2022	10/2022	11/2022	12/2022	Total	Avg	Max
Well #1 / Flow - m³/d															
Count OL	31	28	31	30	31	30	31	31	30	31	30	31	365		
Max OL	2540.53	2691.07	2640.43	2837.55	3030.01	2193.96	3088.67	3019.91	3076.95	3165.72	2373.17	2876.02			3165.72
Mean OL	1133.46	1217.37	1302.83	728.49	959.63	995.57	1383.56	1469.74	1913.52	1442.25	576.62	863.39		1166.34	
Total OL	35137.38	34086.48	40387.64	21854.77	29748.49	29867.09	42890.26	45561.95	57405.56	44709.64	17298.63	26765.24	425713.1		
Well #1 / Flush to Waste: Total - m³/d															
Count OL	31	28	31	30	31	30	31	31	30	31	30	31	365		
Total OL	854.47	783.07	1156.15	742.21	787.19	579.51	652.18	533.64	731.36	679.53	301.1	455.43	8255.84		
Max OL	83.27	60.07	72.29	86.27	62.9	79.72	56.74	34.44	46.54	45.56	42.54	45.51			86.27
Mean OL	27.564	27.967	37.295	24.74	25.393	19.317	21.038	17.214	24.379	21.92	10.037	14.691		22.619	
Well #2 / Flow - m³/d															
Count OL	31	28	31	30	31	30	31	31	30	31	30	31	365		
Max OL	2884.41	2750.65	2354.36	3217.56	3225.06	3003.98	3294.21	2710.07	2453.73	2566.92	2871.28	2392.42			3294.21
Mean OL	1255.39	1052.98	706.47	1449.74	1079.23	1030.69	755.49	1455.18	1022.46	1187.06	1221.51	904.51		1092.76	
Total OL	38917.02	29483.53	21900.48	43492.21	33456.12	30920.7	23420.25	45110.71	30673.86	36798.75	36645.44	28039.93	398859		
Well #2 / Flush to Waste: Total - m³/d															
Count OL	31	28	31	30	31	30	31	31	30	31	30	31	365		
Total OL	1031.86	595.43	504.66	975.27	799.19	433.16	315.82	413.99	312.51	427.69	532.04	373.41	6715.03		
Max OL	67	49.6	58.08	68.04	66.88	39.53	30.23	28.22	29.22	48.4	44.39	40.36			68.04
Mean OL	33.286	21.265	16.279	32.509	25.78	14.439	10.188	13.355	10.417	13.796	17.735	12.045		18.397	
Well #3 / Flow - m³/d															
Count OL	31	28	31	30	31	30	31	31	30	31	30	31	365		
Max OL	2147.06	1758.89	2530.66	2394.38	2374.52	2906.02	2956.6	1126.09	0	2193.2	3106.08	2656.51			3106.08
Mean OL	415.79	579.35	906.4	680.58	1059.53	1217.96	1157.38	93.57	0	165.81	974.1	834.7		674.05	
Total OL	12889.59	16221.85	28098.42	20417.29	32845.56	36538.78	35878.67	2900.67	0	5140.26	29222.99	25875.59	246029.7		
Well #3 / Flush to Waste: Total - m³/d															
Count OL	31	28	31	30	31	30	31	31	30	31	30	31	365		
Total OL	177.02	178.95	250.62	210.8	222.11	261.86	159.53	20.09	0	169.08	152.58	80.23	1882.87		
Max OL	33.2	33.17	27.19	23.12	20.1	18.08	19.07	10.04	0	153.03	14.05	7.02			153.03
Mean OL	5.71	6.391	8.085	7.027	7.165	8.729	5.146	0.648	0	5.454	5.086	2.588		5.159	
Note: OL=Online Monitor															

TABLE 3
Chlorine Gas Summary and Flow
Well #1

TABLE 3
CHLORINE GAS USAGE AND WATER LEVELS - WELL NO. 1
JANUARY 1 - DECEMBER 31, 2022

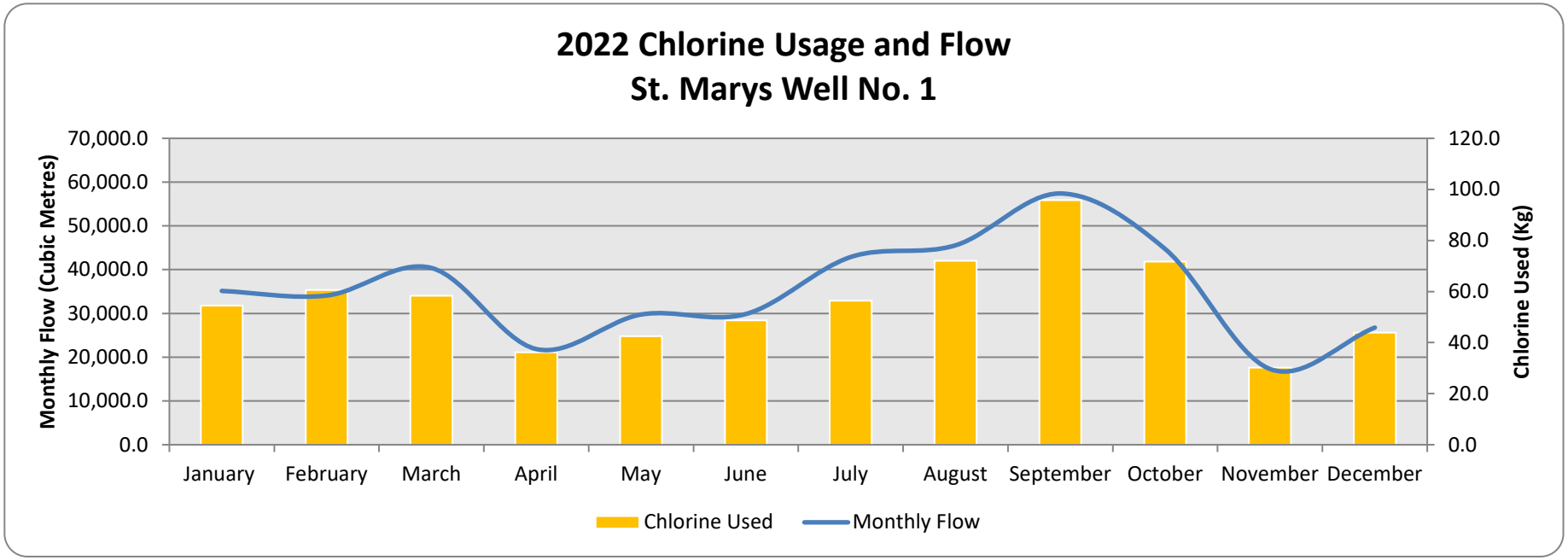
Month	Total Flow (Treated) (m^3)	Cl_2 Used (Kg)	m^3 produced per kg of Cl_2	Avg. Cl_2 Feed Rate (kg/day)	Avg. Cl_2 Residual (mg/l)	Average Water Levels		Precipitation (Estimated) (mm)
						Static (ft)	Dynamic (ft)	
January	35,137.4	54.5	644.6	7.6	1.31	45.1	50.0	5.4
February	34,086.5	60.6	562.7	7.7	1.37	49.4	57.4	42.9
March	40,387.6	58.4	691.6	7.6	1.27	42.5	48.7	48.0
April	21,854.8	36.2	603.7	7.8	1.22	42.5	47.6	53.2
May	29,748.5	42.5	700.1	7.7	1.27	47.1	51.1	97.8
June	29,867.1	48.7	613.3	7.4	1.30	51.7	59.7	48.9
July	42,890.3	56.5	759.8	7.2	1.34	54.3	63.5	24.9
August	45,562.0	72.1	632.1	6.8	1.31	61.2	69.7	128.1
September	57,405.6	95.8	599.2	6.5	1.32	65.5	74.0	76.5
October	44,709.6	71.7	623.7	6.3	1.28	65.8	72.5	67.4
November	17,298.6	30.2	573.2	6.5	1.24	60.4	69.4	20.7
December	26,765.2	43.9	609.7	6.6	1.22	58.9	66.5	40.2
Minimum	**17,298.6**	**30.2**	**562.7**	**6.3**	**1.22**	**42.5**	**47.6**	**5.4**
Maximum	**57,405.6**	**95.8**	**759.8**	**7.8**	**1.37**	**65.8**	**74.0**	**128.1**
Average	**35,476.1**	**55.9**	**634.5**	**7.1**	**1.29**	**53.7**	**60.8**	**54.5**
Totals	**425,713.1**	**671.0**						**1,060.0**

NOTES:

m^3 - Cubic Metres
Cl_2 - Chlorine
Kg - Kilogram
L - Litre
ft - Feet
mm - Milimetre

TABLE 3
CHLORINE GAS USAGE AND WATER LEVELS - WELL NO. 1
WELL NO. 1 - CHLORINE GAS USAGE AND FLOW

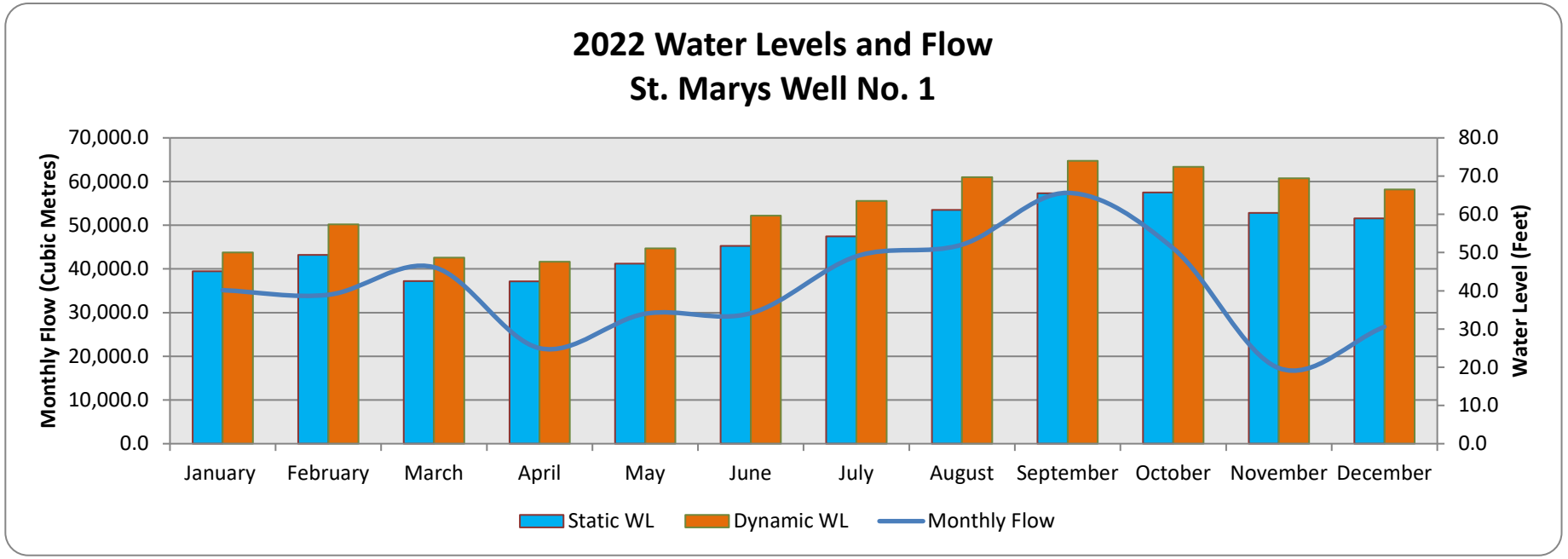
Month	January	February	March	April	May	June	July	August	September	October	November	December
Monthly Flow	35,137.38	34,086.48	40,387.64	21,854.77	29,748.49	29,867.09	42,890.26	45,561.95	57,405.56	44,709.64	17,298.63	26,765.24
Cl_2 Used	54.1	60.6	58.4	36.2	42.5	48.7	56.5	72.1	95.8	71.7	30.2	43.9



NOTES: **Monthly Flow -** Total flow volume from the well as recorded by the flow meter
Chlorine Used - Total amount (Kg) of Chlorine used during each month at the well

TABLE 3
CHLORINE GAS USAGE AND WATER LEVELS - WELL NO. 1
WELL NO. 1 - WATER LEVELS AND FLOW

Month	January	February	March	April	May	June	July	August	September	October	November	December
Monthly Flow	35,137.38	34,086.48	40,387.64	21,854.77	29,748.49	29,867.09	42,890.26	45,561.95	57,405.56	44,709.64	17,298.63	26,765.24
Static Level	45.1	49.4	42.5	42.5	47.1	51.7	54.3	61.2	65.5	65.8	60.4	58.9
Dynamic Level	50.0	57.4	48.7	47.6	51.1	59.7	63.5	69.7	74.0	72.5	69.4	66.5



NOTES:

Monthly Flow - Total flow volume from the well as recorded by the flow meter

Static Level - Groundwater Level when pump is not running

Dynamic Level - Groundwater Level when the pump is running

TABLE 4
Chlorine Gas Summary and Flow
Well #2A

TABLE 4
CHLORINE GAS USAGE AND WATER LEVELS - WELL NO. 2A
JANUARY 1 - DECEMBER 31, 2022

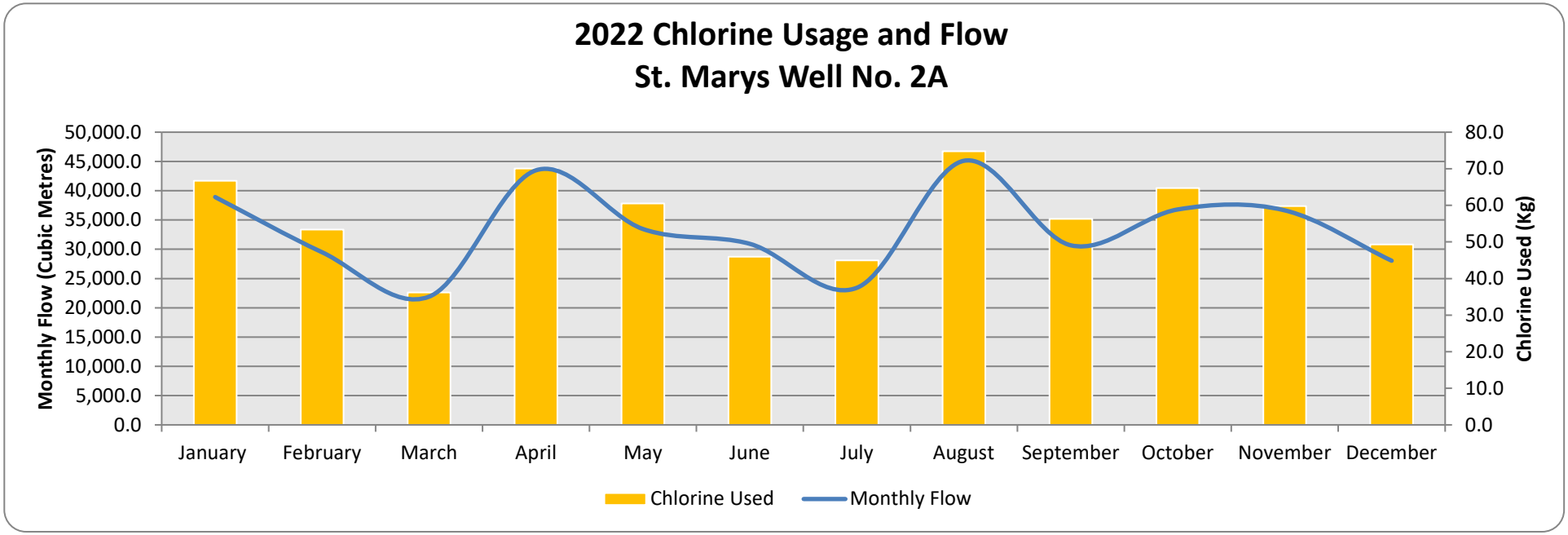
Month	Total Flow (Treated) (m^3)	Cl_2 Used (Kgs)	m^3 produced per Kg of Cl2	Avg. Cl_2 Feed Rate (kg/day)	Avg. Cl_2 Residual (mg/l)	Average Water Levels		Precipitation (Estimated) (mm)
						Static (ft)	Dynamic (ft)	
January	38,917.0	66.7	583.4	7.8	1.28	45.6	55.0	5.4
February	29,483.5	53.4	552.0	7.7	1.29	51.8	59.8	42.9
March	21,900.5	36.2	605.2	7.9	1.30	35.8	43.5	48.0
April	43,492.2	70.1	620.7	7.9	1.28	30.2	40.3	53.2
May	33,456.1	60.5	552.6	7.8	1.26	36.1	46.8	97.8
June	30,920.7	46.0	672.9	7.6	1.28	42.7	50.7	48.9
July	23,420.3	45.0	520.7	8.1	1.27	47.6	57.0	24.9
August	45,110.7	74.8	603.0	7.3	1.28	50.5	58.0	128.1
September	30,673.9	56.3	544.8	7.3	1.29	51.9	58.8	76.5
October	36,799.0	64.7	568.5	7.3	1.33	55.6	61.8	67.4
November	36,645.4	59.8	613.0	7.4	1.28	53.4	61.6	20.7
December	28,039.9	49.3	568.6	7.4	1.28	50.4	59.0	40.2
Minimum	**21,900.5**	**36.2**	**520.7**	**7.3**	**1.26**	**30.2**	**40.3**	**5.4**
Maximum	**45,110.7**	**74.8**	**672.9**	**8.1**	**1.33**	**55.6**	**61.8**	**128.1**
Average	**33,238.3**	**56.9**	**583.8**	**7.6**	**1.28**	**46.0**	**54.4**	**54.5**
Totals	**398,859.2**	**682.8**						**1,060.0**

NOTES:

m^3 - Cubic Metres
Cl_2 - Chlorine
Kg - Kilogram
L - Litre
ft - Feet
mm - Milimetre

TABLE 4
CHLORINE GAS USAGE AND WATER LEVELS - WELL NO. 2A
WELL NO. 2A - CHLORINE GAS USAGE AND FLOW

Month	January	February	March	April	May	June	July	August	September	October	November	December
Monthly Flow	38,917.0	29,483.5	21,900.5	43,492.2	33,456.1	30,920.7	23,420.3	45,110.7	30,673.9	36,798.8	36,645.4	28,039.9
Cl_2 Used	66.7	53.4	36.2	70.1	60.5	46.0	45.0	74.8	56.3	64.7	59.8	49.3



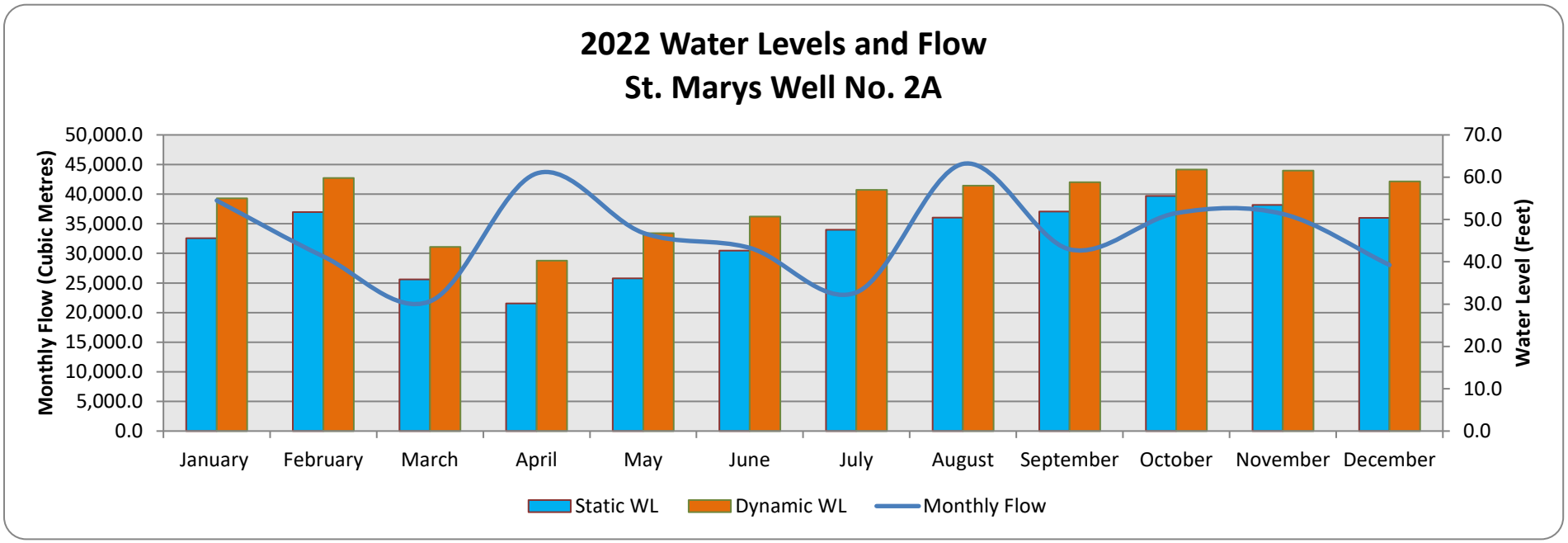
NOTES:

Monthly Flow - Total flow volume from the well as recorded by the flow meter

Chlorine Used - Total amount (Kg) of Chlorine used during each month at the well

TABLE 4
CHLORINE GAS USAGE AND WATER LEVELS - WELL NO. 2A
WELL NO. 2A - WATER LEVELS AND FLOW

Month	January	February	March	April	May	June	July	August	September	October	November	December
Monthly Flow	38,917.0	29,483.5	21,900.5	43,492.2	33,456.1	30,920.7	23,420.3	45,110.7	30,673.9	36,799.0	36,645.4	28,039.9
Static Level	45.6	51.8	35.8	30.2	36.1	42.7	47.6	50.5	51.9	55.6	53.4	50.4
Dynamic Level	55.0	59.8	43.5	40.3	46.8	50.7	57.0	58.0	58.8	61.8	61.6	59.0



NOTES:

Monthly Flow - Total flow volume from the well as recorded by the flow meter

Static Level - Groundwater Level when pump is not running

Dynamic Level - Groundwater Level when the pump is running

TABLE 5
Chlorine Gas Summary and Flow
Well #3

TABLE 5
CHLORINE GAS USAGE AND WATER LEVELS - WELL NO. 3
JANUARY 1 - DECEMBER 31, 2022

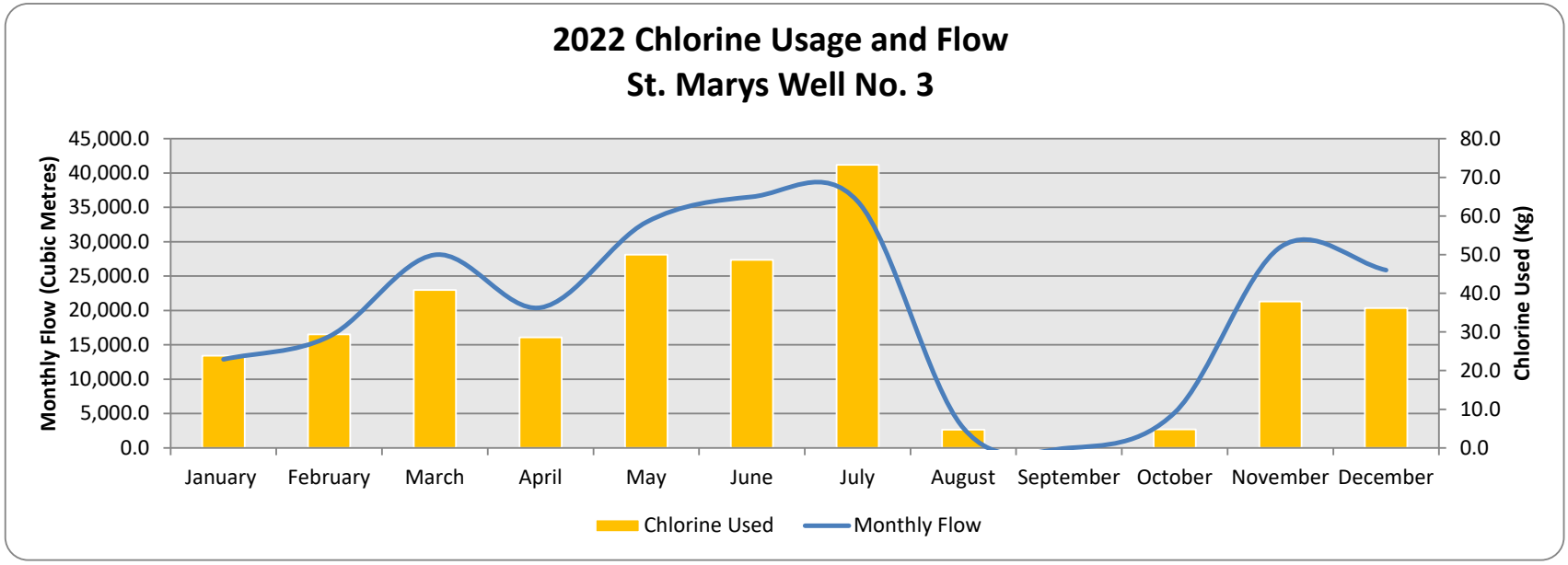
Month	Total Flow (Treated) (m^3)	Cl_2 Used (Kgs)	m^3 produced per Kg of Cl2	Avg. Cl_2 Feed Rate (kg/day)	Avg. Cl_2 Residual (mg/l)	Average Water Levels		Precipitation (Estimated) (mm)
						Static (ft)	Dynamic (ft)	
January	12,889.6	23.9	540.0	9.2	1.24	33.0	44.8	5.4
February	16,221.9	29.4	552.0	14.5	1.29	40.7	50.8	42.9
March	28,098.4	40.9	687.3	15.0	1.26	36.8	43.9	48.0
April	20,417.3	28.6	714.4	15.0	1.23	36.4	43.4	53.2
May	32,845.6	50.0	657.0	14.6	1.28	39.2	52.0	97.8
June	36,538.8	48.6	751.2	13.7	1.35	45.2	55.5	48.9
July	35,878.7	73.2	490.1	12.8	1.31	59.4	66.8	24.9
August	2,900.7	4.7	617.2	12.8	1.25	51.0	57.3	128.1
September	0.0	0.0	0.0	0.0	n/a	0.0	0.0	76.5
October	5,140.3	4.8	1,070.9	11.7	1.22	55.5	66.3	67.4
November	29,223.0	37.9	771.1	11.3	1.29	55.6	68.6	20.7
December	25,875.6	36.2	714.8	11.5	1.25	53.4	67.2	40.2
Minimum	**0.0**	**0.0**	**0.0**	**0.0**	**1.22**	**0.0**	**0.0**	**5.4**
Maximum	**36,538.8**	**73.2**	**1,070.9**	**15.0**	**1.35**	**59.4**	**68.6**	**128.1**
Average	**20,502.5**	**31.5**	**630.5**	**11.8**	**1.27**	**42.2**	**51.4**	**54.5**
Totals	**246,029.7**	**378.2**						**1,060.0**

NOTES:

m^3 - Cubic Metres
Cl_2 - Chlorine
Kg - Kilogram
L - Litre
ft - Feet
mm - Milimetre
Well 3 offline August to October

TABLE 5
CHLORINE GAS USAGE AND WATER LEVELS - WELL NO. 3
WELL NO. 3 - CHLORINE GAS USAGE AND FLOW

Month	January	February	March	April	May	June	July	August	September	October	November	December
Monthly Flow	12,889.6	16,221.9	28,098.4	20,417.3	32,845.6	36,538.8	35,878.7	2,900.7	0.0	5,140.3	29,223.0	25,875.6
Cl_2 Used	23.9	29.4	40.9	28.6	50.0	48.6	73.2	4.7	0.0	4.8	37.9	36.2



NOTES:

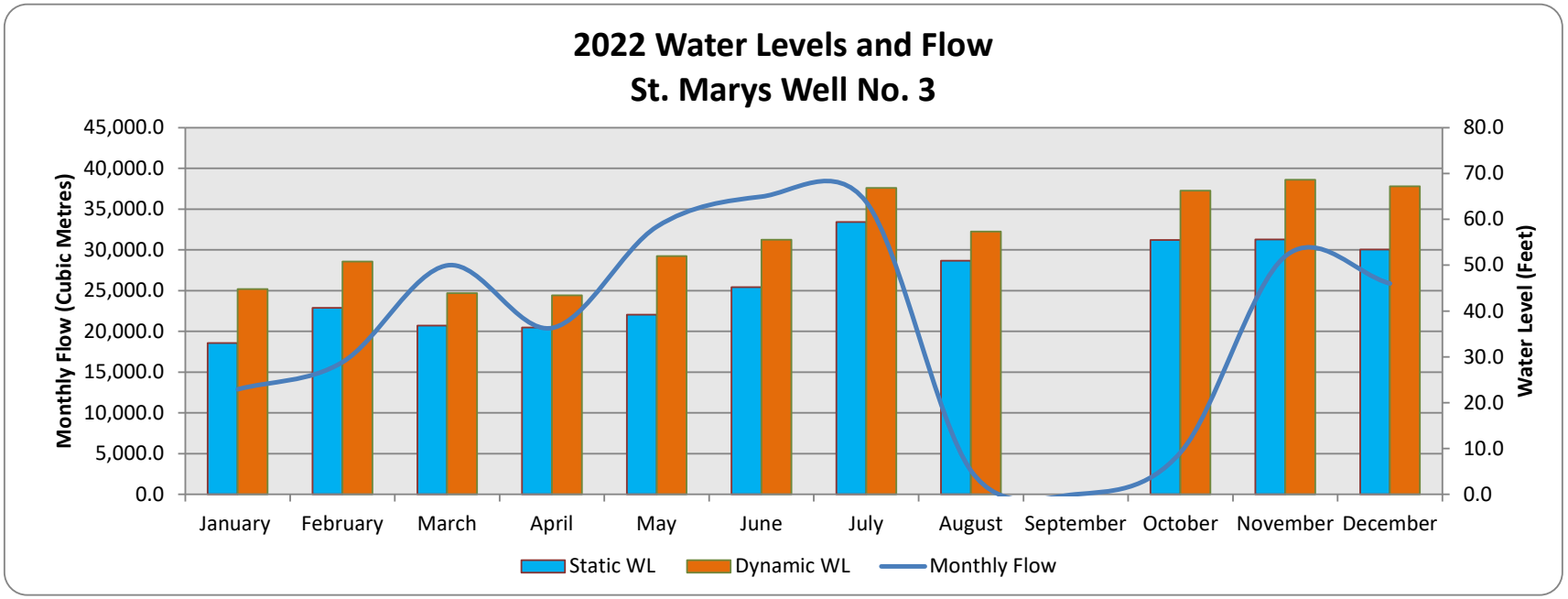
Monthly Flow - Total flow volume from the well as recorded by the flow meter

Chlorine Used - Total amount (Kg) of Chlorine used during each month at the well

Well 3 offline August to October

TABLE 5
CHLORINE GAS USAGE AND WATER LEVELS - WELL NO. 3
WELL NO. 3 - WATER LEVELS AND FLOW

Month	January	February	March	April	May	June	July	August	September	October	November	December
Monthly Flow	12,889.6	16,221.9	28,098.4	20,417.3	32,845.6	36,538.8	35,878.7	2,900.7	0.0	5,140.3	29,223.0	25,875.6
Static Level	33.0	40.7	36.8	36.4	39.2	45.2	59.4	51.0	0.0	55.5	55.6	53.4
Dynamic Level	44.8	50.8	43.9	43.4	52.0	55.5	66.8	57.3	0.0	66.3	68.6	67.2



NOTES:

Monthly Flow - Total flow volume from the well as recorded by the flow meter

Static Level - Groundwater Level when pump is not running

Dynamic Level - Groundwater Level when the pump is running

Well 3 offline August to October

APPENDIX A
2022
Annual Drinking Water Report

ANNUAL REPORT 2022

Drinking Water System Number:	**220000521**
Drinking Water System Name:	St. Marys Drinking Water System
Drinking Water System Owner:	The Corporation of the Town of St. Marys
Drinking Water System Category:	Large, Municipal, Residential
Period being reported:	January 1, 2022 to December 31, 2022

Complete if your Category is Large Municipal Residential or Small Municipal Residential	***Complete for all other Categories***
Does your Drinking Water System serve more than 10,000 people? Yes [ ] No [X] **Is your annual report available to the public at no charge on a web site on the Internet? Yes [X] No [ ]** **Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.** Municipal Operations Center, 408 James St South St. Marys, ON www.townofstmarys.com	**Number of Designated Facilities served:** n/a **Did you provide a copy of your annual report to all Designated Facilities you serve?** n/a **Number of Interested Authorities you report to:** n/a **Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility?** n/a

List all Drinking Water Systems (if any), which receive all their drinking water from your system: n/a

Did you provide a copy of your annual report to all Drinking Water System owners that are connected to you and to whom you provide all drinking water? n/a

Indicate how you notified system users that your annual report is available and is free of charge.

- **[X] Public access/notice via the web**
- **[ ] Public access/notice via Government Office**
- **[ ] Public access/notice via a newspaper**
- **[X] Public access/notice via Public Request**
- **[ ] Public access/notice via a Public Library**
- **[X] Public access/notice via other method:** Municipal Office

Describe your Drinking Water System

Each of the well pump houses #1, 2A and 3 have a vertical turbine pump rated at 60 L/s capacity. These pumps draw ground water from each of the three wells. Water passes air release valves, a backflow check valve, pressure gauges, primary UV light disinfection, flow meter, the chlorine gas injection point, actuator control valve and then into the contact chamber piping located underground.

Booster Station

This provides additional system pressure for industrial properties within the southeast area of the town during fire emergencies.

Reservoir

A ground level reservoir and booster pumping station was completed in 2019 to add an additional 1,600 m^3 of water storage to the system. The reservoir is located next to the existing Well #1.

Water Tower

The water tower is for system pressure regulation and has a storage capacity of 1,820 m^3.

List all water treatment chemicals used over this reporting period

Chlorine gas for disinfection

Were any significant expenses incurred to?

[X] Install required equipment
[X] Repair required equipment
[X] Replace required equipment

Please provide a brief description and a breakdown of monetary expenses incurred

Huron St. S. Watermain Reconstruction	$400,000
Wellington St. Watermain Reconstruction	$340,000
Well #3 - Actuator & Gate Valve	$18,750
Well #3 - Rotometer	$16,410
Well #3 - Turbidity Meter	$7,270
Well #2A - Main Gate Valve	$3,000
All Wells - Chlorine Gas Parts	$8,185
Hydrant Parts	$3,587
Well #2A – Turbidity Meter	$9,035
Distribution Parts	$17,470
Total	$823,707

Provide details on the notices submitted in accordance with subsection 18 (1) of the Safe Drinking Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
No reportable issues for this reporting period.					

Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period

	Number of Samples	Range of E. Coli Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Well #1 Raw	52	0-0	0-25	-	-
Well #2A Raw	52	0-0	0-0	-	-
Well #3 Raw	43*	0-0	0-2	-	-
Well #1Treated	52	0-0	0-0	52	0-10
Well #2A Treated	52	0-0	0-0	52	0-10
Well #3 Treated	41*	0-0	0-0	41	0-10
Distribution	208	0-0	0-0	52	0-10

*Note: Well 3 offline for repairs August to October

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.

	Number of Grab Samples	Range of Results (min #)-(max #)	Unit of Measure
Turbidity	337	Well #1: 0.05-0.39 Well#2A: 0.00-0.53 Well#3: 0.01-0.76	NTU
Chlorine-Treated	8760	Well #1: 0.42-1.80 Well#2A: 0.54-1.77 Well#3: 0.51-2.58	mg/L
Chlorine- Distribution	364	0.46-1.38	mg/L

NOTE: For continuous monitors use 8760 as the number of samples

Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument.

Date of legal instrument issued	Parameter	Date Sampled	Result
2019-10-10 (MDWL)	Continuous Pass-Through UV Dose	Continuously monitored	No results below 40mJ/cm2 for Well 1, 2A and 3.

Summary of Inorganic parameters tested during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony – TW1	2022/01/10	<MDL 0.6	ug/L	No
Antimony – TW2	2022/01/10	<MDL 0.6	ug/L	No
Antimony – TW3	2022/01/10	<MDL 0.6	ug/L	No
Arsenic – TW1	2022/01/10	0.3	ug/L	No
Arsenic – TW2	2022/01/10	0.3	ug/L	No
Arsenic – TW3	2022/01/10	<MDL 0.2	ug/L	No
Barium – TW1	2022/01/10	169.0	ug/L	No
Barium – TW2	2022/01/10	103.0	ug/L	No
Barium – TW3	2022/01/10	123.0	ug/L	No
Boron – TW1	2022/01/10	42.0	ug/L	No
Boron – TW2	2022/01/10	51.0	ug/L	No
Boron – TW3	2022/01/10	49.0	ug/L	No
Cadmium – TW1	2022/01/10	0.111	ug/L	No
Cadmium – TW2	2022/01/10	0.044	ug/L	No
Cadmium – TW3	2022/01/10	0.033	ug/L	No
Chromium – TW1	2022/01/10	0.22	ug/L	No
Chromium – TW2	2022/01/10	0.12	ug/L	No
Chromium – TW3	2022/01/10	0.12	ug/L	No
Mercury – TW1	2022/01/10	<MDL 0.01	ug/L	No
Mercury – TW2	2022/01/10	<MDL 0.01	ug/L	No
Mercury – TW3	2022/01/10	<MDL 0.01	ug/L	No
Selenium – TW1	2022/01/10	0.76	ug/L	No
Selenium – TW2	2022/01/10	0.65	ug/L	No
Selenium – TW3	2022/01/10	0.71	ug/L	No
Sodium – TW1	2020/01/09	27.2	mg/L	Yes
Sodium – TW2	2020/01/09	49.7	mg/L	Yes
Sodium – TW3	2020/01/09	44.1	mg/L	Yes
Uranium – TW1	2022/01/10	1.35	ug/L	No
Uranium – TW2	2022/01/10	1.86	ug/L	No
Uranium – TW3	2022/01/10	2.42	ug/L	No
Fluoride – TW1	2020/01/06	1.07	mg/L	No
Fluoride – TW2	2020/01/06	1.25	mg/L	No
Fluoride – TW3	2020/01/06	1.19	mg/L	No
Nitrite – TW1	2022/01/10	<MDL 0.003	mg/L	No
Nitrite – TW2	2022/01/10	<MDL 0.003	mg/L	No
Nitrite – TW3	2022/01/10	<MDL 0.003	mg/L	No
Nitrite – TW1	2022/04/04	<MDL 0.003	mg/L	No
Nitrite – TW2	2022/04/04	<MDL 0.003	mg/L	No
Nitrite – TW3	2022/04/04	<MDL 0.003	mg/L	No
Nitrite – TW1	2022/07/04	0.003	mg/L	No
Nitrite – TW2	2022/07/04	<MDL 0.003	mg/L	No
Nitrite – TW3	2022/07/04	<MDL 0.003	mg/L	No
Nitrite – TW1	2022/10/03	<MDL 0.003	mg/L	No
Nitrite – TW2	2022/10/03	<MDL 0.003	mg/L	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Nitrite – TW3	2022/10/25	<MDL 0.003	mg/L	No
Nitrate – TW1	2022/01/10	2.7	mg/L	No
Nitrate – TW2	2022/01/10	1.25	mg/L	No
Nitrate – TW3	2022/01/10	1.03	mg/L	No
Nitrate – TW1	2022/04/04	3.25	mg/L	No
Nitrate – TW2	2022/04/04	1.32	mg/L	No
Nitrate – TW3	2022/04/04	1.04	mg/L	No
Nitrate – TW1	2022/07/04	1.39	mg/L	No
Nitrate – TW2	2022/07/04	1.05	mg/L	No
Nitrate – TW3	2022/07/04	0.795	mg/L	No
Nitrate – TW1	2022/10/03	0.486	mg/L	No
Nitrate – TW2	2022/10/03	0.425	mg/L	No
Nitrate – TW3	2022/10/25	0.33	mg/L	No

Summary of lead testing under Schedule 15.1 during this reporting period
(applicable to the following drinking water systems; large municipal residential systems, small municipal residential systems, and non-municipal year-round residential systems)

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Unit of Measure	Number of Exceedances
Distribution	6	0.29-1.17	ug/L	0

Summary of Organic parameters sampled during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor – TW1	2022/01/10	<MDL 0.02	ug/L	No
Alachlor – TW2	2022/01/10	<MDL 0.02	ug/L	No
Alachlor – TW3	2022/01/10	<MDL 0.02	ug/L	No
Atrazine + N-dealkylated metabolites – TW1	2022/01/10	0.01	ug/L	No
Atrazine + N-dealkylated metabolites – TW2	2022/01/10	<MDL 0.01	ug/L	No
Atrazine + N-dealkylated metabolites – TW3	2022/01/10	<MDL 0.01	ug/L	No
Azinphos-methyl – TW1	2022/01/10	<MDL 0.05	ug/L	No
Azinphos-methyl – TW2	2022/01/10	<MDL 0.05	ug/L	No
Azinphos-methyl – TW3	2022/01/10	<MDL 0.05	ug/L	No
Benzene – TW1	2022/01/10	<MDL 0.32	ug/L	No
Benzene – TW2	2022/01/10	<MDL 0.32	ug/L	No
Benzene – TW3	2022/01/10	<MDL 0.32	ug/L	No
Benzo(a)pyrene – TW1	2022/01/10	<MDL 0.004	ug/L	No
Benzo(a)pyrene – TW2	2022/01/10	<MDL 0.004	ug/L	No
Benzo(a)pyrene – TW3	2022/01/10	<MDL 0.004	ug/L	No
Bromoxynil – TW1	2022/01/10	<MDL 0.33	ug/L	No
Bromoxynil – TW2	2022/01/10	<MDL 0.33	ug/L	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Bromoxynil – TW3	2022/01/10	<MDL 0.33	ug/L	No
Carbaryl – TW1	2022/01/10	<MDL 0.05	ug/L	No
Carbayl – TW2	2022/01/10	<MDL 0.05	ug/L	No
Carbayl – TW3	2022/01/10	<MDL 0.05	ug/L	No
Carbofuran – TW1	2022/01/10	<MDL 0.01	ug/L	No
Carbofuran – TW2	2022/01/10	<MDL 0.01	ug/L	No
Carbofuran – TW3	2022/01/10	<MDL 0.01	ug/L	No
Carbon Tetrachloride – TW1	2022/01/10	<MDL 0.17	ug/L	No
Carbon Tetrachloride – TW2	2022/01/10	<MDL 0.17	ug/L	No
Carbon Tetrachloride – TW3	2022/01/10	<MDL 0.17	ug/L	No
Chlorpyrifos – TW1	2022/01/10	<MDL 0.02	ug/L	No
Chlorpyrifos – TW2	2022/01/10	<MDL 0.02	ug/L	No
Chlorpyrifos – TW3	2022/01/10	<MDL 0.02	ug/L	No
Diazinon – TW1	2022/01/10	<MDL 0.02	ug/L	No
Diazinon – TW2	2022/01/10	<MDL 0.02	ug/L	No
Diazinon – TW3	2022/01/10	<MDL 0.02	ug/L	No
Dicamba – TW1	2022/01/10	<MDL 0.2	ug/L	No
Dicamba – TW2	2022/01/10	<MDL 0.2	ug/L	No
Dicamba – TW3	2022/01/10	<MDL 0.2	ug/L	No
1,2-Dichlorobenzene – TW1	2022/01/10	<MDL 0.41	ug/L	No
1,2-Dichlorobenzene – TW2	2022/01/10	<MDL 0.41	ug/L	No
1,2-Dichlorobenzene – TW3	2022/01/10	<MDL 0.41	ug/L	No
1,4-Dichlorobenzene – TW1	2022/01/10	<MDL 0.36	ug/L	No
1,4-Dichlorobenzene – TW2	2022/01/10	<MDL 0.36	ug/L	No
1,4-Dichlorobenzene – TW3	2022/01/10	<MDL 0.36	ug/L	No
1,2-Dichloroethane – TW1	2022/01/10	<MDL 0.35	ug/L	No
1,2-Dichloroethane – TW2	2022/01/10	<MDL 0.35	ug/L	No
1,2-Dichloroethane – TW3	2022/01/10	<MDL 0.35	ug/L	No
1,1-Dichloroethylene – TW1 (vinylidene chloride)	2022/01/10	<MDL 0.33	ug/L	No
1,1-Dichloroethylene – TW2 (vinylidene chloride)	2022/01/10	<MDL 0.33	ug/L	No
1,1-Dichloroethylene – TW3 (vinylidene chloride)	2022/01/10	<MDL 0.33	ug/L	No
Dichloromethane – TW1	2022/01/10	<MDL 0.35	ug/L	No
Dichloromethane – TW2	2022/01/10	<MDL 0.35	ug/L	No
Dichloromethane – TW3	2022/01/10	<MDL 0.35	ug/L	No
2-4 Dichlorophenol – TW1	2022/01/10	<MDL 0.15	ug/L	No
2-4 Dichlorophenol – TW2	2022/01/10	<MDL 0.15	ug/L	No
2-4 Dichlorophenol – TW3	2022/01/10	<MDL 0.15	ug/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D) – TW1	2022/01/10	<MDL 0.19	ug/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D) – TW2	2022/01/10	<MDL 0.19	ug/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D) – TW3	2022/01/10	<MDL 0.19	ug/L	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Diclofop-methyl – TW1	2022/01/10	<MDL 0.4	ug/L	No
Diclofop-methyl – TW2	2022/01/10	<MDL 0.4	ug/L	No
Diclofop-methyl – TW3	2022/01/10	<MDL 0.4	ug/L	No
Dimethoate – TW1	2022/01/10	<MDL 0.06	ug/L	No
Dimethoate – TW2	2022/01/10	<MDL 0.06	ug/L	No
Dimethoate – TW3	2022/01/10	<MDL 0.06	ug/L	No
Diquat – TW1	2022/01/10	<MDL 1.0	ug/L	No
Diquat – TW2	2022/01/10	<MDL 1.0	ug/L	No
Diquat – TW3	2022/01/10	<MDL 1.0	ug/L	No
Diuron – TW1	2022/01/10	<MDL 0.03	ug/L	No
Diuron – TW2	2022/01/10	<MDL 0.03	ug/L	No
Diuron – TW3	2022/01/10	<MDL 0.03	ug/L	No
Glyphosate – TW1	2022/01/10	<MDL 1.0	ug/L	No
Glyphosate – TW2	2022/01/10	<MDL 1.0	ug/L	No
Glyphosate – TW3	2022/01/10	<MDL 1.0	ug/L	No
HAAs (*Note***:** annual average**)**	2022	7.4	ug/L	No
Malathion – TW1	2022/01/10	<MDL 0.02	ug/L	No
Malathion – TW2	2022/01/10	<MDL 0.02	ug/L	No
Malathion – TW3	2022/01/10	<MDL 0.02	ug/L	No
Metolachlor – TW1	2022/01/10	<MDL 0.01	ug/L	No
Metolachlor – TW2	2022/01/10	<MDL 0.01	ug/L	No
Metolachlor – TW3	2022/01/10	<MDL 0.01	ug/L	No
Metribuzin – TW1	2022/01/10	<MDL 0.02	ug/L	No
Metribuzin – TW2	2022/01/10	<MDL 0.02	ug/L	No
Metribuzin – TW3	2022/01/10	<MDL 0.02	ug/L	No
Monochlorobenzene – TW1	2022/01/10	<MDL 0.3	ug/L	No
Monochlorobenzene – TW2	2022/01/10	<MDL 0.3	ug/L	No
Monochlorobenzene – TW3	2022/01/10	<MDL 0.3	ug/L	No
Paraquat – TW1	2022/01/10	<MDL 1.0	ug/L	No
Paraquat – TW2	2022/01/10	<MDL 1.0	ug/L	No
Paraquat – TW3	2022/01/10	<MDL 1.0	ug/L	No
Pentachlorophenol – TW1	2022/01/10	<MDL 0.15	ug/L	No
Pentachlorophenol – TW2	2022/01/10	<MDL 0.15	ug/L	No
Pentachlorophenol – TW3	2022/01/10	<MDL 0.15	ug/L	No
Phorate – TW1	2022/01/10	<MDL 0.01	ug/L	No
Phorate – TW2	2022/01/10	<MDL 0.01	ug/L	No
Phorate – TW3	2022/01/10	<MDL 0.01	ug/L	No
Picloram – TW1	2022/01/10	<MDL 1.0	ug/L	No
Picloram – TW2	2022/01/10	<MDL 1.0	ug/L	No
Picloram – TW3	2022/01/10	<MDL 1.0	ug/L	No
Polychlorinated Biphenyls(PCB) – TW1	2022/01/10	<MDL 0.04	ug/L	No
Polychlorinated Biphenyls(PCB) – TW2	2022/01/10	<MDL 0.04	ug/L	No
Polychlorinated Biphenyls(PCB) – TW3	2022/01/10	<MDL 0.04	ug/L	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Prometryne – TW1	2022/01/10	<MDL 0.03	ug/L	No
Prometryne – TW2	2022/01/10	<MDL 0.03	ug/L	No
Prometryne – TW3	2022/01/10	<MDL 0.03	ug/L	No
Simazine – TW1	2022/01/10	<MDL 0.01	ug/L	No
Simazine – TW2	2022/01/10	<MDL 0.01	ug/L	No
Simazine – TW3	2022/01/10	<MDL 0.01	ug/L	No
Terbufos – TW1	2022/01/10	<MDL 0.01	ug/L	No
Terbufos – TW2	2022/01/10	<MDL 0.01	ug/L	No
Terbufos – TW3	2022/01/10	<MDL 0.01	ug/L	No
Tetrachloroethylene (perchloroethylene) – TW1	2022/01/10	<MDL 0.35	ug/L	No
Tetrachloroethylene (perchloroethylene) – TW2	2022/01/10	<MDL 0.35	ug/L	No
Tetrachloroethylene (perchloroethylene) – TW3	2022/01/10	<MDL 0.35	ug/L	No
2,3,4,6-Tetrachlorophenol – TW1	2022/01/10	<MDL 0.2	ug/L	No
2,3,4,6-Tetrachlorophenol – TW2	2022/01/10	<MDL 0.2	ug/L	No
2,3,4,6-Tetrachlorophenol – TW3	2022/01/10	<MDL 0.2	ug/L	No
THMs (*Note:* annual average**)**	2022	13.7	ug/L	No
Triallate – TW1	2022/01/10	<MDL 0.01	ug/L	No
Triallate – TW2	2022/01/10	<MDL 0.01	ug/L	No
Triallate – TW3	2022/01/10	<MDL 0.01	ug/L	No
Trichloroethylene – TW1	2022/01/10	<MDL 0.44	ug/L	No
Trichloroethylene – TW2	2022/01/10	<MDL 0.44	ug/L	No
Trichloroethylene – TW3	2022/01/10	<MDL 0.44	ug/L	No
2,4,6-Trichlorophenol – TW1	2022/01/10	<MDL 0.25	ug/L	No
2,4,6-Trichlorophenol – TW2	2022/01/10	<MDL 0.25	ug/L	No
2,4,6-Trichlorophenol – TW3	2022/01/10	<MDL 0.25	ug/L	No
Trifluralin TW 1 – TW1	2022/01/10	<MDL 0.02	ug/L	No
Trifluralin TW 2 – TW2	2022/01/10	<MDL 0.02	ug/L	No
Trifluralin TW 3 – TW3	2022/01/10	<MDL 0.02	ug/L	No
Vinyl Chloride - TW 1	2022/01/10	<MDL 0.17	ug/L	No
Vinyl Chloride – TW 2	2022/01/10	<MDL 0.17	ug/L	No
Vinyl Chloride - TW 3	2022/01/10	<MDL 0.17	ug/L	No

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

Parameter	Result Value	Unit of Measure	Date of Sample
Sodium – TW1	27.2	mg/L	2020/01/09
Sodium – TW2	49.7	mg/L	2020/01/09
Sodium – TW3	44.1	mg/L	2020/01/09