

Warren Large Municipal Residential Drinking Water System Reports Covering April 1, 2022– December 31, 2022

Reg 170/03 Schedule 22 Annual Water Summary Report
Reg 170/03 Section 11 Annual Water Quality Report

Prepared by the City of Greater Sudbury for The Corporation of the Municipality of Markstay-Warren

Table of Contents

Introduction.....	3
System Description.....	3
Table 1 Information to be provided under Section 11 (O.Reg.170/03).....	4
Expenditures.....	4
Table 2 Expenditures at the well.....	5
System Failures and Corrective Actions	5
Table 3 Adverse Water Quality Incidents.....	5
Annual Water Quality Data	6
Table 4 Microbiological Testing.....	6
Table 5 Operational Testing	7
Table 6 Organic and Inorganic Testing.....	7
Water Takings and Well Flows	13
Table 7 Well pump 1 flows	14
Table 8 Well Pump 2 flows	14
Conclusion	15

Introduction

This document is prepared to satisfy Section 11, Schedule 22 of the Ontario Regulation 170/03 (O.Reg 170/03) under the Safe Drinking Water Act. The City of Greater Sudbury (CGS) is the operating authority and therefore is responsible for creating and reporting the document to the owner, The Corporation of the Municipality of Markstay-Warren. As CGS took over operations April 1st, the document will cover from this date to December 31st of 2022.

Section 11 of Schedule 22 of O. Reg 170/03 states that the annual water quality and summary report must contain the following information:

- A description of the drinking water system along with a list of chemicals used by the system.
- A description of any major expenses incurred during the period covered by the report to install, repair, or replace required equipment.
- A summary of all adverse water quality incidents (AWQI) reported to the Ministry along with the list of corrective actions taken in response all AWQIs
- A summary of all test results required under the regulation, under an approval, municipal drinking water licence or order.
- A statement of where the report will be available for inspection.

Schedule 22 of O. Reg 170/03 states that the report must list the requirements of the Act, the regulations, the system's approval, and any order that the system failed to meet at any time during the period covered by the report. The quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows must also be included in the report along with a comparison to the rated capacity and flow rates approved in the systems approvals document.

System Description

The Warren Drinking Water system, 210000755, is within the Large Municipal Residential category under the O. Reg 170/03 descriptor. The Corporation of the Municipality of Markstay-Warren is the owner, and the City of Greater Sudbury is the operator.

The Warren drinking water system consists of:

- two ground water wells
- three treated water pumps
- two hydro pneumatic tanks
- a disinfection system that utilises 12 % sodium hypochlorite (chlorine) and
- analyzers that monitor raw water as well as the treated water free chlorine residuals.

Raw water is pumped through the water treatment system and then through a 100 mm water main into the treated water reservoir, located just outside of the water treatment building. Primary disinfection is provided by injecting chlorine into the raw water at the well pumps discharge header. Secondary disinfection is provided at the treated water discharge header. The treated water reservoir volume is a 560 m³ and is made up of a dual-celled in-ground reinforced concrete structure. The facility is equipped with a diesel power standby generator rated at 230 kW.

The distribution system consists asbestos cement main together with hydrants, valves, services to lot line, stops and service boxes. The distribution system was constructed in 1961.

The drinking water treatment system is monitored 24/7, 365 days a year from the Wanapitei Water Treatment plant via SCADA system.

Table 1 Information to be provided under Section 11 (O.Reg.170/03)

Population Served	<500
Does your Drinking Water System serve more than 10 000 people?	No
Location where Summary Report required under O. Reg. 170/03	Markstay-Warren Municipal Office, 21 Main Street South, Markstay, ON P0M 2G0
Number of Designated Facilities served:	None
Did you provide a copy of your annual report to all Designated Facilities you serve?	NA
Number of Interested Authorities you report to	None
Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility?	NA
List all Drinking-Water Systems (if any), and their DWS Number which receive all their drinking water from your system	NA
Indicate how you notified system users that your annual report is available and free of charge	notice via the web - notice via a Public Library - notice via Government Office
Indicate if you notified system users that your annual report is available and is free of charge using alternate methods	Yes

Expenditures

Emergency lighting for the well site were upgraded, a well pump mechanical seal was replaced, the disinfection system piping and valves were upgraded, and a new chemical feed pump installed. To comply with water analysis and data capturing; the pH probes were replaced, and pressure gauges were replaced. A pilot valve was also rebuilt.

Table 2 Expenditures at the well

Emergency lighting replaced	\$2 200
Pump mechanical seal replaced	\$900
Hypo system upgrades, new pump, tank float, repaired hypo feed board	\$7 000
pH probes replaced	\$1 100
Pressure gauges replaced	\$1 000
Pilot valve rebuilt (emergency work)	\$1 400

System Failures and Corrective Actions

There were two Adverse Water Quality Incidents (AWQI) that were reported to the Ministry of the Environment, Conservation and Parks (MECP) as well as to the Spills Action Center (SAC). On June 4th raw pumps flow demand decreased and the free chlorine secondary disinfection analyser read an analysis of 0.01 mg/L. The distribution free chlorine residual must be over 0.05 mg/L under the Ontario Regulation 170/04. The chlorine feed rate was increased to re-establish the free chlorine residual. To ensure the integrity of the water quality; an operator was dispatched to perform free chlorine analysis within the distribution system. The lowest free chlorine residual within the system was found at the fire station (0.67 mg/L). There were no further actions required.

A second incident pertained to the amount of sodium present in the treated water. It is assumed that the sodium is a direct correlation to the proximity of the highway to the well house. No further actions were needed from this incident report.

Table 3 Adverse Water Quality Incidents

AWQI#	Date	Parameter	Result	Corrective Action
158588	22/06/04	Free Cl ₂	0.01 mg/L	Chlorine was increased at raw inlet, distribution free chlorine residuals analysis completed, dead end sampled, and test was 0.7 mg/L. Analyser issue was suspected
160948	22/12/06	sodium	78.7 mg/L	Continue to monitor as it is in the source water

Annual Water Quality Data

The raw water along with the treated potable water and Distribution water were tested for all parameters set out in the O. Reg 170/03 Schedules. All test results returned were not reportable and within regulatory limits.

Twenty five percent of the samples taken were tested for heterotrophic plate count (HPC). The treated water analyses varied from no presence to a count of 50 cfu/100 ml. The distribution also was tested within the same percentage and the analysis varied from no presence to 10 cfu/100 ml.

One coliform unit was detected within the raw water, but it did not carry on to the treated water due to the disinfection of the raw water.

All organic and inorganic sampling was completed in accordance with the regulation. Analysis demonstrates that none of the samples exceeded the maximum allowable limits (MAC).

Haloacetic acids are disinfection by-products with a provincial maximum allowable limit of 80 ug/L. The haloacetic acids results have varied from quarter to quarter and the end of year running average was 14 ug/L. HAAs are currently showing a downward trend.

Trihalomethanes (THMs) are another disinfection by-product in potable water that has a limit of 100 ug/L under regulatory requirements. As of the fourth quarter the running average was 22.58 ug/L. This parameter is also showing a downward trend.

Lead analysis completed within the distribution system showed very low trace residuals with a laboratory result of 0.1 ug/L. This system is not required to sample residential and commercial establishments for lead as they have been granted a reduced sampling schedule by the MECP.

Alkalinity for the system was on average 311 mg/L with an average pH of 7.5.

Table 4 Microbiological Testing

	Number of Samples	Range of E. Coli Results (min) to (max)	Range of Total Coliform Results (min) to (max)	Number of HPC samples	Range of HPC Results (min) to (max)
Raw Well Pump #1	44	0 to 0	0 to 1	NA	NA
Raw Well Pump #2	44	0 to 0	0 to 0	NA	NA
Treated Water	44	0 to 0	0 to 0	44	0 to 50
Distribution	129	0 to 0	0 to 0	42	0 to 10

Table 5 Operational Testing

	Number of Grab Samples	Range of Results (min) to (max)
Free Chlorine Residual Well Discharge mg/L	8760 (continuous analyzer)	3.88 to 0.01
Free Chlorine Residual Distribution mg/L	129	0.50 to 1.67

Table 6 Organic and Inorganic Testing

Parameter	Result	Units	MDL	MAC	Exceedance
1,1,1,2-Tetrachloroethane	<0.3	ug/L	0.3		No
1,1,1,2-Tetrachloroethane	<0.3	ug/L	0.3		No
1,1,1-Trichloroethane	<0.2	ug/L	0.2		No
1,1,1-Trichloroethane	<0.2	ug/L	0.2		No
1,1,2,2-Tetrachloroethane	<0.3	ug/L	0.3		No
1,1,2,2-Tetrachloroethane	<0.3	ug/L	0.3		No
1,1,2-Trichloroethane	<0.3	ug/L	0.3		No
1,1,2-Trichloroethane	<0.3	ug/L	0.3		No
1,1-Dichloroethane	<0.3	ug/L	0.3		No
1,1-Dichloroethane	<0.3	ug/L	0.3		No
1,1-Dichloroethylene	<0.3	ug/L	0.3	14	No
1,1-Dichloroethylene	<0.3	ug/L	0.3	14	No
1,1-Dichloroethylene	<0.3	ug/L	0.3	14	No
1,2,4-Trichlorobenzene	<0.4	ug/L	0.4		No
1,2,4-Trichlorobenzene	<0.4	ug/L	0.4		No
1,2-Dibromo-3-chloropropane	<0.2	ug/L	0.2		No
1,2-Dibromo-3-chloropropane	<0.2	ug/L	0.2		No
1,2-Dibromoethane	<0.2	ug/L	0.2		No
1,2-Dibromoethane	<0.2	ug/L	0.2		No
1,2-Dichlorobenzene	<0.2	ug/L	0.2	200	No
1,2-Dichlorobenzene	<0.2	ug/L	0.2	200	No
1,2-Dichlorobenzene	<0.2	ug/L	0.2	200	No
1,2-Dichloroethane	<0.2	ug/L	0.2	5	No
1,2-Dichloroethane	<0.2	ug/L	0.2	5	No
1,2-Dichloroethane	<0.2	ug/L	0.2	5	No
1,2-Dichloropropane	<0.3	ug/L	0.3		No
1,2-Dichloropropane	<0.3	ug/L	0.3		No

Parameter	Result	Units	MDL	MAC	Exceedance
1,3-Dichlorobenzene	<0.3	ug/L	0.3		No
1,3-Dichlorobenzene	<0.3	ug/L	0.3		No
1,3-Dichloropropane	<0.2	ug/L	0.2		No
1,3-Dichloropropane	<0.2	ug/L	0.2		No
1,4-Dichlorobenzene	<0.3	ug/L	0.3	5	No
1,4-Dichlorobenzene	<0.3	ug/L	0.3	5	No
1,4-Dichlorobenzene	<0.3	ug/L	0.3	5	No
2,3,4,6-Tetrachlorophenol	<0.3	ug/L	0.3	100	No
2,4,6-Trichlorophenol	<0.2	ug/L	0.2	5	No
2,4-D	<0.344	ug/L	0.344	100	No
2,4-Dichlorophenol	<0.2	ug/L	0.2	900	No
Acetone	<30	ug/L	30		No
Acetone	<30	ug/L	30		No
Alachlor	<0.23	ug/L	0.23	5	No
Antimony	<0.5	ug/L	0.5	6	No
Arsenic	1	ug/L	1	10	No
Atrazine	<0.23	ug/L	0.23		No
Atrazine + N-dealkylated metabolites	<0.5	ug/L	0.5	5	No
Azinphos-methyl (Guthion)	<0.173	ug/L	0.173	20	No
Barium	116	ug/L	1	1000	No
Benzene	<0.2	ug/L	0.2	1	No
Benzene	<0.2	ug/L	0.2	1	No
Benzene	<0.1	ug/L	0.1	1	No
Benzene	<0.1	ug/L	0.1	1	No
Benzene	<0.1	ug/L	0.1	1	No
Benzo(a)pyrene	<0.01	ug/L	0.01	0.01	No
Boron	11	ug/L	2	5000	No
Bromoacetic acid	<3	ug/L	3		No
Bromoacetic acid	<3	ug/L	3		No
Bromoacetic acid	<3	ug/L	3		No
Bromoacetic acid	<3	ug/L	3		No
Bromobenzene	<0.3	ug/L	0.3		No
Bromobenzene	<0.3	ug/L	0.3		No
Bromochloroacetic Acid	<3	ug/L	3		No
Bromochloroacetic Acid	10	ug/L	3		No
Bromochloroacetic Acid	6	ug/L	3		No
Bromochloroacetic Acid	<3	ug/L	3		No
Bromochloromethane	<0.3	ug/L	0.3		No

Parameter	Result	Units	MDL	MAC	Exceedance
Bromochloromethane	<0.3	ug/L	0.3		No
Bromodichloromethane	5.9	ug/L	0.3		No
Bromodichloromethane	<0.2	ug/L	0.2		No
Bromodichloromethane	<0.2	ug/L	0.2		No
Bromodichloromethane	8.7	ug/L	0.3		No
Bromodichloromethane	5.7	ug/L	0.3		No
Bromodichloromethane	6.2	ug/L	0.3		No
Bromoform	0.9	ug/L	0.3		No
Bromoform	<0.3	ug/L	0.3		No
Bromoform	<0.3	ug/L	0.3		No
Bromoform	2.6	ug/L	0.3		No
Bromoform	2	ug/L	0.3		No
Bromoform	3.1	ug/L	0.3		No
Bromomethane	<0.4	ug/L	0.4		No
Bromomethane	<0.4	ug/L	0.4		No
Bromoxynil	<0.0918	ug/L	0.0918	5	No
Cadmium	<0.1	ug/L	0.1	5	No
Carbaryl	<2	ug/L	2	90	No
Carbofuran	<4	ug/L	4	90	No
Carbon tetrachloride	<0.2	ug/L	0.2	2	No
Carbon tetrachloride	<0.2	ug/L	0.2	2	No
Carbon tetrachloride	<0.2	ug/L	0.2	2	No
Chloroacetic acid	<4	ug/L	4		No
Chloroacetic acid	<4	ug/L	4		No
Chloroacetic acid	<4	ug/L	4		No
Chloroacetic acid	<4	ug/L	4		No
Chlorobenzene	<0.5	ug/L	0.5	80	No
Chlorobenzene	<0.5	ug/L	0.5	80	No
Chlorobenzene	<0.5	ug/L	0.5	80	No
Chloroethane	<0.3	ug/L	0.3		No
Chloroethane	<0.3	ug/L	0.3		No
Chloroform	3.6	ug/L	0.3		No
Chloroform	<0.3	ug/L	0.3		No
Chloroform	<0.3	ug/L	0.3		No
Chloroform	9.5	ug/L	0.3		No
Chloroform	3.2	ug/L	0.3		No
Chloroform	2.5	ug/L	0.3		No
Chloromethane	<0.3	ug/L	0.3		No

Parameter	Result	Units	MDL	MAC	Exceedance
Chloromethane	<0.3	ug/L	0.3		No
Chlorpyriphos (Dursban)	<0.173	ug/L	0.173	90	No
Chromium	5	ug/L	1	50	No
cis-1,2-Dichloroethylene	<0.3	ug/L	0.3		No
cis-1,2-Dichloroethylene	<0.3	ug/L	0.3		No
cis-1,3-Dichloropropene	<0.3	ug/L	0.3		No
cis-1,3-Dichloropropene	<0.3	ug/L	0.3		No
Desethyl atrazine	<0.288	ug/L	0.288		No
Diazinon	<0.173	ug/L	0.173	20	No
Dibromoacetic acid	<3	ug/L	3		No
Dibromoacetic acid	10	ug/L	3		No
Dibromoacetic acid	7	ug/L	3		No
Dibromoacetic acid	4	ug/L	3		No
Dibromochloromethane	5.1	ug/L	0.3		No
Dibromochloromethane	<0.3	ug/L	0.3		No
Dibromochloromethane	<0.3	ug/L	0.3		No
Dibromochloromethane	13.6	ug/L	0.3		No
Dibromochloromethane	7.5	ug/L	0.3		No
Dibromochloromethane	10.2	ug/L	0.3		No
Dibromomethane	<0.2	ug/L	0.2		No
Dibromomethane	<0.2	ug/L	0.2		No
Dicamba	<0.0803	ug/L	0.0803	120	No
Dichloroacetic acid	3	ug/L	3		No
Dichloroacetic acid	11	ug/L	3		No
Dichloroacetic acid	4	ug/L	3		No
Dichloroacetic acid	<3	ug/L	3		No
Dichlorodifluoromethane	<0.2	ug/L	0.2		No
Dichlorodifluoromethane	<0.2	ug/L	0.2		No
Dichloromethane	<1	ug/L	1	50	No
Dichloromethane	<1	ug/L	1	50	No
Dichloromethane	<1	ug/L	1	50	No
Diclofop-methyl	<0.115	ug/L	0.115	9	No
Dimethoate	<0.173	ug/L	0.173	20	No
Diquat	<0.2	ug/L	0.2	70	No
Diuron	<10	ug/L	10	150	No
Ethylbenzene	<0.09	ug/L	0.09	140	No
Ethylbenzene	<0.09	ug/L	0.09	140	No
Ethylbenzene	<0.2	ug/L	0.2	140	No

Parameter	Result	Units	MDL	MAC	Exceedance
Ethylbenzene	<0.2	ug/L	0.2	140	No
Fluoride	<0.05	mg/L	0.05	1.5	No
Fluoride	0.09	mg/L	0.05	1.5	No
Glyphosate	<20	ug/L	20	280	No
Haloacetic acids (Total)	<8	ug/L	8	80	No
Haloacetic acids (Total)	24	ug/L	8	80	No
Haloacetic acids (Total)	11	ug/L	8	80	No
Haloacetic acids (Total)	<8	ug/L	8	80	No
Lead	0.1	ug/L	0.1	10	No
m+p-Xylene	<0.4	ug/L	0.4		No
m+p-Xylene	<0.4	ug/L	0.4		No
m+p-Xylene	<0.8	ug/L	0.8		No
m+p-Xylene	<0.8	ug/L	0.8		No
Malathion	<0.173	ug/L	0.173	190	No
M-Alkalinity (pH 4.5)	309	mg/L as CaCO ₃	2		No
M-Alkalinity (pH 4.5)	306	mg/L as CaCO ₃	2		No
M-Alkalinity (pH 4.5)	311	mg/L as CaCO ₃	2		No
M-Alkalinity (pH 4.5)	311	mg/L as CaCO ₃	2		No
M-Alkalinity (pH 4.5)	317	mg/L as CaCO ₃	2		No
MCPA	<5.73	ug/L	5.73	100	No
Mercury	<0.1	ug/L	0.1	1	No
Methyl ethyl ketone	<5	ug/L	5		No
Methyl ethyl ketone	<5	ug/L	5		No
Methyl isobutyl ketone (MIBK)	<5	ug/L	5		No
Methyl isobutyl ketone (MIBK)	<5	ug/L	5		No
Methyl tert-butyl ether (MTBE)	<1	ug/L	1		No
Methyl tert-butyl ether (MTBE)	<1	ug/L	1		No
Methyl tert-butyl ether (MTBE)	<1	ug/L	1		No
Methyl tert-butyl ether (MTBE)	<1	ug/L	1		No
Metolachlor	<0.115	ug/L	0.115	50	No
Metribuzin (Sencor)	<0.115	ug/L	0.115	80	No
n-Hexane	<0.5	ug/L	0.5		No
n-Hexane	<0.5	ug/L	0.5		No
Nitrate (as N)	3.82	mg/L	0.05	10	No

Parameter	Result	Units	MDL	MAC	Exceedance
Nitrate (as N)	4.44	mg/L	0.05	10	No
Nitrate (as N)	4.08	mg/L	0.05	10	No
Nitrate (as N)	<0.05	mg/L	0.05	10	No
Nitrite (as N)	<0.05	mg/L	0.05	1	No
Nitrite (as N)	<0.05	mg/L	0.05	1	No
Nitrite (as N)	<0.05	mg/L	0.05	1	No
Nitrite (as N)	<0.05	mg/L	0.05	1	No
o-Xylene	<0.4	ug/L	0.4		No
o-Xylene	<0.4	ug/L	0.4		No
o-Xylene	<0.4	ug/L	0.4		No
o-Xylene	<0.4	ug/L	0.4		No
Paraquat	<0.2	ug/L	0.2	10	No
Pentachlorophenol	<0.3	ug/L	0.3	60	No
Phorate	<0.115	ug/L	0.115	2	No
Picloram	<0.0803	ug/L	0.0803	190	No
Prometryne	<0.0576	ug/L	0.0576	1	No
Selenium	2.2	ug/L	0.2	50	No
Simazine	<0.173	ug/L	0.173	10	No
Sodium	78700	ug/L	1000	20000	No
Styrene	<0.3	ug/L	0.3		No
Styrene	<0.3	ug/L	0.3		No
Terbufos	<0.115	ug/L	0.115	1	No
Tetrachloroethylene	<0.3	ug/L	0.3	10	No
Tetrachloroethylene	<0.3	ug/L	0.3	10	No
Tetrachloroethylene	<0.3	ug/L	0.3	10	No
Toluene	<0.5	ug/L	0.5	60	No
Toluene	<0.5	ug/L	0.5	60	No
Toluene	<0.3	ug/L	0.3	60	No
Toluene	<0.3	ug/L	0.3	60	No
Total Hardness (as CaCO3)	398	mg/L	0.1		No
Total Hardness (as CaCO3)	420	mg/L	0.1		No
Total Hardness (as CaCO3)	442	mg/L	0.1		No
Total Hardness (as CaCO3)	413	mg/L	0.1		No
Total Hardness (as CaCO3)	391	mg/L	0.1		No
Total Hardness (as CaCO3)	397	mg/L	0.1		No
Total Hardness (as CaCO3)	429	mg/L	0.1		No
Total Hardness (as CaCO3)	434	mg/L	0.1		No
Total Hardness (as CaCO3)	439	mg/L	0.1		No

Parameter	Result	Units	MDL	MAC	Exceedance
Total Hardness (as CaCO ₃)	424	mg/L	0.1		No
Total Hardness (as CaCO ₃)	421	mg/L	0.1		No
Total Hardness (as CaCO ₃)	435	mg/L	0.1		No
Total PCBs	<0.06	ug/L	0.06	3	No
Total THMs	15.6	ug/L	0.5	100	No
Total THMs	34.3	ug/L	0.5	100	No
Total THMs	18.4	ug/L	0.5	100	No
Total THMs	22	ug/L	0.5	100	No
Total Xylenes	<0.4	ug/L	0.4	90	No
Total Xylenes	<0.4	ug/L	0.4	90	No
Total Xylenes	<0.4	ug/L	0.4	90	No
Total Xylenes	<0.4	ug/L	0.4	90	No
Trans-1,2-dichloroethylene	<0.4	ug/L	0.4		No
Trans-1,2-dichloroethylene	<0.4	ug/L	0.4		No
Trans-1,3-dichloropropene	<0.3	ug/L	0.3		No
Trans-1,3-dichloropropene	<0.3	ug/L	0.3		No
Triallate	<0.115	ug/L	0.115	230	No
Trichloroacetic acid	<3	ug/L	3		No
Trichloroacetic acid	3	ug/L	3		No
Trichloroacetic acid	<3	ug/L	3		No
Trichloroacetic acid	<3	ug/L	3		No
Trichloroethylene	<0.2	ug/L	0.2	5	No
Trichloroethylene	<0.2	ug/L	0.2	5	No
Trichloroethylene	<0.2	ug/L	0.2	5	No
Trichlorofluoromethane	<0.4	ug/L	0.4		No
Trichlorofluoromethane	<0.4	ug/L	0.4		No
Trifluralin	<0.115	ug/L	0.115	45	No
Uranium	2	ug/L	1	20	No
Vinyl chloride	<0.1	ug/L	0.1	1	No
Vinyl chloride	<0.1	ug/L	0.1	1	No
Vinyl chloride	<0.1	ug/L	0.1	1	No

Water Takings and Well Flows

Warren wells are operated as pump one being the duty pump and therefore the main producing well. Well pump two being the standby production well was the lower producer. From April 1st to

December 31st of 2022 well pump one produced 34 098 m³ of water while well pump two produced 2 522 m³. The municipal drinking water licence stipulates the maximum amount of water that can be taken from each well pumps and in 2022 well 1 used approximately 14.4% of its capacity and well 2 used approximately 1.4 % of its capacity.

Table 7 Well pump 1 flows

	Total Flow m ³	Average Daily Flow m ³ /d	Maximum Daily Flow m ³ /d	Instantaneous Peak Flow L/s	MDWL Daily Maximum Permitted m ³ /d	MDWL Annual Permitted m ³	% Used Capacity
January							
February							
March							
April	7,705	257	763	8.83	864	315,360	29.7
May	3,646	118	776	8.98	864	315,360	13.6
June	3,929	131	770	8.91	864	315,360	15.2
July	3,224	104	774	8.95	864	315,360	12.0
August	3,545	114	810	9.38	864	315,360	13.2
September	2,405	80	796	9.21	864	315,360	9.3
October	2,944	95	820	9.49	864	315,360	11.0
November	3,449	115	875	10.13	864	315,360	13.3
December	3,251	105	902	10.44	864	315,360	12.1
Total	34,098				864	237,600	AVE 14.4

Table 8 Well Pump 2 flows

	Total Flow m ³	Average Daily Flow m ³ /d	Maximum Daily Flow m ³ /d	Instantaneous Peak Flow L/s	MDWL Daily Maximum Permitted m ³ /d	MDWL Annual Permitted m ³	% Used Capacity
January							
February							
March							
April	43.19	1.44	765	8.86	648	236,520	0.2
May	31.33	1.01	765	8.85	648	236,520	0.2
June	91.69	3.06	767	8.88	648	236,520	0.5
July	695.55	22.44	777	8.99	648	236,520	3.5
August	354.78	11.44	807	9.34	648	236,520	1.8
September	414.53	13.82	872	10.09	648	236,520	2.1
October	418.90	13.51	874	10.12	648	236,520	2.1
November	23.62	0.79	876	10.14	648	236,520	0.1
December	448.17	14.46	809	9.36	648	236,520	2.2
Total	2,522				648	178,200	Ave 1.4

Conclusion

CGS has operated the system from April 1st 2022 to December 2022 within all regulatory requirements. As demonstrated within this report the town of Warren has provided its residents with safe drinking water with no risk of ill health effects to the public. Water takings from the aquifer was minimal to the amount allotted by MECP. Warren currently has a healthy raw water capacity to produce drinking water for future growth.