CLEARVIEW TOWNSHIP

Colling-Woodlands 2023 Drinking Water Compliance Report

Period Covering: January 1 to December 31, 2023

Annual and Municipal Summary Reports

(Prepared in accordance with Section 11 and Schedule 22 of Ontario Regulation 170/03)

TABLE OF CONTENTS

INTRODUCTION

This report has been prepared by the Township of Clearview to satisfy the requirements of Section 11: Annual Report and Schedule 22: Summary Reports for Municipalities of Ontario Regulation 170/03 (O. Reg 170/03).

The report covers the period from January 1 to December 31, 2023, for the following municipally owned and operated drinking water system:

- Colling-Woodlands Drinking Water System

Drinking Water System Information

Drinking Water System Number:	260005398
Drinking Water System Category:	Small Municipal Residential
Drinking Water System Classification:	Water Supply and Distribution Class 1
Municipal Drinking Water Licence Number:	099-103, Issued June 25, 2020
Drinking Water Works Permit Number:	099-203, Issued June 25, 2020
Permit to Take Water:	P-300-9070634079, Issued July 15, 2020

Report Content

Under Section 11 of O. Reg 170/03, the Owner of a drinking water system is required to prepare an annual report covering the period of January 1 to December 31 by February 28th of the following year. The annual report must contain the following information:

- A brief description of the drinking water system, including a list of water treatment chemicals used.
- A summary of any reports made to the Ministry of Environment, Conservation and Parks (MECP) pertaining to Adverse Water Quality Incidents (AWQI).
- A summary of test results required under O. Reg. 170/03, or by an approval, the municipal drinking water licence or an order, including an Ontario Water Resources Act order, if tests were not required during this period, a summary of the most recent test results.
- A description of corrective actions taken in accordance with Schedule 17 or 18 of O. Reg. 170/03.
- A description of any major expenses incurred to install, repair or replaced required equipment.
- A statement of where a report prepared under Schedule 22 will be available for inspection by the public, without charge.

Schedule 22 of O. Reg 170/03 requires that an Annual Summary Report for Municipalities be provided to Council by March 31st each year. The report summarizes at a high level, the regulatory activity of the drinking water system for the preceding year. It must contain the following information:

- List of requirements of the Act, 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 and specify the duration of the failure and describe the measures taken to correct the failure.
- A summary of quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows.
- A comparison of the summary of quantities and flow rates to the rated capacity and flow rates approved in the system's approval, drinking water works permit or municipal drinking water licence.

Report Format

This report provides details on measures taken by staff to ensure compliance with Terms and Conditions of the control documents, Act, Regulations, or any orders the system may have been under during the reporting period.

Rated capacities and flows approved in the system's certificates are summarized. There are discrepancies between the capacities allowed in some control documents. Exceeding the Drinking Water Licence or Permit to Take Water flow rates can be considered a contravention of legislation. For this reason, we strive to keep the flow rates below the lower of the control document limits.

A summary of quantities and flow rates including monthly averages and maximum daily flows are included. This flow comparison is to allow for a basic overview of the system's performance and allows for review and planning of possible future expansions if required. The actual pumping capacity has been used to calculate the percentage of overall capacity because in some cases actual capacity has decreased over time and is not represented realistically by the system control documents.

Report Availability

In accordance with Section 11 of O. Reg. 170/03, a copy of the report is available to the public, free of charge, at the following locations:

- Township of Clearview's website www.clearview.ca

- By request at the Township Administration Building, located at 217 Gideon St., Stayner.
- By request at the Township Public Works Building, located at 5833 County Road 96, Stayner.

The public is advised of the report's availability, without charge, and how a copy may be obtained via local newspaper ads, the Township of Clearview's website and social media feeds by February 28th.

QUALITY MANAGEMENT SYSTEM

Quality Management System Policy

Township of Clearview Water Department

Quality Management System Policy Statement

It is Clearview Township's aim to ensure safe drinking water to the end user within all Township - operated water systems. Through this policy the Township commits to follow all applicable legislation & regulations that are associated with the safety and the delivery of Drinking Water. Through maintenance and continual improvement to the Quality Management System the Township is identifying, measuring, controlling and improving the various core water works processes that will ultimately lead to improved water works performance.

Quality Management System Summary

Clearview's Quality Management System (QMS) is legislated under the Drinking Water Quality Management Standard (DWQMS) through the Safe Drinking Water Act. It utilizes a set of coordinated activities to direct and control the department to continually improve the effectiveness of its performance.

The annual Management Review meeting was held to evaluate the continuing suitability, adequacy, and effectiveness of the QMS. The meeting occurred on March 24, 2023, and a subsequent report to council was prepared and submitted for information.

Internal audits were conducted by trained waterworks employees to ensure that the QMS conforms to the requirements of the Township's Operational Plan and the DWQMS. These requirements include ensuring that the QMS has been effectively implemented and properly maintained. The 2023 audit was conducted between February 21st and March 10th, 2023. Two Opportunities for Improvement (OFI) were noted in the report.

Since 2012, Intertek - SAI Global has been retained to provide external auditing services of the DWQMS for Clearview. In 2023, Clearview was due for a re-accreditation audit. The systems audit portion was completed on April 3, 2023, with one OFI being noted in the 10-page report. From May 1st to May 3rd, the auditor conducted an on-site verification audit for the six drinking water systems. Upon completion, a 14-page report was received on May 3, 2023, with five OFIs identified. The purpose of this audit was to determine whether the drinking water QMS conforms to the requirements of the DWQMS Version 2, that it has been effectively implemented and maintained, and that accreditation can continue to be offered to the Township as the operating authority for the drinking water systems. The result was that The Corporation of the Township of Clearview's QMS is considered effectively implemented and meets all the requirements of the standard relative to the scope of certification and it was recommended that certification as an operating authority be continued. An updated Certificate of Registration for conforming with the requirements of Drinking Water Quality Management Standard Version 2 – 2017 was issued to the Township on November 3, 2023.

The Safe Drinking Water Act and regulations call for water works owners to continually monitor water works performance, and review levels of treatment versus current standards. The public expects that responsible owners will be diligent in their duty to care for public water supplies.

Section 19 of the Safe Drinking Water Act (Standard of Care) became effective December 31, 2012. After election of a new Council, members are invited to attend a facilitated training session to understand their responsibilities under the Act. This was conducted at a Special Council Meeting on March 16, 2023, with the Walkerton Clean Water Centre presenting their Responsibilities Under the Statutory Standard of Care – Safe Drinking Water Act course.

The Township is well organized to manage the water works system. Further, staff have been pro-active to ensure all necessary measures are taken to achieve compliance with Regulations and various control documents.

COLLING-WOODLANDS DRINKING WATER SYSTEM

System Description

The Colling-Woodlands Drinking Water System is located at 18 Woodview Drive in the northwest corner of the Township. The facility is owned and operated by the Corporation of the Township of Clearview in accordance with the licence and permits issued by the Ontario Ministry of Environment, Conservation and Parks (MECP) and all other applicable legislation.

Source water for the Colling-Woodlands drinking water system is provided from five groundwater wells. Water is drawn from the wells and transported to the pumphouse where it is treated with sodium hypochlorite for primary and secondary disinfection. Sodium silicate is also added to the water for iron sequestering. It is then stored in an approx. 100 m^3 two-celled underground concrete water storage reservoir. Three high lift pumps provide the distribution system with water from the reservoir, based on system demand. The distribution system is comprised of approx. 2.5 km of various sized watermain, with 8 fire hydrants for flushing purposes. This system does not support fire protection. The system has been fully built out with 83 active service connections translating to an approx. population of 210 people.

A computerized Supervisory Control and Data Acquisition (SCADA) system is used to continuously monitor the drinking water system and alert a certified operator should it detect a potential problem. A 35 kW standby generator provides backup power to the pumphouse and treatment equipment in the event of a power failure.

Water Treatment Chemicals

Chemicals used for drinking water treatment include:

- 12% Sodium Hypochlorite
- Sodium Silicate

Major Expenses Incurred within the Drinking Water System

- Well cleaning and inspection (all 5 wells) - $23,000
- Well # 4 pump replacement - $2,700
- Raw water meter replacement - $4,150

OPERATIONAL CHECKS, SAMPLING AND TESTING

All operational checks and sampling were conducted at the required frequency and locations as per Schedule 6 of O. Reg. 170/03 during the reporting period. All samples were collected by certified operators and analysis performed by accredited laboratories. No additional testing and sampling were necessary due to any requirements of an approval, order, or other legal instrument.

Operational Checks

Operational checks including, treated water and distribution water free chlorine residuals, as well as source water raw turbidity are required under Schedule 7 of O. Reg. 170/03. Raw water turbidity samples are collected and analyzed monthly from each production well. The free chlorine residual in the treated water leaving the pumphouse is continuously monitored by an online analyzer connected to the SCADA system for data logging and alarming. Grab samples from various locations in the distribution system are collected twice a week and analyzed for free chlorine. Table 1 below summarizes the results for the reporting period.

Table 1: Schedule 7 Operational Checks Summary

Parameter	Number of Samples	Min.	Max.	Unit
Raw Turbidity – Well # 1	12	0.15	1.52	NTU
Raw Turbidity – Well # 2	12	0.29	1.69	NTU
Raw Turbidity – Well # 3	12	0.23	1.88	NTU
Raw Turbidity – Well # 4	12	0.45	2.60	NTU
Raw Turbidity – Well # 5	12	0.31	1.45	NTU
Treated Water Free Chlorine	8760*	0.54	5.00	mg/L
Distribution Water Free Chlorine	104	0.55	1.53	mg/L

*8760 is the number used for continuous monitoring equipment.

Microbiological Testing

Microbiological testing of raw source water and distribution water samples is required by Schedule 11 of O. Reg. 170/03 for small municipal residential drinking water systems. Raw water samples from each production well are collected monthly, while distribution samples are collected on a weekly basis. Laboratory results for all samples analyzed for E. coli, Total Coliforms, Background and Heterotrophic Plate Count (HPC) met the requirements and did not exceed the applicable standards set out in O. Reg. 169/03. On rare occasions, untreated raw water samples indicated the presence of bacteria. Table 2 below summarizes the microbiological and bacteriological sample results for the reporting period.

Table 2: Schedule 11 Microbiological Testing Results

Sample Type / Source	Number of Samples	E.coli CFU/100 mL		Total Coliform CFU/100 mL		Number of HPC Samples	HPC CFU/100 mL	
		Min.	Max.	Min.	Max.		Min.	Max.
Raw – Well # 1	15	0	0	0	23	NR	-	-
Raw – Well # 2	13	0	NDOGT	0	NDOGT	NR	-	-
Raw – Well # 3	13	0	0	0	4	NR	-	-
Raw – Well # 4	16	0	0	0	169	NR	-	-
Raw – Well # 5	12	0	0	0	0	NR	-	-
Distribution	55	0	0	0	4	52	< 10	110

NDOGT – No Data Overgrown Target

Chemical Testing

Testing performed under Schedule 13 of O. Reg. 170/03. The tables 4 through 8 below summarize the sample results for the reporting period or provide the most recent results if samples were not required to be collected during the reporting period. All sampling is of treated drinking water leaving the pumphouse, except for THM and HAA samples that are collected from the distribution system.

Table 3: Chemical Sampling Frequency

Parameter	Required Sampling Frequency
THMs	Every Calendar Quarter, calculated as running annual average
HAAs	Every Calendar Quarter, calculated as running annual average
Nitrite & Nitrate	Every 3 months
Sodium	Every 60 months
Fluoride	Every 60 months
Schedule 23 – Inorganics	Every 60 months
Schedule 24 - Organics	Every 60 months

ODWS MAC – Ontario Drinking Water Standard Maximum Allowable Concentration. Where two numbers are listed in this column the first is the aesthetic objective and the second is the maximum allowable under O. Reg. 169/03.

Table 4: Trihalomethanes (THMs) and Haloacetic Acids (HAAs)

Parameter	Running Annual Average	ODWS MAC	Unit	Exceedance
THMs	13.0	100	ug/L	No

HAAs	< 5.3	80	ug/L	No

Table 5: Nitrite and Nitrate

Parameter	Date Sampled	Result	ODWS MAC	Unit	Exceedance
Nitrite	17 Jan 2023	0.07	1	mg/L	No
	17 Apr 2023	< 0.05	1	mg/L	No
	19 Jul 2023	0.06	1	mg/L	No
	23 Oct 2023	< 0.05	1	mg/L	No
Nitrate	17 Jan 2023	< 0.05	10	mg/L	No
	17 Apr 2023	< 0.05	10	mg/L	No
	19 Jul 2023	< 0.05	10	mg/L	No
	23 Oct 2023	< 0.05	10	mg/L	No

Table 6: Sodium and Fluoride

Parameter	Date Sampled	Result	ODWS MAC	Unit	Exceedance
Sodium	1 Sept 2023	28.7	20, 200	mg/L	Yes
Fluoride	18 Jul 2022	<0.1	1.5	mg/L	No

Table 7: Schedule 23 - Inorganics

Parameter	Date Sampled	Result	ODWS MAC	Unit	Exceedance
Antimony	8 Oct 2019	< 0.0001	0.006	mg/L	No
Arsenic	8 Oct 2019	0.0001	0.01	mg/L	No
Barium	8 Oct 2019	0.327	1	mg/L	No
Boron	8 Oct 2019	0.078	5	mg/L	No
Cadmium	8 Oct 2019	< 0.000015	0.005	mg/L	No
Chromium	8 Oct 2019	< 0.002	0.05	mg/L	No
Mercury	8 Oct 2019	< 0.00002	0.001	mg/L	No
Selenium	8 Oct 2019	< 0.001	0.05	mg/L	No
Uranium	8 Oct 2019	< 0.00005	0.02	mg/L	No

Table 8: Schedule 24 – Organics

Parameter	Date Sampled	Result	ODWS MAC	Unit	Exceedance
Alachlor	15 Mar 2021	< 0.3	5	ug/L	No
Atrazine + N-dealkylated metabolites	15 Mar 2021	< 0.5	5	ug/L	No

Azinphos-methyl	15 Mar 2021	< 1	20	ug/L	No
Benzene	15 Mar 2021	< 0.5	1	ug/L	No
Benzo(a)pyrene	15 Mar 2021	< 0.006	0.01	ug/L	No
Bromoxynil	15 Mar 2021	< 0.5	5	ug/L	No
Carbaryl	15 Mar 2021	< 3	90	ug/L	No
Carbofuran	15 Mar 2021	< 1	90	ug/L	No
Carbon Tetrachloride	15 Mar 2021	< 0.2	2	ug/L	No
Chlorpyrifos	15 Mar 2021	< 0.5	90	ug/L	No
Diazinon	15 Mar 2021	< 1	20	ug/L	No
Dicamba	15 Mar 2021	< 10	120	ug/L	No
Dichlorobenzene, 1,2-	15 Mar 2021	< 0.5	3, 200	ug/L	No
Dichlorobenzene, 1,4-	15 Mar 2021	< 0.5	1, 5	ug/L	No
Dichloroethylene, 1,1-	15 Mar 2021	< 0.5	14	ug/L	No
Dichloroethane, 1,2-	15 Mar 2021	< 0.5	5	ug/L	No
Dichloromethane (Methylene Chloride)	15 Mar 2021	< 5	50	ug/L	No
Dichlorophenol, 2,4-	15 Mar 2021	< 0.2	0.3, 900	ug/L	No
Dichlorophenoxy acetic acid, 2,4- (2,4-D)	15 Mar 2021	< 10	100	ug/L	No
Diclofop-methyl	15 Mar 2021	< 0.9	9	ug/L	No
Dimethoate	15 Mar 2021	< 1	20	ug/L	No
Diquat	15 Mar 2021	< 5	70	ug/L	No
Diuron	15 Mar 2021	< 5	150	ug/L	No
Glyphosate	15 Mar 2021	< 25	280	ug/L	No
Malathion	15 Mar 2021	< 5	190	ug/L	No
MCPA	15 Mar 2021	< 10	100	ug/L	No
Metolachlor	15 Mar 2021	< 3	50	ug/L	No
Metribuzin	15 Mar 2021	< 3	80	ug/L	No
Monochlorbenzene (Chlorobenzene)	15 Mar 2021	< 0.5	80	ug/L	No
Paraquat	15 Mar 2021	< 1	10	ug/L	No
Pentachlorophenol	15 Mar 2021	< 0.2	30, 60	ug/L	No
Phorate	15 Mar 2021	< 0.3	2	ug/L	No
Picloram	15 Mar 2021	< 15	190	ug/L	No
Poly-Chlorinated Biphenyls (PCB's)	15 Mar 2021	< 0.05	3	ug/L	No
Prometryne	15 Mar 2021	< 0.1	1	ug/L	No
Simazine	15 Mar 2021	< 0.5	10	ug/L	No
Terbufos	15 Mar 2021	< 0.5	1	ug/L	No
Tetrachloroethylene	15 Mar 2021	< 0.5	10	ug/L	No
Tetrachlorophenol, 2,3,4,6-	15 Mar 2021	< 0.2	1, 100	ug/L	No
Triallate	15 Mar 2021	< 10	230	ug/L	No

Trichloroethylene	15 Mar 2021	< 0.5	5	ug/L	No
Trichlorophenol 2,4,6-	15 Mar 2021	< 0.2	2, 5	ug/L	No
Trifluralin	15 Mar 2021	< 0.5	45	ug/L	No
Vinyl Chloride	15 Mar 2021	< 0.2	1	ug/L	No

Table 9: Other Sampling Conducted Outside O. Reg. 170/03

Parameter	Date Sampled	Result	Unit
Chloride	1 Sep 2023	45.8	mg/L
Hardness	28 Aug 2019	402	mg/L

Community Lead Testing Program

Historical low level lead sample results have qualified Clearview for the reduced sampling program under Schedule 15.1 of O. Reg. 170/03. Clearview is exempt from sampling private residences as less than 10% of plumbing samples exceeded the standard for two consecutive periods. Samples from the distribution system are collected during two sampling periods. Winter (Dec. 15 to Apr. 15) and Summer (June 15 to Oct. 15). Alkalinity and pH samples are analyzed in each sampling period, while lead is only required to be tested for every 3 years. Table 10 below summarizes the lead testing program sample results for the reporting period.

Table 10: Schedule 15.1 - Lead

Parameter	Number of Samples	Min	Max	ODWS MAC	Unit
Lead	0	-	-	0.010	mg/L
Alkalinity	2	333	336	30 - 500*	mg/L as $CaCO_3$
pH	2	7.37	7.5	6.5 - 8.5*	-

*Operational Guidelines

Adverse Water Quality Incidents

There was one Adverse Water Quality Incident (AWQI) in 2023.

- AWQI number 163435 occurred on September 14, 2023. A regular bacti sample taken from the Northwood Drive sample station detected a total coliform count of 4. Corrective actions included the flushing of the sample location and collection of a set of resamples from the original location as well as upstream and downstream sites. All resample results were clear of contamination.

REGULATORY COMPLIANCE SUMMARY

Safe Drinking Water Act & Associated Regulations

No non-compliances were identified during this reporting period.

Municipal Drinking Water Licence & Drinking Water Works Permit

No non-compliances were identified during this reporting period.

Permit to Take Water

No non-compliances were identified during this reporting period.

Provincial Orders

No provincial orders were issued during this reporting period.

SYSTEM CAPACITY

Allowable Capacities

Allowable capacities are imposed on the drinking water system by several legal instruments issued by the Ministry of Environment, Conservation and Parks. They are summarized in Table 11 below.

Table 11: Allowable Capacities

Instrument	Unit	Well # 1	Well # 2	Well # 3	Well # 4	Well # 5
Permit to Take Water	L/min	45	45	45	45	68
	m^3/day	49.032	49.032	49.032	49.032	73.656
	Total from all wells m^3/day	267.784				
Drinking Water Works Permit	L/sec	0.76	0.76	0.76	0.76	1.14
Municipal Drinking Water Licence	Total supplied to distribution system m^3/day	270				

2023 Flow Summary

The table and charts below summarize the 2023 flow data for the Colling-Woodlands drinking water system. This data is a general overview and can be utilized to analyze system performance and the potential need for upgrades.

Figure 1: Monthly Flow Totals

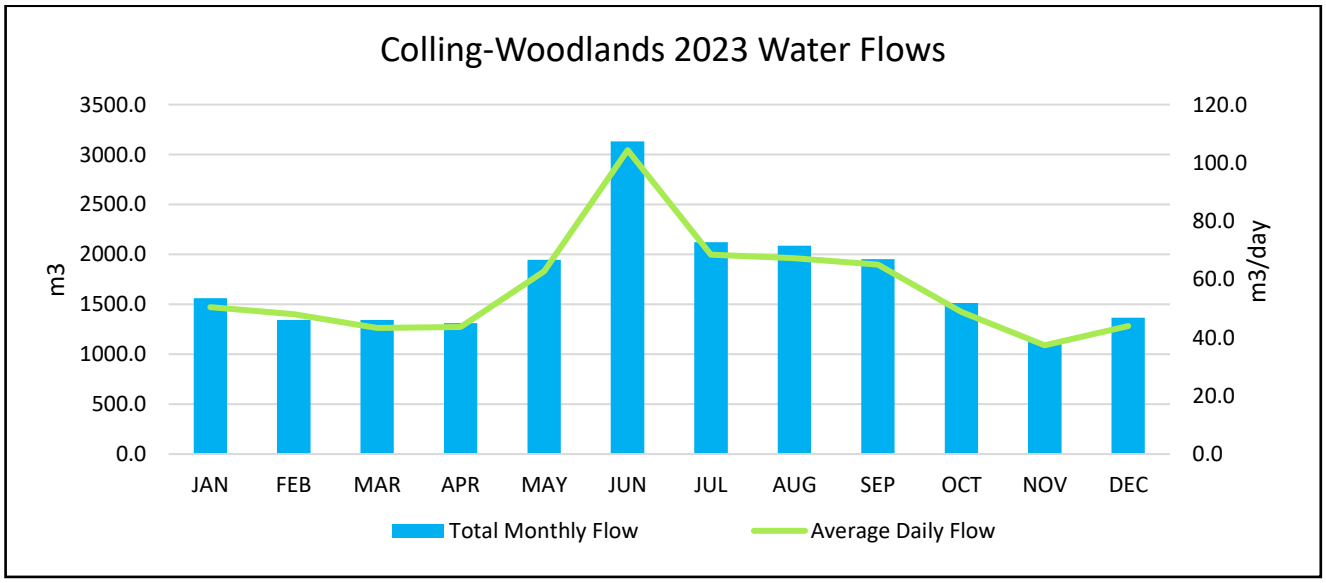
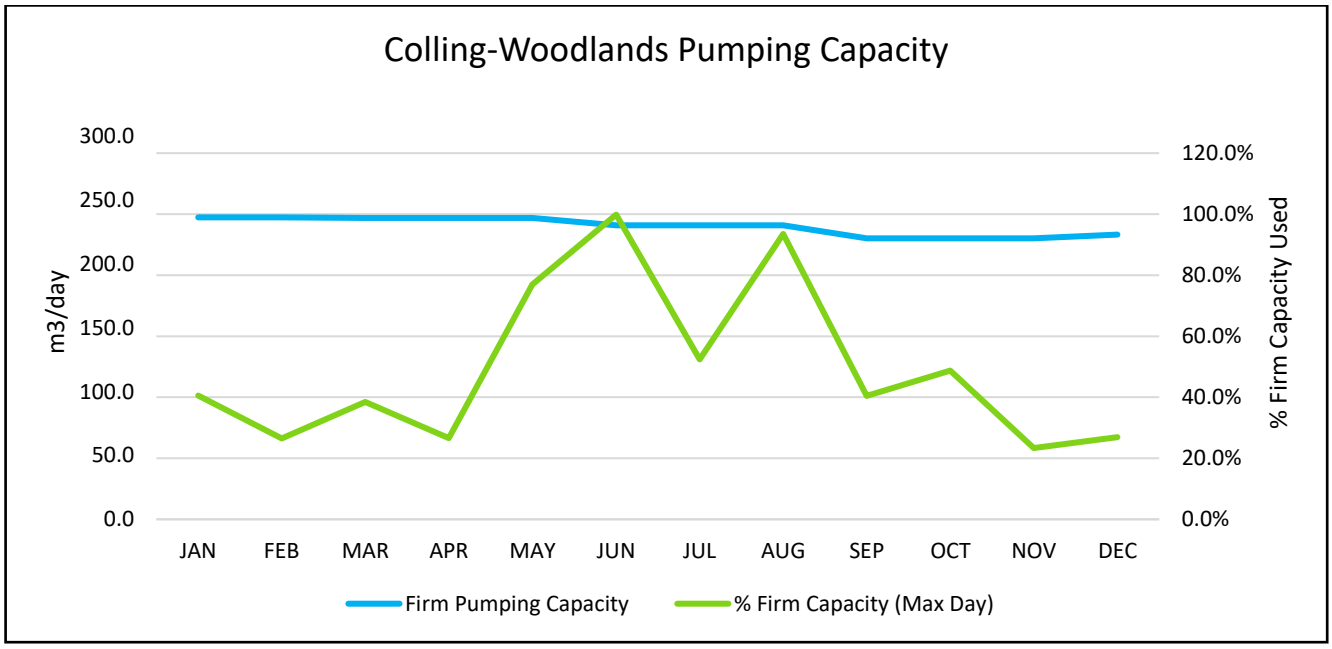


Table 12: Monthly Flows

2023	*Total Flow* m^3	*Average Daily Flow* m^3/d	*Maximum Daily Flow* m^3/d	*Firm Pumping Capacity* m^3/d	*Actual Pumping Capacity* m^3/d	*% Firm Capacity (MDD)*	*% Capacity (MDD)*
JAN	1562.3	50.4	95.8	236.4	325.9	40.5%	29.4%
FEB	1344.1	48.0	62.7	236.4	325.9	26.5%	19.2%
MAR	1342.0	43.3	90.6	235.9	325.4	38.4%	27.8%
APR	1310.6	43.7	62.8	235.9	325.4	26.6%	19.3%
MAY	1944.8	62.7	181.4	235.9	325.4	76.9%	55.7%
JUN	3131.0	104.4	229.9	230.3	312.0	99.8%	73.7%
JUL	2122.9	68.5	120.7	230.3	312.0	52.4%	38.7%
AUG	2086.7	67.3	215.3	230.3	312.0	93.5%	69.0%
SEP	1951.2	65.0	89.0	220.0	302.7	40.4%	29.4%
OCT	1514.4	48.9	107.2	220.0	302.7	48.7%	35.4%
NOV	1120.6	37.4	51.4	220.0	302.7	23.4%	17.0%
DEC	1364.2	44.0	60.0	222.9	307.3	26.9%	19.5%
Total/ Yr.	**20794.8**	**57.0**	**229.9**				

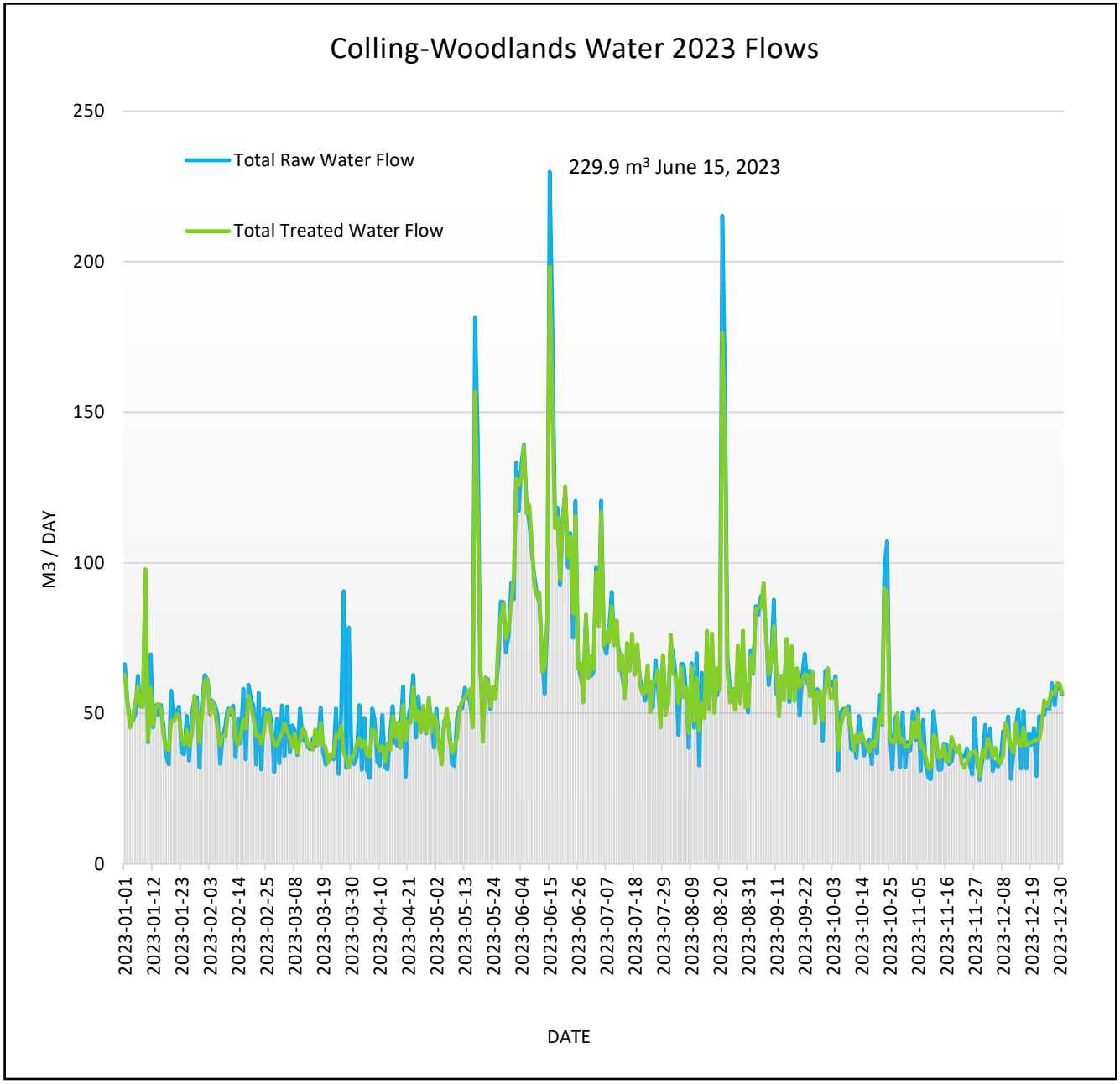
Note: All capacity values used are based on actual pump outputs and flow rates.
Firm pumping capacity is the available flow with the largest pump out of service.

Figure 2: System Capacity



In 2023, the day with the largest volume of water produced was June 15th with 229.9 m^3. This is considered a false peak as extra water was produced to correct an operational issue. When maintenance items that require extra water to be produced such as watermain flushing and reservoir cleaning are not considered, the maximum flow day for the Colling-Woodlands water system occurred on June 5th when 139 m^3 of water was both treated and consumed by customers in the distribution system. Figure 3 below depicts the total daily raw water flow and treated water flow for the system.

Figure 3: 2023 Daily Flows



The total flow volume in 2023 was in line with the amount of water produced in 2022 and the five-year average water production rate. The five-year flow comparison graph shown in Figure 4 below, illustrates a return to typical water usage for the drinking water system following two years of above average usage during the pandemic restriction years of 2020 and 2021, where more residences were used on a full-time basis. The system is considered fully built out with a total of 83 houses.

Figure 4: Five-year Total Flow Comparison