

Davy Drive Subdivision Drinking Water System

Waterworks # 220007141
System Category – Small Municipal Residential

Annual Water Report

Prepared For: The Township of Ramara

Reporting Period of January 1st – December 31st, 2022

Issued: February 24, 2023

Revision: 0

Operating Authority:



This report has been prepared to satisfy the annual reporting requirements in O. Reg. 170/03 Section 11 and Schedule 22

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Report Availability

This system does not serve more than 10,000 residence and the annual reports will be available to residents at the Township Of Ramara Administration Office and on the Township’s website at www.ramara.ca. Notification that reports are available free of charge will be made on the Township of Ramara website. The Township of Ramara Administration Office is located at 2297 Highway 12, Brechin, ON L0K 1B0.

Compliance Report Card

Drinking Water System Number: 220007141

Drinking Water System Name: Davy Drive Subdivision DWS

Drinking Water System Owner: Township of Ramara

Drinking Water System Category: Small Municipal Residential

Period Being Reported: January 1, 2022 - December 31, 2022

	# of Events	Date	Details
Health & Safety			
Number of Incidents	0		
Drinking Water			
MECP Inspections	2	December 23, 2021	Unannounced – Detailed-Drinking Water Inspection – No rating available at time of issuance in 2021 annual report- Final Inspection Rating of 100%
		July 22, 2022	Announced – Focused-Drinking Water Inspection – Final Inspection Rating of 100%
AWQI’s	2	September 27, 2022	Filter #1 effluent turbidity >1 NTU for >15 minutes while in production
		Q4 2022	HAA Running Annual Average for Q1-Q4 2022 exceeded
Number of Non-Compliances	0		
Number of Boil Water Advisories	0		

System Process Description

Raw Source

The water supply for the DWS comes from four (4) groundwater wells that are considered to be GUDI (Groundwater Under the Direct Influence of Surface Water).

Treatment

The treatment system consists of the following:

- Pre-chlorination system and potassium permanganate system for iron and manganese oxidation
- Two (2) greensand filters with backwash equipment and backwash waste storage/decant tank system
- Cartridge filtration systems
- Ultraviolet Light Disinfection for primary disinfection
- Sodium hypochlorite secondary disinfection system
- One (1) standpipe reservoir for potable water storage
- A high lift pumping system
- Stand-by propane generator on-site

Treatment Chemicals used during the reporting year:

Chemical Name	Use	Supplier
Sodium Hypochlorite	Disinfection	Brenntag
Potassium Permanganate	Iron and Manganese Oxidation	Carus Chemical Company

Summary of Non-Compliance

Adverse Water Quality Incidents

Date	AWQI #	Location	Problem	Details	Legis-lation	Corrective Action Taken
September 27, 2022	160155	Facility	Filter #1 effluent turbidity >1.0 NTU for >15 minutes while in production	Maintenance was being completed at the facility that introduces air bubbles into the system, causing high turbidity readings	O. Reg 170/03	Purge air from system, monitored trends and a post free chlorine residual was taken.
Q4 2022	161089	Distribution	HAA	RAA of 87.8 ug/L	O. Reg 170/03	Additional sampling, formalized plan created and submitted to the MECP and MOH.

RAA is the Running Annual Average of four consecutive quarterly sampling results. The RAA limit for Trihalomethanes (THMs) is 100ug/L and the RAA limit for Haloacetic Acids (HAAs) is 80ug/L.

Non-Compliance

Legislation	Requirement(s) system failed to meet	Duration of the failure (i.e. date(s))	Corrective Action	Status
There were no non-compliance issues reported during the reporting period.				

Non-Compliance Identified in a Ministry Inspection:

Legislation	Requirement(s) system failed to meet	Duration of the failure (i.e. date(s))	Corrective Action	Status
There were no non-compliances identified in a Ministry Inspection during this period.				

Flows

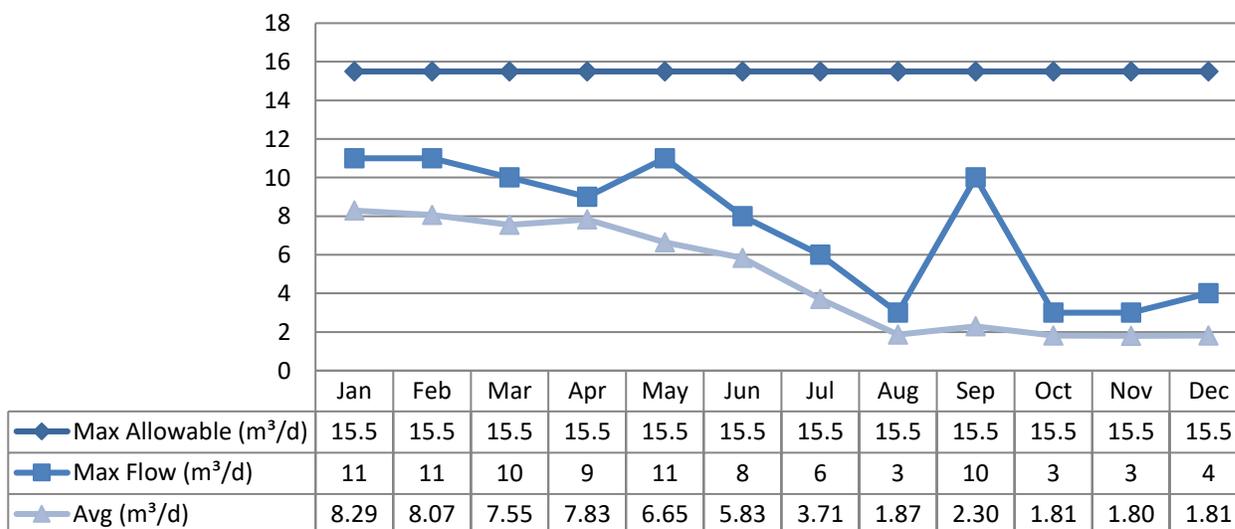
The Davy Drive Drinking Water System is operating on average under half the rated capacity.

Raw Water Flows

The Raw Water flows are regulated under the Permit to Take Water. 2022 Raw Flow Data was submitted to the Ministry electronically under permit #7187-AQPS6B. The confirmation and a copy of the data that was submitted are attached in Appendix A.

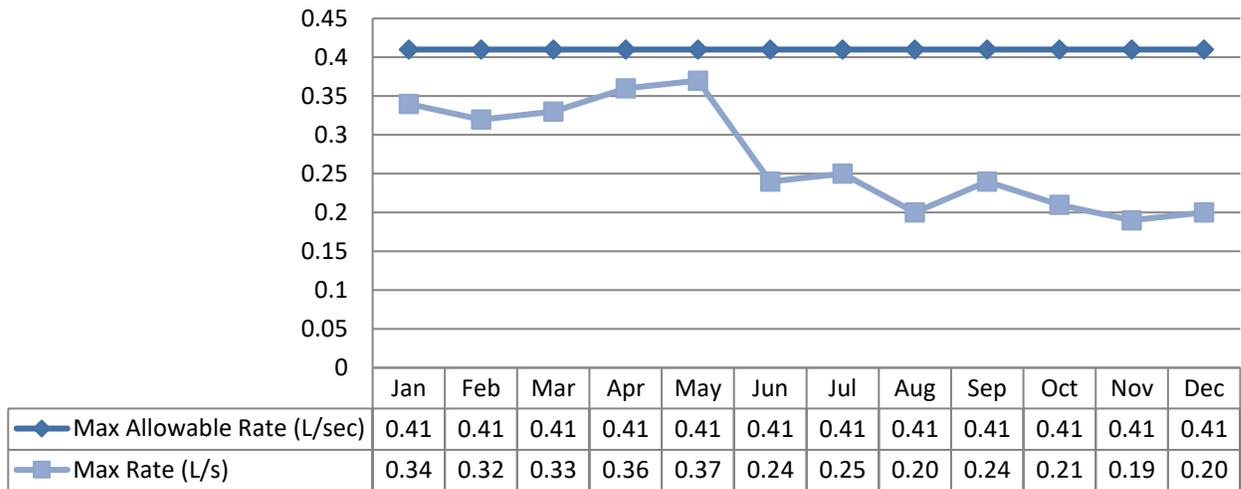
Total Monthly Flows (m³/d)

Max Allowable PTTW – Well # 1



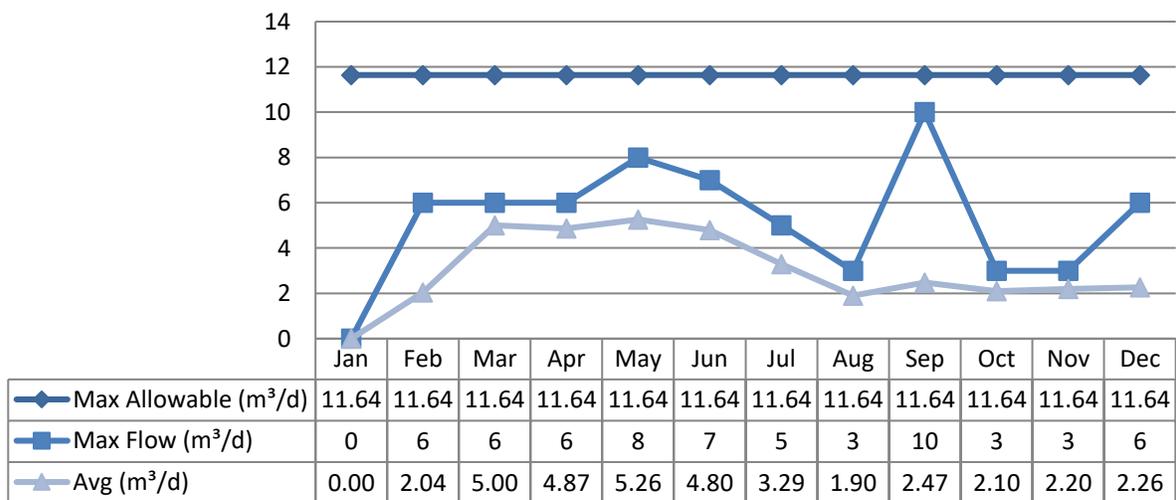
Monthly Rated Flows (L/s)

Max allowable rate – PTTW – Well # 1



Total Monthly Flows (m³/d)

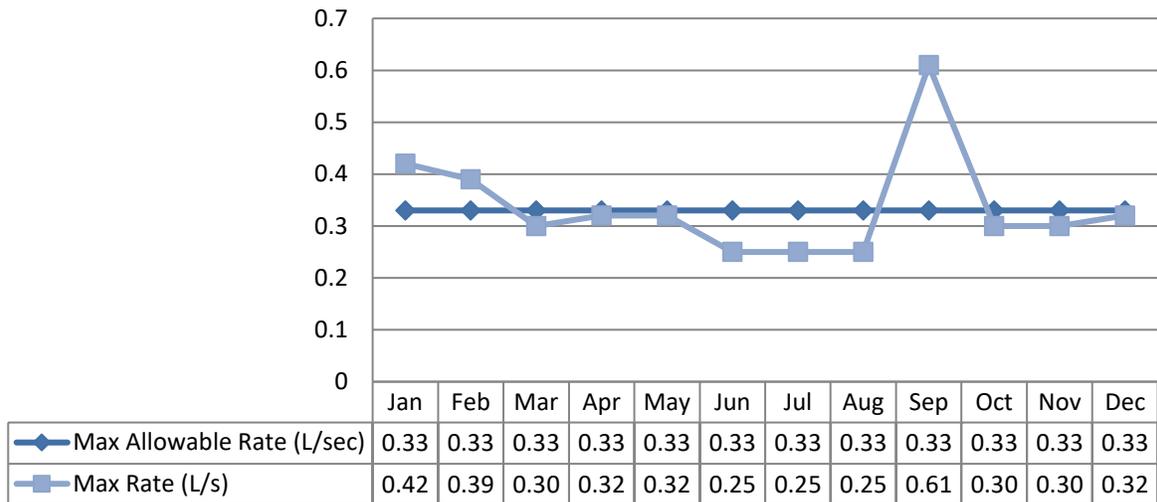
Max Allowable PTTW – Well # 2



Note: Well #2 was offline in January 2022.

Monthly Rated Flows (L/s)

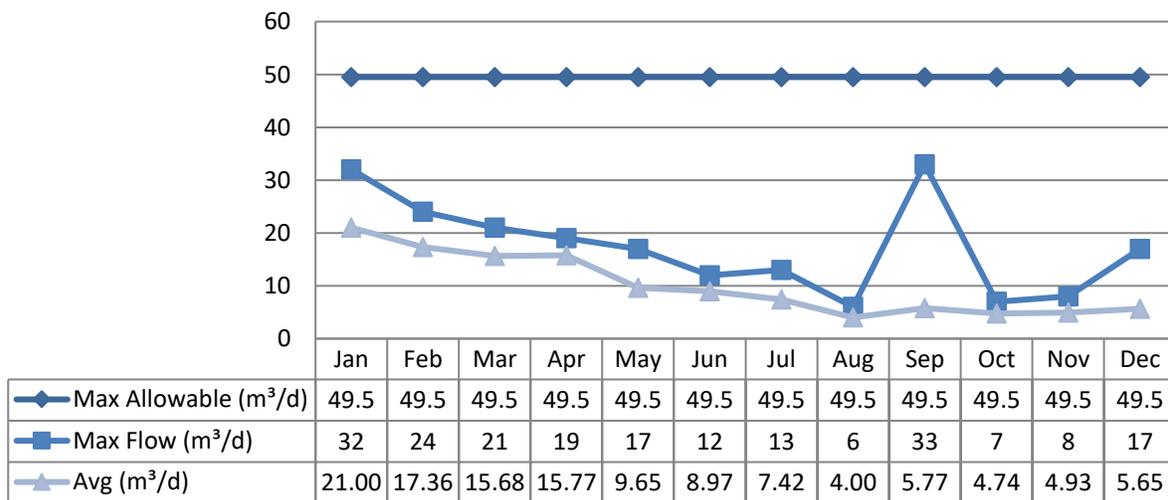
Max allowable rate – PTTW – Well #2



Note: The above table shows there were exceedances in instantaneous peak flow rate (L/s). The spikes in January, February and September were due to well pump start-up and was not sustained or were due to maintenance. All spikes are reviewed for compliance.

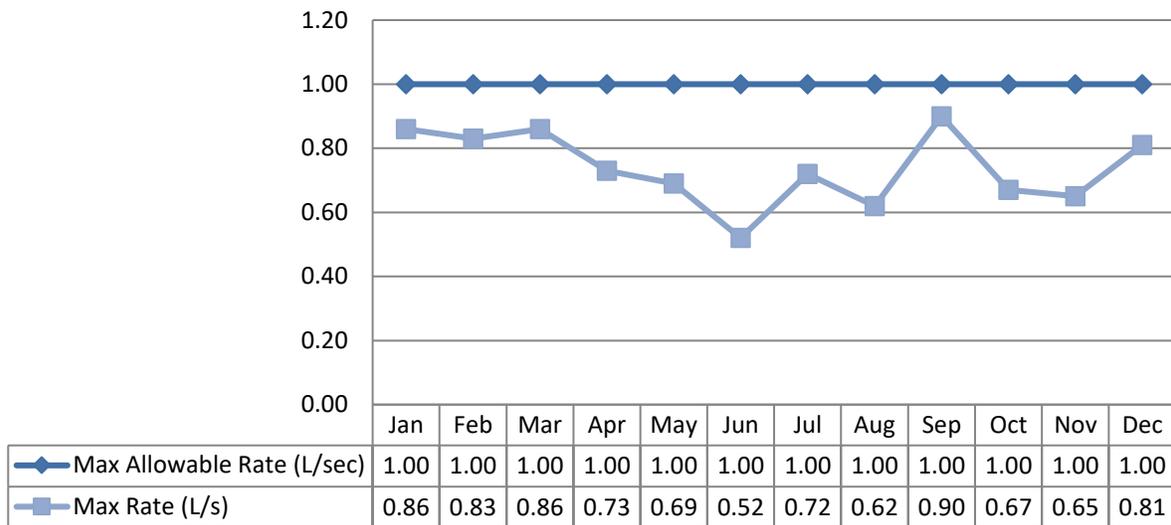
Total Monthly Flows (m³/d)

Max Allowable PTTW – Well #3



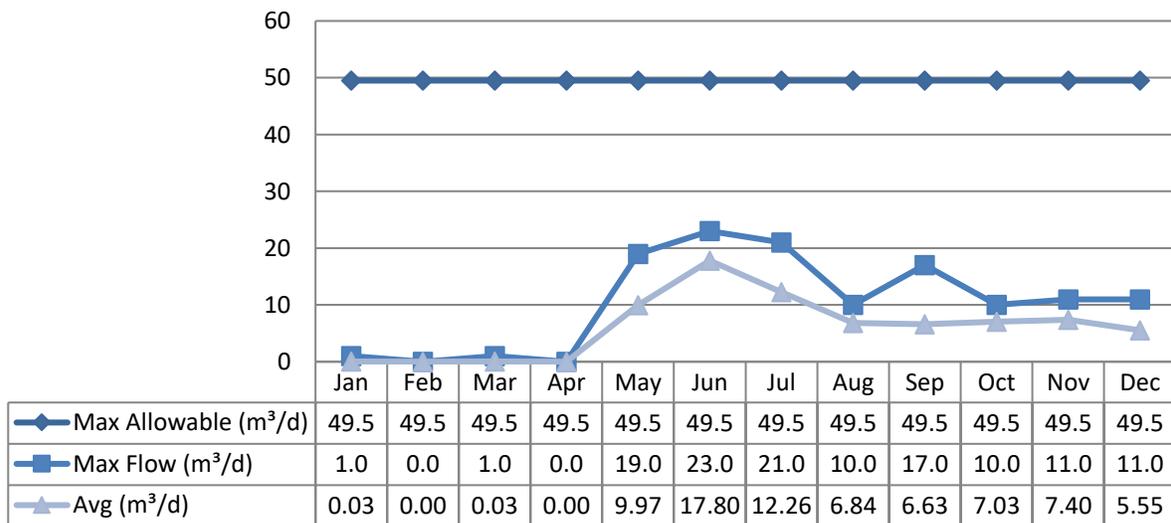
Monthly Rated Flows (L/s)

Max allowable rate – PTTW – Well #3



Total Monthly Flows (m³/d)

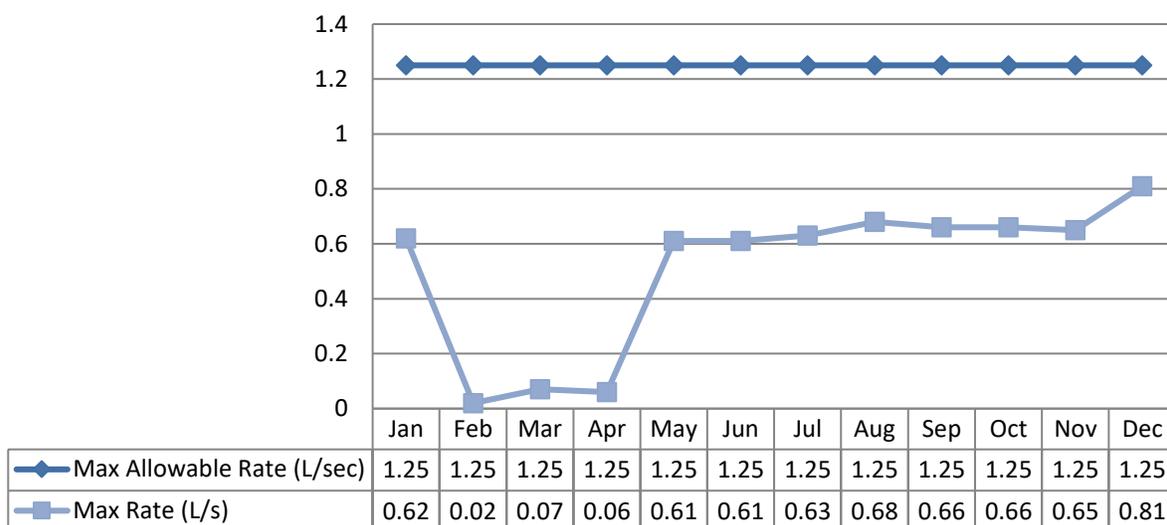
Max Allowable PTTW – Well #4



*Note: Well 4 not in production other than for sampling: January to April, 2022. Unable to collect samples from Well #4 for February and March 2022 due to extreme cold temperature causing Well #4 to freeze. A local MECP inspector was notified on February 14, 2022 along with being notified on April 7, 2022 when Well #4 was thawed and could be sampled.

Monthly Rated Flows (L/s)

Max allowable rate – PTTW – Well #4



*Note: Well 4 not in production other than for sampling: January to April, 2022. Unable to collect samples from Well #4 for February and March 2022 due to extreme cold temperature causing Well #4 to freeze. A local MECP inspector was notified on February 14, 2022 along with being notified on April 7, 2022 when Well #4 was thawed and could be sampled.

Treated Water Flows

The Treated Water flows are regulated under the Municipal Licence. The average consumption for the Davy Drive Drinking Water System during 2022 was: 15.9 m³/day.

Davy Drive Drinking Water System Historical Demands

Year	Number of Connections	Average Daily Demand (m ³)	Maximum Daily Demand (m ³ /day)	Rated Capacity	Per Capita Consumption*(L/p/day)	
					Average	Maximum
2012	34	14	29	76	158	322
2013	34	16	31	76	180	352
2014	34	17	44	76	192	498
2015	34	13	26	76	149	294
2016	34	13	35	76	152	396
2017	34	12.3	21	76	140	239
2018	34	14.3	23	76	163	261
2019	34	14.5	32	76	165	363
2020	34	16.7	35	76	189	396
2021	34	15.8	25	76	179	283
2022	34	15.9	37	76	179	419
3 Year Average/Max		16.1	37	76	182	419

*Based on 2.6 people per dwelling

Note: Excluding pipe leaks/breaks & system flushing

Note: This calculation was completed based on current connections in the system, growth within the drinking water system has not been considered.

System Reserve Capacity

In accordance with the MECP Procedure D-5-1, the reserve capacity is calculated by the following formula:

$$\text{Reserve Capacity} = \text{Design Flow} - \text{Committed Flow}$$

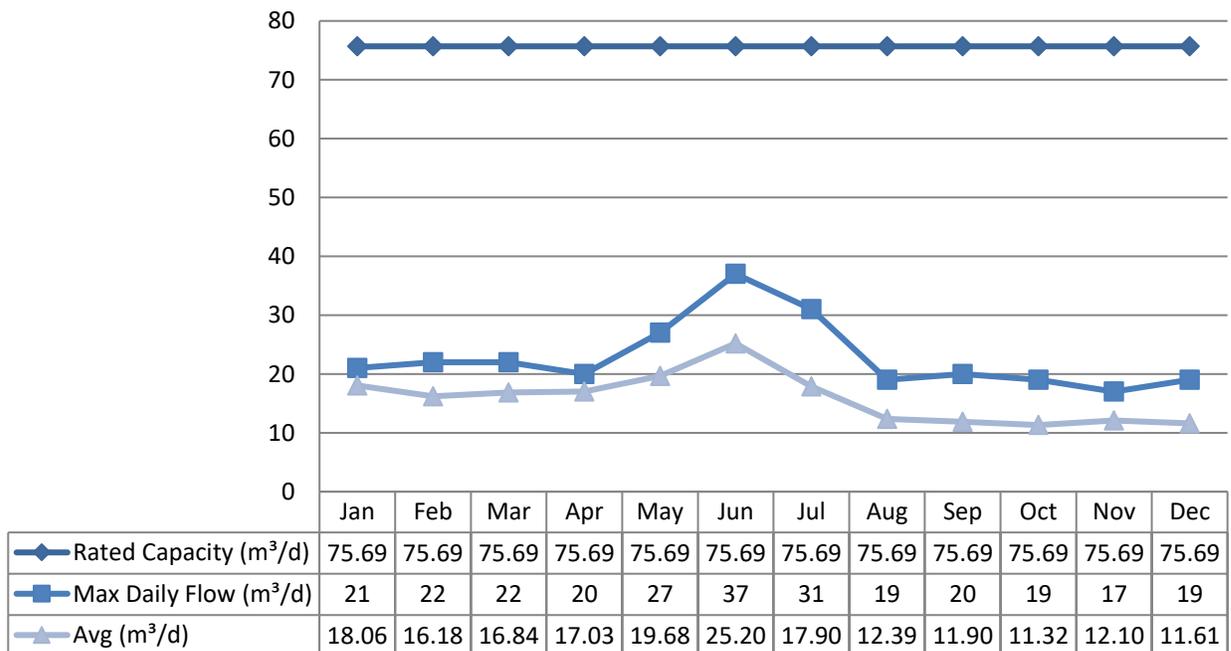
Design flow is the maximum permissible flow approved by the MDWL and/or PTTW. Davy Drive Water Works maximum daily rated capacity is 76 m³/day.

The committed flow is the total expected water demand from the existing and proposed connections based on the previous three years of data. The committed number of service connections is: 42. The three-year (2020-2022) maximum per capita water consumption is: 419 L/p/day. At this water consumption rate, the committed flow is: 46 m³/day.

As a result, the calculated reserve capacity is: 30 m³/day.

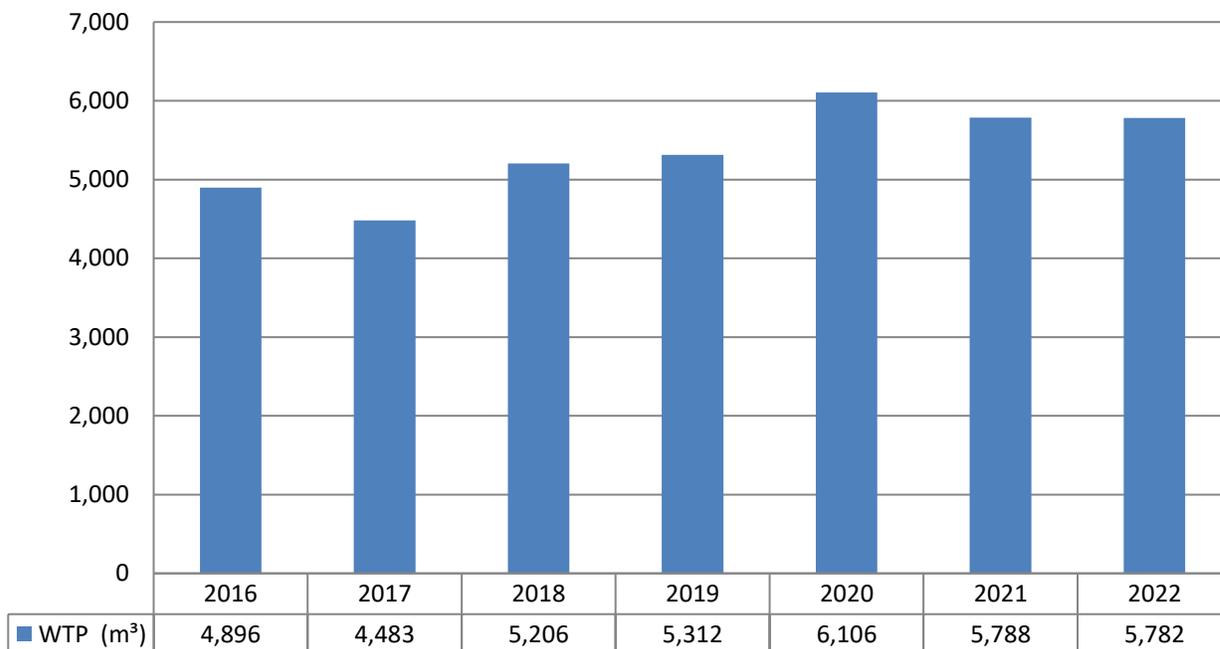
Monthly Rated Flows

Rated Capacity – MDWL



Annual Total Flow Comparison

Total Annual m³



Regulatory Sample Results Summary

Microbiological Testing

	No. of Samples Collected	Range of E. Coli Results		Range of Total Coliform Results		Range of HPC Results	
		Min	Max	Min	Max	Min	Max
Raw Well 1	12	0	0	0	14		
Raw Well 2	12	0	0	0	0*		
Raw Well 3	12	0	1	0	21		
Raw Well 4	12	0	1	0	25**		
Distribution	26	0	0	0	0	0	4

*Note: One result for raw water from Well # 2 resulted in Total Coliform and E. Coli as NDOGT (No Data: Overgrown with Target Bacteria).

**Note: Well 4 not in production other than for sampling: January to April, 2022. Unable to collect samples from Well #4 for February and March 2022 due to extreme cold temperature causing Well #4 to freeze. A local MECP inspector was notified on February 14, 2022 along with being notified on April 7, 2022 when Well #4 was thawed and could be sampled.

Operational Testing

	No. of Samples Collected	Range of Results	
		Minimum	Maximum
Turbidity Well 1 (NTU)	12	0.68	9.81
Turbidity Well 2 (NTU)	12	0.39	15.7
Turbidity Well 3 (NTU)	12	0.33	4.35
Turbidity Well 4 (NTU)	11*	0.39	5.60
Turbidity – Filter Line 1 (NTU)	8760	0.00	2.00
Turbidity – Filter Line 2 (NTU)	8760	0.00	2.00
Turbidity – Treated Water (NTU)	8760	0.00	2.03
Treated Water Chlorine	8760	0.00	3.96
Distribution Water Chlorine	107	0.36	2.15
Fluoride (If the DWS provides fluoridation)	N/A	N/A	N/A

*Note: Well 4 not in production other than for sampling: January to April, 2022. Unable to collect samples from Well #4 for February and March 2022 due to extreme cold temperature causing Well #4 to freeze. A local MECP inspector was notified on February 14, 2022 along with being notified on April 7, 2022 when Well #4 was thawed and could be sampled.

Note: Record the unit of measure if it is **not** milligrams per litre.

Note: For continuous monitors 8760 is used as the number of samples. Spikes recorded by on-line instrumentation were a result of air bubbles and various maintenance/calibration activities. All spikes are reviewed for compliance with O. Reg. 170/03.

Inorganic Parameters

These parameters are tested as a requirement under O. Reg. 170/03. Sodium and Fluoride are required to be tested every 5 years. Nitrate and Nitrite are tested quarterly and the metals are tested annually as required under O. Reg. 170/03. In the event any of the parameters exceed half of the maximum allowable concentration the parameter is required to be sampled quarterly.

- MAC = Maximum Allowable Concentration as per O. Reg. 169/03
- MDL = Method Detection Limit

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedances	
				MAC	1/2 MAC
Treated Water					
Antimony: Sb (ug/L) - TW	2019/08/21	<MDL 0.09	6.0	No	No
Arsenic: As (ug/L) - TW	2019/08/21	<MDL 0.2	10.0	No	No
Barium: Ba (ug/L) - TW	2019/08/21	134.0	1000.0	No	No
Boron: B (ug/L) - TW	2019/08/21	87.0	5000.0	No	No
Cadmium: Cd (ug/L) - TW	2019/08/21	0.004	5.0	No	No
Chromium: Cr (ug/L) - TW	2019/08/21	0.19	50.0	No	No
Mercury: Hg (ug/L) - TW	2019/08/21	<MDL 0.01	1.0	No	No
Selenium: Se (ug/L) - TW	2019/08/21	0.1	50.0	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedances	
				MAC	1/2 MAC
Uranium: U (ug/L) - TW	2019/08/21	1.19	20.0	No	No
Additional Inorganics					
Fluoride (mg/L) - TW	2022/08/03	0.21	1.5	No	No
Nitrite (mg/L) - TW	2022/02/08	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2022/05/03	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2022/08/03	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2022/11/09	<MDL 0.003	1.0	No	No
Nitrate (mg/L) - TW	2022/02/08	0.019	10.0	No	No
Nitrate (mg/L) - TW	2022/05/03	0.043	10.0	No	No
Nitrate (mg/L) - TW	2022/08/03	0.025	10.0	No	No
Nitrate (mg/L) - TW	2022/11/09	0.023	10.0	No	No
Sodium: Na (mg/L) - TW	2020/08/12	25.2	20*	Yes	Yes
Sodium: Na (mg/L) - TW	2020/08/24	23.4	20*	Yes	Yes

*There is no "MAC" for Sodium. The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.

Schedule 15 Sampling:

The Schedule 15 Sampling is required under O. Reg. 170/03. This system is under reduced sampling. No plumbing samples were collected.

Distribution System	Number of Samples	Range of Results Minimum	Range of Results Maximum	MAC (ug/L)	Number of Exceedances
Alkalinity (mg/L)	2	158	183	N/A	N/A
pH	2	7.10	7.10	N/A	N/A
Lead (ug/l)	2	0.23	0.56	10	0

Note: Samples shown above are reflective of the 2022 lead sampling period.

Organic Parameters

These parameters are tested every 5 years as a requirement under O.Reg 170/03. In the event any of the parameters exceed half of the maximum allowable concentration the parameter is required to be sampled quarterly.

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Treated Water					
Alachlor (ug/L) - TW	2019/08/21	<MDL 0.02	5.00	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Atrazine + N-dealkylated metabolites (ug/L) - TW	2019/08/21	<MDL 0.01	5.00	No	No
Azinphos-methyl (ug/L) - TW	2019/08/21	<MDL 0.05	20.00	No	No
Benzene (ug/L) - TW	2019/08/21	<MDL 0.32	1.00	No	No
Benzo(a)pyrene (ug/L) - TW	2019/08/21	<MDL 0.004	0.01	No	No
Bromoxynil (ug/L) - TW	2019/08/21	<MDL 0.33	5.00	No	No
Carbaryl (ug/L) - TW	2019/08/21	<MDL 0.05	90.00	No	No
Carbofuran (ug/L) - TW	2019/08/21	<MDL 0.01	90.00	No	No
Carbon Tetrachloride (ug/L) - TW	2019/08/21	<MDL 0.17	2.00	No	No
Chlorpyrifos (ug/L) - TW	2019/08/21	<MDL 0.02	90.00	No	No
Diazinon (ug/L) - TW	2019/08/21	<MDL 0.02	20.00	No	No
Dicamba (ug/L) - TW	2019/08/21	<MDL 0.20	120.00	No	No
1,2-Dichlorobenzene (ug/L) - TW	2019/08/21	<MDL 0.41	200.00	No	No
1,4-Dichlorobenzene (ug/L) - TW	2019/08/21	<MDL 0.36	5.00	No	No
1,2-Dichloroethane (ug/L) - TW	2019/08/21	<MDL 0.35	5.00	No	No
1,1-Dichloroethylene (ug/L) - TW	2019/08/21	<MDL 0.33	14.00	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2019/08/21	<MDL 0.35	50.00	No	No
2,4-Dichlorophenol (ug/L) - TW	2019/08/21	<MDL 0.15	900.00	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2019/08/21	<MDL 0.19	100.00	No	No
Diclofop-methyl (ug/L) - TW	2019/08/21	<MDL 0.4	9.00	No	No
Dimethoate (ug/L) - TW	2019/08/21	<MDL 0.06	20.00	No	No
Diquat (ug/L) - TW	2019/08/21	<MDL 1.0	70.00	No	No
Diuron (ug/L) - TW	2019/08/21	<MDL 0.03	150.00	No	No
Glyphosate (ug/L) - TW	2019/08/21	<MDL 1.0	280.00	No	No
Malathion (ug/L) - TW	2019/08/21	<MDL 0.02	190.00	No	No
2-Methyl-4chlorophenoxyacetic Acid (MCPA) (ug/L)	2019/08/21	<MDL 0.12	100	No	No
Metolachlor (ug/L) - TW	2019/08/21	<MDL 0.01	50.00	No	No
Metribuzin (ug/L) - TW	2019/08/21	<MDL 0.02	80.00	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2019/08/21	<MDL 0.3	80.00	No	No
Paraquat (ug/L) - TW	2019/08/21	<MDL 1.0	10.00	No	No
PCB (ug/L) - TW	2019/08/21	<MDL 0.04	3.00	No	No
Pentachlorophenol (ug/L) - TW	2019/08/21	<MDL 0.15	60.00	No	No
Phorate (ug/L) - TW	2019/08/21	<MDL 0.01	2.00	No	No
Picloram (ug/L) - TW	2019/08/21	<MDL 1.0	190.00	No	No
Prometryne (ug/L) - TW	2019/08/21	<MDL 0.03	1.00	No	No
Simazine (ug/L) - TW	2019/08/21	<MDL 0.01	10.00	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Terbufos (ug/L) - TW	2019/08/21	<MDL 0.01	1.00	No	No
Tetrachloroethylene (ug/L) - TW	2019/08/21	<MDL 0.35	10.00	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2019/08/21	<MDL 0.2	100.00	No	No
Triallate (ug/L) - TW	2019/08/21	<MDL 0.01	230.00	No	No
Trichloroethylene (ug/L) - TW	2019/08/21	<MDL 0.44	5.00	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2019/08/21	<MDL 0.25	5.00	No	No
Trifluralin (ug/L) - TW	2019/08/21	<MDL 0.02	45.00	No	No
Vinyl Chloride (ug/L) - TW	2019/08/21	<MDL 0.17	1.00	No	No
Distribution Water					
Trihalomethane: Total (ug/L) Annual Average - DW	2022	85.0	100	No	Yes
HAA Total (ug/L) Annual Average - DW	2022	87.8	80	Yes	Yes

MAC = Maximum Allowable Concentration as per O. Reg. 169/03
 MDL = Method Detection Limit

Additional Legislated Samples

Municipal Drinking Water License (MDWL)	Parameter	Date Sampled	Result	Unit of Measure
Settling Tank Discharge Point	Filter Backwash (FBW): Suspended Solids (Composite)	*November 2021	5.0	mg/L
	Filter Backwash (FBW): Suspended Solids (Composite)	February 2022	2.0	mg/L
	Filter Backwash (FBW): Suspended Solids (Composite)	May 2022	7.0	mg/L
	Filter Backwash (FBW): Suspended Solids (Composite)	August 2022	2.0	mg/L
2021/2022 Annual Average	Filter Backwash (FBW): Suspended Solids (Composite)	2021/2022 Annual Average	4.0	mg/L

Note: The Suspended Solids annual average limit is 25 mg/L.

*Note: The MDWL issue #5 dated February 04, 2022 was amended to remove the requirement to collect filter backwash samples and test for suspended solids, calculating the running annual average. The above table shows the last 4 samples required to be collected under the MDWL issue #5. MDWL issue #6 was issued September 22, 2022.

Municipal Drinking Water License (MDWL)	Parameter	Date Sampled	Result	Unit of Measure
Settling Tank Discharge Point	Filter Backwash (FBW): Iron (Composite)	*August 2021	0.434	mg/L
	Filter Backwash (FBW): Iron (Composite)	November 2021	1.240	mg/L
	Filter Backwash (FBW): Iron (Composite)	February 2022	1.4	mg/L
2021/2022 Annual Average	Filter Backwash (FBW): Iron (Composite)	2021/2022 Annual Average	1.0	mg/L

Note: The Iron annual average limit is 1 mg/L, if the limit is exceeded it should be reported to the local Ministry district office.

*Note: The MDWL issue #5 dated February 04, 2022 changed the sampling frequency for filter backwash samples to be collected annually rather than quarterly and was amended to remove the requirement to collect filter backwash samples and test for iron, calculating the running annual average. The above table shows the last 3 samples required to be collected under the MDWL issue #5. MDWL issue #6 was issued September 22, 2022.

Inorganic or Organic Parameter Exceedances

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
Trihalomethane: Total (ug/L) Annual Average - DW	85.0	(ug/L)	2022 Annual Average
HAA Total (ug/L) Annual Average - DW	87.8	(ug/L)	2022 Annual Average

Major Maintenance Summary incurred to install, repair or replace required equipment

Item #	Description
1	New chlorine analyzer
2	Replace UV treatment units
3	Curb stop repairs
4	New sodium hypochlorite pump
5	Replace greensand filters and backwash pump

Appendix A

WTRS Data Submission Confirmation



Ministry of the Environment,
Conservation and Parks

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Location: [WTRS](#) / [WT DATA](#) / [Input WT Record](#) WTRS-WT-008

Water Taking Data submitted successfully.

Confirmation:

Thank you for submitting your water taking data online.

Permit Number: 7187-AQPS6B
Permit Holder: THE CORPORATION OF THE TOWNSHIP OF RAMARA.
Received on: Feb 17, 2023 3:00 PM

This confirmation indicates that your data has been received by the Ministry, but should not be construed as acceptance of this data if it differs from that specified on the Permit Number, assigned to the Permit Holder stated above.

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