

Barry's Bay Drinking Water System

Waterworks # 210000942
System Category – Large Municipal Residential

Annual Water Report

Prepared For: The Township of Madawaska Valley

Reporting Period of January 1st – December 31st 2023

Issued: February 5th, 2024

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

The annual report will be available to residents at the Township of Madawaska Valley Municipal Office and copies provided free of charge if requested. The Township of Madawaska Valley Municipal Office is located at, 85 Bay Street, Barry's Bay, Ontario.

There are no additional drinking water systems that receive water from this facility.

Compliance Report Card

Compliance Event	# of Events
Ministry of Environment Inspections	1 MECP Inspection on September 7 th 2023 with a rating of 100%
Ministry of Labour Inspections	0
QEMS External Audit	1 Audit completed on September 25 th 2023 by SAI Global. No major or minor non-conformances were identified.
AWQI's/BWA	0/0
Non-Compliance	0
Community Complaints	4
Spills	0
Watermain Breaks	0

System Process Description

Raw Source

Barry's Bay DWS receives raw water from Kamaniskeg Lake. The intake for the water treatment plant is roughly 823 m from shore and located approximately 12.2 m below the water surface. Raw water flows by gravity to a wet well, which equipped with a coarse screen. Three vertical turbine low lift pumps, each rated at 26.1 L/s at 19 m total dynamic head (TDH), convey water into the treatment system. A flow meter is installed on the low lift discharge header to allow accurate monitoring of water takings.

Treatment

The Barry's Bay Water Treatment Plant is a direct filtration plant. The raw water is injected with aluminum sulphate (alum), and soda ash to assist with coagulation and pH adjustment. This facility also has the ability to add polymer to aid flocculation and to add ammonia sulphate for chloramination but does not utilize these processes at this time. Alum and soda ash are mixed via inline static mixers prior to entering two (2) parallel rapid mixers, and two (2) parallel flocculation tanks. Water flows through a

splitter box which directs it to three (3) dual media gravity filters. Filter effluent is disinfected using chlorine gas before entering the clearwell. The clearwells have a total volume of 260 m³. There are three high lift constant speed drive vertical turbine pumps, that supply water to the distribution system. Chlorine gas is injected again to maintain secondary disinfection chlorine residuals in the distribution system and soda ash is added for pH control just prior to leaving the plant. Flows leaving the plant are measured with a flow meter.

Process wastewater is directed to a holding tank that discharges its contents to the sanitary sewage system for treatment at the Barry's Bay Wastewater Treatment Plant.

Distribution

The Barry's Bay distribution system is a Class 2 Distribution System that serves a population of approximately 1300. The distribution system includes 101 fire hydrants and a standpipe with a storage capacity of 1364 m³ located at 65 Tower Hill. The measured tank level in the standpipe starts and stops the highlift pumps at the treatment plant. A free chlorine analyzer at the Barry's Bay Sewage Treatment Plant continuously monitors the chlorine residual in the distribution system. The distribution piping runs as far north as Parkway Ave and south as far as Lakeshore Drive. The system also extends west to Lane Street and east to Old Barry's Bay Road.

Treatment Chemicals used during the reporting year:

Chemical Name	Use	Supplier
Aluminum Sulphate (Alum)	Coagulation & Flocculation	Kemira
Soda Ash	pH Adjustment	Reliable Industrial Supply Ltd.
Chlorine Gas	Disinfection	Brenntag

Summary of Non-Compliance

Adverse Water Quality Incidents

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
None to report.						

Non-Compliance

Legislation	requirement(s) system failed to meet	duration of the failure (i.e. date(s))	Corrective Action	Status
None to report.				

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
None to report.				

Flows

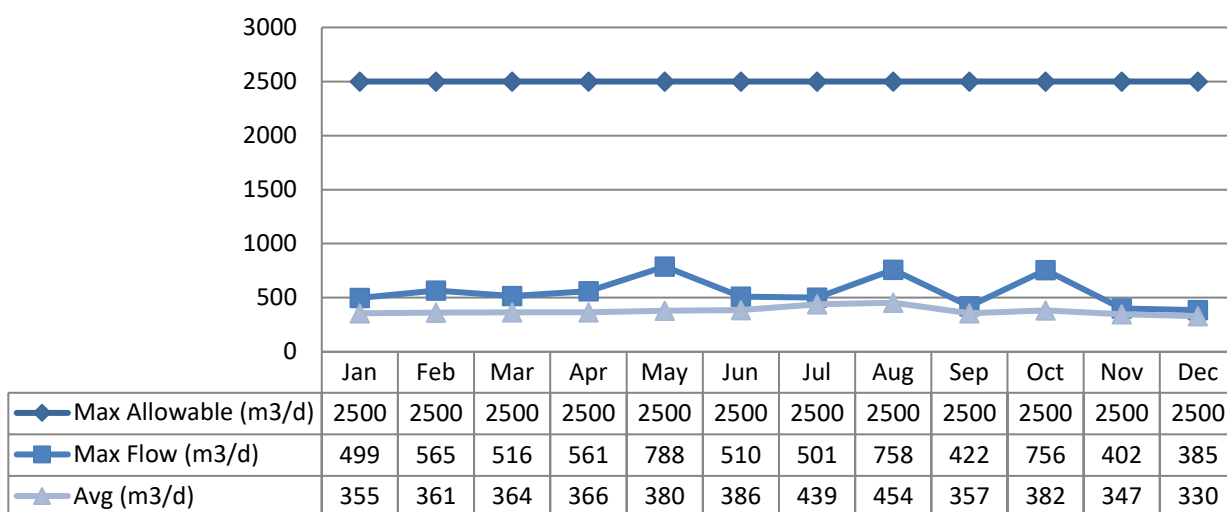
The Barry's Bay Drinking Water System is operating under half the rated capacity.

Raw Water Flows

The Raw Water flows are regulated under the Permit to Take Water (PTTW). 2023 Raw Flow Data was submitted to the Ministry electronically under permit #P-300-1136917810. The confirmation that data was submitted is attached in Appendix A.

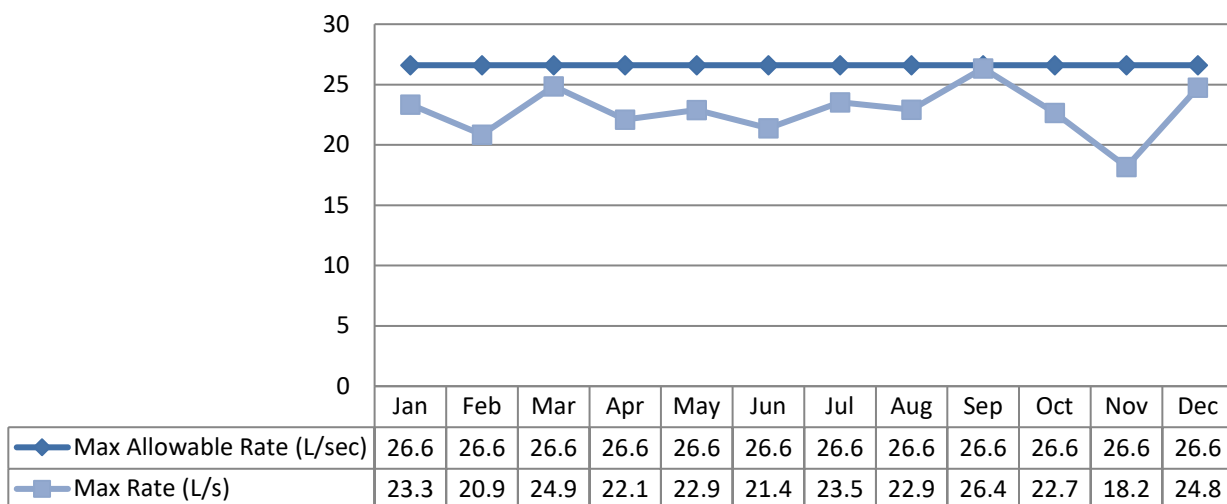
Total Monthly Flows

Max Allowable – PTTW



Monthly Rated Flows

Max allowable rate – PTTW

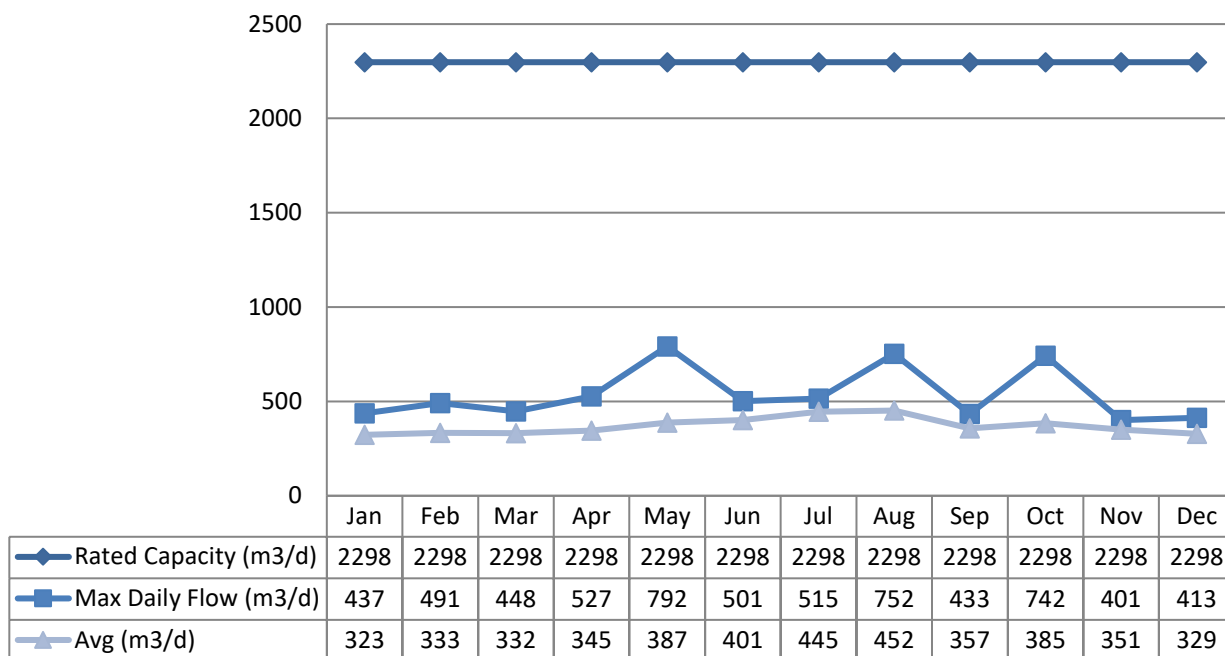


Treated Water Flows

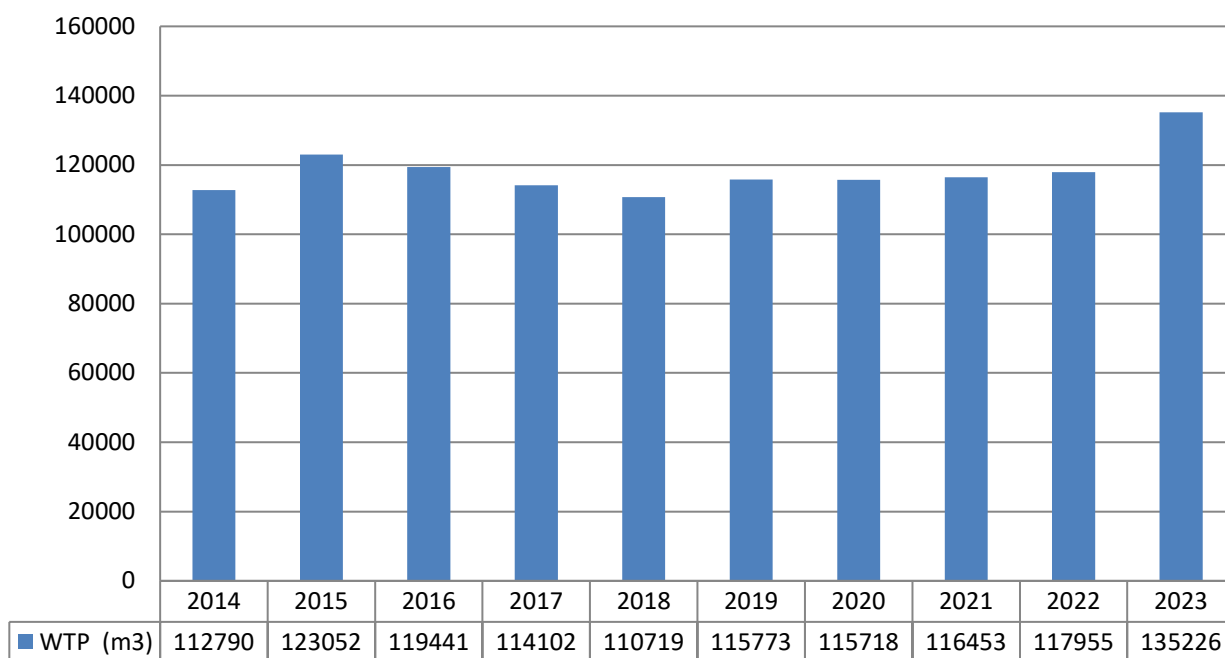
The Treated Water flows are regulated under Municipal Drinking Water Licence (MDWL).

Monthly Rated Flows

Rated Capacity - MDWL



Annual Total Flow Comparison



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 Water	48*	0	42	2	161	N/A	N/A
Treated Water	52	0	0	0	0	0	5
Distribution Water	116	0	0	0	0	0	3

*NOTE: 52 raw water samples were collected in 2023 though the samples results from samples collected January 9th, March 20th, June 26th and July 24th were NDOGT - No Data: Overgrown with Target Bacteria for Total Coliform and E.Coli.

Operational Testing

	No. of Samples Collected	Range of Results	
		Minimum	Maximum
Turbidity, In-House (NTU) - RW	246	0.33	1.94
Turbidity, On-Line (NTU) - TW	8760	0	2
Turbidity, In-House (NTU) - TW	246	0.08	0.90
Turbidity, On-Line (NTU) - Filt1	8760	0	2
Turbidity, On-Line (NTU) - Filt2	8760	0	0.77
Turbidity, On-Line (NTU) - Filt3	8760	0	0.97
Free Chlorine Residual, On-Line (mg/L) - TW	8760	0.70	3.05
Free Chlorine Residual, In-House (mg/L) - TW	246	1.32	2.19
Distribution Free Chlorine Residual, On-Line (mg/L) - DW	8760	0.45	1.79
Distribution Free Chlorine Residual, In-House (mg/L) - DW	132	0.27	1.46

NOTE: 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 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 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 = Less than Method Detection Limit

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Treated Water					
Antimony: Sb (ug/L) - TW	2023/01/09	<MDL 0.6	6.0	No	No
Arsenic: As (ug/L) - TW	2023/01/09	<MDL 0.2	10.0	No	No
Barium: Ba (ug/L) - TW	2023/01/09	18.1	1000.0	No	No
Boron: B (ug/L) - TW	2023/01/09	9.0	5000.0	No	No
Cadmium: Cd (ug/L) - TW	2023/01/09	0.006	5.0	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Chromium: Cr (ug/L) - TW	2023/01/09	0.21	50.0	No	No
Mercury: Hg (ug/L) - TW	2023/01/09	<MDL 0.01	1.0	No	No
Selenium: Se (ug/L) - TW	2023/01/09	<MDL 0.04	50.0	No	No
Uranium: U (ug/L) - TW	2023/01/09	0.003	20.0	No	No
Additional Inorganics					
Nitrite (mg/L) - TW	2023/01/09	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2023/04/03	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2023/07/04	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2023/10/03	<MDL 0.003	1.0	No	No
Nitrate (mg/L) - TW	2023/01/09	0.1	10.0	No	No
Nitrate (mg/L) - TW	2023/04/03	0.14	10.0	No	No
Nitrate (mg/L) - TW	2023/07/04	0.13	10.0	No	No
Nitrate (mg/L) - TW	2023/10/03	0.136	10.0	No	No
Fluoride (mg/L) - TW	2023/01/09	<MDL 0.06	1.5	No	No
Sodium: Na (mg/L) - TW	2019/01/08	17.4	20*	No	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 mg/L 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 Sampling Points	Number of Samples	Range of Results		MAC (ug/L)	Number of Exceedances
			Minimum	Maximum		
Alkalinity (mg/L)	2	4	30	35	N/A	N/A
pH	2	4	6.86	7.26	N/A	N/A
Lead (ug/l)	N/A	N/A	N/A	N/A	10	0

Organic Parameters

These parameters are tested annually 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.

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

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Treated Water					
Alachlor (ug/L) - TW	2023/01/09	<MDL 0.02	5.0	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	2023/01/09	<MDL 0.01	5.0	No	No
Azinphos-methyl (ug/L) - TW	2023/01/09	<MDL 0.05	20.0	No	No
Benzene (ug/L) - TW	2023/01/09	<MDL 0.32	1.0	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Benzo(a)pyrene (ug/L) - TW	2023/01/09	<MDL 0.004	0.01	No	No
Bromoxynil (ug/L) - TW	2023/01/09	<MDL 0.33	5.0	No	No
Carbaryl (ug/L) - TW	2023/01/09	<MDL 0.05	90.0	No	No
Carbofuran (ug/L) - TW	2023/01/09	<MDL 0.01	90.0	No	No
Carbon Tetrachloride (ug/L) - TW	2023/01/09	<MDL 0.17	2.0	No	No
Chlorpyrifos (ug/L) - TW	2023/01/09	<MDL 0.02	90.0	No	No
Diazinon (ug/L) - TW	2023/01/09	<MDL 0.02	20.0	No	No
Dicamba (ug/L) - TW	2023/01/09	<MDL 0.2	120.0	No	No
1,2-Dichlorobenzene (ug/L) - TW	2023/01/09	<MDL 0.41	200.0	No	No
1,4-Dichlorobenzene (ug/L) - TW	2023/01/09	<MDL 0.36	5.0	No	No
1,2-Dichloroethane (ug/L) - TW	2023/01/09	<MDL 0.35	5.0	No	No
1,1-Dichloroethylene (ug/L) - TW	2023/01/09	<MDL 0.33	14.0	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2023/01/09	<MDL 0.35	50.0	No	No
2,4-Dichlorophenol (ug/L) - TW	2023/01/09	<MDL 0.15	900.0	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2023/01/09	<MDL 0.19	100.0	No	No
Diclofop-methyl (ug/L) - TW	2023/01/09	<MDL 0.4	9.0	No	No
Dimethoate (ug/L) - TW	2023/01/09	<MDL 0.06	20.0	No	No
Diquat (ug/L) - TW	2023/01/09	<MDL 1.0	70.0	No	No
Diuron (ug/L) - TW	2023/01/09	<MDL 0.03	150.0	No	No
Glyphosate (ug/L) - TW	2023/01/09	<MDL 1.0	280.0	No	No
Malathion (ug/L) - TW	2023/01/09	<MDL 0.02	190.0	No	No
Metolachlor (ug/L) - TW	2023/01/09	<MDL 0.01	50.0	No	No
Metribuzin (ug/L) - TW	2023/01/09	<MDL 0.02	80.0	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2023/01/09	<MDL 0.3	80.0	No	No
Paraquat (ug/L) - TW	2023/01/09	<MDL 1.0	10.0	No	No
PCB (ug/L) - TW	2023/01/09	<MDL 0.04	3.0	No	No
Pentachlorophenol (ug/L) - TW	2023/01/09	<MDL 0.15	60.0	No	No
Phorate (ug/L) - TW	2023/01/09	<MDL 0.01	2.0	No	No
Picloram (ug/L) - TW	2023/01/09	<MDL 1.0	190.0	No	No
Prometryne (ug/L) - TW	2023/01/09	<MDL 0.03	1.0	No	No
Simazine (ug/L) - TW	2023/01/09	<MDL 0.01	10.0	No	No
Terbufos (ug/L) - TW	2023/01/09	<MDL 0.01	1.0	No	No
Tetrachloroethylene (ug/L) - TW	2023/01/09	<MDL 0.35	10.0	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2023/01/09	<MDL 0.2	100.0	No	No
Triallate (ug/L) - TW	2023/01/09	<MDL 0.01	230.0	No	No
Trichloroethylene (ug/L) - TW	2023/01/09	<MDL 0.44	5.0	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2023/01/09	<MDL 0.25	5.0	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA) (ug/L) - TW	2023/01/09	<MDL 0.12	100.0	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Trifluralin (ug/L) - TW	2023/01/09	<MDL 0.02	45.0	No	No
Vinyl Chloride (ug/L) - TW	2023/01/09	<MDL 0.17	1.0	No	No

Distribution samples are tested quarterly for THM's and HAA's in accordance with O. Reg. 170/03.

	Sample Year	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Distribution Water					
Trihalomethane (THM): Total (ug/L) – DW*	2023	55	100.0	No	Yes
Haloacetic Acid (HAA): Total (ug/L) - DW*	2023	41.7	80.0	No	Yes

*Running Annual Average

<MDL = Less than Method Detection Limit

MAC = Maximum Allowable Concentration as per O. Reg. 169/03

Additional Legislated Samples

Schedule C: System-Specific Conditions of Municipal Drinking Water License # 193-101 requires the Barry's Bay Drinking Water System to have a Harmful Algal Bloom (HAB) plan. The HAB plan is implemented when a potential harmful algal bloom is suspected or present in the source water. To ensure the drinking water remains unaffected, the Raw and Treated water would be sampled on a weekly basis for Microcystin during the Harmful Algal Bloom event, for at least three consecutive weeks with non-detectable results, or until the bloom was no longer observed as per the HAB plan. Lake Kamaniskeg, the raw water source for the Barry's Bay DWS, did not have any Blue-Green Algae blooms reported in 2023.

	No. of Samples Collected	Range of Results	
		Minimum	Maximum
Microcystin (ug/L) - RW	0	N/A	N/A
Microcystin (ug/L) - TW	0	N/A	N/A

<MDL = Less than Method Detection Limit

Major Maintenance Summary

WO #	Description
3339441	Repaired solenoid valves on chlorinators
3526920	Replaced impellers and seals on low lift pump #1
3526920	Replaced pH probe in treated water analyzer
3526751	Replaced soda ash transfer pump
3245565	Replaced UPS for PLC at treatment plant
3245303	Replaced UPS at water tower

Distribution Maintenance

Date	Location Reference	Category	Details
04/19/2023	19666 Opeongo Line, 19674 Opeongo Line and 92 Dunn Street	N/A	Curbstops repaired
04/21/2023	56 Oak Street	N/A	Lowered curbstop to grade of driveway
05/16/2023	Entire System	N/A	Spring flushing program
06/05/2023	67 Dunn Street	N/A	Replaced missing curbstop top
06/05/2023	Martin Street	N/A	Verify hydrant #33's operation after a vehicle had struck the hydrant, no operational deficiencies found
07/24/2023	12 Kitts Street	N/A	Curbstop stem and actuator rod replaced
08/10/2023	19474 Opeongo Line	N/A	Curbstop top replaced
10/10/2023	Entire System	N/A	Fall flushing program
09/02/2023	144 Siberia Road	N/A	Service repaired with ¾ brass compression coupling
11/15/2023	3 Kitts Street	N/A	Curbstop lowered to grade of driveway
12/26/2023	143 Siberia Road	N/A	Service repaired with ¾ brasscompression coupling

O.Reg 319/08 Small Drinking Systems Summary

The Ontario Clean Water Agency monitors one small Ministry of Health regulated systems owned by the Township of Madawaska Valley. The Combermere Community Hall's Directive requires samples to be collected every 3 months, samples were collected January 10th, April 3rd, July 4th, and October 10th in 2023

Sampling Summary

Location	Number of Samples	E.coli Results (Min) - (Max)	Total Coliform Results (Min) – (Max)	HPC Results (Min) - (Max)
Combermere Community Hall	4	0 - 0	0 - 0	N/A

Appendix A

RSRS Data and Submission Confirmation



Client Name: TOWNSHIP OF MADAWASKA VALLEY Reporting Year: 2023 Service: PTTW Permit Number: P-300-1136917810 Permit Version: 1.0 New or Updated Submission: NEW

Site Name: Barry's Bay Water Treatment Plant

Source ID: 500000594660 Source Name: Kamaniskeg Lake Source Type: Lake

UTM(Zone/Easting/Northing): 18/289350.0/5039500.0 Method of Determination: Metered Unit of Measure: Litre

Description: Lake Kamaniskeg Purpose Category: Utilities Specific Category: Municipal Supply Activity: Water Supply

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	323000.0	338000.0	253000.0	404000.0	307000.0	474000.0	433000.0	431000.0	419000.0	355000.0	388000.0	345000.0
2	323000.0	335000.0	348000.0	404000.0	313000.0	380000.0	433000.0	446000.0	419000.0	355000.0	335000.0	345000.0
3	309000.0	371000.0	366000.0	134000.0	266000.0	380000.0	433000.0	526000.0	419000.0	336000.0	334000.0	345000.0
4	392000.0	371000.0	366000.0	561000.0	404000.0	380000.0	473000.0	480000.0	419000.0	410000.0	334000.0	330000.0
5	290000.0	371000.0	366000.0	388000.0	318000.0	362000.0	333000.0	480000.0	344000.0	373000.0	334000.0	359000.0
6	387000.0	385000.0	368000.0	343000.0	318000.0	398000.0	495000.0	480000.0	352000.0	453000.0	368000.0	335000.0
7	387000.0	441000.0	356000.0	343000.0	318000.0	337000.0	422000.0	480000.0	422000.0	453000.0	402000.0	354000.0
8	387000.0	332000.0	348000.0	343000.0	377000.0	376000.0	422000.0	291000.0	310000.0	387000.0	358000.0	347000.0
9	229000.0	565000.0	349000.0	343000.0	340000.0	419000.0	422000.0	433000.0	310000.0	387000.0	342000.0	347000.0
10	499000.0	357000.0	328000.0	343000.0	338000.0	419000.0	404000.0	488000.0	310000.0	756000.0	350000.0	347000.0
11	382000.0	357000.0	328000.0	382000.0	381000.0	419000.0	501000.0	436000.0	349000.0	509000.0	350000.0	308000.0
12	319000.0	357000.0	328000.0	434000.0	386000.0	190000.0	376000.0	436000.0	364000.0	398000.0	320000.0	357000.0
13	427000.0	361000.0	375000.0	397000.0	386000.0	392000.0	494000.0	436000.0	382000.0	388000.0	320000.0	362000.0
14	427000.0	362000.0	392000.0	390000.0	386000.0	265000.0	433000.0	498000.0	334000.0	388000.0	388000.0	355000.0
15	427000.0	302000.0	516000.0	390000.0	368000.0	510000.0	433000.0	478000.0	361000.0	388000.0	373000.0	348000.0
16	272000.0	428000.0	413000.0	390000.0	788000.0	377000.0	433000.0	458000.0	361000.0	285000.0	351000.0	348000.0
17	466000.0	315000.0	365000.0	384000.0	402000.0	377000.0	453000.0	444000.0	361000.0	329000.0	341000.0	348000.0
18	286000.0	315000.0	365000.0	349000.0	436000.0	377000.0	429000.0	432000.0	375000.0	364000.0	341000.0	271000.0
19	356000.0	315000.0	365000.0	361000.0	429000.0	467000.0	417000.0	432000.0	350000.0	416000.0	341000.0	385000.0
20	412000.0	315000.0	152000.0	360000.0	429000.0	255000.0	443000.0	432000.0	380000.0	353000.0	339000.0	366000.0
21	412000.0	341000.0	505000.0	368000.0	300000.0	462000.0	451000.0	434000.0	323000.0	353000.0	370000.0	354000.0
22	412000.0	339000.0	324000.0	368000.0	300000.0	424000.0	451000.0	448000.0	315000.0	353000.0	368000.0	321000.0
23	233000.0	323000.0	367000.0	368000.0	364000.0	397000.0	451000.0	498000.0	315000.0	313000.0	333000.0	321000.0
24	369000.0	341000.0	395000.0	362000.0	347000.0	397000.0	430000.0	456000.0	315000.0	265000.0	339000.0	321000.0
25	339000.0	341000.0	395000.0	355000.0	377000.0	397000.0	501000.0	428000.0	336000.0	397000.0	339000.0	321000.0
26	252000.0	341000.0	395000.0	314000.0	415000.0	410000.0	468000.0	428000.0	288000.0	369000.0	339000.0	321000.0
27	395000.0	332000.0	352000.0	433000.0	415000.0	380000.0	432000.0	428000.0	404000.0	370000.0	322000.0	287000.0
28	395000.0	450000.0	334000.0	326000.0	415000.0	441000.0	433000.0	513000.0	349000.0	370000.0	347000.0	251000.0
29	395000.0		318000.0	326000.0	234000.0	293000.0	433000.0	456000.0	355000.0	370000.0	348000.0	325000.0
30	168000.0		457000.0	326000.0	467000.0	433000.0	433000.0	214000.0	355000.0	117000.0	302000.0	325000.0
31	344000.0		404000.0		462000.0		430000.0	758000.0		483000.0		171000.0

Name of Attester

First Name: Kaylee

Last Name: Saar

Company: Ontario Clean Water Agency

Date Certified/Submitted(yyyy/mm/dd): 2024/01/19