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# Mohawks of the Bay of Quinte

## Annual Water Report

**Reporting period of January 1, 2022 – December 31, 2022**

Prepared For:

Mohawks of the Bay of Quinte

Prepared By:



**Ontario Clean Water Agency**  
**Agence Ontarienne Des Eaux**

This report has been prepared to satisfy the annual reporting requirements of the Provincial Regulations and Guidelines established by the Ministry of the Environment in the Province of Ontario including the section 11 and Schedule 22 reports identified in O.Reg 170/03, Drinking Water Systems Regulation and the Permit to Take Water Reports identified in O.Reg 387/04, Water Taking and Transfer Regulation.

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## **Mohawks of the Bay of Quinte Water Treatment Facility**

### ***Facility Description & Treatment Process***

The Mohawks of the Bay of Quinte Water Treatment Facility is a surface water membrane filtration plant with a submerged low-pressure ultrafiltration membrane system. The *Low Lift System* transfers raw water from the Bay of Quinte to feed the water treatment plant; it will be controlled according to the level in the Pre-treatment System. Treatment consists of Pre-Treatment Clarifiers, Dissolved Air Flotation (DAF) and membrane filtration system, followed by granular activated carbon filter, followed by an ultraviolet disinfection system, with chemical disinfection and pumping system. This facility is Federally funded and operated, therefore it does not fall under Provincial legislation. However, OCWA does provide oversight of the system as if it is regulated under Ontario Regulation 170/03. The Mohawks of the Bay of Quinte Water Treatment Facility would be considered a Large Municipal Residential system under this legislation; therefore this system is classified as a Large Municipal Residential system.

### **Treatment Chemicals used during the reporting period:**

<b>Chemical Name</b>
• Citric Acid
• Phosphoric Acid
• Calcium Thiosulphate
• Sodium Hypochlorite – 12%
• Carbon Dioxide
• Kemira XL-54 PAC
• Ammonium Sulphate

### ***Operational & Maintenance Summary***

- Routine operations, sampling, testing and required system maintenance completed.
- All samples were collected as per Ontario Regulation 170/03.
- All alarms tested and signals confirmed with applicable alarm monitoring.

### ***Performance Data***

All Total Coliform and E.Coli samples collected at the Mohawks of the Bay of Quinte Water Treatment Facility during the reporting period were submitted to Eurofins laboratory for analysis, and all chemical samples collected for analysis are submitted to ALS Global Ltd, with the exception of in-house chlorine residuals, pH and turbidity. Eurofins and ALS Global have been deemed accredited by the Canadian Association for Laboratory Accreditation (CALA), meeting strict provincial guidelines including an extensive quality assurance/quality control program. The free chlorine residuals, pH and turbidity parameters were analyzed in the field at the time of sample collection by certified and trained operators, to ensure accuracy and precision of the results obtained. Sampling was conducted in accordance with Ontario Regulation 170/03.

**Ontario Regulation 170/03 requires the following microbiological sampling:**

- Weekly sample for raw water source to be tested for Total Coliform and E. Coli;
- Nine distribution samples to be tested monthly for Total Coliforms, E. Coli and HPC.

Tabulated below is a summary of all microbiological testing completed during the reporting period.

<b><u>Mohawks of the Bay of Quinte Water Treatment Facility - Microbiological Test Results</u></b>							
Sample Location	# Total Coliform and E. Coli Samples	Total Coliform (CFU/100 mL) – Range of Results (min#) – (max#)	E. Coli (CFU/100 mL)– Range of Results (min#) – (max#)	Exceedance	# HPC Samples	HPC (CFU/1 mL) – Range of Results (min#) – (max#)	Exceedance
Raw Water	52	0-192	0-1	<i>Not Applicable</i>	0	<i>Not Applicable</i>	<i>Not Applicable</i>
Treated Water	52	0-0	0-0	NO	13	0-0	<i>Not Applicable</i>
Distribution Water – (Various Locations)	123	0-0	0-0	YES	32	0 - <500	<i>Not Applicable</i>

Tabulated below is a summary of the Performance Criterion for filtered water turbidity in percent of the measurements each month during the reporting period. The Mohawks of the Bay of Quinte WTF uses membrane filtration and therefore, must remain under 0.10 NTU 99% of the time while the plant is in production.

<b><u>Mohawks of the Bay of Quinte WTF – Filter Turbidity</u></b>		
Sample Parameter & Location	Filter #1	Filter #2
2022 Average	<.10 NTU at %100	<.10 NTU at %100

Tabulated below is a summary of Raw Water flows from the Bay of Quinte for the reporting period.

<b><u>Mohawks of the Bay of Quinte WTF – Raw Water Flow</u></b>				
Month	Total Flow m3	Minimum m3/day	Maximum m3/day	Average m3/day
January	12,929	44	715	417
February	11,612	170	588	414
March	11,866	163	566	382
April	10,432	135	609	347
May	13,005	88	614	419
June	14,492	161	907	483
July	15,318	183	969	494
August	16,445	278	1,272	530
September	12,812	42	900	427
October	15,779	181	818	509
November	16,252	394	727	560
December	19,328	310	930	623
<b>Total</b>	<b>170,270</b>			

Minimum		42		
Maximum			1,272	
Average				467

Tabulated below is a summary of Treated Water Flows for the reporting period.

<b><u>Mohawks of the Bay of Quinte WTF – Treated Water Flow</u></b>				
	Total Flow m3	Minimum m3/day	Maximum m3/day	Average m3/day
January	8,390	27	416	279
February	7,691	49	424	274
March	7,812	24	423	252
April	7,017	66	404	269
May	8,996	73	493	299
June	9,055	98	539	301
July	10,591	136	582	353
August	11,382	98	609	367
September	9,259	165	534	330
October	10,871	215	618	350
November	10,876	36	595	375
December	13,940	222	672	449
<b>Total</b>	<b>115,880</b>			
<b>Minimum</b>		<b>24</b>		
<b>Maximum</b>			<b>672</b>	
<b>Average</b>				<b>324</b>

\*The raw water flows are occasionally higher than the treated water flows due the water used to perform backwashes on the DAF and Ultrafiltration system.

Tabulated below is a summary of in-house analytical testing performed during sampling in the Mohawks of the Bay of Quinte Drinking Water System for the reporting period.

<b><u>Mohawks of the Bay of Quinte WTF - In-House Test Results</u></b>		
Sample Parameter & Location	# of Grab Samples	Range of Results (min#) – (max#)
Turbidity (NTU)- Raw Water	8760	0.00-25.07
Free Chlorine Residual (mg/L) – Treated Water	8760	0.11-5.00
Turbidity (NTU)- Treated Water	8760	0.00-2.00
Free Chlorine Residual (mg/L) – Distribution Water	8760	0.35-2.14

\*Instrument spikes and dips recorded by on-line instrumentation were a result of air bubbles and various maintenance and calibration activities. Power interruptions may also cause an instrument reading to drop to zero. All events are reviewed for compliance with O. Reg. 170/03 and if warranted would be reported to Health Canada.

**Ontario Regulation 170/03 requires the following chemical testing to be performed:**

- One treated water sample every three months to be tested for nitrite and nitrate;
- One distribution sample every three months to be tested for THM and HAA

- One treated water sample every 12 months to be tested for every parameter listed in Schedules 23 and 24; and
- One treated water sample every 60 months to be tested for sodium and fluoride.

Tabulated below is a summary of all chemical sample results for the reporting period.

<b>MBQ WTF -- Chemical Test Results</b>					
Sample Parameter	# of Samples	Distribution 251 York Rd– 2022 Average Result(ug/L)	Distribution Water 7992 Old Hwy#2— 2022 Average Result(ug/L)	ODWS Objective (Type)	Exceedance
Nitrite (N) - mg/L	4	0.01	0.01	1 (MAC)	No
Nitrate (N) – mg/L	4	0.01	0.10	10 (MAC)	No
Nitrite + Nitrate (N) – mg/L	4	0.021	0.11	10 (MAC)	No
THM’s Total – ug/L	4	64.5	52.3	100 (MAC) *	No
HAA Total – ug/L	4	53.6	58.6	80 (MAC)	No

MAC = Maximum Acceptable Concentration, \*expressed as a running annual average

### **Schedule 23 & 24 - Organic and Inorganic Parameter Results**

Tabulated below is a summary of all Schedule 23 & 24 sample results for the reporting period.

<b>MBQ WTF --Test Results</b>					
Parameter	Units	Sample Date	Result Value	Objective	Exceedance (Yes/No)
Antimony (Sb)	ug/L	21-Apr-22	<0.60	6.0	N
Arsenic (As)	ug/L	21-Apr-22	<1.0	10.0	N
Barium (Ba)	ug/L	21-Apr-22	33	1000.0	N
Boron (B)	ug/L	21-Apr-22	<50	5000.0	N
Cadmium (Cd)	ug/L	21-Apr-22	<0.10	5.0	N
Chromium (Cr)	ug/L	21-Apr-22	<1.0	50.0	N
Selenium (Se)	ug/L	21-Apr-22	<5.0	50.0	N
Uranium (U)	ug/L	21-Apr-22	<5.0	20.0	N
Mercury	ug/L	21-Apr-22	<0.10	1.0	N
Benzene	ug/L	21-Apr-22	<0.50	1.0	N
Carbon tetrachloride	ug/L	21-Apr-22	<0.20	2.0	N
Monochlorobenzene	ug/L	21-Apr-22	<0.50	80.0	N
1,2-Dichlorobenzene	ug/L	21-Apr-22	<0.50	200.0	N
1,4-Dichlorobenzene	ug/L	21-Apr-22	<0.50	5.0	N
1,2-Dichloroethane	ug/L	21-Apr-22	<0.50	5.0	N
1,1-dichloroethylene (vinylidene chlorid	ug/L	21-Apr-22	<0.50	14.0	N

Dichloromethane	ug/L	21-Apr-22	<5.0	50.0	N
Ethylbenzene	ug/L	21-Apr-22	<0.50	140.0	N
Tetrachloroethylene (perchloroethylene)	ug/L	21-Apr-22	<0.50	10.0	N
Toluene	ug/L	21-Apr-22	<0.50	60.0	N
Trichloroethylene	ug/L	21-Apr-22	<0.50	5.0	N
Vinyl chloride	ug/L	21-Apr-22	<0.20	1.0	N
o-xylene	ug/L	21-Apr-22	<0.50	<i>Not Applicable</i>	
m/p-xylene	ug/L	21-Apr-22	<1.0	<i>Not Applicable</i>	
Xylenes (Total)	ug/L	21-Apr-22	<1.5	90.0	N
4-Bromofluorobenzene	%	21-Apr-22	99	<i>Not Applicable</i>	
1,4-Difluorobenzene	%	21-Apr-22	93.9	<i>Not Applicable</i>	
Benzo(a)pyrene	ug/L	21-Apr-22	<0.020	0.01	N
Aroclor 1242	ug/L	21-Apr-22	<0.020	<i>Not Applicable</i>	
Aroclor 1254	ug/L	21-Apr-22	<0.020	<i>Not Applicable</i>	
Aroclor 1260	ug/L	21-Apr-22	<0.035	<i>Not Applicable</i>	
Total PCBs	ug/L	21-Apr-22	<0.0080	3.0	N
d14-Terphenyl	%	21-Apr-22	<0.0080	<i>Not Applicable</i>	
alpha-Chlordane	ug/L	21-Apr-22	<0.004	<i>Not Applicable</i>	
gamma-Chlordane	ug/L	21-Apr-22	<0.004	<i>Not Applicable</i>	
p,p-DDD	ug/L	21-Apr-22	<0.004	<i>Not Applicable</i>	
p,p-DDE	ug/L	21-Apr-22	<0.004	<i>Not Applicable</i>	
o,p-DDT	ug/L	21-Apr-22	<0.008	<i>Not Applicable</i>	
p,p-DDT	ug/L	21-Apr-22	<0.20	<i>Not Applicable</i>	
Oxychlordane	ug/L	21-Apr-22	<0.20	<i>Not Applicable</i>	
Bromoxynil	ug/L	21-Apr-22	<0.20	5.0	N
2,4-D	ug/L	21-Apr-22	<5.0	100.0	N
Dicamba	ug/L	21-Apr-22	<0.20	120.0	N
Dinoseb	ug/L	21-Apr-22	<0.20	10	
Glyphosate	ug/L	21-Apr-22	77.5	280.0	N
MCPA	ug/L	21-Apr-22	<0.10	100.0	N
Picloram	ug/L	21-Apr-22	<0.10	190.0	N
2,4-Dichlorophenylacetic Acid	%	21-Apr-22	<0.20	<i>Not Applicable</i>	
Alachlor	ug/L	21-Apr-22	<0.10	5.0	N
Atrazine	ug/L	21-Apr-22	<0.0050		
Atrazine & Metabolites	ug/L	21-Apr-22	<0.20	5.0	N
Azinphos-methyl	ug/L	21-Apr-22	<0.20	20.0	N
Benzo(a)pyrene	ug/L	21-Apr-22	<0.10	20.0	N
Carbaryl	ug/L	21-Apr-22	<0.10	90.0	N

Carbofuran	ug/L	21-Apr-22	<0.30	90.0	N
Chlorpyrifos	ug/L	21-Apr-22	<0.10	90.0	N
Diazinon	ug/L	21-Apr-22	<1.0	90.0	N
2,4-Dichlorophenol	ug/L	21-Apr-22	<1.0	900.0	N
Dimethoate	ug/L	21-Apr-22	<0.10	20.0	N
Diquat	ug/L	21-Apr-22	<0.10	70.0	N
Diuron	ug/L	21-Apr-22	<0.20	150.0	N
Atrazine Desethyl	ug/L	21-Apr-22	<0.10	<i>Not Applicable</i>	
Malathion	ug/L	21-Apr-22	<0.10	190.0	N
Diclofop-methyl	ug/L	21-Apr-22	<1.0	9.0	N
Metolachlor	ug/L	21-Apr-22	<0.50	50.0	N
Metribuzin	ug/L	21-Apr-22	<0.10	80.0	N
Paraquat	ug/L	21-Apr-22	<0.10	10.0	N
Pentachlorophenol	ug/L	21-Apr-22	<0.10	60.0	N
Phorate	ug/L	21-Apr-22	<0.20	2.0	N
Prometryne	ug/L	21-Apr-22	<0.50	1.0	N
Simazine	ug/L	21-Apr-22	<0.10	10.0	N
Terbufos	ug/L	21-Apr-22	<0.50	1.0	N
2,3,4,6-Tetrachlorophenol	ug/L	21-Apr-22	<0.10	100.0	N
Triallate	ug/L	21-Apr-22	81.7	230.0	N
2,4,6-Trichlorophenol	ug/L	21-Apr-22	103.8	5.0	N
Trifluralin	ug/L	21-Apr-22	<0.60	45.0	N
2-Fluorobiphenyl	%	21-Apr-22	<1.0	<i>Not Applicable</i>	
2,4,6-Tribromophenol	%	21-Apr-22	33	<i>Not Applicable</i>	

**Ontario Regulation 170/03 – Specifies requirements for sampling and testing for lead as follows:**

- The Schedule 15 Sampling is required under O.Reg 170/03. This system is under reduced sampling thus no plumbing samples are collected. This facility is on a reduced sampling schedule and lead is sampled every 36 months.

Tabulated below is a summary of the lead sampling results obtained during the reporting period.

<b>Quinte Mohawks School –Plumbing Lead Sample Results</b>			
<b>Location</b>	<b>Sample Parameter- Lead – ug/L</b>	<b>ODWS Objective (Type)</b>	<b>Exceedance</b>
Plumbing	<1.0-2.9	5 ug/L	No
Distribution	<1.0-<1.0	5 ug/L	No



**\*This system is exempt from plumbing sampling for lead. This system must collect distribution pH and alkalinity samples under the reduced sampling table during each sampling period in every 12-month period and distribution lead samples under the reduced sampling table during each sampling period in every third 12-month period**

MBQ WTF – Chemical Test Results – January 1, 2022 to March 31, 2022					
Sample Parameter	# of Samples	Distribution Water Average Result	Distribution Water Rd. Average Result	ODWS Objective Range	Exceedance
pH	2	6.83-7.85	6.86-7.65	6.50 - 8.50	No
Alkalinity(CaCO3) – mg/L	2	92-99	100-123	100 - 200	No

**Blue-Green Algae**

	Raw	Treated
Lowest Analytical Detection Limit (ALS)		0.1 ug/L
Guideline Limit	N/A	1.50 ug/L
<b>Date</b>	<b>Result (ug/L)</b>	
May 24 2022	<0.1	<0.1
May 30 2022	<0.1	<0.1
Jun 6 2022	<0.1	<0.1
Jun 13 2022	<0.1	0.20
Jun 20 2022	<0.1	<0.1
July 4 2022	0.2	<0.1
July 11 2022	0.3	<0.1
July 18 2022	0.1	<0.1
July 25 2022	0.6	0.20
Aug 2 2022	0.2	<0.1
Aug 15 2022	<0.1	<0.1
Aug 22 2022	0.2	<0.1
Aug 29 2022	0.8	<0.1
Sept 26 2022	<0.1	<0.1
Oct 3 2022	<0.1	<0.1
Oct 11 2022	<0.1	<0.1
Oct 24 2022	<0.1	<0.1
Oct 31 2022	<0.1	<0.1

**As a part of the ongoing expansion the following addresses/locations were tied-in to the Mohawks of the Bay of Quinte Drinking Water System during this reporting year:**

- Granny Home- 13 Atsia Crt
- 1093D Lower Slash Rd
- Bayview Variety Store
- Kagita Makim Office
- FNTI Hanger
- Trailer Park Office
- Firemen’s Hall
- Home Support Activity Office
- Youth Centre
- Community Hall
- FNTI Office
- 5427 A Hwy #2 (Build All Office)
- Tim Barnhardt’s Trailer at Turtle Island Trailer Park, Hwy #2, Shannonville
- 2 C Norway’s Rd
- 120 B Bayshore Rd
- 576 York Rd
- 1996 York Rd
- 2006 York Rd
- 8146 Old Hwy #2
- 61 Bayshore Rd
- 2008 York Rd
- 5655 Hwy #2 Shannonville, Two service lines for MBQ Buildings.
- 1766 York Rd.

**Compliance Summary**

From the results tabulated in the previous section, sample results obtained during the reporting period were within the Ontario Drinking Water Quality Objective. No samples taken exceeded the Maximum Acceptable Concentration (MAC) and therefore deemed to be in compliance with O.Reg 170/03.

**AWQI Summary**

The following table contains details on any Adverse Water Quality Incident notices submitted to Environment Canada:

MBQ WTF – AWQI Descriptions					
Facility	Date of Incident (yyyy/mm/dd)	Parameter	Result	Unit of Measure	Corrective Action
<i>No AWQI's in Reporting Year 2022.</i>					

**Alarm Response & Overtime Summary**

- U.V Reactors Low Level Alarm.

- Evoqua Filter Alarm.
- Water Production not Ready Alarm.
- Brownout caused high lift pump alarm.
- Water Production not Ready, cold weather was making level sensors for storage tanks jump up and down.
- Water Production not Ready, Aquarius Low Level Alarm.
- Evoqua Alarm, Cell Level High in Filtration.
- Low Level in Filtration & failed to refill cell.
- Signal Loss from Low Lift Station.
- High Level in Filtration Alarm Membrane #2.
- Low Distribution Cl2 Alarm.
- Water Production Not Ready Alarm.
- Low Distribution CL2 Alarm.
- U.V System Alarm, Low Reactor Level.
- Service line leak at 8203 Old Hwy #2.
- U.V System Alarm.
- Tower Alarm.
- Water Production Not Ready Alarm.
- U.V System Alarm.
- Water Production not Ready Alarm.
- Evoqua System Alarm.
- Membrane #1 Turbidity High.
- Water Production not Ready Alarm.
- GAC's hit low level and disabled.
- Distribution Low Cl2 Alarm.
- U.V System Alarm
- Water Production not Ready Alarm & Evoqua Filter Alarm
- Water Production not Ready, Cl2 pumped locked out

### ***Capital Expenditures Summary***

- Lakeshore Fire Hydrants on site to complete hydrant flushing and fire flow testing