

Corporation of the City of Quinte West

# **Trenton/Bayside DWS (Bayside Service Area)**

2020 Annual & Summary Drinking Water System Report

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**The Corporation of the City of Quinte West**  
 Public Works and Environmental Services  
 Water/Wastewater Division  
**2020 Annual Drinking Water System Report**  
**(Bayside Service Area)**

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## 2020 Annual Drinking Water System Report

### Drinking Water System Information

Drinking Water System Number:	220008079
Drinking Water System Name:	Trenton/Bayside DWS (Bayside Service Area)
Drinking Water System Owner:	The Corporation of the City of Quinte West
Drinking Water System Category:	Large Municipal-Residential System
Period being Reported:	January 1, 2020 through December 31, 2020

**Does your Drinking Water System service more than 10,000 people?**

Yes

**Is your Annual Report available to the public at no charge on a website**

Yes, please visit [www.quintewest.ca](http://www.quintewest.ca)

**Location where Summary Report required under O.Reg.170/03 Schedule 22 will be available for inspection**

Water/Wastewater Division Administration Office

25 Couch Crescent

Trenton, ON, K8V 1GB

**List all Drinking Water Systems (if any), that receive all of their Drinking Water from your System:**

None.



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**Indicate how you notified system users that your annual report is available, and is free of charge.**

- Public access/notice via City website
- Public access/notice via Government Office
- Public access/notice via newspaper
- Public access/notice via City social media platform(s)
- Public access/notice via a Public Library
- Public access/notice via other method:

**Description of the Drinking Water System**

The Bayside Water Treatment Plant pulls water from the Bay of Quinte through a 404m long intake pipe that extends approximately 370m into the Bay. This conventional, chemically-assisted filtration plant has a rated capacity of 11,360 cu.m/day. The facility uses rapid-mix coagulation, flocculation, sedimentation, dual-media filtration, and granular activated adsorber cells. The facility uses sodium hypochlorite for disinfection, and fluoridates its drinking water supply. Drinking Water is pumped to the Water Distribution System (WDS) through two (2) vertical turbine highlift pumps that pull water from the onsite clearwell that has a usable volume of approximately 980 cu.m. The elevated water storage tower located at 10 Richards Way, has an effective usable volume of 6,050 cu.m. Onsite, a dual-celled holding pond is used to provide natural filtration for process wastewater, prior to final discharge into an adjacent wetland through ex-filtration.

The Bayside Water Treatment Plant services approximately 5,100 customers in the community of Bayside, in addition to a portion of CFB Trenton. In 2015, the City constructed a watermain that effectively connected the Bayside WDS to the Trenton WDS. ON April 21, 2017, the Trenton and Bayside Drinking Water Systems were consolidated into one Drinking Water Works Permit (DWWP) #163-202, and one Municipal Drinking Water



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Licence (MDWL) #163-102. Each system is still assigned a separate DWS number by the Ministry of Environment, Conservation and Parks.

**List all water treatment chemical used over this Reporting Period:**

- ✓ Polyaluminum Chloride (Tradename: SternPac)
- ✓ Sodium Hypochlorite
- ✓ Hydrofluosilicic Acid (Fluoride solution)

**Were any significant expenses incurred to:**

- Install Required Equipment?
- Repair required Equipment?
- Replace required Equipment?

**Provide a brief description, and a breakdown of monetary expenses incurred to facilitate Equipment upgrades:**

Preventative Maintenance (PM) activities for lubrication, inspections, testing and cleaning of equipment is scheduled and completed routinely, along with other lifecycle replacement needs. In addition to the PM activity, the following Capital expenditures were incurred this Reporting Period:

Repair Backwash pump	\$4,000
Substation repairs/maintenance	~\$18,000
Valve replacement	\$23,000



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**Notices submitted in accordance with subsection 18(1) of the Safe Drinking Water Act or section 16-4 of Schedule 16 of O.Reg. 170/03 and reported to Spills Action Centre during this Reporting Period:**

<b>Incident Date</b> (DD-MM-YY)	<b>Parameter</b>	<b>Result</b>	<b>Unit of Measure</b>	<b>Corrective Action</b>	<b>Corrective Action Date</b> (DD-MM-YY)
14-JUL-20	<i>Total Coliform</i>	2	count/10 0mL	Resample and Test. Resample results clear, no further Corrective Actions required	17-JUL-20



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**Microbiological Testing completed in accordance with Schedule 10, 11, or 12 of Regulation 170/03 during this Reporting Period:**

	Number of Samples	Range of E.Coli (min - max)	Range of Total Coliform (min - max)	Number of Heterotrophic Plate Count Samples	Range of HPC results (min - max)
Raw	53	0 - 20	0 - 1780	NA	NA
Treated	53	0 - 2	0 - 0	53	0 - 380
Distribution	181	0 - 0	0 - 0	70	0 - 21

**Operational Testing completed in accordance with Schedule 7, 8, or 9 of O.Reg.170/03 during this Reporting Period:**

Parameter	Number of Grab Samples	Range of Results (min-max)
Turbidity, (NTU)	8760	0.000 - 0.629
Primary Disinfection FAC <sup>1</sup> , (mg/L)	8760	1.35 - 3.60 <sup>2</sup>
Secondary Disinfection FAC, (mg/L)	8760	0.46 - 3.00
Fluoride <sup>3</sup> , (mg/L)	8760	0.20 - 0.86

<sup>1</sup> Free Available Chlorine. Defined as the free amount of chlorine available in water.

<sup>2</sup> Maximum FAC not representative of typical water quality. MECP required updated CT calculations as part of the MDWL renewal process. In order to meet CT in the short term, staff required to increase Post Chlorine concentrations to meet cold water temperature CT. Average FAC over reporting period 2.24mg/L.

<sup>3</sup> Fluoride System offline for approximately 40 days throughout reporting period for analyzer maintenance, and Elevated Tank maintenance.





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**Summary of additional testing and sampling carried out in accordance with the requirement of an Approval, Order, or other Legal Instrument:**

In accordance with Condition 4.0 of MDWL #163-102, issue number 4, monthly samples were collected from the 'Filter to Waste' environmental Discharge, and 'Holding Pond' Influent discharge points. On September 28, 2020 MECP Approvals Branch issued a new MDWL to the City and removed the requirement to sample Holding Pond Influent and test for TSS, as environmental release is through exfiltration to adjacent wetland and therefore not an environmental risk. The ponds are monitored regularly, and solids removed on an as-needed basis, to ensure continued effective operation.

Condition 1.5 of the MDWL outlines the maximum annual average concentration for each of these parameters. Results of this sampling and testing are outlined in the table below.

<b>Residue Management, TSS Results, (mg/L)</b>		
<b>Date</b>	<b>Lagoon Influent</b>	<b>Filter to Waste Discharge</b>
Jan 7	191	< 2
Feb 4	10	< 2
Mar 3	167	< 2
Apr 7	524	< 2
May 5	167	< 2
Jun 1	124	< 2
Jul 7	2380	< 2
Aug 5	330	< 2
Sep 1	706	< 2



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Oct 1	289	< 2
Nov 3	Not Required	< 2
Dec 1	Not Required	2
<b>Annual Average Concentration (mg/L)</b>	<b>489</b>	<b>2</b>

**Summary of Inorganic parameters tested during this Reporting Period or the most recent Sample Results:**

<b>Inorganic Compound Results</b>				
<b>Parameter</b>	<b>Sample Date (dd/mmm/yy)</b>	<b>Result Value</b>	<b>Unit of Measure</b>	<b>Exceedance?</b>
Antimony	07-JAN-20	0.09	ug/L	No
Arsenic	07-JAN-20	0.20	ug/L	No
Barium	07-JAN-20	33.9	ug/L	No
Boron	07-JAN-20	9	ug/L	No
Cadmium	07-JAN-20	0.003	ug/L	No
Chromium	07-JAN-20	0.14	ug/L	No
Mercury	07-JAN-20	0.01	ug/L	No
Selenium	07-JAN-20	0.06	ug/L	No
Sodium	07-JAN-20	15.5	mg/L	No
Fluoride	07-JAN-20	0.44	mg/L	No
Uranium	07-JAN-20	0.074	ug/L	No
Nitrate	07-JAN-20 07-APR-20 07-JUL-20 06-OCT-20	0.453 0.363 0.289 0.088	mg/L	No



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Nitrite	07-JAN-20	0.003	mg/L	No
	07-APR-20	0.003		
	07-JUL-20	0.003		
	06-OCT-20	0.003		

**Summary of Lead Testing under Schedule 15.1 during this Reporting Period:**

Lead Sampling Results				
Sampling Period	Location Type	Number of Samples	Range of Lead Results (ug/L), 'min-max'	Number of Exceedances
Winter Sampling Period <sup>4</sup>	Drinking Water System exempt from sampling in accordance with Section 15.1-5(9) under Schedule 15 of O.Reg.170/03. Sampling and testing for Lead not required until April, 2021 for sampling period.			
Summer Sampling Period <sup>5</sup>	Drinking Water System exempt from sampling in accordance with Section 15.1-5(9) under Schedule 15 of O.Reg.170/03. Sampling and testing for Lead not required until Summer 2021 sampling period.			

<sup>4</sup> Winter Sampling Period runs from December 15 - April 15. The last sample collected in accordance with the Regulation was sampled on February 27, 2018.

<sup>5</sup> The Summer Sampling Period runs from June 15 through October 15. The last sample collected in accordance with the Regulation was sampled on October 17, 2018.



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**Summary of Organic parameters sampled during this Reporting Period:**

<b>Organic Compound Results</b>				
<b>Parameter</b>	<b>Sample Date</b>	<b>Result Value</b>	<b>Unit of Measure</b>	<b>Exceedance</b>
Alachlor	07-JAN-20	0.02	ug/L	No
Atrazine + N-dealkylated metabolites	07-JAN-20	0.01	ug/L	No
Azinphos-methyl	07-JAN-20	0.05	ug/L	No
Benzene	07-JAN-20	0.32	ug/L	No
Benzo(a)pyrene	07-JAN-20	0.004	ug/L	No
Bromoxynil	07-JAN-20	0.33	ug/L	No
Carbaryl	07-JAN-20	0.05	ug/L	No
Carbofuran	07-JAN-20	0.01	ug/L	No
Carbon Tetrachloride	07-JAN-20	0.17	ug/L	No
Chlorpyrifos	07-JAN-20	0.02	ug/L	No
Diazinon	07-JAN-20	0.02	ug/L	No



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Dicamba	07-JAN-20	0.20	ug/L	No
1,2-Dichlorobenzene	07-JAN-20	0.41	ug/L	No
1,4-Dichlorobenzene	07-JAN-20	0.36	ug/L	No
1,2-Dichloroethane	07-JAN-20	0.35	ug/L	No
1,1-Dichloroethylene (vinylidene chloride)	07-JAN-20	0.33	ug/L	No
Dichloromethane	07-JAN-20	0.35	ug/L	No
2-4 Dichlorophenol	07-JAN-20	0.15	ug/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	07-JAN-20	0.19	ug/L	No
Diclofop-methyl	07-JAN-20	0.40	ug/L	No
Dimethoate	07-JAN-20	0.06	ug/L	No
Diquat	07-JAN-20	1	ug/L	No
Diuron	07-JAN-20	0.03	ug/L	No
Glyphosate	07-JAN-20	1	ug/L	No
Malathion	07-JAN-20	0.02	ug/L	No



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2 methyl-4-chlorophenoxyacetic acid (MCPA)	07-JAN-20	0.00012	ug/L	No
Metolachlor	07-JAN-20	0.01	ug/L	No
Metribuzin	07-JAN-20	0.02	ug/L	No
Monochlorobenzene	07-JAN-20	0.3	ug/L	No
Paraquat	07-JAN-20	1	ug/L	No
Pentachlorophenol	07-JAN-20	0.15	ug/L	No
Phorate	07-JAN-20	0.01	ug/L	No
Picloram	07-JAN-20	1	ug/L	No
Polychlorinated Biphenyls(PCB)	07-JAN-20	0.04	ug/L	No
Prometryne	07-JAN-20	0.03	ug/L	No
Simazine	07-JAN-20	0.01	ug/L	No
THM (NOTE: latest annual average)	06-OCT-20	83.75	ug/L	No
<b>HAA (NOTE: latest annual average)</b>	<b>06-OCT-20</b>	<b>95.9</b>	<b>ug/L</b>	<b>YES</b>



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Terbufos	07-JAN-20	0.01	ug/L	No
Tetrachloroethylene	07-JAN-20	0.35	ug/L	No
2,3,4,6-Tetrachlorophenol	07-JAN-20	0.20	ug/L	No
Triallate	07-JAN-20	0.01	ug/L	No
Trichloroethylene	07-JAN-20	0.44	ug/L	No
2,4,6-Trichlorophenol	07-JAN-20	0.25	ug/L	No
Trifluralin	07-JAN-20	0.02	ug/L	No
Vinyl Chloride	07-JAN-20	0.17	ug/L	No

**Inorganic or Organic parameter(s) that have exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards:**

None.



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## **2020 Summary Report to Council**

In accordance with Schedule 22 requirements outlined in Ontario Regulation 170/03, a Summary Report shall be prepared no later than March 31 for the preceding year, and supplied to members of municipal council.

The Report shall list the requirements of the Act, Regulations, 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.

The Report must also include a summary of the quantities and flow rates of potable (drinkable) water supplied during the Reporting Period, including monthly average and maximum daily flows. A comparison of these flows to the rated capacity and flow rates approved in the system Drinking Water Works Permit, and Municipal Drinking Water Licence, must also be provided.

### **Prescribed Instruments applicable to the Trenton/ Bayside DWS**

The Trenton/Bayside DWS is governed by, and must operate their DWS primarily in accordance with, the following Acts and Regulations at minimum:

- Safe Drinking Water Act, 2002;
- O. Reg. 128/04 – Certification of Drinking Water System Operators and WQA
- O. Reg. 170/03 – Drinking Water Systems
- O. Reg. 169/03 – Ontario Drinking Water Quality Standards
- Environmental Protection Act, where applicable;
- Clean Water Act, where applicable;
- Municipal Drinking Water Licence 163-102;
- Drinking Water Works Permit 163-202;
- Permit to Take Water 1000-9RFK23, expires December 4, 2024.





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Councillors wishing to obtain a copy of any Act or Regulation are free to contact the Compliance Coordinator at [amy@quintewest.ca](mailto:amy@quintewest.ca) to obtain a current consolidated copy and interpretation of the legislation.

## **Compliance with Prescribed Instruments, Acts and Regulations**

### **Safe Drinking Water Act**

- Adverse Water Quality Incidents as defined by the Safe Drinking Water Act have been listed in section [Notices submitted in accordance with subsection 18\(1\) of the Safe Drinking Water Act or section 16-4 of Schedule 16 of O.Reg. 170/03 and reported to Spills Action Centre during this Reporting Period](#). Located on page 7 of the Annual Report.
- NSF International conducted an offsite Surveillance Audit on October 27, 2020. The intent of the audit is to confirm continued conformance to the Drinking Water Quality Management Standard. There were no Non-Conformances identified in the Audit Report; three (3) Opportunities for Improvement to the documented Operational Plan were suggested.
- After a successful re-accreditation audit in 2019, the City was required to apply for a Municipal Drinking Water Licence renewal in 2020. The City received a renewed Permit and Licence on September 28, 2020.
- The City achieved a 100% Inspection Rating on its 2020 MECP Compliance Inspection with no instances of non-compliance.



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## Clean Water Act

The Source Protection Plan was approved by the Minister of Environment, Conservation and Parks, and came into effect on January 1, 2015. The City has put the necessary internal processes in place with the Planning, Building, and Public Works Departments to screen applications and ensure compliance with the Source Protection Plan. In 2020, three (3) applications were submitted to the Risk Management Official for review and approval surrounding the Bayside Intake Protection Zone. In general the screening, application, and approval processes implemented by staff seem to be working reasonably well. Throughout the screening and verification process it has been determined that currently there are no Risk Management Plans required for the properties identified surrounding the Bayside Intake.

## Permit to Take Water

The City operates its Bayside Water Treatment Plant in accordance with Permit to Take Water (PTTW) number 1000-9RFK23 which expires on December 4, 2024. This Permit allows the City to take 11,365 cu.m/day from the Bay of Quinte at a maximum flow rate of 262.8 L/s. The maximum recorded daily taking was 6,399.2 cu.m/day on July 29, 2020. The maximum recorded flow rate was 124.7 L/s on December 10, 2020.

For a detailed summary of water quantities and flow rates, see section [2020 Water Quantities and Flow Rates - Raw Water Assessment](#).

## Drinking Water Works Permit/Municipal Drinking Water Licence

- The City applied for renewal of its Municipal Drinking Water Licence, and Drinking Water Works Permit in 2020. The Bayside Drinking Water System is now governed by Issue Number: 05 of Municipal Drinking Water Licence number 163-102, and



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Issue Number: 08 of Drinking Water Works Permit number 163-202. Noteworthy changes to the City's Licence are listed below:

- ◆ MECP Approvals Branch contended the Contact Time calculation applied to the Bayside WTP Chlorine Contact Tank, specifically the Baffling Factor applied to a tank section. The City engaged Jacobs Engineering to conduct a Tracer Study analysis. In simple terms, the purpose of a Tracer Study is to determine how quickly a drop of water travels through the clearwell. This drop of water requires a certain amount of contact with a disinfectant (chlorine) in order to render any organisms inactive. The Tracer Study was conducted on December 16, 2020 and was a success. The Bayside WTP will not require any significant Capital Upgrades to achieve the requirements of the Procedure for Disinfection of Drinking Water.
  - ◆ MECP Approvals Branch agreed to remove the Lagoon Influent sampling requirement from the Licence as sample results obtained from the sampling are redundant. See section [Summary of additional testing and sampling carried out in accordance with the requirement of an Approval, Order, or other Legal Instrument](#) for further information on this condition.
  - ◆ The new Licence requires development of a Harmful Algal Bloom monitoring, reporting and sampling plan by March 28, 2021.
  - ◆ The Watermain Disinfection Procedure was revised in August, 2020. This version 2.0 requires adoption by March 28, 2021 as well.
- In accordance with Condition 1.1 of the MDWL, the Bayside Water Treatment Plant has a rated capacity to treat and distribute 11,360 cu.m/day. Over the Reporting Period the maximum daily volume of treated water distributed to the distribution system was 6,191 cu.m/day on July 29, 2020. The Annual Average Daily Flow pumped to the Distribution System was 3,683 cu.m/day. For a detailed summary of treated water quantities and flow rates, see section [2020 Water Quantity and Flow Rates \(Treated Water Assessment\)](#).



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**2020 Water Quantity and Flow Rates (Raw Water Assessment)**

<b>Raw Water Flow: PTTW Limit = 11,365 cu.m/d</b>			
<b>Month</b>	<b>Average Daily Flow (cu.m/d)</b>	<b>Maximum Daily Flow (cu.m/d)</b>	<b>Total Monthly Flow (cu.m/month)</b>
January	3622.18	4706.29	112287.63
February	3673.08	4178.60	106519.42
March	3576.61	4283.17	110874.94
April	3461.62	3872.87	103848.69
May	3886.32	4882.65	120475.94
June	4659.25	5710.01	139777.55
July	4870.25	6399.15	150977.90
August	4448.35	5094.19	137898.84
September	3888.54	4638.89	116656.26
October	3479.85	3993.92	107875.35
November	3517.71	4393.40	105531.24
December	3265.66	4535.07	101235.48
<b>Total Raw Water Flow =</b>			<b>1,413,959</b>



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**2020 Water Quantity and Flow Rates (Treated Water Assessment)**

<b>Treated Water Flow: Facility Rated Capacity = 11,360 cu.m/day</b>			
<b>Month</b>	<b>Average Daily Flow (cu.m/d)</b>	<b>Maximum Daily Flow (cu.m/d)</b>	<b>Total Monthly Flow (cu.m/month)</b>
January	3396.92	3993.38	105304.61
February	3475.85	3792.25	100799.59
March	3454.54	3843.70	107090.69
April	3346.81	3785.02	100404.22
May	3729.35	4786.94	115609.72
June	4434.37	5584.76	133031.05
July	4538.29	6191.10	140686.91
August	4255.25	5134.36	131912.64
September	3698.58	4702.62	110957.38
October	3306.01	3953.99	102486.16
November	3309.83	3799.83	99294.79
December	3119.73	4255.71	96711.56
<b>Total Treated Water Flow =</b>			<b>1,344,289</b>

- Annual Average Daily (Treated Water) Flow = 3,683 cu.m/day. This accounts for 32% of the facility Rated Capacity.
- Maximum Daily (Treated Water) Flow = 6,191 cu.m/day. This accounts for 54.5% of the facility Rated Capacity during recorded peak daily flow condition.



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## Historical Flow Comparison

The 5-year ADF is calculated to be 3,156 cu.m/day, accounting for 28% of the facility rated capacity. With continued demand from the Trenton Service Area, and the planned interconnection of Trenton and Frankford WDS, it is expected that demand will continue to increase annually. This facility should still be able to distribute on average approximately 5,000 cu.m/day more water to meet average daily flow requirements.

