



A Natural Attraction

Bayside Water Treatment Plant & Water Distribution System



2009 Annual and Summary Report



**PUBLIC WORKS &
ENVIRONMENTAL SERVICES**

**2009 Annual & Summary Report
Bayside WTP & Water Distribution
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Annual Report**

Drinking-Water System Number: **220008079**
Drinking-Water System Name: **Bayside Water Treatment Plant and Water Distribution system**
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, 2009-December 31, 2009**

Does your Drinking-Water System serve more than 10,000 people?

No

Is your annual report available to the public at no charge on a web site on the Internet?

Yes – please visit www.quintewest.ca

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

City Hall
7 Creswell Drive
Trenton, ON, K8V 5R6

List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Not applicable.

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

- Public access/notice via the web
- Public access/notice via Government Office
- Public access/notice via a newspaper
- Public access/notice via Public Request
- Public access/notice via a Public Library
- Public access/notice via other method:



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Describe your Drinking-Water System

The Bayside Water Treatment plant drafts water via a gravity raw water intake pipe, 404 m long extending approximately 370 m into the Bay of Quinte. This conventional chemically assisted filtration plant has a rated capacity of 11,360 m³/day. Processes used at the filtration plant include flocculation, sedimentation, Dual-Media filtration, and Granular-Activated Carbon adsorption filtration. The disinfection system consists of a sodium hypochlorite solution injected into the GAC transfer/storage well which has a total usable volume of 1,960 m³. The Bayside WTP injects fluoride into the potable water before water is pumped into the distribution system via two vertical turbine high lift pumps. The elevated water storage tower has an operating capacity of 6,050 m³, and is located approximately 150 m west of Montrose Road. The Bayside WTP services approximately 3000 people in the Bayside community, in addition to part of CFB Trenton.

List all water treatment chemicals used over this reporting period:

- Hydrofluosilic Acid (Fluoride solution)
- Aluminum Sulphate (alum)
- Sodium Hypochlorite

Were any significant expenses incurred to?

- Install required equipment
- Repair required equipment
- Replace required equipment

Please provide a brief description and a breakdown of monetary expenses incurred:

- Flocculation chamber motor and gear case repaired
- Two filter electric valve actuators were replaced
- Two chemical pumps were replaced along with the flow control panel
- New spill containment was created for Alum and Sodium Hypochlorite storage
- A new chlorine residual analyzer and sample pump was installed for early detection of chlorine system problems



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Provide details on the 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

Incident Date (mm/dd/yy)	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date (mm/dd/yy)
05/26/09	Fluoride	Fluoride residual greater than 1.50 mg/L for 8 mins, 4 sec.	mg/L	A fluoride probe was installed, and was allowed a conditioning period. Daily grabs were not collected.	05/26/09
05/26/09	Fluoride	Fluoride residual greater than 1.50 mg/L for 4 min. 30 sec.	mg/L	A fluoride probe was installed, and was allowed a conditioning period. Daily grabs were not collected.	05/26/09
10/15/09	pressure	25-30 homes issued a Boil Water Advisory (BWA) due to a watermain break	psi	Water was directed from Trenton through CFB Trenton while watermain break repaired. 25-30 homes were isolated near the break therefore issued a BWA. Bacti samples collected showed no contamination	10/16/09
12/30/09	Chemically-assisted filtration not complete due to lower than normal alum dosage	Filter turbidities increased.		Alum pump dosage increased. Filters filtering to waste until turbidities were within acceptable range. No reportable filter turbidity exceedances during this event. This report was made as a precautionary measure	12/31/09



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Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period.

	Number of Samples	Range of E.Coli Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw	57	0-52	0-2040	0	
Treated	52	0-0	0-0	51	0-1
Distribution	160	0-0	0-0	55	0-2

** The City did not meet sampling requirements as per O. Reg. 170/03 Schedule 10(3). One HPC analysis was not completed on the Treated Water during regular weekly sampling.*

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.

	Number of Grab Samples	Range of Results (min #)-(max #)
Turbidity *	8760	0.041-1.998
Chlorine **	8760	0.43-4.87
Distribution Chlorine	8760	0.75-3.40
Fluoride ***	8760	0.05-1.84

** Currently, the Bayside WTP does not have the capability of reporting a MIN turbidity reading on the daily reports. The Min result reported is the Min value over the year for the Average daily turbidities. In addition, the Max value reported occurred mainly during filter start-up, and never lasted more than 15 minutes.*

*** The Minimum plant chlorine reported occurred on October 4, 2009. During that time a CT calculation was performed and the plant was found to be in compliance.*

**** The Maximum fluoride residual reported occurred between January 1, 2009 and January 4, 2009. The quick spikes were due to the highlift pump start-up. On October 1, 2009 the fluoride system was taken offline due to maintenance for a period of 16 days.*



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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.

As per C of A # 7170-7U7PX4: Issued August 28, 2009, and amended C of A # 5754-7BRPXU:

Residue Management – Lagoon Effluent

Date	Suspended Solids Result (mg/L)
January 6, 2009	13
February 3, 2009	15
March 3, 2009	<2
April 14, 2009	11
May 5, 2009	<2
June 2, 2009	6
July 14, 2009	11
August 5, 2009	20
September 1, 2009	3
October 6, 2009	9
November 3, 2009	16
December 8, 2009	3

***Annual average suspended solids concentration discharged to Bay of Quinte = 9.25 mg/L**

Summary of Inorganic parameters tested during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	02/11/09	0.00004	mg/L	No
Arsenic	02/11/09	0.0006	mg/L	No
Barium	02/11/09	0.0285	mg/L	No
Boron	02/11/09	0.0088	mg/L	No
Cadmium	02/11/09	0.000003	mg/L	No
Chromium	02/11/09	0.0006	mg/L	No
Mercury	02/11/09	0.00002	mg/L	No
Selenium	02/11/09	0.001	mg/L	No
Sodium	02/11/09	11.8	mg/L	No
	05/13/09	9.80		
	08/11/09	10.4		
Uranium	02/11/09	0.000016	mg/L	No
Fluoride	02/11/09	0.41	mg/L	No
	05/13/09	0.34		
	08/11/09	0.53		
Nitrate	02/11/09	0.299	mg/L	No
	05/13/09	0.171		
	08/11/09	0.135		
	11/10/09	0.144		
Nitrite	02/11/09	0.005	mg/L	No
	05/13/09	0.005		
	08/11/09	0.005		
	11/10/09	0.005		



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Summary of lead testing under Schedule 15.1 during this reporting period:

Location Type	Number of Samples	Range of Lead Results (ug/L) (min#) – (max #)	Number of Exceedances
Plumbing – Non residential	2	0.18-0.32	0
Plumbing – Residential	20	0.06-2.74	0
Distribution	4	0.09-0.96	0

Summary of Organic parameters sampled during this reporting period or the most recent sample results:

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	02/11/09	0.00011	mg/L	No
Aldicarb	02/11/09	0.0003	mg/L	No
Aldrin + Dieldrin	02/11/09	0.000067	mg/L	No
Atrazine + N-dealkylated metabolites	02/11/09	0.00012	mg/L	No
Azinphos-methyl	02/11/09	0.00021	mg/L	No
Bendiocarb	02/11/09	0.00013	mg/L	No
Benzene	02/11/09	0.00037	mg/L	No
Benzo(a)pyrene	02/11/09	0.000004	mg/L	No
Bromoxynil	02/11/09	0.00033	mg/L	No
Carbaryl	02/11/09	0.00016	mg/L	No
Carbofuran	02/11/09	0.00037	mg/L	No
Carbon Tetrachloride	02/11/09	0.00041	mg/L	No
Chlordane (Total)	02/11/09	0.11	ug/L	No
Chlorpyrifos	02/11/09	0.00018	mg/L	No
Cyanazine	02/11/09	0.00018	mg/L	No
Diazinon	02/11/09	0.000081	mg/L	No
Dicamba	02/11/09	0.00020	mg/L	No
1,2-Dichlorobenzene	02/11/09	0.00050	mg/L	No
1,4-Dichlorobenzene	02/11/09	0.00021	mg/L	No
Dichlorodiphenyltrichloroethane (DDT) + metabolites	02/11/09	0.00014	mg/L	No
1,2-Dichloroethane	02/11/09	0.00043	mg/L	No
1,1-Dichloroethylene (vinylidene chloride)	02/11/09	0.00041	mg/L	No
Dichloromethane	02/11/09	0.00034	mg/L	No
2-4 Dichlorophenol	02/11/09	0.00015	mg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	02/11/09	0.00019	mg/L	No
Diclofop-methyl	02/11/09	0.00040	mg/L	No
Dimethoate	02/11/09	0.00012	mg/L	No
Dinoseb	02/11/09	0.00036	mg/L	No
Diquat	02/11/09	0.001	mg/L	No

Diuron	02/11/09	0.000087	mg/L	No
Glyphosate	02/11/09	0.006	mg/L	No
Heptachlor + Heptachlor Epoxide	02/11/09	0.00011	mg/L	No
Lindane (Total)	02/11/09	0.000056	mg/L	No
Malathion	02/11/09	0.000091	mg/L	No
Methoxychlor	02/11/09	0.00014	mg/L	No
Metolachlor	02/11/09	0.000092	mg/L	No
Metribuzin	02/11/09	0.00012	mg/L	No
Monochlorobenzene	02/11/09	0.00058	mg/L	No
Paraquat	02/11/09	0.001	mg/L	No
Parathion	02/11/09	0.00018	mg/L	No
Pentachlorophenol	02/11/09	0.00015	mg/L	No
Phorate	02/11/09	0.00011	mg/L	No
Picloram	02/11/09	0.00025	mg/L	No
Polychlorinated Biphenyls(PCB)	02/11/09	0.00004	mg/L	No
Prometryne	02/11/09	0.00023	mg/L	No
Simazine	02/11/09	0.00015	mg/L	No
THM (NOTE: show latest annual average)	11/10/09	0.051	mg/L	No
Temephos	02/11/09	0.00031	mg/L	No
Terbufos	02/11/09	0.00012	mg/L	No
Tetrachloroethylene	02/11/09	0.00045	mg/L	No
2,3,4,6-Tetrachlorophenol	02/11/09	0.00014	mg/L	No
Triallate	02/11/09	0.0001	mg/L	No
Trichloroethylene	02/11/09	0.00038	mg/L	No
2,4,6-Trichlorophenol	02/11/09	0.00025	mg/L	No
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	02/11/09	0.00022	mg/L	No
Trifluralin	02/11/09	0.00012	mg/L	No
Vinyl Chloride	02/11/09	0.00017	mg/L	No

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 last Sample
THM	51	ug/L	11/10/09



Summary Report – O. Reg. 170/03 Schedule 22 Requirement

Under Schedule 22 of O. Reg. 170/03, the Ministry of Environment requires that a copy of the Safe Drinking Water Act, regulations, the system’s approvals, and any order that the system failed to meet at any time during the reporting period be provided to the members of the municipal council.

The following is a list of the Acts and Regulations which have been provided to municipal council electronically:

- ✚ The Safe Drinking Water Act, 2002
- ✚ O. Reg. 128/04 – Certification of Drinking Water Operators
- ✚ O. Reg. 169/03 – Ontario Drinking Water Quality Standards
- ✚ O. Reg. 170/03 – Drinking Water Systems (Please see ‘Application of Schedules’ table below for applicable schedules pertinent to Large Municipal Residential Systems)
- ✚ O. Reg. 188/07 – Licensing of Municipal Drinking Water Systems
- ✚ O. Reg. 242/05 – Compliance and Enforcement
- ✚ O. Reg. 248/03 – Drinking Water Testing Services
- ✚ Procedure for Disinfection of Drinking Water in Ontario

- ✚ The systems Certificate of Approval # 7170-7U7PX4
- ✚ Permit to Take Water (PTTW) # 4214-68CMDB

TABLE
Application of schedules
O. Reg. 170/03

Item	Drinking Water Systems	Applicable Schedules				
		Treatment	Operational Checks, Sampling and Testing	Adverse Test Results and Other Problems	Reports	Chemical Testing Parameters
1.	Large municipal residential systems	1, 4	6, 7, 10, 13, 15.1	16, 17	22	23, 24

O. Reg. 170/03, s. 4; O. Reg. 247/06, s. 2; O. Reg. 399/07, s. 1.

* Please note that the Act and Regulations provided have potentially been amended since these documents were saved electronically. For the most current and up to date consolidated laws, please visit www.e-laws.gov.on.ca.

For details on the 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, please refer to the table on page 3 of this Report. Additional non-compliance issues were raised while generating this annual report. They are as follows:

- ✚ The City did not meet sampling requirements as per O. Reg. 170/03 Schedule 10(3). An HPC analysis was not completed on the Treated Water during regular weekly sampling.
- ✚ ***Corrective Measure: A sample schedule has been formulated for 2010 sampling to reduce the risk of this type of occurrence happening in the future. A Compliance Coordinator has been hired to review sample results and sample submissions to ensure that operations staff meet regulatory requirements.***
- ✚ Reports under subsection 18(1) of the Act in respect of Fluoride on May 26, 2009 were not accurate. The operator failed to notify Spills Action Centre at the time the incidents occurred which took place between January 1, 2009 and January 4, 2009. A new probe was installed on December 30, 2008 which could have contributed to high fluoride spikes, however, upon further investigation the spikes occurred when the highlift pump would start up, and would be drawing off the clearwell that the fluoride was injected into. There is not enough mixing in this clearwell before water is pumped into the distribution system, therefore this explains the reason for the quick spikes in fluoride. Two grab samples were collected on January 2nd, 2009, and were found to be 0.59 mg/L at 1030 hrs, and 0.57 mg/L at 1230 hrs. Under O. Reg. 170/03, Schedule 7 (4) a fluoride sample is required to be tested at least once every day.
- ✚ ***Corrective Measure: Staff have had training on legislative requirements specifically regulation 170/03 and adverse reporting.***
- ✚ Reports should have been made under Reg. 170/03 Schedule 16(4) in respect of Filter Effluent turbidities not filtering at or below 0.3 NTU for 95% of the months of March, April, May and December.
- ✚ ***Corrective Measure: A Compliance Coordinator has been hired to follow up with operations staff to ensure the reports are made if necessary. The filter has been rebuilt and topped up with media to provide better filtration in the future.***



Summary of Quantities and Flow Rates

Raw Water - PTTW limit of 11, 365 m³/d; 131.5 L/s				
Month	Monthly Average Flow (m³)	Max Daily Flow (m³)	Max Daily Peak Flow rate (L/s)	Total Monthly Flow (m³)
January	3,361	4,127	145.2	104,203
February	3,309	3,860	153.1	92,651
March	3,374	3,823	149.2	104,604
April	3,308	4,290	141.6	99,232
May	3,511	4,187	133.3	108,831
June	3,314	4,102	183.5	99,431
July	3,119	4,202	262.2	96,686
August	3,128	4,048	169.0	96,979
September	3,905	5,063	163.6	117,146
October	3,633	5,094	153.8	112,611
November	3,371	3,791	161.5	101,117
December	3,641	4,332	172.1	112,883
Total Raw Water Flow 2009 -				1,246,376
Treated Water - Rated Capacity of 11, 360 m³/d				
Month	Monthly Average Flow (m³)	Max Daily Flow (m³)	Max Daily Peak Flow rate (L/s)	Total Monthly Flow (m³)
January	2,902	3,549	145.5	89,969
February	2,785	3,175	134.3	77,967
March	2,757	3,183	144.2	85,464
April	2,706	3,735	139.4	81,168
May	2,850	3,541	140.9	88,335
June	2,723	3,645	143.6	81,689
July	2,687	3,637	263.0	83,305
August	2,782	3,667	148.5	86,231
September	3,502	4,275	145.7	105,067
October	3,294	4,066	151.8	102,101
November	3,066	3,725	142.3	91,994
December	3,241	3,866	138.7	100,466
Total Treated Water Flow 2009 -				1,073,756
Comparison of Quantities and Flow Rates for Treated Water				
Actual Annual Average Daily Flow (m ³)=		2,942	25.9 % of Rated Capacity	
Actual Max Daily flow (m ³) =		4,275	37.6 % of Rated Capacity	

** Raw water instantaneous peak flow rate exceedances occurred during pump start-up or filter maintenance. Most spikes were less than 1 minute, none lasted more than 1 hour.*