

CITY OF CHARLOTTETOWN
WATER & SEWER UTILITY



**WATER REPORT
2007**



COMMITTEE MEMBERS
David MacDonald, Chair
Mitchell Tweel, Vice-Chair
Melissa Hilton, Member at Large

Craig Walker, Manager

Water is as important to us as the air that we breathe. Without it, we would not survive. The City of Charlottetown Water and Sewer Utility is committed to provide its residents with safe drinking water. It is also committed to the protection of its watersheds and conservation of this vital resource.

DID YOU KNOW???

In 1869 (18 years before the former Charlottetown Water Commission was created), City Council faced its first serious challenge. Public wells were contaminated and many citizens had to look elsewhere for pure water. City Council licensed James Hughes and Patrick Hann to deliver pure water to its citizens. They took water from Grey's Spring and sold it to people in the Spring Park area. Pure water was delivered to the door of each citizen of Charlottetown at a cost of one cent per bucket.

In 1870, City Council hired Charles W. Fairbanks to search for an ample source of pure water to supply to its citizens. Fairbanks proposed that the water supply come from the valley of the Winter River (5 ½ miles from the City).

The City was authorized by the provincial legislature in 1872 to construct a water works system. The provincial legislature also guaranteed the payment of interest on debentures. These would be issued by the city to pay for construction.

The City took the water question to the polls. It was argued that heavy taxation would result if approved and that other options should be studied. The citizens voted against the water works. A new City Council was elected in 1873.

SAMPLING:

In accordance with the provincial government's *Drinking Water and Wastewater Facility Operating Regulations*, water quality samples are collected on a monthly basis and analyzed for the presence of coliform bacteria and E.coli. A minimum of one sample for every 1,000 persons served and one

sample from each source of supply is collected per month. The Regulations also requires the Utility to collect a minimum of one sample per year (the Utility does two samples per year) from each source of supply to be analyzed for a general chemical analysis and one sample every three years from each source of supply to be analyzed for a detailed chemical analysis. With the exception of the detailed chemical analysis, the samples are taken to an accredited laboratory (PEI Analytical Laboratories) for analysis and reports are prepared.

By testing for the presence of coliform bacteria with the distribution system, it confirms the effectiveness of the disinfection process. Within Charlottetown, the disinfection used is chlorine. The presence of E.coli bacteria indicates that the water may be contaminated with human or animal waste. In 2007, there was only one sample taken that reported a very small E.coli count and it was not confirmed. This was at a well site where the water was not disinfected. No E.coli showed within the distribution system nor did it show in a resample. Background count is an indicator of the system's condition and a count of >200 is resampled. The source of all non-compliant samples (coliform >10 and/or background >200) is checked and resampled.

In 2007, the Utility hired Jacques Whitford to sample and provide the groundwater analytical results for Union Wellfield. Water samples were taken from each well and sent to an off-Island accredited laboratory for detailed chemical analysis. The analysis included metals, general chemistry (inorganic constituents), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs) and phenols. Any that had a maximum acceptable concentration (MAC) established by the *Guidelines for Canadian Drinking Water Quality* (GCDWQ), the parameters tested were below the GCDWQ criteria.

The provincial government does an Island wide pesticide monitoring of ground water on a yearly basis. The program includes the monitoring of the Utility's supply system. Based on records dating back to 2003 up to and including 2007, there was no detection of the pesticides tested.

Total Coliform Bacteria (Distribution System)			
	# of Samples	Positive TC Tests	# of Non-Compliant Samples (TC>10)
January	39	2	
February	35		
March	29		
April	34		
May	33	1	1
June	31		
July	36	1	
August	30		
September	33	1	
October	34	2	
November	35	3	1
December	31		
Total	400	5*	2*
Detection %		2.500	0.500

* All re-tests reported negative

Total Background Growth			
	# of Samples	Positive BG Tests	# of Non-Compliant Samples (BG>200)
January	39		
February	35		
March	29		
April	34		
May	33		
June	31		
July	36		
August	30		
September	33	1	
October	34		
November	35	1	
December	31		
Total	400	2*	0
Detection %		0.500	0.000

* All re-tests reported negative

UNTREATED WATER (SAMPLES FROM WELLS)												
	Distribution (Small Systems)	Green Meadow*	Malpeque	Brackley	Union	Suffolk	Total	TC	>10 TC	Ecoli	BG	>200 BG
January	2	3	4	4	4	4	17	2	2		3	
February	2	4	8	8			30	1			2	
March												
April	1	2	4	4	5	4	16	4				
May	1	2	1	4	5	4	17	3				
June	1	2	1	4	5	4	17	3	1		1	
July	1	2	5	5	5	4	17	3		1**		
August	1	2	4	4	8	4	19	11			3	
September	1	2	4	4	5	4	16	4	2			
October	1	2	4	4	5	3	15	7				
November			1	4	5	4	14	2	1		3	
December			3	3	5	4	12	4			1	
Total	11	21	3	48	60	47	190	44	6	1	13	

* Green Meadow Station was taken out of service in November

** was not confirmed

During the course of the year, samples for chemical analysis are taken from the distribution system. Based on the information gathered, the following is a typical chemical analysis of the water the City of Charlottetown provides its customers.

Typical Chemical Analysis	
Chemical	Concentration, (mg/l)
Alkalinity Total	129.48
Cadmium	< 0.005
Calcium	31.58
Chloride	13.53
Chromium	< 0.05
Copper	<0.02
Iron	< 0.1
Lead	<0.002
Magnesium	17.84
Manganese	< 0.020
Nickel	< 0.05
Nitrate-N	3.56
pH	8.1
Phosphorus	0.04
Potassium	1.53
Sodium	8.06
Sulfate	6.79
Zinc	<0.02
Total Hardness	152

The concentration indicated falls below the Maximum Acceptable Concentration and the Aesthetic Objective set under the *Guidelines for Canadian Drinking Water Quality* from Health Canada.

As per Section 17(2) of the Environmental Protection Act Drinking Water and Wastewater Facility Operating Regulations, the owner of a Class IV “wastewater treatment facility shall ensure that samples of treated wastewater are collected and analyzed for

- (a) biological oxygen demand, suspended solids and fecal coliform on a monthly basis;
- (b) ammonia, total phosphorus and total nitrogen on a yearly basis . . .”

Average Analysis for 2007		
	Treatment Plant	East Royalty Lagoon
Fecal Coliform (MPN/100mL)	49	>1600
c BOD (mg/L)	12	13
Suspended Solids (mg/L)	7	17
Ammonia-N (mgN/L)	9	19
Total Nitrogen (mg/L)	23	26
Total Phosphorus (µg/L)	3220	6099

For further information, please check out the following websites:

Drinking Water and Wastewater Facility Operating Regulations –
<http://www.gov.pe.ca/law/regulations/pdf/E&09-04.pdf>

Guidelines for Canadian Drinking Water Quality –
http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/sum_guide-res_recom/index_e.html
Water Report 2005 and Water Report 2006 –
http://www.city.charlottetown.pe.ca/cityhall/water_sewer.cfm

General Information – nitrates and other chemicals
<http://www.gov.pe.ca/enveng/wm-nfo/index.php3>