

CITY OF CHARLOTTETOWN
WATER & SEWER UTILITY



**WATER REPORT
2006**



COMMITTEE MEMBERS
David MacDonald, Chair
Peter McCloskey, 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???

The Charlottetown Water Commission originated with the passing of the *Charlottetown Water Works Act* on May 7, 1887.

Its first Commission was elected on June 6, 1887.

The first water pumping station was Malpeque, and it was established in 1888.

The initial investment in assets was \$148,000. Today it is over \$88.5M (36.1M water and 52.4M sewer).

The original system installed in 1888 is still in service. Modifications were done in the 1960's to improve fire protection.

In addition to present day record systems, the technical department still uses the drawings that were created in 1901.

CAPITAL WORK

In 2006, the Water and Sewer Utility completed several water related projects. Both water and sewer went in on the East Royalty Road, and service was provided to thirteen properties. A water main extension was provided on the Trans Canada Highway in the area of the Holiday Inn Express. Both projects included hydrants for fire protection.

The largest project was extending the water out Route #2 from Sherwood Road to Countryview Drive. Approximately 66 properties were serviced. Brookdale pumping station was decommissioned

and homes serviced by that system became a part of the City's main system. Seven hydrants were added and, with the increase in water pressure, the existing two hydrants were put into operation.

WATER PRESSURE

The City's water system operates with two separate pressure zones – a high (boosted) and a low (gravity) system. The original system is a low-pressure system that has pressure set and controlled by the elevation of water stored in the Utility's reservoirs. The closer the property or point of use is in elevation to the reservoir, the less pressure is available for the user. On the other hand, the closer the point of use is to sea level, the higher the pressure.

In the late 1970's, it was determined by Transport Canada that improved pressure was needed to adequately provide fire protection at the new Charlottetown Airport. Also about that time, the Village of Sherwood began to develop a community water system and the low-pressure system could not provide adequate pressure within the planned area. With financial assistance from Transport Canada, Village of Sherwood, federal and provincial governments, the booster station was built adjacent to the reservoir on Mount Edward Road. Today this boosted system provides service to customers that are located at elevations equal to or higher than the reservoir.

WATER FACTS

Municipal water is regulated by the *Guidelines for Canadian Drinking Water Quality* (Health Canada). Minimal quality requirements for bottled water are provided under the *Canadian Food and Drug Act*.

Based on local department stores, prices of bottled water range from \$1.00+ per Imperial gallon to \$13.00+. The City's rate per Imperial gallon is approximately 1/10 of one cent so \$1.00 would buy over 940 Imperial gallons.

Total Coliform Bacteria (Distribution System)			
	# of Samples	Positive TC Tests	# of Non-Compliant Samples (TC>10)
January	35		
February	30		
March	31	1	1
April	31	1	1
May	34	1	
June	33		1
July	39	2	1
August	40		2
September	31		
October	35		1
November	34		
December	30		
Total	403	5*	7*
Detection %		0.012	0.017

* All re-tests reported negative

Total Background Growth			
	# of Samples	Positive BG Tests	# of Non-Compliant Samples (BG>200)
January	35	1	
February	30	1	
March	31		
April	31	2	
May	34	1	
June	33	1	
July	39	3	
August	40	1	
September	31		
October	35		
November	34		
December	30		
Total	403	10*	0
Detection %		0.025	0.000

* All re-tests reported negative

UNTREATED WATER (SAMPLES FROM WELLS)											
	Distribution (Small Systems)	Brookdale*/Green Meadow	Malpeque	Brackley	Union	Suffolk	Total	TC	TC >10	Ecoli	BG >200 BG
January	4	6	12	10	8	40	19				6
February			8	5	4	17	6				
March	2	3				5					1
April	2	3	4	4	5	18	4				
May	4	6	1	10	4	33	7				1
June			2		4	6	1				
July	2	3	4	5	4	18	1				
August	2	3	4	5	4	19	8				3
September	2	3	5	5	4	19	3	1			
October	2	3	8	5	8	26	9	1			
November	2	5	1	5	4	17	1	1			
December			4	4		8	2				
Total	22	35	59	58	49	226	61	3			11

* Brookdale Station was taken out of service in November

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	128.2
Cadmium	< 0.005
Calcium	30.3
Chloride	13.84
Chromium	< 0.05
Copper	<0.02
Iron	< 0.1
Lead	<0.002
Magnesium	16.47
Manganese	< 0.020
Nickel	< 0.05
Nitrate-N	3.45
pH	7.9
Phosphorus	<0.02
Potassium	1.48
Sodium	7.31
Sulfate	6.04
Zinc	<0.02
Total Hardness	144

HARDNESS

The hardness of water is usually referred to by the water's ability to neutralize soap or the inability to form soap lather. Water hardness is caused by

dissolved polyvalent metallic ions. The principal hardness-causing ions in fresh water are calcium and magnesium (neither are a direct public health concern) and are naturally present in the soil and bedrock. Ground water is generally harder than surface water and PEI is totally dependent on ground water. The level of hardness is measured in milligrams per litre (mg/L) or grains per gallon (gpg). Charlottetown's water ranges from 140-150 mg/L and, according to Health Canada, is considered hard.

A maximum acceptable level has not been established by Health Canada and its *Guidelines for Canadian Drinking Water Quality*. This is because hardness has an aesthetic effect and the public's acceptance of hardness may vary considerably. It is recognized that a hardness of greater than 200 mg/L is considered poor, but can be tolerated, and greater than 500 mg/L is unacceptable for domestic purposes.

There are 17.118 mg/L in one grain per US gallon and 14.286 mg/L in one grain per Imperial gallon. To convert to grains divide the mg/L by either 17.118 or 14.286 depending on whether you want US or Imperial gallons.

Should you wish to install a water softener, only water to be heated and cold water used for laundry and washing need to be softened. Since toilets use large amounts of water it would be more economically feasible to not treat this water. The source for cold drinking water should be not be softened. Softened water should also not be used for aquariums or for watering plants, grass, etc.

JUST A THOUGHT!!!

With summer coming, just remember - According to Environment Canada's website "a single lawn sprinkler spraying 19 litres per minute uses more water in just one hour than a combination of ten toilet flushes, two 5-minute showers, two dishwasher loads, and a full load of clothes."