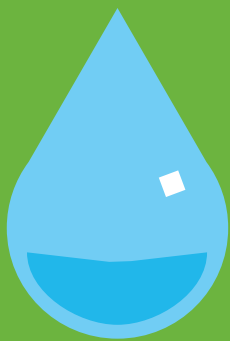


# 2011 WHITE ROCK ANNUAL PERFORMANCE REPORT





4	Introduction
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## INTRODUCTION

The 2011 Performance Report provides an overview of the achievements of EPCOR White Rock Water Inc. (EPCOR) and looks ahead at plans for 2012. Our key measures of success include a full range of activities, summarized under the headings of Operational Excellence, Water Quality Information, Quality Assurance, Customer Care and Community, Safety, Capital Program, and Environment.

These measures are set by EPCOR and submitted to and consistent with our Regulators' requirements (B.C. WATER Comptroller's Office and Fraser Health Authority). Capital program and operations budgets are approved by the B.C. Water Comptroller's Office in accordance with their regulatory process. Detailed reporting is submitted as required to both the B.C. Water Comptroller's office and Fraser Health Authority.

## EPCOR'S VISION

We are committed to protecting public health through the production and delivery of high quality drinking water and responsible management of wastewater.

To achieve our vision, we focus on:

- **People and safety:** Be a place where people choose to work, a workplace free of occupational illness and injury and focus on continuous improvement
- **Operational excellence:** Be recognized as an expert in our business by adopting best available technology and solutions that enhance water quality, system reliability, and our efficiency and cost-effectiveness
- **Environment:** Make the environment a priority in everything we do

## BACKGROUND

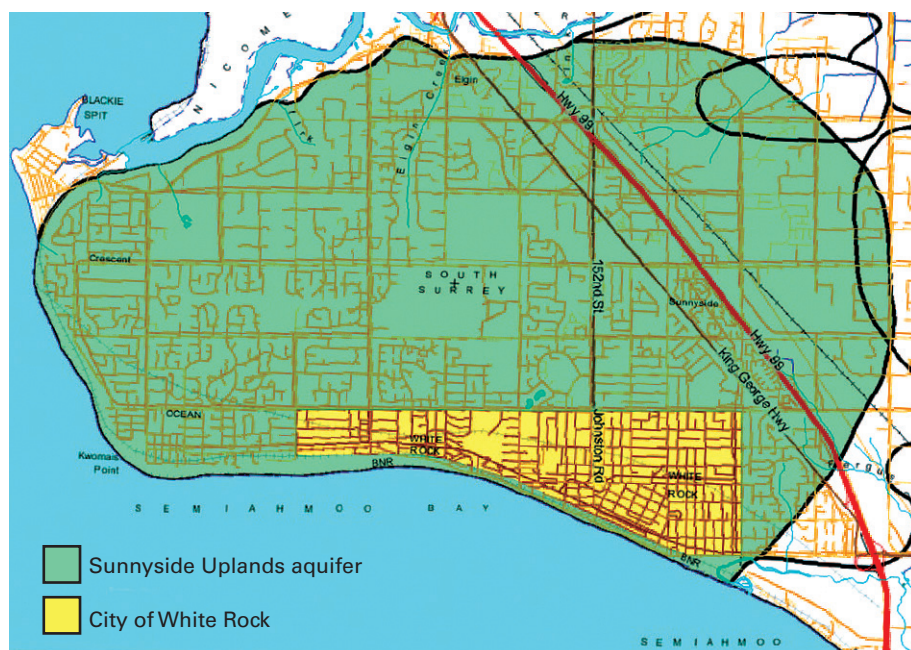
EPCOR White Rock Water Inc. (EPCOR) purchased the privately-owned and operated White Rock Utilities on May 1, 2005 and the amalgamation was completed in May 2006. White Rock Utilities has served the White Rock area since 1913.

EPCOR owns the water system assets and operates them on behalf of the residents of White Rock. EPCOR also supplies water to certain adjacent areas in the city of Surrey, and the Semiahmoo First Nation. The utility serves a population of approximately 20,000 people with an average consumption of water of 6.9 million litres (ML) per day.

Every water service in the city is metered. Fire protection service is provided to the residents by means of 321 fire hydrants. The entire water supply comes from a groundwater source called the Sunnyside Uplands aquifer and is provided through six wells, which range in depth from about 60 to 150 meters (200 to 500 feet). The water is distributed directly to residents with limited treatment.

The distribution system also includes 76 km of watermain, of which approximately 130 meters (427 feet) is galvanized iron pipe. This is being replaced as part of an annual pipe replacement program.

EPCOR White Rock is regulated by the BC Comptroller of Water Rights (Comptroller). Water rates and terms of service are determined through a regulatory process, which takes place whenever approved rates expire. Rates are based on a fair rate of return to EPCOR for providing water service.



White Rock has uniform structure water rates and three customer groups - single family residential; multi residential; and commercial. Current rates are effective to December 31, 2013.

EPCOR employs seven full time permanent employees in White Rock. Additional technical and operational support is available through EPCOR's 27 water professionals in British Columbia (BC) and over 450 water professionals in EPCOR Water Services.

### EPCOR'S distribution system is comprised of:

- Two pressure zones
- Three water storage reservoirs
- Three pressure reducing valve stations
- A booster station
- 76 km of mainly ductile and cast iron pipes ranging in size from 100 mm to 300 mm (about 4 inches to 12 inches) in diameter
- 321 hydrants
- 1154 valves



### DID YOU KNOW...

One penny will buy 44 cups (or ten litres) of White Rock tap water.



## OPERATIONAL EXCELLENCE

EPCOR proactively manages all infrastructure through regular maintenance, evaluations and improvements. In 2011, these activities included:

- Annual maintenance of all pressure relief valve (PRV) stations
- Reservoir inspection and maintenance
- Water meter maintenance
- Hydrant inspection and maintenance
- Exercising and maintenance of distribution system valves
- Uni-Directional Flushing (UDF) program. UDF uses a hydraulic modeling system to direct water through specific pipes at high velocity to maintain water quality by preventing the accumulation of material within the piping. It uses less water, is more effective than regular flushing, and maximizes pressure throughout the system

### DID YOU KNOW...

In 2011, EPCOR White Rock conducted 5010 water quality tests.

## WATER QUALITY INFORMATION

EPCOR monitors the physical, chemical, and microbiological characteristics of your drinking water. Health Canada has established science-based guidelines for drinking water known as the Guidelines for Canadian Drinking Water Quality (GCDWQ). These guidelines set the maximum acceptable concentrations (MAC) of chemical, microbiological and radiological contaminants found in water based on potential health effects. They also address aesthetic water quality issues such as colour, taste and odour by setting aesthetic objectives (AO).

EPCOR does additional monitoring and testing of your drinking water based on the GCDWQ that exceeds the Fraser Health Authority permit requirements. In 2011, the arsenic concentration was less than the MAC but the manganese concentration exceeds the AO in some of the wells. Refer to information on page 8.

Some customers continue to report sulphurous odours in parts of the distribution system. These unpleasant odours are an aesthetic water quality problem and are the result of low dissolved oxygen levels, which encourage the formation of sulphides by some bacteria present in untreated water. These odours can be reduced by increasing the amount of dissolved oxygen throughout the water system or by disinfecting the water in the system.





# QUALITY ASSURANCE

Protecting public health is the priority for EPCOR; water quality is monitored and continually enhanced through diligent operations and high quality standards.

EPCOR employees work to provide water in the community that meets or exceeds standards and expectations for safety, reliability and quality. EPCOR White Rock Water is a Class III system. All operators are certified at the correct levels for the work they conduct. One operator is certified at Level III and three are certified at Level II. The community benefits by receiving the technical expertise and knowledge required to deliver a safe and reliable drinking supply.

## HIGHLIGHTS

EPCOR reviews the existing water system regularly to assess its current condition and identify upgrades required to meet or exceed utility standards. EPCOR continues to implement or enhance its operating procedures and standards, including:

- Routine sampling for bacteria is supplemented by quarterly quality testing for metals. All testing is carried out by accredited BC laboratories (BCCDC, EXOVA and AGAT)
- Annual reporting of water quality information and system upgrades to Fraser Health consistent with provincial regulations
- Monthly equipment testing and calibration by local operators, combined with annual testing of all water lab equipment by certified technicians
- Supplementary lab training to allow additional parameters to be tested for in the water supply



Water produced from the White Rock system wells is considered high quality ground water. EPCOR takes measures to prevent microbial contamination, but there is a always a small risk of microbial contamination in any type of water system.

Immuno-compromised persons may be more vulnerable to microbial contamination than the general population. This includes people with HIV/AIDS or other immune system disorders or people who have undergone chemotherapy, organ transplants or who have received other treatments that suppress the immune system. We advise that these individuals seek advice about drinking the White Rock water from their physician or other health care provider.





## Physical and Chemical Water Quality Data for White Rock Source and Distribution System Water for 2011

ABBREVIATIONS	
AO	Aesthetic Objective
°C	Degree Celsius
GCDWQ	Guidelines for Canadian Drinking Water Quality
HAAs	Haloacetic Acids
mg/L	milligram per Litre
MAC	Health-based Maximum Acceptable Concentration
MPN/100mL	Most Probable Number per 100mL solution
NA	Not Applicable, No Limits Set
NTU	Nephelometric Turbidity Unit
TC	Total coliforms
THMs	Trihalomethanes
<	Less Than Detection Limit
µS/cm	Microsiemens/cm

### HOW TO MEASURE:

- Most substances listed are reported in milligrams per litre (mg/L). One milligram per litre is commonly referred to as one part per million
- One part per million is equivalent to one drop in 1/2 bathtub full of water or one second in 12.5 days
- Some substances are measured in parts per billion. One part per billion is also referred to as one microgram per litre (µg/L)
- One part per billion is equivalent to one drop in 520 bathtubs full of water or one second in 32 years

SUBSTANCE	UNIT OF MEASURE	MIN BACTERIA	MAX	2011 AVERAGE	GCDWQ GUIDELINES
<b>BACTERIA</b>					
<i>E. Coli</i>	MPN/100ml	<1	<1	<1	0
Heterotrophic Plate Count	MPN/100ml	NA	NA	NA	NA
Total Coliforms	MPN/100ml	<1	6.4*	<1	less than 10% > 0
<b>CHEMICALS**</b>					
Chloroform	mg/L	<0.001	<0.001	<0.001	NA
Bromodichloromethane	mg/L	<0.001	<0.001	<0.001	NA
Dibromochloromethane	mg/L	<0.001	<0.001	<0.001	NA
Bromoform	mg/L	<0.001	<0.001	<0.001	NA
Total THMs	mg/L	<0.001	<0.001	<0.001	0.1
Monochloroacetic Acid	mg/L	<0.002	<0.002	<0.002	NA
Monobromoacetic Acid	mg/L	<0.002	<0.002	<0.002	NA
Dichloroacetic Acid	mg/L	<0.002	<0.002	<0.002	NA
Bromochloroacetic Acid	mg/L	<0.002	<0.002	<0.002	NA
Dibromoacetic Acid	mg/L	<0.002	<0.002	<0.002	NA
Trichloroacetic Acid	mg/L	<0.002	<0.002	<0.002	NA
Total HAAs	mg/L	<0.002	<0.002	<0.002	0.08
<b>OTHER</b>					
Conductivity	µS/cm	214	575	322	NA
pH	-	7.4	8.2	7.9	6.5-8.5 (AO)
Temperature	°C	6.1	21.6	12.2	15 (AO)
Turbidity	NTU	<0.1	0.7	0.1	5
<b>TRACE METALS</b>					
Arsenic	mg/L	0.0036	0.0095	0.0076	0.01
Copper	mg/L	<0.001	0.210	0.014	1 (AO)
Iron	mg/L	<0.005	0.260	0.018	0.3 (AO)
Lead	mg/L	<0.0001	0.0094	0.0003	0.01
Manganese	mg/L	<0.001	0.190	0.066	0.05 (AO)

### NOTES:

\* 1 % of samples tested were TC positive (4 out of 507). They were determined to be "false" positive tests, by additional testing.

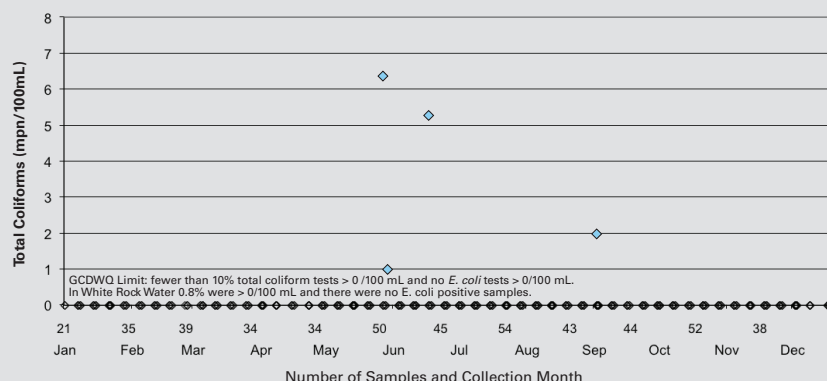
\*\* Chemicals tested were disinfection byproducts. During the Boil Water Notice period in 2010, EPCOR established a chlorine feed at well #6 for the Merklin reservoir site. That chlorine feed continues to serve the Merklin reservoir site, as well as a limited area of the system only (the high east zone), which is supplied by water from the Merklin station.

Additional detailed water quality information can be obtained at [www.epcor.com](http://www.epcor.com) or EPCOR's White Rock office.

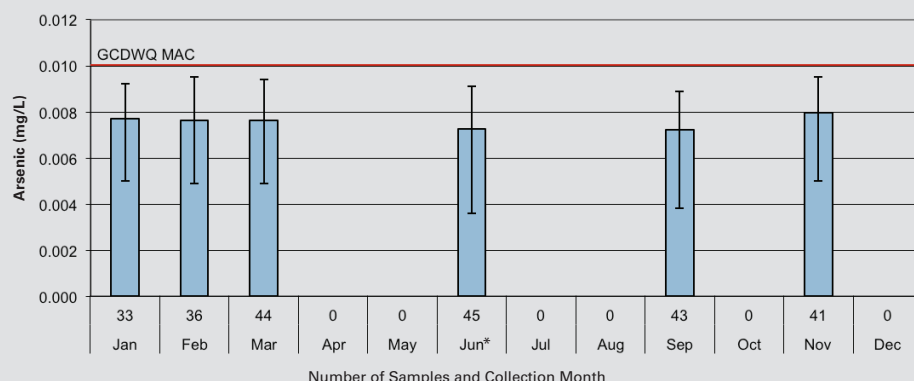


# PHYSICAL AND CHEMICAL WATER QUALITY DATA FOR WHITE ROCK SOURCE AND DISTRIBUTION WATER FOR 2011

**Total Coliforms in White Rock's Distribution System in 2011.**



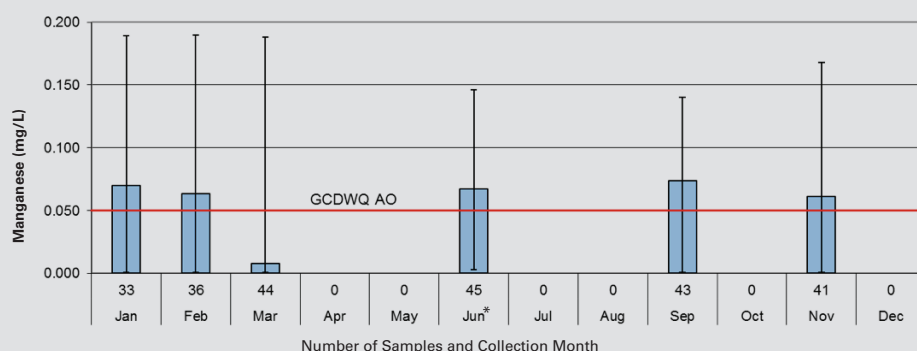
**Average Arsenic Levels in White Rock's Distribution System in 2011.**



## ARSENIC

In 2007, Health Canada reduced the MAC levels for arsenic from 0.025 mg/L to 0.010 mg/L. Although the MAC for arsenic is set at 0.010 mg/L, there may be health risks associated lower levels. Approximately 24% of the samples taken from White Rock's distribution system in 2007 showed arsenic concentrations that exceeded the MAC with the maximum concentration of 0.012 mg/L and an average of 0.008 mg/L. In 2010, (0.3%) of 311 samples taken from White Rock's water system showed arsenic concentrations that exceeded this new guideline limit, with the maximum concentration of 0.012 mg/L and an average of 0.007 mg/L. In 2011 0% of samples taken from White Rock water system showed arsenic concentrations that exceeded this new guideline limit. EPCOR continues to monitor arsenic levels on a routine basis.

**Average Manganese Levels in White Rock's Distribution System in 2011.**



## MANGANESE

The GCDWQ aesthetic objective (AO) for manganese is 0.05 mg/L. At levels above 0.15 mg/L, it can cause staining of plumbing, laundry and objectionable taste. New studies, however, are suggesting some levels of manganese may also be associated with health effects. In 2010, the average concentration of manganese in White Rock's water was less than the AO at 0.048 mg/L. However, in some locations, the manganese concentrations reached up to 0.344 mg/L, which exceeds the AO. In 2011, the average concentration of manganese in White Rock was 0.066mg/L, which exceeded the AO. Minimum and maximum concentrations were <0.001mg/L and 0.190 mg/L, respectively. 59% of the 291 samples tested exceeded the AO of 0.050mg/L.

⊥ symbol on graph indicates the average minimum and maximum. \*Effective Q2, Arsenic and Manganese testing changed from monthly to quarterly.



## TOTAL WATER QUALITY MANAGEMENT PLAN

EPCOR's work on the Total Water Quality Management plan is at the preliminary design stage and requires several more regulatory reviews. The plan will address the regulatory requirements for disinfection of the White Rock water supply and maintenance of disinfectant residual throughout the distribution system.

The process has taken some time, however, it is important to ensure available options have been carefully reviewed and considered before they are finalized. Information will be shared with customers once all the reviews are completed.

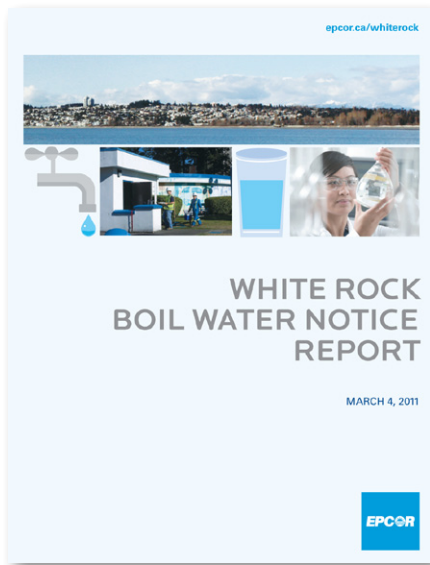
EPCOR's formal report in 2011 to Fraser Health on the 2010 Boil Water Notice (BWN) summarized the circumstances surrounding the announcement and cancellation of the BWN, and measures taken to upgrade the water distribution and storage system. The report concluded with a series of recommendations to maintain and enhance public health for EPCOR White Rock's customers through the provision of safe tap water.

The report's most significant recommendations are:

1. The disinfection of the water supply at source and maintenance of disinfectant residual throughout the reservoirs and distribution system; and
2. The expansion and roll out of a comprehensive cross connection control program

During the Boil Water Notice period in 2010, EPCOR established a chlorine feed at well #6 for the Merklin reservoir site. That chlorine feed continues to serve the Merklin reservoir site, as well as a limited area of the system only (the high east zone), which is supplied by water from the Merklin station.

A copy of the complete report can be found at <http://www.epcor.com/outreach/Pages/white-rock-twqm.aspx> or at EPCOR's White Rock office.



## WATER FLUSHING FOR COMMERCIAL BUILDINGS AND SCHOOLS

Water quality deteriorates when the water is stagnant within piping in buildings for any length of time. EPCOR recommends that building owners or managers have a program to flush the water through drinking water fixtures in the building after periods of no use, such as over weekends and after holidays, before consumption of the water. This is especially important for buildings that are used intermittently, such as schools or day care facilities. Enough water should be flushed to ensure the water in the piping has been displaced completely. This can usually be determined by running the water until it is cool to the touch. To conserve water, the flushed water can be collected for other uses, such as watering plants.

## TESTING FOR ORGANIC COMPOUNDS

EPCOR tests drinking water periodically for organic compounds indicated in the Guidelines for Canadian Drinking Water Quality (GCDWQ) and some not included in the guidelines. Organic compounds are a diverse group of compounds — many are naturally occurring but some originate from human sources. The presence of certain organic compounds in drinking water is an indication of contamination of the water from human activities. In 2008, EPCOR tested for 279 organic compounds and did not detect any in White Rock's drinking water.

Having established this baseline information in 2008, EPCOR will conduct another set of detailed organic compound tests in 2012 for comparison.

## CUSTOMER CARE AND COMMUNITY

EPCOR White Rock staff provides 24-hour emergency services to our customers and are available to answer questions or concerns. We are committed to resolving customer calls in a timely and professional manner. Our new office location in White Rock has provided an improved environment for serving our customers. We continue to receive positive feedback from local residents about our convenient location and staff accessibility.

A variety of information relating to water services, water efficiency and watershed protection, as well as EPCOR's interactive online school education program, can be found on EPCOR's website at [www.epcor.com](http://www.epcor.com).

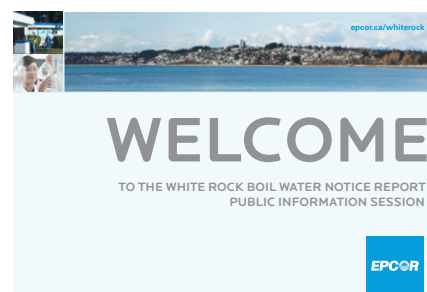
## HIGHLIGHTS

EPCOR is proud to actively support the community; our employees strive to build sustainable partnerships that enhance community life and promote wellness in the communities we serve. During 2011, EPCOR White Rock was proud to support:

- Quarterly meetings with the volunteer Community Advisory Panel (CAP), which includes representation from customers, community and stakeholder groups
- A bi-annual customer newsletter (mailed out with bills and posted on our website), providing updates on water efficiency, quality and water operations
- Regular communication with the City of White Rock to coordinate and align engineering/construction activities, maintenance and development services work
- A Public Information Session to review the recommendations of the Boil Water Notice Report
- Community events such as:
  - Chamber of Commerce Business Excellence Awards
  - Semiahmoo House Society's 'A Taste of BC's Finest' event
  - Peace Arch Hospital and Community Health Foundation's 'Partners in Caring' gala
  - White Rock South Surrey Hospice Society's "Hike for Hospice"
  - Snowbirds fly for CH.I.L.D. Foundation
  - City of White Rock's Tour de White Rock
  - White Rock BIA Tour de White Rock Block Party
  - Chamber of Commerce Business Trade Show
  - The United Way, with employee donations directed to local organizations of their choice
  - The South Surrey/White Rock Food Bank with employee donations



Snowbirds fly for  CH.I.L.D. Foundation



BWN Public Information Session



2011 Peace Arch Hospital Foundation Gala



CUSTOMER SERVICE INDEX							
ACTIVITY		2011	2010	2009	2008	2007	2006
Customer calls received, responded to and resolved	Meter Issues	57	142	35	82	111	
	Aesthetic Issues:						
	- Odour/manganese	39	45	100	33	56	
	Backflow tests	322	283	51	157	41	
	Operational:			68	26		244
	- Water main break	10	10			11	
	- Line leaks/breaks	16	14			12	
	- Water Pressure	22	9			0	
	- Boil Water Notice calls	0	251				
	Total:		754	254	298	231	244
Customer satisfaction index*	Water Service Supplier	N/A	95%	N/A	N/A	N/A	94%
	Quality of tap water	N/A	95%				96%
Community Events Supported		10	7	8	10	8	5

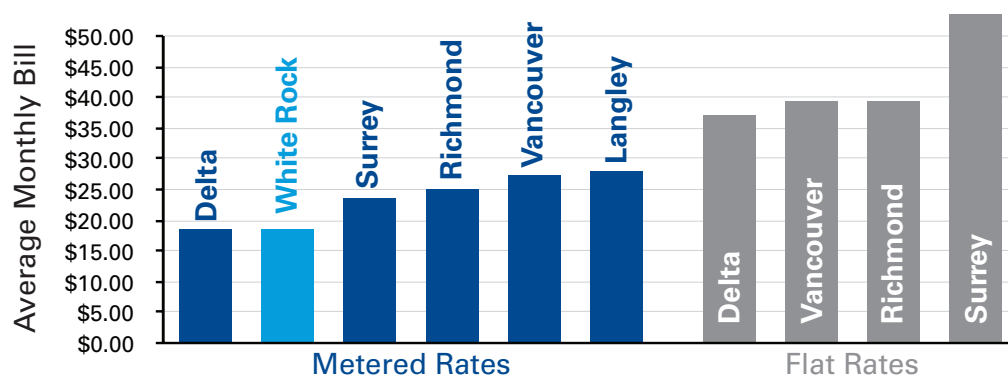
\* Customer survey conducted in 2010. The next customer survey will be conducted in spring 2013.

## HOW YOU CAN USE LESS WATER AROUND THE HOME:

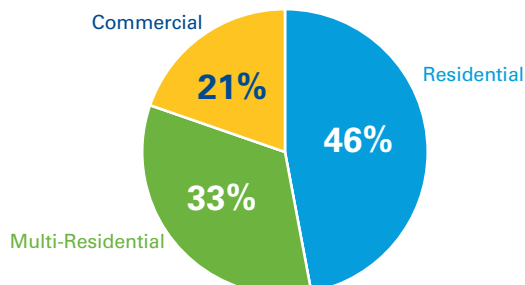
- Use your automatic dishwasher and washing machine only for full loads
- Give the dishes a quick rinse—don't leave the water running longer than necessary
- Check for leaks in household taps and toilets
- Keep a jug of drinking water in the refrigerator, rather than running the tap until the water cools off

## Comparative 2011 Residential Monthly Water Rates for the BC Lower Mainland

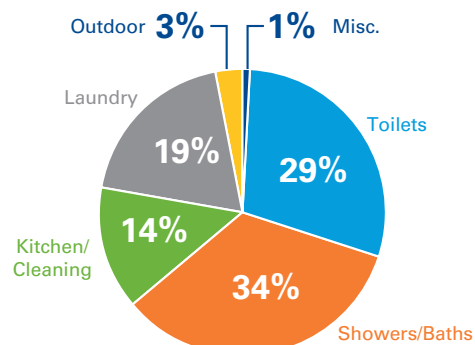
Based on average consumption of 825ft<sup>3</sup> (or 23m<sup>3</sup>) per month



## 2011 EPCOR White Rock Water Consumption By Customer Group



## Typical Canadian Household Water Consumption



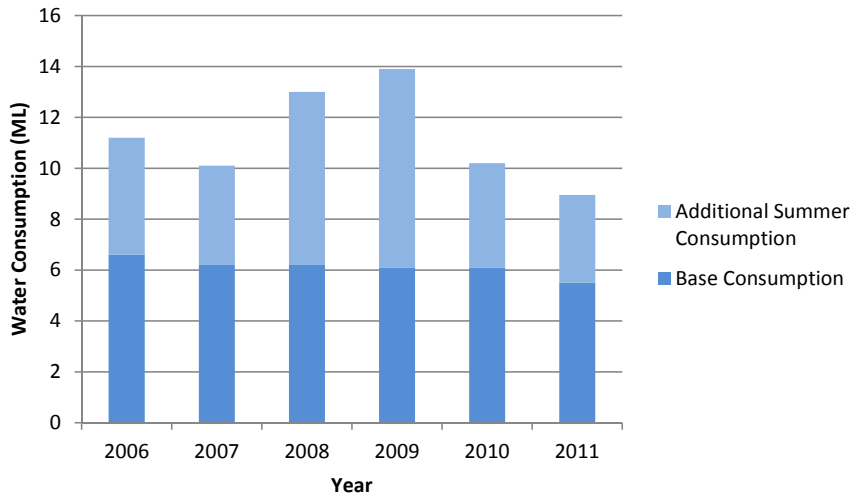


## MAXIMUM DAY DEMAND (MDD)

To provide sufficient water service to its White Rock customers, EPCOR tracks annual water consumption patterns. A 'Peak' (maximum) water consumption day occurs when the highest demand is recorded for the year. By knowing the 'Maximum Day Demand (MDD)', water system resources are designed accordingly for all customer needs, including fire-fighting and high-use periods.

On a peak day in July 2011, White Rock consumed 9 ML (million litres) of water. Demand on the Peak Day is separated into a base consumption of about 5.5 ML and additional summer consumption of about 3.4 ML. By comparison, the 2010 MDD total was 10 ML due to higher base consumption and seasonal irrigation demands throughout 2010.

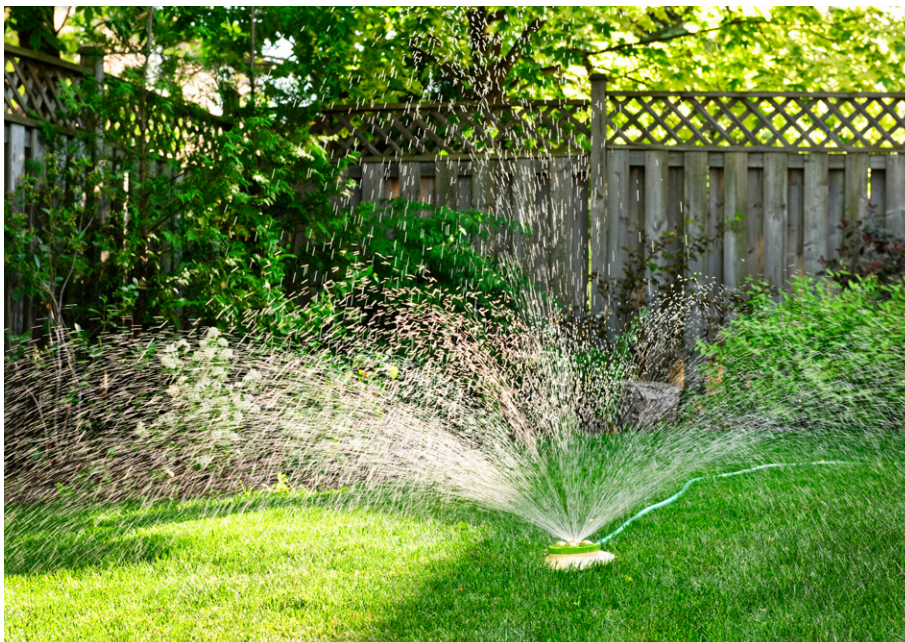
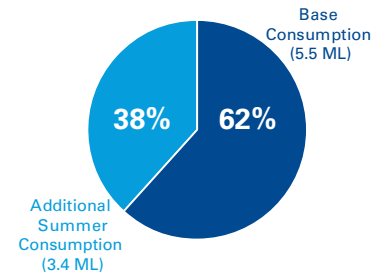
2011 White Rock Peak Day Water Consumption Trends



### DID YOU KNOW...

- A leaking toilet can double or triple your regular household consumption. Be a leak seeker and regularly check toilets, pipes, faucets and other water fittings for leaks and repair them immediately
- If your toilet is more than 10 years old, it is probably a water waster. Replacing it with a new, efficient low-flush toilet will use between 50 per cent and 80 per cent less water per flush, depending on the model you buy. Blue food dye placed in the toilet tank can be used to test for leaks

2011 Peak Day Water Consumption



### WATER WISELY OUTDOORS:

- Water your lawn only when it needs it, and use timers to avoid over-watering. A healthy lawn needs no more than one hour of watering each week; less, if it rains
- Position your sprinkler so that water lands on the lawn, not on paved areas
- For best results, water in the early part of the morning and avoid watering on windy days



## SAFETY

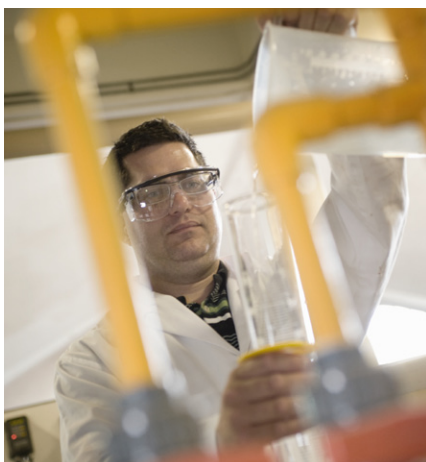
EPCOR is committed to the ongoing safety of our employees, our contractors and the public with the promotion of safe work practices incorporated into our day-to-day work activities. We work safe by conducting regular inspections in all work areas. Lost time incidents are reported monthly and a target of zero is set annually.

This year's highlights include:

- Zero LostTime incidents in 2011
- Safety Performance Index (SPI) implemented to track safety and environmental activities at all facilities
- Preventive talks, site inspections and safe work plans incorporated into regular work activities
- Annual reviews by EPCOR Corporate Security and Safety to identify risks and recommend actions to encourage prevention of incidents
- Annual update of EPCOR's Emergency Response Plan (ERP)
- Continued work with the City of White Rock to coordinate a local ERP

### DID YOU KNOW...

**EPCOR White Rock Water system operated with no lost time incidents for staff in 2011.**



### Life Saving Rules



**Working Safely at EPCOR**



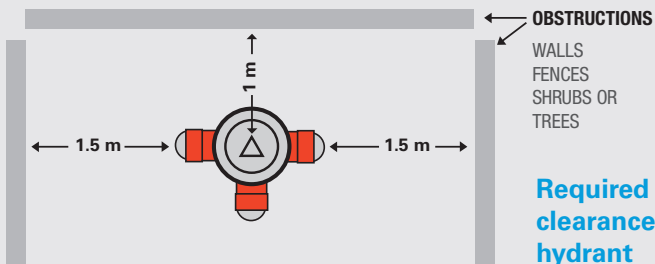
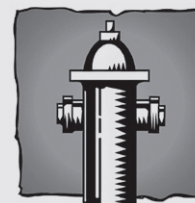
### KEEP WATER METERS CLEAR

- ✓ Expose the meter box
- ✓ Trim grass, plants, cedars, trees, shrubs, and hedges around the meter box
- ✓ Clear path to the meter box
- ✓ Remove flower pots from on top of meter box



### KEEP FIRE HYDRANTS CLEAR

Please help us provide a clear path to fire hydrants. It is important that the White Rock Fire / Rescue Department can quickly see and access hydrants in case of an emergency. It makes your neighbourhood safer if hydrants are not blocked by grass, shrubs or other items.





## CAPITAL PROGRAM

EPCOR follows a comprehensive set of processes for identifying, evaluation, approving and executing capital projects. Our capital budgeting process begins with an assessment of the system and identification of potential projects in consultation with our engineering group. We use this information in preparing its Master Plan. The Master Plan is updated periodically to highlight the areas within the system that require attention and then to recommend projects to be undertaken.

The Master Plan provides a long-term planning horizon to ensure the waterworks infrastructure supports the existing and future water demands and needs for the City of White Rock and surrounding area. The Master Plan includes an assessment on the basis of projected growth and demand patterns and identifies areas such as system integrity and water sources to address capital infrastructure requirements.

Capital projects completed during 2011 included:

### Water Main Upgrades

- Completed water main looping projects on Kerfoot Road, Cory Road and Chestnut Street
- Completed water main upgrades on Oxenham Avenue

### System Controls/SCADA Upgrades

- Well level transducers were installed on all six White Rock wells

### Ongoing Capital

- Meter replacement program: 138 meters in various sizes were replaced in 2011
- 5 new hydrants were installed
- Merklin Low Reservoir roof and flashing upgrades were completed
- 52 new water service connections were installed

### Security Upgrades

- Continued to develop and implement new security measures to protect White Rock's water supply

## ENVIRONMENT

EPCOR works closely with all regulatory and environmental agencies to provide safe water to the community and meet environmental compliance.





## WHAT'S AHEAD

### QUALITY ASSURANCE

- Working with our Regulators to implement the recommendations from the Total Water Quality Management Plan
- Routine water quality monitoring of White Rock's water supply and regular system maintenance of laboratory equipment
- 24/7 remote system monitoring to ensure reliable water provision

### ENVIRONMENT

- Continue to work with our customers on water efficiency and awareness programs
- Support groundwater management program which focuses on public awareness and education



### OPERATIONAL EXCELLENCE

- Encouragement of staff to attain highest levels of Environmental and Safety certification. This results in an increase of operational knowledge and, in turn, a safer and more productive work environment

### SAFETY

- Commitment to EPCOR Safety Program, ensuring the safety of staff and the public at large. This includes further training in:
  - Workplace Hazardous Materials Information System
  - Transportation of Dangerous Goods
  - Construction Safety
  - Confined Space Rescue
  - Fall Protection

### CUSTOMER CARE AND COMMUNITY

- Customer communication to increase awareness of White Rock's water supply and the importance of using it wisely
- Monitoring, tracking and follow-up of all customer inquiries and concerns
- Continued community involvement and event sponsorship

### CAPITAL PROGRAM

- Further System security and SCADA/Controls updates
- Ongoing capital maintenance program for water infrastructure to ensure system reliability and efficiency
- Implement capital construction recommendations from the Total Water Quality Management Plan to meet current and future guidelines and regulations
- Complete construction of a new ground water well to meet system reliability and water demand needs



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