## Water conservation – every drop counts

The importance of protecting our water resource cannot be overstated. In economic terms, the measurable contribution of water to the Canadian economy is difficult to estimate. In environmental terms, water is the lifeblood of the planet. Without a steady supply of clean, fresh water, all life, including human, would cease to exist.

The perception that Canada is blessed with an abundance of fresh water has led to misuse and abuse of the resource: from household toilets that use 20 litres per flush where 6 litres would do, to industrial plants – and some municipalities – that use water bodies as convenient sewers.

> In 2001, the average Canadian daily domestic use of fresh water per capita was 335 litres.

The quantity, quality and economic problems we face as a result of our use of water are complex but, at least one of the causes of these problems is easy to manage – the way we waste water. And, the solution is straight forward – *water conservation*. Simply stated, water conservation means *doing the same with less*, by using water more efficiently or reducing where appropriate, in order to protect the resource now, and for the future. Using water wisely will reduce pollution and health risks, lower water costs, and extend the useful life of existing supply and waste treatment facilities.

And it's easy. With little change to the way we do things now, or the equipment we use, we can reduce water consumption in the home, and in business, by 40 percent or more. These pages outline the role of water conservation in addressing problems related to water use and water quality. It also shows us what part we can play as residential consumers in finding solutions.

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## Sustaining our water supply

Water is considered a renewable resource: "renewable" referring to that portion which circulates back and forth in the hydrologic cycle. However, pressures on the resource are growing. For example, between 1972 and 1996, Canada's rate of water withdrawals increased by almost 90 percent, from 24 billion $m^3$/yr (cubic metres per year) to 45 billion $m^3$/yr. But, our population increased by only 33.6 percent over the same period, illustrating the growth in our thirsty lifestyles. As the readily available supplies of fresh water are being used up, we begin to see that there are real limits to how much water we can count on.

### Limiting factors

- Although Canada has a significant amount of fresh water, we possess only 7 percent of the world's *renewable* freshwater supply.
- In Canada, 84 percent of the population lives in a narrow southern band, while 60 percent of our water supply flows north to the Arctic Circle.
- Our growing population, and our growing thirst for water, are being concentrated in expanding metropolitan areas, and are forcing water regulators and policy makers to find ways to stretch available supplies even further.
- Increasing pollution of surface and groundwater is further reducing the supplies of readily available, clean water.
- Because our water use almost always leads to some degree of deterioration in water quality, the less water we withdraw, the less we upset the natural balance of our aquatic ecosystems. And, the less we upset the ecosystem, the less we have to spend to restore the water quality to an acceptable standard for public use.
- Finally, financing by municipal governments for the treatment of water supplies and wastewater is becoming increasingly constrained.

We can, however, make a significant contribution to solving these problems by reducing unnecessary levels of water use. To do so requires that we identify the areas within our homes, businesses, buildings and processes

where we waste water and then make appropriate changes, either in our fixtures, or in our water-using habits.

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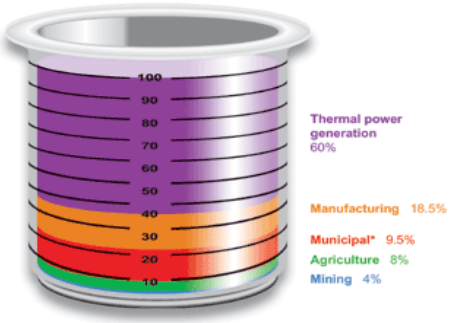
## How water is used

We use water in many ways, and assign different values to those uses. *Instream* uses (e.g., for transportation and recreation) are valued highly, but it has proven difficult to give them a dollar value that has any real meaning. For example, just what would the average consumer be willing to pay to swim in a clean lake or for a chance to catch fish in a clean, unpolluted river?

By far the greater number and variety of water uses occur on land. These are called *withdrawal* uses and, although important to our daily lives, they have tended to be assigned a low value. Water is withdrawn, used and then discharged. Most withdrawal uses "consume" some of the water, which means less is returned to the source than was taken out. And, after it has been used, the quality of the water that is returned is often diminished, which has a negative impact on both the environment and recreational instream uses.

In 1996, five main withdrawal uses accounted for a total annual water intake (extractive uses) of 44.6 billion $m^3$. These uses are described more fully in Freshwater Series A-4, "Water Works!" and are briefly described in this figure:




***Thermal power*** generation includes both conventional and nuclear power generating plants, which withdrew about 64 percent of the total water intake in 1996.

***Manufacturing*** accounted for 14 percent of water withdrawals in 1996. Paper and allied products, primary metals, and chemicals were the main industrial users.

***Agriculture*** accounted for nearly 9% of total withdrawals, with the semi-arid Prairie region of Canada accounting for 75% of this total. Agriculture consumes a large portion of what it uses, returning less than 30% to its source where it can be used again. Irrigation is the largest agricultural consumer of water.

***Municipal use*** accounted for 10% of all water withdrawals in 1996, or 12% when similar rural uses were included (excludes industrial uses and large-scale agriculture). In the municipal sector, more than half of the water demand is a result of residential use.

***Mining use***, including metal mining, non-metal mining, and the extraction of coal, accounted for 1 percent of all water withdrawals in 1996. Water is used by the mining industry to separate ore from rock, to cool drills, to wash the ore during production, and to carry away unwanted material.

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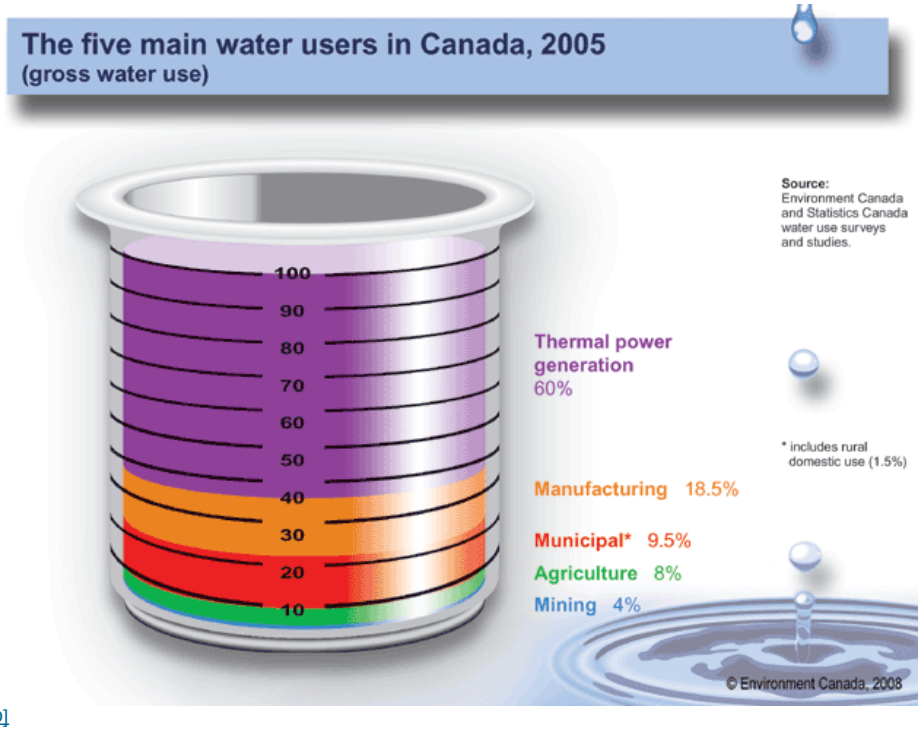


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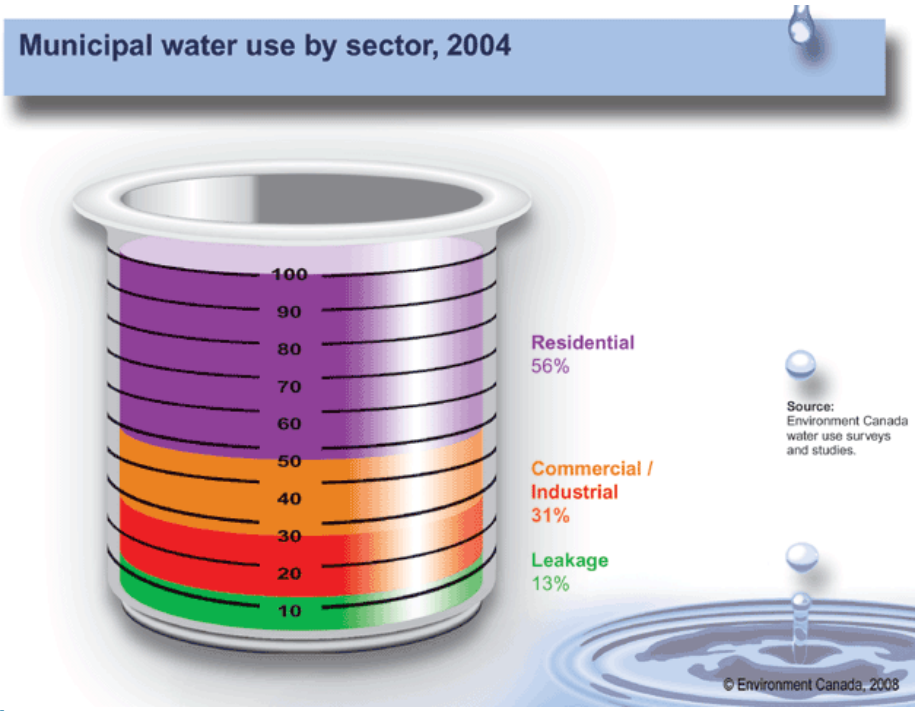


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## Sustaining our infrastructure

While many communities have access to an abundant water supply, the costs of the infrastructure that provides homes and industry with water and sewer services are straining the available municipal financial resources.

By *infrastructure*, we mean the *water treatment plants* that purify our water, the *water mains* in the ground that transport water, and the *towers* and *reservoirs* that store water. The term includes the *sewer pipes* that carry away wastewater and the *sewage treatment plants* that treat wastewater before returning it to the environment where it often becomes the source of water for communities downstream. This figure illustrates municipal water supply and sewage treatment:

Experts are predicting a growing problem involving municipal water and sewer infrastructure in Canada. In 1991, the value of this investment was estimated to be worth over 90 billion dollars, of which a significant amount is

deteriorating with age.

An increasing number of Canadian municipalities are considering water conservation as the key to keeping expansion needs to a minimum. Water conservation also optimizes plant efficiency, while assisting municipalities in financing the replacement of infrastructure that may be over 50 years old in some communities and up to 100 years old in several others.

Communities with older systems in need of extensive repairs or replacement face the most difficult problems. With all levels of government adopting policies of realistic water pricing and user pay principles, many municipalities have instituted *full cost pricing* to recover the total cost of providing both water and sewer services – including the costs of financing the replacement of older systems and the upgrading of overloaded treatment plants. Higher municipal costs, in turn, mean higher water – and sewer – bills.

The problem of stressed treatment systems is not restricted to communities with piped water and sewer systems. Over the past 25 years, there has been a substantial migration of urban dwellers to the countryside. City-bred water using habits and attitudes are, in many instances, lowering the water table. And, the flood of wastewater produced is stressing the soil's ability to treat septic effluent adequately.

For both urban and rural communities, water conservation can extend the life of this over-stressed infrastructure.

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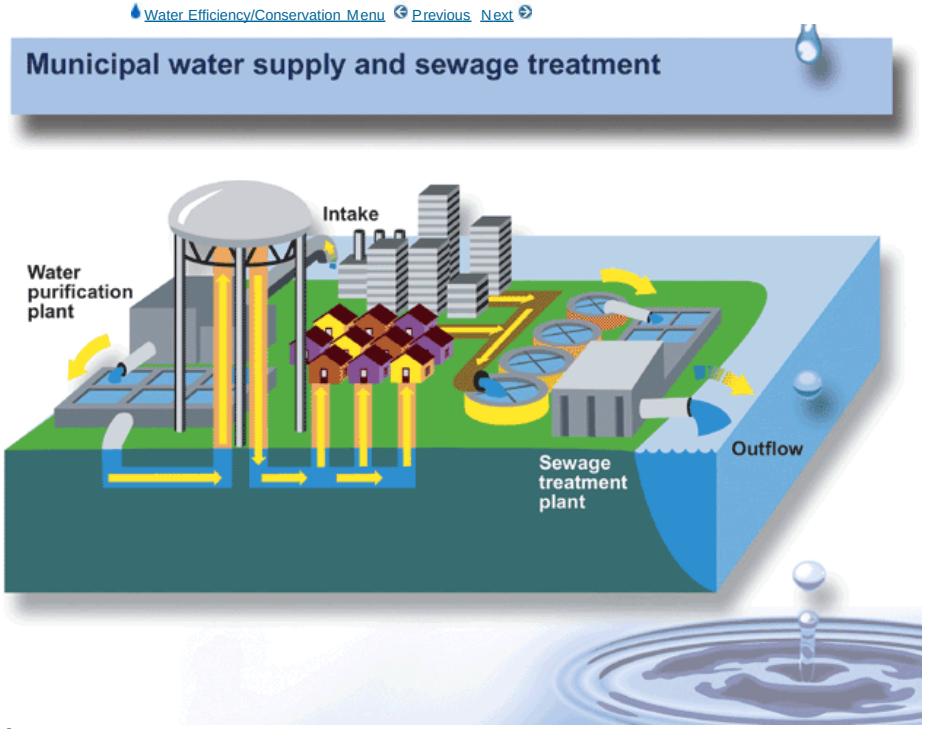


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## Metering

Tied to price increases, metered households generally show reductions in water use, with the greatest savings occurring during the summer months, when water use is usually much higher due to frequency of lawn watering, car washing and other outdoor uses. In 1999, water use was 70% higher when consumers faced flat rates rather than volume-based rates. And yet, only about 56% of Canada's urban population was metered in 1999.

Metering of industry has been common for some time. What's new is the metering of the return flow to the sewer system, particularly as it relates to the industrial sector. Case studies show that including sewage treatment in rate calculations generates greater water savings. An increasing number of municipalities are applying sewer surcharges to residential water bills.

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## Water efficient residential technology

More than half of municipal water is used by the residential sector.

As a consequence, the residential sector represents a logical target for demand management activities. Depending on the nature of the water efficiency program developed, each household can reduce water use by 40 percent or more.

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## Leak detection and repair

Up to 30 percent of the total water entering supply-line systems is lost to leaking pipes.

In most cases, if unaccounted for water in a municipal system exceeds 10 to 15 percent, a leak detection and repair program is cost-effective. For example, studies have shown that for every $1.00 spent in communities with leak detection programs, up to $3.00 can be saved.

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## Rates, pricing and public education

About 55 percent of Canadians served municipal water pay in ways that do not promote conservation. A 2001 study of rate structures by Environment Canada showed that in 1999, 43 percent of the population was under a *flat rate* structure (where the charge or assessment is fixed, regardless of the amount of water used). Another 12 percent were under a *declining block rate* structure (where the consumer's bill rises at a slower rate as higher volumes of water are used); i.e., the more you use, the less you pay per unit.

Only about 45 percent of the population served was found to be under a rate structure that provided a definite incentive to conserve water: 36 percent were under a *constant rate* structure (where the bill to the consumer climbs uniformly with the volume used); and 9 percent were under an *increasing block rate* structure (where a successively higher price is changed as larger volumes of water are used).

Introducing conservation-oriented pricing or raising the price has reduced water use in some jurisdictions, but it must be accompanied by a well articulated public education program that informs the consumer what to expect.

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## Sustaining our water quality

In addition to water supply and infrastructure issues, water quality is a problem in many Canadian communities. Generally speaking, the decline in water quality is a function of the way we use water. Even something as simple as rinsing dishes in the kitchen creates wastewater that is contaminated to some degree. Once this water enters the sewer system, it must be treated in a sewage treatment plant. These facilities are never 100 percent effective, which means that some water quality deterioration remains after the treatment process.

Specific causes of impaired water quality are numerous, including: agricultural runoff containing the residues of fertilizers, pesticides and other chemicals, industrial pollution, either directly from the facility, or indirectly from the leaching of chemicals from landfills, or pollution from average households in the form of improperly treated municipal sewage (refer to Freshwater Series A-3, Clean Water – Life Depends on It!) Nearly 75% of Canadians are serviced by municipal sewer systems. In 1999, 97% of the Canadian population on sewers received some form of wastewater treatment. The remaining 3% of Canadians served by sewage collection systems were not connected to wastewater treatment facilities in 1999 and discharged their untreated sewage directly into receiving water bodies.

For the roughly 25 percent of the Canadian population served by private wells and septic disposal systems, the news is not much better. These systems were originally designed for houses that were widely separated from their nearest neighbour, such as farmhouses and the occasional rural residence. Yet, today, in many parts of the country, individual private wells are being installed in subdivisions at suburban densities. The primary danger here is that too many wells may pump too much water for the aquifer to sustain itself.

Septic treatment systems associated with these developments can stress the environment in a number of other ways. They are often allowed in less than satisfactory soil conditions and are seldom maintained properly. They are also unable to treat many household cleaners and chemicals which, when flushed down the drain or toilet, often impair or kill the bacterium needed to make the system work (The same applies in urban systems). The end results are improper treatment of wastewater – if not outright failure of the system – and the contamination of adjacent wells with septic effluent containing bacterium, nitrates and other pollutants.

Once these contaminants are in the groundwater, they eventually reach rivers and lakes. In other words, once we have a *pollution* problem, we may be only a step away from a *water supply* problem.

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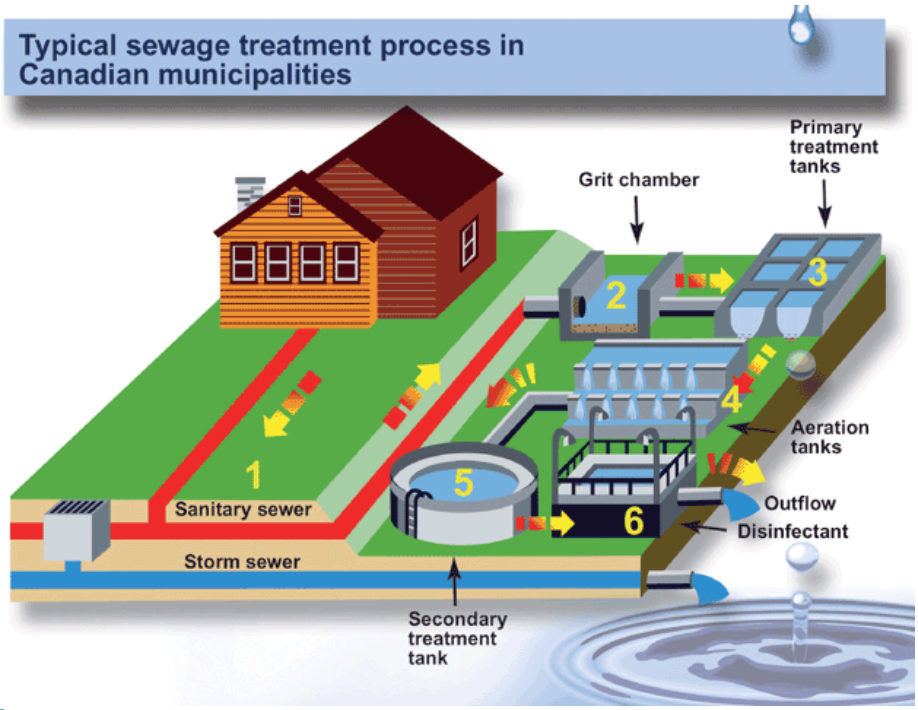


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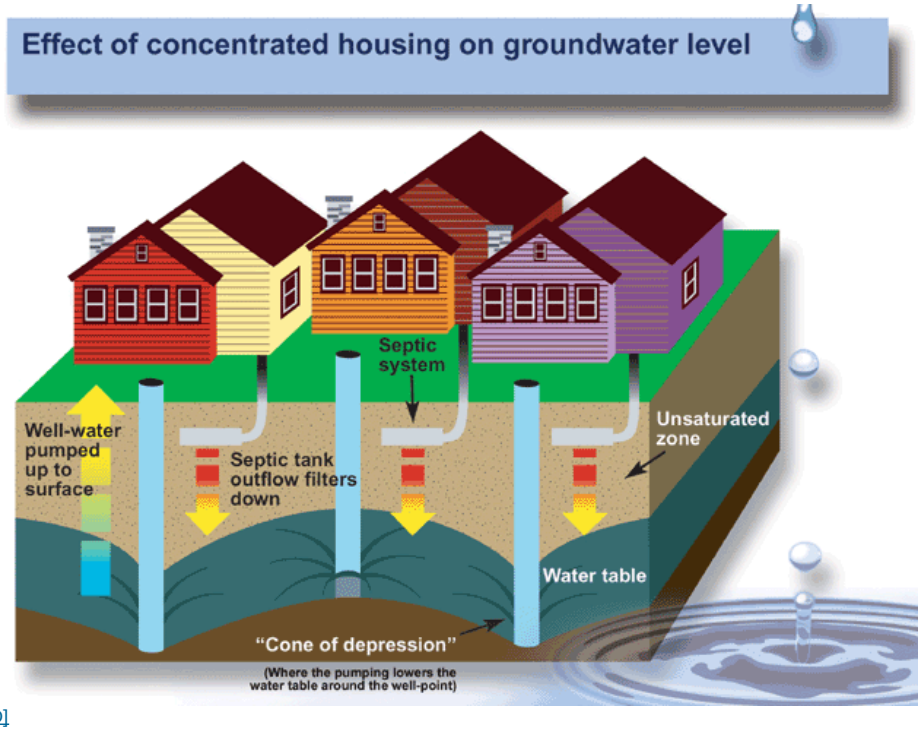


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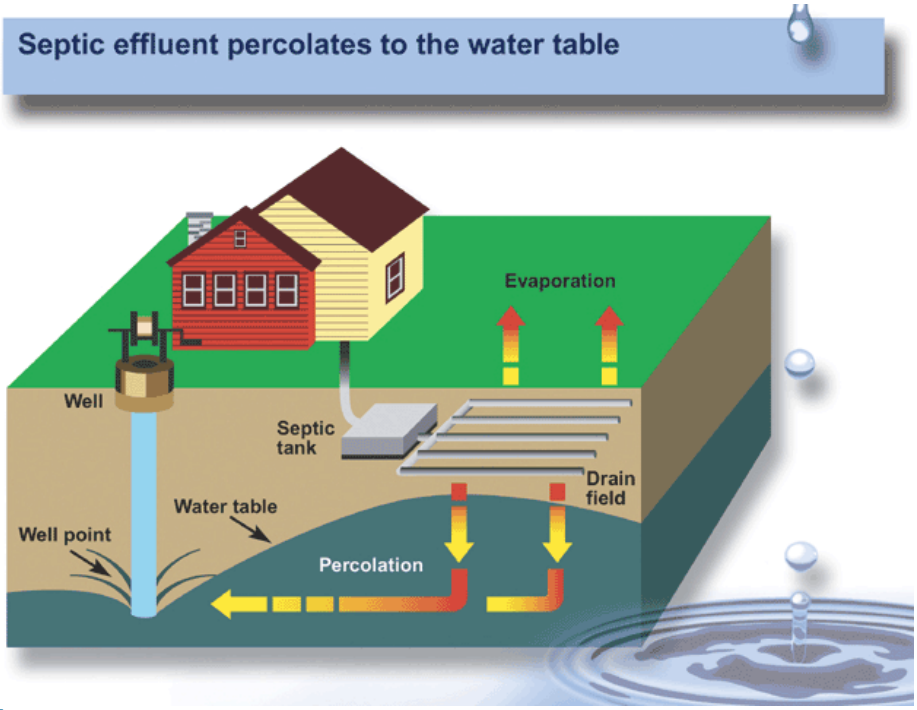


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## How we contaminate groundwater

Any addition of undesirable substances to groundwater caused by human activities is considered to be *contamination*. It has often been assumed that contaminants left on or under the ground will stay there. This has been shown to be wishful thinking. Groundwater often spreads the effects of dumps and spills far beyond the site of the original contamination. Groundwater contamination is extremely difficult, and sometimes impossible, to clean up.

Groundwater contaminants come from two categories of sources: *point sources* and distributed, or *non-point sources*. Landfills, leaking gasoline storage tanks, leaking septic tanks, and accidental spills are examples of point sources. Infiltration from farm land treated with pesticides and fertilizers is an example of a non-point source.

Among the more significant point sources are municipal landfills and industrial waste disposal sites. When either of these occur in or near sand and gravel aquifers, the potential for widespread contamination is the greatest.

In Ville Mercier, Quebec, for example, the disposal of industrial wastes into lagoons in an old gravel pit over many years rendered the water supplies of thousands of residents in the region unusable. Water had to be pumped from a well 10 kilometres away to replace the area's supply.

Other point sources are individually less significant, but they occur in large numbers all across the country. Some of these dangerous and widespread sources of contamination are septic tanks, leaks and spills of petroleum products and of dense industrial organic liquids.

Septic systems are designed so that some of the sewage is degraded in the tank and some is degraded and absorbed by the surrounding sand and subsoil. Contaminants that may enter groundwater from septic systems include bacteria, viruses, detergents, and household cleaners. These can create serious contamination problems. Despite the fact that septic tanks and cesspools are known sources of contaminants, they are poorly monitored and very little studied.

Contamination can render groundwater unsuitable for use. Although the overall extent of the problem across Canada is unknown, many individual cases of contamination have been investigated such as Ville Mercier in Quebec; the highway de-icing salt problem in Nova Scotia; industrial effluents in Elmira, Ontario; various pesticides in the Prairie provinces; industrial contamination in Vancouver, British Columbia; and so on. In many cases, contamination is recognized only after groundwater users have been exposed to potential health risks. The cost of cleaning up contaminated water supplies is usually extremely high.

Contamination problems are increasing in Canada primarily because of the large and growing number of toxic compounds used in industry and agriculture. In rural Canada, scientists suspect that many household wells are contaminated by substances from such common sources as septic systems, underground tanks, used motor oil, road salt, fertilizer, pesticides, and livestock wastes. Scientists also predict that in the next few decades more contaminated aquifers will be discovered, new contaminants will be identified, and more contaminated groundwater will be discharged into wetlands, streams and lakes.

Once an aquifer is contaminated, it may be unusable for decades. The residence time, as noted earlier, can be anywhere from two weeks or 10 000 years.

Furthermore, the effects of groundwater contamination do not end with the loss of well-water supplies. Several studies have documented the migration of contaminants from disposal or spill sites to nearby lakes and rivers as this groundwater passes through the hydrologic cycle, but the processes are not as yet well understood. In Canada, pollution of surface water by groundwater is probably at least as serious as the contamination of groundwater supplies. Preventing contamination in the first place is by far the most practical solution to the problem. This can be accomplished by the adoption of effective groundwater management practices by governments, industries and all Canadians. Although progress is being made in this direction, efforts are hampered by a serious shortage of groundwater experts and a general lack of knowledge about how groundwater behaves.

See also: Groundwater section
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## Solutions – the municipal challenge

Municipal governments across Canada are beginning to take action to manage the demand for water, instead of seeking new sources of supply. *Demand management*, incorporating water efficient applications, is rapidly gaining popularity as a low cost, effective way to get more service out of existing systems, thus delaying or deferring the need for constructing new works. The benefits of water efficient techniques apply equally well to rural, private wells and septic disposal systems, as they do to central water and sewer systems in the city.

The wide range of water efficiency initiatives currently being undertaken, can be grouped under four principal categories: 1) Structural, 2) Operational, 3) Economic and, 4) Socio-political.

Most of these water conservation activities fall within the jurisdiction of municipal governments and/or public utilities.

## Structural

metering
- water recycling systems
- wastewater re-use
- flow control devices
- distribution system pressure reduction
- water saving devices (efficient fixtures, appliances and retrofits)
- drought resistant landscaping (xeriscaping)
- efficient sprinkling/irrigation technology
- new process technologies
- plant improvements

### Operational

- leak detection and repair
- water use restrictions
- elimination of combined sanitary/storm sewers to reduce loadings on sewage treatment plants
- plant improvements

### Economic

- rate structures
- pricing policies
- incentives through rebates and tax credits
- other sanctions (fines)

### Socio-political

- public education
- information transfer and training
- regulatory (legislation, codes, standards and by-laws)

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## Solutions – in the city and in the countryside

The irony in all of this is that water quality impacts from overloaded or poorly maintained and operated municipal and private sewage disposal systems are the number one preventable type of pollution in Canada. The answer lies in better, more thorough treatment. And, one of the ways to enhance the treatment process is to limit the amounts of wastewater entering the wastewater stream. Again, water conservation is one of the easiest and cheapest ways to reduce the volume of wastewater flows and improve water quality.

Following a few common sense rules, it should be possible to safeguard your water supply while extending the life of your sewage disposal system, regardless of whether you live in the country or in the city.

Think carefully about the quantities of wastewater your household or business produces, as well as the quality of the wastewater. Do you make it a habit of discarding solvents, cleaners and related chemicals down your drains? If you do, you may be introducing substances that are toxic to the bacterium and other organisms that play a vital role in the treatment of sewage. This statement applies equally well to urban and rural households and businesses.

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## Individual action – conserving water in the home, community and at work

As we have seen, water quality and quantity are two sides of the same coin. How does saving water help water quality? Because water saved is water that does not end up in the wastewater stream requiring treatment. This, in turn, reduces municipal pumping and treatment costs and frees up monies that can be used for infrastructure renewal and replacement and protection of supply sources. Less wastewater in the sewage treatment plant also means that the plant has a better chance of doing the job it was intended to do.

### Solutions – in the home

So where do we start? The first step is to identify where we use water in the home. Then we need to decide on what to do to reduce the amount of water we use, either by eliminating wasteful practices and habits, or by improving

the efficiency of our water using fixtures and devices. Since we waste so much, this should be a relatively easy and painless process. The prime area to target is the bathroom, where nearly 65 percent of all indoor water use occurs.

What follows are some suggestions for how to get your house or business in order. Based on the three rules of water conservation – reduce, repair and retrofit – a typical household can reduce water consumption by 40 percent or more, with or no effect on lifestyle.

## Solutions – at work and in the community

Many of the suggestions made for reducing water use in the home have wider application, both in the workplace, and in the community at large. Low-flow equipment are available for most commercial and toilet applications, instituting them may mean taking a leading role yourself, for example, forming and leading a committee that would address the following questions:

- do your workplace bathrooms, kitchens, etc. have water-efficient toilets, faucets, etc. similar to those discussed for the household?
- if your workplace uses water in its production process or for washing goods or equipment, is this being done efficiently?
- does your community have a water-efficiency assistance program that helps households and business improve their water-use efficiency?
- is the water distribution system properly maintained so that no pollution leaks into it and so that no water is wasted through leaky mains?

See also:

- Interdepartmental Advisory Group on Water Conservation at Federal Facilities (WCFF)
- Water Efficiency Experiences Database

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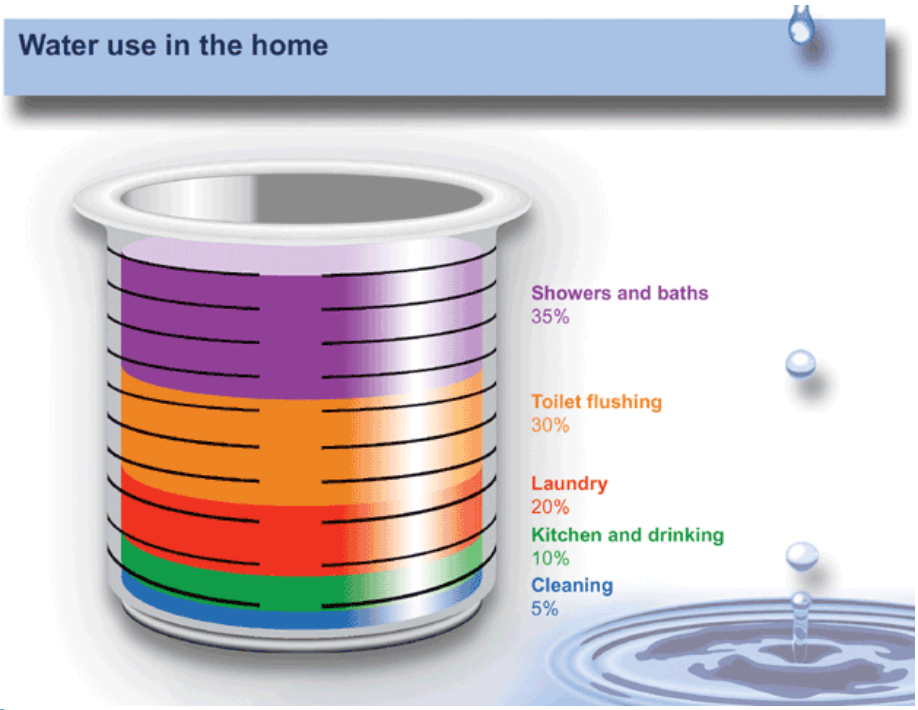


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## Reduce

Much of the water "consumed" in our daily activities is simply wasted. Taps are left running while we brush our teeth. Dishwashers and laundry machines are operated without full loads. Really, everywhere we use water there is room for improvement. Here are just a few examples for both indoor and outdoor water use.

- Don't use the toilet as a wastebasket or flush it unnecessarily.
- Take short showers – five minutes or less should do. If you prefer

baths, fill the tub only one-quarter full.

- Keep a bottle of drinking water in the refridgerator rather than letting your tap run to get cold water when you want a drink. (Rinse the bottle every few days.)
- More than 50 percent of the water applied to lawns and gardens is lost due to evaporation, or run-off because of overwatering. Find out how much water your lawn really needs. As a general rule, most lawns and gardens require little more than 2 to 3 centimeters (1 inch) of water per week.
- To reduce loses due to evaporation, water early in the morning (after the dew has dried).
- Watering off-peak helps the utility manage its load on the system and helps ensure adequate reservoir levels and water pressure for possible fire emergencies.
- When washing a car, fill a bucket with water and use a sponge. This can save about 300 litres of water.

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## Repair

Leaks can be costly. A leak of only one drop per second wastes about 10 000 litres of water per year. Most leaks are easy to find and to fix, at very little cost.

- Leaking faucets are often caused by a worn out washer that costs pennies to replace. Most hardware stores will have faucet repair kits with illustrations showing how to replace a washer.
- A toilet that continues to run after flushing, if the leak is large enough, can waste up to 200 000 litres of water in a single year! To find out if your toilet is leaking, put two or three drops of food colouring in the tank at the back of the toilet. Wait a few minutes. If the colour shows up in the bowl, there's a leak.
- Toilet leaks are often due to a flush valve or flapper valve that isn't sitting properly in the valve seat, bent or misaligned flush valve lift wires, or a corroded valve seat. All of these can be fixed easily and inexpensively. To get at the valve seat, which surrounds the outlet hole at the bottom of the tank, you must first empty the tank . This is accomplished by turning off the inlet tap under the tank and flushing the toilet, making sure to keep depressing the flush lever until no more water drains out of the tank. Then, holding the valve out of the way, sand the corroded or warped valve seat smooth with a piece of emery cloth, if, however, the leak is around the base of the toilet where it sits on the floor, call a professional.

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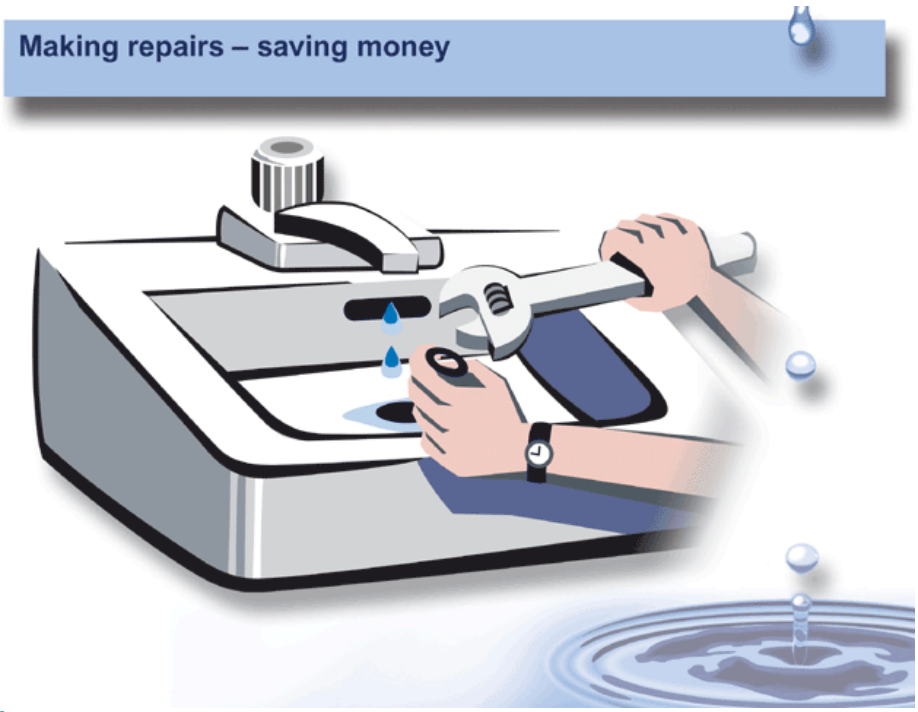


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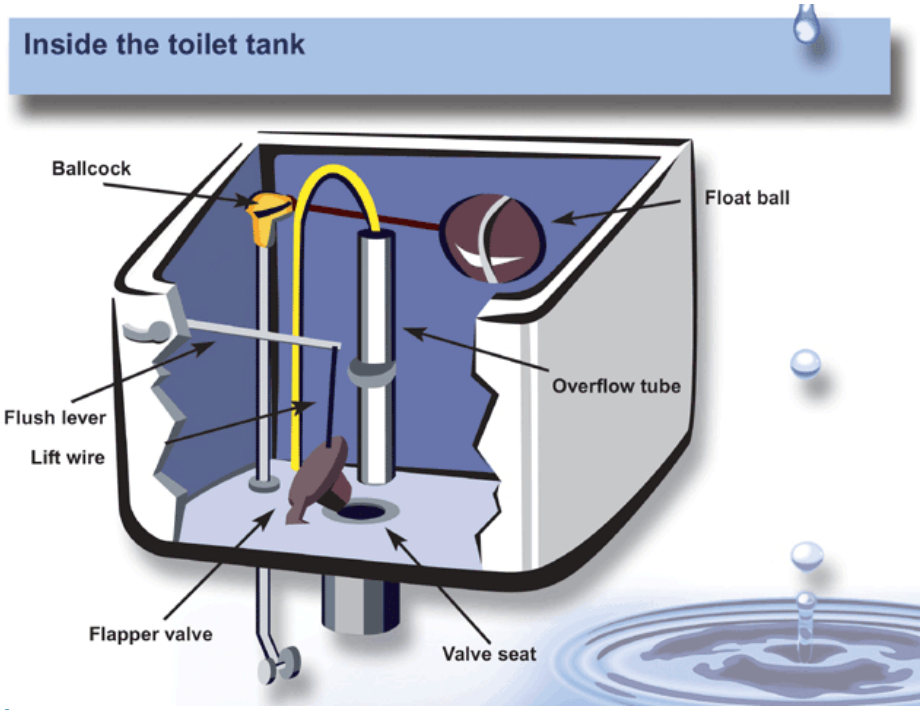
Inside the toilet tank
Ballcock
Float ball
Overflow tube
Flush lever
Lift wire
Flapper valve
Valve seat

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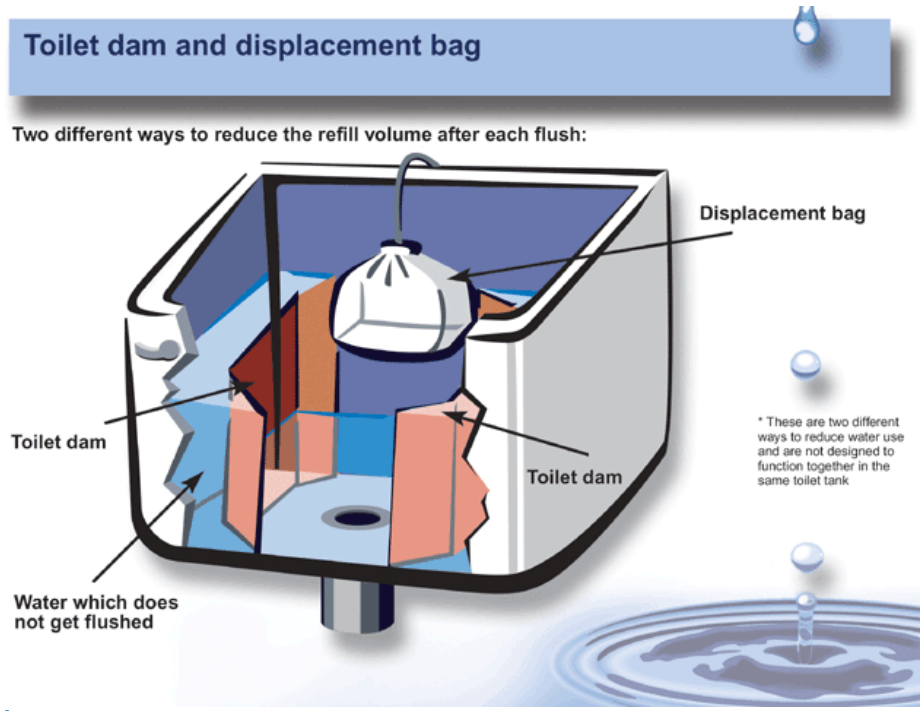
Toilet dam and displacement bag
Two different ways to reduce the refill volume after each flush:
Displacement bag
Toilet dam
Toilet dam
Water which does not get flushed
* These are two different ways to reduce water use and are not designed to function together in the same toilet tank

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## Annual toilet water cost and savings comparison

| | ANNUAL COST** | | | ANNUAL SAVINGS with an ultra low-flush toilet (5.7 litres/flush), compared to: | |
|---|---|---|---|---|---|
| Water rate* | Standard toilet | Low-flush toilet | Ultra low-flush toilet | Standard toilet | Low-flush toilet |
| $ | $ | $ | $ | $ | $ |
| 0.50 | 55.48 | 38.54 | 16.64 | 38.84 | 21.90 |
| 0.60 | 66.58 | 46.25 | 19.97 | 46.61 | 26.28 |
| 0.70 | 77.67 | 53.96 | 23.30 | 54.37 | 30.66 |
| 0.80 | 88.77 | 61.67 | 26.63 | 62.14 | 35.04 |
| 0.90 | 99.86 | 69.38 | 29.96 | 69.90 | 39.42 |
| 1.00 | 110.96 | 77.09 | 33.29 | 77.67 | 43.80 |
| 1.10 | 122.06 | 84.80 | 36.62 | 85.44 | 48.18 |
| 1.20 | 133.15 | 92.51 | 39.95 | 93.20 | 52.56 |
| 1.30 | 144.25 | 100.21 | 43.27 | 100.98 | 56.94 |
| 1.40 | 155.34 | 107.92 | 46.60 | 108.74 | 61.32 |
| 1.50 | 166.44 | 115.63 | 49.93 | 116.51 | 65.70 |

**Water rate***
Per cubic metre
= 1000 litres
=35.32 cubic feet

**Standard toilet: (per flush)**
= 19 litres
=4.2 imp. gallons
=5.0 U.S. gallons

**Low-flush toilet (per flush)**
=13.2 litres
=2.9 imp. gallons
=3.5 U.S. gallons

**Ultra low-flush toilet** (per flush)
=5.7 litres
=1.25 imp. gallons
=1.5 U.S. gallons

* Contact your municipality for your true water rate that includes sewage charges and/or surcharges.
** Based on a four-person household flushing four times per person per day.

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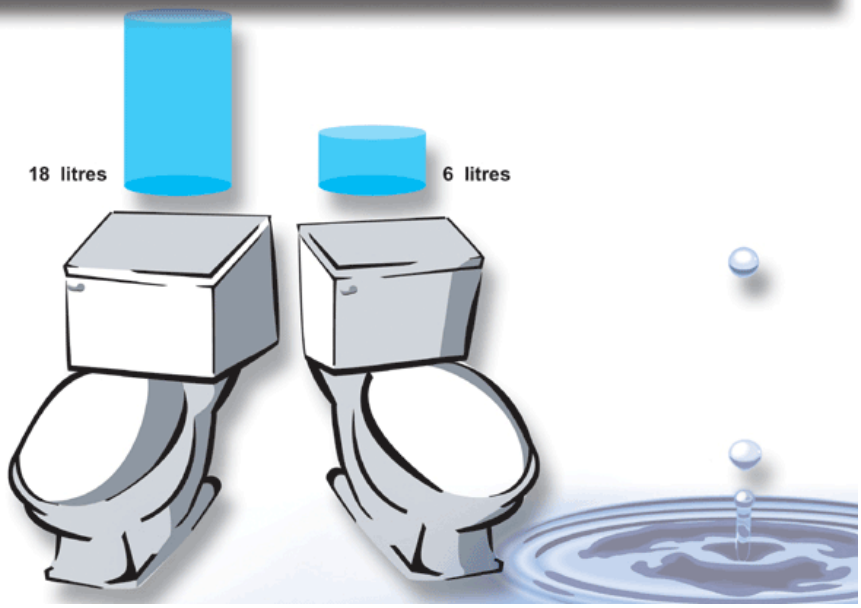
## Water use per flush – conventional vs. ULV toilet

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## Annual shower water cost and savings comparison

| SHOWER TIME | Water rate* | ANNUAL COST Standard showerhead | ANNUAL COST Low-flow showerhead | Annual savings | SHOWER TIME | Water rate* | ANNUAL COST Standard showerhead | ANNUAL COST Low-flow showerhead | Annual savings |
|---|---|---|---|---|---|---|---|---|---|
| | $ | $ | $ | $ | | $ | $ | $ | $ |
| 6 min. shower | 0.50 | 26.68 | 14.82 | 11.86 | 10 min. shower | 0.50 | 44.46 | 24.70 | 19.76 |
| | 0.60 | 32.01 | 17.78 | 14.23 | | 0.60 | 53.35 | 29.64 | 23.71 |
| | 0.70 | 37.35 | 20.75 | 16.60 | | 0.70 | 62.24 | 34.58 | 27.66 |
| | 0.80 | 42.68 | 23.71 | 18.97 | | 0.80 | 71.14 | 39.52 | 31.62 |
| | 0.90 | 48.02 | 26.68 | 21.34 | | 0.90 | 80.03 | 44.46 | 35.57 |
| | 1.00 | 53.35 | 29.64 | 23.71 | | 1.00 | 88.92 | 49.40 | 39.52 |
| | 1.10 | 58.69 | 32.60 | 26.09 | | 1.10 | 97.81 | 54.34 | 43.47 |
| | 1.20 | 64.02 | 35.57 | 28.45 | | 1.20 | 106.70 | 59.28 | 47.42 |
| | 1.30 | 69.36 | 38.53 | 30.83 | | 1.30 | 115.60 | 64.22 | 51.38 |
| | 1.40 | 74.69 | 41.50 | 33.19 | | 1.40 | 124.49 | 69.16 | 55.33 |
| | 1.50 | 80.03 | 44.46 | 35.57 | | 1.50 | 133.38 | 74.10 | 59.28 |
| 8 min. shower | 0.50 | 35.57 | 19.76 | 15.81 | 12 min. shower | 0.50 | 53.35 | 29.64 | 23.71 |
| | 0.60 | 42.68 | 23.71 | 18.97 | | 0.60 | 64.02 | 35.57 | 28.45 |
| | 0.70 | 49.80 | 27.66 | 22.14 | | 0.70 | 74.69 | 41.50 | 33.19 |
| | 0.80 | 56.91 | 31.62 | 25.29 | | 0.80 | 85.36 | 47.42 | 37.94 |
| | 0.90 | 64.02 | 35.57 | 28.45 | | 0.90 | 96.03 | 53.35 | 42.68 |
| | 1.00 | 71.14 | 39.52 | 31.62 | | 1.00 | 106.70 | 59.28 | 47.42 |
| | 1.10 | 78.25 | 43.47 | 34.78 | | 1.10 | 117.37 | 65.21 | 52.16 |
| | 1.20 | 85.36 | 47.42 | 37.94 | | 1.20 | 128.04 | 71.14 | 56.90 |
| | 1.30 | 92.48 | 51.38 | 41.10 | | 1.30 | 138.72 | 77.06 | 61.66 |
| | 1.40 | 99.59 | 55.33 | 44.26 | | 1.40 | 149.39 | 82.99 | 66.40 |
| | 1.50 | 106.70 | 59.28 | 47.42 | | 1.50 | 160.06 | 88.92 | 71.14 |

**This table assumes 10 showers per week**

**Water rate***
Per cubic metre
= 1000 litres
=35.32 cubic feet

**Standard showerhead**
=17.1 litres
=3.75 imp. gal./min.
=4.5 U.S.gal./min.

**Low-flow showerhead**
=9.5 litres/min.
=2.1 imp. gal./min.
=2.5 U.S. gal./min.

**Annual savings**
with a low-flow showerhead (9.5 litres/min.)

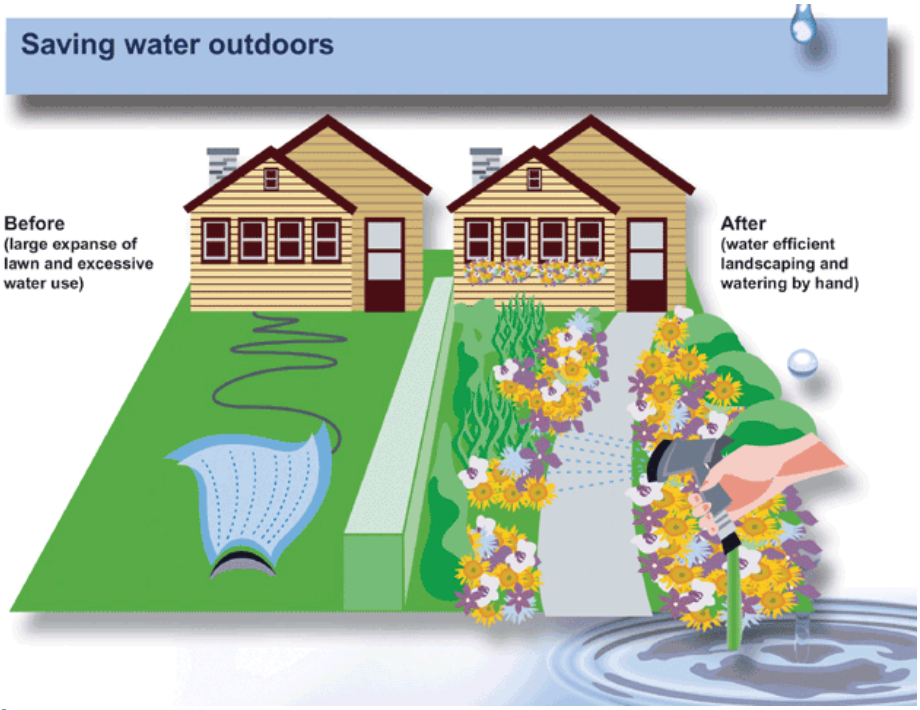
**Note:** Use this table to compute annual cost/savings for other numbers of weekly showers by:
1. locating your shower time and water rate*
2. multiplying the corresponding cost/savings figures by your weekly showers.
3. Dividing by 10

*Contact your municipality for your true water rate that includes sewage charges and/or surcharge
Note the additional savings by reducing the showering time regardless of showerhead type.

[D]

## Low-flow showerhead with shut-off button


[D]




[D]

## The bottom line

Water conservation. The message is clear. If we each save a little, it can add up to major savings in water, energy and money. For the average household, reductions in water use as high as 40 percent or more are feasible, just by following the steps outlined on the preceding Web pages.

The benefits don't stop at the household or business. The municipal water and sewer department gets a break on the amount of water it has to pump to our homes and businesses and on the amount of wastewater it has to treat in sewage treatment plants. Water conservation can extend the useful life of municipal water supply and treatment plants, and will benefit the operating efficiency – and life expectancy – of private septic disposal systems.

And, finally, water conservation can generate *significant* environmental benefits. It can reduce water diverted and the pollution loadings on our lakes and rivers by reducing the volumes of wastewater which we have to treat. This can help to protect our drinking water and the ecological balance in sensitive aquatic ecosystems.

If we all practice water conservation, everyone – and everything – benefits.

See also: Every Drop Counts! Slide Show
Water Efficiency/Conservation Menu Previous

QUICKFACTS