



## *Fresh Water*

Although water covers nearly three-quarters of Earth's surface, only 3% is fresh water in some form (surface water, groundwater, snow and ice).

Canada is more fortunate than most countries because the country's landmass contains approximately 9% of the world's renewable water supply (water replenished by precipitation on a short-term basis).

However, in some parts of BC, freshwater quality and quantity are under pressure from increasing population and economic activity.

Freshwater supports the agriculture, fisheries, and forests on which society depends for food, clothing, and shelter, as well as for recreational and cultural pursuits.

Indicators of surface water quality, groundwater quality and quantity and water use show the need for action on water resources stewardship, as well as progress achieved, to ensure the future sustainability of water resources.



***The following indicators focus on the supply of groundwater and trends in surface water quality and water use.***

# Environmental Trends in British Columbia: 2007

## Surface water quality in British Columbia

The Water Quality Index (WQI) is a tool that allows a large number of water quality characteristics to be expressed as a single rating for each body of fresh water. Guidelines for different variables have been established through research.

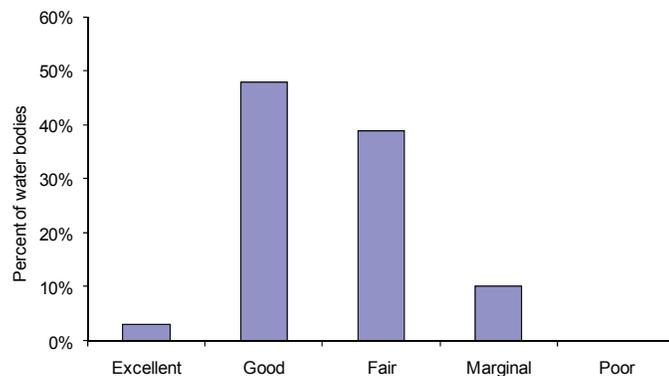
Water quality characteristics that are measured include:

- physical (e.g., temperature, pH, dissolved oxygen, turbidity, suspended solids)
- chemical (e.g. pesticides, trace metals)
- biological (e.g. fecal coliforms, zooplankton, algal growth, nutrients)

The WQI was calculated for 31 streams, rivers and lakes with sufficient monitoring records between 2002 and 2004.

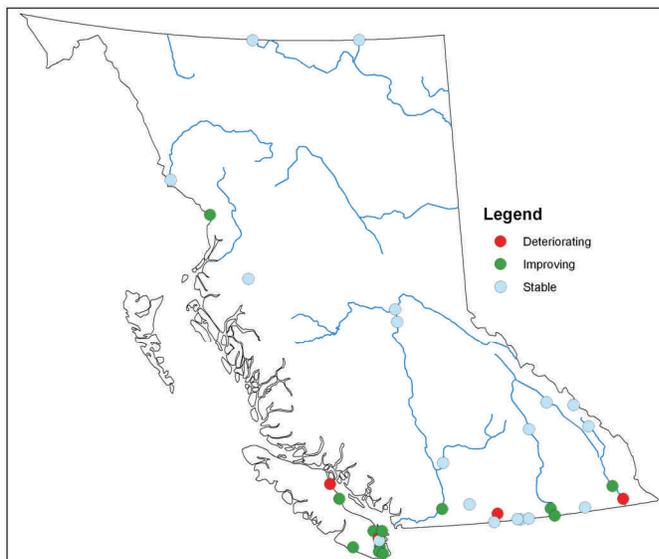
- More than half (51 %) of the water bodies were rated 'excellent' or 'good.'
- 39 % were rated 'fair.'
- 10 % were 'marginal' and none were 'poor.'

Water quality index for surface water bodies in BC



Source: B.C. Ministry of Environment

## Trends in water quality at monitoring stations in BC



Source: B.C. Ministry of Environment

Long term trends in water sampling stations with at least 10 years of records are also classified according to the overall trend of 'improving', 'stable', or 'deteriorating.'

- Results of trend assessments at 38 water quality sampling stations showed 13 with improving trends, 18 with stable trends, and four with deteriorating trends. Three other stations had mixed trends.

Most water quality monitoring stations are intentionally located where there is a risk of water pollution, so it is likely that a greater proportion of the thousands of other water bodies in B.C. are actually in good to excellent condition.

# Environmental Trends in British Columbia: 2007

## Groundwater in British Columbia

Groundwater is often the only available or economical source of high quality, potable water for domestic use.

Much of the groundwater extracted in B.C. comes from underground aquifers near large urban centers and major agricultural areas.

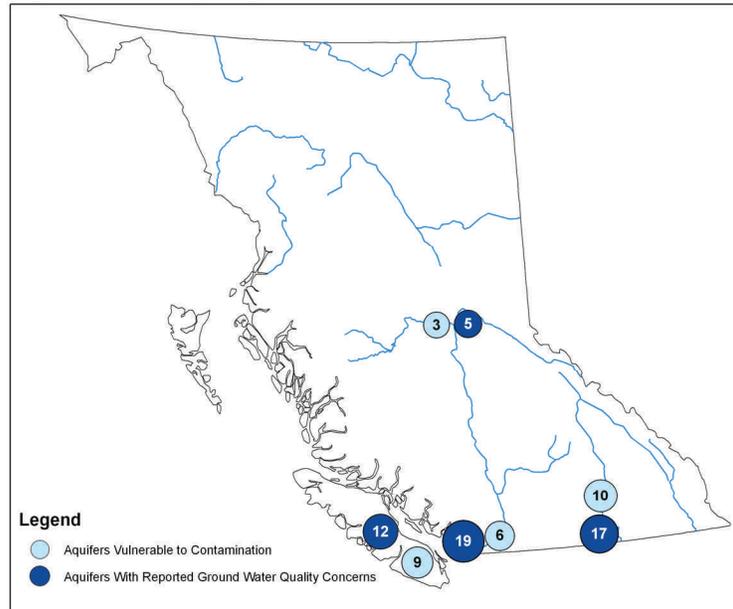
Outside of Victoria and Vancouver Island, groundwater provides about a quarter of the municipal drinking water in the province.

Heavy demand can put the supply and quality of groundwater at risk. For example, excessive groundwater withdrawal in coastal areas can cause salt water intrusion into the aquifer.

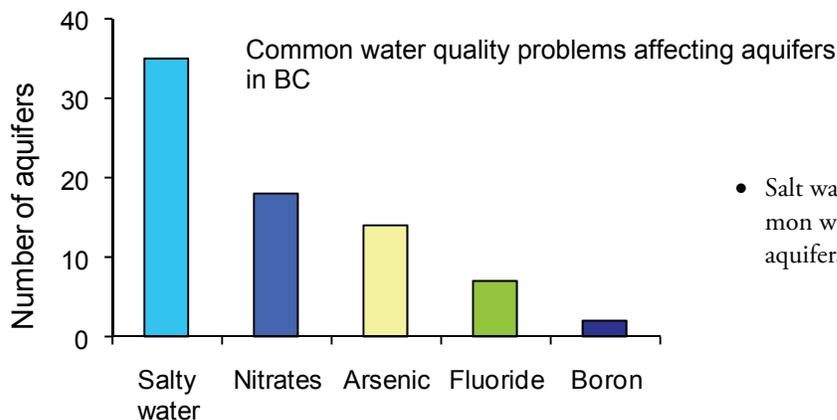
Some aquifers are naturally vulnerable to contamination for intrinsic reasons such as a shallow water table or an unconfined structure (not overlain by a clay, till or hardpan layer).

Contaminants may be naturally occurring (e.g., arsenic) or introduced by human activities (e.g., nitrate).

Aquifers vulnerable to contamination and with reported groundwater quality concerns



- There are 28 heavily developed aquifers vulnerable to contamination and 53 aquifers with documented water quality problems.
- The majority are in the Southern Interior, on the Gulf Islands, on the east coast of Vancouver Island and in the Lower Mainland.



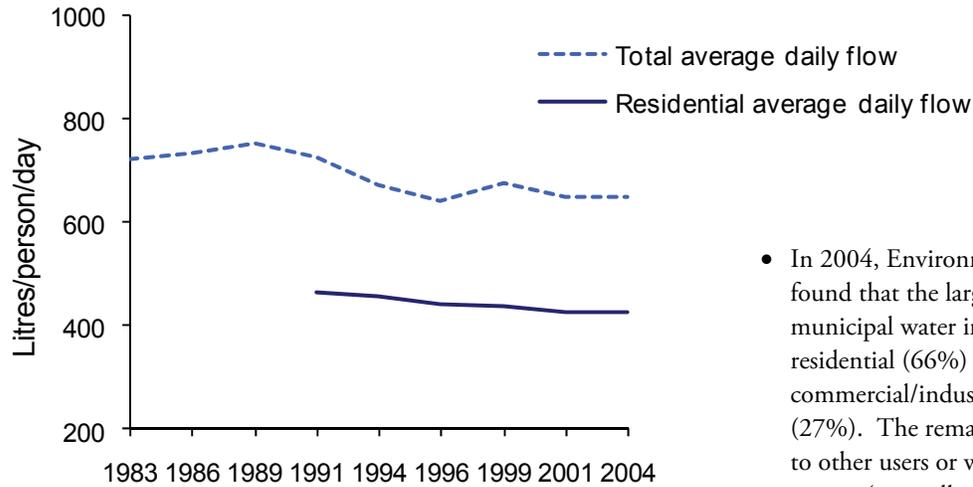
- Salt water intrusion is the most common water quality problem in BC aquifers.

# Environmental Trends in British Columbia: 2007

## Water use in British Columbia

Municipal water use includes water used for residential (domestic), industrial, commercial, and other uses.

Per capita municipal water use in B.C.

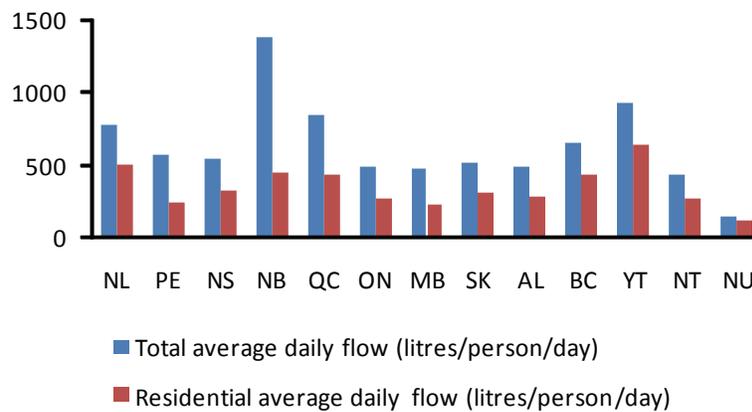


- In 2004, Environment Canada found that the largest users of municipal water in B.C. were residential (66%) followed by commercial/industrial uses (27%). The remaining 8% went to other users or was lost in the system (generally due to leaks).

Source: Environment Canada

- Estimated personal water use in B.C. only decreased 11% between 1991 (465 litres/person/day) and 2004 (426 litres/person/day).
- 426 litres is still above the Canadian national average of 329 litres/person/day, putting B.C. in the top bracket of water consuming provinces.
- The higher rate of water consumption in B.C. may be a result of the flat rate pricing system still used in 70% of B.C. municipalities.

Per capita residential water use in Canada in 2004



Source: Environment Canada 2007b; Municipal Water and Wastewater Survey 2004 Summary Tables.

## *Taking Action - What is being done?*

The federal, provincial and territorial governments worked together to develop national guidelines for water quality [<http://www.ec.gc.ca/CEQG-RCQE/English/Ceeg/Water/default.cfm>].

Water quality  
guidelines  
in Canada  
Protecting your health  
and the environment

The Provincial Government regulations governing water quality and quantity include:

- B.C. Drinking Water Protection Act and Regulation (2005)
- B.C. Water Act and Groundwater Protection Regulation (2005)



**B.C. Hydro Water Use Plans**, required under the BC Water Act, account for multiple uses of the water resource as well as social and environmental values.

**The Water Sustainability Action Plan (WSAP) for British Columbia** is a partnership of government and non-government organizations to improve awareness and encourage action around the sustainable use of water resources. Some of the tools developed under this plan include:

- **The WaterBucket** which provides a 'one-stop' portal to a comprehensive set of information resources and planning tools
- **The Water Balance Model for British Columbia**, an evaluation tool that quantifies the benefits of installing rainwater source controls such as green roofs and rain gardens
- **The Water Sustainability Project (WSP)**, a University of Victoria POLIS Project to increase public awareness of water issues

# Environmental Trends in British Columbia: 2007

## What can you do?

**Protect Water Quality** – reduce use of household cleaning products and fertilizers and pesticides on your lawn and garden; compost kitchen waste; regularly inspect and pump septic tanks (every three to five years); regularly check and repair fluid leaks from your vehicle; and recycle used oil and antifreeze.

**Conserve water indoors** – install low-flow toilets, showerheads and faucets; take shorter showers or use less water in baths; run dishwashers only when full, rather than wasting water on a partial load; use short cycles and full loads in washing machines and purchase water conserving appliances when it is time to replace them.

**Check your regional district for information on rebate programs and other local information:**

- Greater Vancouver Water District Water Conservation programs <http://www.gvrd.bc.ca/water/conservation.htm>.
- Capital Regional District Water Conservation programs <http://www.crd.bc.ca/water/conservation/>.
- Other regional districts and municipalities can be found through: <http://www.civicnet.bc.ca/siteengine/ActivePage.asp?PageID=83>

**Conserve water outdoors** –let lawns go dormant in the summer, watering only once in months with no rain; water in the morning or evening to reduce loss to evaporation; use drip irrigation systems for garden plants; choose drought-tolerant plants; keep soil around plants covered with leaves or other organic mulch; use a bucket of soapy water to wash your car, then rinse quickly using a hose; sweep sidewalks and driveways rather than using a hose.



**Participate in community efforts** – Join a community stewardship group to care for a local water body; participate in local community planning and regional growth strategies; encourage your neighbours, local employers and community leaders to adopt water quality protection measures.

**For detailed information on these and other indicators, including an in-depth report [pdf], see the Environmental Trends in British Columbia: 2007 website:**

**<http://www.env.gov.bc.ca/soe/et07/>**