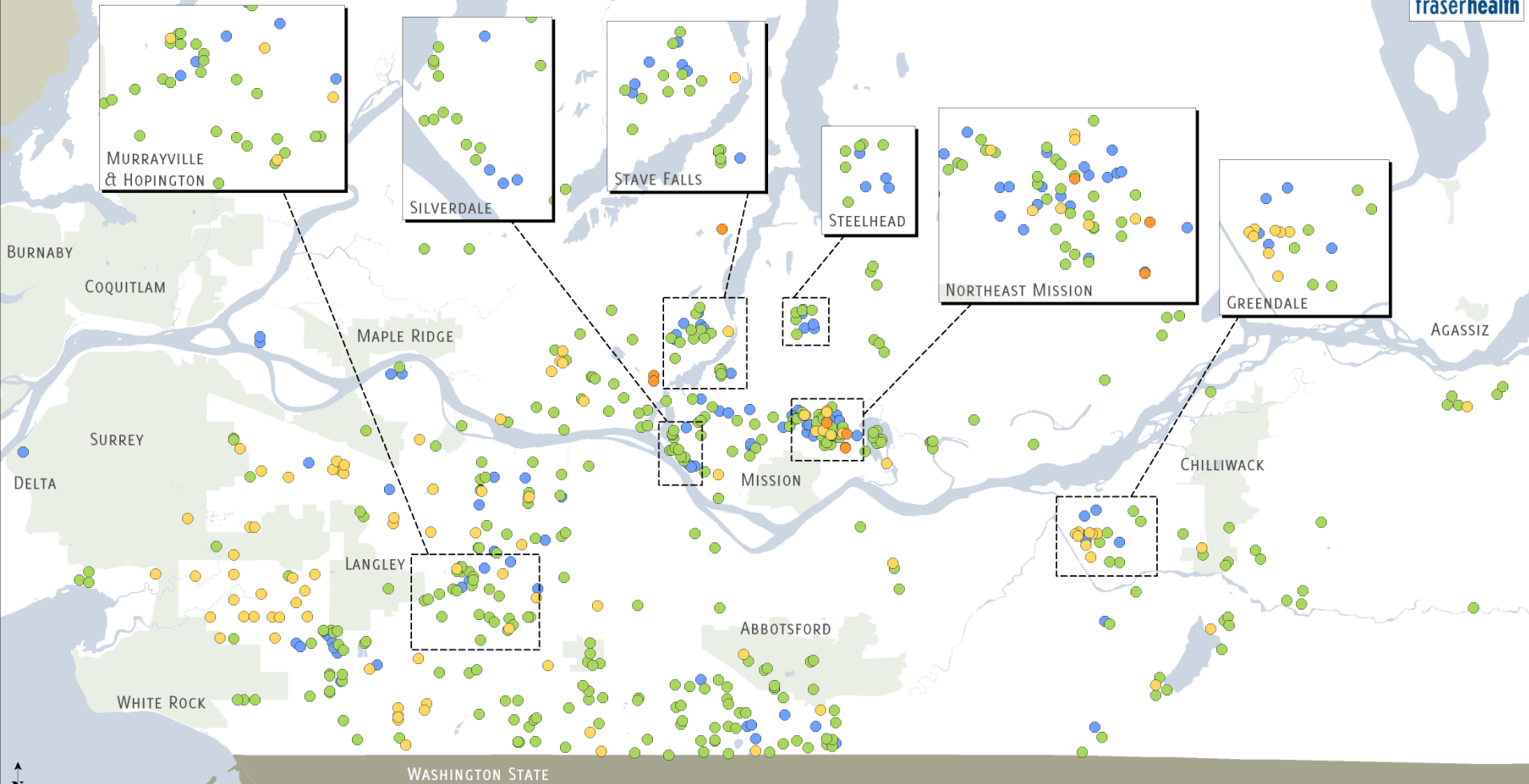


# Fraser Health Drinking Water

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# PRE-TREATMENT ARSENIC LEVELS IN PRIVATE WATER SYSTEMS WITH A GROUNDWATER SOURCE



Map shows arsenic levels measured prior to treatment, between 1992 and 2008. The Canadian guideline for maximum acceptable arsenic level in drinking water is 10.0  $\mu\text{g/L}$ . FH recommends that water systems with As concentrations > 10.0  $\mu\text{g/L}$  either treat their water to below 10.0  $\mu\text{g/L}$ , as low as reasonably achievable or use an alternate water source. Levels of 0.3  $\mu\text{g/L}$  and lower are considered a negligible risk to human health. Levels above 200.0  $\mu\text{g/L}$  can cause toxic reactions including stomach pain, vomiting, diarrhea, muscle pain, weakness and flushing of the skin. To be cautious, Fraser Health recommends that people not drink water with arsenic levels of 100.0  $\mu\text{g/L}$  or more.

Arsenic Concentration ( $\mu\text{g/L}$ )	< 0.3 negligible risk	0.3 - 10.0 meets Health Canada MAC	10.0 - 100.0 exceeds Health Canada's MAC	100.0 or greater: potential for toxicity without treatment
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### What can I do if there is arsenic in my drinking water?

Water with arsenic is a problem only if you are using it for drinking, preparing food or watering food plants. Exposure through breathing and skin contact is not harmful. For example, there are no known health effects from hand washing, bathing, or washing clothing in water with arsenic.

If an initial test detects arsenic, even at levels below the guideline, it is important to have a second test done to confirm the results. If arsenic is present, then you can either use another source for drinking water or treat the current source.

Chlorination and mechanical filters do not remove arsenic from water. **Boiling water may increase the concentration of arsenic and make the problem worse.** There are several treatment options for removing arsenic including reverse osmosis filters and distillation.

There is no regulatory control over treatment devices for private homes, so you have to be careful to buy one that works for removing arsenic. Look for a treatment device that has been certified by an organization accredited by the Standards Council of Canada (SCC) and meets one of the following standards:

- NSF/ANSI Standard 62 on drinking water distillation systems; or
- Standard 58 on reverse osmosis drinking water treatment systems; or
- Standards 53 on drinking water treatment units – with specific designation for arsenic.

Be sure to operate and maintain your treatment device as per the manufacturer's instructions and test your raw and treated water regularly for arsenic to make sure that the device is indeed working properly.

**For more information** pertaining to drinking water and other services, visit the Fraser Health website below or contact the Drinking Water Program staff at 1-604-870-7900.

[www.fraserhealth.ca/your\\_environment](http://www.fraserhealth.ca/your_environment)

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## Arsenic in Well Water

### Information for Private Well Owners

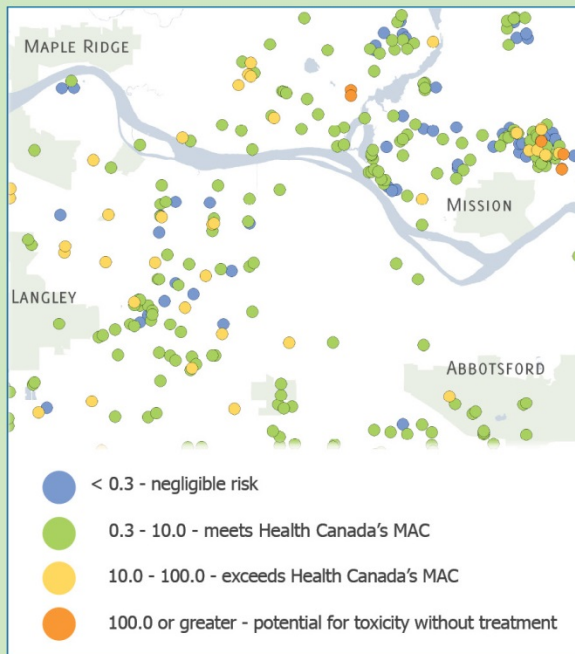


Health Protection

*Ensuring Healthy People and Healthy Environments*

Drinking water that contains arsenic can have serious short-term and long-term health effects. As you can see on the map, some groundwater in the Fraser Valley is known to contain arsenic concentrations exceeding Health Canada's Maximum Acceptable Concentration (MAC) of 0.010mg/L (10 ug/L or 10 parts per billion). This pamphlet provides information about arsenic, including how to test your well water for arsenic and what to do if arsenic is found in your well water.

### Pre-Treatment Arsenic Levels



For a detailed and larger area view of the above Arsenic Map visit the Fraser Health website

### How does arsenic get into drinking water?

Arsenic can get into drinking water from natural deposits or runoff from agriculture, mining or industrial processes. In British Columbia, natural minerals are the most common sources of arsenic in drinking water. The amount of arsenic found in groundwater wells is usually higher than that found in surface water supplies such as lakes, streams and rivers.

### What are the health effects of arsenic exposure?

Arsenic in water is a concern only if the water is being used for drinking or preparing food. Exposure through breathing and skin contact is not harmful. For example, there are no known health effects from hand washing, bathing or washing clothing in water with arsenic.

**However, if you use your water for drinking or preparing food, water that contains arsenic can have serious short-term and long-term health effects, depending on how much arsenic is in your water and for how long you drink it.**

Short to medium-term (days to weeks) exposure to very high levels of arsenic (over 200 parts per billion) in drinking water can lead to arsenic poisoning. For an added margin of safety, do not drink water containing 100 parts per billion arsenic or greater.

Symptoms of exposure to high levels of arsenic include stomach pain, vomiting, diarrhea, and impaired nerve function, which may result in 'pins and needles' sensation in hands and feet.

As children tend to drink more water per unit of body weight than adults, they may have more exposure to arsenic in drinking water and may be at greater risk of illness when higher levels of arsenic are present.

Long-term (years to decades) exposure to even relatively low amounts of arsenic in drinking water can increase your risk of developing certain cancers,

including skin, lung, kidney, and bladder cancer. The risk of cancer is the reason for developing the Canadian guideline for arsenic in drinking water. Long-term arsenic exposure can also cause skin problems including darkening, and wart or corn-like growths, mostly found on the palms of the hands and soles of the feet.

Health Canada set a Maximum Acceptable Concentration (MAC) of 0.010 mg/L (10 ug/L or 10 parts per billion) for arsenic in drinking water. This level was set based on the ability to treat water to a level practically to this level. This amount is still considered to be with a health risk higher than the level considered to be a very minor risk. For this reason people are encouraged to consider taking precautions with their drinking water, even if the arsenic levels are slightly below the guideline.

For more information on arsenic in drinking water, visit the Guidelines for Canadian Drinking Water Quality website or visit the Health Canada website at [www.hc-sc.gc.ca](http://www.hc-sc.gc.ca)

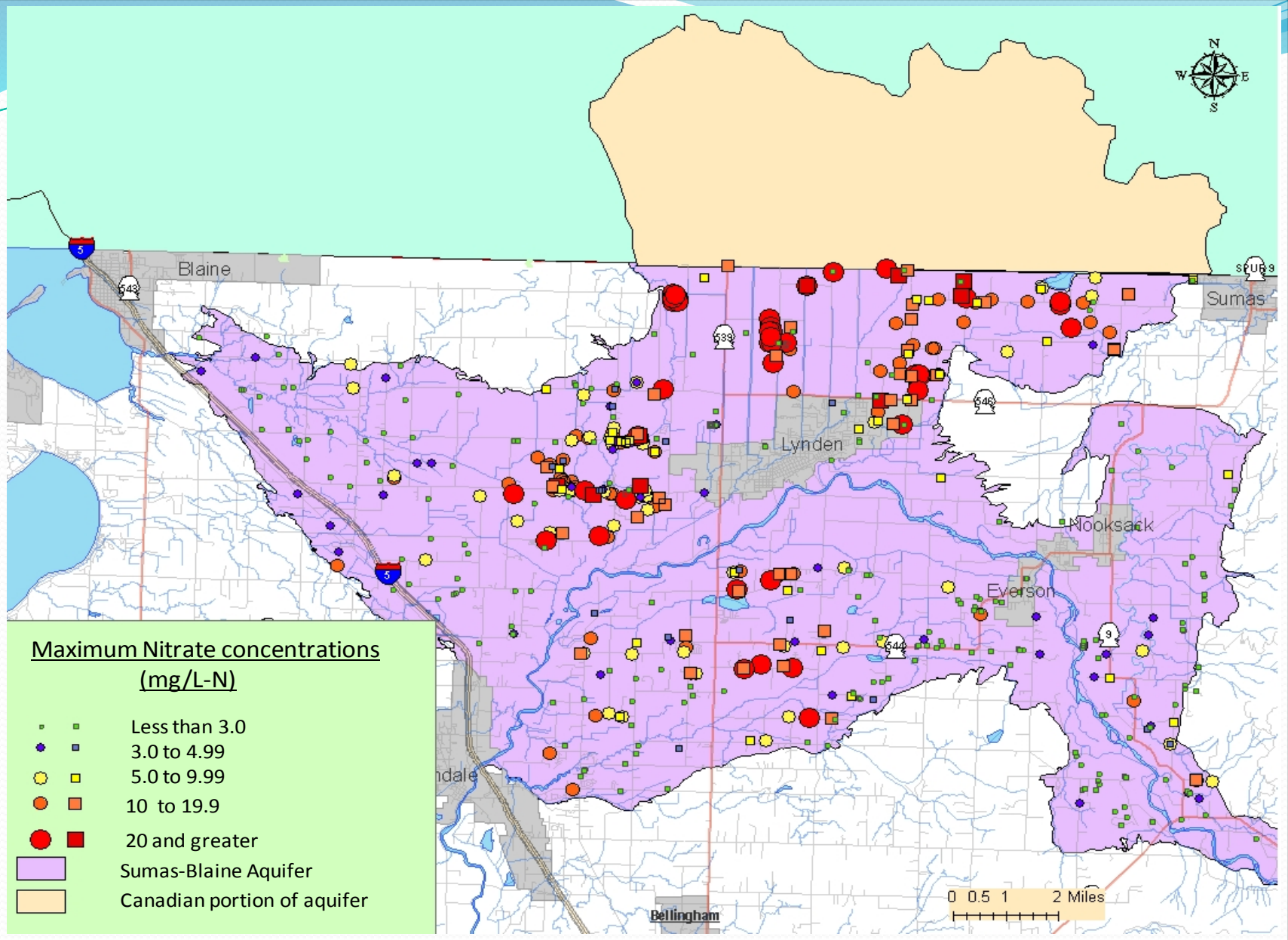
### How can I find out if there is arsenic in my drinking water?

Any well may contain arsenic or other contaminants. As the well owner, it is your responsibility to test your well water for arsenic and other indicators of water quality.

Arsenic in drinking water has no odour or taste. It is detected by a chemical test that is done by specialized laboratories. For a list of "Laboratory Analytical" check the yellow pages in the telephone book or contact an Environmental Health Officer at the Drinking Water Program at 1-604-870-7300.

For more information on water testing go to [healthlinkbc.ca/healthfiles/hfile05b.stm](http://healthlinkbc.ca/healthfiles/hfile05b.stm). See "Should I Get My Well Water Tested?"





Whatcom County

# Public Health Act

## Health Hazard Regulation Sec 8

(1) A person who installs a well, or who controls a well installed on or after July 20, 1917, must ensure that the well is located at least

(a) 30 m from any probable source of contamination,

(4) A well that does not meet the requirements of this section is prescribed as a health hazard.









## Buying a home with a well

### Buyer Beware

When purchasing a home with its own water supply (well) you should be aware that there is minimal regulatory oversight on private wells. The homeowner is responsible for ensuring the water is safe for drinking, cooking and household sanitation. Wells with poor water quality can be expensive to treat. Having a qualified professional inspect the well, before you purchase, can save you time and money.



### Making sure all is well with your well

Here are a few questions you should consider:

#### ➤ Are there potential sources of contamination?

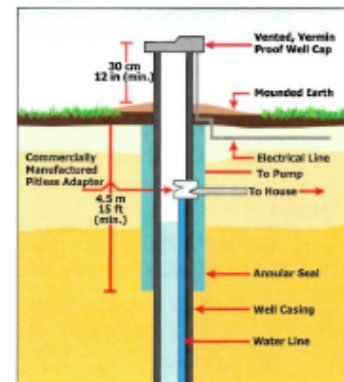
The general rule is that any source of contamination should be a minimum of 100 feet (30 metres) away from your well. Be aware of potential sources (i.e. septic fields, livestock pens, etc.) of contamination on the property and neighbouring properties.

#### ➤ Is the well properly constructed?

A properly constructed well will prevent the entry of surface contamination and should have the following:

- Well casing that extends 12 to 24 inches above the ground.
- No visible cracks or holes in the casing.
- Cap (lid) which is secure and watertight.
- Ground around the casing which slopes away to prevent surface water from ponding and seeping into the well.

A key piece of information is the **Well Drillers Log** that will tell you the depth of the well, soil conditions, volume of water produced and construction materials. The current homeowner may have a copy for your review. There are two online resources provided by the Ministry of Environment that may be used to obtain well information: BC Water Resource Atlas and the WELLS Database. The website is [www.env.gov.bc.ca/wsd/plan\\_protect\\_sustain/groundwater/wells.html](http://www.env.gov.bc.ca/wsd/plan_protect_sustain/groundwater/wells.html)



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- **Does the well produce enough water to meet your daily needs?**
  - According to Living Water Smart BC we use approximately 490 litres (108 gallons) of water per person, per day. [www.livingwatersmart.ca](http://www.livingwatersmart.ca)
  - The well drillers log should tell you approximately how much water the well produced at the time of construction.
  - You can always hire a qualified professional to conduct a Well Yield Test to determine how many liters per minute the well system can produce.
  - Talk to the neighbours to see if they have any issues with their wells (quality or quantity).
  - Shallow wells (less than 50 feet) are more vulnerable to seasonal fluctuations in water quantity and quality.
  
- **What is the microbiological and chemical quality of the well water? Is the water safe to drink?**
  - Treating water can be expensive. So make sure you know what's in the water before you purchase the home.
  - Have the water tested at a certified laboratory. Public water systems are required to use labs approved by the Provincial Health Officer for microbiological testing. A number of the labs on that list also test water (including chemical testing) for the general public: <http://lmlabs.phsa.ca/NR/rdonlyres/33521F8F-576A-4570-BAB6-F9F6D4D377A6/0/PHOApprovedLaboratoryList.pdf>
  - Contact the lab to do a Potability Test for drinking water. Labs, as a general rule, do not collect the samples. Most labs will courier you a collection kit which includes sampling instructions. Another option is to hire a qualified professional to collect the samples for you.
  - If you have any questions about the test results, please feel free to call the Fraser Health Drinking Water program 1-866-749-7900 or 604-870-7900.
  - For more information on testing go on line to HealthLinkBC and read File #05b "Should I Get My Well Water Tested?" [www.healthlinkbc.ca/healthfiles/hfile05b.stm](http://www.healthlinkbc.ca/healthfiles/hfile05b.stm)
  
- **Is the new house connected to a community sewer system or its own onsite septic system?**

Installing a new septic system can be very expensive, so be sure have the system inspected by a qualified professional before you purchase. For more details on what to look for check out the Canada Mortgage and Housing Corporation document listed below. In BC only an Authorized Person can construct, alter, repair or maintain a sewerage system. [www.wastewater.asttbc.org/c/index.php](http://www.wastewater.asttbc.org/c/index.php)

#### Helpful Resources:

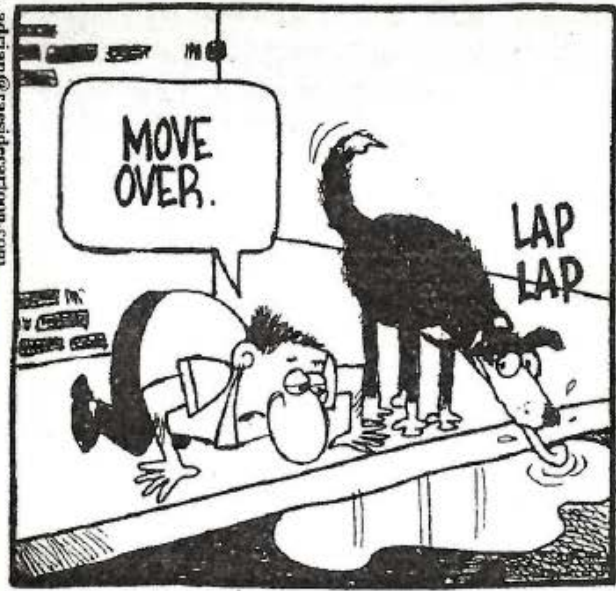
- Canada Mortgage and Housing Corporation "Buying a House with a Well and Septic System". [www.uoguelph.ca/orwc/Resources/documents/cmhc\\_homeowner\\_septic\\_and\\_well\\_booklet.pdf](http://www.uoguelph.ca/orwc/Resources/documents/cmhc_homeowner_septic_and_well_booklet.pdf)
- BC Ministry of Environment Water Stewardship. "Frequently Asked Questions (FAQs): Water Wells and Well Water Quality". [www.env.gov.bc.ca/wsd/plan\\_protect\\_sustain/groundwater/library/faq\\_grdwater.html](http://www.env.gov.bc.ca/wsd/plan_protect_sustain/groundwater/library/faq_grdwater.html)
- BC Ministry of Health Healthfiles on drinking water [www.health.gov.bc.ca/pho/water.html](http://www.health.gov.bc.ca/pho/water.html)
- Fraser Health website. [www.fraserhealth.ca/your-environment/drinking-water/](http://www.fraserhealth.ca/your-environment/drinking-water/)



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For more information about Fraser Health's Drinking Water Program, refer to:

<http://www.fraserhealth.ca/your-environment/drinking-water/>