

St Luke's Creation Care

Water is Life 💧 🌊

Part Two - What contaminates our water?

Water

But let justice roll on like a river, righteousness like a never-failing stream! (Amos 5:24)

You gave no water to the weary and you withheld food from the hungry. (Job 22:7)

He said to me: "It is done. I am the Alpha and the Omega, the Beginning and the End. To the thirsty I will give water without cost from the spring of the water of life. (Revelation 21:6)

Did you know?

Our bodies are 70% water!

20% of the world's freshwater is in Canada.

Most of it is found in glaciers, groundwater, or lakes.

<https://www.canada.ca/en/environment-climate-change/services/water-overview/frequently-asked-questions.html>



Angel Glacier on Mount Edith Cavell, Jasper
by Traveler100 - Own work, CC-BY 2.5,

<https://en.wikipedia.org/w/index.php?curid=12532530>

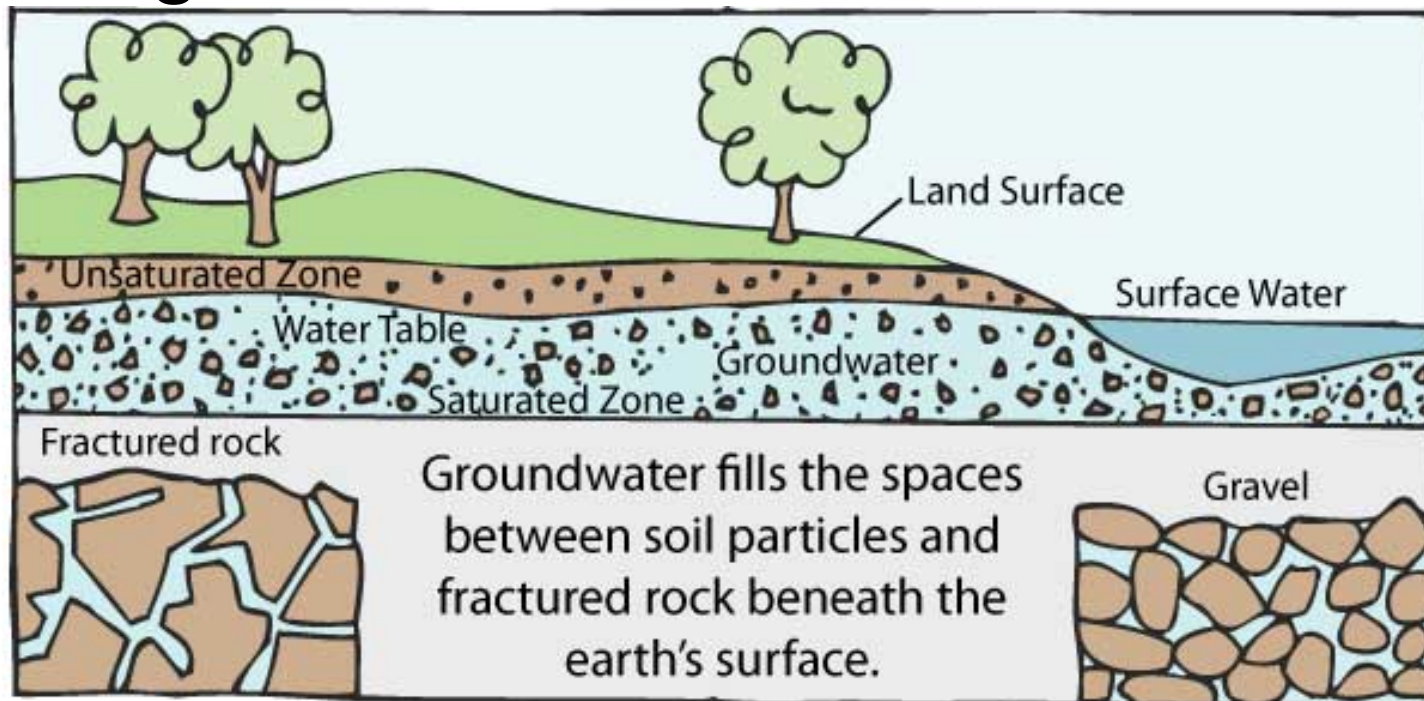


Smoke plumes near Great Bear Lake, NWT. Image by NASA

Groundwater

Much of Canada's water is "groundwater" - water found underground in crevices, sand, and porous rocks.

Once groundwater polluted, it's almost impossible to clean up. And then the pollution spreads to rivers, wells, and drinking water.



**What makes water
dirty?**

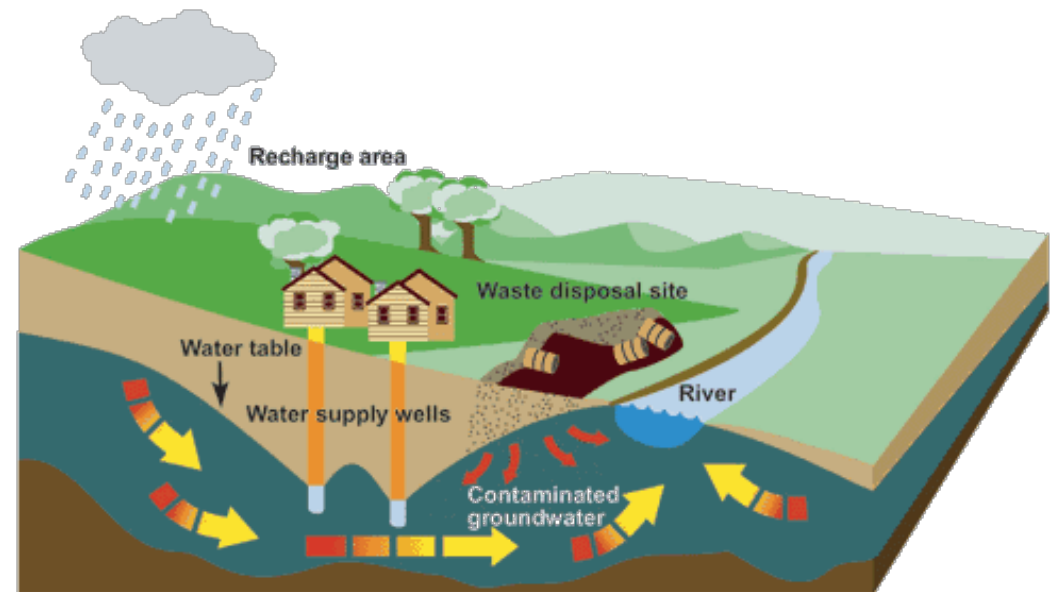
Runoff from agriculture

Runoff from agriculture can be material washed off of fields into rivers, or it can be water that seeps through the fields to the groundwater underneath.



Tractor fertilize field pesticide and insecticide
Creative Commons Aqua Mechanical via Lancaster Farming

Groundwater contamination from a waste disposal site



<https://www.canada.ca/en/environment-climate-change/services/water-overview/pollution-causes-effects/groundwater-contamination.html>

Waste water from industry

Not all of the water used by industry can be returned to circulation. For example, water used in extraction of bitumen must be stored for many years in huge tailings ponds.



Mildred Lake Settling Basin, near Ft. McMurray, is a tailings pond for the Syncrude mine.

Currently tailings (contaminated water) is added at a rate of 150,000 barrels/day (~943,500 cubic meters).

<http://www.oilsandsmagazine.com/projects/syncrude-mildred-lake>

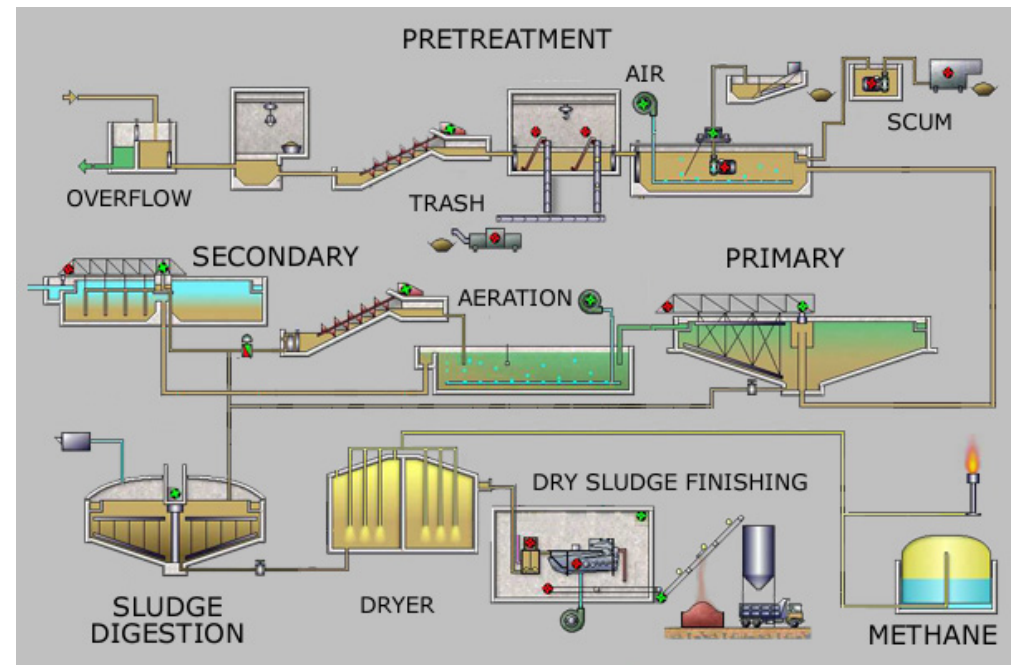
image by TastyCakes and Jamitzky,
via Wikimedia Commons

Stuff we dispose of

We're very lucky in Canada to have really good water treatment systems in most cities.* In Edmonton, our water goes to municipal treatment plants that remove the solids (like poop, hair, food residue) and then sterilize the water to remove bad bacteria before returning the water to the North Saskatchewan River.

Simplified process flow diagram for a typical large-scale treatment plant

Image by Leonard G. via Wikimedia Commons



*Victoria still dumps raw sewage in their harbour.

Stuff that goes into the storm sewers

Did you know that the storm sewers on our streets go straight into the North Saskatchewan River without treatment? That means that if you rinse your paint brush into a storm sewer, or wash chemicals down your driveway, you're putting them straight into the river!



Garbage

The Great Pacific Garbage Patch is bigger than France, and full of things people threw out. As scary as that is, it's just one highly visible aspect of the problem.

Improper disposal of garbage is a huge source of water contamination, putting toxic chemicals and bad bacteria in local water sources.

right: sample of water from the Great Pacific Garbage Patch

image from <https://news.nationalgeographic.com/2018/03/great-pacific-garbage-patch-plastics-environment/>



What can I do?

This is an overwhelming problem, but some things you can do can make a big difference!

- Pay attention to disposal of stuff, from garbage to engine oil. Don't dump anything down the storm sewer that you wouldn't want in the river!
- Municipal water purification is amazing, but they can't take out most chemicals. Read the label to make sure it's safe to dump down the sink.
- ★ **Use less stuff.** A lot of our stuff is made in countries with less stringent regulation about disposal of manufacturing waste. If you don't need it, don't buy it.