

Groundwater and climate change

With climate change, we are generally observing a higher frequency of flooding events, leading to higher surface water levels. Because surface water and groundwater systems are connected, this also results in higher levels of groundwater than observed in the past.

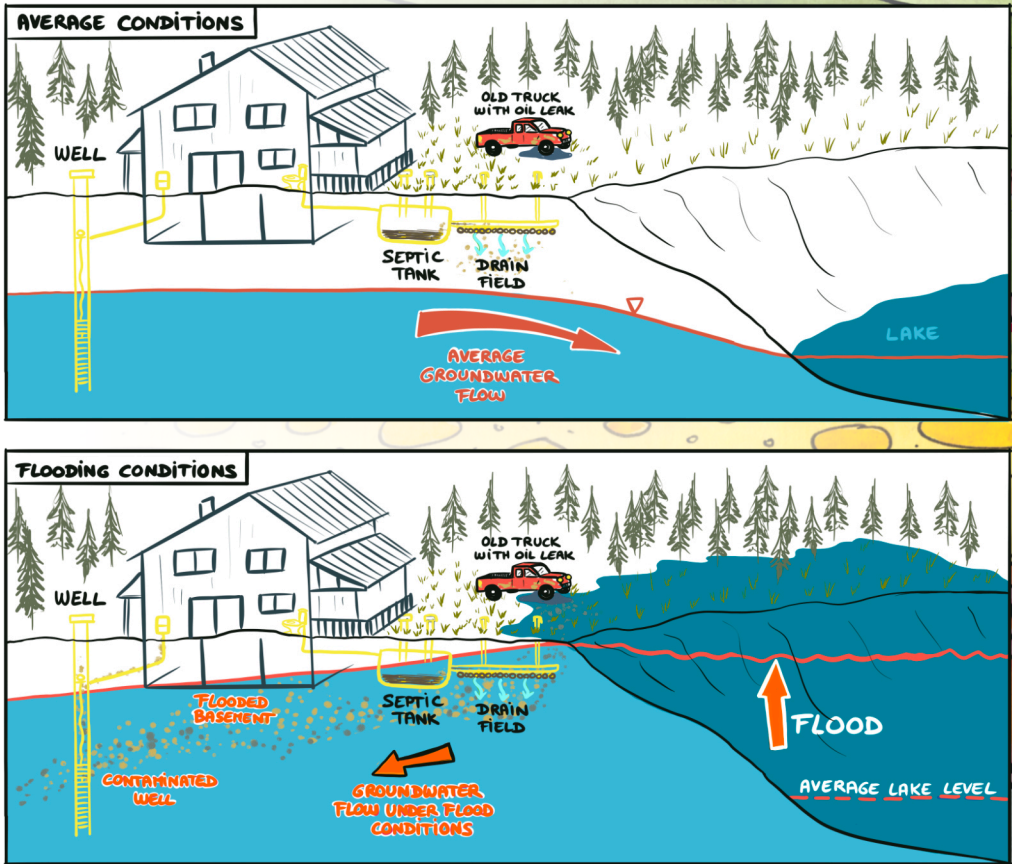
Thawing permafrost as a result of climate change is also leading to more interaction between surface and groundwater and more potential contamination!



# GROUNDWATER IN TESLIN

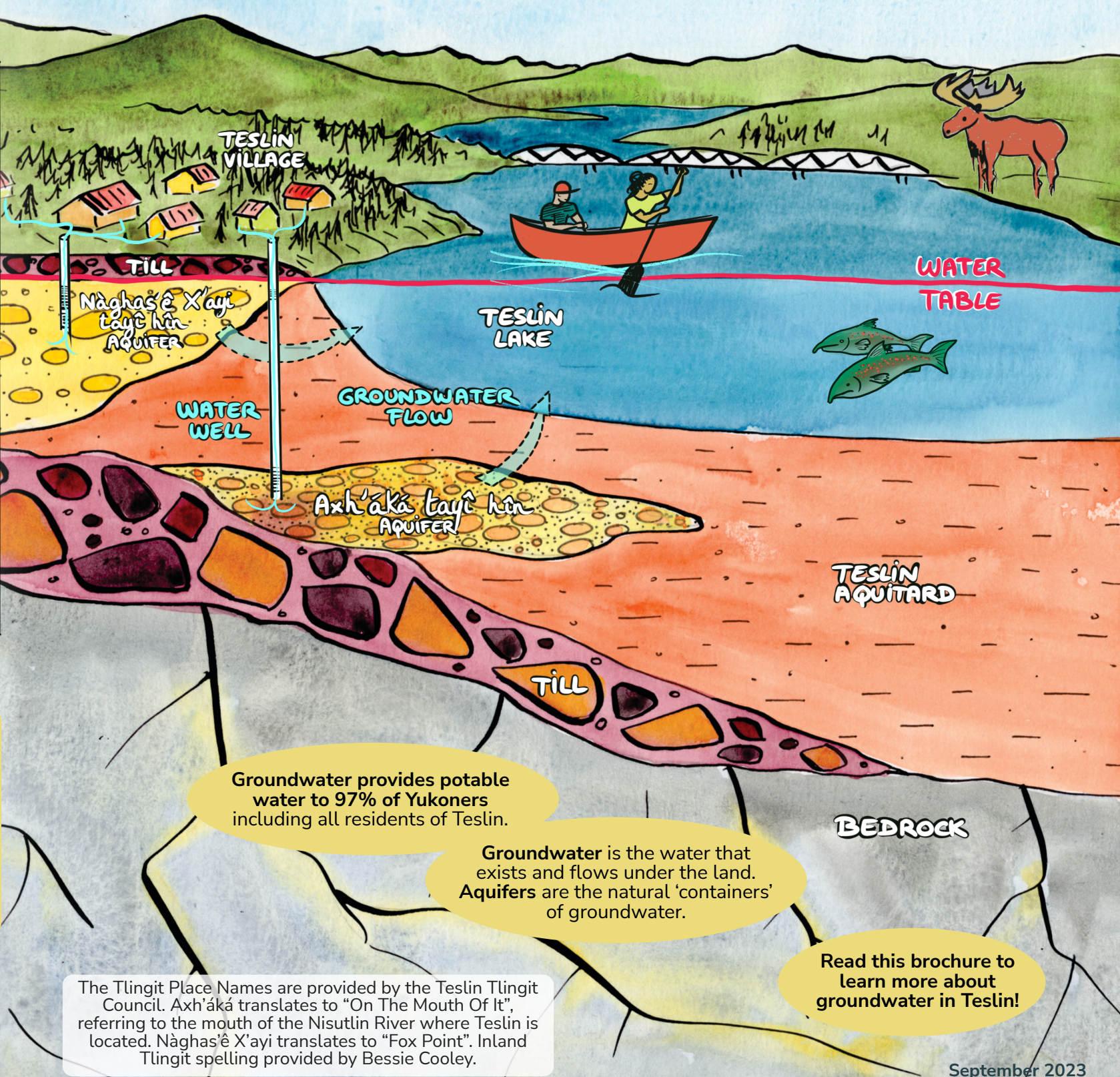
Groundwater, flooding and flood-related groundwater contamination

- Under average water level conditions, groundwater flows from uplands towards Teslin Lake.
- High water events such as record flooding that happened in 2021 and 2022 across the Yukon can potentially cause groundwater flooding. This is when groundwater levels exceed the levels of buried infrastructure (basements, crawl spaces, septic systems, etc.).
- During high-water events, contaminants such as sewage can find their way into groundwater, which can lead to illness if used for drinking water. This is why boil water advisories are put into place.
- Testing your well water is an important step to making sure that your water quality is still good, especially after high water events.



How to test your well water

1. **Testing for bacteria.** Viruses and bacteria in your water can cause illness. Government of Yukon's Environmental Health provides free biological testing in Whitehorse. For instructions on how to sample your well call 1-800-661-0408. Water should be tested for bacteria once a year and also after high water events.
2. **Testing for chemicals.** Government of Yukon also recommends testing for the various chemicals in your water. It is recommended that you test well water once every 5 years for chemicals. It is also a good idea to test after high water events. This service is not provided by Government of Yukon. Reach out to an engineering or environmental science company who can do the testing for you (estimated cost \$200+shipping).



Groundwater provides potable water to 97% of Yukoners including all residents of Teslin.

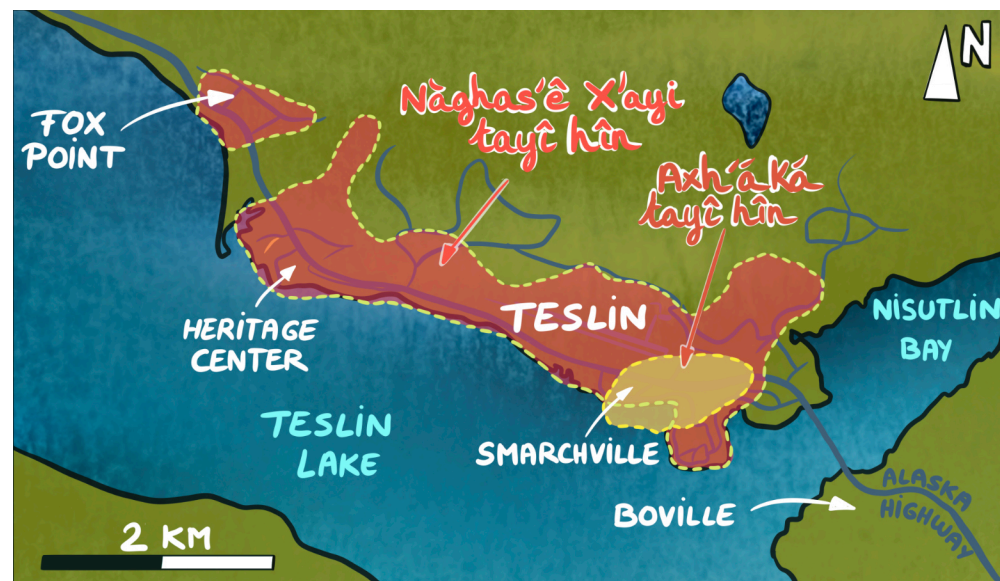
Groundwater is the water that exists and flows under the land. Aquifers are the natural 'containers' of groundwater.

Read this brochure to learn more about groundwater in Teslin!

The Tlingit Place Names are provided by the Teslin Tlingit Council. Axh'áká translates to "On The Mouth Of It", referring to the mouth of the Nisutlin River where Teslin is located. Naghas'è X'ayi translates to "Fox Point". Inland Tlingit spelling provided by Bessie Cooley.







# GROUNDWATER SYSTEMS IN TESLIN

**Aquifers** are geological units that store groundwater and allow it to flow relatively easily. Aquifers supply groundwater for drinking and other uses. Groundwater from aquifers may be accessed at surface through springs and wells.

There are two types of aquifers, **confined and unconfined aquifers**. Confined aquifers are separated from the surface with an impermeable layer, while unconfined aquifers are not and are at higher risk of contamination.



## Groundwater vulnerability

- Groundwater is the primary source of drinking water for Teslin residents and its protection is extremely important!
- The Nàghas'ê X'ayi tayî hîn and Axl'áká tayî hîn Aquifers are both confined aquifers, isolated from the surface by the Teslin Aquitard. This makes them less vulnerable to contamination from the surface, but it is still critical to protect the groundwater in these aquifers!
- Contaminated groundwater is most often caused by human activities such as fuel spills. Cleaning up contaminated groundwater is complicated and expensive so preventing contamination is the best approach!



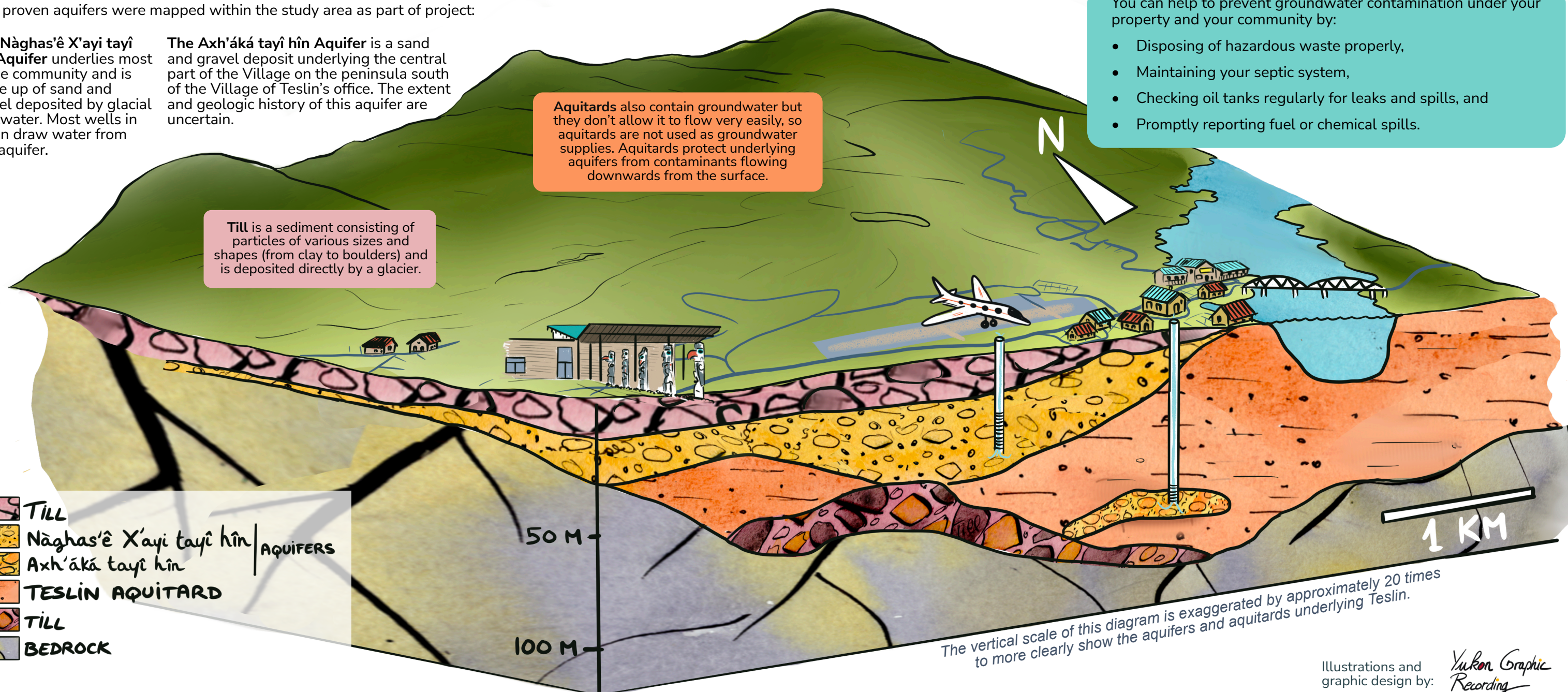
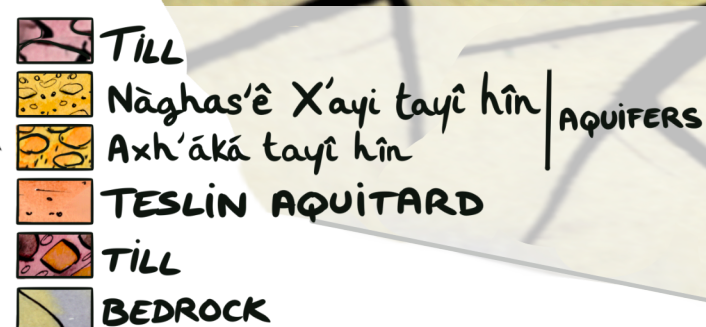
Two proven aquifers were mapped within the study area as part of project:

**The Nàghas'ê X'ayi tayî hîn Aquifer** underlies most of the community and is made up of sand and gravel deposited by glacial meltwater. Most wells in Teslin draw water from this aquifer.

**The Axl'áká tayî hîn Aquifer** is a sand and gravel deposit underlying the central part of the Village on the peninsula south of the Village of Teslin's office. The extent and geologic history of this aquifer are uncertain.

**Aquitards** also contain groundwater but they don't allow it to flow very easily, so aquitards are not used as groundwater supplies. Aquitards protect underlying aquifers from contaminants flowing downwards from the surface.

**Till** is a sediment consisting of particles of various sizes and shapes (from clay to boulders) and is deposited directly by a glacier.



The vertical scale of this diagram is exaggerated by approximately 20 times to more clearly show the aquifers and aquitards underlying Teslin.

Illustrations and graphic design by: *Yukon Graphic Recording*