

KARST

What is Karst?

Karst is a unique type of land form. It forms as water dissolves soluble bedrock like limestone. Water alone can dissolve some rock, but some types of rock, such as marble and limestone, need acidic water to dissolve.

Carbonic acid is a mild acid that occurs naturally in groundwater. When rain passes through the atmosphere it takes on a small amount of carbon dioxide. As the rainwater passes through soil, the water absorbs more carbon dioxide to become more acidic. This water easily dissolves the calcite in the rock. The groundwater moves through cracks and creates larger passages and caves.

Karst produces a landscape with sinkholes, sinking streams, springs, vertical shafts, caves, and complex drainage systems. Characteristic features of Karst topography include: stalactites, stalagmites and columns which are of great interest to cave explorers (spelunkers) and tourists.

Why is it a water quality issue?

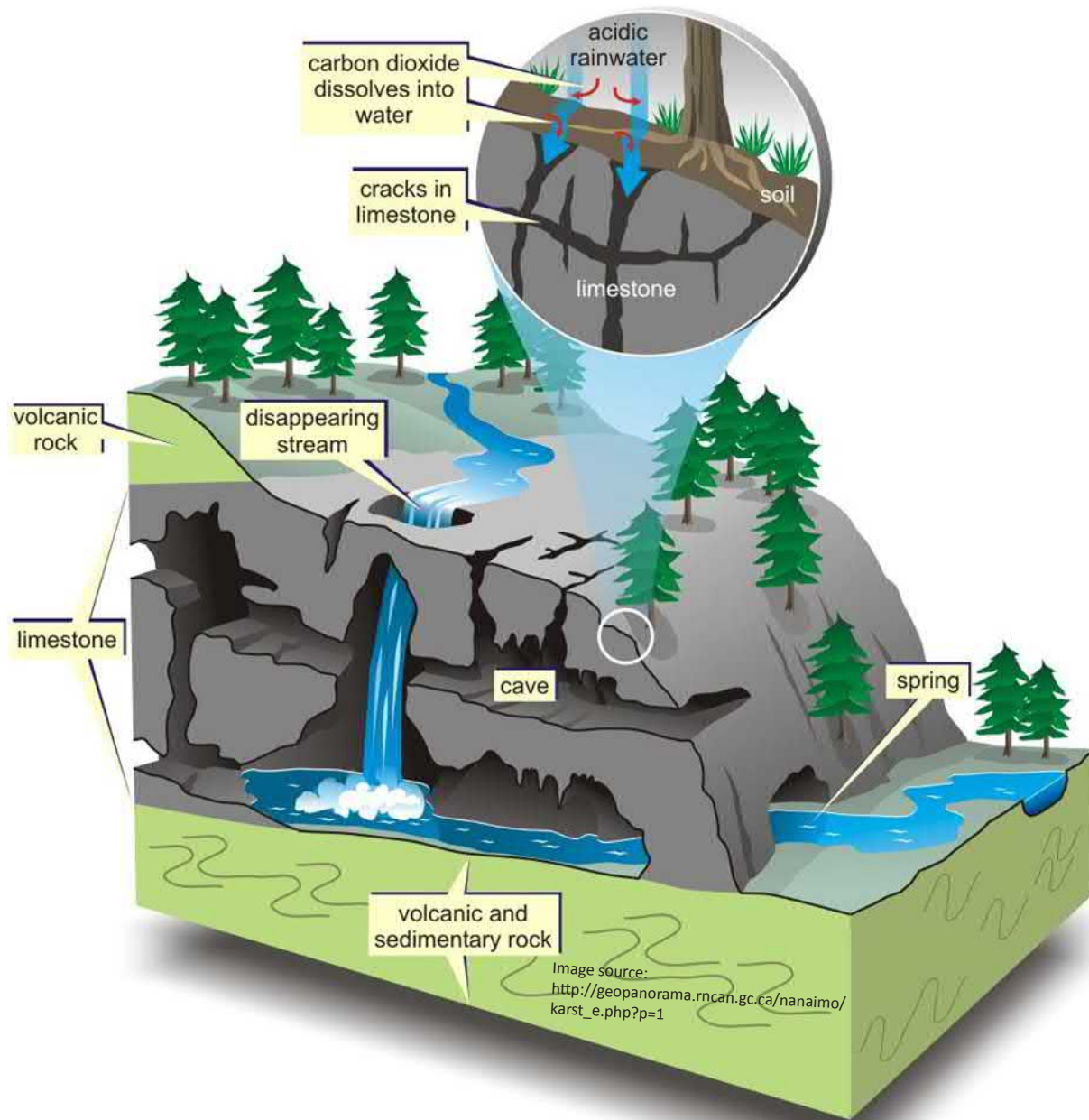
Sinkholes and large cracks allow surface water to enter the aquifer without the filtration that would normally occur through soils and other deposits.

The flow of groundwater in karst aquifers is different from other aquifers because of the larger channels, which allow underground streams to have velocities the same as surface streams. The higher velocity decreases contact with the rock, which results in very little to no breakdown of contaminants. There is little possibility for contaminant removal once a karst aquifer is contaminated due to the volume and speed of the water movement. When contaminants move directly from the surface to the aquifer they can enter the drinking water supply of groundwater wells very quickly. Sinkhole flooding or collapse is an issue. The caves and channels that form under the surface can become very extensive. When enough of the limestone that is providing stability to the surface is eroded or a cave or channel expands close to the surface a sinkhole can occur.

Best Management Practices

- Increase your awareness of Karst and other unique land formations.
- Create circular buffer zones around springs, sinkholes and other visual indicators of karst. A physical buffer immediately next to sinkholes provides extra protection.
- Plant native species in buffer zones to slow run-off and trap contaminants.
- Use erosion control measures.
- Limit usage of pesticides, herbicides and fertilizers due to increased risk of contamination.
- Collect rainwater.
- Maintain your septic system by having it pumped every 3-5 years and inspected for cracks or leaks.
- Take care when dealing with pollutants/contaminants.
- Rural well owners should monitor their wells for nitrates and pathogens on a regular basis. This is particularly important after snow melt or heavy rainfall events.
- Reduce manure application in late summer/early fall and following the first cut hay. Use fall cover crops.
- Monitor the water quality of springs and wells.

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Examples of Karst
 Owen Sound (above)
 Tobermory (below)



**DRINKING WATER
 SOURCE PROTECTION**
 ACT FOR CLEAN WATER



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