

Up a dry gully fact sheet for students



How aquifers work

What is an aquifer?

Aquifers are natural stores of water in the ground. Aquifers are generally found in porous types of rocks such as sandstone, conglomerate, sand and gravel.

Ground water from the surface filters down through the soil and fills some types of aquifers. A hole is drilled from the surface into the ground to penetrate an aquifer. Normally water must be pumped to the surface but in some aquifers water is forced up bore holes by pressure.

How does an aquifer work?

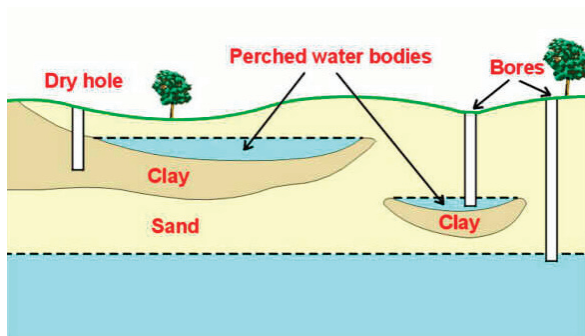
An aquifer is usually filled with water from the ground. Some aquifers are big and some are small. The amount of water in the aquifer can vary from season to season and year to year.

Ground water can seep through an aquifer quickly at a rate of 20 metres per year or slowly at 20 centimetres per century, depending on the permeability of the rock.

Is water in aquifers clean?

Yes. Aquifers are natural filters that trap sediment and other particles (like bacteria) and provide natural purification of the ground water flowing through them.

Some aquifers contain high levels of salt and minerals and may need to be filtered. If you drink water from an aquifer, it often tastes different.



Intergranular Aquifer

Are there aquifers in the Gold Coast and Brisbane regions?

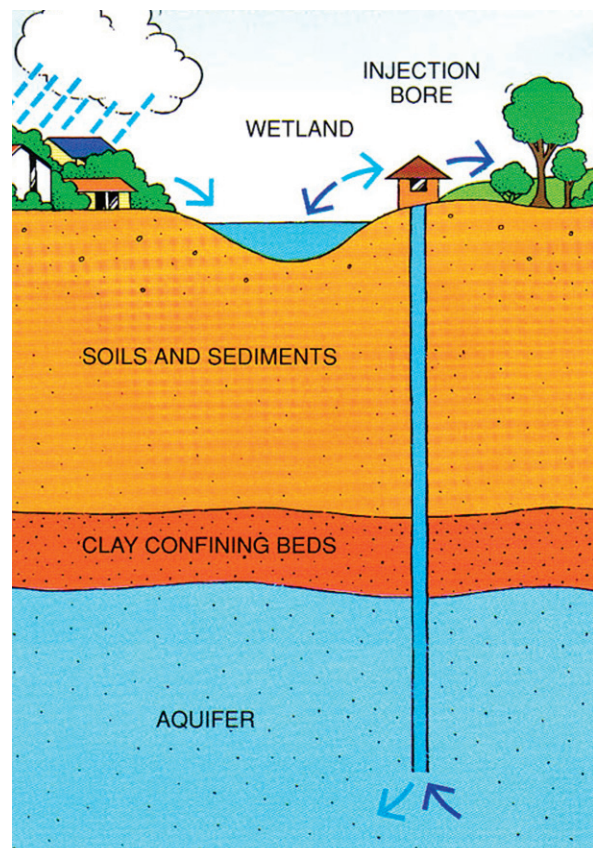
There are aquifers in the Woongoolba/Norwell region in the northern part of the Gold Coast and in several regions around Brisbane, such as Redlands. Water is used mainly for irrigation.

In some communities in Australia aquifers are the only source of drinking water. Over 100 towns and cities in Queensland use water from aquifers for their drinking water supply.

Major cities such as Perth and Newcastle have used groundwater supplies for many years as part of their town water supply system.

How can aquifer water be used?

Water can be used for drinking, watering lawns and gardens, or to irrigate crops, depending on its quality. Bores can be connected to pipes and water pumped to treatment plants or other storage facilities.



Activities

- 1) Discuss the advantages and disadvantages of using aquifers for our water supply.
- 2) Brainstorm in class and make a list in two columns on a whiteboard.
- 3) Use the internet to find out where the nearest aquifer is to your school.
- 4) Try to find three country towns in Queensland that use an aquifer for their drinking water.
- 5) Draw a picture (cross section) of an aquifer and use arrows to show how water moves e.g. being collected, being stored and being extracted. Show things like:
 - rock and soil layers
 - underground catchments
 - water seepage
 - bores or drill holes
 - pumps and pipes
 - water treatment plant
- 6) Here is a simple experiment to show how artesian pressure works. Fill a plastic sandwich bag with water, put a straw in through the opening, tape the opening around the straw closed, DON'T point the straw towards your teacher, and then slowly squeeze the bag. Artesian water is pushed out through the straw.

Further reading

Gold Coast Aquifer Project:
www.goldcoast.qld.gov.au

Brisbane Aquifer Project:
wwwbrisbane.qld.gov.au