Groundwater and gas development in the NT

Groundwater is important to everyone in the Northern Territory

Groundwater is needed for community drinking water, for industries like farming and tourism, as well as for the gas industry.

Groundwater in the Beetaloo Sub-basin

Before more gas industry activities take place in the Northern Territory, it is important to learn more about the groundwater in the region. CSIRO scientists have been studying the Cambrian Limestone Aquifer in the Beetaloo Sub-basin. The water is stored in and moves through rock called limestone that was formed 541 to 485 million years ago. The Beetaloo Sub-basin, an area of about 30,000 square kilometres south-east of Katherine, is rich in naturally occurring shale gas.

Samples and tests

CSIRO researchers tested samples of 25 water bores to find out how much water was flowing in them and where that water came from underground. They also measured the type and amount of chemicals naturally in the groundwater, including methane gas, other hydrocarbons, salts, metals and radionuclides.

What they found

The scientists looked at some chemicals (known as environmental tracers) to find out how old the water is, how quickly it recharges from the surface and where it flows underground. They will build computer models of the water flow to learn more. The tests showed that the water is good enough for agriculture and cattle. Some bore water was good enough for people to drink under the Australian drinking water guidelines, except for three of the 25 bores, which had higher natural concentrations of radionuclides than allowed for drinking water.

Frequently asked questions about groundwater

What is groundwater and why is it important?

Groundwater is water stored underground, in spaces within soil, sand and rock. Groundwater between 50 and 200m deep is a source of water for our native plants and wildlife. It is also a valuable resource for communities, agriculture and industry.

What is an aquifer?

An aquifer is an underground area of rock and soil that can store and pass on groundwater.

What chemicals do you normally find in groundwater?

Some natural chemicals are found in groundwater. These include salts, metals, methane gas, hydrocarbons (compounds of hydrogen and carbon) and radionuclides (naturally radioactive chemicals that break down to slowly release some radiation). These chemicals must be in low concentrations for agriculture and even lower for drinking water.

What is recharge?

Groundwater recharge is when water moves from the earth's surface underground into the aquifer.

What are environmental tracers?

Environmental tracers are natural chemicals in the groundwater that change with time. Scientists can use them to find out how old water is and where it came from. These tracers are easy to measure and include tritium, carbon-14 and helium. They can show if groundwater is young (>50 years old), old (1,000-10,000 years), or very old (>20,000 years). The age is important when studying groundwater recharge.