



Understanding Groundwater

Groundwater is a valuable resource, it can be found beneath most land and is the most available freshwater on earth.

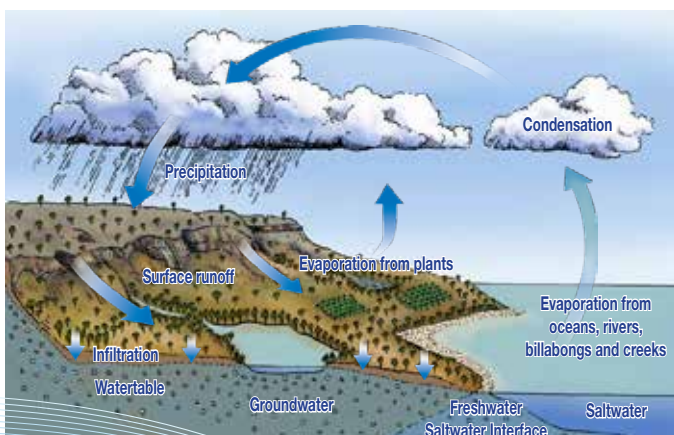
As groundwater is hidden from our view it tends to be somewhat mysterious. Millions of people depend on groundwater as a source of water for drinking, irrigation and stock use to name just a few.

Groundwater and the Water Cycle

From the time the earth was formed, water has been endlessly circulating. This circulation is known as the water cycle.

Groundwater is an integral part of this dynamic cycle and is interrelated with surface water. Many people think groundwater is stored in vast underground lakes or is flowing in underground rivers. In fact, groundwater is the water that fills the spaces and cracks between soil particles, rock, sand and gravel.

Geological formations made up of gravel, sand, sandstone or fractured rock capable of storing and yielding large quantities of water due to the large interconnected spaces or fractures are called aquifers.



Where Does the Water Come From?

Groundwater like all water on earth, originates from rainfall. Water that is not used by vegetation filters through the soil until it reaches the saturated zone. This process is called groundwater recharge. Significant recharge can be expected only during rainy periods. The water table (level) in an aquifer will rise and fall depending on annual variations in rainfall/recharge. Aquifers can also gain water from rivers and streams draining into the ground.

The Effects of Climate

The Top End has two distinct seasons with a dry season between May and September and a wet season from October to April. Rainfall is highly seasonal with the vast majority falling in the wet season. It is from this regular recharge from rainfall that allows sustainable groundwater usage.

However, in Central Australia rainfall is low and can occur at any time of the year. Aquifers are recharged by the movement of groundwater between aquifers, which come from both recent and ancient rainfall and from seepage from ephemeral rivers and flood out areas. In some cases, recharge rates are so slow they are measured in geological time. It is in these regions that groundwater resources can be limited due to the lack of sufficient rainfall/recharge.

Did you Know?

Groundwater quality can vary considerably from place to place. It can contain various kinds of dissolved salts (minerals) depending on the soil and parent rock of the area. Not all groundwater is suitable for human consumption so it is important to check the quality of groundwater in your area.

The Department have aquifer maps, resource assessment reports and bore reports available on the website or at any of our regional offices.

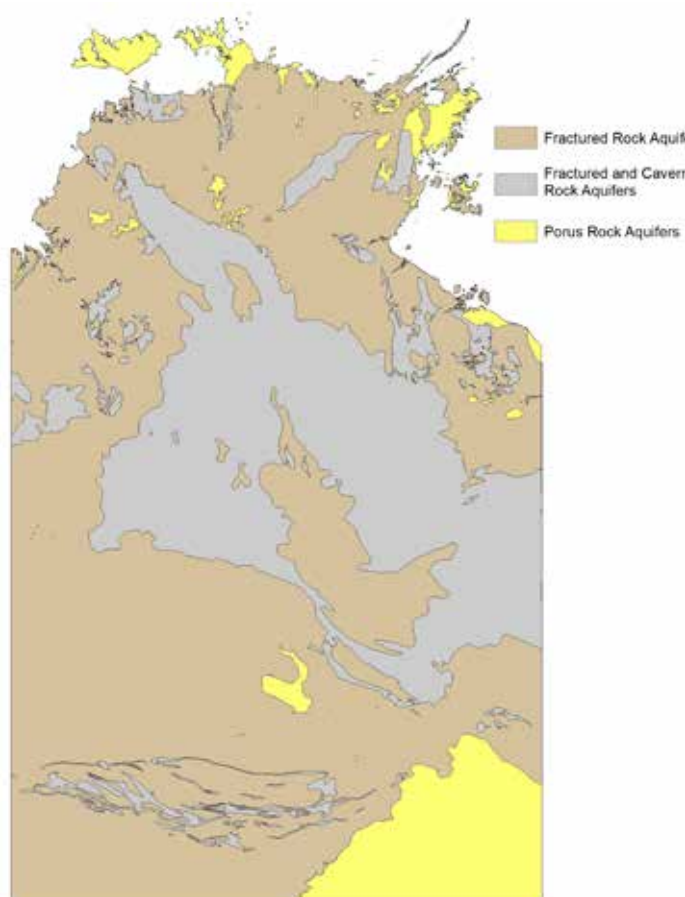
Aquifers in the Territory

Fractured Rock Aquifers - Are made up of metamorphic rock like slate, shale and granite where the groundwater is stored in the fractures, joints and bedding planes of the rock mass. These rock types have minor porosity. Porosity is the space between individual grains in sediment or rock that fills with water.

Fractured and Cavernous Aquifers - Are made up of sedimentary rock like limestone and dolostone which are composed largely of the minerals calcite and aragonite.

These aquifers are characterised by the presence of sinkholes, caves, large springs and highly productive water bores. They have extremely high porosity (cavernous) and permeability allowing for the movement of large volumes of water.

Sedimentary Basin Aquifers (Porus) - Are made up of multi layered aquifer systems consisting of sediments such as sand and gravel, laid down at various times in the past. They have high porosity and permeability allowing water to move easily. The Great Artesian Basin is a well known sedimentary basin aquifer.



Groundwater Facts

- 22% of the world's freshwater is groundwater;
- 90% of the NT's water supply is from groundwater;
- the NT has approximately 35,000 water bores;
- Groundwater is affected by long term climatic cycles; and
- Over use of groundwater poses a significant risk to springs, soaks and rivers.