

OKLAHOMA ROCKS! STATE PARKS

RED ROCK

CANYON

The geologic history of Red Rock Canyon is really three different stories. One is a story told on the canyon walls and in many of the other red rocks that make up so much of central and western Oklahoma. A second story is told in the canyon itself – why is it here and why does it run at almost right angles to the nearby major rivers? Thirdly, the red sandstone in the canyon is an aquifer that has provided water to a unique ecology and countless generations of Native Americans and Oklahomans.

Water is an important natural resource, and the Rush Springs Sandstone is one of the State's most important sources of good, clean water. For a rock formation to be an aquifer – an underground “reservoir” of water – it must have porosity and permeability. Porosity is the capacity of a rock to contain water (or oil or gas!); in the case of sandstone in the pore spaces between the tiny grains of sand. Permeability is the ability of a fluid to pass through the rock. Some layers within the Rush Springs Sandstone have both good porosity and good permeability. Rainwater falling on the ground seeps into the Rush Springs Sandstone and collects in those layers, some of which can be seen in the canyon walls as highly vegetated and/or wet layers. These seeps or springs rarely dry up and feed the creek in the bottom of the canyon.

>> ACTIVITY

Understanding Permeability

What you'll need: glass jar or vase • large polished stones or marbles • sand • water

>> DIRECTIONS

1. Begin by filling the glass vase with the large polished stones or marbles. The vase represents a rock and the clear glass allows us to see inside of the “rock”.
2. Pour the sand into the vase. Note that the sand fills in the empty areas between the polished stones. This is because the “rock” is porous and has open spaces between the larger “grains.”
3. Next, see if there is enough space to pour the water into the vase. While the “rock” may look full from the outside, there are connected spaces between the small sand grains that will allow the water to travel and fill available areas in the vase.
4. Pour the water in the case to understand permeability. See how the water is able to travel because the open spaces in the “rock” are connected.

For more information about Oklahoma Geology, and links to past editions of Oklahoma Rocks! visit the Oklahoma Geological Survey website: <http://ogs.ou.edu/level2-earthscied.php>

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