

RIDGE AND VALLEY

The Ridge and Valley area is underlain mostly by limestone, dolomite, sandstone, shale (a rock made from clay) and conglomerates. These rocks have been folded and, in some locations, have been pushed over one another; then eons of weathering have made the more resistant rocks (sandstone and conglomerates) the ridges, and the less resistant rocks (shale and limestone) the valleys.

Conglomerates are rocks made from pebbles and cobbles of old, broken rocks, all held together by natural cements. Because conglomerates are made of pieces of earlier rocks, they can have any kinds of rocks or minerals in them.

The Ridge and Valley area typically has only a thin soil layer, so there's not much of a filtering system to clean water before it reaches the water table. This is especially important for carbonate rocks, which we discussed in the Piedmont section.

Although the valleys usually are limestone and dolomite, the higher elevations are often sandstone and shale, which yield only enough water for rural supplies.

The Ridge and Valley area is full of fracture zones, cracks that formed when the mountains were being built. The fracture zones have the highest yields in this province, but they are also the most likely to be polluted, because the water in them doesn't have much chance to filter through soil.

APPALACHIAN PLATEAUS

This province covers the largest region of Pennsylvania. The geology of this area consists mostly of flat-lying sandstone, siltstone (this rock has particles smaller than sand-sized, but bigger than clay-sized), shale, some limestone, coal and sediments deposited by glaciers. But it's the presence of coal that has drastically influenced this province.

Coal has been great for the economy of Pennsylvania, but has been hard on water quality. Large-scale coal mining has polluted both groundwater and surface water in many areas by exposing some unwanted elements - especially sulfur and iron.

Most of the well water in the plateaus comes from sandstone aquifers. Shale tends to make poor aquifers because shale has a low permeability. The most productive aquifers are valleys that were filled with sand and gravel during the ice age.

CENTRAL LOWLAND

This narrow strip along the shore of Lake Erie is relatively flat due to the fact that it was covered with glacial ice during the most recent ice age.

When the ice retreated, it left behind thick gravel and sand deposits that make excellent aquifers. However, some wells may encounter naturally-occurring salty water.

