

## NATIONWIDE MAP OF PRINCIPAL AQUIFERS

The distribution of the principal aquifers of the United States, Puerto Rico, and the U.S. Virgin Islands is shown in figure 4. The aquifers shown on the map are the shallowest principal aquifers; some are underlain by other productive aquifers, whereas others are overlain by minor aquifers. For example, the Mississippi River Valley alluvial aquifer overlies aquifers that are part of the Mississippi embayment aquifer system from southeastern Missouri to northeastern Louisiana, and also overlies aquifers that are part of the coastal lowlands aquifer system in east-central Louisiana. Local stream-valley alluvial aquifers that yield small to large amounts of water are in the valleys of many major streams that cross principal aquifers, but the stream-valley aquifers are not mapped on figure 4 because of the map scale. Many of the principal aquifers are overlain by confining units and extend into the subsurface beyond the areas shown on the map.

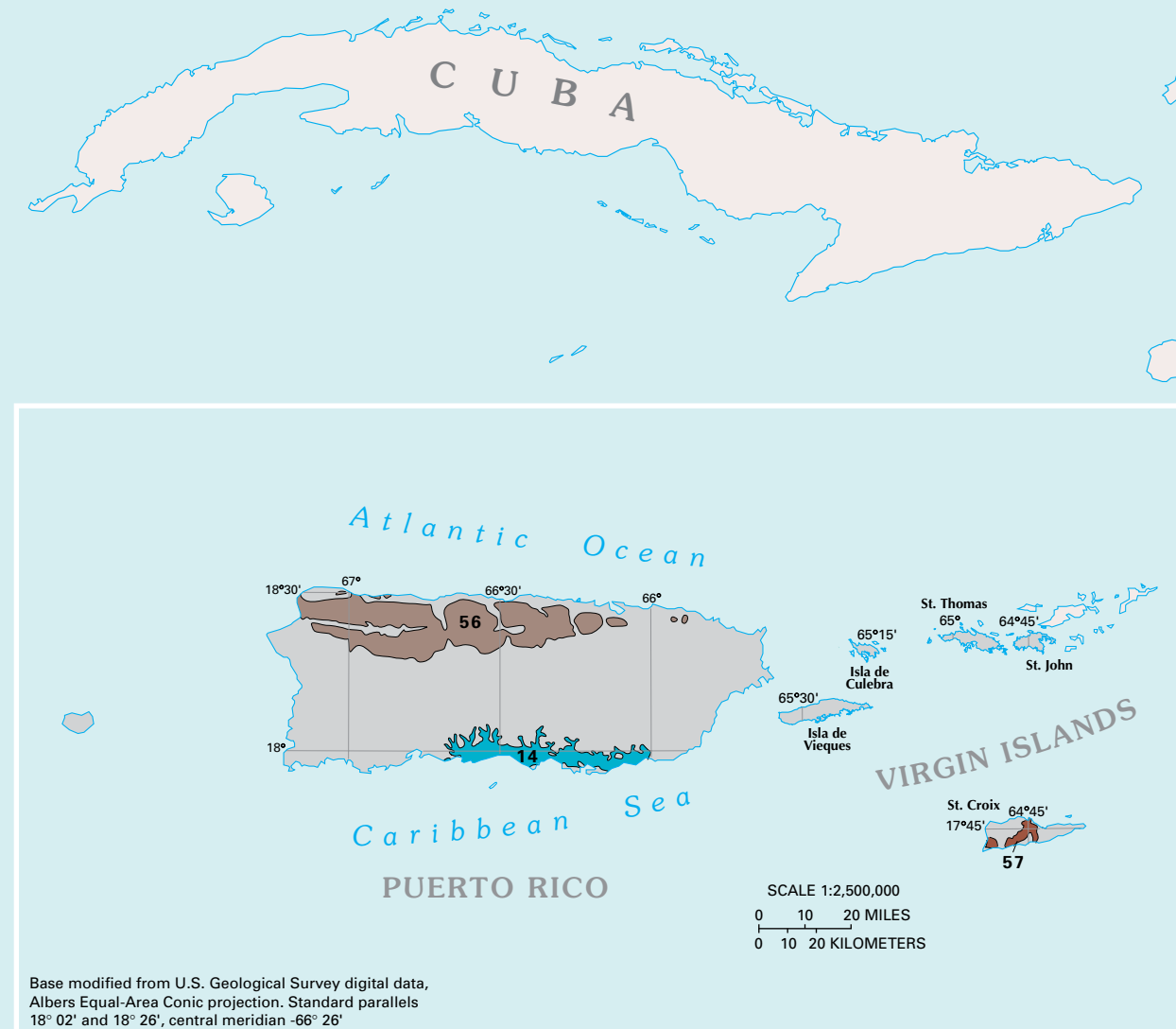
The nationwide aquifer map was constructed by juxtaposing the regional maps of principal aquifers from the descriptive chapters. Regional maps for some chapters might show more detail than the nationwide map because minor aquifers that are important local sources of water were mapped in some States. On the nationwide map, however, such local aquifers are included in a category called "not a principal aquifer," along with confining units that might be mapped separately in some descriptive chapters. However, productive aquifers might underlie parts of the area mapped in this category; for example, the prolific Floridan aquifer system underlies the areas mapped as "not a principal aquifer" in the Coastal Plain of Florida, Georgia, and Alabama. Also included in this category are low-yielding aquifers that extend over large areas, such as those in the fractured crystalline rocks of the Appalachian and Blue Ridge region of the eastern United States.

Large areas of the eastern, northeastern, and north-central parts of the Nation are underlain by crystalline rocks.

These igneous and metamorphic rocks are permeable only where they are fractured and generally yield only small amounts of water to wells. However, because these rocks extend over large areas, large volumes of ground water are withdrawn from them, and, in many places, they are the only reliable source of water supply. Accordingly, the crystalline rocks of northern Minnesota and northeastern Wisconsin, northeastern New York and the New England States, and the Piedmont and Blue Ridge Physiographic Provinces that extend from eastern Alabama to southeastern New York are mapped as aquifers in the Atlas chapters that describe those areas. Because the crystalline rocks have minimal permeability, they are not mapped as principal aquifers on figure 4.

In the north-central and northeastern parts of the conterminous United States, numerous local productive aquifers are in glacial deposits of sand and gravel. The map scale of the nationwide map is too small to allow individual aquifers in these glacial deposits to be shown. The general distribution of the glacial deposits is indicated by the dot patterned area on figure 4, and the locations of the principal bedrock aquifers that underlie them are mapped in the figure. These bedrock aquifers are used primarily where glacial-deposit aquifers are thin or yield little water.

The principal aquifers mapped in figure 4 are in six types of permeable geologic materials: unconsolidated deposits of sand and gravel, semiconsolidated sand, sandstone, carbonate rocks, interbedded sandstone and carbonate rocks, and basalt and other types of volcanic rocks. Rocks and deposits with minimal permeability, that are not considered to be aquifers, consist of intrusive igneous rocks, metamorphic rocks, shale, siltstone, evaporite deposits, silt, and clay. There is, thus, a direct relation between permeability and type of geologic material. For this reason, the aquifers mapped in figure 4 are categorized according to their general geologic character. Each category is described and illustrated in the following sections of this report.



Base modified from U.S. Geological Survey digital data, Albers Equal-Area Conic projection, Standard parallels 18° 02' and 18° 26', central meridian -66° 28'