INTRODUCTION

The Coastal Plain of South Carolina covers approximately 16,500 square miles. Beneath the Coastal Plain there are several aquifers that are important sources of water for municipal, industrial, and agricultural uses. This report presents maps depicting the generalized geohydrologic framework of the Coastal Plain of South Carolina. Generalized sections are presented to aid in the understanding of the aquifer framework. The confining beds inhibit but do not prevent the vertical movement of water between aquifers. A regional framework for the aquifers of the Eastern Coastal Plain has been developed to provide a basis for future work on the coastal aquifers system. The regional framework shown is the generalized geohydrologic framework.

Aquifer unit | Age of sediments | Geologic formations
--- | --- | ---
surficial | Pleistocene | Coastal terrace deposits
Florian A | Eocene | Santee Limestone
A2 | Eocene | Bluffton Formation
A3a2 | Late Cretaceous | Black Creek Formation
A3a3 | Late Cretaceous | Middendorf Formation
A4 | Late Cretaceous | Cape Fear Formation

These are geologic formations that are generally associated with a given aquifer. However, a given aquifer may consist of parts of additional formations not shown.

Carotun equivalent of aquifer A2.

FIGURE 1.—GENERALIZED GEOHYDROLOGIC SECTION A-A'

FIGURE 2.—GENERALIZED GEOHYDROLOGIC SECTION B-B'

FIGURE 3.—GENERALIZED GEOHYDROLOGIC SECTION C-C'

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BY

WALTER R. AUCOTT AND GARY K. SPEIRAN

1985

DEPARTMENT OF THE INTERIOR
United States Geological Survey

WATER-RESOURCES INVESTIGATIONS REPORT 84-4208
SHEET 1 OF 5
WATER-LEVEL DATA

Water-level data have been compiled from many sources including State, county, and local government agencies, consulting engineers, and water-supply operators; and information from field and local government agencies. Water levels measured in
range of 1 to 20 feet. The measurements may represent composite water levels from wells screened in more than one aquifer. These measurements may represent composite water levels from wells screened in more than one aquifer. Significant water-level differences are possible because the wells are not all screened in the same aquifer. Corrections were made for significant density differences resulting from water pressure, gradients, and for measurements made in aquifer A4 at the coast.
EXPLANATION

Potentiometric contour.--Shows altitude at which water level would have stood in tightly cased wells. Hatchures indicate depressions. Dashed where approximately located. Contour interval is 25 feet. National Geodetic Vertical Datum of 1929.

Control point.--Well in which water level or artesian pressure was measured or reported from 1900-82. All control points are determined to have had little or no effect from pumping stress at the time of the measurement.

FIGURE 6.—POTENTIOMETRIC SURFACE OF AQUIFER A3a3 (MIDDENDORF FORMATION) PRIOR TO DEVELOPMENT

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AQUIFER A4

Only a few wells penetrate aquifer A4 in South Carolina because it is the deepest aquifer in much of the Coastal Plain, has a comparatively low transmissivity, and contains water that is more mineralized than water from the other aquifers. Few potentiometric measurements therefore exist for aquifer A4. Also, the extent of the aquifer is not well defined in the upper Coastal Plain. The flow system in this aquifer seems to be quite different in the upper Coastal Plain than it is in the lower Coastal Plain.

In the lower Coastal Plain the potentiometric surface of this unit probably has a relatively smooth configuration. This relatively smooth surface is a result of the greater depth of the aquifer and the greater effectiveness of the confining layer in separating the flow system of this aquifer from the flow systems of overlying aquifers. The potentiometric contours are dashed, however, because the data are sparse. Water flows in the lower Coastal Plain part of aquifer A4 from recharge areas in Georgia toward discharge areas in eastern South Carolina and southeastern North Carolina. Discharge is by upward leakage to the overlying aquifer A3a.

The potentiometric surface of aquifer A4 is more difficult to accurately determine in the upper Coastal Plain. Because of the limited data, this surface was not depicted in this area. Where data exist in the upper Coastal Plain, water levels in aquifer A4 are similar to those in aquifer A3a. Discharge from aquifer A4 to aquifer A3a in the vicinity of the Pee Dee River probably creates a sink in the potentiometric surface of aquifer A4. Water flows into this sink from the recharge areas in the upper Coastal Plain and from the lower Coastal Plain.

FIGURE 7.--POTENTIOMETRIC SURFACE OF AQUIFER A4 (CAPE FEAR FORMATION) PRIOR TO DEVELOPMENT

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