INTRODUCTION

The Coastal Plain of South Carolina covers approximately 20,000 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 potentiometric surfaces of the Coastal Plain aquifers of South Carolina prior to development and a generalized depiction of the geohydrologic framework. A companion report by Aucott and Speiran (1985) presents potentiometric surface maps for November 1982 and maps of water-level declines caused by ground-water withdrawals between the period prior to development and November 1982. The maps in these reports are the first comprehensive statewide potentiometric maps of the Coastal Plain aquifers in South Carolina. They have been developed as a part of the nationwide RASA (Regional Aquifer System Analysis) program of the U.S Geological Survey. This report is intended to add to the understanding of ground-water flow in these aquifers, to provide a base of information for further studies, and to aid in planning the development of the water resources of the Coastal Plain of South Carolina.

GENERALIZED GEOHYDROLOGIC FRAMEWORK

The Coastal Plain province consists of a wedge of sand, clay, and limestone sediments of Late Cretaceous and younger age deposited on a pre-Cretaceous basement of consolidated metamorphic and sedimentary rocks. The wedge thickens from the Fall Line toward the present-day shoreline. This wedge can be divided into aquifers and confining beds based on relative permeabilities, areal extent, and continuity of the lithology of the sediments.

The aquifers consist of layers of sand or high permeability limestone separated by confining layers of clay, silt, or low permeability limestone. Water generally moves laterally within each of the aquifers. The confining beds inhibit but do not prevent the vertical movement of water between aquifers.

A regional framework for the aquifers of the Southeastern Coastal Plain has been developed in previous work on the Floridan aquifer system and preliminary work on the sand aquifers (Miller, 1984, and Renken, 1984). The regional framework has been modified in South Carolina by subdividing some aquifers to develop a State framework that best represents the hydrology of the aquifers in South Carolina and takes into account differences in data density and scale. The State framework and the regional framework were based on examinations of geophysical logs, water levels, geochemical data, and geologic descriptions. In addition, other studies were consulted during the development and review of the South Carolina framework.

The clastic aquifers of the South Carolina Coastal Plain have been designated as the surficial aquifer and aquifers A2, A3a2, A3a3, and A4. This terminology was adapted from the regional framework (Renken, 1984). Part of the Floridan aquifer system is also present in South Carolina. These aquifers are generally associated with a geologic formation or group of formations as indicated in the following table. This association is general because formational descriptions are frequently local in scope and because an aquifer may contain parts of other formational units. Because it is premature to assign formal names to the aquifers, geologic formations have been correlated with the aquifer designations to add to local identification of the aquifer framework. Generalized sections (figs. 1, 2, and 3) are presented to aid in the understanding of the aquifer framework.

Aquifer unit	Age of sediments	Geologic formations [1]
surficial	Pleistocene	Coastal terrace deposits
Floridan [2]	Eocene	Ocala Limestone Santee Limestone [3]
A2	Eocene	Barnwell Formation McBean Formation Congaree Formation
A3a2	Late Cretaceous	Black Creek Formation
A3a3	Late Cretaceous	Middendorf Formation
A4	Late Cretaceous	Cape Fear Formation

1 These are geologic formations that are generally associated with a given aquifer. However, a given aquifer may not consist of the same formations in all areas, and locally an aquifer may consist of parts of additional formations not listed.

2 Carbonate equivalent of aquifer A2.

3 As a result of the criteria used by Miller (1984) to define the Floridan aquifer system, the updip parts of the Santee Limestone are within aquifer A2. Because the potentiometric surfaces of aquifer A2 and the Floridan aquifer system are mapped together any future redefinition of the boundary between these units will not affect their combined potentiometric surfaces.

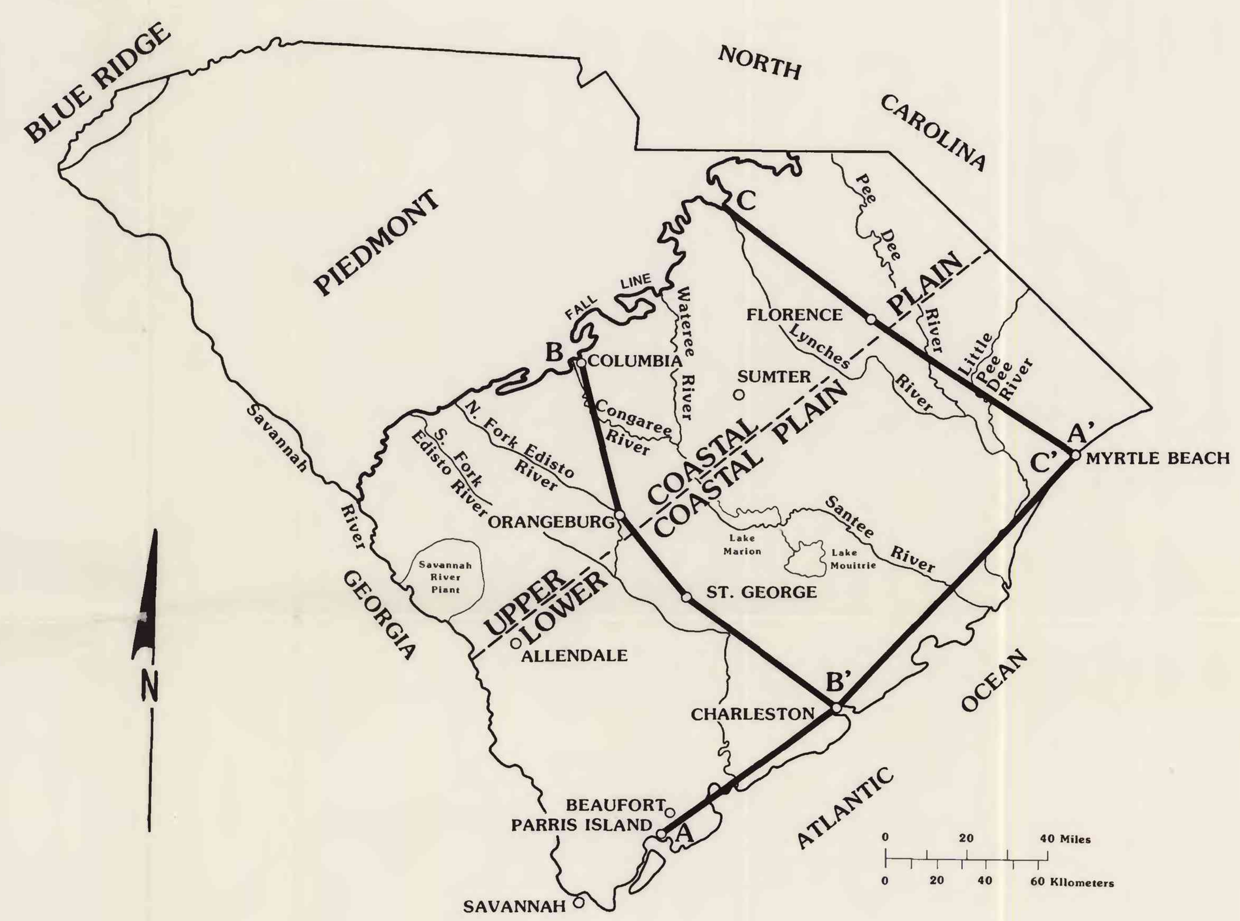
The surficial aquifer consists of coastal terrace deposits. These sediments are generally less than 40 feet thick and consist primarily of sand, shell, and clay that were deposited in a series of transgressions and regressions of the sea during the Pleistocene Epoch (Siple, 1946). The surficial aquifer is a water-table aquifer and is present throughout the lower Coastal Plain.

Aquifer A2 consists of clastic sediments of Eocene age that are stratigraphically equivalent to the carbonate sediments of the Floridan aquifer system. It crops out throughout most of its areal extent in the upper Coastal Plain. The formational units that comprise aquifer A2 are the Barnwell Formation, McBean Formation, and the Congaree Formation. Sediments from these formations have been lumped together because they act hydrologically as a single aquifer. This is indicated by the general lack of a significant vertical potentiometric gradient between these formations except in small areas adjacent to Georgia and near the Fall line. Aquifer A2 and the Floridan aquifer system can be treated as a single hydrologic unit in South Carolina because there are no significant water-level differences between them and there is no evidence of an intervening confining bed. The combined Floridan aquifer system and aquifer A2 exist only in the southern and western two-thirds of the Coastal Plain.

Aquifer A3 of the regional framework has been subdivided into three parts; two of which, aquifers A3a2 and A3a3, exist in South Carolina. Aquifer A3a2 is composed primarily of permeable sediments of the Black Creek Formation and is the uppermost of the three Upper Cretaceous aquifers defined in South Carolina. It consists of thinly laminated sand and clay lenses. The updip limit of aquifer A3a2 is generally parallel to the Fall Line. The aquifer crops out in the eastern part of the upper Coastal Plain, and is present in the subsurface throughout much of the Coastal Plain of South Carolina.

Aquifer A3a3, which is the middle of the three Upper Cretaceous aquifers, exists throughout the Coastal Plain of South Carolina. In the upper Coastal Plain it generally consists of more massive sands than does aquifer A3a2 and is generally comprised of the Middendorf Formation. This unit has also been referred to as the Tuscaloosa Formation (Cooke, 1936). In the lower Coastal Plain, the permeable sediments of aquifer A3a3 are lithologically quite similar to those of aquifer A3a2 but are stratigraphically equivalent to the Middendorf Formation. Aquifer A3a3 crops out along most of the length of the Fall Line.

Aquifer A4 consists of sediments considered to be part of the Cape Fear Formation and is the basal aquifer in the Coastal Plain system of South Carolina. It consists predominately of sand, silt, and gravel layers separated by thick silt and clay layers. This unit has not been well defined in the upper Coastal Plain. However, where this aquifer is postulated to exist updip, it appears that its flow system is closely related to that of the overlying aquifer A3a3.



LOCATION MAP

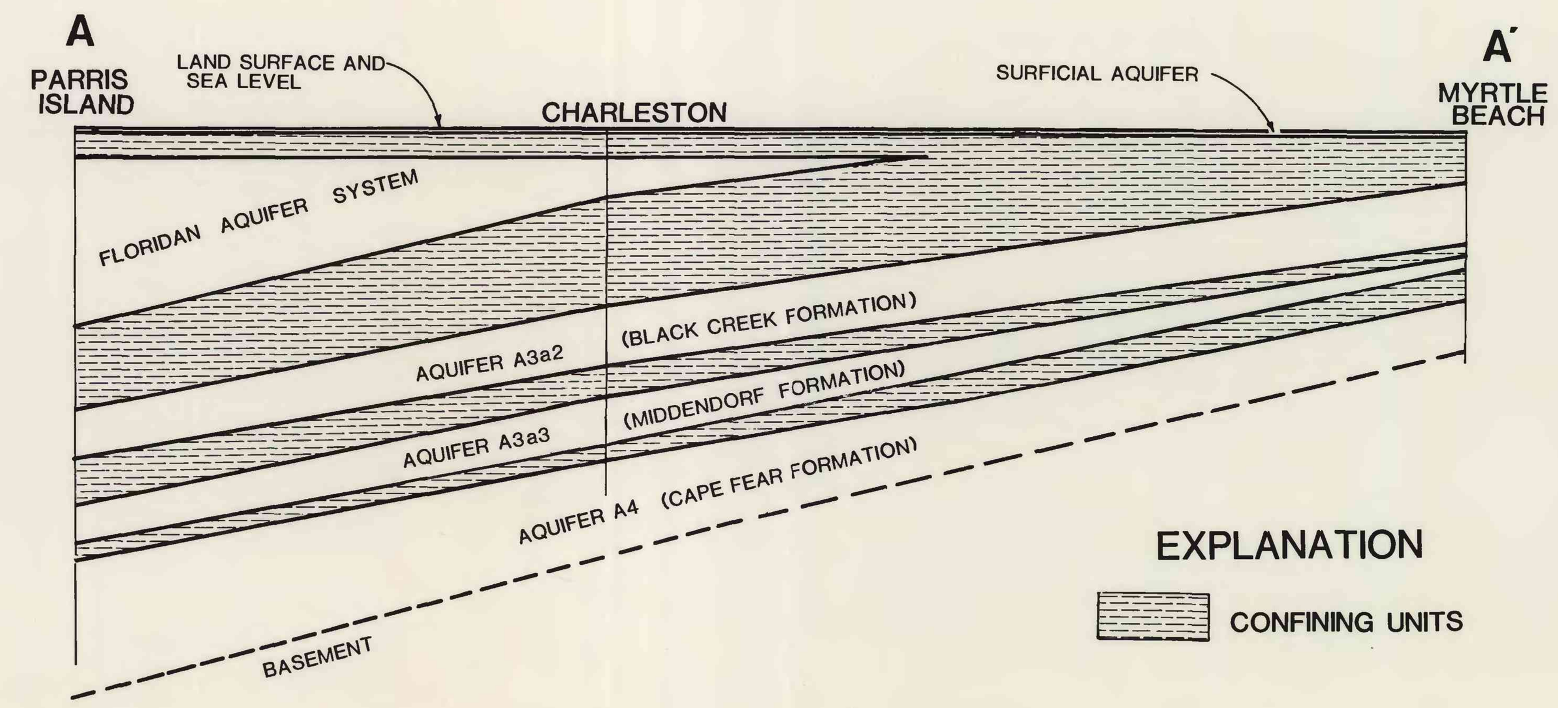


FIGURE 1.--GENERALIZED GEOHYDROLOGIC SECTION A-A'

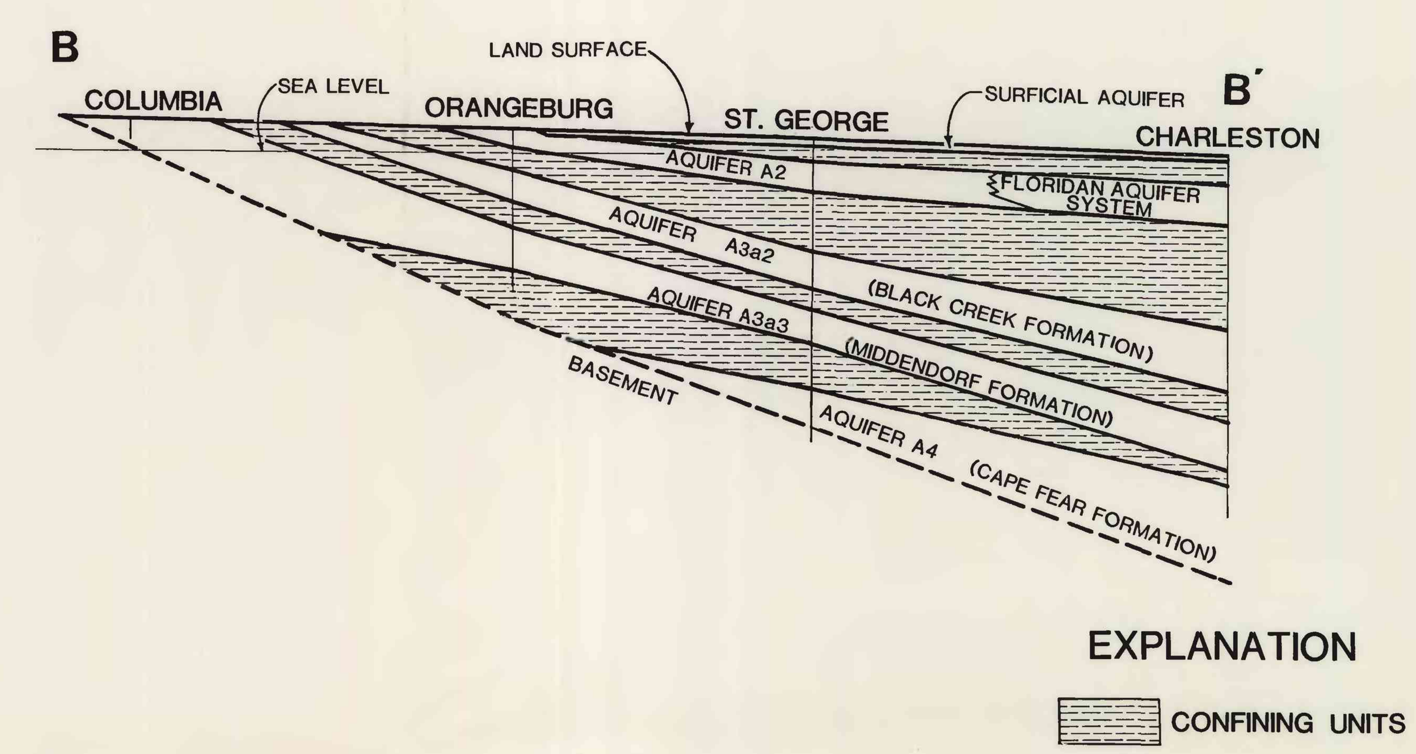


FIGURE 2.--GENERALIZED GEOHYDROLOGIC SECTION B-B'

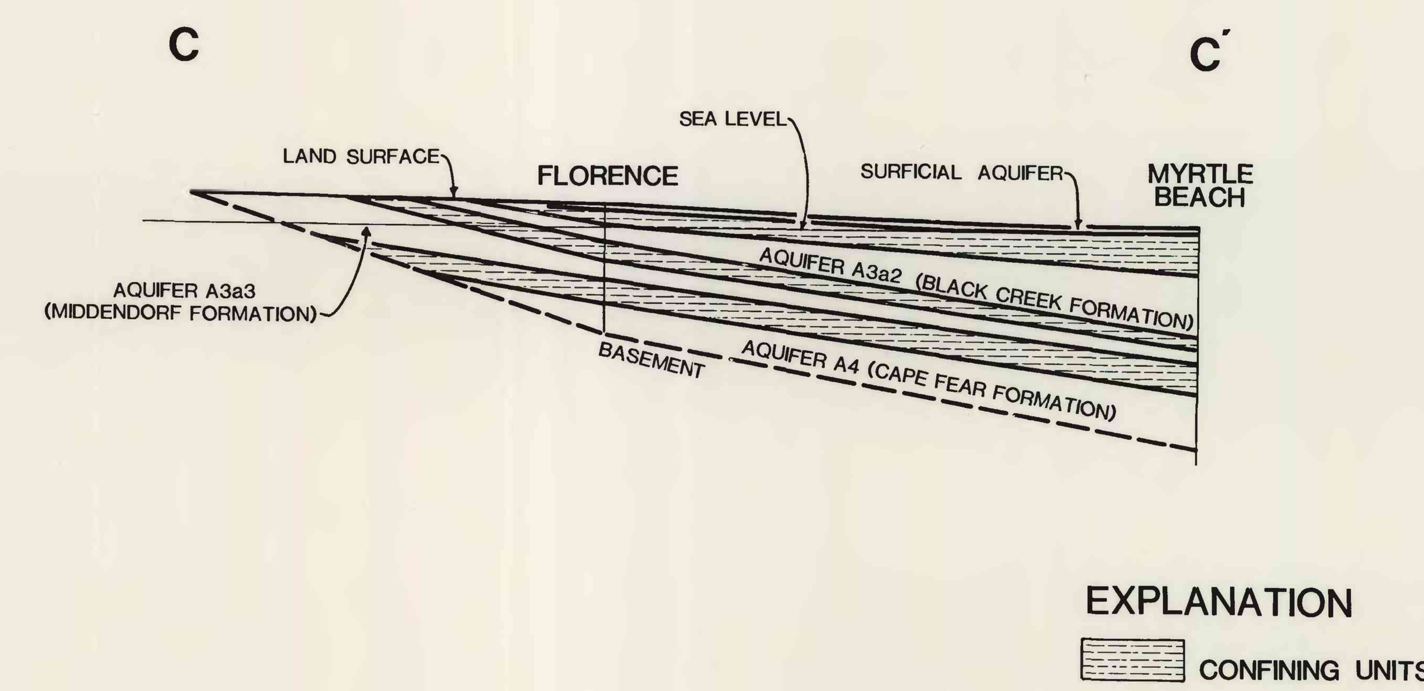


FIGURE 3.--GENERALIZED GEOHYDROLOGIC SECTION C-C'

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POTENTIOMETRIC SURFACES OF THE COASTAL PLAIN AQUIFERS OF SOUTH CAROLINA PRIOR TO DEVELOPMENT

BY
WALTER R. AUCOTT AND GARY K. SPEIRAN

1985

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WATER-LEVEL DATA

Water-level data have been compiled from many sources including files, data reports, and county reconnaissance reports of the U.S. Geological Survey; reported measurements from drillers, consulting engineers, and water-system operators; and information from State and local government agencies. Water levels measured in the early 1900's to the present day and during all seasons of the year were used to represent the potentiometric surface prior to development. This surface is defined as the long-term average potentiometric surface that existed under natural conditions, prior to any man-made stress on the aquifers. Recent water-level measurements were used only in areas where no appreciable ground-water withdrawals have been made and where it appears that development has caused no significant changes in the potentiometric surface. The only developmental activities which affect these potentiometric surface maps are those caused by the creation of Lakes Marion and Moultrie. The effects of these artificial reservoirs are most evident on figure 4.

Most measuring point altitudes were derived from topographic quadrangle maps of 1:24,000 and 1:62,500 scales having land-surface altitude contour intervals ranging from 5 to 20 feet. A few measurements may represent composite water levels from wells screened in more than one aquifer. These measurements were compared with single zone measurements whenever possible. Corrections were made for significant density differences resulting from saline water, primarily for measurements made in aquifer A4 in the area near the coast.

A water level obtained from a well that penetrates only a part of an aquifer may not be representative of water levels throughout that aquifer. Partial penetration appears to be a problem only in aquifer A4 because significant water-level differences can occur between the sand layers within aquifer A4. Significant water-level differences are possible because this aquifer consists of thin layers of sand that are interbedded with thick silty clay layers. Most of the measurements used were from wells screened in the middle or lower part of aquifer A4, although some measurements from the upper part of this aquifer were used when no other data were available.

POTENTIOMETRIC MAPPING METHODOLOGY

To ensure that the potentiometric maps presented in this report represent conditions prior to development, extensive comparisons were made between the predevelopment maps, the November 1982 maps, and historical and current pumpage patterns. Previously published potentiometric maps including Warren, 1944; Siple, 1967; Zack, 1977; Hayes, 1979; Johnston and others, 1980; Johnston and others, 1981; and Faye and Prowell, 1982 were consulted for the parts of the study area they covered. Comments by A. D. Park (South Carolina Water Resources Commission, oral commun., 1982) were incorporated into figure 4 in Berkeley, Charleston, and Dorchester Counties where he was conducting a geohydrologic study.

In areas of sparse data, the potentiometric maps were constructed consistent with similar parts of the flow system where more detailed data exist. For example, vertical gradients between the aquifers are downward in suspected recharge areas and upward in suspected discharge areas. Because of the density of the data, the accuracy of the data, the nature of the hydrologic system, and the scale of the maps, a contour interval of 25 feet was selected to best represent the potentiometric surfaces.

FLOW SYSTEM PRIOR TO DEVELOPMENT

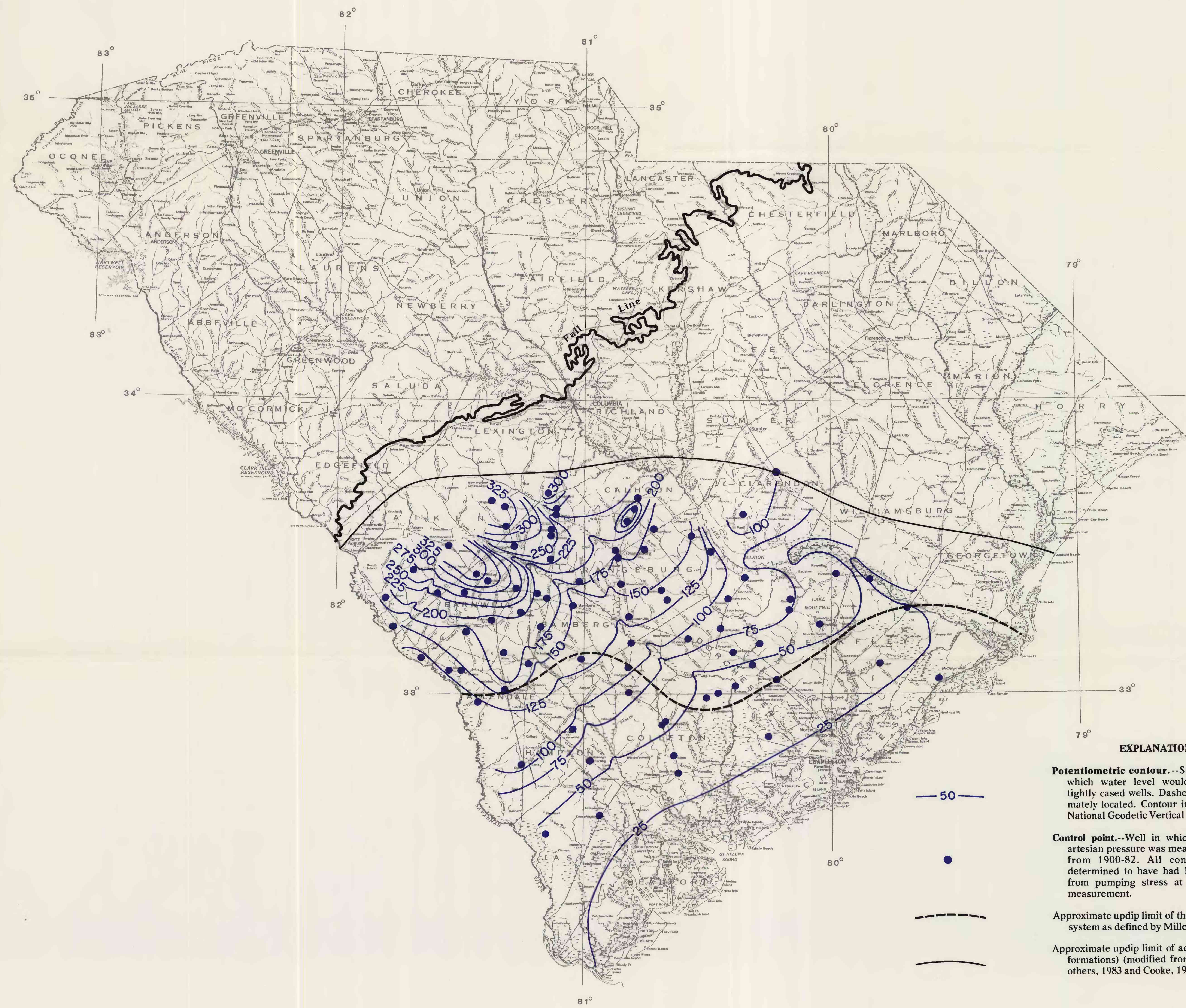
The major source of recharge to the Coastal Plain aquifers of South Carolina is precipitation in aquifer outcrop areas. Potentiometric highs in the interstream uplands of the outcrop areas of aquifer A2, A3a2, and A3a3 result from this recharge.

The major discharge from aquifers A2, A3a2, and A3a3 is to rivers and streams in the upper Coastal Plain. The bending of the potentiometric contours upstream in the vicinity of the Savannah River and other major rivers (figs. 4, 5, and 6) is indicative of ground-water discharge to the rivers. Discharge also occurs to the smaller streams in the upper Coastal Plain, but the effects of these discharges on the potentiometric surfaces are indicated only where data are available to show that the effects are significant. The depiction of these effects is limited because of the map scale and data density.

Leakage between aquifers through confining beds is a significant factor in the flow system. Downward gradients in the upper Coastal Plain, such as in some areas of the Savannah River Plant (SRP), located in Aiken and Barnwell Counties, indicate downward leakage from aquifer A2 to aquifer A3a2. Downward leakage, such as that occurring in the SRP, is an important source of recharge to the deeper aquifers in some areas.

In the lower Coastal Plain, discharge from aquifers A3a2, A3a3, and A4 occurs as upward leakage to the surficial aquifer, the Floridan aquifer system, and aquifer A2. The direction of flow in the Cretaceous aquifers in this area is roughly parallel to the coast rather than perpendicular to the coast as might be expected if the discharge by upward leakage were uniform throughout the area.

The distinctive flow pattern in the Cretaceous aquifers in the lower Coastal Plain is due to three factors. First, confining beds above aquifer A3a2 are more effective in southwestern South Carolina where clayey sediments of Paleocene age exist than in eastern South Carolina where Paleocene sediments are not present. Second, because the dip of the Coastal Plain sediments in southeastern North Carolina is substantially less than the dip in southwestern South Carolina, the aquifers are closer to the land surface and in better hydraulic contact with the rivers farther downdip in the east than the west. Finally, the Cape Fear River and to a lesser extent the Pee Dee River are lower in altitude farther upstream than rivers to the west. These river drains of lower altitude enable a lower potentiometric surface to occur in the Cretaceous aquifers in the east. These three factors combine to provide a more effective discharge area in the east than in the southwest for aquifers A3a2, A3a3, and A4. This imbalance in discharge in the lower Coastal Plain causes a major alteration in the flow direction from perpendicular to the coast to flow nearly parallel to the coast toward the primary discharge area in southeastern North Carolina and eastern South Carolina.



EXPLANATION

—50— **Potentiometric contour.**--Shows altitude at which water level would have stood in tightly cased wells. 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.

Approximate updip limit of the Floridan aquifer system as defined by Miller (1984).

Approximate updip limit of aquifer A2 (Eocene formations) (modified from Colquhoun and others, 1983 and Cooke, 1936).

0 20 40 60 Miles

0 20 40 60 80 Kilometers

FIGURE 4.--POTENTIOMETRIC SURFACE OF THE FLORIDAN AQUIFER SYSTEM AND AQUIFER A2 (EOCENE FORMATIONS) PRIOR TO DEVELOPMENT

Fall line from Overstreet and Bell (1965)

Base from U.S. Geological Survey
State base map, 1970

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SELECTED REFERENCES

Aucott, W.R., and Speiran, G.K., 1985, Potentiometric surfaces of November 1982 and declines in the potentiometric surfaces between the period prior to development and November 1982 for the Coastal Plain aquifers of South Carolina: U.S. Geological Survey Water-Resources Investigations Report 84-4215, 7 sheets.

Cederstrom, D. J., Boswell, E. H., and Tarver, G. R., 1979, Summary appraisals of the nation's ground-water resources--South Atlantic-Gulf Region: U.S. Geological Survey Professional Paper 813-O, 35 p.

Colquhoun, D. J., Woollen, I. D., Van Niewenhuise, D. S., Padgett, G. G., Oldham, R. W., Boylan, D. C., Bishop, J. W., and Howell, P. D., 1983, Surface and subsurface stratigraphy, structure and aquifers of the South Carolina Coastal Plain; Columbia, S. C., University of South Carolina, Department of Geology, 78 p.

Cooke, C. W., 1936, Geology of the Coastal Plain of South Carolina: U.S. Geological Survey Bulletin 867, 196 p.

Faye, R. E. and Prowell, D. C., 1982, Effects of Late Cretaceous and Cenozoic faulting on the geology and hydrology of the Coastal Plain near the Savannah River, Georgia and South Carolina: U.S. Geological Survey Open-File Report 82-156, 73 p.

Gohn, G. S., Bybell, L. M., Smith, C. .C, and Owens, J. P., 1978, Preliminary stratigraphic cross sections of Atlantic Coastal Plain sediments of the Southeastern United States--Cenozoic sediments along the South Carolina coastal margin: U.S. Geological Survey Miscellaneous Field Studies Map MF-1015-B, 2 sheets.

Gohn, G. S., Christopher, R. A., Smith, C. C., and Owens, J. P., 1978, Preliminary stratigraphic cross sections of Atlantic Coastal Plain sediments of the Southeastern United States--Cretaceous sediments along the South Carolina coastal margin: U.S. Geological Survey Miscellaneous Field Studies Map MF-1015-A, 2 sheets.

Hayes, L. R., 1979, The ground-water resources of Beaufort, Colleton, Hampton, and Jasper Counties, South Carolina: South Carolina Water Resources Commission Report No. 9, 91 p.

Johnston, R. H., Healy, H. G., and Hayes, L. R., 1981, Potentiometric surface of the Tertiary limestone aquifer system, Southeastern United States, May 1980: U.S. Geological Survey Open-File Report 81-486.

Johnston, R.H., Krause, R. E., Meyer, F. W., Ryder, P. D., Tibbals, C. H., and Hunn, J. D., 1980, Estimated potentiometric surface for the Tertiary limestone aquifer system, Southeastern United States, prior to development: U.S. Geological Survey Open-File Report 80-406.

LeGrand, H. E., 1955, Brackish water and its structural implications in Great Carolina Ridge, North Carolina: American Association of Petroleum Geologists Bulletin, v. 39, no. 10, p. 2020-2037.

Lonon, G. E., Burnett, C. B., and Morris, H. J., 1983, Water use in South Carolina, 1980: South Carolina Water Resources Commission Report No. 138, 20 p.

Miller, J. A., 1984, Geohydrologic framework of the Floridan aquifer system in Florida, Georgia, and parts of Alabama and South Carolina: U.S. Geological Survey Professional Paper 1403-B, in press.

Overstreet, W.C., and Bell, Henry III, 1965, Geologic map of the crystalline rocks of South Carolina: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-413.

Park, A. D., 1980, The ground-water resources of Sumter and Florence Counties, South Carolina: South Carolina Water Resources Commission Report No. 133, 43 p.

Peek, H. M., and Register, L. A., 1975, A preliminary report on anomalous pressures in deep artesian aquifers in southeastern North Carolina: North Carolina Department of Natural and Economic Resources, Report of Investigation no. 10, 20 p.

Renken, R.A., 1984, The hydrogeologic framework for the sand aquifer of the Southeastern United States Coastal Plain: U.S. Geological Survey Water-Resources Investigations Report 84-4243.

Siple, G. E., 1946, Progress report on ground-water investigations in South Carolina: South Carolina Research, Planning and Development Board Bulletin No. 15, 116 p.

------1951, South Carolina, **in** Water levels and artesian pressures in observation wells in the United States, 1948, part 2, Southeastern States: U.S. Geological Survey Water-Supply Paper 1127, p. 194-198.

------1954, South Carolina, **in** Water levels and artesian pressures in observation wells in the United States, 1951, Part 2, Southeastern States: U.S. Geological Survey Water-Supply Paper 1192, p. 182-186.

------1957a, Geology and ground water in parts of Aiken, Barnwell, and Allendale Counties, South Carolina: unpublished report on file in Columbia, S. C., office of U.S. Geological Survey, 128 p.

------1957b, South Carolina, **in** Water levels and artesian pressures in observation wells in the United States, 1955, part 2, Southeastern States: U.S. Geological Survey Water-Supply Paper 1405, p. 226-237.

------1967, Geology and ground water of the Savannah River Plant and vicinity, South Carolina: U.S. Geological Survey Water-Supply Paper 1841, 113 p.

------1975, Ground-water resources of Orangeburg County, South Carolina: South Carolina State Development Board, Division of Geology Bulletin No. 36, 59 p.

Siple, G. E., and Koch, N. C., 1965, South Carolina, **in** Ground-water levels in the United States, 1959-63, Southeastern States: U.S. Geological Survey Water-Supply Paper 1803, p. 212-223.

Sloan, Earl, 1908, Catalogue of the mineral localities of South Carolina: South Carolina Geological Survey, Bulletin No. 4, Ser. 4, 505 p.

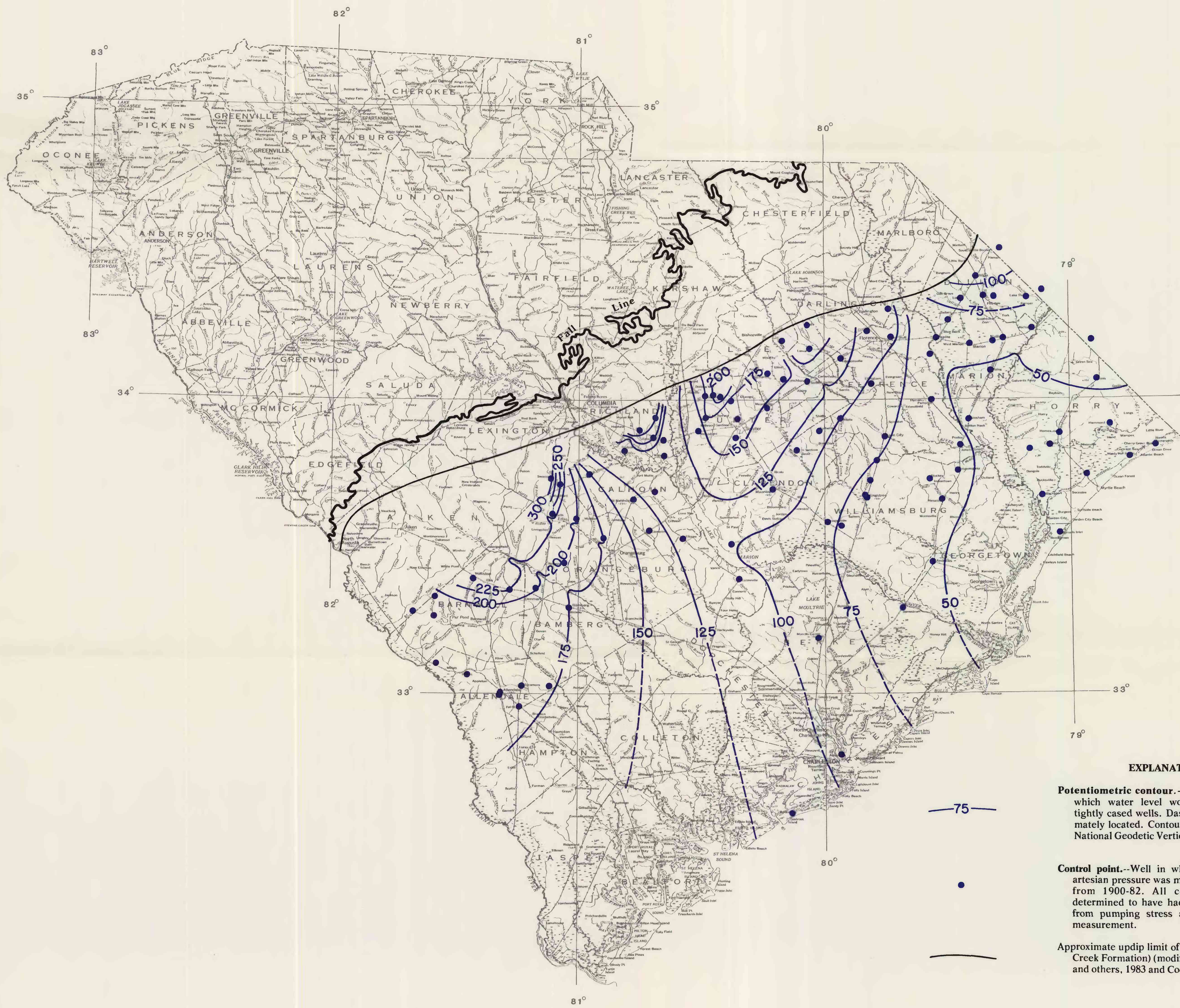
South Carolina Water Resources Commission, 1971, Water use in South Carolina, 1970: 114 p.

U.S. Geological Survey, 1971, South Carolina, **in** Ground-water levels in the United States, 1964-68, Southeastern States: U.S. Geological Survey Water-Supply Paper 1978, p. 201-211.

Warren, M. A., 1944, Artesian water in southeastern Georgia: Georgia Geological Survey Bulletin 49A, 83 p.

Woollen, I.D., and Colquhoun, D. J., 1977, The Black Creek and Middendorf Formations in Darlington and Chesterfield Counties, South Carolina, their type areas: South Carolina Geological Survey, Geologic Notes, v. 21, no. 1, p. 164-197.

Zack, A. L., 1977, The occurrence, availability, and chemical quality of ground water, Grand Strand area and surrounding parts of Horry and Georgetown Counties, South Carolina: South Carolina Water Resources Commission Report No. 8, 100 p., 9 plates.



EXPLANATION

—75— **Potentiometric contour.**--Shows altitude at which water level would have stood in tightly cased wells. 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.

Approximate updip limit of aquifer A3a2 (Black Creek Formation) (modified from Colquhoun and others, 1983 and Cooke, 1936).

FIGURE 5.--POTENTIOMETRIC SURFACE OF AQUIFER A3a2 (BLACK CREEK FORMATION) PRIOR TO DEVELOPMENT

0 20 40 60 Miles

0 20 40 60 80 Kilometers

Fall line from Overstreet and Bell (1965)

Base from U.S. Geological Survey State base map, 1970

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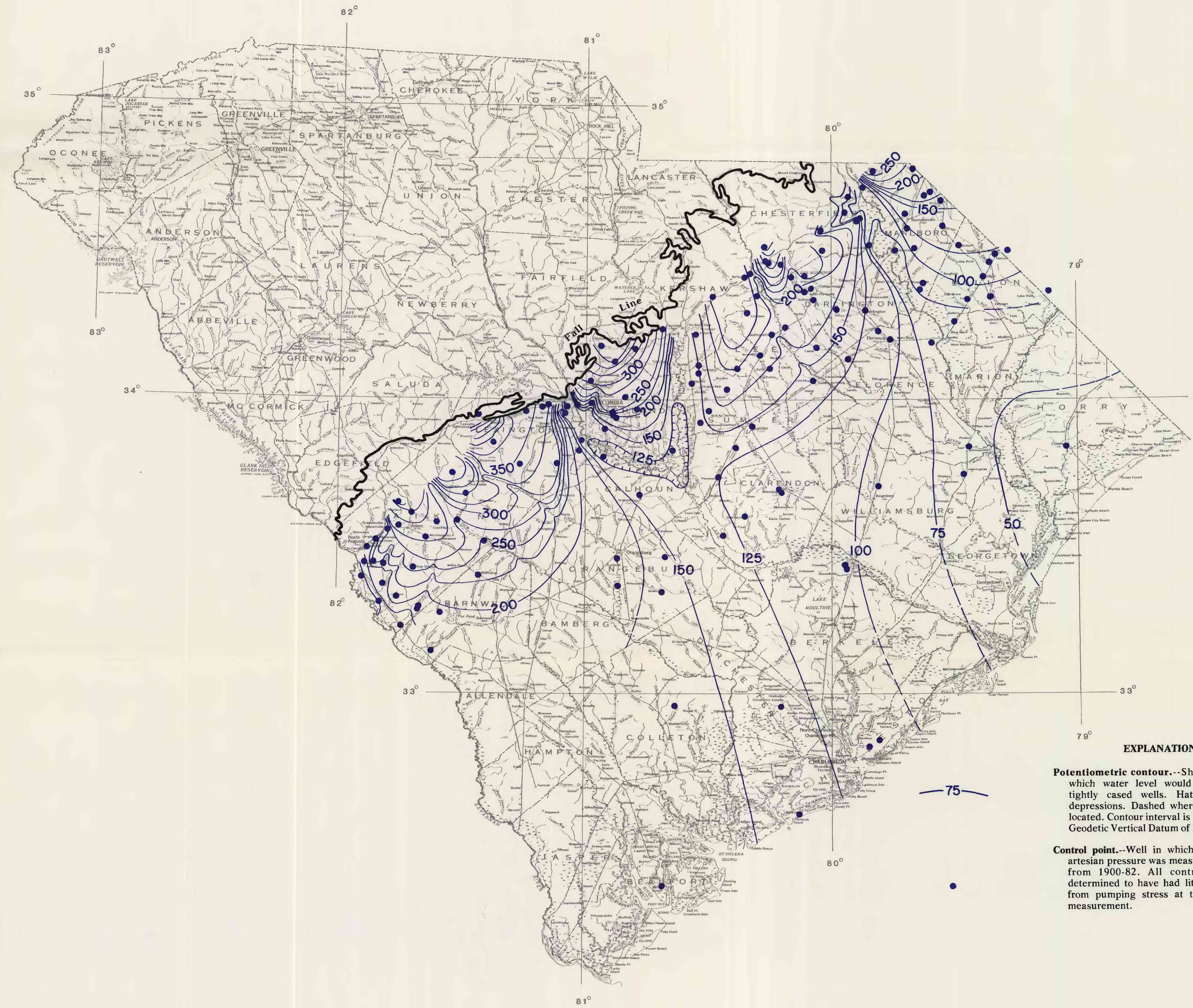

EXPLANATION

75 **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

0 20 40 60 Miles

0 20 40 60 80 Kilometers

Fall line from Overstreet and Bell (1965)

Base from U.S. Geological Survey State base map, 1970

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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 Costal 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 so 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 A3a3.

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 A3a3. Consequently the potentiometric surface of aquifer A4 is probably quite similar to that of overlying aquifer A3a3. In the upper Coastal Plain of South Carolina, aquifer A4 is recharged by downward leakage from aquifer A3a3 in the interstream areas. Discharge from aquifer A4 to aquifer A3a3 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.

EXPLANATION

Potentiometric contour.--Shows altitude at which water level would have stood in tightly cased wells. 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. Water levels are density corrected where applicable.

Approximate updip limit of aquifer A4 (Cape Fear Formation).

0 20 40 60 Miles

0 20 40 60 80 Kilometers

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

Fall line from Overstreet and Bell (1965)

Base from U.S. Geological Survey State base map, 1970

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