

# **Shallow Coal and Kaolinite Exploration Drill-Hole Data, North Carolina and South Carolina**

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Chapter H of

**Shallow Coal Exploration Drill-Hole Data—Alabama, Georgia,  
Kentucky, Louisiana, Mississippi, Missouri, North Carolina,  
South Carolina, Tennessee, and Texas**

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## Introduction

Coal and kaolinite exploration drill-hole data from 533 and 200 wells in North Carolina and South Carolina, respectively, drilled between November 1978 and June 1979 by Phillips Coal Company, a division of Phillips Petroleum Company (Phillips), are discussed in this chapter, and the data are provided in accompanying spreadsheets. The data are part of a larger dataset donated to the U.S. Geological Survey by the North American Coal Corporation, which purchased Phillips assets in 2001 (see chapter A, this volume). The data in 10 State reports have been digitized from field maps to create unified and spatially consistent coal exploration drill-hole datasets for each of the States (chapters B–K, this volume). Data for North Carolina and South Carolina include maps of each State with drill-hole coverage (figs. H1 and H2), a list of data attributes and explanations of the data format (tables H1 and H2), a list of comments found in the data and definitions of them (tables H3 and H4), a list of counties and the number of drill holes for each county (tables H5 and H6), and tabulated data in spreadsheet format (see appendixes H1 and H2).

## Methods

Data from drill-hole tabulation sheets completed by Phillips were entered into spreadsheets. Annotated field and highway maps from Phillips, generally 1:62,500 to 1:100,000 scale, were utilized to spot check the accuracy of the location information in the drill-hole tabulation sheets. Spot checks were made using the appropriate 1927 State coordinate plane projection source material digitized from hardcopy maps into a geographic information system (GIS) using ArcMap™ software from the Environmental Systems Research Institute, Inc. (ESRI). Fiducial marks served as reference points. Drill-hole locations were digitized and compared to the locations of the points given in the tabulated data sheets. To facilitate combining this dataset with datasets for other States, the drill-

hole dataset has been reprojected into a North American Datum of 1983 geographic coordinate system. The shapefile data were exported to a spreadsheet (see appendixes H1 and H2).

## Generalized Coal and Kaolinite Geology of North Carolina and South Carolina

Upper Cretaceous units in North Carolina and South Carolina contain both lignite and kaolinite (fig. H3). In South Carolina, the Paleocene Sawdust Landing Formation of the Black Mingo Group contains lignite and kaolinite, and the Eocene Huber Formation and an unnamed Miocene unit contain kaolinite (Siesser and others, 1985; Krutak and Beron, 1990; Nystrom and others, 1991; Sohl and Owens, 1991).

## Data

The North Carolina and South Carolina data provide drill-hole coverage for the Atlantic Coastal Plain (figs. H1 and H2). Drill-hole depths range from 10 to 300 feet in North Carolina, with an average depth of 237 feet, and 50 to 310 feet in South Carolina, with an average depth of 240 feet. Exploration data for North Carolina recorded only 14 drill-hole locations (out of a total of 533 drill holes) with coal information and 8 drill holes that were described as having the occurrence of kaolinite; exploration in South Carolina yielded only three locations with coal data (out of a total of 200 drill holes). Comparisons between digitized highway map points and their corresponding drill-hole tabulation sheet coordinates indicate that the drilling team accurately determined their locations from local topographic maps; therefore, there are no spatial errors associated with the creation of this dataset. Shapefile attributes include all original raw data with the exception of the land owner information (tables H1 and H2). The shapefile was exported to spreadsheets (see appendixes H1 and H2).

References Cited

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Appendix H1

The North Carolina coal exploration drill-hole dataset in spreadsheet format is available at [pubs.usgs.gov/of/2011/1261/Appendices/H1-NC.xls](https://pubs.usgs.gov/of/2011/1261/Appendices/H1-NC.xls).

Appendix H2

The South Carolina coal exploration drill-hole dataset in spreadsheet format is available at [pubs.usgs.gov/of/2011/1261/Appendices/H2-SC.xls](https://pubs.usgs.gov/of/2011/1261/Appendices/H2-SC.xls).

**Table H1.** Attribute titles and data descriptions and formats for the North Carolina coal and kaolinite exploration drill-hole dataset.

Attribute title	Data description and format
DRILL-HOLE NAME	Two-letter county code followed by drill-hole number.
COUNTY	County where the drill hole is located.
ELEVATION	Elevation above sea level in feet.
DEPTH_TOTAL	Depth of drill hole in feet.
DEPTH_PROBED	Depth of geophysical probe measurement in feet.
LATITUDE	Decimal degree location values given to 4 decimal places.
LONGITUDE	Decimal degree location values given to 4 decimal places.
X_C	Thickness of coal for bed number X in decimal feet.
X_CP	Thickness of coal and partings combined for bed number X in decimal feet.
X_DEPTH	Top depth of bed number X in feet.
K_THICKNESS	Thickness of kaolinite for bed number X in decimal feet.
K_DEPTH	Depth of kaolinite for bed number X in feet.
COMMENT	Additional information regarding the drill hole.

**Table H2.** Attribute titles and data descriptions and formats for the South Carolina coal and kaolinite exploration drill-hole dataset.

Attribute title	Data description and format
DRILL-HOLE NAME	Two-letter count code followed by drill-hole number.
COUNTY	County where the drill hole is located.
ELEVATION	Elevation above sea level in feet.
DEPTH_TOTAL	Depth of drill hole in feet.
DEPTH_PROBED	Depth of geophysical probe measurement in feet.
LATITUDE	Decimal degree location values given to 4 decimal places.
LONGITUDE	Decimal degree location values given to 4 decimal places.
X_C	Thickness of coal for bed number X in decimal feet.
X_CP	Thickness of coal and partings combined for bed number X in decimal feet.
X_DEPTH	Top depth of bed number X in feet.
COMMENT	Additional information regarding the drill hole.

**Table H3.** Explanation of comments used to describe the North Carolina drill-hole dataset (modified from J.A. Luppens, U.S. Geological Survey, written commun., 2009).

Symbol/Comment	Description
?	Questionable data/information.
HUNG PROBE (150')	During exploration the geophysical logging instrument were stuck in the drill hole at 150 feet. Due to this issue no geophysical data were recovered for this drill hole.
KAOLINITE CORED	During exploration a kaolinite deposit was encountered and a core sample was taken. The depth of the core is listed in the comment section after the notation.
NC	Abbreviation for "no coal." No coal was found during exploration for this drill hole.
NK	Abbreviation for "no kaolinite." No kaolinite was found during exploration for this drill hole.
NO ELEVATION RECORDED	No ground elevation information was recorded on the original coal exploration maps for this drill hole.
NP	Abbreviation for "not probed." Geophysical logging never occurred at this location.
NSL	Abbreviation for "no significant lignite." Coal may have been found during exploration but because the coal beds were thin (usually less than 2 feet thick) no coal data were recorded.
POOR	A subjective term used to describe coal of poor quality.

**Table H4.** Explanation of comments used to describe the South Carolina drill-hole dataset (modified from J.A. Luppens, U.S. Geological Survey, written commun., 2009).

Symbol/Comment	Description
NC	Abbreviation for "no coal." No coal was found during exploration for this drill hole.
NSL	Abbreviation for "no significant lignite." Coal may have been found during exploration but because the coal beds were thin (usually less than 2 feet thick) no coal data were recorded.
POOR	A subjective term used to describe coal of poor quality.

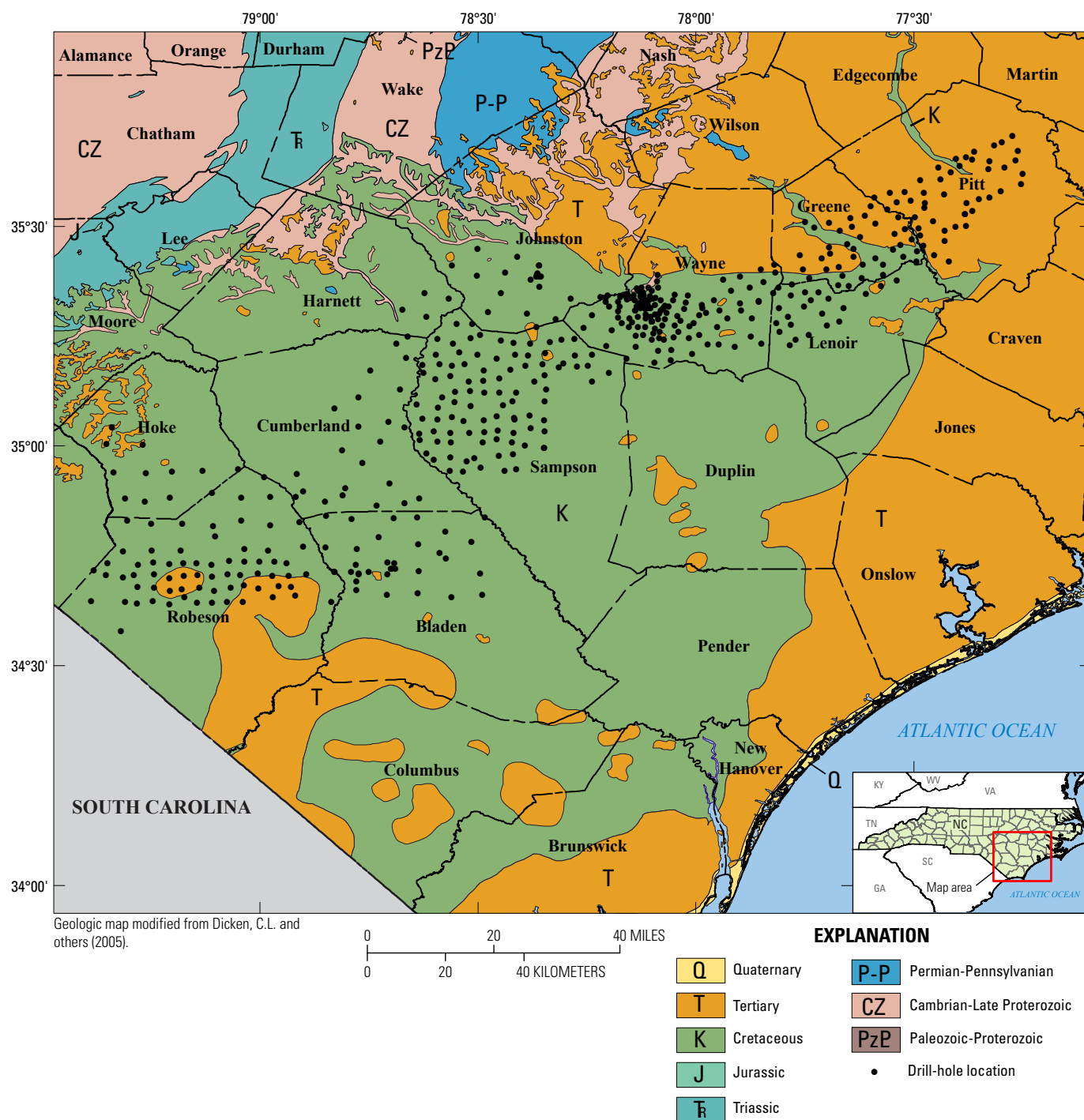
**H4     Shallow Coal Exploration Drill-Hole Data—AL GA, KY, LA, MS, MO, NC, SC, TN, TX**

**Table H5.** North Carolina counties and the number of drill holes by county.

County	Number of drill holes
Bladen	33
Cumberland	24
Greene	38
Harnett	4
Hoke	11
Johnston	23
Lenoir	24
Pitt	47
Robeson	69
Sampson	99
Wayne	161
Total	533

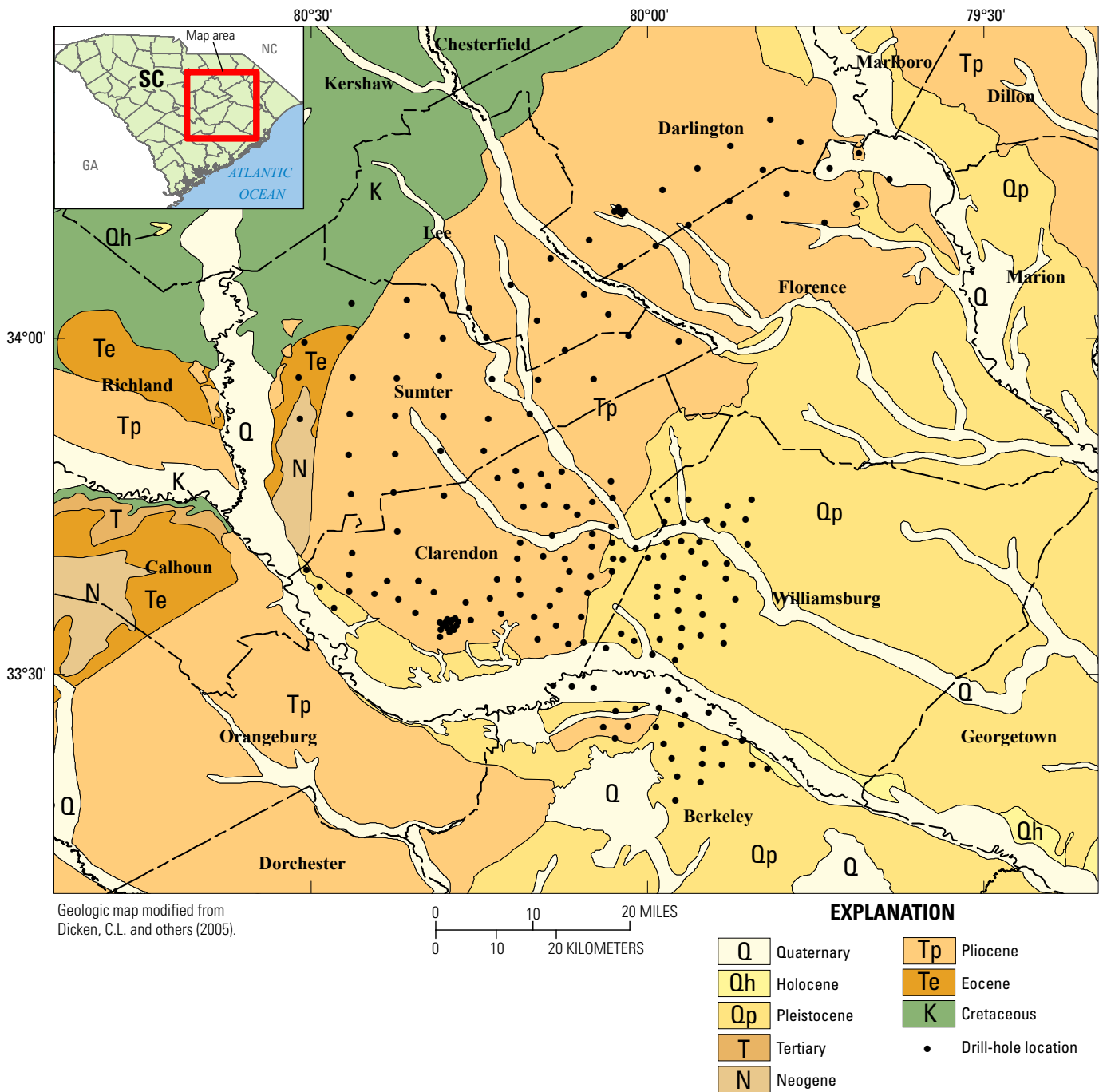
**Table H6.** South Carolina counties and the number of drill holes by county.

County	Number of drill holes
Berkely	27
Clarendon	75
Darlington	15
Florence	8
Lee	9
Sumter	27
Williamsburg	39
Total	200



**Figure H1.** North Carolina regional map with county lines showing the North Carolina coal exploration drill-hole locations (geologic map modified from Dicken, C.L. and others, 2005).





**Figure H2.** South Carolina regional map with county lines showing the South Carolina coal exploration drill-hole locations (geologic map modified from Dicken, C.L. and others, 2005).

System	Series	Stage	North Carolina Formations	South Carolina Formations
Quaternary	Pleistocene		Waccamaw Formation	
Tertiary	Pliocene		Pinehurst Formation	
	Miocene	Anahuac	Belgrade Formation	unnamed upland unit
	Oligocene	Chicasawhayan		
		Vicksburgian	River Bend Formation	
	Eocene	Jacksonian		Barnwell Group
		Claibornian	Castle Hayne Formation	Orangeburg Group
				McBean Formation Warley Hill Formation Huber Formation Congaree Formation
	Paleocene	Sabinian	— — — — —	Black Mingo Group
		Midwayan	Beaufort Formation	Lang Syne Formation Sawdust Landing Formation
Cretaceous	Upper (in part)	Maestrichtian	Peedee Formation	
			Donoho Creek Formation	
		Campanian	Bladen Formation	
			Tar Heel Formation	
		Santonian	Middendorf Formation	
			Cape Fear Formation	

 Unconformable

 Lignite- and kaolinite-bearing formation

 Transitional

 Unsure

 Kaolinite-bearing formation

**Figure H3.** Generalized stratigraphic chart of North Carolina and South Carolina upper Cretaceous through Pleistocene formations in the upper Coastal Plain (Siesser and others, 1985; Krutak and Beron, 1990; Nystrom and others, 1991; Sohl and Owens, 1991; Self-Trail and others, 2004).