Shallow Coal Exploration Drill-Hole Data, Alabama

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Chapter B 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 exploration drill-hole data from 2,520 wells drilled in Alabama between 1977 and 1979 by Phillips Coal Company, a division of Phillips Petroleum Company (Phillips), are discussed in this chapter, and the data are provided in an accompanying spreadsheet. 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 Alabama include a map of the State showing areas with drill-hole coverage (fig. B1), a list of data attributes and explanations of the data format (table B1), a list of comments found in the data and descriptions of them (table B2), a list of counties and the number of drill holes for each county (table B3), and tabulated data in spreadsheet format (see appendix B1).

Methods

Annotated topographic field and county highway maps from Phillips, generally at 1:62,500 to 1:100,000 scale, were utilized to generate the drill-hole datasets. Alabama State coordinate plane projection source material from 1927 was digitized from hardcopy maps into a geographic information system using ArcMap™ software from the Environmental Systems Research Institute, Inc. (ESRI). Fiducial marks and county boundaries served as reference points. Maps were scanned and georeferenced; drill-hole locations were digitized and shapefile attribute values were populated with data from the maps. To facilitate combining this dataset with datasets for other States, the dataset has been projected into a North American Datum of 1983 geographic coordinate system. The shapefile data were exported to a spreadsheet (appendix B1).

Generalized Coal Geology of Alabama

The Eocene/Paleocene Wilcox Group is a coal-bearing unit in southern Alabama (Warwick and others, 1997) (fig. B2). Coal-bearing formations in the Wilcox include the Nanafalia, Tuscahoma Sand, and Hatchetigbee. The coal-bearing formation of the Paleocene Midway Group is the Naheola Formation (Warwick and others, 1997). The Pennsylvanian age Upper Pottsville Formation is a shallow coal-bearing unit in the Warrior Basin in northwestern Alabama (Hatch and Pawlewicz, 2007).

Data

The Alabama data provide drill-hole coverage in southern Alabama from the west to the east of the State as well as drill-hole coverage in northwestern Alabama (figs. B1, B2). Probed depth data for 1,867 drill holes range from 17 to 395 feet with a mean depth of 205 feet. The discrepancy between the 2,520 total holes in this dataset and the 1,867 cited above reflects holes that were planned and mapped but may not have been drilled. Location error, due to the reduced resolution and generalized nature of highway maps, is expected to be ±0.25 miles. Shapefile attributes include all original raw data from the Phillips drill-hole location maps (table B1).

References Cited

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Hatch, J.R., and Pawlewicz, M.J., 2007, Petroleum assessment of the Pottsville Coal Total Petroleum System, Black Warrior Basin, Alabama and Mississippi, *in* Hatch, J.R., and Pawlewicz, M.J., comps., Geologic assessment of undiscovered oil and gas resources of the Black Warrior Basin Province, Alabama and Mississippi: U.S. Geological Survey Digital Data Series DDS–69–I, ch. 4, 28 p., accessed August 31, 2011, at *pubs.usgs.gov/dds/dds-069/dds-069-i/REPORTS/69_I_CH_4.pdf*.

Ogg, J.G., Ogg, Gabi, and Gradstein, F.M., 2008, The concise geologic time scale: Cambridge, U.K., Cambridge University Press, 184 p.

Warwick, P.D., SanFilipo, J.R., Crowley, S.S., Thomas, R.E., and Freid, J., comps., and Tully, J.K., (digital comp., 1997, Map showing outcrop of the coal-bearing units and land use in the Gulf Coast coal region: U.S. Geological Survey Open-File Report 97–172, 1 sheet, accessed April 20, 2011, at *pubs.usgs.gov/of/1997/of97-172/*.

Appendix B1

The Alabama coal exploration drill-hole dataset in spreadsheet format is available at *pubs.usgs.gov/of/2011/1261/Appendices/B1-AL.xls*.

Table B1. Attribute titles and data descriptions and formats for the Alabama coal 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.
COMMENT	Additional information regarding the drill hole. See table B2 for an explanation of comments.

Table B2. Explanation of comments used to describe the Alabama drill-hole dataset (J.A. Luppens, U.S. Geological Survey, written commun., 2009).

Comment	Description
?	There is uncertainty about the drill hole.
Carbonaceous; CM	Coal has a high ash content.
Data Depth	Minimum depth as determined by the deepest coal depth and thickness when well depth is not available.
DEM	Elevation of the drill-hole determined by a digital elevation model (Gesch, 2002).
Inferior Lignite	Lignite found in the drill hole was of poor quality.
Lignite	Lignite was found in the drill hole.
NC	Abbreviation for "no coal." No coal was found during exploration 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 ft. thick) no coal data was recorded.
Partially Inferior Lignite	Lignite found in the drill hole was of poor quality.
Poor Lignite	Lignite found in the drill hole was of poor quality.
Trace Lignite	The drill hole contained only traces of lignite.
Visual Estimate	Depth to top of coal bed estimated visually—not measured.

Table B3. Alabama counties and the number of drill holes by county.

County	Number of drill holes
Barbour	493
Butler	331
Choctaw	98
Coffee	176
Conecuh	53
Covington	82
Crenshaw	209
Dale	174
Franklin	10
Henry	388
Houston	19
Lamar	7
Lowndes	1
Marengo	135
Marion	135
Monroe	143
Pike	3
Sumter	5
Wilcox	58
Total	2,520

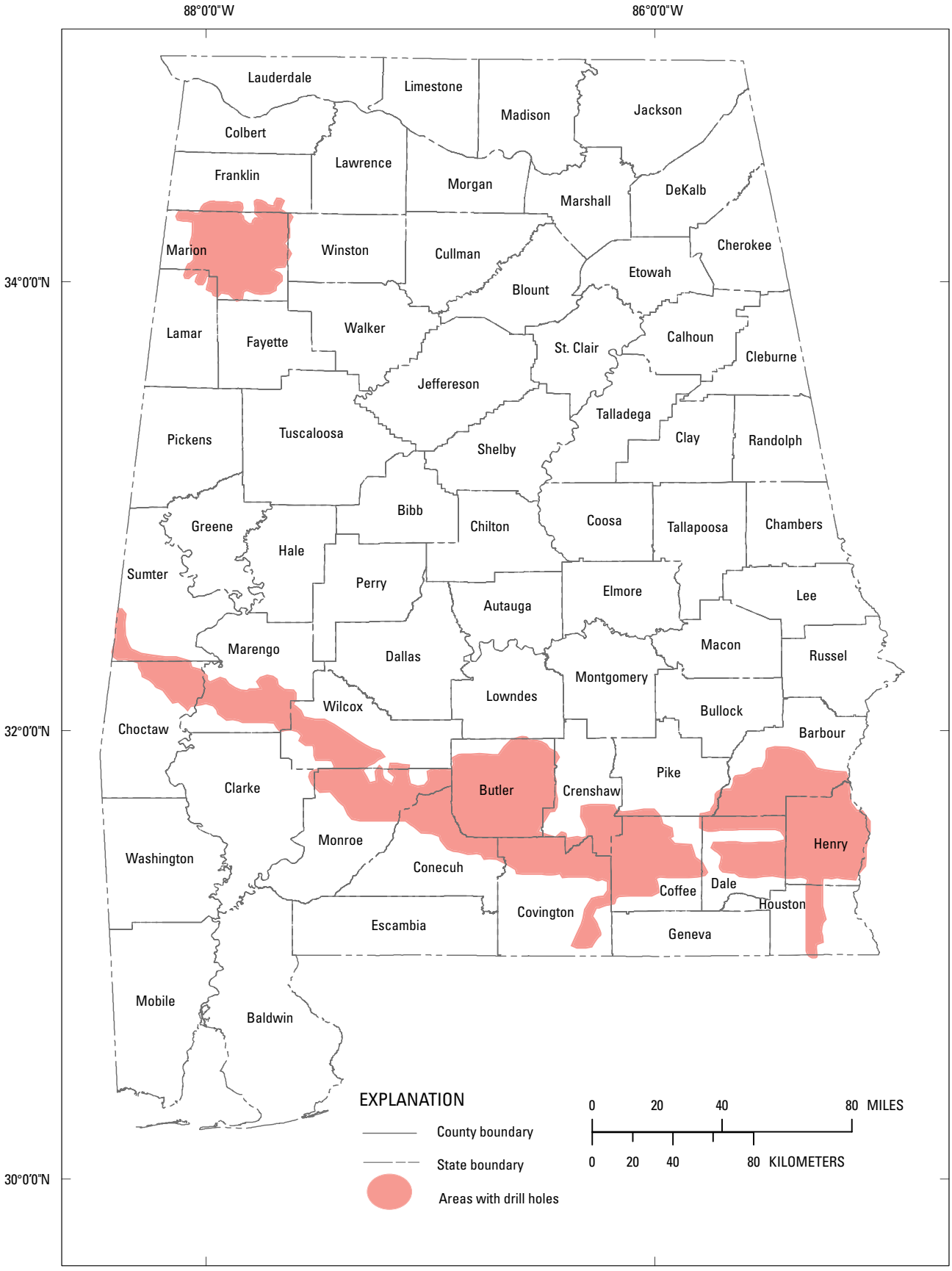

Figure B1. Map of Alabama showing locations of areas with drill holes.

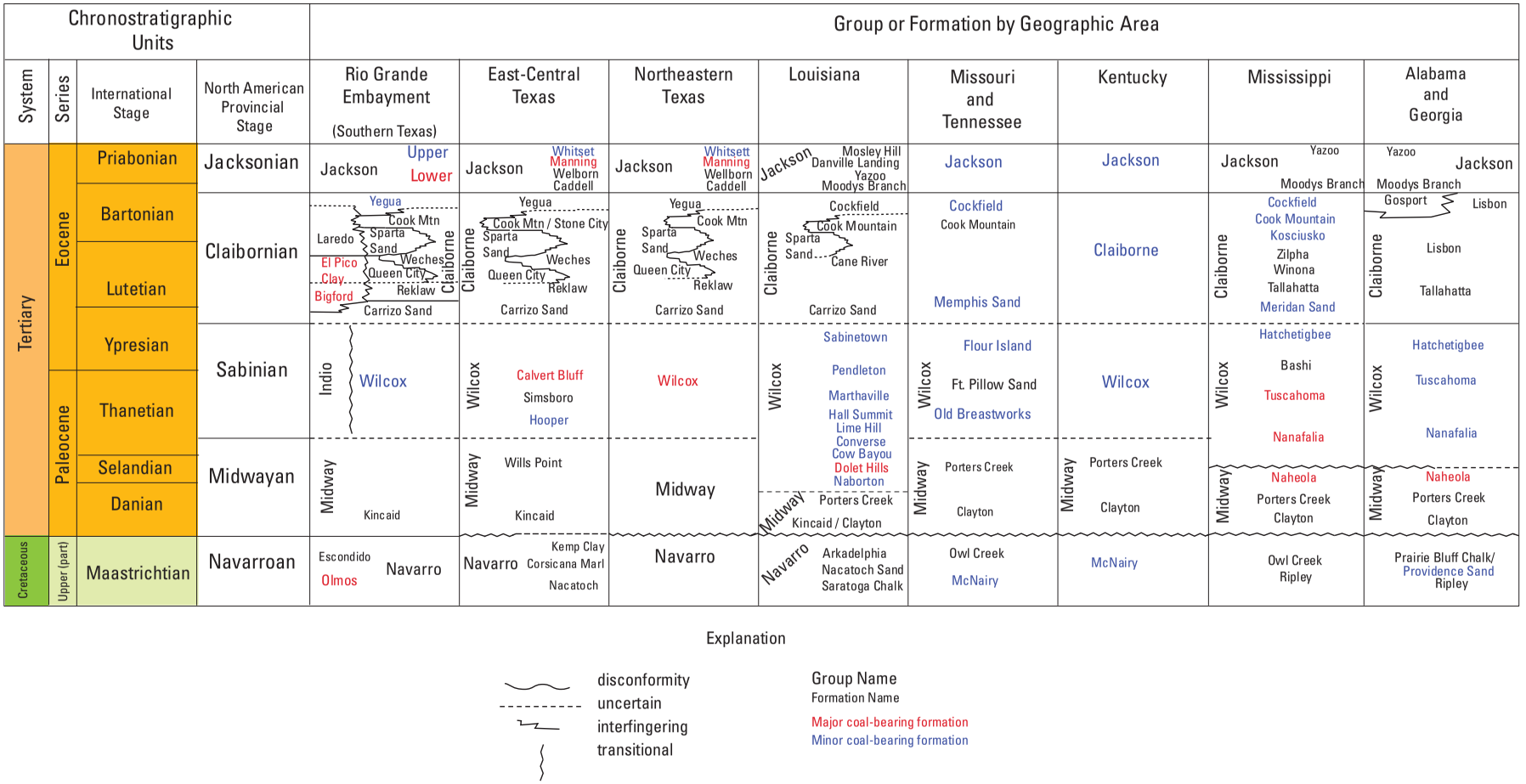

Figure B2. Generalized stratigraphic chart showing major and minor coal-bearing formations in the Mississippi Embayment and Gulf Coastal Plain (modified from Warwick and others, 1997; Ogg and others, 2008).