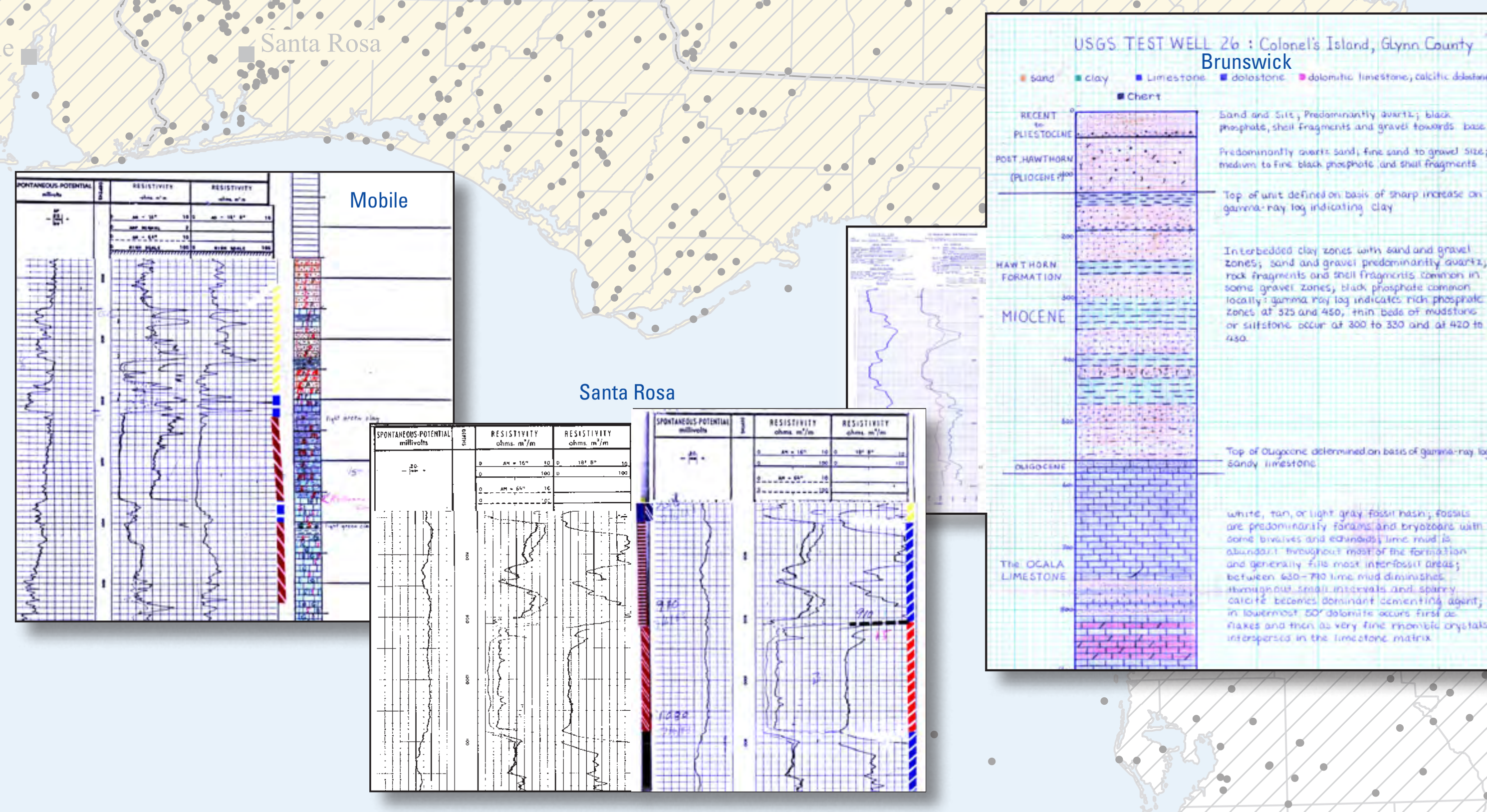
Groundwater Resources Program

Geophysical Log Database for the Floridan Aquifer System and Southeastern Coastal Plain Aquifer System in Florida and Parts of Georgia, Alabama, and South Carolina



Data Series 760

Version 1.1, December 2016

U.S. Department of the Interior
U.S. Geological Survey

Cover.

Mobile: Oil test well P299, T.J. Rester et al #1, Mobile, County, Alabama; hand-annotated electric log showing the sand and gravel aquifer, a confining bed, and the Floridan aquifer system. Log scanned from paper files of the USGS.

Santa Rosa: Oil test well P299, St. Regis Paper Co. et al #1, Santa Rosa, County, Florida; electric log showing the Upper and Lower Floridan aquifers separated by the Bucatunna clay confining unit (low-resistivity from 930 to 1,080 feet is the Bucatunna Clay); a second log is the same thing but is the annotated log from J.A. Miller. Log scanned from paper files of the Florida Department Environmental Protection Oil and Gas Program, Tallahassee, Florida.

Brunswick: USGS test well Glynn County, Georgia; lithologic log, electric log collected by USGS Southeast Logger Service. Logs scanned from paper files of the USGS Georgia Water Science Center, Norcross, Georgia.

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By Lester J. Williams, Jessica E. Raines, and Amanda E. Lanning

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KEN SALAZAR, Secretary

U.S. Geological Survey
Suzette M. Kimball, Director

U.S. Geological Survey, Reston, Virginia: 2013
First release: 2013
Revised: December 2016 (ver 1.1)

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Suggested citation:
Williams, L.J., Raines, J.E., and Lanning, A.E., 2016, Geophysical log database for the Floridan aquifer system and southeastern Coastal Plain aquifer system in Florida and parts of Georgia, Alabama, and South Carolina (ver. 1.1, December 2016): U.S. Geological Survey Data Series 760, 12 p., available at http://dx.doi.org/10.3133/ds760.

ISSN 2327-638X (online)

Contents

Figures

Tables

Conversion Factors and Datums

Inch/Pound to SI

Multiply	By	To obtain
inch	2.54	centimeter (cm)
inch	25.4	millimeter (mm)
foot (ft)	0.3048	meter (m)

Vertical coordinate information is referenced to the National Geodetic Vertical Datum of 1929 (NGVD 29).

Horizontal coordinate information is referenced to the North American Datum of 1983 (NAD 83).

Altitude, as used in this report, refers to distance above the vertical datum.

Abbreviations

ASCII American Standard Code for Information Interchange

DILL dual induction laterolog

FGS Florida Geological Survey

FLDEP Florida Department of Environmental Protection

GAEPD Georgia Environmental Protection Division

GIS geographic information system

PDF portable document format

RASA Regional Aquifer-System Analysis

USGS U.S. Geological Survey

UWI unique well identifier

Acknowledgments

Appreciation is extended to several organizations and individuals who contributed data and helped during the compilation of this database. David Taylor, with the Florida Department of Environmental Protection (FLDEP) Oil and Gas Program, provided substantial help not only in accessing the oil and gas permit files in his office, but also in providing a number of previously scanned logs. This saved a large amount of time in compiling data for the Florida area. State Geologists and their staffs also assisted in this project, including Jon Arthur (State Geologist), Harley (Guy) Means, Rodney S. Dehan, and Andy Smith at the Florida Geological Survey, Berry H. (Nick) Tew (State Geologist) and Blakeney Gillett at the Geological Survey of Alabama, and Jim Kennedy (State Geologist) and Steve Walker at the Georgia Environmental Protection Division.

We especially thank Katy Etheridge of the Florida Geological Survey (FGS), who provided extensive assistance in scanning and compiling critical files part of the U.S. Geological Survey (USGS) Regional Aquifer System Analysis (RASA) Program that were being stored at the FGS offices in Tallahassee, Florida.

Jeffery B. Davis with the St. Johns Water Management District provided assistance in digitizing and contributed numerous logs from the District’s database. These logs constitute a significant proportion of logs for central, north-central, and northeastern Florida. The South Florida Water Management District provided digitized logs from their database. Personnel of the Southwest Florida Water Management District provided numerous logs and data during the course of this project. A special thanks is extended to Jason J. LaRoche, who provided logs from recently drilled test wells in the Southwest Florida Water Management District.

Much assistance and help was provided by Peter D. Warwick of the USGS Energy Resources Program for compilation of key geophysical logs in the Florida panhandle. These were key wells having a wide variety of porosity logs that were helpful for assessing salinity in the deep aquifers of that area.

Jim Miller, USGS, Ret. provided descriptions and a key to his annotated logs, which was of great help in deciphering color codes and lithology symbols used during the RASA studies. USGS personnel who helped with data compilation at individual offices include Jason Bellino (Tampa, Florida), Rick Spechler (Orlando, Fla.), Hal Davis (Tallahassee, Fla.), Ron Reese (Davie, Fla.), and Michael Peck (Atlanta, Georgia).

Finally, we thank Kevin F. Dennehy of the USGS Groundwater Resources Program who provided much help in the coordination of this project through the Groundwater Resources Program. Without his help this project would not have been possible.

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Abstract

A database of borehole geophysical logs and other types of data files were compiled as part of ongoing studies of water availability and assessment of brackish- and saline-water resources. The database contains 4,883 logs from 1,248 wells in Florida, Georgia, Alabama, South Carolina, and from a limited number of offshore wells of the eastern Gulf of Mexico and the Atlantic Ocean. The logs can be accessed through a download directory organized by state and county for onshore wells and in a single directory for the offshore wells. A flat file database is provided that lists the wells, their coordinates, and the file listings.

Introduction

The U.S. Geological Survey (USGS) Groundwater Resources Program began two regional studies in the southeastern United States in the fall of 2009 to investigate groundwater availability of fresh and brackish water resources: (1) groundwater availability of the Floridan aquifer system, (http://water.usgs.gov/ogw/gwrp/activities/regional.html), and (2) saline water aquifer mapping in the southeastern United States. A common goal for both studies was to gather available geophysical logs and related data from the State geological surveys and the USGS that would be used as a basis for developing a hydrogeologic framework for the study area. Similar efforts were undertaken by the USGS Floridan and Southeastern Coastal Plain Regional Aquifer-System Analysis (RASA) Program of the from the 1970s to mid-1990s (Miller, 1986; Renken, 1996). The logs compiled for these older efforts were difficult to access from the paper files; however, and partly because of this, older and newer logs were compiled into a single digital database for the current study. The purpose of this report is to summarize the different types of logs and related data contained in the database and to provide these logs in a digital format that can be accessed online (http://dx.doi.org/10.3133/ds760).

The geophysical logs presented here were collected over many decades. Because of this, the scales and (or) methods of presentation may not be consistent with current (2016) scales or presentation methods. For example, logs may now be shown with a logarithmic scale or a scale reversed from that collected to enhance the user's ability to identify geophysical responses associated with specific rock types, minerals, or water quality. Prior to the introduction of digital computing, such manipulations were rarely done. Therefore, it is suggested that users of older logs be familiar with scale or presentation changes over time, as discussed by Frank (1986), who also discusses pitfalls that users should avoid when interpreting older geophysical logs.

Regional Setting

The study area coincides with the approximate boundary of the Floridan aquifer system, where most of the logs were compiled; some logs also were included north of this boundary, within the Southeastern Coastal Plain aquifer system (fig. 1). The Floridan aquifer system (Miller, 1986) is composed of highly permeable, vertically continuous carbonate rocks (limestone and dolostone), mostly of Tertiary age, that were (1) deposited to form a wedge-shaped body covering Georgia, Alabama, and South Carolina and (2) vertically accreted on the Florida Platform. In the updip parts of the Floridan aquifer system, the carbonate rocks interfinger and progressively grade into clastic sediments that are part of the Southeastern Coastal Plain aquifer system (Renken, 1996). Renken (1996) grouped the mostly Cretaceous to Paleocene clastic units into several regional aquifers that compose the Southeastern Coastal Plain aquifer system (fig. 2). These aquifers consist of sand and sandy limestone, whereas the confining units are composed of clay and shale.

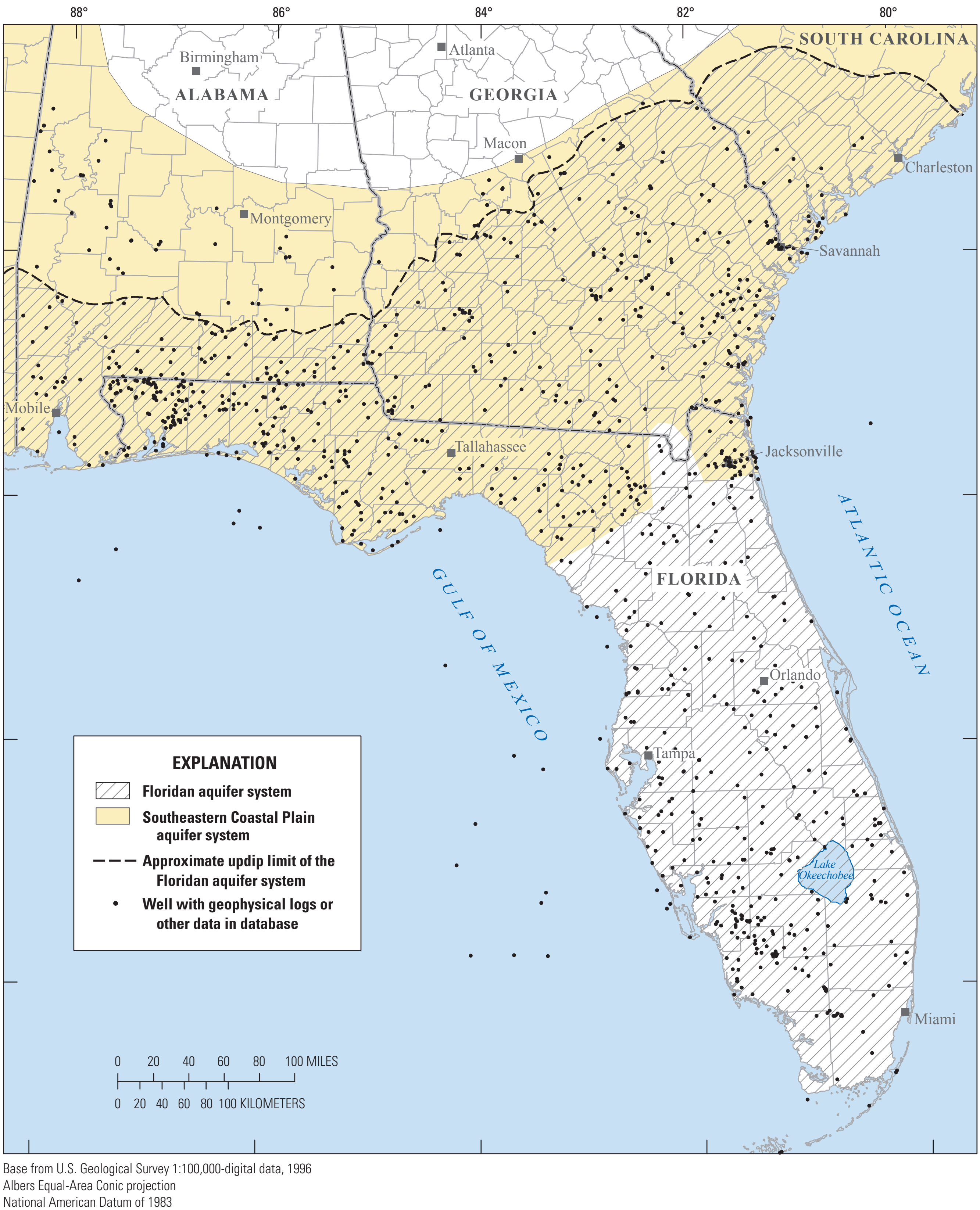

Figure 1. Study area location map showing the approximate extent of the Floridan and Southeastern Coastal Plain aquifer systems and location of wells in the geophysical log database.

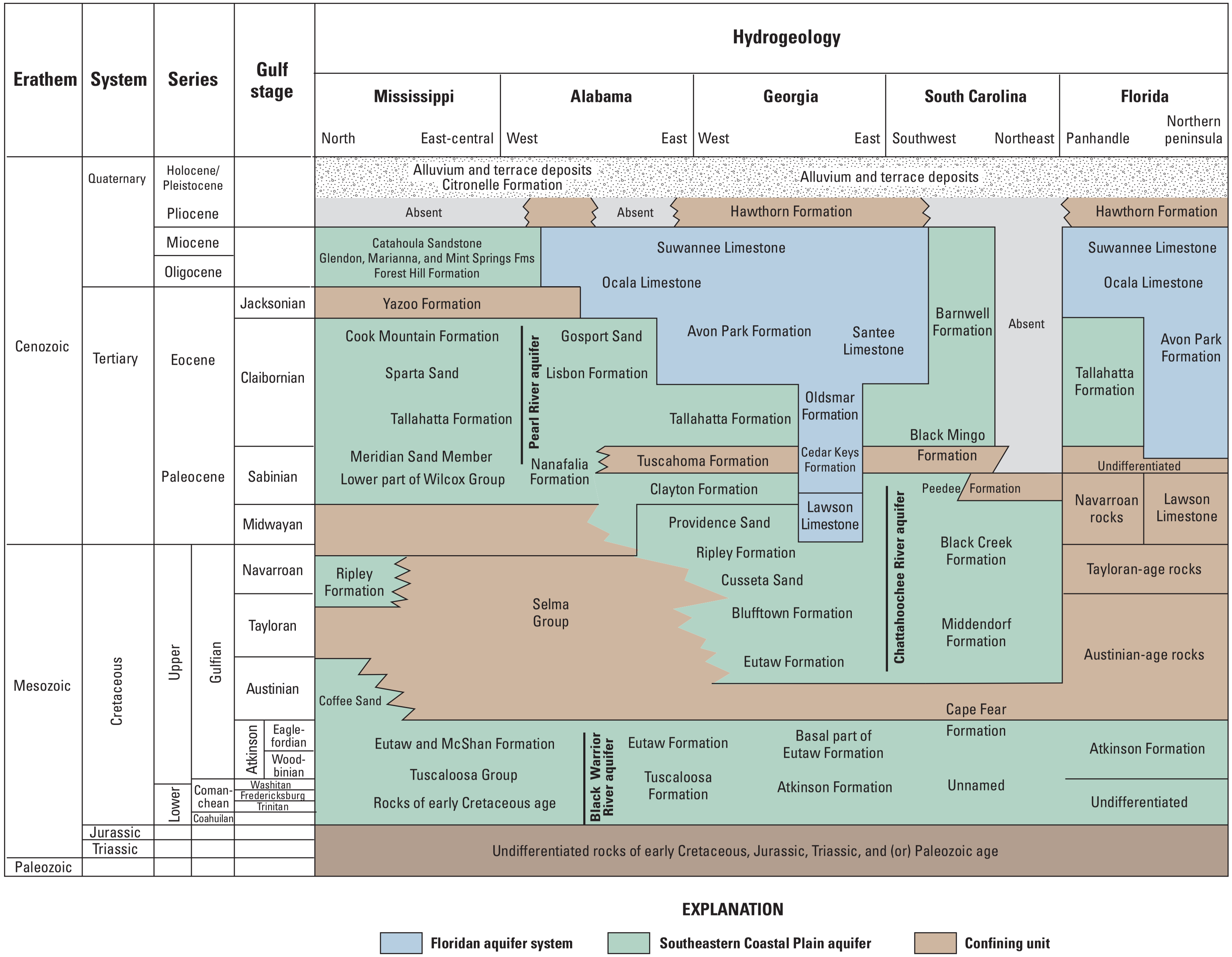

Figure 2. Generalized correlation chart showing stratigraphic units and hydrogeologic units of the Floridan and Southeastern Coastal Plain aquifer systems (modified from Renken, 1996).

Geophysical Log Database

The 4,883 logs contained in the database (http://dx.doi.org/10.3133/ds760) were collected in 1,248 wells and obtained from several sources. First, a collection of hand-annotated logs was scanned from files compiled by James A. Miller (U.S. Geological Survey, Ret.) during the RASA studies of the Floridan and Southeastern Coastal Plain aquifer systems. These logs, which had been dispersed to several USGS offices and State Geological Surveys, were scanned into .tiff images or portable document format (PDF) files. The logs from the RASA collection are generally reproductions of the original logs and are mostly plotted on a 1-inch scale (1-inch equals 100 feet) and of lesser quality than the original logs held at the State geological surveys and (or) oil and gas permit offices.

A second set of mostly newer logs was compiled for the current evaluation of fresh and brackish groundwater availability, initated as part of the USGS Groundwater Resource Program. These logs were obtained from several sources, including the St. Johns River Water Management District, South Florida Water Management District, Southwest Florida Water Management District, State Geologic surveys, and from offices of the USGS. Where possible, the log data were obtained in a digital format that could be readily used for correlation and log analysis. In processing the digital log data, it was sometimes necessary to "stitch" together multiple log runs and prepare the logs for analysis. For correlation, the logs were printed on a 1-inch scale and annotated where necessary to identify major and minor hydrogeologic units and distinguishing features, namely, correlation markers. Some of the wells used for correlation have had extensive hydraulic testing, which some of the annotations describe. These logs, like the ones from the RASA studies, should only be considered intermediate correlation logs used to select major and minor units in the Floridan and Southeastern Coastal Plain aquifer systems. Handwritten designations of hydrogeologic and geologic units annotated on geophysical logs may or may not match the final correlation published in future USGS reports and should therefore be used with caution.

The database also contains scanned images of the original, or best available copy, of oil and gas logs obtained from State geological surveys, oil and gas offices, and from the offices of the USGS. The collection of logs from Florida and Alabama in the database represent only a small part of the total number of logs that are currently available. No oil and gas logs were scanned for South Carolina because a sufficient number of logs for this area were already available from the files of the USGS.

One set of oil and gas logs was obtained from the files of the Georgia Environmental Protection Division (GAEPD) in Atlanta, Georgia and includes nearly all of the logs that were available for the Georgia Coastal Plain as of December 2010. In cases where the original logs could not be located from the GAEPD files, available copies of the logs at the USGS Georgia Water Science Center were scanned.

A second set of logs was obtained from the files of the Oil and Gas Program of the Florida Department of Environmental Protection that were scanned during March 2011. Because of the large number of logs available from this office, only a select number were scanned for this project. As a starting point, borehole geophysical logs for wells that were also used in the RASA studies were reviewed to determine if higher-quality images of the induction or electric log were available and if any additional logs (such as sonic, density, and neutron porosity) not part of the RASA log collection were available. Following this review, additional log data were scanned to fill in data gaps and to increase the number of wells having both induction and sonic logs that were needed for the brackish water assessment. In Alabama, the same approach was taken; wells that were used for the RASA study were scanned first, followed by the addition of wells having both induction and porosity logs that could be used for the brackish-water assessment. The geophysical log database also contains scanned images of logs collected by the USGS Southeast Region Logging Service, which operated from the 1970s through latter part of the 1990s, mostly for groundwater-related studies in the southeastern United States. Copies of these logs were obtained from offices of the USGS across the region. Because the USGS logging service used a color plotter, most of the logs from this program were scanned into color images so that the individual curves can be differentiated on the log plots. Only the deeper USGS southeast region logging service logs were scanned for this study. Additional logs collected by the USGS between 1995 and 2012 using portable logging equipment also are included in the database.

Types of Geophysical Logs and Other Data in the Database

The geophysical log database mostly contains scanned images of electric logs, induction-electric logs, induction laterologs, induction-spherically focused logs, borehole-compensated sonic logs, borehole-compensated neutron and density logs, gamma-ray logs, caliper logs, flowmeter logs, fluid resistivity and temperature logs, and short/long normal resistivity logs. The database also contains a variety of logs collected by the USGS Southeast Region Logging Service including long- and short-normal resistivity, focused resistivity, acoustic velocity, gamma ray, gamma-gamma (density), neutron, fluid temperature, fluid resistivity, flowmeter, and caliper logs. Table 1 provides a complete list of the log types and codes used for different types of logs in the database. The database also includes geologic descriptions of well cuttings, paleontological reports, driller's logs, mudlogs, and handwritten notes.

Table 1. Codes used for different types of logs in database.

[AM, electrode spacing; K, potassium; Th, thorium; U, uranium]

Code	Description	Code	Description
ACVEL	Acoustic velocity	ILD	Induction log deep
BHCSONIC	Borehole compensated sonic log	ILM	Induction log medium
CAL	Caliper log	INDU	lnduction log
CARBONATE	Carbonate analysis log	LAT	Lateral log (unspecified)
CBL	Cement bond log	LAT6	6-foot lateral log
CCL	Casing collar log	LITHO	Lithology log (unspecified, geologist, drillers, etc.)
COMPOSITE	Composite log, usually merged from several logs	LL	Laterolog (unspecified depth of penetration)
COND	Conductivity log	LL3	Laterolog 3 (shallow focused resistivity)
CORE	Core log	LL6	Laterolog 6 (shallow focused resistivity)
DEN	Density log	LL8	Laterolog 8 (shallow focused resistivity)
DENLITHO	Litho density log (contains PE)	LN	Long normal resistivity log (usually AM=64 inches)
DI	Dual induction log	LSDD	Linespeed—flowmeter trolling down (pumped/flowing
DILL	Dual induction laterolog	LSDU	Linespeed—flowmeter trolling up (pumped/flowing)
DOCS	Documents, various types of files	LSPE	Linespeed (unspecified)
DRILLERS	Drillers log	LSSD	Linespeed—flowmeter trolling down (unpumped)
DRILLTIME	Drilling time log	MILL	Micro laterolog
DST	Drill stem test	MUDLOG	Mud log (service co. lithology, gas, etc.)
DT	Delta T—sonic travel time (usually compensated)	NEU	Neutron porosity log
DTEM	Temperature differential	NMR	Nuclear magnetic resonance log
DYND	Flowmeter (trolling down) pumped/flowing	PALEO	Paleontological information
DYNU	Flowmeter (trolling up) pumped/flowing	PE	Photo electric log
ELOG	Electric log (SP, LN, SN, lateral resistivity)	PERF	Perforation log
FLCOND	Fluid conductivity (flow conditions unspecified)	PUMPING	Indicates log collected during pumping
FLCP	Fluid conductivity—pumped or flowing	R8	Resistivity log (normal) AM=8 inches
FLCU	Fluid conductivity—unpumped or not flowing	R32	Resistivity log (normal) AM=32 inches
FLOWMETER	Flowmeter	RES	Single point resistance or unspecified resistance log
FLRES	Fluid resistivity log	RHO8	Bulk density
FLRP	Fluid resistivity log—pumped or flowing	SFL	Sperically focused resistivity log
FLRU	Fluid resistivity log—unpumped or not flowing	SN	Short normal resistivity log (usually AM=16 inches)
FLTEMP	Fluid temperature log	SP	Spontaneous potential log
FluidLogs	Fluid type of logs, unspecified types	SPHI	Sonic porosity log
FMS	Indicates annotated correlation log	SPINNER	Flowmeter log, spinner tool
FOCRES	Focused resistivity log (guard)	SPR	Single point resistance
FRES	Fluid resistivity log (flow conditions unspecified)	STATIC	Log collected during static, non-pumping condition
FSD	Flowmeter log-trolling down (unpumped/not flowing)	TEP	Fluid temperature log (pumped/flowing)
FVEL	Flowmeter log--trolling direction unspecified	TEU	Fluid temperature log (unpumped/not flowing)
GAMM	Gamma ray log	UTS	Flowmeter—(trolling up) unpumped/not flowing
GAMGAM	Gamma gamma density log	WATER	Water sample analysis document
GAMMASPEC	Spectral gamma ray log (may have K, Th, and U curves)	XCAL	X-caliper (or XYCAL)
GEOLOGIST	Geologist log	YCAL	Y-caliper (or XYCAL)

Unique Well Identifiers

All of the wells in the database are designated with a unique well identifier (UWI). In the RASA studies, Miller (1986) designated the wells using a "State and county" abbreviation followed by a sequential project number within the county. For example, GA-GLY9 is the identifier used for the ninth well in Miller's database for Glynn County, Georgia. The identifiers used in Miller (1988) are consistent with the digital version of this database recently compiled by Bellino (2011) and are included in this database.

During this study, however, the UWI of Miller (1986) was changed to match the UWI used by the State survey permit programs. Although Miller's original UWI is maintained in the database, these identifiers are not used for file naming (discussed later). In Florida, permitted oil and gas test wells were designated with a "P" followed by the associated permit number (P1, for example). In Georgia, permitted oil and gas logs were designated with "GGS" followed by the number assigned by the Georgia Geological Survey (GGS3114, for example). A few oil and gas test wells in Georgia that do not have an assigned GGS number were designated as "DP" followed by the Georgia Environmental Protection Division permit number. In Alabama, permitted oil and gas test wells were designated with "AP" followed by the permit number (AP1111, for example). Reassigning the UWIs for the permitted oil and gas programs made it easier to link the well data with the established State GIS datasets and provided a more consistent methodology for adding new wells into the database without assigning a project-specific well number. Additionally, the State and local identifiers make it easier to compare wells in previously published reports of the State surveys and water-management districts. Similarly, well data obtained from the water management districts in Florida were assigned UWIs that have been in common usage in each district.

File Naming Convention

As the files were being scanned, each file was given a standard file name, starting with the UWI, followed by log type and the top and bottom of the logging interval. The UWI is separated from the rest of the file name by an underscore (fig. 3). For the middle part of the file name, log codes from table 1 are used to indicate the types of logs contained in the log image or file. In all but one of the examples shown in figure 3, only one log code per file is listed. Depending on the type of log, however, some files have multiple log codes that represent the various types of logs contained in the file. Furthermore, each log code may represent one or several curves contained in the geophysical log file. For example, the dual induction laterolog (DILL) usually contains a deep induction, medium induction, shallow laterolog, and spontaneous potential curves. Also included in the filename is information on the top and bottom of the logged interval, which may be represented by several logging runs. Per convention, the "top" and "bottom" listed in the database and used in the file name are the shallowest depth reading from the first logging run and the deepest reading from the last logging run was used in the file name and listed as the "top" and "bottom" of the logging interval in the database. A log may be listed more than once if it has been digitized into an LAS file. The ".LAS" extension designates the file uses the log ASCII standard format where the data is stored following digitizing. The LAS files may contain either a partial or complete digitized file of the original image. Unnecessary curves contained in several logs (for example, gamma ray may be present in both the DILL and BHCSONIC) may only be digitized from one of the log images. Logs may only be partially digitized depending on the needs of the project.

Annotations

Some of the logs contain annotations and markings that are described in this section. As mentioned above, this information should be used with caution, because it may differ from the final picks published in the RASA studies by Miller (1986) and Renken (1996). On the RASA logs, colored pattered tapes were used in the margins to indicate time-stratigraphic units (fig. 4). The time-stratigraphic boundaries were determined by either diagnostic fauna or correlation of log patterns to one or more wells containing paleontology data available at the time of the RASA studies. Some of the logs have a lithology column that shows the major rock types (sand, shale, limestone, and salt) and minor trace components (phosphate, lignite, glauconite). The lithology noted on these logs is based entirely on examination of drill cuttings (James A. Miller, U.S. Geological Survey, retired, oral commun., 2012). For wells in Florida, the Florida Geological Survey database may have additional descriptions that supersede or supplement the lithologic descriptions noted on the logs (http://www.dep.state.fl.us/geology/gisdatamaps/litholog-temp.htm).

Microfauna considered to be age-diagnostic when the logs were correlated are shown on some of the annotated logs in the database. For reference, these include Tertiary index fauna that are listed in Miller (1986) (table 2) and Cretaceous fauna that are characteristic for these rocks contained in files of the USGS (table 3).

File name	File description and type
P403_DILL_3090_9669.tif	Dual induction laterolog (TIF)
P403_DILL_3090_9669.las	Dual induction laterolog (LAS)
P403_BHCSONIC_3090_9668.tif	Borehole compensated sonic (TIF)
P403_BHCSONIC_3090_9668.las	Borehole compensated sonic (LAS)
19E043_GAMGAM_160_964.tif	Gamma-gamma density (TIF)
19E043_GEOLOGIST.pdf	Geologist log (PDF)
19E043_LN_SN_SP_190_954.tif	Long normal, short normal, spontaneous potential (TIF)

UWI Logcodes Top Bottom

Figure 3. Partial listing of files for P403, Sun Oil Co. Shepard Dairy Inc. #1, Polk Co. Florida, and 19E043, USGS test well, Lowndes County, Georgia, showing file naming conventions. [UWI, unique well identifier; logcodes, type of log, see table 1; top, shallowest reading in feet below measuring point; bottom, deepest reading in feet below measuring point]

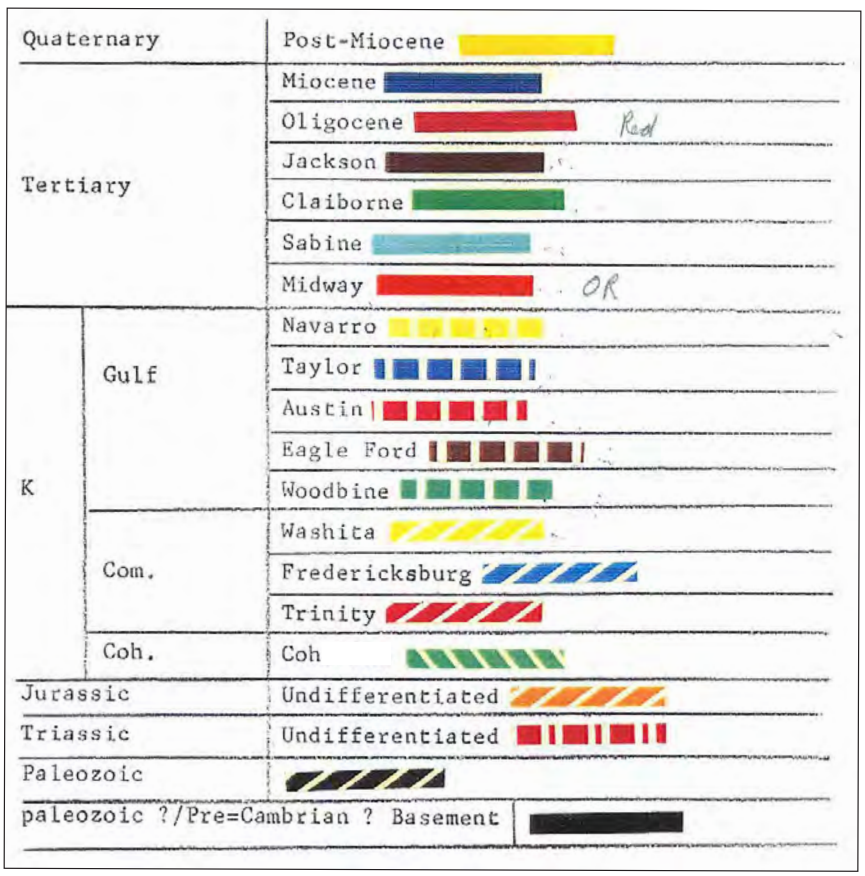

Figure 4. Copy of explanation for colored and patterned tapes used along the left margin of logs that represent interpretation of time-stratigraphic units by J.A. Miller (U.S. Geological Survey, unpub. data, 1970–1986).

Table 2. Microfauna characteristics of several Tertiary units in the study area (from Miller, 1986).

Miocene Series
Amphistegina chipolensis Cushman and Ponton
Amphistegina lessoni d'Orbigny
Bolivina floridana Cushman
Bolivina marginata multicostata Cushman
Elphidium chipolensis (Cushman)
Sorites sp.
Aurila conradi (Howe and McGuirt)
Hemicythere amygdula Stephenson
Oligiocene Series
Pararotalia byramensis Cushman
Miogypsina sp.
Pulvinulina mariannensis Cushman
Robulus vicksburgensis (Cushman) Ellisor
Palmula caelata (Cushman) Israelsky
Globigerina selli (Borsetti)
Lepidocyclina leonensis Cole
Lepidocyclina parvula Cole
Aurila kniffeni (Howe and Law)
Pararotalia mexicana mecatepecensis Nuttall
Eocene Series
Late Eocene
Bulimina jacksonensis Cushman
Robulus gutticostatus (Gumbel) var. *cocoaensis* (Cushman)
Amphistegina pinarensis Cushman and Bermudez var. *cosdeni* Applin and Jordan
Lepidocyclina ocalana Cushman
Lepidocyclina ocalana floridana Cushman
Eponides jacksonensis (Cushman and Applin)
Gyroidina crystalriverensis Puri
Globigerina tripartita Koch
Operculina mariannensis Vaughn
Cytheretta alexanderi Howe and Chambers
Clithocytheridea caldwellensis (Howe and Chambers)
Clithocytheridea garretti (Howe and Chambers)
Jugosocythereis bicarinata (Swain)
Haplocytheridea montgomeryensis (Howe and Chambers)
Asterocyclina sp.
Middle Eocene
Asterigerina texana (Stadnichencol)
Dictyoconus sp.[1]
Spirolina coreyensis (Cole)
Lituonella floridana (Cole)

Eocene Series (Continued)
Middle Eocene (Continued)
Discorbis inornatus Cole
Valvalina cushmani Applin and Jordan
Valvulina martii Cushman and Bermudez
Discorinopsis gunteri[1] Cole
Fabularia vaughani Cole and Ponton
Textularia coreyensis Cole
Gunteria floridana Cushman and Ponton
Pseudorbitolina cubensis Cushman and Bermudez
Globorotalia bullbrooki Bolli
Amphistegina lopeztrigoni Palmer
Ceratobulimina stellata Bandy
Globorotalia spinulosa Cushman[2]
Clypeina infundibuliformia Morellet and Morellet (alga)
Leguminocythereis petersoni Swain
Lepidocyclina antillea Cushman (=*L. gardnerae* Cole)
Early Eocene
Miscellanea nassauensis Applin and Jordan
Helicostegina gyralis Barker and Grimsdale[3]
Lockhartia sp.
Globorotalia formosa gracilis Bolli
Globorotalia subbotinae Morozova
Globorotalia wilcoxensis (Cushman and Ponton)
Pararotalia trochoidiformis (Lamarck)
Brachycythere jessupensis Howe and Garrett
Haplocytheridea sabinensis (Howe and Garrett)
Pseudophragmina (Proporocyclina) cedarkeyensis Cole
Paleocene Series
Globorotalia pseudomenardii Bolli
Borelis floridanus Cole
Borelis gunteri Cole
Valvulammina nassauensis Applin and Jordan
Globorotalia angulata (White)
Globorotalia pseudobulloides (Plummer)
Cythereis reticulodacyi Swain
Krithe perattica Alexander
Trachylebris prestwichiana (Jones and Sherborn)
Globorotalia velascoensis (Cushman)

[1]Locally these species may also occur in rocks of Oligocene age.

[2]Occurs locally in rocks of late early Eocene age.

[3]Occurs locally in the lower part of the middle Eocene.

Table 3. Microfauna characteristics of the Cretaceous units in the study area (from James A. Miller, U.S. Geological Survey, unpub. data, 1970–1986).

Cretaceous—Navarro
Vaughanina cubensis Palmer
Lepidorbitoides nortoni (Vaughan)
Rudistid (pelecypod) fragments
Torrenis sp.
Sulcoperculina cosdeni Applin and Jordan
Cretaceous—Taylor
Bolivinoides decoratus (Jones)
Stensionina americana Cushman and Dorsey
Marssonelle oxycona (Reuss)
Dorothia glabrella Cushman
Globotruncana ventricosa White
Bolvina incrassata Reuss
Globotruncana elevata (Brotzen)
Planoglobulina glabrata (Cushman)
Anomalina scholtzensis (Cole)
Brachycythere sphenoides (Reuss)
Praebulimina carseyae (Plummer)
Cretaceous—Austin
Globotruncana carinata Dalbiez
Globotruncana concavata (Brotzen)
Globotruncana coronata Bolli
Globotruncana renzi Gandolfi
Globotruncana sigali Reichel
Planulina austiniana Cushman
Planulina texana Cushman
Kyphopyxa christneri (Carsey)
Veenia paratriplicata (Swain)
Cythereis bicornis Isrealsky
Cythereis hannai Isrealsky
Cretaceous—Eagle Ford
Planulina eaglefordensis (Moreman)
Rotalipora Cushmani (Morrow)
Cretaceous—Eagle Ford (Continued)
Rotalipora greenhornensis (Morrow)
Cythereis fredericksburgoides
Cythereis eaglefordensis Alexander
Haplocytheridea lunarea Swain and Brown
Ammobaculites sp.
Globotruncana helvetica Bolli
Cretaceous—Woodbine
Rotalipora appenninica (Renz)
Schuleridea washitaensis (Alexander)
Paracyprides? Graysonensis (Alexander)
Cythereis quadrialara Swain
Eocytheropteron semiconstructum Alexander
Cretaceous—Fredricksburg
Lituola subgoodlandensis (Vanderpool)
Coskinolinoides texanus Keijzer
Cythereis cf. sandigel Alexander
Cretaceous—Trinity
Orbitolina texana (Roemer)
Dictyoconus floridanus (Cole)
Fabanella lanceolata (Swain)
Fabanella leguminoidea (Swain)
Fabanella tumidosa (Swain)
Schuleridea anterofossulata Swain and Brown
Schuleridea hatterasensis Swain
Dolocytheridea hilseana (Roemer)
Pontocyprella suprajurassica Oertli
Choffatella decipiens Schlumberger
Cythereis hawleyi Alexander
Cretaceous—Coahuila
Hutsonia aff. Blandoidea Swain and Brown
Vernoniella cf. sequana Oertli
Eocytheropteron aff. Vasseyensis Stchepinsky

Database File Information

The database consists of site and file lists in Microsoft Excel and plain ASCII formats (comma delimited text-CSV-files). The Excel file format contains a link field that can be used to access individual files over the Internet.

The database contains two primary tables (files):

- LogDB_WellList—A listing of wells that have logs in the database including the latitude, longitude, and the altitude of the log measuring point.
- LogDB_FileList—A listing of logs and related files for each well pointing to a download.

A listing of the fields in these files is provided in table 4. Blank fields occur where data were not available, incomplete, or not applicable. Inconsistent case in character fields is an artifact of the different source data used.

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Renken, R.A., 1996, Hydrogeology of the Southeastern Coastal Plain aquifer system in Mississippi, Alabama, Georgia, and South Carolina: U.S. Geological Survey Professional Paper 1410–B, 101 p., 142 pls.

Table 4. Listing of files and fields in the geophysical log database.

[—, none; URL, uniform resource locator; USGS, U.S. Geological Survey]

Table	Field	Data type	Description	Note
LogDB_FileList	state	Character	State name abbreviation	OS, offshore and not associated with a State.
LogDB_FileList	county	Character	County name	OFFSHORE is not associated with a county.
LogDB_FileList	uwi	Character	Unique well identifier	Links to log_wells_master table
LogDB_FileList	file_name	Character	File name	See file-naming convention section of report.
LogDB_FileList	log_codes	Character	Short abbreviations for log types found in a file	See table 1 for complete explanation.
LogDB_FileList	top_log_interval	Numeric	Top of logging interval, in feet from measuring point (shallowest reading of uppermost logging run)	—
LogDB_FileList	bot_log_interval	Numeric	Bottom of logging interval in feet from measuring point (deepest reading of lowermost logging run)	—
LogDB_FileList	file_extenison	Character	File extension	A group of letters (typically 3) that follow the last period in a file name, indicating the format of the file.
LogDB_FileList	log_date	Character	Date of log (if available)	The date of the last logging run if multiple runs, or representative date of logs used to create composite logs.
LogDB_FileList	annotation	Character	Flag indicating person or project log was annotated	—
LogDB_FileList	url	Character	URL path to file download	—
LogDB_FileList	link	Character	Web link to the file	This is only true for the .xls file. In the .csv file, the URL and link field contents are the same.
LogDB_FileList	state	Character	State name abbreviation	OS, offshore and not associated with a State.
LogDB_FileList	county	Character	County name	OFFSHORE is not associated with a county.
LogDB_WellList	uwi	Character	Unique well identifier (UWI)	Primary key, links to UWI in log_files master
LogDB_WellList	latitude_dd	Numeric	Latitude, in decimal degrees	—
LogDB_WellList	longitude_dd	Numeric	Longitude, in decimal degrees	—
LogDB_WellList	coord_datum	Character	Coordinate datum	North American Datums of 1927 and 1983 ((NAD 27 and NAD 1983)
LogDB_WellList	mp_elev	Numeric	Elevation of measuring point, in feet	—
LogDB_WellList	mp_reference	Character	Measuring point reference (kelly bushing, drilling floor, etc.)	KB, kelly bushing, DF, drilling floor, GL, ground level
LogDB_WellList	mp_vdatum	Character	Measuring point datum	National Geodetic Vertical Datum of 1929 (NGVD 29)
LogDB_WellList	total_depth	Numeric	Total depth, in feet	Total depth of well or test hole

Table 4. Listing of files and fields in the geophysical log database.—Continued

[—, none; URL, uniform resource locator; USGS, U.S. Geological Survey]

Table	Field	Data type	Description	Note
LogDB_WellList	fips_cd	Character	State-county Federal Information Processing Standard (fips) code	—
LogDB_WellList	usgs_site_no	Character	USGS site number	National Water Information System site number
LogDB_WellList	usgs_station_name	Character	USGS station name	National Water Information System station name
LogDB_WellList	rasa_id	Character	USGS Regional Aquifer-System Analysis (RASA) Program	Miller, 1986, 1988
LogDB_WellList	operator	Character	Drilling operator	Names are based on incomplete records.
LogDB_WellList	well_nm	Character	Well name or lease	
LogDB_WellList	completion_dt	Character	Well completion date or rig release date	These are best available data, but incomplete.
LogDB_WellList	source	Character	Source of information	—
LogDB_WellList	well_type	Character	Type of well (oil test, injection, water)	—
LogDB_WellList	service_co	Character	Service company code used in log_files_master table	—

Manuscript approved on March 19, 2013

Edited by Michael Deacon
Layout by Caryl J. Wipperfurth
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USGS

Williams and others—**Geophysical Log Database for the Floridan Aquifer System and Southeastern Coastal Plain Aquifer System**—Data Series 760, ver. 1.1

ISSN 2327-638X (online)
http://dx.doi.org/10.3133/ds760