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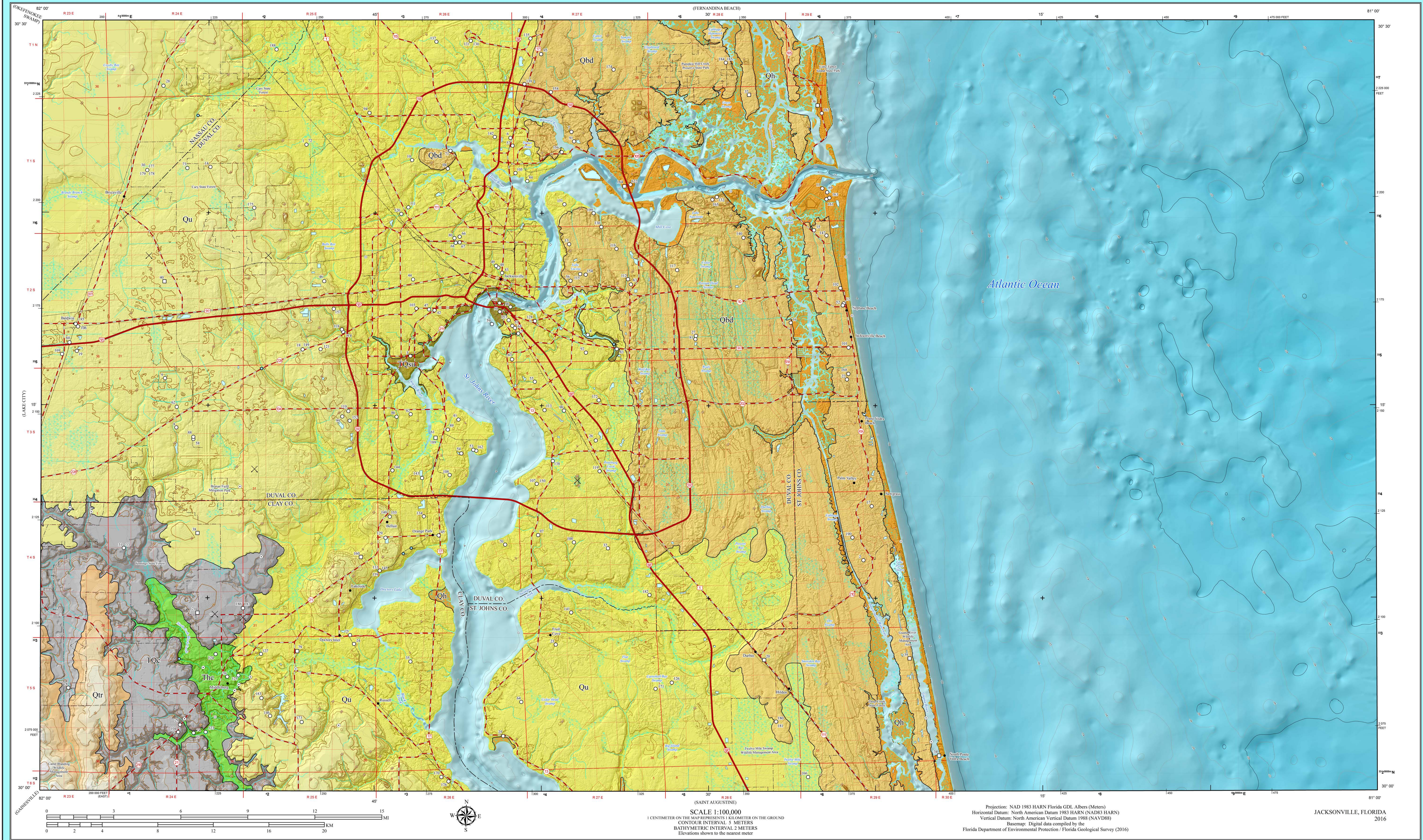


OPEN-FILE MAP SERIES 108, Plate 1
GEOLOGIC MAP OF THE USGS JACKSONVILLE
30 X 60 MINUTE QUADRANGLE, NORTHEAST FLORIDA
2016

BY
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Holocene Sediments
Sediments mapped as Holocene (Qh) may include quartz sands, marls, organics, humate, minor carbonate sands, and mud. They may also include fresh-water mollusk shells. Within the study area, they occur as modern barrier islands and floodplain deposits in the vicinity of the St. Johns, Guana, and Tolomato rivers, and along the east coast.

Quaternary Beach Ridge and Dune
Quaternary beach ridge and dune sediments (Qbd) are a subdivision of the undifferentiated Quaternary sediments that are noted on the basis of surficial expression of relic beach ridges and dunes. While not a formally recognized lithostratigraphic unit, Qbd are mapped following the convention of Scott et al. (2001)* in order to facilitate a better understanding of Florida's geology. Beach ridge and dune sediments are dominantly siliclastic sands and are unconsolidated to poorly consolidated. Organics typically occur as disseminated organic matrix, roots and plant debris, carbonized remains of charcoal.

Undifferentiated Quaternary Sediments
While not a formally recognized lithostratigraphic unit, undifferentiated Quaternary sediments (Qu) are mapped following the convention of Scott et al. (2001)* in order to facilitate a better understanding of Florida's geology. The undifferentiated Quaternary sediments present in the mapped area may be highly variable in thickness. Generally, these undifferentiated Quaternary sediments consist of white to gray clay to coarse-grained, clean to clayey unfossiliferous sands, sandy clays and clays with variable admixtures of organics.

Trail Ridge Sands
Sediments mapped as Quaternary Trail Ridge Sands (Qtr) include heavy-mineral bearing sediments associated with Trail Ridge, but are not limited to just the ridge itself. While not a formally recognized lithostratigraphic unit, they are mapped following the convention of Scott et al. (2001) in order to facilitate a better understanding of Florida's geology. These sediments consist of unconsolidated to slightly indurated white to tan, medium to fine quartz sands. They contain an average of three percent heavy minerals, of which approximately 45 percent are titanium-rich minerals consisting of ilmenite, leucosene, and rutile. Other common heavy minerals in the unit include staurolite, zircon, kyanite, sillimanite, corundum, topaz, and tourmaline.

Undifferentiated Tertiary/Quaternary Shelly Sediments
Undifferentiated Pliocene/Pleistocene shelly sediments (TQsu) typically consist of fine-to-medium quartz sand with variable amounts of calcifitite, fossil shells, and clay. Fossil shells can be weathered, fragmented, or whole and can be the dominant lithologic component of the unit. Gray clay is a more common matrix material in TQsu in the western portion of the study area, while calcifitite matrix is more common in the eastern portion of the study area, especially near the coast. Clay content ranges from a trace amount up to 15 percent. Other accessory minerals may include calcite, argonite, mica, heavy minerals, and phosphate. Colors range from light gray to light olive gray. While not a formally recognized lithostratigraphic unit, TQsu sediments are mapped in order to facilitate a better understanding of Florida's geology.

Cypresshead Formation
The Pliocene/Pleistocene Cypresshead Formation (TQc), named by Huddleston (1988), is a mottled reddish-brown to reddish-orange to white, unconsolidated to poorly consolidated, fine-to very coarse-grained, variably clayey to clean quartz sand. Cross-beds are common within this formation. Discoid quartzite pebbles, heavy minerals, mica, and ghosts of nearshore marine mollusks are rarely present. The Cypresshead Formation is present in the southwestern portion of the study area along the southern Duval Upland, east of Trail Ridge (see OFMS 108, Plate 3 for more discussion).

Coosawatchie Formation (Hawthorn Group)
The Middle Miocene Coosawatchie Formation (The) consists of quartz sand, dolomite, limestone and clay. The unit ranges in color from yellowish gray to light gray to olive gray. The most common lithology in the upper section of the unit is a sandy to very sandy dolomite which may be interbedded with quartz sands and clays (Scott, 1988). Quartz sand and clay dominate and dolomites become subordinate in the lower portion of the formation. The quartz sands are fine- to medium-grained, generally phosphatic, clayey and dolomitic. On occasion, shell fragments, consisting primarily of leached and weathered mollusk fragments, are found in the upper portion of the unit. In many instances, the sands grade into dolomites and clays. Clay content is variable and may range from five to more than 30 percent (Scott, 1988). Phosphate content is highly variable, ranging from a trace to more than 20 percent. Phosphate grains, ranging from sand to pebble-sized, while not common in the unit, may be present.

LEGEND
Primary highway
Secondary highway
Light duty road, principal street
Railroad
County boundary
National or state reservation boundary
Contours (5m)
Index
Intermediate
Bathymetry (2m)
Index
Intermediate

20' Core
14' Cuttings
M-Series sample
Outcrop/exposure
Borrow pit
Spring
City/town
7.5 Minute quadrangle tick marks
7.5 Minute quadrangle

River or stream
Lake, pond or river
Wetland
U.S. Public Lands Survey Township Range
U.S. Public Lands Survey Section

*Note: See OFR 105 for references
**Wells numbered 1 - 40 are used in cross-sections on OFMS 108, Plate 2
***Refer to Open-File Report 105, Appendix A for well information

Basemap Coordinate Explanation
10,000-meter grid, zone 17: Universal Transverse Mercator
25,000-foot grid ticks based on Florida coordinate system, east and west zones
1:600 = 1:600,000 FEET EAST

1:24,000 QUADRANGLE GRID

BRUCEVILLE	DUNMORE	TROUT RIVER	EASTPORT	MANFORD
BALDWIN	MARETTA	JACKSONVILLE	ALBINGTON	JACKSONVILLE BEACH
EPITONE	JACKSONVILLE HIGHS	ORANGE PARK	DAYMOND	PALM VALLEY
MIDDLEBURG SW	MIDDLEBURG	FLORISSIMO ISLAND	ORANGODALE	DURBIN
				SOUTH PONTA VEDRA BEACH

ADJOINING MAPS

1	2
3	4
5	6

1 Okefnokee Swamp
2 Fernandina Beach
3 Lake City
4
5 Gainesville
6 Saint Augustine

For more information or to order maps contact:
Librarian, Florida Geological Survey
3000 Commonwealth Blvd., Suite 1
Tallahassee, FL 32303
850.617.0316
<http://www.dep.state.fl.us/geology/programs/statemap.htm>

This map was created using Florida Department of Environmental Protection (FDEP) databases and data obtained by the Florida Geological Survey (FGS). It was completed August 31, 2016, by the FDEP/FGS, Geological Investigations Section. This document was prepared for the presentation of the geologic information shown and is not intended to replace site-specific or use-specific investigations. The FGS does not guarantee this document to be free from errors or inaccuracies and disclaims any responsibility or liability for inappropriate change of scale, interpretations, or decisions based thereon. Cooperatively funded by the FGS and the U.S. Geological Survey (USGS), National Cooperative Geologic Mapping Program, under USGS assistance award number G15AC00309. The views and conclusions in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S.