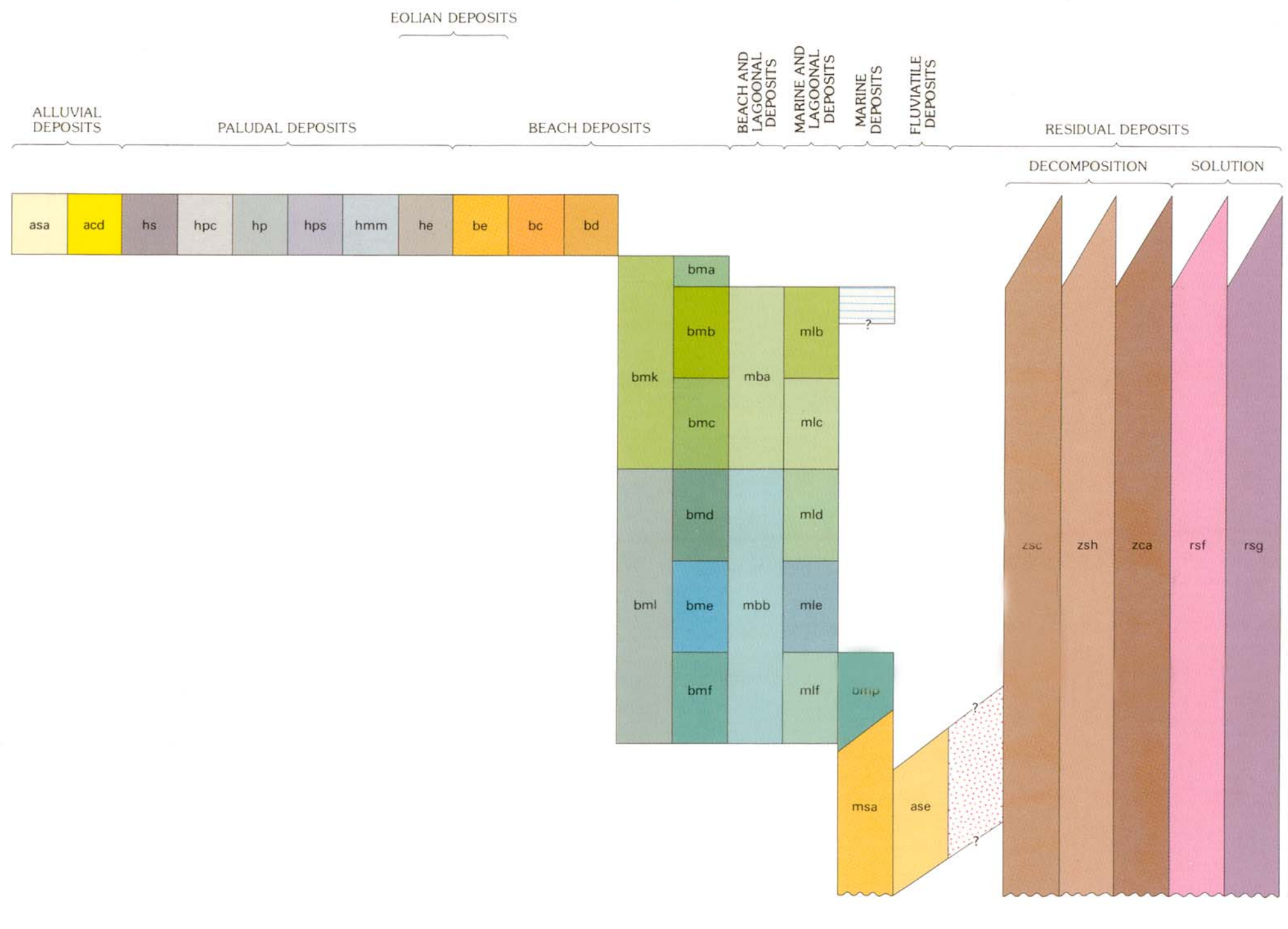




## LIST OF MAP UNITS

HOLOCENE	
ana	ALLUVIAL GRAVELLY SAND
and	ALLUVIAL CLAY AND SILT
hs	SWAMP DEPOSIT
hpc	FRESHWATER MARSH PEAT AND CLAY
ht	PEAT
hps	SALINE MARSH DEPOSIT
hsm	COSTAL MARSH SWAMP DEPOSIT
he	SWAMP DEPOSIT AND DUNE SAND
be	BEACH AND DUNE SAND
bc	BEACH SHELL-FRAGMENT AND SHELL SAND
bm	BEACH MUD
LATE PLEISTOCENE	
an	ANASTASIA FORMATION
bma	BEACH AND NEAR-SHORE MARINE SAND
bmb	BEACH AND NEAR-SHORE MARINE SAND
mb	MARINE SILT AND CLAY
LATE PLEISTOCENE TO MIDDLE PLEISTOCENE	
bmk	BEACH AND NEAR-SHORE SAND, WEATHERED AND OXIDIZED
mba	BEACH AND MARINE SAND AND LAGOONAL DEPOSITS, UNDIFFERENTIATED
MIDDLE PLEISTOCENE	
bmc	BEACH AND NEAR-SHORE MARINE SAND
mic	MARINE SILT AND CLAY
bmd	BEACH AND NEAR-SHORE MARINE SAND
mid	MARINE SILT AND CLAY
bme	BEACH AND NEAR-SHORE MARINE SAND
mle	MARINE SILT AND CLAY
MIDDLE PLEISTOCENE TO EARLY PLEISTOCENE	
bmi	BEACH AND MARINE SAND AND LAGOONAL DEPOSITS, UNDIFFERENTIATED
mbu	BEACH AND MARINE SAND AND LAGOONAL DEPOSITS, UNDIFFERENTIATED

## CORRELATION OF MAP UNITS



#### DESCRIPTION OF MAP UNITS

mlf	MARINE SILT AND CLAY
<b>EARLY PLEISTOCENE AND PLOCENE</b>	
bmp	BEACH AND NEAR-SHORE MARINE SAND AND SILT
msa	MARINE AND ALLUVIAL SAND
lps	LAND PEBBLE PHOSPHATE DEPOSIT
<b>PLOCENE</b>	
ase	ALLUVIAL SAND
<b>QUATERNARY AND TERTIARY</b>	
zsc	SAND AND CLAY DECOMPOSITION RESIDUUM
zsh	MEDIUM TO FINE SILTY SAND AND SANDY SILT DECOMPOSITION RESIDUUM
zsa	SANDY CLAY DECOMPOSITION RESIDUUM
rsf	CLAYEY SAND SOLUTION RESIDUUM WITH CHERT BLOB
rsq	SANDY CARBONACEOUS CLAY SOLUTION RESIDUUM
BEACH RIDGES - Mapped along Atlantic coast and discontinuously along central carbonate	

## LATE PLEISTOCENE TO MIDDLE PLEISTOCENE

**BEACH AND MARINE SAND: WEATHERED AND OXIDIZED**—Light gray, fine-draining sand, composed of well-sorted, rounded to subangular, medium to coarse sand. Material under at depths of as much as 0.5 m by fine-scale sand compacted and mixed with insoluble clay, locally weakly to strongly cemented with calcareous concretions. Material is composed of much as 7 m of consolidated sand containing abundant but thin, platy, friable shales. Much of the sand has been eroded from the upper part of the deposit. Resulting in reduction of thickness by as much as 1.5 m. In places, the dissolved shell material has been incorporated with insoluble clay, forming a sandy, silty matrix. Thin, platy, friable shales, clayey sand, or shelly sand, often. Pleistocene beach-ridge deposits (bml) mapped only in Florida. Thickness 6–9 m.

**BEACH AND MARINE SAND AND LAGONAL, DEPOSITS: UNDIFFERENTIATED**—Light gray, fine-draining sand, composed of well-sorted, rounded to subangular, medium to coarse sand. Material is composed of much as 7 m of well-sorted sand, gray, poorly to well-sorted sand, silts, and clay, intermixed and interbedded. Locally includes thin stringers of well-sorted quartz pebbles and shell hash in the upper part of the deposit. Material also contains the includes thin stringers of beach sand and sandy, silty, friable shales and shelly sand. Pleistocene beach-ridge deposits. Mapped areas include small sand dune deposits (b), organic mud, shell debris, and evasive sand of Holocene age. Mapped only in Florida. In general, correlative with beach-ridge deposits (bml).

## MIDDLE PLEISTOCENE

**BEACH AND NEAR-SHORE MARINE SAND** (Barrier island facies of Pamlico Formation in Georgia)—Fine to medium quartz sand commonly leached throughout, deeply weathered to yellowish-red with brown or gray mottled horizons, and locally cemented with iron oxide. Where unweathered, white to gray, light-tan to yellowish-brown. Sand is well sorted to very well sorted; planar bedded or low-angle crossbedded; subhorizontal to fan and glacial channel and

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**Late Pleistocene**

- Trail Ridge sequence of Florida: Comprises a thick surface sand and underlying peat. The sand is white to light-yellow near surface, but becomes direction, orange to red or brown downward. Sand is very uniformly textured, medium to fine grained, crossbedded horizontally, usually dipping west, and loosely slightly cemented with iron oxide. Deposited in chiefly quartz, but locally included 3-4 percent of heavy minerals. Includes, limestone, iron, and monazite. Contains garnet, epidote, or hornblende, which are common constituents of marine sands so close tobe above it. The sand underlies Trail Ridge, a well preserved broad high ridge that trends south from Georgea for about 215 km along the axis of the Florida Peninsula. Shape and direction of crossbedding of sand indicates deposition as a gently barly southerly longshore current. On west slope of ridge, sand lies locally overlying by younger high-level sand (included in unit mb6).

**Pleistocene**

- QUATERNARY
- QUATERNARY
- QUATERNARY

**Early Pleistocene**

- Trail Ridge sequence of Florida: Comprises a thick surface sand and underlying peat. The sand is white to light-yellow near surface, but becomes direction, orange to red or brown downward. Sand is very uniformly textured, medium to fine grained, crossbedded horizontally, usually dipping west, and loosely slightly cemented with iron oxide. Deposited in chiefly quartz, but locally included 3-4 percent of heavy minerals. Includes, limestone, iron, and monazite. Contains garnet, epidote, or hornblende, which are common constituents of marine sands so close tobe above it. The sand underlies Trail Ridge, a well preserved broad high ridge that trends south from Georgea for about 215 km along the axis of the Florida Peninsula. Shape and direction of crossbedding of sand indicates deposition as a gently barly southerly longshore current. On west slope of ridge, sand lies locally overlying by younger high-level sand (included in unit mb6).

**EARLY PLEISTOCENE AND PIOCENE**

**BEACH AND NEAR-SHORE MARINE SAND AND PEAT (Trail Ridge sequence of Florida)**

The sand is white to light-yellow near surface, but becomes direction, orange to red or brown downward. Sand is very uniformly textured, medium to fine grained, crossbedded horizontally, usually dipping west, and loosely slightly cemented with iron oxide. Deposited in chiefly quartz, but locally included 3-4 percent of heavy minerals. Includes, limestone, iron, and monazite. Contains garnet, epidote, or hornblende, which are common constituents of marine sands so close tobe above it. The sand underlies Trail Ridge, a well preserved broad high ridge that trends south from Georgea for about 215 km along the axis of the Florida Peninsula. Shape and direction of crossbedding of sand indicates deposition as a gently barly southerly longshore current. On west slope of ridge, sand lies locally overlying by younger high-level sand (included in unit mb6).

GEORGIA

The Trail Ridge sequence as a whole is considered to be mostly early to middle Pliocene in age (Cooke, 1964, p. 121).

The maximum stand of sea level during deposition of the Calaca-heta Formation in southern Florida. Total thickness 16-30 m (WALSH, 1967, p. 143).

Upper part is white to light-yellow, fine to coarse, loose quartz sand, with occasional thin, conchoidal, light-colored, siliceous nodules, coarse to fine sand, and thin beds of white, highly lenticular, well-sorted fine quartz sand containing numerous brown shrimps. Locally contains thin beds of white, lenticular, well-sorted, coarse to fine sand and quartz pebbles, most not less than 2 cm in diameter, a few up to 4 cm. The sand is well-sorted, and the pebbles are well-sorted and rounded. The sand is collapsed into, karst terrain developed on limestone. Its distribution is coincident with, and forms an important part of Lake Wales Ridge (WALSH, 1967, p. 143).

The central divide of the Florida peninsula for 250-300 km. The sand is the principal part of marine terrace deposits. The sand is well-sorted, and the pebbles are well-sorted and rounded. The sand is collapsed into, karst terrain developed on limestone. Its distribution is coincident with, and forms an important part of Lake Wales Ridge (WALSH, 1967, p. 143).

It has been correlated with the Pleistocene Ciriñole Formation (Grogan and others, 1964; Priole, and others, 1965; White, 1970).

Assigned locally to the Pleistocene (Grogan and others, 1964). White assigned a Pleistocene Hemphillian age to P. C. Whitmore (Grogan and others, 1964; Priole, and others, 1965; White, 1970).

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QUATERNARY GEOLOGIC MAP OF THE JACKSONVILLE 4° x 6° QUADRANGLE, UNITED STATES

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