

# DIGITAL MAPPING TECHNIQUES 2026

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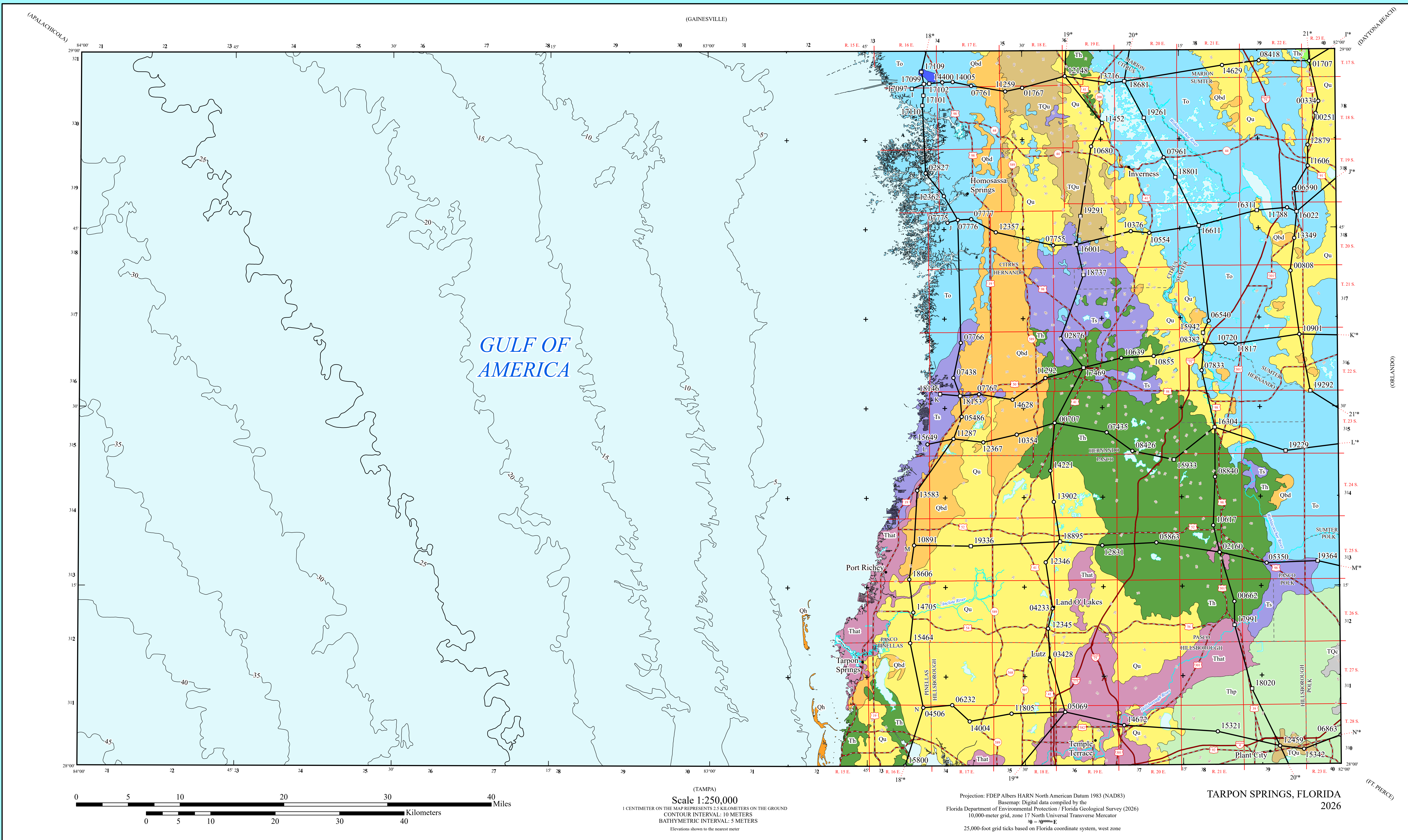
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# Regional Geologic Map Series: Tarpon Springs USGS 1° x 2° Quadrangle, Central Florida

## Plate 1: Geologic Map

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2026

DRAFT



This product was produced by compiling previously published geologic maps and geologic cross sections (Green, et al., 2011; Williams, et al., 2011; Green, et al., 2012a; Williams et al., 2012; Williams and Green, 2012; and Green, et al., 2012b). These prior map products were cooperatively funded by the FGS and the U.S. Geological Survey (USGS), National Cooperative Geologic Mapping Program, under USGS Assistance award numbers G10AC00426 and G1AC20418.

Locations were re-verified for all geologic cross section borholes and geologic cross sections were combined across multiple products to create complete edge-to-edge geologic cross sections for this product. Minor edge-matching and geologic contact adjustments were made as needed in order to reconcile geology affected by adjustments to borehole locations.

This compilation is designed to become part of a new regional geologic map series which will continue combining geologic maps and geologic cross-sections produced as Open-File Map Series under the STATEMAP Program and other FGS geologic mapping efforts. In order to compare with prior publications, the reader is directed to the hyperlinked references on this plate.

References:

- Green, R.C., Williams, C.P., Burdette, K.E., Bassett, S.W., Flor, A.D., and Paul, D.T., 2011, Geologic map of the eastern portion of the USGS Inverness 30 x 60 minute quadrangle, central Florida: Florida Geological Survey Open-File Map Series 102, scale 1:100,000, 3 plates. <https://doi.org/10.35256/OFMS102>
- Williams, C.P., Burdette, K.E., Green, R.C., Bassett, S.W., Flor, A.D., and Paul, D.T., 2011, Text to accompany geologic map of the eastern portion of the USGS Inverness 30 x 60 minute quadrangle, central Florida: Florida Geological Survey Open-File Report 96, 40 p. <https://doi.org/10.35256/OFR96>
- Williams, C.P., Green, R.C., Bassett, S.W., Hamon, L.M., and Flor, A.D., 2012, Geologic map of the western portion of the USGS Inverness 30 x 60 minute quadrangle, central Florida: Florida Geological Survey Open-File Map Series 103, scale 1:100,000, 3 plates. <https://doi.org/10.35256/OFMS103>
- Williams, C.P. and Green, R.C., 2012, Text to accompany geologic map of the western portion of the USGS Inverness 30 x 60 minute quadrangle, central Florida: Florida Geological Survey Open-File Report 97, 29 p. <https://doi.org/10.35256/OFR97>
- Green, R.C., Evans, W.E., III, Williams, C.P., Kromhout, C., Bassett, S.W., and Hamon, L.M., 2012a, Geologic map of the USGS Tarpon Springs 30 x 60 minute quadrangle, central Florida: Florida Geological Survey Open-File Map Series 104, scale 1:100,000, 3 plates. <https://doi.org/10.35256/OFMS104>
- Green, R.C., Evans, W.E., III, Williams, C.P., Kromhout, C., and Bassett, S.W., 2012b, Text to accompany geologic map of the USGS Tarpon Springs 30 x 60 minute quadrangle, central Florida: Florida Geological Survey Open-File Report 98, 40 p. <https://doi.org/10.35256/OFR98>
- Colquhoun, D.J., 1969, Coastal plain terraces in the Carolinas and Georgia, U.S.A.; in Wright, H.E., Jr., editor, Quaternary Geology and Climate: Volume 16 of the Proceedings of the VII Congress of the International Association for Quaternary Research, v. 16, p. 150-162.

**Holocene**

**Holocene sediments**  
**Qh** Sediments mapped as Holocene (Qh) may include quartz sands, marls, organics, and minor carbonate sands and mud. They may also include fresh-water gastropods and modern shells. Within the study area, these occur near and along the present coastlines in barrier islands on the Gulf of America.

**Holocene/Pleistocene**

**Quaternary beach ridge and dune**  
**Qbd** Sediments exhibiting discernible beach ridges and dunes (Qbd) have been mapped separately from Quaternary undifferentiated sediments. These sediments consist of light gray to tan, fine to medium quartz sand with a variable percentage of organic material.

**Quaternary undifferentiated sediments**  
**Qu** While not a formally recognized lithostratigraphic unit, Quaternary undifferentiated sediments (Qu) are mapped to facilitate a better understanding of Florida's geology. Quaternary undifferentiated sediments consist of white to gray to orange, fine- to coarse-grained, clean to clayey, unfossiliferous quartz sands, and sandy clays with variable admixtures of organics. These sediments occur in the northwest corner and along the eastern side of the mapped area.

**Pleistocene/Pliocene**

**Tertiary-Quaternary Undifferentiated Sediments**  
**TQu** White to gray to orange to blue-green, fine to coarse grained, clean to clayey unfossiliferous sands, sandy clays, and clays with variable admixtures of organics. Tertiary-Quaternary Undifferentiated sediments (TQu) are siliclastics that are separated from the Quaternary Undifferentiated Sediments solely on the basis of elevation (Scott, 2001). Pleistocene sea levels reached a maximum of approximately 100 feet (30.5 meters) above MSL (Colquhoun, 1969). These sediments are predominantly older than Pleistocene but include sediments reworked during the Pleistocene. This unit may include fluvial and aeolian deposits.

**Cypresshead Formation**  
**TQc** The Pliocene/Pleistocene Cypresshead Formation (TQc) 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-bedded sands and bimodal sand size distributions are common within this formation. Discoid quartzite pebbles, heavy mineral grains, mica, and ghosts of nearshore marine molluscs are often present. East of the St. Johns River, it typically becomes a more weathered, finer-grained, well-sorted sand and silt. In cores, the unit is often characterized by beds of fine grained, well sorted sand with thin layers of clay dispersed through the sand.

**Pliocene/Miocene**

**Hawthorn Group, Peace River Formation**  
**Thp** The middle Miocene to lower Pliocene Peace River Formation (Thp) is comprised of yellowish gray to olive gray, interbedded sands, clays, and carbonates with the siliclastic component being dominant. Phosphate sand and gravel are most common in the uppermost beds, although they are generally interspersed throughout the unit. The Peace River Formation contains a diverse fossil assemblage of marine and terrestrial fauna (e.g., shark teeth, ray spines, horse teeth, dugong, and whale ribs). Porosity types in the formation are generally intergranular.

**Miocene**

**Hawthorn Group, Undifferentiated**  
**Thh** Undifferentiated Hawthorn Group (Th) sediments are light olive gray and bluish gray in unweathered sections and brownish gray to grayish orange and reddish brown to reddish gray in weathered sections. They consist of poorly- to moderately-consolidated, clayey sands to silty clays, and relatively pure clays with minor phosphate due to leaching and transport. In addition to these clays, the present study noted that the unit also contains dolostols, dolostones, and variable (but typically low), concentrations of phosphatic sand with occasional phosphatic gravel. The clays are often expansive, but are, at times, silicified. Agatized corals and chert are also present.

**Hawthorn Group, Coosawhatie Formation**  
**Thc** The Middle Miocene Coosawhatie Formation (Thc) is exposed or lies beneath a thin overburden on the eastern flank of the Ocala Platform in the present study area. It typically ranges from a light gray to olive gray, poorly consolidated, variably clayey sand with minor dolomite, to an olive gray, poorly- to moderately-consolidated, slightly sandy, silty clay. The unit may contain 20 percent or more phosphate but generally has less than 10 percent phosphate.

**Miocene/Oligocene**

**Hawthorn Group, Arcadia Formation, Tampa Member**  
**That** The upper Oligocene to lower Miocene Tampa Member of the Arcadia Formation (That) varies from white to yellowish gray in color and ranges from a wackestone to packstone with varying amounts of quartz sand, silt, and clay phosphate (typically less than 3 to 5 percent), dolomite, chert, siliceous limestone and silicified corals are also present. Fossil molds of foraminifera, mollusks, gastropods and algae are all common within the Tampa Member. Pinkish gray to light olive gray dolostones also occur with a similar fossil assemblage and accessory mineral assemblage as the limestones. Thin sand and clay beds can be found intertenually within the unit. Porosity of the unit is generally intergranular and moldic.

**Oligocene**

**Suwannee Limestone**  
**Ts** The lower Oligocene Suwannee Limestone (Ts) consists of limestone (grainstone and packstone) in the study area. The unit is typically gray, tan, and yellowish gray, moderately to very well-indurated, finely to coarsely crystalline, with limited occurrences of fossiliferous limestone. Chert is occasionally present in the unit in minor amounts. Porosity types include intergranular and moldic. Sedimentary features include bioturbation and cross-bedding. Fossils present in the unit include mollusks, corals, echinoids (including the index fossil *Rhyncholampas goniatiti*), as well as abundant miliolids, and other benthic foraminifera such as *Dicorinopsis gunteri*, *Fallorella [Dicycocomus] cookei*, and *Fallorella [Cockinolia] floridana*.

**Eocene**

**Ocala Limestone**  
**To** The upper Eocene Ocala Limestone is white to cream, fine- to coarse-grained, poorly to well-indurated, moderately to well-sorted, fossiliferous limestone (wackestone, packstone, and grainstone). Fossils commonly include foraminifera, bryozoans, mollusks, and echinoids. Foraminifera present may include *Lepidocyclina ocala*, *Nannulites [Camerina] vanderstoki*, *Amphistegina pinarensis*, and *Nannulites [Operculinoides] ocala*. Algae and crustaceans may also be present.

**Avon Park Formation**  
**Tap** The Middle Eocene Avon Park Formation consists of cream to light brown to tan, poorly indurated to well-indurated, variably fossiliferous limestone (grainstone to wackestone, with rare mudstone). The limestones are interbedded with tan to brown, very poorly to well-indurated, very fine to medium crystalline, fossiliferous (molds and casts), vuggy dolostones. Fossils present in the unit include mollusks, foraminifera (*Spirulina coryensis*, *Litaneella floridana*, *Bolivina* sp., and *Cushmania [Dicycocomus] americana*), echinoids (*Neolanugum dalli*), algae, and carbonized plant remains.

**LEGEND**

- Primary highway
- Secondary highway
- Core
- Cuttings
- City
- USGS 1:24,000 Quadrangle Tick Mark
- River, stream, or canal
- County boundary
- Bathymetry (5m)
- Intermediate Index
- Contours (10m)
- Intermediate Index
- Cross section continuation
- U.S. Public Lands Survey Township/Range
- Wetland
- Water bodies
- Study Area, Plant City Quadrangle

NOTE: Cross sections continue on adjoining quadrangles

This map was created using Florida Department of Environmental Protection (FDEP) databases and data obtained by the Florida Geological Survey (FGS). 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 for inappropriate change of scale, interpretations, or decisions based hereon. The views and conclusions in this document are those of the compilers and authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Government.

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<https://floridadep.gov/fgs/research/content/statemap>

**GEOLOGIC TIMESCALE**

ERA	PERIOD	EPOCH	AGE (m.y.)	FORMATIONS	HYDRO. UNIT	
CENOZOIC	QUATERNARY	HOLOCENE	0.012	PEACE RIVER FORMATION	SUBSURFACE AQUIFER SYSTEMS (SSAS)	
		PLEISTOCENE	2.58	(MISSING)		
		PLIOCENE	3.6	(MISSING)		
	TERTIARY	NEOGENE	AVON PARK FORMATION	15.97	ARCADIA FORMATION	INTERMEDIATE-AQUIFER SYSTEM OR INTERMEDIATE-CONFINING UNIT (IAS/ICU)
			PEACE RIVER FORMATION	11.63	PEACE RIVER FORMATION	
			OCALA LIMESTONE	23.03	OCALA LIMESTONE	
		PALEOGENE	OCALA LIMESTONE	28.4	SUWANNEE LIMESTONE	
			OCALA LIMESTONE	33.9	SUWANNEE LIMESTONE	
			OCALA LIMESTONE	39.9	SUWANNEE LIMESTONE	
			OCALA LIMESTONE	40.4	SUWANNEE LIMESTONE	

