



The near surface geology of the northern portion of the U.S.G.S. 1:100,000 scale Crestview quadrangle is both simple and complex in nature. As part of the structurally unimpacted Eastern Gulf Coastal Plain, the region consists of gently dipping, generally unconsolidated sequences of Oligocene to Pleistocene sediments. Physiographically, it is comprised of gently sloping Neogene fluviolacustrine siliciclastic of the Western Highlands, terraced Pleistocene-Holocene siliciclastic of the Gulf Coastal Lowlands, and various floodplains. Several distinct Neogene coastal terraces and ridges have been recognized in the study area (Healy, 1973). Surface topography has been deeply incised, resulting in some impressive relief that is uncharacteristic of most Florida landscapes. Florida's highest elevation is located within the study area in northern Walton County at 345 feet (105.2 meters) above sea level. Normal faults are evident in western Holmes County and northeastern Walton County and is expressed as disjunctive valleys, normal bridges and spring-fed lakes.

The study area falls within two geomorphic provinces - the Southern Pine Hills District and the Dougherty Karst Plain District (Scott, in prep.). Most of the mapped area lies in the Western Highlands portion of the Southern Pine Hills District. A limited portion lies in the De Funiak - Bonifay Karst Hills of the Dougherty Karst Plain District.

The Western Highlands and the Gulf Coastal Lowlands comprise the Southern Pine Hills District in the western portion of the study area. The topography of the Western Highlands formed primarily on the Citronelle Formation siliciclastic sediments. Alum Bluff Group siliciclastic sediments occur in the easternmost portion of the Western Highlands. The topography of the highlands is the result of fluvial processes eroding the Alum Bluff Group marine sediments and the Pleistocene Citronelle fluviolacustrine sediments. Elevations range from more than 300 feet (91.4 meters) to approximately 25 feet (7.6 meters) above sea level.

The De Funiak Spring-Bonifay Karst Hills cover much of the western portion of the Dougherty Karst Plain District in northeastern Walton County east to the Jackson-Bowling County line and south into Washington County. The elevations of the hills range from more than 300 feet (91.4 meters) to approximately 100 feet (30.5 meters). The landscape is very similar to that of the Southern Pine Hills but has scattered to numerous sinkholes. Alum Bluff Group and Citronelle Formation sediments overlie the soluble carbonate. Carbonates are at or near the surface in some stream valleys and low-lying areas.

From a stratigraphic perspective, the western Florida panhandle consists of a sequence of siliciclastic and carbonate rocks. The predominantly carbonate sediments of the Florida Platform and the siliciclastic Gulf Coastal Plain sequences of the Mississippi Embayment. While this regional, carbonate-siliciclastic distinction is most evident in the Florida panhandle, it is also present in the study area. The Alum Bluff Group is a carbonate-siliciclastic unit that is present in the study area. The Alum Bluff Group is a carbonate-siliciclastic unit that is present in the study area. The Alum Bluff Group is a carbonate-siliciclastic unit that is present in the study area.

Due to the occurrence of Quaternary mollusks and soils located at the surface in this study area, the authors adopted the policy of mapping the first marine geologic unit within twenty feet (6.1 meters) of the surface. If Quaternary sediments were more than twenty feet (6.1 meters) thick, then they appear on the surface mapped unit. In areas where the Quaternary sediments are less than twenty feet (6.1 meters) thick, the underlying stratigraphic unit was mapped.

The oldest unit encountered in this study is the Bridgeboro Limestone. Within the study area, this unit occurs entirely in the subsurface. It is penetrated in wells east of the Yellow River and is generally encountered at 60 feet (18.3 meters) above sea level in the northeast and dips less than one degree in a southeasterly direction. This gentle southeasterly dip is the regional trend for all stratigraphic units above the Bridgeboro Limestone in the study area. Some variations exist in this trend and may be explained by post-depositional folding on the surface of the Alum Bluff Group. The Bridgeboro Limestone is a white to yellow, fossiliferous dolomite, easily recognized by its abundance of larger foraminifera (spirogyrogonia and nummulites), bryozoa, and coralline sponges (either as thin, encrusting lamine or small nodules). In the Florida panhandle, Huddleston (1933) has mapped this unit as the Florida Limestone Member of the Bridgeboro Limestone. The Bridgeboro Limestone in this study area has been determined to be Early Oligocene (Vicksburgian) in age based on the occurrence of diagnostic, large foraminifera, mollusks, and bryozoa (Byram and Huddleston, 1991).

The Byram Formation, in this study area, conformably (?) overlies the Bridgeboro Limestone. Its thickness is variable, ranging from 20 to 100 feet (6.1 to 30.5 meters). Huddleston (1933) suggests that the Byram Formation is a lateral equivalent of the Florida Limestone Member of the Bridgeboro Limestone. It occurs east of the Yellow River and is primarily a subsurface unit. It does, however, crop out in a small area at Natural Bridge, in northern Walton County (1/4, SE 1/4 section 26, T6N, R20W). This well-known exposure has been referred to as the Byram Formation (Cooke and Moore, 1929; Machell, 1944; Cooke, 1945; Morrison Limestone (Von and Hendry, 1963), and Sawanne Limestone (Dove, 1968). It is considered here as a subsurface unit. It is rich in larger foraminifera, mollusks, and bryozoa. The formation is a white to tan, sandy, glauconitic limestone or marl that contains abundant large foraminifera, bryozoa, and mollusks. Huddleston (1933) lists the marl unit as Biotinaceous Clay. For the purposes of this map, it is included as a subsurface unit. It is rich in larger foraminifera, mollusks, and bryozoa. The formation is a white to tan, sandy, glauconitic limestone or marl that contains abundant large foraminifera, bryozoa, and mollusks. Huddleston (1933) lists the marl unit as Biotinaceous Clay. For the purposes of this map, it is included as a subsurface unit.

