



FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

FLORIDA GEOLOGICAL SURVEY
903 WEST TENNESSEE STREET
TALLAHASSEE, FLORIDA 32304-7716

RICK SCOTT
GOVERNOR
HERSCHEL T. VINYARD JR.
SECRETARY

MEMORANDUM

TO: Paula Allen, Program Administrator, Division of State Lands
FROM: Harley Means, P.G., Professional Geologist Administrator, Florida Geological Survey *H.M.*
SUBJECT: Geological Assessment of the Upper Lake Lafayette Florida Forever Parcel
DATE: October 17, 2014

On September 19, 2014 geologist Cindy Fischler and I joined you and representatives from the Florida Wildlife Conservation Commission, Florida Department of State, Division of Historical Resources, Florida Forest Service, Florida Natural Areas Inventory and several members of the public and the landowner for a site visit to Parcel # 11-26-20-009-000-0 which is locally known as the Fallschase property or the Upper Lake Lafayette Florida Forever Parcel. This parcel consists of approximately 373 acres of mixed hardwood forested land located on the north side of Lake Lafayette in Leon County. We spent several hours walking the property and observing the natural and manmade features that exist on the parcel.

The Fallschase parcel lies within the Tallahassee Hills geomorphic province. This geomorphic province is characterized by rolling hills and topographic relief that exceeds 100 feet in some areas. The near-surface geology consists of a thin veneer of unconsolidated quartz sand (generally less than a few feet) overlying the clayey sands and sandy clays of the Pliocene Miccosukee Formation. The Miccosukee Formation overlies the Lower Miocene Torreya Formation. The Torreya Formation crops out in the stream bed near the lake drain. The Torreya Formation is also exposed in and around the sinkhole that is locally referred to as the lake drain. The Torreya Formation overlies the Lower Miocene St. Marks Formation, which is the upper limestone unit that comprises part of the upper Floridan aquifer in this area. The upper Floridan aquifer is the primary drinking water aquifer in Leon and Wakulla counties and also provides the water that discharges from numerous springs in the area including Wakulla, St. Marks, Wacissa and other smaller springs.

Lake Lafayette, like other large lakes in the Tallahassee Hills, was formed by karst processes. There are sinkholes (swallets) in the bed of the lake that periodically allow the lake to completely drain into the underlying Floridan aquifer system. The largest of these sinkhole features is located adjacent to the Fallschase parcel in the bed of the lake. Immediately north of this sinkhole, on the Fallschase parcel, other smaller sinkholes were observed, some of which are actively subsiding. The subsidence and coalescing of sinkholes in and around Lake Lafayette will continue as this is how the lake basin originally formed.

Surficial drainage on the Fallschase parcel is directed downslope toward Lake Lafayette. Any development that takes place on this parcel has the potential to impact the water quality of surface water. Since the surficial drainage flows downslope into Lake Lafayette, any contaminants that might be introduced to surface water could enter the upper Floridan aquifer through the swallets in the bed of the lake. Furthermore, these contaminants could then travel down gradient and impact groundwater wells and springs. Potential areas of concern would be down gradient homeowner wells, City of Tallahassee production wells and Wakulla Springs. Dye trace studies conducted approximately 7 miles to the south of Lake Lafayette showed that groundwater flow is being directed toward Wakulla Spring.

The Fallschase parcel, from a geological and hydrogeological perspective, is a good candidate for state acquisition as it contains karst features (swallets) that provide direct connection to the underlying Floridan aquifer system. Lake Lafayette already receives stormwater runoff from Capital Circle Northeast and development that exists in the drainage basin. State acquisition and protection of this largely undeveloped parcel will keep future impacts to surface water in Lake Lafayette, and groundwater in the underlying Floridan aquifer system, minimized.