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Wakulla Springs Alliance

"Protecting and restoring water quality, spring flow and ecological health of Wakulla Spring"

February 18, 2022

Dear Commissioner _____:

The Wakulla Springs Alliance Board urges you to deny the application by Southwest Georgia Oil Company to change the Future Land Use Map designation of its property on the northwest corner of routes 319 and 267 (CPM21-12) from Agriculture to Rural 2 to enable rezoning the property from Ag to C-2 to allow for development of the site as a gas station.

Doing so would pose a risk of damaging contamination of the Floridan Aquifer and Wakulla Spring via the Chips Hole Cave system from cumulative spills during fueling of vehicles as well as a containment system failure or human operator error. Allowing intense development of this property also would preclude its acquisition for protecting Wakulla Springs State Park.

A medium-sized gas station that pumps an average of 100,000 gallons per year can be expected to generate about 125 gallons of spilled gasoline per year during vehicle fueling.¹ While state rules require secondary containment systems with leak detection, infrequent monitoring or human operator error could permit a leak to go undetected.

In the absence of site-specific hydrogeologic data, the best basis for assessing the vulnerability of the underlying aquifer to contamination is the Wakulla County Aquifer Vulnerability Assessment (2009).² As shown on the map below, prepared by Michael Core with the Florida Resources and Environmental Analysis Center at FSU, aquifer vulnerability underlying the property ranges from "more vulnerable" to "most vulnerable."

While gasoline and diesel fuel tend to float at the top of the water table because their densities are lower than water, some of their constituents can dissolve from a spill plume and travel long distances.³ Of particular concern are the so-called BTEX chemicals, benzene, toluene, ethyl benzene, and xylene, and in diesel fuel, polynuclear aromatic hydrocarbons (PAHs). The USEPA has set federal maximum contaminant levels for each of these substances in drinking water.⁴ The Groundwater Protection Council of state ground water regulatory agencies reports that the benzene in a 10-gallon gasoline spill can contaminate up to 12 million gallons of water.⁵

A fuel leak or spill could contaminate nearby wells, while dissolved contaminants could travel both horizontally and vertically. A potentiometric map of the area (see below) indicates groundwater generally flows to the southeast in this area of the Wakulla springshed. State Geologist Harley Means, with whom we have consulted, has indicated that ground water exchange between the limestone aquifer and the Chips Hole caves (see map below) will depend on head gradients.

A dye test conducted by the WKPP on June 12, 2021, demonstrated a direct connection of the Chips Hole caves to the main cave system that flows to Wakulla Spring from the Leon Sinks area. The WKPP estimates that the travel time from that location to the Wakulla Spring main vent is 7 to 8 days. Remediation of gasoline contaminants in ground water in the aquifer and cave system could be extremely difficult.

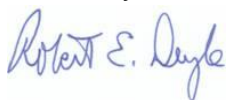
Concerns also have been raised with the disposition of wastewater from the planned carwash on the site which will contain oils and grease as well as nitrogen and phosphorus from detergents.⁶ These dissolved contaminants also pose a risk of contaminating the aquifer. David Edwards has indicated that the county has discussed extending sewer service to the property at the applicant's expense but evidently no formal agreement has yet been reached.

The subject property, as well as the larger parcel to its north owned by St. Joe Timberland Co., are included within the Optimum Boundary of Wakulla Springs State Park in the current Park Management Plan (see map below).⁷ Changing the future land use classification of the Southwest Georgia Oil parcel as well as the larger St. Joe tract from Agriculture to a more intense land use designation would likely preclude acquisition of these parcels which are important to protecting the water quality of the spring as well as access, via Chips Hole sink, for research divers mapping the spring's cave system. We understand that efforts are underway to identify funds for purchasing these parcels by the State of Florida.

Land use law experts with whom we have consulted confirm that property owners are not entitled to comprehensive plan map changes in Florida. Therefore, this decision is entirely discretionary on the part of the County Commission. Given the vulnerability of the aquifer to contamination at this location, approving such an amendment would be inconsistent with all that Wakulla County has done to protect Wakulla Springs and the intent of Comprehensive Plan Conservation Element objective 5.0 to protect ground water quality. Moreover, approving such an amendment could impede state acquisition of this property for protecting this resource as part of the State Park Management Plan.

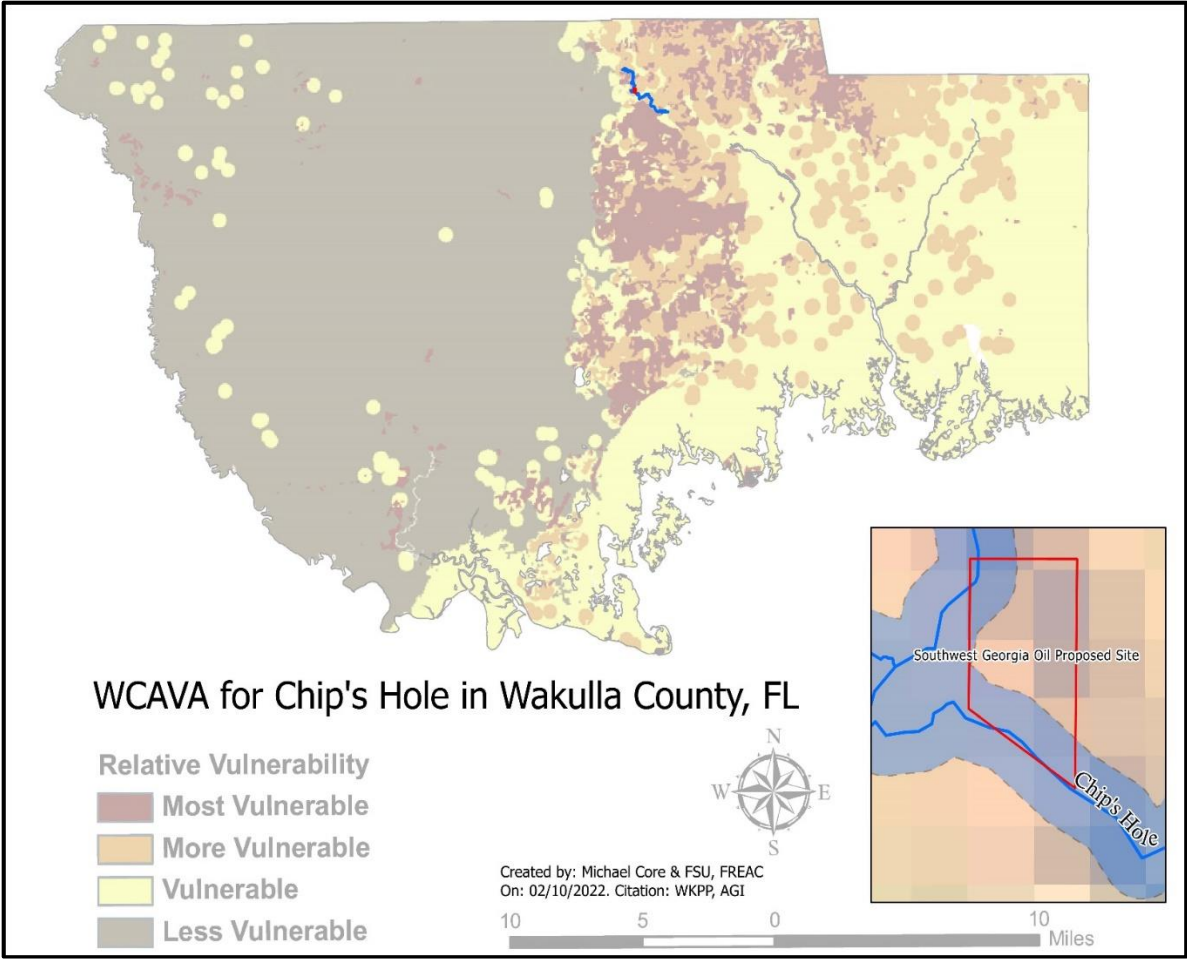
The Alliance believes that the more prudent course would be to retain the current Agriculture Future Land Use designation and rezone the southeast corner of this parcel to Ag to correct the current inconsistent zoning of that small corner of the property.

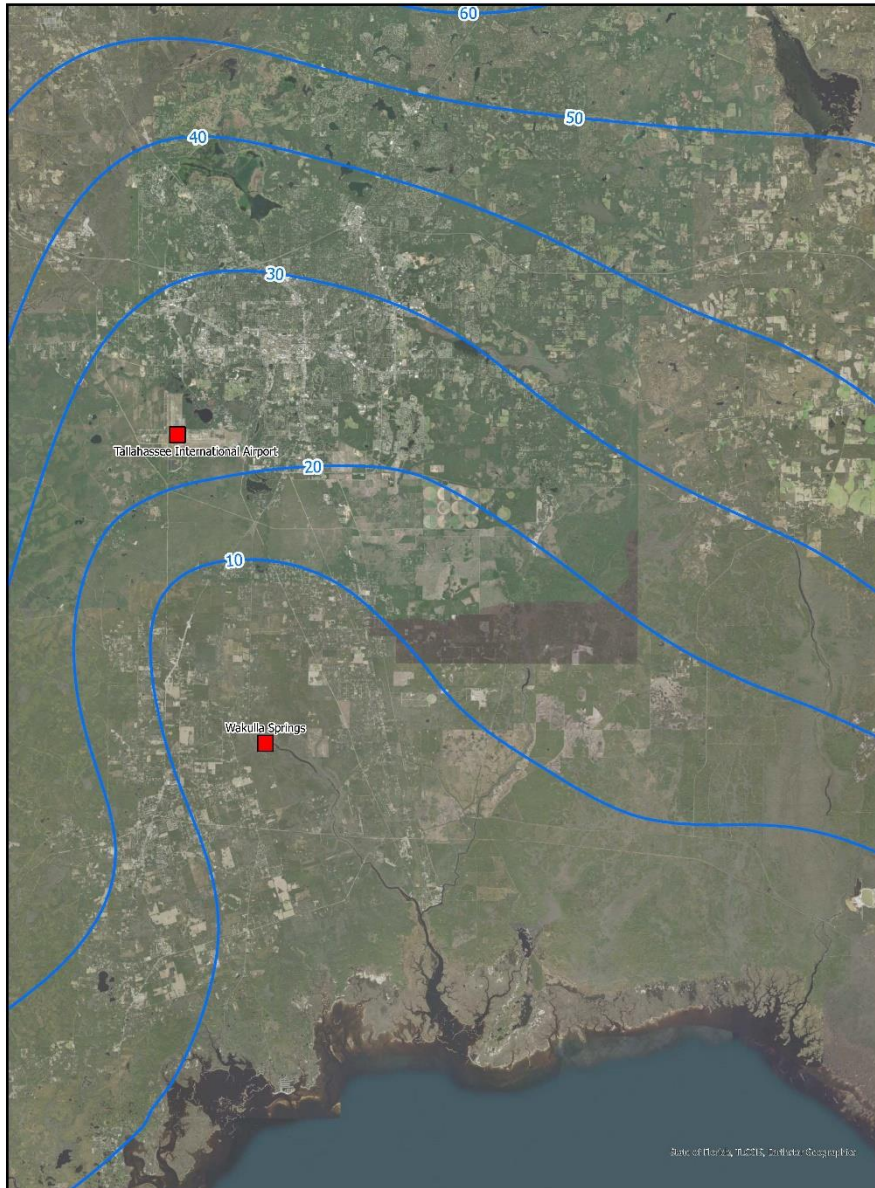
Sincerely,



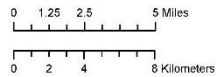
Robert E. Deyle, Chair
Wakulla Springs Alliance

cc: David Edwards, County Administrator
Sommer Pell, Director Planning and Community Development





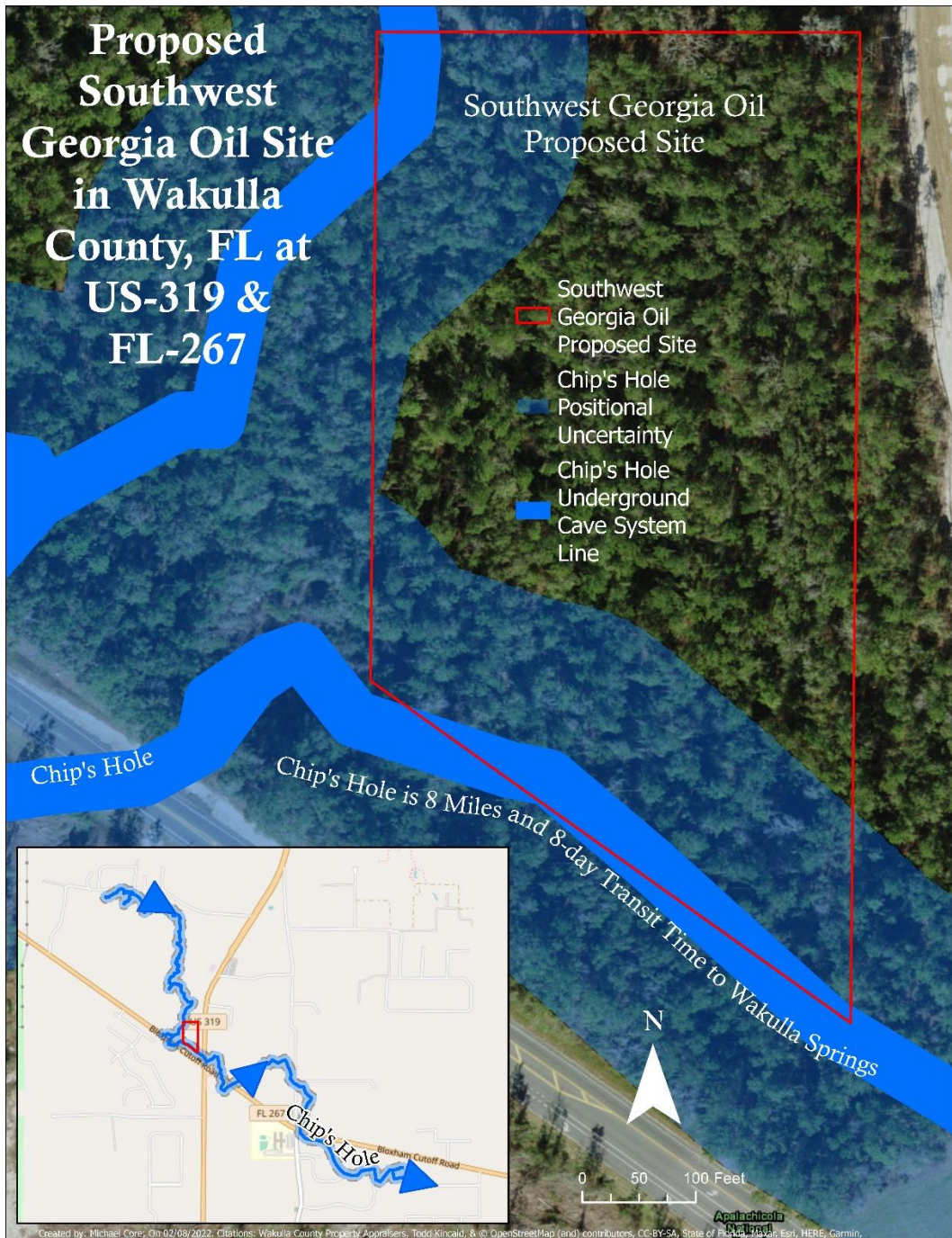
Leon-Wakulla County Potentiometric Surface Map



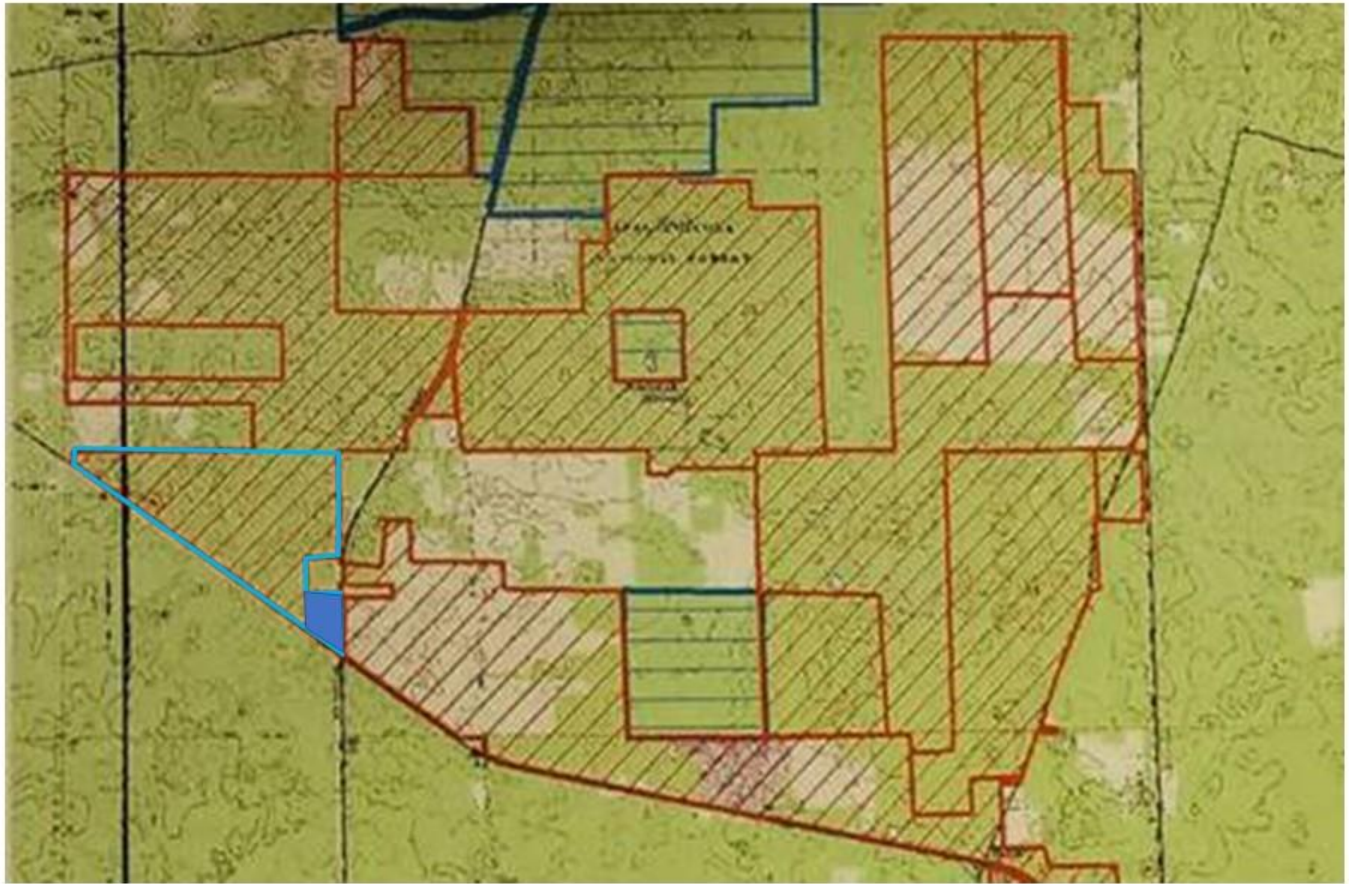
— Potentiometric Surface Contour

Potentiometric surface lines are in 10 ft intervals.
Contours were calculated from May 2019 Upper Floridan aquifer well data from the NFWFWD.





The cave system center line is displayed with a width of 50 feet reflecting the WKPP's report that the cave width is roughly 25 feet on each side of the line. The semi-transparent blue area represents a 3% margin of error (129 feet) for the exact position of the mapped cave center line.



 St. Joe Timberland parcel

 SW Georgia Oil parcel

¹ Hilpert, et al. 2015. Hydrocarbon Release During Fuel Storage and Transfer at Gas Stations: Environmental and Health Effects. *Current Environmental Health Reports* 2: 412–422. [https://link.springer.com/article/10.1007/s40572-015-0074-8#:~:text=For%20instance%2C%20about%200.01%20%25%20of,\(worst%2Dcase%20scenario\).](https://link.springer.com/article/10.1007/s40572-015-0074-8#:~:text=For%20instance%2C%20about%200.01%20%25%20of,(worst%2Dcase%20scenario).)

² https://www.adgeo.net/content/fava2/WCAVA_Poster.pdf.

³ Malgorzata Glowacka. 2005. *Soil and groundwater contamination with gasoline and diesel oil : assessment of subsurface hydrocarbon contamination resulting from a fuel release from an underground storage tank in Vanstad, Skåne, Sweden*. <https://www.lunduniversity.lu.se/lup/publication/2338881>; Groundwater Pollution Council. c2008. Groundwater and Underground Storage Tanks. [https://www.gwpc.org/sites/gwpc/uploads/documents/Topics/Underground Storage Tanks/Underground Storage Tanks_Full Chapter.pdf](https://www.gwpc.org/sites/gwpc/uploads/documents/Topics/Underground_Storage_Tanks/Underground_Storage_Tanks_Full_Chapter.pdf).

⁴ <https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations>.

⁵ Groundwater Pollution Council (c2008).

⁶ Isaac Monney, Emmanuel Amponsah Donkor, and Richard Buamah. 2020. “Clean vehicles, polluted waters: empirical estimates of water consumption and pollution loads of the carwash industry.” *Heliyon* 6(5).

⁷ Florida Division of Recreation and Parks. 2007. Edward Ball Wakulla Springs State Park Unit Management Plan. <https://floridadep.gov/sites/default/files/Edward%20Ball%20Wakulla%20Springs%202007%20Approved%20Plan.pdf>.