Wakulla Springs Alliance
Lake and Sinking Stream Nitrogen Loading Project

Funded by the Fish and Wildlife Foundation of Florida, this project (PFS1516-02), which is scheduled to be completed by September 30, 2016, will close the primary data gap in the NSILT nitrogen loading budget for the Wakulla Spring and River BMAP - the contribution from seepage into ground water from lakes and wet sinkholes within the "Lakes Region" of the Wakulla Springs springshed (see Figure 1). These karst features breach the thin clay confining layer of relatively impermeable soils which protects the aquifer from surface contamination, providing the principal pathway by which nitrogen is carried by storm water into the aquifer (Howard T. Odum Florida Springs Institute, 2014).

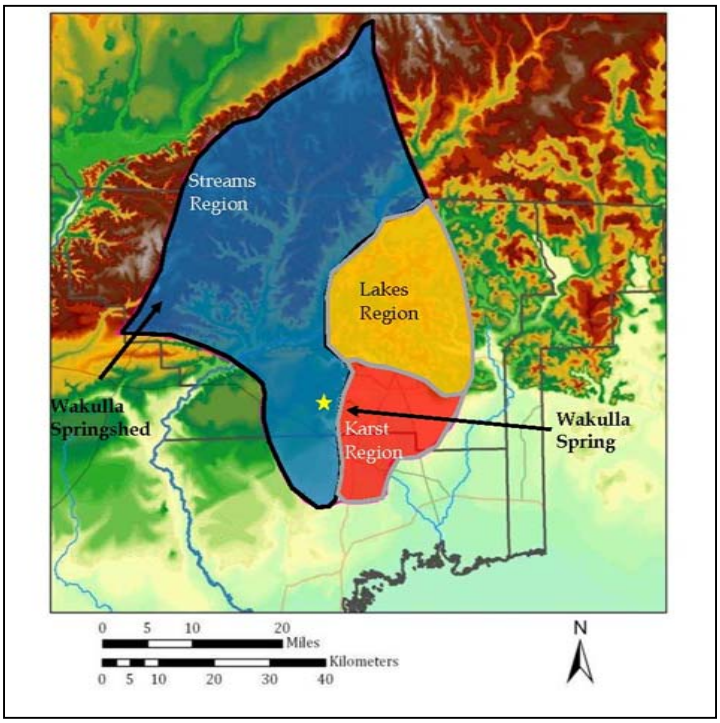

Figure 1. Conceptual diagram of the Wakulla Springshed
(Howard T. Odum Florida Springs Institute, 2014).

McGlynn Laboratories, Inc. (MLI), under contract with the Wakulla Springs Alliance, has collected existing data on the water levels (stages) and nitrogen concentrations of lakes and wet sinkholes within the Wakulla Springs springshed, much of which are informal data that have heretofore not been assembled or published.[1] Karst features analyzed include the Bradford Brooks Chain of Lakes, Killearn Chain of Lakes, Piney Z Lake, Lake Lafayette, and Lakes Hall, Iamonia, Jackson, Miccosukee, Munson, and Silver, as well as the Falls Chase sinkhole in Upper Lake Lafayette.

[1] Data sources analyzed include STORET, the FDEP, Florida Fish and Wildlife Commission, Northwest Florida Water Management District, City of Tallahassee and Leon County Stormwater Management Services, Florida State University (FSU) Department of Earth, Ocean and Atmospheric Science, former FSU Center for Aquatic research and Resource Management, Florida LAKEWATCH, and a number of homeowner associations and individuals who collect stage and water quality data such as Killearn Estates, Lake Bradford, Lake McBride, and Lake Jackson.

MLI is performing quality assurance and certification of the informal data, including additional surveying or elevation checks using the LIDAR data base available from Tallahassee/Leon County GIS; adjusting stage data for evapotranspiration losses and precipitation gains; and calculating an average annual ground water seepage rate for each lake. MLI also is estimating seepage rates and attenuation factors for wet sinks by examining existing soils data and previous evaluations of the sinkholes.

MLI is estimating provisional nitrogen loadings for these water bodies at the earth surface and applying recharge factors based on the confinement attributes of the underlying karst to estimate nitrogen loadings to the aquifer. MLI also will identify any major sources for which staff gages or nitrogen concentration data are needed to enable further refinement of karst feature nitrogen loadings in the springshed.

The final project report is scheduled to be published in September 2016.

For More Information:

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References Cited:

Howard T. Odum Florida Springs Institute. 2014. *Wakulla Spring Restoration Plan*. http://floridaspringsinstitute.org/Resources/Documents/2014.08%20V3%20Wakulla%20Restoration%20Plan.pdf.