

Wakulla Springs Alliance

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

Board of Directors

Chair

Robert E. Deyle

Professor Emeritus, FSU

Vice Chair

Douglas E. Barr

Former Executive Director,
NFWFMD

Treasurer

Jim Davis

Sustainable Tallahassee

Secretary

Gail Fishman

Writer

Albert Gregory

Retired, Department of
Environmental Protection

Cal Jamison

Wakulla Soil & Water
Conservation District

Howard Kessler, M.D.

Former Wakulla County
Commissioner

Debbie Lightsey

Former Tallahassee
City Commissioner

Terry Ryan

Retired Commercial and
Mortgage Banker

**Lindsay Stevens, AICP,
Esq.**

Jim A. Stevenson

Former Chair, Florida
Springs Task Force

Tom Taylor

FSU Adjunct Faculty
and Private Consultant

September 28, 2020

Dear Commissioner _____:

As you may know, Leon County is undertaking two important initiatives to reduce nitrogen discharges from septic systems to the aquifer that feeds Wakulla Spring: (1) a Comprehensive Wastewater Treatment Facilities Plan (Wastewater Treatment Plan) to identify the most cost-effective means to convert traditional septic systems to more effective nitrogen removal systems and (2) a pilot project funded by the Florida Department of Environmental Protection (FDEP) to install passive nitrogen reduction septic systems on approximately 120 properties.

Unfortunately, both initiatives are compromised by reliance on a relatively inexpensive but unproven technology, so-called In-ground Nitrogen Reduction Biofilters (INRBs).

A group of citizens who played an active role in advocating for the Wastewater Treatment Plan and in advising FDEP on development of the 2018 Wakulla Basin Management Action Plan¹ have met with county staff on several occasions and recommended changes to the county's approach to address this deficiency. To our knowledge county staff has not adopted those recommendations; they have stated only that minimizing cost is the priority.

While the Wakulla Springs Alliance fully understands the importance of minimizing the costs of septic system conversions so as to achieve high voluntary participation by homeowners and to accomplish as many conversions as possible, we believe that the current approach is "penny wise and pounds (of nitrogen) foolish."

The Alliance therefore asks you to urge the County Administrator and the Department of Public Works to do the following:

¹ Pam Hall, Debbie Lightsey, Anthony Gaudio, Robert Deyle, Alan Niedoroda

1. Use a lower nitrogen reduction rate estimate for INRBs in the Wastewater Treatment Plan

INRBs have not been subject to the rigorous third-party testing required for all other advanced nitrogen removal septic system technologies. The Wastewater Treatment Plan consultants are assuming 65% removal based on a single field test conducted by Hazen and Sawyer for the Florida Department of Health (FDOH).² Septic systems using conventional drain fields instead of INRBs remove, on average, 50% of the nitrogen in septic tank effluent. At best, INRBs will have a small effect on total nitrogen reduction compared to other passive nitrogen reduction systems, but the additional 15% can only be presumed to occur IF the INRB systems are installed as designed and tested by Hazen and Sawyer.

The INRB design that FDOH has approved by rule (64E-6.009(7) Florida Administrative Code) omits several critical elements needed to assure that the systems will perform as they did in the H&S study: a liner under the woodchip/sand biofilter layer of the drain field, a low-pressure dosing system to distribute the septic tank effluent evenly in the drain field rather than relying on gravity, and a minimum of 50% woodchip content in the woodchip/sand biofilter layer. In comments submitted to FDOH on the proposed rule, Damann Anderson, who conducted the H&S study, stated, that without those components INRB nitrogen removal is unlikely to achieve 65% reduction. Because of these deficiencies, the Florida Springs Council has challenged several Basin Management Action Plans (BMAPs) adopted by FDEP which assume 65% reduction by INRBs.

We will be fooling ourselves if the Wastewater Treatment Plan assumes 65% nitrogen removal by INRBs unless Leon County requires the INRBs installed in the county include the components in the prototype tested by Hazen and Sawyer (see #2 below). Based on the field test conducted by Hazen and Sawyer, we recommend that the county assume no more than 50% removal until testing is conducted on the modified system design allowed under the FDOH rule. This is the level of nitrogen reduction Hazen and Sawyer documented for the upper sand filter layer of the INRB.

2. Modify the design of the INRBs in the pilot project to include systems that more nearly replicate the system tested by Hazen and Sawyer and include some of these modified systems among those to be monitored by FDEP.

- a. Standardize the type, quality, and sizing of woodchips to assure consistency in nitrogen removal
 - The wood chips included in the woodchip/sand biofilter layer provide a carbon source for the bacteria that convert nitrate-nitrogen into nitrogen gas that then seeps up through the soil and is released into the atmosphere. Woodchips from different wood sources, and of different size and condition, will provide variable quality food source for the bacteria and, therefore, different levels of nitrate-nitrogen removal. The FDOH rule does not specify woodchip type, quality, or sizing. In the absence of clear state standards, the county should define specifications to be followed by installers of INRBs for the pilot project.

² Hazen and Sawyer. 2015. *Florida Onsite Sewage Nitrogen Reduction Strategies Study: Evaluation of Full Scale Prototype Passive Nitrogen Reduction Systems (PNRS) and Recommendations for Future Implementation.*

- b. Require at least 50% woodchip content in the woodchip/sand biofilter, rather than the 40-60% range permitted by FDOH – This higher minimum woodchip content will provide more carbon for the denitrifying bacteria and, therefore, greater nitrogen reduction, especially in systems without a liner under the woodchip/sand layer.
- c. Include low-pressure dosing in all systems that will require a pump to deliver septic tank effluent to the drain field because of site topography – This will enhance nitrogen removal and facilitate monitoring.
- d. Include a liner under the woodchip/sand biofilter layer in several of the systems to be monitored – This will optimize nitrogen removal and extend biofilter life by maintaining saturated conditions.

We will be fooling ourselves about the benefits to Wakulla Spring from this pilot project without information about how INRBs that lack these elements of the system tested by Hazen and Sawyer actually perform.

3. Collaborate with FDEP to expand their planned monitoring to more than four systems

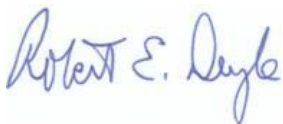
FDEP currently plans to monitor only four of the 120 systems to be installed in the pilot project. Monitoring of the alternative system designs called for in #2 above is needed at locations with different soil conditions. We recommend increasing the monitoring to at least four sites for each system configuration.

4. Delay full implementation of the pilot project until one year of monitoring is completed on the alternative system designs called for in #2.

We will be “penny wise and pounds (of nitrogen) foolish” if we proceed with full implementation of the pilot project without sound information on how the modified INRBs will perform. Once monitoring is completed, we can make wiser decisions about what system design will be most cost-effective in achieving the required reductions in nitrogen loading to Wakulla Spring from the BMAP primary focus area in Leon County.

A member of the Wakulla Springs Alliance will contact you within the next week to discuss this matter further.

Sincerely,



Robert E. Deyle, Chair
Wakulla Springs Alliance

cc: Vince Long, Leon County Administrator
Brent Pell, P.E., Director, Leon County Public Works
Charles Wu, Director of Engineering Services, Leon County Public Works
Theresa Heiker, Stormwater Management Coordinator, Leon County Public Works