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August 28, 2013

Commissioner Adam H. Putnam
Florida Department of Agriculture and Consumer Services
The Capitol
400 South Monroe Street
Tallahassee, Florida 32399-0800

Subject: An Open Letter Concerning the Role of the Florida
Department of Agriculture and Community Services in the
Restoration and Protection of Florida's Aquifer and Springs

Dear Commissioner Putnam:

Thank you for convening the meeting of the Water Policy Advisory Council in Gainesville on Friday, August 23. It was a pleasure meeting you and observing your genuine interest in finding a productive role for the Florida Department of Agriculture and Consumer Services in the protection of the imperiled Floridan Aquifer and the springs that depend on it for a clean and abundant source of water.

As you heard from the water management district executive directors, Drew Bartlett with the Florida Department of Environmental Protection, and my colleagues at the University of Florida, nitrate nitrogen concentrations are at detrimentally high levels in a majority of Florida's 1,000+ artesian springs, and spring flows are in serious decline. These impairments are human-induced and have been repeatedly studied and publicized for the past 20+ years. In many spring basins in North and Central Florida, the State's agricultural industry inadvertently contributes to both spring flow declines and nutrient pollution. Other key contributors to these problems are water and wastewater utilities, residential outdoor water use, septic tanks, and landscape fertilization.

I am sending you this letter because of your dual role as the State's principal elected official with responsibility for oversight of agriculture and the protection of the public/consumer trust. While effective production of agricultural crops is critically important to the future sustainability of our state, it is no more important than the sustainability of our equally precious Floridan Aquifer and springs. The widespread and highly visible damage to Florida's springs in agricultural watersheds such as the Suwannee Basin demonstrates that agricultural best management practices are not working. There is shared responsibility in our more urban springsheds as well, with elevated nitrate concentrations in springs such as Wekiwa and Volusia Blue, as well as serious flow reductions.

The purpose of this letter is to request that you use your influence towards protecting both the public's water supply, as well as providing opportunities for private interests to conduct responsible irrigation and fertilization practices.

Based on an analysis of the overall groundwater recharge to the Floridan Aquifer the, the Florida Springs Institute has concluded that average groundwater use needs to be reduced by more than 50 percent to restore healthy aquifer levels and spring flows. This is just one half of the puzzle. Use of nitrogen fertilizers in areas where the aquifer is vulnerable due to a lack of confinement is leading to wide-spread groundwater pollution. The available evidence consistently indicates that in these poorly confined areas, there are no available best management practices for intensive agriculture or landscape fertilization that will adequately protect the underlying groundwater from nitrate contamination. The Florida Springs Institute has estimated that the necessary reduction in nitrogen use in these vulnerable areas is greater than 90%. A similar estimate was independently presented at the meeting by Dr. Wendy Graham of the University of Florida Water Institute.

There is an environmental disaster occurring before our eyes regarding springs and aquifer impairment. Immediate and significant actions are needed by Florida's government. All of our state agencies need to publically acknowledge the fact that continuing on our current course of excessive pumping, and intensive use of nitrogen fertilizer, will result in continuing aquifer and springs degradation. The bottom line is that the public wants to see two things happen as quickly as possible: (1) reductions in springs' nitrate concentrations, and (2) increased aquifer levels and spring flows. This desired turn-around is in the hands of the state officials who participated at Friday's meeting. Please continue to


work with them and help to provide the leadership needed to achieve these goals.

As promised, I am attaching the executive summaries from two of our springs restoration plans completed to-date. They summarize our current understanding of these issues and actions needed to restore and protect these important spring systems. A number of additional spring restoration plans can be downloaded from our website:

www.floridaspringsinstitute.org .

I would also like to offer you an open invitation to visit one or more affected springs with me to see firsthand what is happening to our natural springs. Seeing is believing.

Best wishes,

A handwritten signature in blue ink that reads "Robert L. Knight". The signature is written in a cursive style with a large, stylized "K".

Robert "Bob" Knight, Ph.D.
Director Howard T. Odum Florida Springs Institute

Comments to FDACS Water Policy Advisory Committee

Robert L. Knight, Ph.D., Director Howard T. Odum Florida Springs Institute

August 23, 2013

1. Introduce the Florida Springs Institute
2. The BIG PICTURE concerning nitrate contamination of the Floridan Aquifer and North Florida springs:
 - a. Background nitrate in the FA was <0.05 mg/L
 - b. DEP has determined that nitrate above 0.35 mg/L (7 times background) is harmful to springs, causing impairment and proliferation of filamentous algae
 - c. The groundwater nitrate standard is 10 mg/L, 200 times background and 30 times higher than the springs standard
 - d. >30% of the entire state of Florida has groundwater nitrate above the 0.35 mg/L standard
 - e. >18% of the state has GW nitrate above 1.0 mg/L or 20 times historic baseline
 - f. An estimated 60% of Florida's springs are impaired due to excessive nitrate N, and
 - g. About 6,000 tons of N is currently discharged from springs each year, a 900% increase over historic conditions
3. FDACS' can play an important role in reducing these elevated nitrate concentrations:
 - a. In most springsheds, agricultural, residential, and recreational fertilizer N use is the biggest contributor of nitrate to GW and springs

- b. In vulnerable areas, loading rates to the FA are in the range of 50 to 200 lbs N/ac/yr, or 100 to 400 times the natural input of N from rainfall
 - c. In vulnerable areas BMPs do not measurably reduce these N loads to the GW
 - d. To achieve the spring nitrate goal, use of fertilizer N needs to be reduced by >90% in vulnerable areas
 - e. FDACS and IFAS need to develop and fund “advanced BMPs” for vulnerable areas that substantially reduce GW nitrate loads (*e.g.*, long-leaf pine timber production for agricultural areas and Florida Friendly Yards for residential areas)
 - f. Advanced BMPs will require considerable financial investments by the State
4. Water quality and water quantity are related:
- a. GW is our most valuable source of clean, potable freshwater and if used above sustainable levels, the loss of this resource results in widespread ecological and financial collapse
 - b. Irrigation is the single largest GW use in the State
 - c. Water balance estimates and measured aquifer levels indicate we are over-using this resource and must cut current pumping rates back by at least 50%
 - d. Excessive irrigation will have to be curtailed to achieve this goal
5. In conclusion:
- a. Bottom line: we need to see declining spring nitrate concentrations and increasing flows as soon as possible
 - b. Consumptive Use permits provide a “license to pollute” – by authorizing GW use (declining spring flows), the WMDs are encouraging use of N fertilizers (increasing nitrate contamination)

- c. On behalf of Florida's springs, we request that FDACS work more pro-actively with DEP and the WMDs to restore a clean and abundant GW supply and to restore and protect our springs.