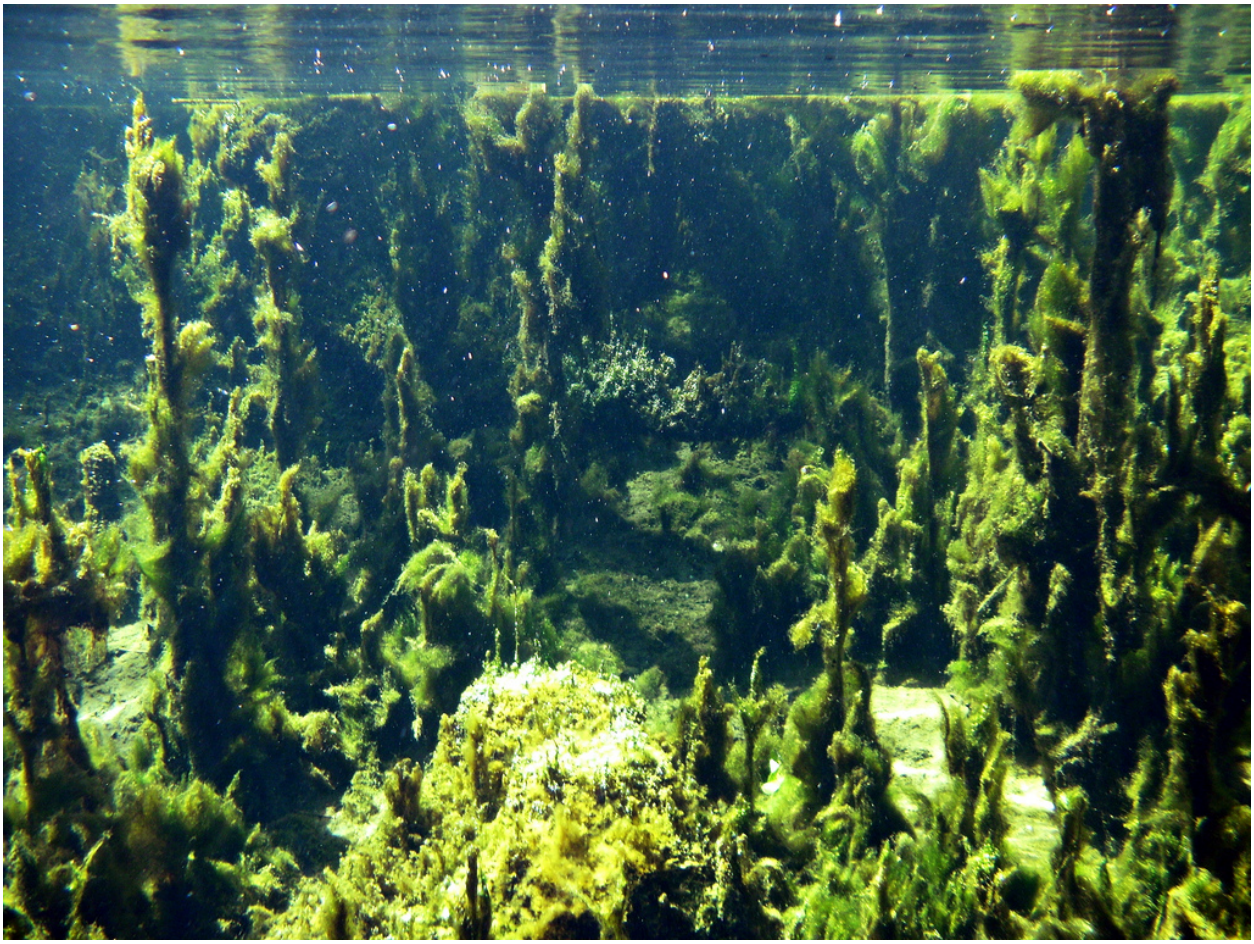
Applying an Agricultural Privilege Tax to Reduce Florida Springs' Nutrient Pollution



A Report for the Florida Springs Institute

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Introduction

The U.S. Environmental Protection Agency identified agricultural nonpoint source pollution, predominately from nutrient runoff from agriculture, as "the leading source of water quality impacts on surveyed rivers and lakes, the second largest source of impairments to wetlands, and a major contributor to contamination of surveyed estuaries and ground water."[1] Agricultural nonpoint source pollution has been particularly harmful to the health of Florida's Springs that are recharged through a porous limestone bedrock, which in places contains direct conduits for this pollution to enter the underlying Floridan Aquifer.

The Clean Water Act (CWA)[2], the primary federal legislation for controlling water pollution, has been mostly successful at regulating water pollution from point source pollution, such as wastewater treatment plants and industrial discharges through discrete pipes or outfalls. However, the CWA does not provide legal authority over nonpoint source pollution, including most forms of agricultural runoff, which is broadcast over large areas, and whose effect on water resources is not easily calculable. This regulation has fallen to the state legislatures, like Florida, which thus far has been implemented through voluntary or incentive-based programs to encourage farmers to use Best Management Practices (BMPs) in their farming operations to control nutrient pollution.

Relative to most states, Florida has a robust regulatory framework for nutrient pollution not within the jurisdiction of the CWA, such as agricultural discharges. This regulatory program attempts to limit nutrient pollution through application of methods and technology outlined in BMPs, and to achieve specific water quality standards, as determined through a numeric standard known as a Total Maximum Daily Load (TMDL).

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[1] National Nonpoint Source Program, U.S. ENVIRONMENTAL PROTECTION AGENCY (2016), https://www.epa.gov/sites/production/files/2016-10/documents/nps_program_highlights_report-508.pdf

[2] Clean Water Act of 1972, 33 U.S.C. §§ 1251–1387

TMDLs are adopted by the Florida Department of Environmental Protection (FDEP). The agency first determines if a waterbody is impaired based on credible data, studies and reports showing whether it meets water quality standards for a specific pollutant, such as nitrogen or phosphorus. A TMDL is calculated by reasonably and equitably determining the various sources that contribute nutrient pollutants, which is usually nitrogen in the case of Florida springs. The FDEP then organizes a group of stakeholders to create a Basin Management Action Plan (BMAP) that includes strategies for achieving the adopted TMDLs. Contributors of nonpoint source pollution must demonstrate compliance by either implementing BMPs or conducting water quality monitoring.[3] Water quality compliance has a rebuttable presumption upon implementation of BMPs.

It is premature to determine the degree of success that BMAPs and TMDLs will have on Florida springs recovery; however, the fact that agricultural pollution continues to be one of the most significant sources of water quality degradation in the Florida springs[4] indicates that nonpoint source pollution continually requires innovative solutions.

One effective solution to agricultural pollution, known as the Everglades Area Agricultural Privilege Tax, establishes a surcharge on property taxes of agricultural producers that contribute nonpoint source pollution to the Florida Everglades ecosystem. This additional tax has been used to create incentives to decrease pollution and fund innovation in pollution control. This effort bases the tax on ambient water quality, i.e. the attainment of TMDLs, rather than the amount of individual pollution.

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[3] Fla. Stat. §403. 067(7)(b)(2)(h) Nothing in law actually requires a producer to implement agricultural BMPs. However, "A nonpoint source discharger included in a basin management action plan *may* be subject to enforcement action by the department or a water management district based upon a failure to [implement BMPs or water quality monitoring] …." (emphasis added)

[4] Farm fertilizers and livestock waste are responsible for more than 85 percent of the nitrogen sources in each springshed in the Suwannee BMAP, and more than 60 percent in each springshed in the Santa Fe BMAP. http://publicfiles.dep.state.fl.us/DEAR/BMAP/Suwannee/DRAFT%20BMAP/Suwannee%20BMAP_2017_Draft_FinalR1a.pdf
http://publicfiles.dep.state.fl.us/DEAR/BMAP/Santa_Fe/Santa_Fe_2018_BMAP/Santa%20Fe%20BMAP_2018.pdf

Each agricultural producer in a water basin is taxed only if the TMDL is exceeded, which creates the proper incentive both for number of acres farmed and pollution control effort per acre farmed to achieve the water quality goals. Evaluation of an agricultural privilege tax to address the challenges of agricultural nonpoint pollution is warranted, especially in the unique context of Florida's springs, which are both natural wonders and bellwethers to the health of Florida's primary freshwater supply.

Florida Springs and Aquifer Protection Act

In 2016, Florida enacted a comprehensive water law that is arguably the most extensive and complex environmental legislation in recent years. The law contains new protections for springs, starting with a requirement to delineate a Priority Focus Area (PFA) for each of the twenty-four nutrient impaired springs among the 30 springs designated by the law as Outstanding Florida Springs (OFS). The PFAs provide a guide for focusing restoration strategies and enhanced environmental regulation that will most benefit the springs. The delineation of PFAs must use identifiable boundaries such as roads or political jurisdictions for ease of enforcement. The PFA becomes effective upon its incorporation of the Springs BMAP. In determining the boundary of the PFA, the FDEP shall consider groundwater travel time to the spring, hydrogeology, nutrient load, and any other factors that contribute to spring degradation.[5] The law also creates a 20-year target for TMDL compliance within PFAs, as well as within the overall BMAP region, and requires adoption of the BMAPs by July 1, 2018.[6] Springs BMAPs must identify the sources of pollution and includes a list of projects to implement the plan, the source of funding for each project and an implementation plan designed to achieve the adopted TMDL for the spring.[7] .

In response to these requirements of the law, "DEP developed [the Nitrogen Source Inventory and Loading Tool (NSILT)] to identify and quantify the major contributing nitrogen sources to

[5] Fla. Stat. §373.803
[6] Fla. Stat. §373.803(1)
[7] Fla. Stat. §373.807

groundwater in areas of interest. This GIS and spreadsheet-based tool provides spatial estimates of the relative contribution of nitrogen from various sources, and takes into consideration the transport pathways and processes affecting the various forms of nitrogen as they move from the land surface through soil and geologic strata that overlie and comprise the Upper Florida aquifer."[8] Once a quantitative assessment of pollution sources is established based on the NSILT model, management programs to address human caused factors, and to attain water quality standards, will be implemented via the BMAP and TMDL programs.

In addition, the law requires "an implementation plan designed with a target to achieve the nutrient total maximum daily load no more than 20 years after the adoption of a basin management action plan," in which FDEP "shall develop a schedule establishing 5-year, 10-year, and 15-year targets for achieving the nutrient total maximum daily load;" however this "schedule shall be used to provide guidance for planning and funding purposes and is exempt from chapter 120."[9] This provision distinguishes spring BMAPs from the BMAPs of other water bodies by creating a predetermined schedule of 20 years to achieve the TMDL; however, it exempts these interval TMDL goals from being challenged, which appears to provide FDEP with a safe harbor for its milestones even if management strategies are facially inadequate to meet TMDLs. As such, even if the established TMDL targets are clearly shown to be unobtainable based on the adopted BMAP strategies, the current law appears to protect FDEP's interim milestones against administrative procedures.

Analysis

Nonpoint source nutrient pollution from agriculture is one of the most challenging forms of water pollution to control. Furthermore, its enforcement is complicated by the fact that agriculture is

[8] Water Quality Restoration Program and BMAP Development, FDEP, https://floridadep.gov/dear/water-quality-restoration/content/nitrogen-source-inventory-and-loading-tool-nsilt-1
[9] Fla. Stat. §373.807(1)(b)(8)

critical to the U.S. and local economies, food security, and the financial viability of farmers who typically operate with small profit margins. Therefore, there are important policy reasons for not imposing too heavy of an economic burden on farmers to meet water quality standards. Florida is especially protective of agriculture with its Right to Farm Act that provides that, "a local government may not adopt any ordinance, regulation, rule, or policy to prohibit, restrict, regulate, or otherwise limit an activity of a bona fide farm operation … , where such activity is regulated through implemented best management practices or interim measures developed by the Department of Environmental Protection, the Department of Agriculture and Consumer Services, or water management districts … .[10]"

On the other hand, it is also imperative to maintain clean water for the protection of public health and the natural environment, including economic resources and recreational values, such as those provided by Florida springs. Ultimately, even though reduction of nutrient pollution from agriculture will be a challenging and costly endeavor, it is arguably less costly than restoring water quality and valuable environments once significant deterioration has occurred.

While Florida is among the leaders in the nation for its regulation in this area, it remains unclear whether current efforts will lead to any meaningful improvements, especially considering increasing pressures on the State's Aquifer systems caused by projected growth in both population and in agricultural water use.[11] Major deficiencies to the existing regulatory framework include:

(i) the absence of compulsory water quality monitoring for nutrient pollution;

(ii) the limitations of BMPs, namely its safe harbor provision that avoids or hinders effective water quality compliance; and

[10] Fla. Stat. §823.14(6)

[11] Statewide agricultural water demand in Florida is anticipated to increase about 14% over the next 25 years, with nearly a 50% increase in irrigation demand expected in Suwannee River Water Management District by 2040. 2017 FLORIDA STATEWIDE AGRICULTURAL IRRIGATION DEMAND ESTIMATED AGRICULTURAL WATER DEMAND, 2020–2040. https://www.freshfromflorida.com/content/download/78207/2313146/FSAID_IV_Water_Use_Estimates_06.23.2017.pdf

(iii) insufficient funding for research and implementation of BMPs, and other nutrient management practices.

The cornerstone of any effective regulatory framework is adequate funding. Without the resources to monitor, regulate, and ultimately provide agricultural producers with the means to mitigate the adverse effects of agricultural practices on water resources, particularly Florida springs, attainment of water quality standards will remain unmet. One solution could be to internalize the negative externalities of agricultural production through a fee or tax that incentivizes effective BMPs, and funds research and technologies to achieve water quality standards.

Agricultural Privilege Tax

1. Funding and Incentive

A practical model for funding nutrient control systems and ensuring that farmers use BMPs and other nutrient management technologies is the Everglades Agricultural Area (EAA) Privilege Tax. Codified in Florida Statute, this law imposes an agricultural privilege tax for landowners in the EAA[12] by way of a property assessment "for the privilege of conducting an agricultural trade or business on" each acre of real property within the EAA.[13] The tax was created in response to the Everglades Forever Act, which set stringent, federally enforceable water quality standards for all water discharging from the EAA into Everglades National Park. From 1994-2014, the tax generated an average of $11.7 million annually for Everglades Restoration.[14]

[12] Fla. Stat. §373.4592(6)
[13] Fla. Stat. §576.045(2)(a)(3)
[14] Audit of the Everglades Agricultural Area Tax Assessment Process Project #14-05, Office of Inspector General, South Florida Water Management District.
https://www.sfwmd.gov/sites/default/files/documents/audit_eaa_tax_assessment_process_14-05.pdf

Initially imposed in 1994, the tax progressively increased from $24.89 per acre to its maximum level of $35 per acre in 2013.[15] This step-up allowed farmers time to adopt BMPs before the full effect of the tax became effective. The law provides relief from the tax if agricultural landowners executed BMPs that demonstrably reduced phosphorus loading to the amount required by the Everglades Forever Act.[16] Therefore, landowners have a financial incentive to adopt BMPs to generate "incentive credits," which lower the privilege tax to the statutorily mandated minimum tax of $24.89 per acre.[17] The tax specifically addresses row-crop farming, a highly intensive agricultural activity that contributes significantly to agricultural nutrient runoff. In addition, a smaller agricultural privilege tax exists for a drainage basin to the west of the EAA known as C-139, which unlike the EAA consists of a mixture of land uses such as row crop, pasture, and even some pine forests. Only row crops acreage is assessed a privilege tax, which has likely limited conversion to farmland in this area.

Agricultural privilege tax revenue is used by the South Florida Water Management District for restoration of the Everglades ecosystem,[18] by achieving the water quality standards for the region.[19] The tax is also used to fund projects that mitigate the increased nutrient loading at the farm operation level. Through this tax, the water management district directly enforces financial responsibility upon the agricultural producer, rather than on relying on voluntary or safe harbor BMP approaches.

The imposition of this type of tax in spring BMAP areas could provide much needed funding to develop and implement pollution reduction technologies, including nutrient treatment systems. By enforcing the responsibility of BMPs among all agricultural producers according to the type and acreage

[15] Fla. Stat. § 373.4592(6)(a)(2013); Legislation has since been approved to gradually reduce the tax pursuant to the following schedule: "tax notices mailed in November 2014 through 2026, $25 per acre; for the tax notices mailed in November 2027 through 2029, $20 per acre; for the tax notices mailed in November 2030 through 2035, $15 per acre; and for the tax notices mailed in November 2036 and thereafter, $10 per acre" §373.4592(6)(c)(6)
[16] §373.4592(6)(c)(2)
[17] §373.4592(6)(c)(4)
[18] §373.4592(6)(c)(6)
[19] §373.4592(3)

of operation, the burden on individual farmers could be made less onerous and shared proportionally to the producer's pollution impact. In addition, this tax could discourage intensifying agricultural uses by appropriately assigning the cost of agricultural intensification on spring and aquifer water quality. While the Everglades Agriculture Privilege tax uses a simplistic determination for the tax assessment, whereby only vegetable crop acreage is taxed, NSILTs in OFSs could be used to determine tax assessments across several types of agricultural land use, with farmers paying an assessment rate relative to their activity's share of nitrogen load. Revenue from the tax could be directed to smaller farmers in need of financial assistance, or to locations like PFAs where there is an imperative to reduce nutrient pollution.

2. Water Quality Monitoring

In addition to the financial responsibility imposed on the agricultural producer, the agricultural privilege tax established water monitoring as a means of measuring its efficacy rather than relying on a presumption of water quality compliance through BMP execution alone. Without monitoring, it is impossible to verify the amount of pollution a farmer contributes to the water basin. Monitoring data helps to identify which types of farm operation are key contributors to nutrient runoff and in need of mitigation efforts. Furthermore, monitoring data could help quantify the efficacy of BMPs. These data would also be helpful in determining how an agricultural privilege tax could be adjusted based on the average amount of pollution produced, and as feedback on the reliability of the NSILT models.

As noted, nonpoint source pollution is more difficult to monitor than point source pollution given the numerous geographic, topographic, and other variables affecting how nutrients pass through the environment. Additionally, costs for monitoring nonpoint sources are greater because the area to be measured is larger in size than those required for point source polluters. However, with improving scientific modeling, and the requirement of BMAPs to identify the amount of pollution coming from

each source category, water quality monitoring could serve an important function of monitoring pollution management strategy performance.

Within the context of the EAA, the 1994 Everglades Forever Act mandates monitoring at the EAA basin-level through the water management district's pumping stations that discharge EAA runoff into the Everglades and at the farm-level through water control structure, such as pump stations and culvert risers that connect each farm to the larger canal system. Through its vast system of canals used to drain what was historically the northern portion of the Everglades, it is easier to apply principles of point source pollution monitoring at both levels in the EAA basin.

Unfortunately, within the spring BMAPs, it would impractical, if not impossible, to collect and monitor runoff from each producer given ground permeability and the more diffuse nature by which nitrogen passes through the soil as it enters the aquifer. However, within the spring priority focus area (PFA), where the travel time and conduit for pollutants from the agricultural field to the spring vent is more well-known, a landowner's nitrogen contribution to the spring vent is more comparable to EAA runoff. In effect, water discharging from the spring vent would be analogous to the EAA pumping station for each PFA. Although it would be impossible to monitor at the farm-level, PFAs are considerably smaller and more manageable than the vast EAA and C-139 Basins.

Within the PFA, nitrogen contamination to the spring vent is expected to occur within the 5, 10 and 15-years TMDL milestones set forth in the Springs and Aquifer Protection Act. Therefore, agricultural activities in the PFA are more likely to have an immediate impact on the spring than other areas within the spring BMAP, and with less opportunity for attenuation of the nitrogen. The general dynamics of a spring watershed are fundamentally not unlike the EAA watershed, where nutrient-laden water discharged from each agriculture producer ends up at a discharge point into a legally protected

ecosystem. In both scenarios, producers have been required to implement BMPs to address the pollution.

Monitoring wells that measure nutrients in the groundwater could be constructed to gauge trends in groundwater quality within the PFA. Despite these challenges, like the EAA, whose water quality success is ultimately measured by the water leaving the EAA basin, the water discharging from the spring vent would also provide the ultimate assessment of water quality compliance within the spring BMAP. While such precise monitoring is difficult to implement in the short-term, projects like the Florida Spring Institute's Blue Water Audit,[20] that uses NSILTs and other scientific data to estimate nitrogen pollution contributed to the aquifer, provides valuable information to identify the primary contributors of agricultural pollution. Even with only a general understanding of each agricultural activity's "nitrogen footprint" on the aquifer, regulators should have the necessary information to establish a reasonable privilege tax on agricultural producers.

Conclusion

While the scale, costs and timeline of Everglades restoration has proven daunting, the principles of its agricultural privilege tax could be applied to spring BMAPs if properly limited in scope to address the most critical sources of nitrogen pollution to the spring itself. For instance, the privilege tax could be assessed on the entire BMAP area to fund restoration practices within the springs PFA, or other areas of highest vulnerability. A tax is by the no means the only source of funding that springs restoration will require. However, the tax's most compelling attribute may be its mechanism to strongly incentivize farmers to adhere to BMPs that are verified with water quality monitoring. This is because those agricultural producers who demonstrate success of BMPs on nitrogen pollution reduction through water quality monitoring could receive incentive credits to reduce their tax burden. In some cases, nutrient

[20] https://howardtodumfloridaspringsinstitute.wildapricot.org/projects

treatment systems may prove too challenging or costly to implement in the spring BMAP; in such cases, fee-simple land acquisition or conservation easements could be employed to limit agricultural intensity in areas of extreme vulnerability to groundwater pollution.

An agricultural privilege tax, without question, stands in stark contrast to the existing regulatory approach, which assumes water quality compliance upon mere acceptance of BMAP management strategies. However, existing modeling on nitrogen pollution via NSILTs already shows that existing agricultural practices are the major reason why water quality standards are not being met in many OFS. Rather than postponing effective restoration efforts, an agricultural privilege tax would strongly incentive agricultural producers to take immediate and substantive actions and would strongly incentivize the State to closely monitor the efficacy of those actions. A regulatory model that was born out of the necessity to comply with Federal law, the Everglades Agricultural Privilege Tax is a unique strategy for meeting water quality standards. With improved technologies and information, this framework could be improved upon in its application to the Outstanding Florida Springs, and would likely speed up their recovery process. Like the Everglades ecosystem, natural springs are an iconic natural wonder of Florida, and warrant regulations and protections at least as robust.