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The Phosphorus Standard and Everglades Restoration: Will This Standard Lower Phosphorus in the Everglades or is the Proposed Standard a Hollow Promise?

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THE PHOSPHORUS STANDARD AND EVERGLADES RESTORATION: WILL THIS STANDARD LOWER PHOSPHORUS IN THE EVERGLADES OR IS THE PROPOSED STANDARD A HOLLOW PROMISE?

ROBERT MALINOSKI*

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I. INTRODUCTION

The Everglades was a sixty-mile wide shallow river that flowed from Lake Okeechobee to Florida Bay and encompassed more than 18,000 square miles of South Florida.¹ This free-flowing fresh water sustained numerous species of plants and animals, until 1948, when a major hurricane flooded much of South Florida. Congress authorized the Central and Southern Florida Project (C&SF), headed by the Army Corps of Engineers, to control flooding and drain huge wetland areas for agriculture and urban development.² The C&SF Project sent much of the fresh water that flowed through the Everglades directly into the Gulf of Mexico and the Atlantic Ocean. The result had numerous positive and negative effects. One of the positive effects of the project is that much of present-day Broward County would be flooded without the C&SF Project.³ One of the negative effects, however, is the Everglades is about half the area that it was prior to 1948. The remaining half of the Everglades shows serious symptoms of ecological decline.⁴

The Everglades Agricultural Area (EAA) comprises a large portion of the former north end of the Everglades.⁵ Run-off from the EAA flowed freely for many years into the Everglades. This run-off contains agricultural chemicals many of which are rich in phosphorus, which is one of the causes of the ecological decline in what remains of the natural Everglades. This, combined with the diversion of much of the fresh water that fed the Everglades, leads to a tragic reality: "The Everglades are dying."⁶

Various entities, including interest groups, the Florida Legislature, and the federal government worked for years to reverse the degradation and restore the Everglades.⁷ However, it arguably was not until 1988 when the federal government sued the Florida Department of Environmental

¹ See Mary Doyle & Donald Jodrey, *Everglades Restoration: Forging New Law In Allocating Water Environment*, 8 ENVTL. LAW 255, 259-60 (2002) [hereinafter Doyle & Jodrey].

² See *id.* at 260.

³ Broward County is home to over 1.6 million people. See BROWARD COUNTY, *Basic Demographic Profile*, at <http://gis.broward.org/browardfacts/step04.asp?geog=COUNTY&flist=YES&tables=key> (last visited Apr. 2, 2004).

⁴ See Doyle & Jodrey, *supra* note 1, at 260.

⁵ See map in Appendix A. TETRA TECH, INC., *An Overview of the Historical Everglades Ecosystem and Implications For Establishing Restoration Goals 2* (2000), at <http://rd.tetrattech.com/projects/everglades/Historical%20Everglades%20Ecosystem.pdf> (last visited Apr. 2, 2004).

⁶ *Id.* at 261.

⁷ See *id.* Some of the interests groups included in this are the agricultural industry and specifically what is referred to in South Florida as "Big Sugar" or the sugar cane industry.

Regulation and the South Florida Water Management District that restoration truly began.⁸ That litigation culminated in the passage of the historic Everglades Forever Act⁹ (EFA), originally passed by the Florida Legislature in 1994.¹⁰ Part of the restoration involves the reintroduction of the 1.7 billion acre-feet of freshwater, which diversion canals discharge into the Atlantic Ocean and Gulf of Mexico daily. The issue with the high phosphorus content of these waters is that phosphorus enrichment stimulates growth of certain types of vegetation and algae, and scientists theorize that phosphorus changed the natural mix of the Everglades through a process called eutrophication.¹¹

Low nutrient levels characterized the natural Everglades ecosystem, which limits the growth of plant and animal life.

The addition of enhanced levels of nutrients [known as eutrophication] to a nutrient-limited system such as the Everglades causes degradation by elevating the phosphorus content of the peat soil; disturbing biological and chemical processes in the marsh; and altering the vegetative communities. These imbalances occur throughout the ecosystem, favoring survival of pollutant-tolerant species, such as cattail, and decline of others, such as Sawgrass.¹²

As a result, cattails are slowly replacing the endless sea of sawgrass that is characteristic of the Everglades. The National Park Service estimates that cattails displaced over 6,000 acres of sawgrass by the late 1980's in Loxahatchee National Wildlife Refuge alone.¹³ This change in the

⁸ See *United States of America v. S. Fla. Water Mgmt. Dist.*, 847 F. Supp. 1567 (S.D. Fla. 1992) (approving and entering the settlement agreement between the parties as a consent decree). The original suit was brought for the violation of state water quality standards, particularly phosphorus laden water flowing into federal lands in the Everglades.

⁹ See John J. Fumero & Keith W. Rizzardi, *Everglades Symposium Issue: The Everglades Ecosystem: From Engineering To Litigation To Consensus-Based Restoration*, 13 ST. THOMAS L. REV. 667, 673 (2001) [hereinafter Fumero & Rizzardi].

¹⁰ See FLA. STAT. ch. 373.4592 (1994).

¹¹ See William H. Green & Gary V. Perko, *Everglades Symposium Issue: Good Science or Myopia: Will the 1991 Everglades Settlement Lead to An Optimal Restoration or Will Phosphorus Reductions Be Taken Too Far?*, 13 ST. THOMAS L. REV. 697, 698 (2001) [hereinafter Green & Perko].

¹² Memorandum in Support of Motion of the United States for Partial Summary Judgment on Liability at 20, *U.S. v. SFWMD*, No. 88-1886 (S.D. Fla. filed Nov., 1990) available at http://exchange.law.miami.edu/everglades/litigation/federal/usdc/88_1886/pleadings/us_msj/memo_sj2.html#IIIC (last visited Apr. 2, 2004).

¹³ See UNIVERSITY OF MIAMI SCHOOL OF LAW, *Ecosystem: Eutrophication of the Marsh*, at <http://exchange.law.miami.edu/everglades/science/ecosystem.htm#top>. The Loxahatchee National Wildlife Refuge encompasses Water Conservation Area 1. See Appendix A.

ecosystem also affects native animal species, which live in the sawgrass habitat. For example, habitat changes have reduced the number of wading birds, such as egrets, herons, and ibises, by an estimated ninety percent.¹⁴ Entire populations of animals, including the Cape Sable seaside sparrow, the Miami blackheaded snake, the wood stork, and the Florida panther, are at risk of disappearing.¹⁵ Thus, a major focus of the EFA is a reduction of phosphorus in the waters of the Everglades.¹⁶

After much compromise and significant litigation, tremendous strides in the removal of phosphorus from the waters entering the Everglades occurred because of the EFA. For example, the EFA required the building of Storm Water Treatment Areas (STAs) on the southern border of the EAA to absorb phosphorus-containing waters from flowing directly from the EAA into the Everglades.¹⁷ To date, STAs removed more than 125 metric tons of total phosphorus,¹⁸ but amendments to the EFA in May of 2003 significantly delayed the deadline for Everglades' restoration.¹⁹ The deadline, originally set for 2006 by the 1994 version of the EFA, was delayed until 2016.²⁰

Regardless of this delay, however, the State faced a looming deadline. The EFA required the Florida Department of Environmental Protection (FDEP)²¹ through the Environmental Regulation Commission (ERC) to adopt a phosphorus standard by the end of December 2003.²² Thus, when the ERC announced in July of 2003 that they adopted the default standard of ten parts per billion (ppb) for phosphorus²³ it seemed that reasonable restoration and reduction of phosphorus would continue.

¹⁴ See NATIONAL PARK SERVICE, *The Everglades: Early Development Everglades National Park*, at <http://www.nps.gov/ever/eco/develop.htm> (last visited Apr. 2, 2004).

¹⁵ See *id.*

¹⁶ See generally Fla. Stat. ch. 373.4592 (2003).

¹⁷ See *id.*

¹⁸ See S. FLA. WATER MGMT. DIST., 2004 EVERGLADES CONSOLIDATED REPORT, 4A-1 (2004), available at http://www.sfwmd.gov/org/ema/everglades/consolidated_04/final/chapters/ch4a.pdf (last visited Apr. 2, 2004).

¹⁹ It is beyond the scope of this article to discuss the politics surrounding these changes. However, it is important for the reader to understand that many parties and interest groups had an impact on the revisions to the EFA. See, e.g., Aaron Schwabach, *How Free Trade Can Save the Everglades*, 14 GEO. INT'L ENVTL. L. REV. 301 (2001) [hereinafter Schwabach].

²⁰ See FLA. STAT. ch. 373.4592 (2003). See also FLA. STAT. ch. 373.4592 (1994).

²¹ Formerly named the Florida Department of Environmental Regulation.

²² See FLA. STAT. ch. 373.4592 (2003). The EFA set a default phosphorus standard of ten part per billion (ppb).

²³ See S. FLA. WATER MGMT. DIST., 2004 EVERGLADES CONSOLIDATED REP., 2C-1 (2004), available at http://sfwmd.gov/org/ema/everglades/consolidated_02/final/chapters/ch2c.pdf (last visited Apr. 2, 2004); see also Green & Perko, *supra* note 11, at 699 (stating this is the logical regulatory limit because background limits are around ten ppb).

However, when the ERC adopted the phosphorus standard, the ruling contained testing criteria and moderating provisions²⁴ that resulted in an immediate administrative challenge by the Miccosukee Indians²⁵ under the Florida Administrative Procedures Act.²⁶ The complaint challenges the adoption of the phosphorus standard by the FDEP stating, among other things, the FDEP exceeded its authority.²⁷ The Miccosukee administrative challenge also calls into question most of the testing criteria, claiming it will do little to achieve the ten ppb standard.

This article criticizes the phosphorus standard adopted by the FDEP and proposes changes that are more likely to achieve a uniform ten ppb standard throughout the Everglades. Part I reviews the Everglades Forever Act, its requirements, how the FDEP adopted the ten ppb standard, and the administrative challenge that followed. Part II reviews the proposed ten ppb phosphorus standard, closely scrutinizing the testing criteria and moderating provisions. Part III criticizes the moderating provisions and testing criteria for largely allowing the ten ppb standard to be ignored. Part IV proposes possible solutions for the phosphorus standard. Part V takes a final look at the phosphorus standard and concludes that the administrative challenge is unlikely to succeed.

II. ADOPTION OF THE PHOSPHORUS LIMIT OF TEN PARTS PER BILLION (PPB)

A. *Requirements Under the Everglades Forever Act (EFA) for the Florida Department of Environmental Protection (FDEP)*

The Everglades Forever Act (EFA) is a comprehensive plan to restore the quantity and quality of water in the Everglades Protection Area (EPA).²⁸ To achieve this goal, the EFA requires that "in no case shall such phospho-

²⁴ See generally FLA. ADMIN. CODE ANN. r. 62-302.540 (2003).

²⁵ See Petition for Formal Administrative Determination of Invalidity of Proposed Rule and Request for Formal Administrative Hearing, Miccosukee Tribe of Indians v. Florida, (DOAH, 2003) (No. 03-2872RP), available at <http://www.doah.state.fl.us/internet/search/detail.cfm?CaseNo=03-002872&URLString=0> [hereinafter Petition for Formal Administrative Determination of Invalidity of Proposed Rule and Request for Formal Administrative Hearing, Miccosukee Tribe of Indians v. Florida].

²⁶ See generally FLA. STAT. ch. 120 (2003) (explaining the proper procedures under the Florida Administrative Procedures Act).

²⁷ See e.g. FLA. ADMIN CODE ANN. r. 62-302.540(4) (2003). The amended rule states that achievement of the criteria shall take into account deviations above the 10ppb long-term limit. See also *infra* Part III.C. for a full discussion of this point.

²⁸ See FLA. STAT. ch. 373.4592 (2003).

rus criterion allow waters in the [EPA] to be altered so as to cause an imbalance in the natural populations of aquatic flora and fauna."²⁹ The EFA set a default phosphorus standard of ten parts per billion (ppb).³⁰ While there is no specific reference as to why ten ppb was the default rule, there is scientific data that indicates that ten ppb of phosphorus is at or near natural background levels for the Everglades.³¹ The EFA states that once the FDEP adopts a standard it will supersede the ten ppb limit set as a default, but "shall not be lower than the natural conditions of the [EPA] and shall take into account spatial and temporal variability."³²

As previously stated, the standard that the FDEP must adopt could not cause any imbalance in flora and fauna. Because any increase above natural background levels may cause an imbalance and the adopted standard logically could not be lower than natural background levels of ten ppb, it logically follows that the FDEP was *required* to adopt the default standard of ten ppb. Where the Florida Legislature did give the FDEP leeway to enforce the standard is in the same section where it states, "[T]he department's rule adopting a phosphorus criterion may include moderating provisions during the implementation of the initial phase."³³ These moderating provisions allow for discharges to the EPA based upon Best Available Phosphorus Reduction Technology (BAPRT).

BAPRT, defined in section 2(a)³⁴ as the Best Management Practice, is presently the practice of maintaining and improving source controls of urban and agricultural runoff in the EAA. Discharges into impacted areas³⁵ are allowed if a net improvement is seen for the phosphorus level. The standard also allows discharges into un-impacted areas³⁶ of the Everglades based upon a "determination by the department that the environmental benefits of the discharge clearly outweigh potential adverse impacts."³⁷ The Miccosukee challenged these moderating provisions because, for example, they allow

²⁹ *Id.* ch. 373.4592(4)(e)(2). This section also sets forth the default rule of ten ppb if the FDEP had failed to adopt a standard by the end of 2003; *see also* Green & Perko, *supra* note 11, at 699 (stating high phosphorus levels can cause an imbalance in the Everglades).

³⁰ *See id.* ch. 373.4592(4)(e)(2).

³¹ *See* Green & Perko, *supra* note 11, at 699.

³² FLA. STAT. ch. 373.4592(4)(e)(2) (2003).

³³ *Id.*

³⁴ *Id.* r. 62-302.540(3) (codified at FLA. STAT. ch. 373.4592(2)(a) (2003)).

³⁵ Impacted areas are defined as areas of the EPA where total phosphorus concentrations in the upper ten centimeters of the soils are greater than 500 mg/kg. *See* FLA. ADMIN. CODE ANN. r. 62-302.540(3)(d) (2003).

³⁶ Un-impacted areas are defined as areas of the EPA where total phosphorus concentrations in the upper 10 centimeters of the soils are less than 500 mg/kg. *See id.* r. 62-302.540(3)(i).

³⁷ FLA. STAT. ch. 373.4592(4)(e)(2) (2003).

sampling criteria above ten ppb to be ignored for various reasons.³⁸ Finally, the EPA uses geometric means³⁹ to determine compliance with the long-term reduction of phosphorus for concentration levels measured at sampling stations throughout the EPA.⁴⁰

B. *Delegation of Authority to the Environmental Regulatory Commission (ERC)*

To help achieve the work of the FDEP the State of Florida came up with an ingenious design.⁴¹ The Florida Legislature mandated the FDEP to delegate its rule-making authority to the Environmental Regulation Commission (ERC).⁴² The ERC consists of seven residents of the State, appointed by the governor with approval by the Senate.⁴³ The membership is representative of the agricultural industry, the development industry, local government, the environmental community, lay citizens, and members of the scientific community familiar with the transport of water pollutants.⁴⁴

The ERC has the authority to set water quality standards, such as the phosphorus standard, in the EFA.⁴⁵ This delegation required the ERC to consider scientific and technical validity, economic impacts, as well as relative risks and benefits to the public and the environment.⁴⁶ While the FDEP did delegate a large portion of its standard setting authority, the ERC cannot establish department policies, priorities, plans, or directives according to statute and case law.⁴⁷

C. *Administrative Challenge to the Proposed Rule*

The Miccosukee Indians immediately challenged the proposed phosphorus rule⁴⁸ through the Florida Administrative Procedures Act

³⁸ See discussion *infra* Part III.C.

³⁹ See discussion *infra* Part IV.B.2-4 about geometric and arithmetic means.

⁴⁰ See FLA. STAT. ch. 373.4592(4)(c)(3) (2003).

⁴¹ This scheme seems ingenious because all those affected have input in the adoption of standards like the phosphorus limit required by the EPA. Thus, decisions are not made in a vacuum by bureaucrats.

⁴² See FLA. STAT. ch. 20.255(7) (2003).

⁴³ See *id.*

⁴⁴ See *id.*

⁴⁵ See FLA. STAT. ch. 403.804(1) (2003).

⁴⁶ See *id.*

⁴⁷ See *id.*

⁴⁸ The Everglades has been the home of the Miccosukee Tribe for centuries, and is an integral part of their culture and they claim they would be substantially affected by the proposed phosphorus rule.

(FAPA). The FAPA sets out the general procedures for challenging the validity of a proposed rule in Section 120.56.⁴⁹ First, "any person substantially affected by a rule or proposed rule may seek an administrative determination of the invalidity of the rule on the ground that the rule is an invalid exercise of delegated legislative authority."⁵⁰ Second, the petition seeking an administrative determination must "state with particularity the provisions alleged to be invalid with sufficient explanation of the facts or grounds for the alleged invalidity."⁵¹ Additionally, the petition must provide "facts sufficient to show that the persons challenging a rule is substantially affected by it or... will be substantially affected by it."⁵² Further, the petition *shall be filed* with the Division of Administrative Hearings (DOAH), which will then forward the petition to the challenged agency.⁵³ Within ten days after receiving a petition, unless DOAH grants a continuance, DOAH assigns an administrative law judge who then conducts a hearing within thirty days of the assignment.⁵⁴ The administrative law judge shall render a decision within thirty days of the hearing and state the reasons thereof in writing.⁵⁵ The FAPA further states that hearings held under this section occur by de novo review with the standard of proof being preponderance of the evidence.⁵⁶ Once an administrative law judge makes his ruling, his order is final agency action.⁵⁷

Under this current statutory framework, "the proper test to determine whether a rule is a valid exercise of delegated authority is a functional test based on the nature of the power or duty at issue and not the level of detail in the language of the applicable statute."⁵⁸ The First District Court of Appeals in Florida stated:

The question is whether the rule falls within the range of powers the Legislature has granted to the agency for the purpose of enforcing or implementing the statutes within its jurisdiction. A

See Petition for Formal Administrative Determination of Invalidity of Proposed Rule and Request for Formal Administrative Hearing, *Miccosukee Tribe of Indians v. Florida*, *supra* note 25.

⁴⁹ FLA. STAT. ch. 120.56 (2003).

⁵⁰ *Id.* ch. 120.56(1)(a).

⁵¹ *Id.* ch. 120.56(1)(b)-(c).

⁵² *Id.*

⁵³ *See id.*

⁵⁴ *See* FLA. STAT. ch. 120.56(1)(c) (2003).

⁵⁵ *See id.* ch. 120.56(1)(d).

⁵⁶ *See id.* ch. 120.56(1)(e).

⁵⁷ *See id.* ch. 120.56(1)(e).

⁵⁸ *St. Johns River Water Mgmt. Dist. v. Consolidated Tomoka Land Co.*, 717 So. 2d 72, 80-81 (Fla. 1st DCA 1998).

rule is valid exercise of delegated legislative authority if it regulates a matter directly within the class of powers and duties identified in the statute to be implemented. This approach meets the legislative goal of restricting the agencies' authority to promulgate rules, and, at the same time, ensure that the agencies will have the authority to perform the essential functions assigned to them by the Legislature.⁵⁹

To find the proposed phosphorus standard an invalid delegation of authority, which the Legislature did not grant the FDEP, an administrative judge must determine that the Everglades Forever Act does not expressly grant the sweeping standard proposed. Viewed in this light and combined with the fact that the EFA specifically grants the FDEP power to set a phosphorus limit, including moderating provisions, the Miccosukee administrative challenge has a high standard to meet.

The Miccosukee Tribe argues that the proposed rule will substantially affect them because the Everglades is their home.⁶⁰ Their challenge alleges that the proposed rule exceeds delegated authority because it adopts permit and moderating provisions in addition to establishing numeric interpretation of phosphorus criteria.⁶¹ While many of the allegations of the Miccosukee's challenge have merit, for example, that the moderating provisions exclude relevant data, for their challenge to succeed it must show that the Florida Legislature did not explicitly give the FDEP those powers in the EFA.

III. THE PHOSPHORUS STANDARD, TESTING CRITERIA, AND MODERATING PROVISIONS

A. *Phosphorus Standard*

As previously discussed, the Everglades Forever Act (EFA) required the setting of a numeric phosphorus standard for the Everglades Protection Area.⁶² The Environmental Regulation Commission (ERC) set this standard at ten parts per billion (ppb).⁶³ The logic behind this numeric criterion is not as simple as it sounds at first glance. One would normally assume that the numeric phosphorus limit should be set for waters entering the

⁵⁹ *Id.*

⁶⁰ See Petition for Formal Administrative Determination of Invalidity of Proposed Rule and Request for Formal Administrative Hearing, Miccosukee Tribe of Indians v. Florida, *supra* note 25.

⁶¹ See *id.*

⁶² See generally FLA. STAT. ch. 373.4592 (2003).

⁶³ See FLA. ADMIN. CODE ANN. r. 62-302.540 (2003).

Everglades Protection Area (EPA) from the Storm Water Treatment Areas (STA).⁶⁴ Many pollution permits for industrial discharges require a discharger to meet the permit standard at the point of discharge.⁶⁵ For example, assume Company A has a discharge limit of ten ppb for pollutant X. Company A would be required to discharge pollutant X at ten ppb where it entered navigable waters from the facility's pipe. Normally, Company A would not be able to take samples at various locations downstream, average them, and declare they were meeting the ten ppb standard for pollutant X.

While discharges into the EPA do require pollution permits, the permit standard is clearly above the ten ppb set by the ERC.⁶⁶ If the standard as adopted were for discharges into the Everglades Protection Area (EPA), it would be easy to determine if waters met that standard. For example, the FDEP would monitor the discharges into the EPA like a discharge from an industrial facility similar to the example above. However, this is not the case for the EPA phosphorus limit.⁶⁷ In reality, engineers designed the STAs to have phosphorus limits at fifty ppb.⁶⁸ Therefore, the ten ppb limit for phosphorus could not be a discharge limit from the STAs into the EPA.

The phosphorus standard is actually an overall balance of phosphorus in the Everglades. This is clear from the use of the term *net improvement* in the moderating provisions.⁶⁹ In this case, a net improvement is the downward trend of phosphorus in the waters of the EPA. The FDEP will monitor the Everglades by taking samples at seventy-seven monitoring stations set up throughout the Everglades. The FDEP will then test the water from each station for phosphorus content to make certain there is a net improvement. The FDEP designed this sampling protocol to achieve a ten ppb standard averaged over all stations in the Everglades. Because waters entering the northern portions of the Everglades can and often will be much higher than ten ppb, this is a logical approach to determine the content of phosphorus averaged over the entire area of the Everglades. As the waters flow south past testing stations, phosphorus levels in the water would be reduced through absorption into soil below the water and natural dilution in the

⁶⁴ See generally Keith Rizzardi, *Regulating Watershed Restoration: Why the Perfect Permit is the Good Project*, 27 NOVA L. REV. 51, 58 (2002).

⁶⁵ This is an area of contention between the State and Federal governments. Federal law specifically states that the Clean Water Act does not require permits for agricultural run-off. See 33 U.S.C.A. § 1342(k)(1) (West 2004). However, another Miccosukee lawsuit resulted in a federal court requiring the state to issue permits for the discharges from the STAs. See *Miccosukee v. S. Fla. Water Mgmt. Dist.*, 280 F.3d 1364 (11th Cir. 2002).

⁶⁶ See Green & Perko, *supra* note 11, at 700.

⁶⁷ See FLA. ADMIN. CODE ANN. r. 62-302.540(5)(b)(1) (2003).

⁶⁸ See Green & Perko, *supra* note 11, at 700.

⁶⁹ See FLA. ADMIN. CODE ANN. r. 62-302.540(7)(a)(1) (2003).

water column as water volumes increase by the natural flow through the Everglades.⁷⁰

This sampling protocol will not be an inexpensive venture for the state. Each station will cost the state between \$3,000 and \$40,000 per year for each station.⁷¹ However, if the FDEP monitored discharges from the STAs to the EPA for purposes of compliance, there would only be a handful of monitoring stations. This would significantly reduce the cost of monitoring and be a good indicator of the amount of phosphorus going into the Everglades. Nevertheless, political pressure and interest groups played a significant part in determining the present testing protocol and it is unlikely that it will change.⁷²

B. Testing Criteria

The FDEP collects samples from the monitoring stations on a monthly basis to determine whether water in the Everglades meets the numeric phosphorus standard of ten ppb for that period.⁷³ The criteria is considered met "if the five year geometric mean is less than or equal to the ten ppb limit."⁷⁴ To accomplish this goal the proposed rule sets out three provisions:

- a. the annual geometric mean averaged across all stations is less than or equal to *ten ppb* for three of five years
- b. the annual geometric mean averaged across all stations is less than or equal to *eleven ppb*; and
- c. the annual geometric mean at all individual stations is less than or equal to *fifteen ppb* (emphasis added).⁷⁵

These provisions as drafted should call into question the achievement of the ten ppb standard, even in the mind of the layperson, because three standards appear, two of which are above ten ppb. In addition, the rule

⁷⁰ The achievement of a phosphorus gradient monitored in the interior areas of the Everglades is consistent with the Consent Decree, which helped settle the original lawsuit. See Keith Rizzardi, *Translating Science into Law: Phosphorus Standards in the Everglades*, 17 J. LAND USE & ENVTL. L. 149, 152 (2001) [hereinafter *Translating Science*].

⁷¹ See FLA. DEPT. OF ENVTL. PROT., STATEMENT OF ESTIMATED REGULATORY COSTS FOR SECTIONS 62-302.530 AND 62.302-540, F.A.C., WATER QUALITY STANDARDS FOR PHOSPHORUS WITHIN THE EVERGLADES PROTECTION AREA, DOCKET NO.: 01-37R, available at <http://www.dep.state.fl.us/secretary/erc/default.htm> (last visited Apr. 2, 2004).

⁷² See *supra* note 19.

⁷³ See FLA. ADMIN. CODE ANN. r. 62-302.540(5)(c)(1) (2003).

⁷⁴ *Id.*

⁷⁵ *Id.*

states that any "exceedences of the...provisions shall not be considered deviations from the criteria if attributable to the full range of natural spatial and temporal potential variability."⁷⁶ The FDEP may excuse variability above the ten ppb for natural spatial and temporal variability, statistical variability inherent in sampling and testing procedures, or higher natural background conditions.⁷⁷ Thus, the ultimate goal of the rule is to achieve a geometric mean of the waters in the Everglades with a phosphorus concentration of ten ppb, not the waters entering the Everglades to have a ten ppb phosphorus concentration or lower⁷⁸ as most industrial discharge programs are set up. The implication is that overtime the criteria will achieve the ten ppb standard. However, it is hard to understand how that would be possible because the testing criteria contain two standards above ten ppb.

C. Moderating Provisions

The proposed rule has a section of moderating provisions for discharges into the EPA. It appears the FDEP drafted the moderating provisions understanding that discharges to the EPA simply will not be able to meet the ten ppb standard⁷⁹ in the short term. This is evident from the standard's use of *net improvement*.⁸⁰ As long the Everglades shows net improvement, the moderating provisions allow discharges into the EPA.⁸¹ The FDEP will achieve this net improvement by using the Best Available Phosphorus Reduction Technology (BAPRT).⁸²

Section 2a⁸³ defines BAPRT as the best management practice, which presently is the practice of maintaining and improving source controls of urban and agricultural runoff in the EAA. STAs further enhance BAPRT by collecting run-off from the EAA before it flows into the Everglades.⁸⁴ As previously discussed, STAs are designed to have outflows of fifty ppb phosphorus.⁸⁵ Because the average inflows into STAs of phosphorus are 154 ppb,⁸⁶ the net improvement provision seems to be directed at the STAs

⁷⁶ *Id.*

⁷⁷ *See id.*

⁷⁸ *See* discussion *infra* Part IV.B.1-4.

⁷⁹ This is understandable considering that the STAs were designed for discharges of fifty ppb.

⁸⁰ *See* FLA. ADMIN. CODE ANN. r. 62-302.540(7)(a) (2003).

⁸¹ *See id.*

⁸² *See id.*

⁸³ *Id.* r. 62-302.540(3) (codified at FLA. STAT. ch. 373.4592(2)(a) (2003)).

⁸⁴ *See id.* r. 62-302.540(3).

⁸⁵ *See* Green & Perko, *supra* note 11, at 700.

⁸⁶ *See* S. FLA. WATER MGMT. DIST., 2004 EVERGLADES CONSOLIDATED REPORT, *supra* note 18.

rather than the EPA. Accordingly, as long as the geometric mean concentration of phosphorus is going down, high discharges into the EPA will continue.

IV. CRITICISMS OF THE PHOSPHORUS STANDARD AND PROVISIONS

A. *FDEP Exceeded its Rule-Making Authority*

The Miccosukee administrative challenge claims the Environmental Regulation Commission (ERC) exceeded its authority when it adopted the ten parts per billion (ppb) standard.⁸⁷ For this to be true, the ERC would have to do more than set a numeric standard.⁸⁸ Further, the Florida Department of Environmental Protection (FDEP) must exceed the power or duties delegated by the Legislature in the Everglades Forever Act (EFA) for that to occur.⁸⁹ The proposed rule also contains moderating provisions and numeric interpretation criterion for the data collected to determine compliance within the Everglades Protection Area (EPA).⁹⁰ While there can be little doubt that the ERC has the authority to set water quality standards, the authority of the FDEP to set moderating provisions and testing criteria that allow the intent of the Everglades Forever Act (EFA)⁹¹ to be defeated seems beyond “the powers and duties identified in the statute to be implemented.”⁹²

The moderating provisions call for a net improvement to be the standard for discharges into impacted areas of the EPA until December 31, 2016.⁹³ The goal of the moderating provisions is not the discharge of water with ten ppb phosphorus, but rather the goal of “reducing outflow concentrations of phosphorus.”⁹⁴ This in turn must be a reference to the STAs rather than an actual standard for the Everglades. If the goal of the moderating provisions is the net reduction of phosphorus from the outflow from the Everglades,

⁸⁷ See Petition for Formal Administrative Determination of Invalidity of Proposed Rule and Request for Formal Administrative Hearing, *Miccosukee Tribe of Indians v. Florida*, *supra* note 25.

⁸⁸ See discussion *supra* Part II.C about the Florida Administrative Procedures Act.

⁸⁹ See *id.*

⁹⁰ See, e.g., FLA. ADMIN. CODE ANN. r. 62-302.540 (2003).

⁹¹ See FLA. STAT. ch. 373.4592(1)(d) (2003). “It is the intent of the Legislature to promote Everglades restoration...The legislature finds that waters flowing into the Everglades Protection Area contain excessive levels of phosphorus. A reduction of phosphorus will benefit the ecology of the Everglades Protection Area.”

⁹² Margolis v. Miami Dade County Sch. Bd., No. 98-4915RX, 1999 WL 1486356, at *10 (Fla. Div. Admin. Hrgs., June 2, 1999).

⁹³ See FLA. ADMIN. CODE ANN. r. 62-302.540(7)(a)(1) (2003).

⁹⁴ *Id.* r. 62-302.540(7)(a)(1)(a).

this would be in direct conflict with the consent decree which the State and the federal government previously agreed upon.

The consent decree specifically discusses *inflow limits* for the Everglades ranging from eight to fourteen ppb.⁹⁵ If higher levels of phosphorus⁹⁶ are entering impacted areas of the Everglades, yet the outflows are going down, where has the phosphorus gone? Logic suggests that the phosphorus is being absorbed into the Everglades and this logic is supported by scientific studies. One such study documents high levels of phosphorus in the soils of the Everglades.⁹⁷ While the net effect in the water column may be reduced, the phosphorus continues to concentrate in the soil. Thus, the soil is still an available source from which the natural flora and fauna could absorb excess phosphorus. The availability of phosphorus as a nutrient would not be the ten ppb. Potentially, it would be whatever the nutrient level in the soil is.⁹⁸ Thus, the moderating provisions as proposed by the FDEP allow the ten ppb standard to be ignored. Because the agency effectively used its delegated power to adopt provisions, which defeat the accomplishment of the ten ppb standard, one could argue that it is beyond "powers the Legislature has granted to the agency for the purpose of enforcing or implementing the statutes."⁹⁹

The moderating provisions also allow the FDEP to ignore relevant data. For the purpose of hydro-pattern restoration, the FDEP can discharge into un-impacted areas of the Everglades. Subsection b.2 of the moderating provision allows discharges if the environmental benefits "clearly outweigh the potential adverse impacts that may result in the event that phosphorus levels in the discharge exceed the criterion."¹⁰⁰ This provision is not without its merits. Clearly, part of the restoration of the Everglades must be the reintroduction of water that was long ago diverted, which caused much of the Everglades to dry up.¹⁰¹ The concern seems to be that this is a disingen-

⁹⁵ See *Translating Science*, *supra* note 70, at 152.

⁹⁶ In other words, levels exceeding ten ppb.

⁹⁷ See Memorandum in Support of Motion of the United States for Partial Summary Judgment on Liability at 38, *U.S. v. SFWMD*, No. 88-1886 (S.D. Fla. filed Nov., 1990) available at http://exchange.law.miami.edu/everglades/litigation/federal/usdc/88_1886/pleadings/us_msj/memo_sj2.html#IIIC; but see TETRA TECH, INC., AN OVERVIEW OF THE HISTORICAL EVERGLADES ECOSYSTEM AND IMPLICATIONS FOR ESTABLISHING RESTORATION GOALS 25-30 (2000) at <http://rd.tetrattech.com/projects/everglades/Historical%20Everglades%20Ecosystem.pdf> (last visited Apr. 2, 2004).

⁹⁸ The nutrient level for impacted areas exceeded 500 mg/kg.

⁹⁹ *St. Johns River Water Mgmt. Dist. v. Consolidated Tomoka Land Co.*, 717 So. 2d 72, 80-81 (Fla. 1st DCA 1998).

¹⁰⁰ FLA. ADMIN. CODE ANN. r. 62-302.540(7)(b)(2) (2003).

¹⁰¹ See Doyle & Jodrey, *supra*, note 1, at 260-61.

uous loophole, which will allow the FDEP to discharge phosphorus-containing water at any level with no recourse. However, because there is a clear need for hydro-pattern restoration,¹⁰² it seems that this provision is an absolute necessity for the EFA to accomplish its end.

The Florida Legislature made certain that the FDEP had the authority to adopt moderating provisions. The EFA specifically allows the FDEP to adopt "moderating provisions during the implementation of the initial phase of the Long Term Plan [as long as there is] net improvement to impacted areas."¹⁰³ A broad reading of the EFA demonstrates that the FDEP has authority to adopt some form of moderating provisions, but interpretation of this provision in the EFA should not be done in a vacuum. One should consider that the initial phase of implementation originally was set to end in 2006; revisions in 2003 extended the deadline until 2016.¹⁰⁴ This extension and accompanying moderating provisions allows ten more years of discharges with high levels of phosphorus, so long as the FDEP achieves a net improvement. Under hydro-pattern restoration, entire discharges to restore water levels could be ignored for purposes of determining compliance with the ten ppb standard,¹⁰⁵ allowing for the continued imbalance of flora and fauna that the EFA set out to reverse. The FDEP faced quite a paradox. To continue the restoration of the Everglades, a reduction in phosphorus was necessary. To prevent the Everglades from drying up, large quantities of water that are high in phosphorus had to be pumped in. Thus, the Florida Legislature drafted the EFA with enough wiggle room so the FDEP could achieve the ten ppb standard.

The Miccosukee administrative challenge is valid regarding the net improvement concept and the exclusion of imbalance discharges in the moderating provisions. Yet, the FDEP must have these moderating provisions to make restoration of the Everglades a reality. Without the reintroduction of fresh water, the Everglades would dry up. The Florida Legislature recognized this when it added the moderating provisions to the EFA. Thus, it is unlikely that an administrative judge will find adoption of moderating provisions outside the power the Legislature delegated to the FDEP.

¹⁰² Hydro-pattern restoration in this case would be the reintroduction of some of the 1.7 billion acre-feet of fresh water in drier periods that is flowing directly to the ocean.

¹⁰³ FLA. STAT. CH. 373.4592(4)(e)(2) (2003).

¹⁰⁴ See FLA. STAT. ch. 373.4592 (2003).

¹⁰⁵ See discussion *infra* Part IV.B.

B. The Testing Criteria as Proposed by the FDEP/ERC is Flawed

The Everglades restoration presents a unique situation. Most discharges by permit are from point-source industrial facilities as previously discussed, meaning there is a distinct facility from which the pollution originates. The high phosphorus water discharged from the STAs into the Everglades originates from non-point sources, which are located in the EAA.¹⁰⁶ While the State did not generate the phosphorus-containing water, Florida, through the FDEP, is in charge of cleaning up these waters before they enter the EPA. Ironically, the State is forced to comply with its own permits for polluted water that it did not generate. Regardless of this fact, the federal government decided that discharges from STAs and diversion canals are subject to point-source pollution permits.¹⁰⁷

The approach that all parties originally agreed to and incorporated into the proposed rule dictated that compliance would be determined by flow though concentrations of phosphorus,¹⁰⁸ including setting up sampling stations throughout the Everglades. These stations capture representative samples flowing by and the FDEP collects these samples once per month at each location. Although this approach has merit, to make it scientifically sound, the FDEP must include all samples in the final computation towards the ten ppb standard. Otherwise, it is not a true representation of whether or not waters in the Everglades are meeting the standard.

1. STANDARD ESTABLISHES MORE THAN ONE CRITERION

A cursory reading of the proposed rule immediately gives the impression that waters of the Everglades will not meet the ten ppb standard. Of the three different standards set out in the rule, two are above the suggested standard of ten ppb.

- a. the annual geometric mean averaged across all stations is less than or equal to ten ppb for three of five years
- b. the annual geometric mean averaged across all stations is less than or equal to *eleven ppb*; and

¹⁰⁶ Phosphorus also comes from urban areas, but a majority of the problem originates from the agricultural industry.

¹⁰⁷ See *Miccossukee v. S. Fla. Water Mgmt. Dist.*, 280 F.3d 1364 (11th Cir. 2002).

¹⁰⁸ See *id.*

- c. the annual geometric mean at all individual stations is less than or equal to *fifteen ppb* (emphasis added).¹⁰⁹

While the ERC does have the power to establish water quality standards, the setting of multiple standards may be beyond their delegated authority. Additionally, the EFA says nothing about establishing multiple standards for phosphorus, but rather specifically provides for *a criterion* throughout the sections that discuss the establishment of a phosphorus standard.¹¹⁰

Because the EFA specifically mentions *a criterion* throughout Section (4)(e)(2) no less than six separate times,¹¹¹ there can be no other interpretation beside a criterion must be set. As a result, there should be but one standard set for the Everglades to determine the net improvement strategy is working. For any other interpretation to be valid, the Florida Legislature would have to revise the EFA yet again. The ERC stepped outside the powers delegated to it through the FDEP because the EFA does not mention multiple criteria, and there may be good reason for an administrative judge to question its legitimacy.

The use of multiple standards by the FDEP/ERC, of all the challenges set forth in the Miccosukee Tribe's challenge¹¹² to the proposed rule, is most susceptible to rejection through an administrative hearing. This is not a case where judicial interpretation is required to construe an inconsistency in the statute or the intent of the legislature.¹¹³ To the contrary, the statute is very clear. There is to be a criterion set for phosphorus¹¹⁴ and in the event a criterion is not set by the FDEP, it shall be ten ppb.¹¹⁵ Once the FDEP adopts a criterion it will supersede the ten ppb standard in the EFA.¹¹⁶ Therefore, this portion of the proposed rule is an invalid exercise of delegated authority.¹¹⁷ However, it would be easy for the FDEP and ERC to rectify this problem, as they could simply set a standard of ten ppb with no other provisions. While this would not rectify all the problems with the proposed rule, it is the provision that is easiest to correct.

¹⁰⁹ See FLA. ADMIN. CODE ANN. r. 62-302.540(5)(c)(2) (2003).

¹¹⁰ See FLA. STAT. ch. 373.4592(4)(e)(2) (2003).

¹¹¹ See *id.*

¹¹² See Petition for Formal Administrative Determination of Invalidity of Proposed Rule and Request for Formal Administrative Hearing, *Miccosukee Tribe of Indians v. Florida*, *supra* note 25.

¹¹³ See, e.g., *Peterson v. Dep't of Env'tl. Regulation*, 350 So. 2d 544, 545 (Fla. Dist. Ct. App. 2003).

¹¹⁴ See FLA. STAT. ch. 373.4592(4)(e)(2) (2003).

¹¹⁵ See *id.*

¹¹⁶ See *id.*

¹¹⁷ See discussion *supra* Part II.C.

2. PROPOSED RULE USES GEOMETRIC MEAN TO DETERMINE COMPLIANCE WITH STANDARD

The Miccosukee's administrative challenge also states that the proposed rule's use of geometric means is not a fair and rational mathematical method of measuring compliance with the ten ppb phosphorus criterion.¹¹⁸ Their allegations have merit when one takes a close look at geometric means. A geometric mean is the average value of a set of quantities expressed as the n th root of their product.¹¹⁹ The geometric mean is relevant any time several quantities are multiplied together to produce a product.¹²⁰ It answers the question: "If all the quantities had the same value, what would that value have to be in order to achieve the same product?"¹²¹ Anytime you have a number of factors contributing to a product, and you want to find the *average* factor, the answer is the geometric mean.¹²² Geometric means are most often used in financial markets to determine average returns on investment.¹²³

Pollution permit calculations also use geometric means for determinations of whether the discharger complies with their permit. For example, many wastewater dischargers, as well as regulators who monitor swimming beaches and shellfish areas, must test for and report fecal coliform bacteria concentrations,¹²⁴ giving credence to the FDEP's willingness to use geometric means to determine compliance with the ten ppb standard. Nevertheless, the use of geometric means has one flaw. A geometric mean, unlike an arithmetic mean, tends to dampen the impact of very high or low values.¹²⁵ The effect would be to bias the mean lower, in other words extremely high levels of phosphorus would not raise the average as much

¹¹⁸ See Petition for Formal Administrative Determination of Invalidity of Proposed Rule and Request for Formal Administrative Hearing, *Miccosukee Tribe of Indians v. Florida*, *supra* note 25.

¹¹⁹ See PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, *Geometric Mean Calculation—Wastewater NPDES Reporting*, at http://www.dep.state.pa.us/waterops_apps/etpmain/NPDES/calculator/GeoMain.asp (last visited Apr. 2, 2003) ("The geometric mean of the numbers 455, 122, and 333 would be calculated by multiplying them together and taking the 3rd (nth root = the number of values) root of that value or 264.")

¹²⁰ See UNIVERSITY OF TORONTO MATHEMATICS NETWORK, *Applications of the Geometric Mean*, at <http://www.math.toronto.edu/mathnet/questionCorner/geomean.html> (last visited Apr. 2, 2004).

¹²¹ *Id.*

¹²² See *id.*

¹²³ See *id.*

¹²⁴ See BUZZARDS BAY PROJECT NATIONAL ESTUARY PROGRAM, *Geometric Mean Calculation*, at <http://www.buzzardsbay.org/geomean.htm> (last visited Apr. 2, 2004).

¹²⁵ See PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, *supra* note 119.

and would make compliance easier. This effect, however, could be avoided if a straight average (arithmetic mean) were calculated.¹²⁶

The effects of using geometric means to determine compliance with the EFA is clear. Use of a geometric mean would tend to bias the results by damping the effect of very high levels of phosphorus detected at stations in the upper Everglades. Higher levels of phosphorus would occur at those sampling stations nearest where the discharges from the STAs are because that is where the phosphorus containing waters enter the Everglades. While the damping effect is good for other forms of sampling, such as fecal coliform concentrations, because they tend to vary wildly at any time,¹²⁷ allowing the use for determination of EFA compliance may be inappropriate. The FDEP should not expect the wild variances regulators see in fecal coliform counts because the STAs are designed to discharge waters containing fifty ppb of phosphorus. Because high levels of phosphorus are effectively dampened using geometric means, the imbalance in the flora and fauna in the upper Everglades would continue.

3. ANALYSIS USES GEOMETRIC MEAN OVER EXCESSIVE TIME PERIOD

As previously discussed, geometric means tend to bias the results of sampling by damping the effects of higher readings. The proposed rule further biases the results of sampling in the Everglades for compliance purposes by using an excessive time period. It states that both un-impacted and impacted areas of the Everglades will achieve the criterion if the *five-year* geometric mean is less than or equal to ten ppb standard.¹²⁸ One provision that follows also permits compliance if the annual geometric mean across all stations is equal to ten ppb for three out of five years.¹²⁹ Allowing the calculation of the geometric mean over such an extended period would further distort whether the Everglades is in fact achieving the ten ppb standard. While the geometric mean for this period may very well be at or below the ten ppb, there would be serious reason to doubt that the ten ppb standard is uniform throughout the Everglades. Because that is the standard for the EPA, which the FDEP/ERC adopted, it would be their responsibility to make certain the Everglades meets the standard. Allowing the geometric mean to be calculated over extended periods of time further undermines the accomplishment of the end. Additionally, this is in direct conflict with the

¹²⁶ See BUZZARDS BAY PROJECT NATIONAL ESTUARY PROGRAM, *supra* note 124.

¹²⁷ See PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, *supra* note 119. Fecal coliform concentrations can vary from 200 to 200,000.

¹²⁸ See FLA. ADMIN. CODE ANN. r. 62-302.540(5) (2003).

¹²⁹ See *id.*

consent decree agreed to by the State of Florida and the federal government, which called for the calculation of *annual* compliance with the phosphorus standard.¹³⁰

4. ANALYSIS USES GEOMETRIC MEAN AT INDIVIDUAL STATIONS

While the FDEP justifies use of geometric means for compliance of the overall EFA of the ten ppb, another provision using geometric means should find little justification. The proposed rule also allows the use of geometric means for calculation of the readings at individual stations,¹³¹ furthering bias of the data collected. This is especially clear when one considers that the geometric mean is always lower than the arithmetic mean or average.¹³² The arithmetic mean is determined by taking the average of a set of quantities.¹³³ Determining whether individual stations are meeting the ten ppb phosphorus standard is more representative if the mean or average is used. The average would not have a tendency to dampen the higher readings recorded at stations. Thus, extreme readings would appear more clearly in the data rather than disappearing in the clutter of lower readings.

The Miccosukee's administrative challenge has valid points related to geometric means. Would that be enough for a successful challenge to the proposed phosphorus rule? There is no clear answer. However, the Florida Legislature did give the FDEP authority to set a numeric standard with moderating provisions as set out in the EFA. The question may be was the Florida Legislature specific enough? The First Circuit in *Southwest Florida Water Management District v. Save the Manatee Club, Inc.*¹³⁴ stated that, "authority for an administrative rule is not a matter of degree."¹³⁵ The question is "whether the statute contains a specific grant of legislative authority for the rule, not whether the grant of authority was specific enough."¹³⁶ In other words, "[e]ither the enabling statute authorizes the rule at issue or it does not."¹³⁷

¹³⁰ See *Translating Science*, *supra* note 70, at 152.

¹³¹ See FLA. ADMIN. CODE ANN. r. 62-302.540(5) (2003).

¹³² See BUZZARDS BAY PROJECT NATIONAL ESTUARY PROGRAM, *supra* note 124. *E.g.*, the arithmetic mean of 3, 4, and 8 is 5. The geometric mean of 3, 4, and 8 is 4.5.

¹³³ See PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, *supra* note 119.

¹³⁴ S. W. Fla. Water Mgmt. Dist. v. Save the Manatee Club, Inc., 773 So. 2d 594 (1st DCA 2000).

¹³⁵ *Id.* at 599.

¹³⁶ *Id.*

¹³⁷ *Id.* See also State Bd. of Trs. v. Day Cruise Ass'n, Inc. 794 So. 2d 696 (1st DCA 2001); Agency for Health Care Admin., Bd. Of Clinical Lab. Pers. v. Fla. Coalition of Prof'l Lab. Orgs., Inc., 718 So. 2d 869 (1st DCA 1998).

Although, the Everglades Forever Act granted the FDEP power to adopt moderating provisions and a numeric standard, it did not specify how to achieve that. While the use of geometric means is questionable, the FDEP's adoption of it seems reasonable because it is used in other facets of sampling for pollution permitting.¹³⁸ Because the intent of the Florida Legislature is clear in the EFA, the Florida courts are unlikely to require more. The Florida Supreme Court interpreted the Administrative Procedure Act to mean that the Legislature should not have to micro-manage Florida's agencies and the public's interest is served by encouraging agency responsiveness in the performance of their functions.¹³⁹ Considering the EFA grants the FDEP the power to adopt a phosphorus standard, it is not likely the courts will question the manner in which it is implemented, especially since an administrative judge is likely to see the testing criteria as a reasonable way to achieve the ten ppb standard.

V. POSSIBLE SOLUTIONS FOR FLAWS IN THE PHOSPHORUS STANDARD

Because the Florida Department of Environmental Protection (FDEP) is able to discard relevant data through the moderating provisions and the natural bias by using geometric means, the FDEP is probably aware that an actual ten ppb standard simply cannot be met. However, the FDEP did the best it could by adopting a standard that had as much leeway as possible. It is also likely that the phosphorus standard will survive the Miccosukee's administrative challenge. Considering the history of the Everglades litigation,¹⁴⁰ one may conclude no matter what standard the FDEP adopted an interested party would challenge it. Nevertheless, the FDEP had to come up with an achievable standard. With the wide open moderating provisions and testing criteria it is unlikely that waters of the Everglades will ever truly contain only ten ppb of phosphorus.

In reality, the proposed rule will do little to achieve a water quality standard of ten ppb. While it would be ideal if it could, because ten ppb is near the natural background level of the Everglades,¹⁴¹ it simply will not happen under this rule. A better solution may be to set the standard higher and adjust the testing criteria.¹⁴² The Duke University Wetland Center's

¹³⁸ See *supra* text accompanying note 124.

¹³⁹ See Florida Dept. of Bus. and Prof'l Regulation, Div. of Pari-Mutuel Wagering v. Inv. Corp. of Palm Beach, 747 So. 2d 374 (Fla. 1999).

¹⁴⁰ See Fumero & Rizzardi, *supra* note 9, at 672-82.

¹⁴¹ See Green & Perko, *supra* note 11, at 699.

¹⁴² This is very unlikely considering the political climate surrounding the Everglades Forever Act. See discussion *supra* note 19.

Research determined that a range of phosphorus in the water column from seventeen to twenty-two ppb would prevent significant alteration of the Everglades.¹⁴³ It further determined that a phosphorus concentration of twenty ppb would achieve a balance of flora and fauna.¹⁴⁴ The FDEP discounted this study because of its limited nature, which seemed to bias the data.¹⁴⁵ Actually, the proposed rule by the FDEP may end up achieving a phosphorus standard similar to the Duke University study. However, because scientific data indicates background levels of phosphorus in the Everglades are around ten ppb and the Florida Legislature and federal government have long negotiated for a political solution, a standard at or very near to ten ppb was the only standard the FDEP could adopt.

While there would be little support for changing the ten ppb standard, as previously discussed, there may be a need to modify the testing criteria. First, the FDEP should calculate arithmetic average rather than a geometric mean at individual testing stations. This would be more representative of levels of phosphorus in the station area. Second, the geometric mean for the entire Everglades area should be on an annual basis, satisfying the Consent Decree and serving to reduce some of the complaints the Miccosukee Indians have about the proposed rule. While this is far from a perfect solution, it is better than the proposed rule and may help reduce some of the discourse.

Another solution is to pressure the agricultural industry to reduce the amount of phosphorus contained in the water leaving the Everglades Agricultural Area (EAA). It is true that the present technologies developed for the Storm Water Treatment Areas (STA) are the most economical for the agricultural industry,¹⁴⁶ but these industries are the origin of this non-point source phosphorus. Yet, it is also true that the Everglades Forever Act (EFA) developed with the idea that the agricultural industry which benefited from lands that were previously the Everglades, should help pay for the cleanup. Currently, the industry pays an Agricultural Privilege Tax of \$4.29 per acre to maintain the status quo.¹⁴⁷ This comes to approximately \$96,118,595 of

¹⁴³ See *Translating Science*, *supra* note 70, at 155.

¹⁴⁴ See *id.*

¹⁴⁵ See *id.*

¹⁴⁶ The Sugar Cane Growers Cooperative of Florida estimates that alternatives like chemical treatment/solid separation technology would exceed \$2 billion. See FLA. DEPT. OF ENVTL. PROT., STATEMENT OF ESTIMATED REGULATORY COSTS FOR SECTIONS 62-302.530 AND 62.302-540, F.A.C., WATER QUALITY STANDARDS FOR PHOSPHORUS WITHIN THE EVERGLADES PROTECTION AREA, DOCKET NO.: 01-37R, available at <http://www.dep.state.fl.us/secretary/erc/default.htm> (last visited Apr. 2, 2004).

¹⁴⁷ See S. FLA. WATER MGMT. DIST., EVERGLADES CONSTRUCTION PROJECT—FINANCIAL SCHEDULES 4 (June 2003), available at <http://www.sfwmd.gov/org/erd/ecp/ecpindex.pdf> (last visited Apr. 2, 2004).

the estimated \$405,023,403 of the costs as of September 2002.¹⁴⁸ The agriculture industry is seemingly not paying its fair share. Couple this with the millions of subsidies that the industry receives from the federal government, and one quickly concludes they could pay more.¹⁴⁹

VI. CONCLUSION

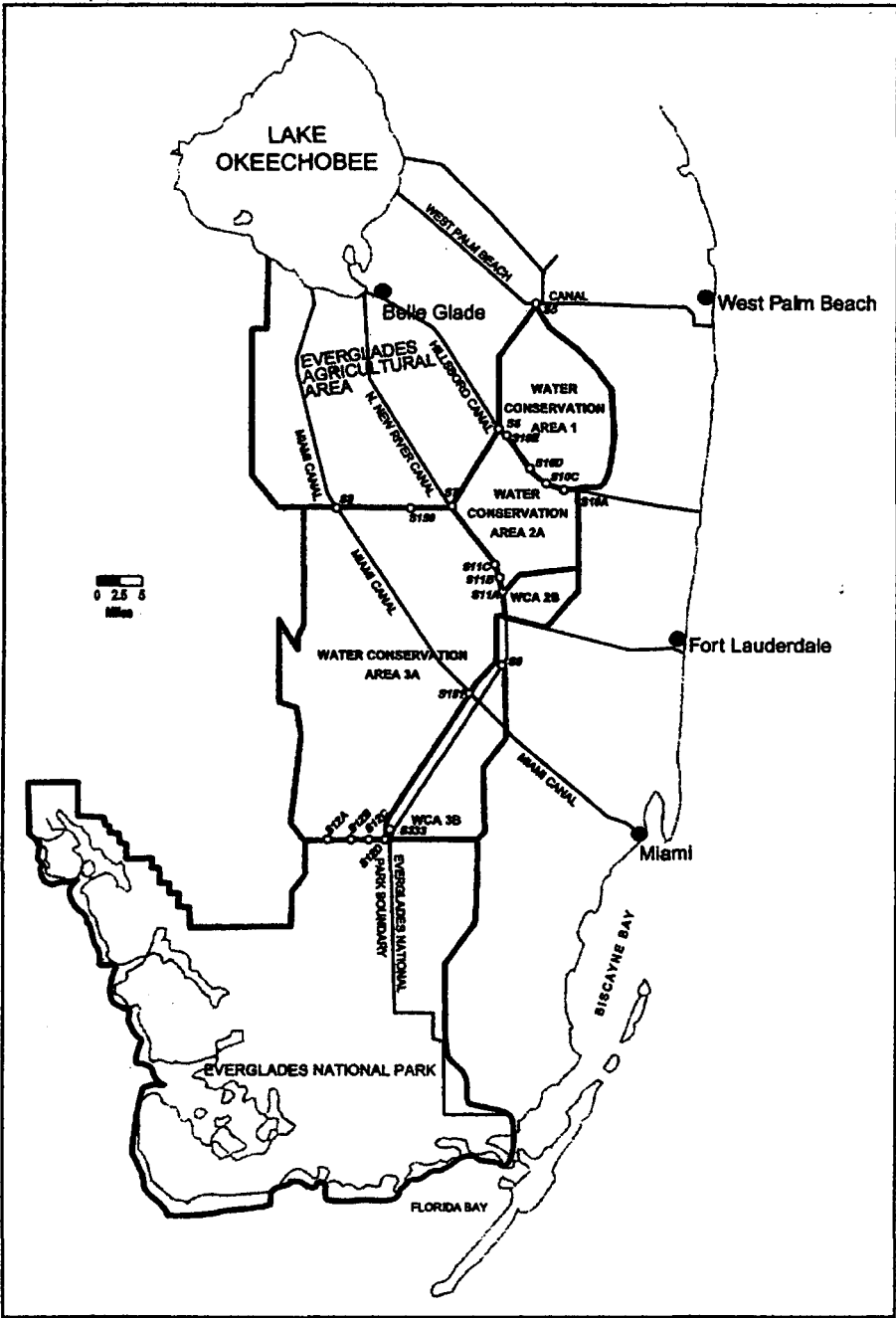
The proposed rule for achieving a phosphorus standard of ten ppb, as adopted by the FDEP and ERC will not accomplish what it purports to do. It appears that the FDEP adopted a ten ppb standard because the Legislature suggested it in the EFA and natural background levels of phosphorus are believed to be around that concentration. However, the FDEP knew that the ten ppb standard could not be met because present phosphorus removal practices are not adequate. Therefore, it adopted a standard with flawed testing criteria, allowing the FDEP to excuse relevant data resulting in non-compliance of the ten ppb standard. As written, certain provisions of the proposed rule could have trouble passing the administrative challenge. Other provisions, such as use of geometric means are questionable as written into the rule. However, opponents to the proposed rule will have to overcome a high standard to show that the FDEP exceeded its delegated authority since the Florida Administrative Procedures Act and case law is in the State's favor.

While the proposed phosphorus standard may be susceptible to a challenge because the FDEP adopted three standards rather than one, the FDEP can easily correct that. The FDEP could also do more to curb the criticism it is facing. Among the changes would be the setting of one standard, the use of arithmetic means rather than geometric means at individual stations, and removal of the excessive period over which the geometric means are measured. There is little doubt that a proposed rule with these provisions would also be challenged, but these changes would create a less controversial rule; one that is more representative of phosphorus in the water column. It is more likely to preserve the proposed phosphorus standard during an administrative challenge and more likely to attain the intent of the EFA. The proposed rule as adopted by the FDEP/ERC, however, is little more than a shell of standard that will not achieve a ten ppb standard. This is not to say the FDEP intended to undermine the EFA, the FDEP simply did its best based on the circumstances.

¹⁴⁸ See *id.*

¹⁴⁹ See generally Schwabach, *supra* note 19.

APPENDIX A



Schematic of the current Everglades region. The letter-number combinations identify the flow control structures in the system.