

Background on Phosphorus

- 1) **Everglades Forever Act of 1994** does NOT set any particular standard for phosphorus content in water flowing to the Everglades. Rather, the law requires the ERC to take testimony and adopt a scientifically valid standard for phosphorus in water entering the million-acre region that starts with the Water Conservations Areas and flows down to Everglades National Park. The law uses “net improvement” and “causing no imbalance in flora and fauna” as criteria. This area is known as the Everglades Protection Area.
- 2) **Phosphorus is a mineral nutrient** that is essential for all living things, including sawgrass and the other plants and animals of the Everglades ecosystem. It is not toxic and is not a chemical.
- 3) **Hydroperiod is the depth of water and the cycle of drought and flood.** It is the dominant characteristic of the Everglades, more important to sawgrass and many other species than small changes in nutrient levels. Higher phosphorus levels in a sawgrass plain simply produce thicker stands of sawgrass. When the sawgrass is drowned by high water, however, the area often turns to cattail. (See WMD research Hydrologic Needs of Everglades Marshes).
- 4) **Phosphorus occurs naturally in the soil,** plants and animals throughout the historic Everglades system. Phosphorus-rich water from Lake Okeechobee historically flowed south, depositing the phosphorus-rich peat soil that now supports agriculture in the area.
- 5) **STAs:** More than 40,000 acres of man-made marshes, called Stormwater Treatment Areas (STAs) have been planned in recent years to restore this process of peat-formation to the system. Four STAs comprising less than 20,000 acres have been completed so far, with two more scheduled for completion in late 2004, at a total cost of more than \$700 million.
- 6) **STAs have been successful:** Water leaving the STAs already in operation is in the range of 20 to 30 ppb and is down to 10 ppb before it reaches Everglades National Park. One cell of STA 1W now has achieved levels of 14 ppb for two years. As other cells mature, they are expected to reach or even exceed this performance.
- 7) **Wildlife is rebounding:** Since 1994 a wide range of public and private efforts have achieved very significant improvements in the health of the Everglades. In spring of 2001, nests of the white ibis, a threatened species of wading bird, reached an all-time record high of 12,500 in the Loxahatchee preserve in Palm Beach County. Florida panther births now are counted as three times as numerous as panther deaths. Florida crocodile nests in the region more than doubled during the last 20 years of the 20th Century. Overall, by spring of 2000, nesting pairs of Everglades wading birds had surpassed 30,000 for the first time since 1946, up from the low of 5,000 in the 1980s. (See www.sfwmd.gov for details.)
- 8) **The Everglades is a mixed ecosystem** that ranges from rich forest environments to aquatic deserts. Historically, this wide variety of changing environments was created by a mixture of factors such as different water levels, seasonal cycles of rainfall and drought, shifting acid/alkaline balances, and fire.
- 9) **Comprehensive Everglades Restoration Plan:** Because habitat changes over the past century result from the complex interaction of these and other factors, the \$8 billion Federal Comprehensive Everglades Restoration Plan (CERP) focuses on the quantity of water and on the cycles of high and low water.
- 10) **Nutrient level requirements vary:** The nutrient-starved aquatic desert areas are unique to the Everglades but are only one portion of the million acres of the system. These areas, called oligotrophic sloughs, feature sparse vegetation and few higher life forms. They may be dominated by a seasonal mat made up of varying colonies of microorganisms (periphyton mats). Some of these organisms require a very low phosphorus content of 10 ppb or even less in order to survive.
- 11) **Too much phosphorus** turns these unique patches of Everglades aquatic desert (oligotrophic sloughs) into an ordinary subtropical swamp, allowing the periphyton mat to be replaced by denser vegetation and high concentrations of birds and animals.

- 12) **Too little phosphorus** in the other areas will starve out the snails, birds and many endangered species that thrive in the border areas next to the oligotrophic sloughs and in the more nutrient-rich environments. Dense wading bird populations need more plants and fish and, consequently, are found in areas with phosphorus levels as high as 30 ppb or higher.
- 13) **Current basin discharge levels:** The water to be measured under the new rule enters the Everglades Protection Area from urban, suburban and agricultural sources around South Florida. These include Lake Okeechobee, Wellington, Weston, Coral Springs, parts of Southwest Dade County, Indian Reservations, and some low-intensity farming on the west side of the Everglades, as well the large Everglades Agriculture Area just south of Lake Okeechobee. None of these basins currently discharges water at 10 ppb.
- 14) **EAA phosphorus discharge levels:** The basin that is farthest along in reducing phosphorus from water and in meeting state requirements is the Everglades Agricultural Area Basin. By implementing scientifically designed Best Management Practices, the EAA has reduced phosphorus loads for eight consecutive years. In 2001 sugar farmers reduced the amount of phosphorous leaving the Everglades Agricultural Area by 73 percent. The most recent three-year trend calculated shows a 55 percent reduction of the phosphorus load from the EAA basin, where the law requires only a 25 percent reduction. In contrast, some of the urban basins have no plan at all, or no funding source for their plan, or are only beginning to study the components that will compose their plan. These basins clearly will not be able to meet any stringent phosphorus standard in the near future.

Florida

Department of Environmental Protection

"More Protection, Less Process"



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CONTACT: Deirdre Finn, (850) 212-4151

ERC Approves Everglades Phosphorus Water Quality Standard

-- Stringent, science-based 10 ppb water quality standard protects famed River of Grass --

TALLAHASSEE -- The Environmental Regulation Commission (ERC) today voted to approve a stringent, science-based water quality standard of 10 parts per billion (ppb) for phosphorus in the Everglades. Indeed, it is one of the first such numeric water quality standards for any waterbody in America.

"Ninety percent of the water in the Everglades already meets the 10 ppb water quality standard," said Department of Environmental Protection Secretary David B. Struhs. "Today's approval guarantees progress for cleaning up the remaining 10 percent."

The Department of Environmental Protection proposed the water quality standard in December 2001. Over the last 2 1/2 years, the seven member commission has heard scientific data and expert testimony supporting the stringent water quality standard.

"This is likely the most well-researched, scientifically-proven environmental standard ever passed in Florida," said Struhs. "It will guarantee restoration and protection of the Everglades, while recognizing the complexity and variability of the ecosystem. It will ensure Florida remains in compliance with the federal court settlement and that we continue to collaborate closely with our federal partners."

The Everglades Forever Act required the Department to adopt the phosphorus rule by December 31, 2003. The South Florida Water Management District must comply with the water quality standard by December 31, 2006.

Amendments to the Everglades Forever Act made earlier this year provide more than \$600 million over the next 13 years to implement advanced technologies to reduce phosphorous flowing into the Everglades.

For more information, visit www.EvergladesForeverAct.com.

The Palm Beach Post

Editorial

JULY, 28 2003

Progress Made in Everglades but Post's Editorial Ignores It

By Kenneth Wright, chairman of the State of Florida's Environmental Regulation Commission

The Environmental Regulation Commission has adopted a stringent, science-based water-quality standard for the Everglades. The Post's July 14 editorial "Give Everglades guardian" ignored that fact and consistently disregards the unprecedented progress achieved during the past four years to restore water quality and flow to the "River of Grass."

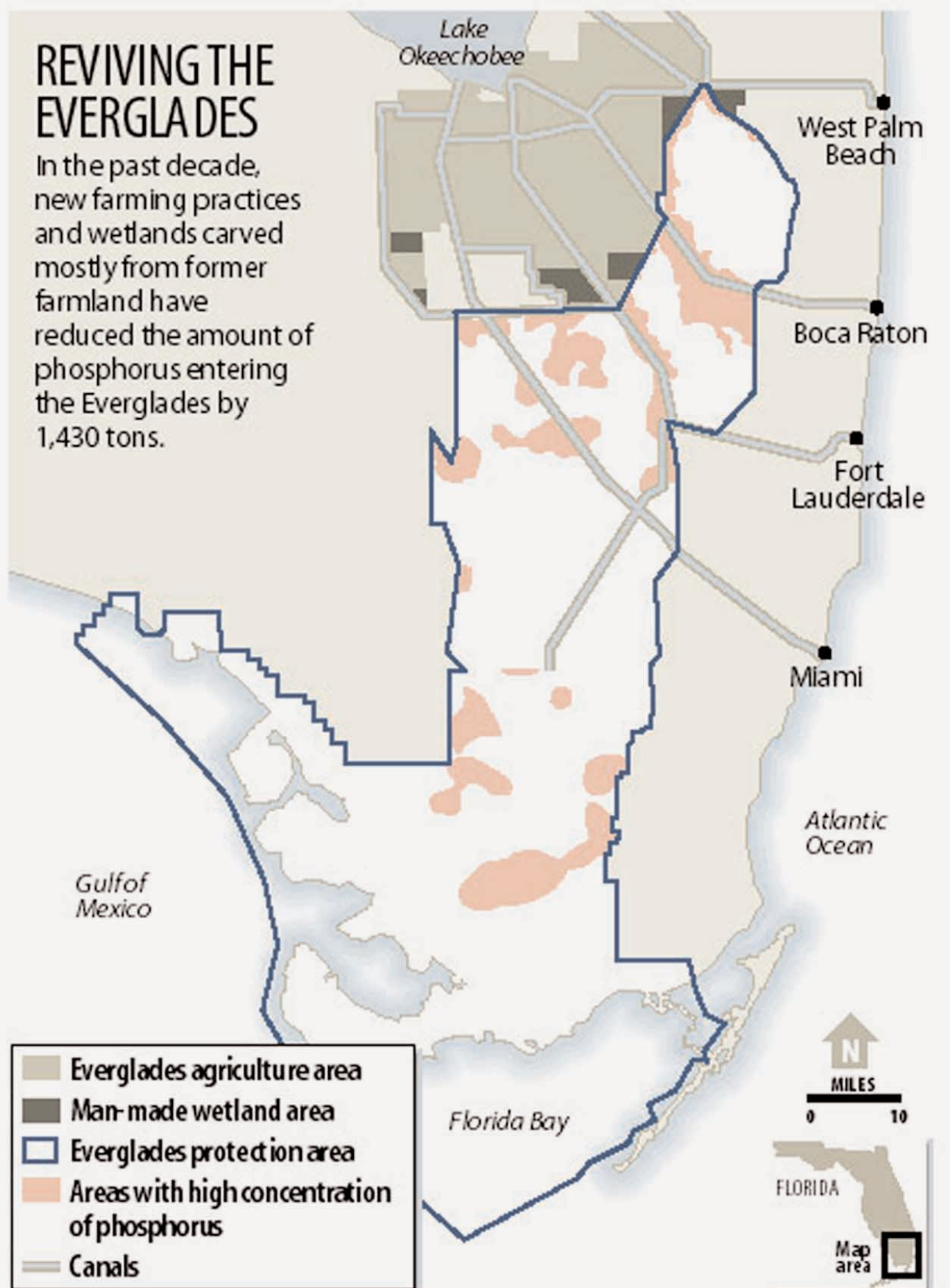
The 10-parts-per-billion water-quality standard for phosphorus is one of the first in the nation. More scientific research has gone into developing the water-quality standard than any other standard in Florida -- and perhaps even the nation.

To ensure consistency with the settlement agreement overseen by U.S. District Judge William Hoever, the commissioners adopted the same measurement system and method being used in the Loxahatchee National Wildlife refuge and Everglades National Park. The plan contemplates a long-term phosphorus level of 7 ppb in the refuge and 8 ppb in most of Everglades National Park -- more protective than the 10-ppb criterion just adopted. The rule also is consistent with the federal Clean Water Act and the state Everglades Forever Act.

Ninety percent of the Everglades is clean. During the past decade, Florida invested more than \$600 million to reduce phosphorus entering the Everglades. Recent amendments to the Everglades Forever Act and the new, stringent water-quality standard will guarantee progress for cleaning up the remaining 10 percent.

REVIVING THE EVERGLADES

In the past decade, new farming practices and wetlands carved mostly from former farmland have reduced the amount of phosphorus entering the Everglades by 1,430 tons.



SOURCE: South Florida Water Management District

ORLANDO SENTINEL

Phosphorus Goals

Today, 95 percent of the Everglades, including Water Conservation Areas and all the pristine areas, receive water averaging 10 parts per billion (ppb) or less of phosphorus.

After seven years and \$500 million in private and public investment under the Florida Everglades Forever Act of 1994 (EFA) the average phosphorus level of water leaving the new filter marshes (STAs) is 20 ppb, an achievement that few thought possible 10 years ago when U.S. Government sued the state of Florida over water quality.

By 2006, all of the Everglades including the Water Conservation Areas are required by the EFA to meet the 10 ppb standard, which was set by the Environmental Regulatory Commission (ERC) in 2003.

In the pristine areas that most people think of as “Everglades,” the 10 ppb goal already has been achieved. Less than five percent of this area is considered heavily impacted. This is the area where restoration efforts are concentrated. There, phosphorus levels are higher and there is ongoing scientific debate about how it can be lowered to comply with a presumed level of 10 ppb.

Some of the new technical requirements will include:

- Screening methodology
- Compliance test that accounts for the variations that are natural to the Everglades system
- Compliance methodology that is consistent with the larger volumes of water that will come into the system under the federal Comprehensive Everglades Restoration Program
- Defined measurement period, such as a rolling five-year average
- Test for improvement in the function of the new systems as they are fine-tuned
- Measure that considers nonfarm input, including urban runoff and water flowing directly from polluted Lake Okeechobee
- Economic impact measure that includes best technology, overall benefit to system, lowest-cost alternatives
- Realism standard, e.g. one of the STAs will not be finished by the 2006 compliance date

One final point of consideration will have to be the cost of achieving the goal. Some experts are warning it will take several billion dollars to achieve 10 ppb in the impacted areas if compliance is measured under the most severe conditions.