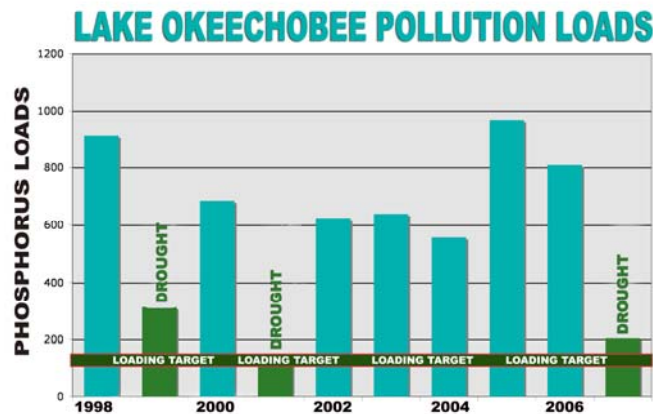


Essential #1

Improve and protect water quality

The Problem

Polluted agricultural runoff and stormwater from expanding urban areas is unraveling the fabric of the Greater Everglades ecosystem. The natural functions of the Everglades that make it the most biologically diverse ecosystem in North America involve large amounts of water that is naturally low in nutrients and driven by abundant sunshine and rainfall. Nutrient-laden runoff disrupts nutrient cycles and causes dramatic imbalances in Everglades native flora and fauna.



The most serious water quality problem facing the greater Everglades and the coastal estuaries is the pollution of Lake Okeechobee. Nutrient loads far exceed state-mandated levels and “choke” the Lake with nutrients. These nutrients remain in the Lake for decades, causing algae blooms and other indicators of profound imbalances. Phosphorus levels in Lake water now exceed 150 parts per billion, about 3.5 times recommended levels.

These kinds of pollution levels are not only deadly to the Lake, the Lake’s polluted water is also discharged south into the southern

Everglades—as well as to the Atlantic estuaries by way of the St. Lucie River, and to the Gulf of Mexico estuaries by way of the Caloosahatchee. At all three discharge points, the Lake’s polluted water is linked to serious degradation of these ecologically productive and economically valuable systems.

The pollution in the Lake has been an issue since the late 1970s. The 1973 state legislature authorized the *Special Project to Prevent the Eutrophication of Lake Okeechobee*. The project’s 1976 *Final Report* made extensive recommendations to limit nutrient pollution into the Lake. Other than the Kissimmee River Project, most of the *Final Report’s* recommendations were never implemented. In 1983, the South Florida Management District attempted to deal with pollution levels in the Lake by sending much of the polluted water to the Everglades—triggering almost two decades of litigation. More than \$1.8 billion has been invested in clean-up, but the toll on the Everglades has been incalculable.



Recent scientific data indicates the damaged areas of the Everglades continue to expand. More than 25 percent of the remaining Everglades has been damaged by excessive nutrient pollution—a 40 percent increase in just 10 years. Clearly, improvements are needed in the treatment of this nutrient-laden runoff prior to introducing it into the Everglades.

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The Solution

The water quality problems facing Lake Okeechobee are daunting. The aggressive strategy to address this long-neglected problem involves the following actions:

- **Implement the proposed Best Management Practices (BMPs) in the Lake Okeechobee watershed, including the upper Kissimmee Chain of Lakes.** BMPs are types of structures and techniques that farmers or developers use to reduce on-site pollution. *The Lake Okeechobee and Estuary Recovery Plan* suggests some excellent BMPs that should be realistically implemented. This BMP program also needs to be expanded to include innovative ways to decrease phosphorus use, decrease its mobility, and improve recovery of already-applied fertilizer.
- **Purchase land and construct additional Stormwater Treatment Areas (STAs) in the Everglades Agricultural Area (EAA); and strengthen special Best Management Practices (BMPs) in the EAA.** The evidence is abundantly clear that additional water treatment areas are necessary to remove the pollution from runoff water leaving the Everglades Agricultural Area. An additional 45,000 acres of STAs will be needed to treat the expected flows from the Lake to the Everglades (*Essential #4*). The BMP Program in the EAA is 15 years old and is in urgent need of refinement and strengthening. Monitoring the BMP performance suggests several of the most successful BMPs, now voluntary, should be mandatory.



Stormwater Treatment Areas (STA) are manmade marshes designed to remove phosphorus and other pollutants from the water column. The Essentials document that almost double the acreage proposed in CERP will be needed for STAs in order to treat all of the water.

- **Begin the construction of STAs in the**

Lake Okeechobee Basin.

Constructing water treatment areas north of the Lake is more complex than in the EAA. Still, if we infer from the experience of the existing

treatment areas in the EAA, it is reasonable to predict more than 100,000 acres of STAs could be needed. The South Florida Water Management District should begin addressing this reality by identifying locations, purchasing lands, and constructing feasible STAs--beginning with the STA features identified in the *Lake Okeechobee Watershed Project*.

- **Develop a long-range plan that will achieve the targets required in the Lake Okeechobee Recovery Act of 2000.** The Northern Everglades Act of 2007 once again calls for the South Florida Water Management District to spell out the action steps the State will be taking to meet specific target goals to reduce water pollution. The State is developing a plan, but a clear roadmap for getting to the pollution goals will be necessary if pollution goals will actually be met.

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The Solution continued...

- **Invest in new technologies and studies to address other types of water pollution beyond phosphorus.** While phosphorus levels in Everglades water is of primary concern, other types of pollution also threaten the Everglades and estuaries. New research on reducing mercury, nitrates, and other substances like herbicides and pesticides must be implemented.
- **Limit water quality degradation associated with new developments in the Everglades watershed.** New development must be designed with assurances that their stormwater is managed and retained on-site whenever possible, and that appropriate treatment will prevent any further degradation to water quality. This will require significant additional water storage in each new development project.

- **The South Florida Water Management District should inventory and model the entire range of public and private canals and water control structures in the Lake Okeechobee Basin.** The District should then institute a project to place control structures in uncontrolled canals and ditches to restore more natural groundwater levels, and when possible, recreate shallow marsh wetlands in cooperation with landowners. Specifically, surface water quality control efforts should be incorporated into restoration efforts related to water storage features within the *Upper Chain of Lakes Headwaters Revitalization Project*, Lake Istokpoga's watershed, and the more recent Northern Everglades initiative.

Above: Under phosphorus enrichment cattails outcompete and replace sawgrass, forming dense stands of vegetation that impede water flow and reduce habitat quality.

Right: Recreating a more natural timing and distribution of water will allow for a more natural annual wetting and drying cycle in the Everglades marshes, which will in turn provide improved habitat.

