



Position Statement

Approved by the Guardians Board of Directors
(with revisions December 12, 2016)

Florida's Future Water Supply Depends on Improved Surface Water Management

This position statement identifies a public policy **Problem** affecting the entire State of Florida, briefly describes policy **Issues** associated with the problem, states the Guardians of Martin County **Position** and recommendations for resolving the problem, and in numbered **Endnotes** provides additional information and identifies source references.

Problem

To support Florida's expected population growth,^{1,2,3} new freshwater sources will be necessary,⁴ as sustainable limits to groundwater resources are imminent.^{5,6} Storing surface water is more cost-effective than retreating municipal wastewater or desalination of seawater or brackish groundwater;⁷ except for conservation practices to extend existing water supplies, there are no other options. Six million people in the 3-county greater Miami area depend on (a) freshwater supplies from the Biscayne Aquifer, and (b) freshwater recharge that limits saltwater intrusion to the aquifer.⁸ Yet hundreds of billions of gallons of freshwater per year are "wasted to tide"⁹ via drainage canals that discharge excess Lake Okeechobee (Lake O) water to the east and west.¹⁰ Historically, this water flowed south¹¹ in a vast "River of Grass"¹² over lands that are now designated as the Everglades Agricultural Area (EAA),¹³ and Everglades Protection Area (EPA) that includes three large Water Conservation Areas and Everglades National Park (see Figure 1 on page 6). From 1991 to 2016 only 10% of excess Lake O water reached the EPA.¹⁴

Lake O discharges waste enormous amounts of water, and also affect the quality of life Floridians enjoy via devastating impacts on water resources and ecosystems such as:

- reduced salinity in the St. Lucie and Caloosahatchee estuaries to the east and west of Lake O, killing oysters and sea grasses that aquatic biota depend on;
- extensive nutrient pollution from lake discharges that feed massive algae blooms;
- millions of pounds of sediment from lake discharges that pollute the estuaries and smother sea grasses and near-shore reefs;
- saltwater intrusion into the Biscayne Aquifer due to lack of freshwater recharge; and
- insufficient freshwater flow south of Lake O that triggers vegetation decline,¹⁵ promotes degenerative changes in wildfire types in Everglades National Park,¹⁶ creates wildfire smoke hazards in populous areas east of the Park,¹⁷ and contributes to hyper salinity and seagrass die-off in parts of Florida Bay,¹⁸ as well as in the Gulf of Mexico.

The excessive nutrients in Lake O water are responsible for large-scale blue-green algae blooms in the hot months of summer that can cover more than 30 square miles. Discharges of Lake O water transport nutrients and algae east and west into the St. Lucie and Caloosahatchee estuaries and the Indian River Lagoon (IRL). In 2013 and 2016 Lake O discharges led to hazardous algae blooms (HABs) in the St. Lucie estuary and the IRL that threatened human health and led to beach closures. In 2013 realtors estimated that diminished water quality reduced property values in Martin County by \$488 million.¹⁹ Due to even worse HABs in June 2016, Governor Rick Scott declared a state of emergency in Martin and three other counties (Lee, Palm Beach, and St. Lucie).²⁰ About half of the 611 potential visitors to Florida participating in a survey said they would avoid these areas,²¹ which in turn would adversely impact restaurants, recreation and tourism activities near the HABs in Martin County,²² as well as in the other three impacted counties.²³

Issues

The overarching issue is state acquisition of sufficient land in the Everglades Agricultural Area (EAA) immediately south of Lake Okeechobee on which to construct additional storage, treatment, and conveyance of excess water from the lake. This new water infrastructure would substantially reduce the discharges east and west of the lake, provide more water flowing into Everglades National Park and Florida Bay to the south of it, recharge of the Biscayne aquifer, and create additional freshwater supplies for water use. Four related sub-issues are discussed below: Freshwater Supply and Demand, Stormwater Storage, Need for a Reservoir in the Everglades Agricultural Area (EAA), and Land Acquisition for a Reservoir in the EAA.

● **Freshwater Supply and Demand.** In 2010, 6.4 billion gallons per day (g/d) of freshwater were withdrawn from Florida's groundwater and surface water resources to meet various demands; about two-thirds of that was groundwater.²⁴ Given that rainfall throughout the state averages 150 billion g/d, it may seem that water is abundant, but in some places the freshwater supply is already inadequate to meet the demands placed on it.²⁵ A projected increase of 15 million people between now and 2070 will be accompanied by additional water demand for combined development and agriculture uses ranging from 30% to 54% beyond current demand, depending on how widely conservation practices are adopted.²⁶

● **Stormwater Storage.** To provide adequate surface water for existing users and expected growth, Florida must move from a water drainage system to a water storage system.²⁷ Storing rainfall (a.k.a "stormwater") would provide additional freshwater resources for aquifer recharge and water supply.²⁸ In the 3-county greater Miami area, for example, freshwater withdrawals in 2010 were 1.4 billion g/d.²⁹ Comparing this to the discharge of excess Lake Okeechobee water, which averaged 624 million g/d during the 35-year period ended in 2015,³⁰ one can say that the average daily discharge of Lake O water being wasted to tide is equivalent to almost half (44.5%) of the daily freshwater demand in the greater Miami area.

● ***Need for a Reservoir in the Everglades Agricultural Area (EAA).*** Storing excess Lake O water in reservoirs around the lake is consistent with findings from the University of Florida (UF) Water Institute study report commissioned by the Florida Legislature and conducted by senior faculty: “The solution [for providing] relief to the estuaries and the ability to move more water south of Lake Okeechobee is enormous increases in storage and treatment of water both north and south of the lake ... [and] will require additional land between the lake and the EPA”³¹—i.e., land in the Everglades Agricultural Area (EAA) is required (see Figure 1 on page 6).

Planned projects—the large-scale long-term Comprehensive Everglades Restoration Project (CERP) and its Central Everglades Planning Project (CEPP) components—are held back by “increasingly frustrating financial, procedural, and policy constraints impeding project implementation.”³² Additional water storage and treatment areas south of Lake O, including a storage reservoir in the EAA, are an integral part of CERP and CEPP, without which CERP's primary goals for Everglades restoration cannot be attained. The South Florida Water Management District has proposed to commence planning for an EAA reservoir in 2021.³³

The UF Water Institute study found that even if all planned projects were completed, water storage and treatment capability around Lake O will remain insufficient to fix problems associated with discharges to the east and west.³⁴ Based on information in the UF study report, Gary Goforth, P.E., Ph.D., a consulting water resources engineer, estimated storage needs at more than 350,000 acre feet (AF) north of Lake O;³⁵ 400,000 AF and 200,000 AF west and east, respectively;³⁶ and another 360,000-500,000 AF south of the lake.³⁷ Goforth’s interpretation is that the UF study called for between 120-160 billion gallons of new storage capacity south of the lake, in addition to new storage elsewhere.

● ***Land Acquisition for a Reservoir in the EAA.*** The key to constructing the necessary additional water storage, treatment and conveyance south of Lake O is state acquisition of land in the EAA owned by sugarcane producers, who currently farm 425,000 acres³⁸ immediately south and southeast of Lake O. Florida’s future will be affected by the willingness of sugarcane producers to work jointly with all other parties interested in ensuring abundant clean water. By adopting cooperative water management policies that help move more water south of Lake O, sugarcane producers can positively influence the economic and ecological conditions of the St. Lucie, Caloosahatchee and Florida Bay estuaries; enhance Biscayne Aquifer recharge; and help restore Everglades National Park. These areas are being adversely impacted by water management policies designed to (a) protect rural communities south of Lake O from potential flooding, and (b) maintain the physical viability of sugarcane farming in the EAA with a complex system of dikes, canals, and pumps. This drainage system keeps EAA lands dry in the rainy season and irrigates them in the dry season, and taxpayers pay more for this than do sugar producers.³⁹

The sugar industry is in a position to transform Florida’s water management approach by making it possible to store more stormwater south of Lake O rather than wasting it to tide

through drainage canals. The sugar industry thus could avert the very real possibility of a fundamental water supply crisis in the state's southernmost counties. By doing so, Florida's sugar producers would be paying forward part of the benefits they have garnered from EAA water management policies and the U.S. sugar program, which costs consumers of sugar products an estimated \$2.9 to \$3.5 billion per year.⁴⁰ The sugar program effectively keeps domestic sugar prices above world market prices using import restrictions, market allocations, and non-recourse loans that are embedded in the Farm Bill passed by Congress every five years or so.⁴¹ Domestic sugar production likely would not be viable without these market interventions.

On August 9, 2016, Sen. Joe Negron, who resides in Stuart and will preside over the Florida Senate in 2017-2018, proposed as his top priority state acquisition of 60,000 acres of EAA lands for 120 billion gallons (360,000 AF) of new water storage.⁴² He will face many challenges trying to make this happen.⁴³ Although funds to purchase lands are available,⁴⁴ the State of Florida has tended to side with the sugar industry's position on selling its lands in the EAA.^{45,46,47}

Position

The Guardians of Martin County strongly support state acquisition of EAA lands to reduce the wasteful and destructive Lake O discharges and facilitate the movement of more water south. We find adequate scientific support for doing so:

- More than 200 scientists who have conducted research in the Everglades signed a petition to the Chair of the South Florida Water Management District's Governing Board identifying increased storage and treatment of more freshwater south of Lake O as essential for restoring the Everglades, Florida Bay, and the St. Lucie and Caloosahatchee estuaries.⁴⁸
- According to the UF Water Institute study report, if all planned projects were completed, at least 120 billion gallons of additional storage and treatment areas south of Lake O would still be necessary to improve the problems associated with Lake O discharges to the east and west.

The Guardians acknowledge that the discharges are done primarily to protect people living south of Lake O from floods and secondarily to maintain the viability of farming in the EAA. The tradeoff for those benefits is three devastated estuarine ecosystems, which we find unacceptable. Although we live east of Lake O, as does Sen. Negron, we believe that the following actions are in the best interest of all Floridians because they would provide additional freshwater storage for 6 million people in the greater Miami area as well as moving more water south of Lake O instead of east and west, thus helping Everglades restoration. As a writer in *The New Yorker* put it, "The best that can be hoped for with the [Everglades] restoration project is that it will prolong the life of the wetland and, with that, of Miami's drinking-water system."⁴⁹

The Guardians of Martin County recommend that the State of Florida take these actions:

1. Accelerate funding and completion of planned projects that would reduce the need for Lake O discharges to the east and west, including CERP's Indian River Lagoon-South project component for natural area land acquisition. Without IRL-South projects, "the southern Indian River Lagoon ecosystem will continue to deteriorate and will remain in imminent danger of ecological collapse as a result of regional water management practices."⁵⁰
2. Initiate additional efforts beyond projects already planned in order to further reduce Lake O discharges and achieve dry season Everglades demand targets, including 11,000 to 129,000 acres of water storage and treatment areas south of Lake O (as identified in the UF study,⁵¹ depending on the mix of reservoir design options and their locations) as well as conveyance facilities and changes in operating procedures.
3. The Guardians recommend that the state take the following actions as soon as possible:
 - support the U.S. Army Corps of Engineers planning process to evaluate storage options south of Lake O now, rather than later, and urge the Corps to immediately commence with that process,
 - identify EAA land parcels by ownership and acreage that if converted from sugarcane farming would reduce Lake O discharges,
 - assign priority rankings to parcels that would optimize the cost-effectiveness of creating new water storage and treatment areas and conveyance facilities in the EAA,
 - modify operating procedures in the state's two wildlife management areas south of and adjacent to the EAA (see Figure 1 on page 6), to store more water as per suggestions in the University of Florida Water Institute study report,⁵² and
 - modify Lake O operating procedures to send water south 52 weeks of the year, not just during periods when irrigation water is needed or flood risk is high.
4. Ensure that the identified lands from item 3 above would be sufficient to provide storage capacity of 120 billion gallons. The 60,000 acres proposed by Sen. Negron may be sufficient to do that, and because that is *only 15 percent of the lands cultivated for sugarcane farming*, state acquisition of these lands will not shut down the industry.
5. Negotiate with EAA landowners,⁵³ using the priority list in item 3 above, and buy lands for new water storage, treatment, and conveyance facilities.⁵⁴ If negotiations are fruitless, then in recognition of the environmental, economic, and social value that restoring the Everglades and three estuaries would have, the state has two options:
 - a. exercise the already contracted option, which expires in October 2020, to acquire 153,000 acres of land from U.S. Sugar Corp.,⁵⁵ or
 - b. initiate eminent domain proceedings to acquire lands sufficient to store 120 billion gallons of water, as identified in item 3 above.⁵⁶
6. Use Land Acquisition Trust Fund ("Amendment 1") monies to buy EAA lands,⁵⁷ and fund some of the costs for water conveyance and storage infrastructure on these lands.

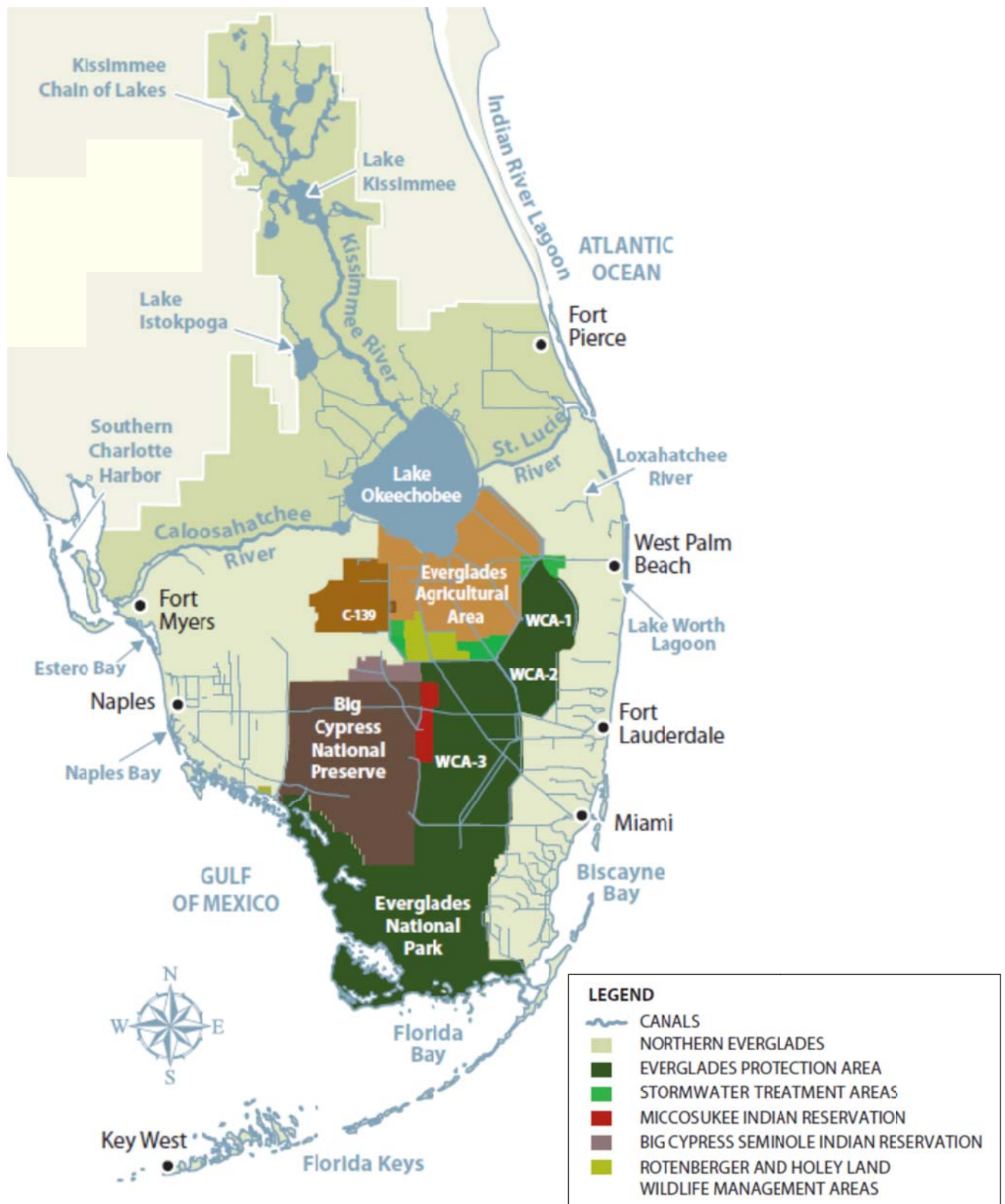


Figure 1. South Florida Water Management District geographic and cultural features.

Source: SFWMD, 2016 South Florida environmental report highlights, page 3, accessed at https://issuu.com/southfloridawatermanagement/docs/2016_sfer_highlights_final?e=4207603/33817547

Endnotes

(all source document URLs listed below were functional in August 2016 or later)

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- ² "South Florida population [in the greater Miami area of Miami-Dade, Broward, and Palm Beach Counties] hits 6 million for first time," *Miami Herald*, C. Rabin, March 24, 2016, accessed at <http://www.miamiherald.com/news/local/article68048512.html>
- ³ By 2030, Florida's population is expected to grow 20% to a median estimate of 24.1 million, and by 2045, an additional 13% to 27.2 million; the 3-county greater Miami area is expected to grow 13% to 6.8 million by 2030, and another 10% to 7.5 million by 2045. See "Projections of Florida population by county, 2020-2045, with estimates for 2015," University of Florida, S. Rayer & Y. Wang, 2016, accessed at http://www.bebr.ufl.edu/sites/default/files/Research%20Reports/projections_2016.pdf
- ⁴ To continue on its growth trajectory to 2035, the State of Florida will need to increase freshwater supplies by more than 17%—from 6.3 billion gallons per day (BG/D), of which 2.3 BG/D is for public water use—by adding 1.1 BG/D to the supply. See "Regional water supply planning, 2015 report," Florida Dept. of Environmental Protection, 2016, accessed at https://www.dep.state.fl.us/water/waterpolicy/docs/2015_Annual_Reg_Water_Supply.pdf
- ⁵ "Water use trends in Florida," Fact Sheet, Florida Dept. of Environmental Protection, 2014, accessed at <https://www.dep.state.fl.us/water/waterpolicy/docs/factsheets/wrfs-water-use-trends.pdf>
- ⁶ The growing realization that Florida's water resources are reaching sustainable use limits was demonstrated by the passage of the 2016 Water Bill, and large areas of the state have regulations restricting increased use of traditional freshwater supplies, with more yet to come. See "Finding certainty in the new world of alternative water supply sources," *Florida Bar Journal* 90(8), E.D. Ross & D.K. Madden, September/October 2016, accessed at <http://www.floridabar.org/DIVCOM/JN/JNJournal01.nsf/8c9f13012b96736985256aa900624829/c25364bb989481e78525801a00649a99!OpenDocument>
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- ¹¹ *The Swamp: The Everglades, Florida, and the Politics of Paradise*, M. Grunwald, 2006, Simon & Schuster.
- ¹² *The Everglades: River of Grass*, M.S. Douglas, 1947, R. Bemis Publishing.
- ¹³ "A brief history of water management in the Everglades Agricultural Area," Circular 815, University of Florida IFAS Extension, F.T. Izuno, 1989.
- ¹⁴ "Sorting out the facts in the middle of the ongoing ad blitz," G. Goforth, May 26, 2016, slide 5, accessed at <http://garygoforth.net/RC%20-%20Goforth%20May%202016.pdf>

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- ¹⁸ National Academy of Sciences report cited at note 15, page 129.
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- ²⁰ "Florida governor declares state of emergency over 'guacamole-thick' algae," *FoxNews*, June 30, 2016, accessed at <http://www.foxnews.com/us/2016/06/30/guacamole-thick-algae-causes-crisis-on-florida-coastline.html>
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- ²⁹ U.S. Geological Survey report cited at note 24 above.
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- ³⁴ University of Florida Water Institute study report cited at note 31 above, pages 6 & 8.
- ³⁵ University of Florida Water Institute study report cited at note 31 above, page 36 & 87, with estimate by G. Goforth.
- ³⁶ University of Florida Water Institute study report cited at note 31 above, page 6.
- ³⁷ University of Florida Water Institute study report cited at note 31 above, page 6, identified need for one million AF of new storage north and south of Lake O; based on G. Goforth estimate of at least 350,000 AF needed north of the lake, he estimated 360,000-500,000 AF needed south of the lake.
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- ⁵¹ University of Florida Water Institute study report cited at note 31 above, pages 131-133.
- ⁵² University of Florida Water Institute study report cited at note 31 above, pages 116-119.
- ⁵³ Analysis of accessible data on Florida’s sugar industry by Guardians board member Jay O’Laughlin, Ph.D., reveals that at least 90% of Florida’s sugarcane crop is grown by three land-owning organizations: U.S. Sugar Corp., Florida Crystals Corp., and the Sugarcane Growers Cooperative of Florida.
- ⁵⁴ University of Florida Water Institute study report cited at note 31 above suggested three options (pages 101-106): a) purchase sugarcane farmlands at fair market value, b) develop cost-sharing or Payment for Environmental Services programs for on-farm or multi-farm water storage, and c) enhance water storage capability of the state’s two wildlife management areas south of Lake O (see Figure 1, on page 5).
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