

THE FUTURE OF FLORIDA'S NATURAL WATERS

Poor water quality management is damaging Floridian waters.



Executive Summary

Florida, a natural wetland, contains a plethora of water sources such as rivers, ponds, lakes, and streams that are rich with biodiversity and serve as drinking water sources. **As a result of increasing agricultural and industrial activities, these sources are being heavily polluted at an alarming rate.** As Florida's population grows, there is a higher demand for resources and thus an increase in destructive activities such as urban development, agricultural practices, and power production. **These activities release dangerous levels of harmful pollutants into several bodies of water across Florida,** including plant nutrients such as phosphorus and nitrogen, chemicals, trash, microorganisms, and radioactive and heat energy. **Water pollution has detrimental effects on not only aquatic ecosystems but humans, who can suffer from indirect adverse health issues that arise from consuming organisms exposed to nutrient pollution.**

Considering the devastating damages associated with poor water quality, **it is crucial to keep water pollutants to a low.** Poor water quality management is a pressing, modern issue as industrial and agricultural activity levels increase to accommodate for Florida's growing population. **As these activity levels increase, current water quality enforcement needs to be restructured and strengthened.** Florida needs stricter and more consistently monitored water quality enforcement. Factories and industries should be given strict prohibitions regarding waste level output, water treatment processes need to redirect their focus to reducing levels of toxins and pathogens in wastewater, and technology used to measure water pollution levels should be improved to yield a more accurate assessment of water quality to root out the source of high levels of water pollutants.

LOW WATER QUALITY CAN:

- Introduce toxic pollutants into bodies of water across Florida
- Cause indirect health issues in humans
- Harm organisms living in aquatic ecosystems
- Worsen algal blooms
- Cause a lack in clean drinking water sources

Scope of Problem

Water pollution is the release of pollutants that interfere with the effective use of water or the functioning of ecosystems into lakes, streams, rivers, ponds, and oceans. Poor water management can lead to excessive levels of waste disposal and improper sewage disposal, which is detrimental to water quality levels. Once water quality levels drop past a certain threshold, organisms living in these polluted bodies of water are put in danger as an imbalance in nutrients causes damage to the environment, making it difficult for aquatic organisms to thrive.



TYPES OF WATER POLLUTANTS

- Pathogenic microorganisms
- Putrescible organic waste
- Fertilizers and plant nutrients
- Toxic chemicals
- Sediments
- Heat
- Petroleum
- Radioactive substances

Pictured on the left is an algal bloom outbreak on Florida's Caloosahatchee River, left containing algal blooms, right with the absence of blooms

Weak water quality enforcement also allows harmful industrial and agricultural activities to release higher levels of dangerous toxins and waste into Florida's waters, deteriorating water quality levels as acidity, nutrient, and chemical levels increase. Nutrient pollution severely degrades aquatic ecosystems as well as residents living near contaminated water sources, who may have no access to clean water due to this pollution. Additionally, as high levels of plant nutrients such as nitrogen and phosphorus enter water sources, they promote the proliferation of harmful algal blooms, which can consequently produce even more toxins and create dead zones that further damage ecosystems and human health. It is essential that policymakers recognize the severity of this problem and shift their focus to enforcing stronger policies regarding water quality across Florida before irreversible damage to Florida's natural waters and the aquatic biodiversity residing in them occurs.

Policy Alternatives

Existing policies regarding water quality and water pollution policies in Florida focus on giving bodies such as Florida's Water Management Districts (WMDs) and Florida's Department of Environmental Protection (FDEP) the ability to implement their own personalized water management programs. The current water quality management policies in Florida operate on a statewide and nationwide level.

Statewide policies include the Florida Water Resources Act of 1972, which provides Florida's WMDs with planning responsibilities and emphasizes environmental protection by establishing programs that regulate water withdrawals. Another policy is FAWCPA, the Florida Air and Water Pollution Control Act, which gives FDEP the power to improve water quality by allowing them to take water samples from drinking water sources to ensure it is safe for consumption. If contamination is present, FDEP can address this by implementing water quality restoration programs to restore Florida's water quality as well as encourage research on pollutants regarding their cause, effects, prevention, and control. The U.S. Environmental Protection Agency, abbreviated as EPA, approved Florida's Department of Environmental Protection's rules to protect its waterways from water pollutants such as nitrogen and phosphorus. Numeric limits on the amount of these pollutants found in surface waters have been adopted, and FDEP has also harnessed biological and chemical indicators to monitor pollutant levels in bodies of water.

The Clean Water Act, a federal policy, aims to reduce pollution across the country by distinguishing quality standards for water as well as regulating waste discharge. Under this act, the EPA has created pollution control programs that include setting standards for wastewater. Another federal act is the Safe Drinking Water Act, which works to eliminate pollution in drinking water by prohibiting waste discharge unless given permission from a state agency. It also does not allow the release of waste if the pollutants released cause water quality to fall below the standards established by the FDEP.

Current Policies

- Florida Water Resources Act of 1972
 - > Allows WMDs to have planning responsibilities
- Florida Air and Water Pollution Control Act
 - > Enables FDEP to create water quality restoration programs, sample water quality, and encourage research on pollutants
- Clean Water Act
 - > Establishes water quality standards and regulates waste discharge across the US
- Safe Drinking Water Act
 - > Prohibits waste discharge unless given permission by a state agency or if it results in a drop in water quality below standards established by FDEP



Policy Alternatives

Current policies put heavy emphasis on Florida's legislative bodies to create and enforce programs; although these policies have helped manage water quality, **there need to be stricter regulations regarding point sources** that produce pollutants across Florida, as these are the leading cause of water pollution. The EPA's Safe Drinking Water Act and Clean Water Act needs to **uphold more limitations on the release of pollutants**, and these limitations **should not only restrict current waste discharge but promote the reduction of water pollutant levels as a whole**. These limitations need to be upheld with the implementation of harsher punishments such as fines for surpassing a certain amount of waste to thwart high levels of waste being released into Florida's waters.

Policy Recommendations and Changes

Current policy that concerns water pollution in Florida focuses on prohibiting levels of waste from being deposited by enforcing water quality standards and creating water restoration programs. While this is effective, industrial and agricultural activities are increasing throughout Florida; to accommodate for this, **future policy needs to be more proactive and take on a stronger preventative standpoint by placing larger enforcements on factories and industries that produce waste.**

- The EPA's guidelines regarding the numeric limits on the amount of waste discharge allowed in surface waters should be **decreased** to sustain healthier waters.
- **Stronger enforcements and guidelines regarding how much waste industries can be enforced through fines** and other punishments to deter them from releasing high levels of pollutants.
- **Bans need to be enacted on the use of certain pesticides** and products that contain harmful nutrients and chemicals.

Preventative measures can further be pushed by **creating a more comprehensive plan concerning the treatment of wastewater and other wastewater related legislation**. There needs to be an increase in efforts to develop higher-end technology that can more accurately assess water quality and root out the main sources of water pollutants so that preventive measures can be more condensed and effective.

- A focus on research regarding technological advancements can prove to be beneficial, and **subsidies should be provided to encourage further development of higher end technology** that can more accurately assess pollution levels in bodies of water.
- The FDEP uses biological and chemical indicators to determine water quality levels; to expand on this, **devices should be installed that can monitor water quality in real-time as well as assess the source of contaminants to root out the main causes of nutrient pollution more effectively in Florida's waters**. This technology can also be utilized to assess whether treatment plans have been successful in decreasing water pollutant levels.
- **Samples of water should be taken on a regular basis** across different points in a body of water to determine whether water quality is up to par with standards as well as uniform throughout the body of water.

Appendices

Davis, Jarrett, et al. An Overview of Florida Water Policy Framework and Institutions. University of Florida Institute of Food and Agricultural Sciences Extension, <https://journals.flvc.org/edis/article/download/104537/102393>.

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