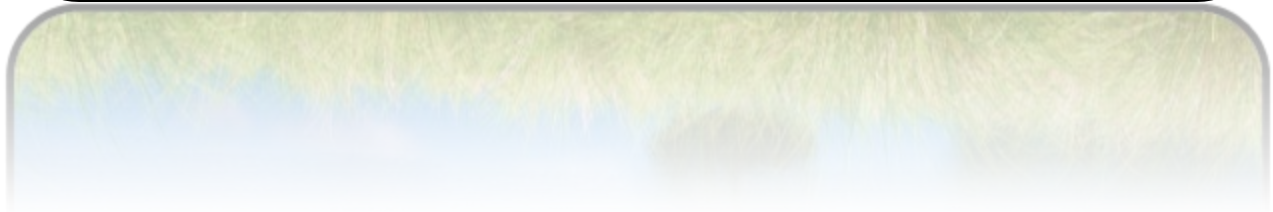




# NONPOINT SOURCE PROGRAM UPDATE

April 2015





**Florida Department of Environmental Protection  
Division of Environmental Assessment and Restoration  
Bureau of Watershed Management  
Nonpoint Source Management Section  
2300 Blair Stone Rd., Tallahassee, FL 32399**

**ACKNOWLEDGMENTS**

The Nonpoint Source Management Section would like to acknowledge the valuable participation, cooperation, and assistance received from staff in the Florida Department of Environmental Protection, the Florida Department of Agriculture and Consumer Services, the water management districts, and the Florida Department of Health, and from individuals in the private sector who contributed to the preparation of this document and to nonpoint source management efforts throughout Florida.

*We appreciate and value our partners!*

# Table of Contents

LIST OF ACRONYMS .....	6
EXECUTIVE SUMMARY.....	9
INTRODUCTION .....	10
Vision Statement.....	13
Goals and Objectives.....	14
1. WATERSHED MANAGEMENT .....	17
Restoring Impaired Waters.....	17
Protecting Unimpaired Waters.....	28
2. NPS GRANT AND FUNDING ADMINISTRATION.....	31
Section 319 Grant Administration - Challenges .....	31
NPS Program Activities.....	34
NPS Management Plan and Annual Reports.....	34
Clean Water State Revolving Fund (CWSRF) .....	35
Partnerships and Interagency Cooperation.....	35
3. URBAN STORMWATER MANAGEMENT .....	38
Introduction.....	38
Education.....	40
Watershed Plan Development.....	42
Support Local Communities in Stormwater Pollution Reduction.....	43
Point Source Stormwater (NPDES Stormwater Permitting) .....	44
4. SURFACE WATER, COASTAL, AND WETLAND NPS MANAGEMENT .....	47
Florida Surface Water .....	47
Coastal Protection.....	49
The Florida Everglades.....	51
5. GROUND WATER AND SPRINGS NPS MANAGEMENT PROGRAMS.....	55
Ground Water Regulatory Programs .....	59
Ground Water Quality Standards and Criteria.....	62
Installation Discharges to Ground Water: Permitting .....	63
Ground Water Monitoring.....	64

Florida Springs.....	66
6. AGRICULTURAL NPS MANAGEMENT PROGRAMS.....	72
History of the Florida Agricultural NPS Management Program.....	73
Agricultural Incentive/Technical Assistance Activities.....	75
Agricultural BMPs.....	76
FDACS' Role in Agricultural BMPs.....	77
Agricultural Regulatory Programs.....	80
Aquaculture NPS Management Program.....	85
Agricultural Operations and the Water Management Districts.....	86
The Western Basins and the Northern Everglades and Estuaries Protection Programs.....	92
7. SILVICULTURE NPS MANAGEMENT PROGRAM.....	95
Florida Silviculture NPS Management Program.....	96
8. ON-SITE WASTEWATER TREATMENT AND DISPOSAL SYSTEM PROGRAM.....	101
OSTDS Regulation.....	102
OSTDS Technical and Advisory Committees.....	104
Local Ordinances.....	104
Education and Compliance.....	105
Inventory.....	106
OSTDS Influence on Springs and Surface Waters.....	106
9. MINING.....	109
Environmental Impacts of Mining.....	109
10. BIOASSESSMENT OF WATERBODIES.....	112
Florida's Bioassessment Program.....	112
Surface Water Monitoring Program.....	114

## List of Tables

Table 1. Prioritized List of Adopted BMAPs and Impairments Being Addressed.....	26
Table 2. NPS Lead Agencies and Cooperating Partners .....	36
Table 3. Ground Water Classifications.....	63
Table 4. Summary of Ground Water Monitoring Programs and Data Sources: Programs that Include Potable Ground Water Sampling: Department- Maintained Monitoring Networks.....	64
Table 5. Summary of Ground Water Monitoring Programs and Data Sources: Department-Maintained Monitoring Networks .....	65
Table 6. Section 319 Grant Funding, FY04–FY11.....	105
Table 7. Tier I Monitoring Programs.....	117
Table 8. Tier I and Tier II Blended Monitoring Programs.....	117
Table 9. Tier II Monitoring Programs.....	117
Table 10. Tier III Monitoring Programs .....	118

## List of Figures

Figure 1. The Watershed Management Approach.....	19
Figure 2. Ground Water Estuarine Connection.....	57
Figure 3. Florida's Hydrological Divide .....	58
Figure 4. Springs of Florida .....	68
Figure 5. EAA and C-139 Basin Map.....	92
Figure 6. Tiers I, II, and III of the IWRM Network.....	118
Figure 7. Florida's Rotating Basin Groups.....	119
Figure 8. Florida's 29 River Basins.....	120

## LIST OF ACRONYMS

ACOE	United States Army Corps of Engineers
AFO	Animal Feeding Operation
AGSWM	Agricultural Ground and Surface Water Management
ATU	Aerobic Treatment Unit
BioRecon	BioReconnaissance
BMAP	Basin Management Action Plan
BMP	Best Management Practice
BOD	Biochemical Oxygen Demand
CAFO	Concentrated Animal Feeding Operation
CBOD5	Five-Day Biochemical Oxygen Demand
CCCL	Coastal Construction Control Line
CERP	Comprehensive Everglades Restoration Plan
CES	Cooperative Extension Service
cfs	Cubic Feet Per Second
CGP	Construction Generic Permit
CMC	Chemical Mixing Center
CP	Conservation Plan
CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program
CWA	Clean Water Act
CWSRF	Clean Water State Revolving Fund
CZARA	Coastal Zone Act Reauthorization Amendment
DEO	Department of Economic Opportunity
Department	Florida Department of Environmental Protection
DOF	Division of Forestry
EAA	Everglades Agricultural Area
ECP	Everglades Construction Project
EPA	United States Environmental Protection Agency
EQIP	Environmental Quality Incentive Program
ERP	Environmental Resource Permit
F.A.C.	Florida Administrative Code
FAMU	Florida Agricultural and Mechanical University
FASU	Florida Association of Stormwater Utilities
FCO	Florida Coastal Office
FDACS	Florida Department of Agriculture and Consumer Services
FDCA	Florida Department of Community Affairs
FDOH	Florida Department of Health
FEMA	Federal Emergency Management Agency
FFL	Florida-Friendly Landscaping
FFS	Florida Forest Service
FIWND	Florida Isolated Wetland Nutrient Database

FLAIR	Florida Accounting and Information Resources
FNAI	Florida National Areas Inventory
F.S.	Florida Statutes
FSA	Florida Stormwater Association
FSU	Florida State University
FWCC	Florida Fish and Wildlife Conservation Commission
FWRA	Florida Watershed Restoration Act
FWS	United States Fish and Wildlife Service
GIS	Geographic Information System
GOMA	Gulf of Mexico Alliance
GRTS	Grant Reporting and Tracking System
GWTV	Ground Water Temporal Variability
HA	Habitat Assessment
HAB	Harmful Algal Bloom
HUC	Hydrologic Unit Code
IPM	Integrated Pest Management
IWR	Impaired Surface Waters Rule
IWRM	Integrated Water Resources Monitoring
JCP	Joint Coastal Permit
LID	Low-Impact Development
LOPA	Lake Okeechobee Protection Act
LVI	Lake Vegetation Index
LVS	Linear Vegetation Survey
mg/L	Milligrams Per Liter
MS4	Municipal Separate Storm Sewer System
MSGP	Multi-Sector Generic Permit
NEEPP	Northern Everglades and Estuaries Protection Program
NNC	Numeric Nutrient Criteria
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPS	Nonpoint Source
NRCS	Natural Resources Conservation Service
NWFWMD	Northwest Florida Water Management District
NWQI	National Water Quality Initiative
OFW	Outstanding Florida Water
OSTDS	On-Site Sewage Treatment and Disposal System
PBTS	Performance-Based Treatment System
RAP	Reasonable Assurance Plan
RFA	Request for Applications
ROMA	Regional Offsite Mitigation Area
RPS	Rapid Periphyton Survey
RRAC	Research Review and Advisory Committee
SCI	Stream Condition Index

SFWMD	South Florida Water Management District
SJRWMD	St. Johns River Water Management District
SRF	State Revolving Fund
SRP	Suwannee River Partnership
SRWMD	Suwannee River Water Management District
SSAC	Site-Specific Alternative Criteria
STA	Stormwater Treatment Area
STORET	STOrage and RETrieval
SWAPP	Source Water Assessment and Protection Program
SWCD	Soil and Water Conservation District
SFWMD	Southwest Florida Water Management District
SWIM	Surface Water Improvement and Management
TAC	Technical Advisory Committee
TCAA	Tri-County Agricultural Area
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus
TRAP	Technical Review and Advisory Panel
TV	Temporal Variability
UF	University of Florida
UF-IFAS	University of Florida–Institute of Food and Agricultural Sciences
UIC	Underground Injection Control
ULO	Unliquidated Obligation
USDA	United States Department of Agriculture
USDW	Underground Sources of Drinking Water
USFS	United States Forest Service
USGS	United States Geological Survey
VISA	Very Intense Study Area
WCI	Wetland Condition Index
WMD	Water Management District
WPP	Watershed Protection Plan
WSRP	Water Supply Restoration Program
WWCVC	Water Well Contractor Violation Clearinghouse
WWTF	Wastewater Treatment Facility
WWTP	Wastewater Treatment Plant



## EXECUTIVE SUMMARY

Nonpoint source (NPS) pollution is the largest contributor of pollutants to Florida's surface and ground waters. Unlike point source pollution, which is conveyed by pipes and discharged into waterbodies at discrete points, NPS pollution is diffuse. It is caused by rainfall "moving over and through the ground and carrying natural and human-made pollutants" into our waters.<sup>1</sup> Typical categories of NPS pollution in Florida include runoff or leaching from agricultural lands; erosion and sedimentation from unvegetated lands, construction sites, or unpaved roads; on-site sewage treatment and disposal systems, or septic tanks; and stormwater sheetflow runoff, especially from highly urban areas.

Efforts to understand the magnitude of NPS pollution in Florida began in the mid-1970s with the preparation of the report, *Nonpoint Source Effects*, by Dr. Martin Wanielista and his colleagues at the University of Central Florida's College of Engineering. In June 1976, the Florida Department of Environmental Regulation, now the Florida Department of Environmental Protection, began receiving grant funding from the United States Environmental Protection Agency under Section 208 of the federal Clean Water Act to develop area wide water quality management plans to abate water pollution from point and nonpoint sources. The primary thrust of this program was to identify, assess, and control NPS pollution. In 1999 Florida developed an NPS Management Plan that described the programs to address NPS pollution and identified the goals and actions for the next five years for those programs.

The state remains committed to implementing an environmentally effective program that focuses on the attainment of water quality goals by using a balanced approach of education, research, technical assistance, financial incentives, regulation, and partnerships. This update of the plan provides the goals and actions for the next five years as well as descriptions of the programs that address NPS pollution.

---

<sup>1</sup> 68 FR 60653, 60655.

## INTRODUCTION

Florida has 54,836 miles of streams and rivers; 49,128 miles of ditches and canals; 1,811,329 acres of lakes, reservoirs, and ponds; and more than 1,000 springs.<sup>2</sup> Though ranking 22<sup>nd</sup> in land mass, Florida is the fourth most populous state in the country. It also receives, on average, more than 60 inches of rain a year in the far northwest and southeast; the Keys receive about 40 inches annually.<sup>3</sup>

Using Section 208 grant funds, a variety of projects was undertaken throughout Florida to quantify the pollutant loads generated in runoff and leaching from agricultural and urban land uses and to assess the effectiveness of different types of pollution controls, termed best management practices (BMPs). These investigations determined the following:

- NPS pollution was responsible for over half of the total pollution load entering Florida’s surface waters and over 75% of the loading to lakes.
- Stormwater was responsible for 450 times the amount of suspended solids, nine times the biochemical oxygen demand (BOD), and an equal amount of the nutrient loads discharged to Florida waters compared with secondarily treated domestic wastewater.
- Stormwater accounted for 80% to 95% of the loadings of heavy metals and coliform bacteria entering Florida waters.
- It is far easier and much more cost-effective to prevent or minimize NPS pollution, especially from new land use activities, than it is to restore polluted waterbodies.
- Structural and nonstructural BMPs can be implemented in a cost-effective manner to either prevent pollutants from entering stormwater, or to treat stormwater before it is discharged to surface or ground water.

Public education and technical assistance programs were essential in minimizing actions by individuals who were contributing to NPS pollution. Florida began the implementation of NPS management programs in the late 1970s. Under Section 319 of the federal Clean Water Act (CWA), Florida’s NPS Management Program works to

---

<sup>2</sup> Department, May 2012, [Integrated water quality assessment for Florida: 2012 305\(b\) report and 303\(d\) list update](#), Executive Summary.

<sup>3</sup> *Id.* at 7.

minimize new NPS pollution and target specific watersheds, either to improve degraded water quality or to minimize NPS pollution to high-quality waters. Then and now, the NPS Program is primarily a technology-based program, rather than a water quality-based effluent program such as that used in point source permitting.

This approach relies on specific performance standards that are achieved through the development of design criteria for specific BMPs. A BMP is a control technique that is used for a given set of conditions to achieve water quality and water quantity enhancement at a minimum cost. The use of BMPs is an iterative process in which BMPs are developed and implemented and then monitored for compliance and effectiveness. Based on monitoring results and other new information, BMP design criteria are revised to improve their performance. As a result, the NPS Program is dynamic and designed to accommodate new science and technology, as appropriate.

Florida's wide-reaching NPS management efforts currently implement NPS management through two sections of the Florida Department of Environmental Protection, as follows:

- The **NPS Management Section** identifies and assists in the development and assessment of BMPs to control pollution from specific sources of NPS pollution (*e.g.*, agriculture, forestry, on-site sewage treatment and disposal systems [OSTDS], urban); identifies programs to assure the implementation of programs, activities, and structural and nonstructural BMPs that will minimize or reduce NPS pollution; and coordinates restoration activities with other state and local entities, especially those leading to the restoration of impaired waters.
- The **Watershed Planning and Coordination Section** coordinates with state, regional, and local governmental agencies, local watershed groups, and nongovernmental organizations, and other interested stakeholders to develop and implement Basin Management Action Plans. BMAPs are developed collaboratively with local stakeholders and are designed to identify management actions and schedules required to meet the pollutant load reductions required by adopted Total Maximum Daily Loads.

There are a number of avenues available to the state to address NPS pollution, but all are tied to the primary goal of restoring impaired and/or unimpaired waterbodies. This document discusses the many avenues, both regulatory and nonregulatory, and the many agencies working to achieve this single goal. These partners and programs are individual pieces of the larger puzzle. They fit together through the statutory framework

relating to NPS management, which is today largely encapsulated in the Florida Watershed Restoration Act (FWRA) (Section 403.067, Florida Statutes [F.S.]). This statute begins with a declaration by the Legislature that “the waters of the state are among its most basic resources and that development of a total maximum daily load program for state waters required by [the Clean Water Act will promote improvements in water quality throughout the state through the coordinated control of point and nonpoint sources of pollution.”

Recognizing the many pieces of the puzzle, the Legislature further found that “while point and nonpoint sources of pollution have been managed through numerous programs, better coordination among these efforts and additional management measures may be needed in order to achieve the restoration of impaired water bodies” (Section 403.067[1], F.S.).

In this act, the Legislature provided for coordination through a declaration that the Department would be the lead agency in administering the allocation of loads associated with a TMDL through nonregulatory and incentive-based programs, with support and implementation by all other agencies and parties. The act requires close coordination with a variety of interested stakeholders, including, but not limited to, applicable local governments, water management districts (WMDs), the Florida Department of Agriculture and Consumer Services (FDACS), other appropriate state agencies, local Soil and Water Conservation Districts (SWCDs), environmental groups, regulated interests, and affected pollution sources. The projects and commitments of these stakeholders to reduce NPS pollution are documented in the Basin Management Action Plans adopted by Secretarial Order. To the extent additional coordination with a particular stakeholder is necessary, the Department may enter into a separate, more detailed Memorandum of Understanding.

In addition, this act provided for ground-breaking, progressive steps to address NPS pollution. It provides a mechanism to allocate loads to both point and nonpoint sources and requires that these parties engage in *either* a BMAP, as discussed in this report, *or* progressive monitoring. The act also allows the Department to start implementation early by providing initial allocations and following up with more detailed allocations.

It is through this act that the many pieces of the puzzle come together to form a NPS management strategy for the restoration of Florida’s waters and to provide the framework for interagency cooperation.

As described more fully later in this document, Florida has a very mature and active agricultural program. Under Section 403.067, F.S., FDACS develops BMPs or other

measures necessary to achieve the level of pollution reduction established by the Department for agricultural pollutant sources. FDACS is also required to assist with BMP implementation under this act. In addition to FDACS, the water management districts and the United States Department of Agriculture's Natural Resources Conservation Service (USDA-NRCS) have active agricultural programs in Florida. Because of this mature agriculture program and the separate funding sources associated with it, agriculture is not the main focus for Florida 319(h) program activities.

During the next five years, the Department will focus its efforts on developing BMAPs for springs and other surface water systems. In addition, the Department will continue to monitor project implementation and water quality for existing BMAPs. The BMAP staff will coordinate with NPS management staff to identify eligible 319(h) projects within BMAP areas. The Department is focused on urban NPS pollution as well as OSTDS and will include these projects in BMAPs as appropriate. In addition, public education programs addressing urban NPS pollution and OSTDS are a high priority for the Department over the next five years. Other priorities include water quality and bioassessment monitoring to determine water quality impairments and the development of TMDLs to address water quality impairments. These activities and priorities are discussed in greater detail in following chapters.

## Vision Statement

It is the ultimate vision of the NPS Management Section to implement a dynamic and effective NPS Management Program designed to achieve and maintain the beneficial uses of Florida's surface and ground waters.

This vision is consistent with the Department's mission to "Protect, Conserve, and Manage Florida's Environment and Natural Resources." It also is consistent with the expressions of legislative intent, as reflected in several Florida statutes.

---

### STATEMENTS OF LEGISLATIVE INTENT IN THE FLORIDA STATUTES<sup>4</sup>

"[W]aters of the state are among its most basic resources and . . . the development of a total maximum daily load program for state waters as required by s. 303(d) of the Clean Water Act, Pub. L. No. 92-500, 33 U.S.C. ss. 1251 et seq. will promote improvements in water quality throughout the state through the coordinated control of point and nonpoint sources of pollution. The Legislature finds that, while point and nonpoint sources of pollution have been managed through numerous programs, better coordination among these efforts and additional management measures may be needed in order to achieve the restoration of impaired water bodies. The scientifically based total maximum daily load program is

---

<sup>4</sup> 68 FR 60653, 60655.

necessary to fairly and equitably allocate pollution loads to both nonpoint and point sources. Implementation of the allocation shall include consideration of a cost-effective approach coordinated between contributing point and nonpoint sources of pollution for impaired water bodies or water body segments and may include the opportunity to implement the allocation through nonregulatory and incentive-based programs.”

“The waters in the state . . . have not heretofore been conserved or fully controlled so as to realize their full beneficial use. The department and the governing board shall take into account cumulative impacts on water resources and manage those resources in a manner to ensure their sustainability... It is further declared to be the policy of the Legislature: ... To minimize degradation of water resources caused by the discharge of stormwater.”

“It is declared to be the public policy of this state to conserve the waters of the state and to protect, maintain, and improve the quality thereof for public water supplies, for the propagation of wildlife and fish and other aquatic life, and for domestic, agricultural, industrial, recreational, and other beneficial uses and to provide that no wastes be discharged into any waters of the state without first being given the degree of treatment necessary to protect the beneficial uses of such water.”

---

## Goals and Objectives

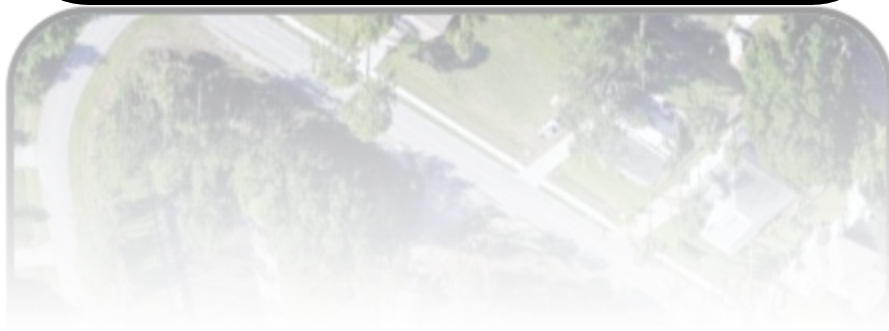
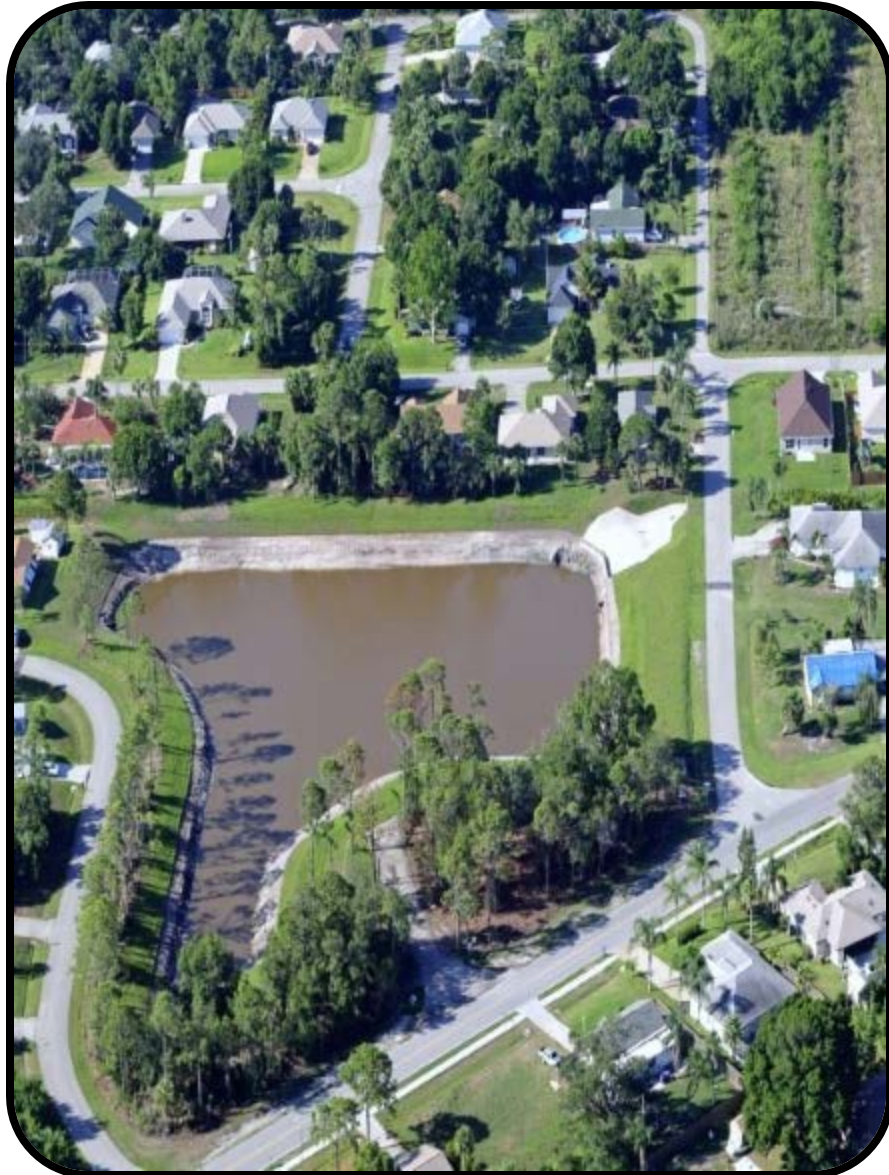
The goals of the Florida NPS Management Program, in conjunction with numerous Department programs, are as follows:

1. Restore impaired waters by reducing/preventing NPS pollution:
  - Assess waterbodies for impairments.
  - Prioritize waters for TMDL development.
  - Develop TMDLs for impaired waters.
  - Prioritize waters for watershed plan development.
  - Develop watershed management plans to implement TMDLs.
  - Support programs and projects geared towards implementing watershed management plans and restoring impaired waters.
2. Protect unimpaired waters from NPS pollution:
  - Support statewide and local projects targeted at preventing NPS pollution.

- Support programs that protect unimpaired waters, such as the land acquisition program, Outstanding Florida Waters (OFW) Program, nonpoint source education programs, *etc.*

To meet these overall goals, more specific goals, including programmatic goals, objectives, and activities are set forth in **Appendix 1** of this plan. Updates on the status of the goals and activities in **Appendix 1** will be provided in the NPS Annual Report.

## WATERSHED MANAGEMENT





# 1. WATERSHED MANAGEMENT

## Restoring Impaired Waters

### *The Watershed Management Cycle*

The main focus of the Department's NPS management plan is geared toward the restoration of impaired waterbodies, typically focusing on nutrient and bacterial impairments. The Department utilizes a watershed approach to assessing and restoring waterbodies, based on a five-phase cycle that rotates through the state's basin groups every five years (**Figure 1** describes the three principal elements of the watershed management approach).

Phases 1 through 3 of the cycle address prioritizing, assessing, and developing Total Maximum Daily Loads for waterbodies in the basins. The assessment of waterbodies for the attainment of water quality standards is a priority to the Department. This water quality monitoring and data collection, as well as evaluation, are fundamental to the Department's restoration program. Through this assessment program, the Department identifies waters that will be monitored each year. In the second year, the Department evaluates the monitoring data collected and is able to identify those waterbodies not meeting water quality standards. As part of its 303(d) listing process, the Department prioritizes the impairments for future TMDL development.

This leads to the next phase of the restoration process – the development of TMDLs. The TMDL for an impaired waterbody identifies the amount of a particular pollutant a waterbody can assimilate and still be considered healthy for its intended use. The Department is building off the United States Environmental Protection Agency (EPA) Recovery Potential Screening tool to prioritize impaired waters for TMDL development. The Department conducts public meetings on this prioritization tool each year across the state to solicit public feedback on waters of concern to its constituents. Feedback is incorporated into the Department's TMDL development schedule. This assessment and TMDL development form the basis for Phase 4 and 5—the development and implementation of the BMAP.

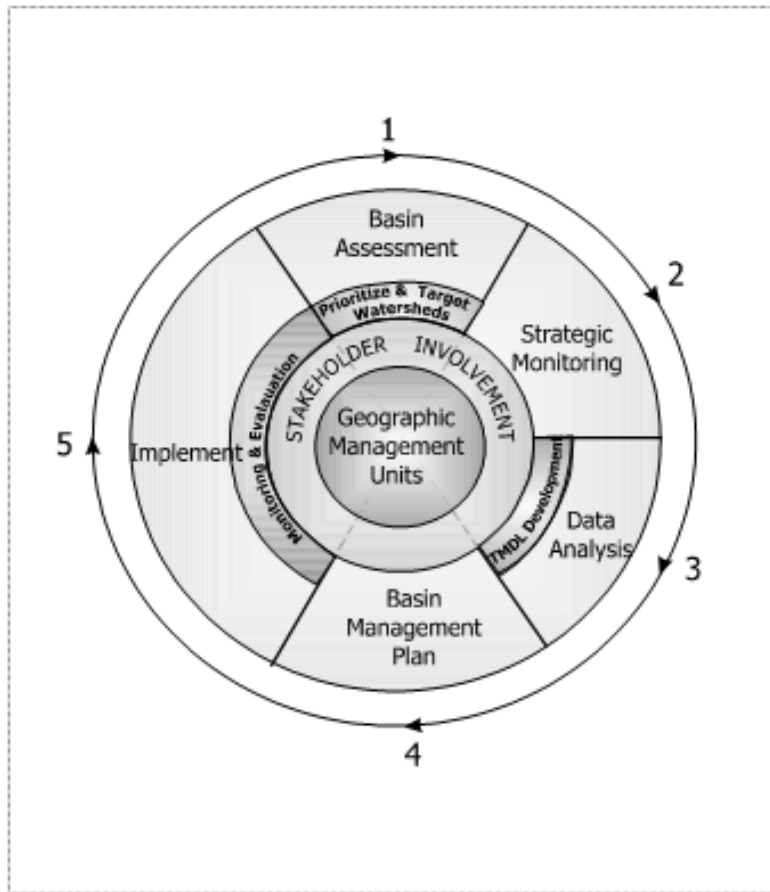
Phases 4 and 5 address the restoration of impaired waters through BMAPs, which are Florida's "blueprints" for watershed restoration. Phase 4 relates to BMAP development, and Phase 5 relates to BMAP implementation. It should be noted that this is an iterative process, and one of the key components of the watershed management approach is that the effectiveness of management activities (*i.e.*, TMDL implementation, NPS load reductions) will be monitored and evaluated in each phase to plan for successive phases.

Monitoring conducted in each phase of BMAP implementation will focus on evaluating whether water quality objectives are being met.

One of the strengths of the watershed approach is its focus on communication, coordination, cooperation, and stakeholder involvement. The initial phase of the BMAP development process includes outreach to stakeholders to build consensus for a path to restoration. As implementation takes place, the BMAP process continues this outreach and communication with stakeholders, in order to further refine and if necessary refocus efforts, ultimately ensuring that restoration goals are met in a timely and efficient manner.

More information on the watershed management cycle and [Florida's Watershed Assessment Program](#) is available online.

FIGURE 1. THE WATERSHED MANAGEMENT APPROACH



The three principal elements of the watershed management approach are as follows:

**Target watersheds:**

Identify watersheds where pollution poses the greatest risk to human health, ecological resources, and/or the beneficial use of water.

**Stakeholders:**

Facilitate coordination with all parties who have a stake in the watershed to participate in the analysis of problems and the creation of solutions.

**Coordinated action:**

Develop action items that draw on the full range of methods and tools available, integrating them into a coordinated, multi-organizational approach to all identified problems.

The objectives and specific tasks in each phase of the watershed management cycle are as follows:

**Phase 1: Initial Basin Assessment**

Objectives:

- Establish the general ecological health of the basin.
- Identify waterbodies requiring restoration, protection, and/or TMDL development.
- Identify sources of pollution.
- Develop a coordinated monitoring program.
- Develop consensus-based water resource protection and restoration goals.

## Tasks:

- Identify and coordinate with local, state, and federal stakeholders (public and private) to assist in data collection, basin assessment, and the development of a coordinated plan of action for completing the assessment.
- Characterize each basin—including climate, geology, hydrology (surface and ground water), water budget, biology, land use, population, and known sources of pollution (point and nonpoint). The state is divided into basin groups to be assessed on a rotating schedule (a [map of the basins](#) is available online).
- Inventory and evaluate existing data (within and outside the Department) to characterize basin conditions. Use data from the Florida STOrage and RETrieval (STORET) database and the 305(b) methodology to generally assess major waterbodies and overall basin water quality, including ground water basin evaluation and biology (a hydrologic unit code [HUC] and watershed-level assessment), and evaluate other existing data in the context of watersheds where a problem has been identified.
- Provide a detailed description of water resource issues for the basin, including candidate waters for TMDL development, restoration, and/or preservation; point sources and nonpoint sources; specific parameters of concern (biological and chemical), including summary statistics and temporal variability, as available; and watershed vulnerability.
- Adopt a basin-specific 303(d) list by Secretarial Order.
- Summarize existing and planned management activities (local, state, and federal) to address identified water resource issues, concentrating on water quality management.
- Conduct field reconnaissance to identify potential sources of pollution and ground truth land use data.
- Identify information needs, develop monitoring goals (establish questions to be answered), identify the monitoring methodologies and resources required, and develop a plan of study for coordinated monitoring in the basin. The monitoring plan addresses design (location

of sampling stations, indicators to be measured, and frequency of sampling), data management, and reporting.

- Summarize water quality management goals for the basin and identify management activities that should be initiated in the short term, produce and distribute a basin assessment report for public review and comment, and build consensus among all stakeholders.
- Assess the effectiveness of point source controls, BMPs, and TMDLs.

## **Phase 2: Coordinated Strategic Monitoring**

### Objectives:

- Supplement existing data to further characterize basin conditions.
- Investigate areas with identified or potential water quality problems.
- Evaluate the effectiveness of management actions.
- Collect data for TMDL development.

### Tasks:

- Conduct monitoring as established in the monitoring plan of study developed in Phase 1 and as otherwise may be needed in waters requiring TMDL development and implementation.
- Coordinate the monitoring of point sources and nonpoint sources to determine loadings and the effectiveness of current controls. Types of monitoring include intensive surveys in 303(d)-listed waters, BioReconnaissance (BioRecon) assessments, Very Intense Study Area (VISA) evaluations, and parameter-specific studies.

More information on the [Department's monitoring programs](#) is available online.

### Phase 3: Data Analysis and TMDL Development

#### Objectives:

- Document the water quality data collected in Phase 2, noting any changes in the conclusions of the initial basin assessment.
- Provide a more detailed assessment of major pollutant sources, including the quantification of NPS loadings.
- Analyze data and prioritize areas for TMDL development.
- Develop and document TMDLs.

#### Tasks:

- Summarize available flow data, providing statistics on worst-case conditions and noting differences in flow from long-term averages.
- Summarize water quality data from targeted monitoring stations, noting seasonal variations, differences in water quality in the basin, compliance with water quality criteria, and overall ranking of water quality.
- Summarize the results of intensive surveys, noting any spatial and temporal trends and compliance with water quality criteria.
- Summarize the results of BioRecons by creating *EcoSnaps* and *EcoSummaries*.
- Summarize the results of any special studies, noting conclusions as appropriate.
- Complete an inventory of and quantify major pollutant sources, including the determination of NPS loadings of key parameters.
- Conduct modeling to determine assimilative capacity, establish TMDLs, allocate loadings to major sources, and evaluate the main management alternatives.
- Adopt TMDLs and an allocation process by rule.

#### **Phase 4: BMAP Development**

##### Objectives:

- Work with the Department's TMDL Program to prioritize areas for BMAP development.
- Work with local stakeholders to develop a BMAP that will specify how the desired goals will be achieved.
- Identify mechanisms to determine the effectiveness of the restoration plan. While the plan will focus on the implementation of TMDLs developed in the basin, it will also address more general watershed goals.
- Work with local stakeholders to develop a BMAP boundary or area for restoration activities.
- Develop a consensus on recommended management programs, projects, and activities. Establish clear responsibility and a schedule for implementation.

##### Tasks:

- Coordinate with stakeholders to develop a draft BMAP.
- Identify appropriate projects and actions that can be implemented to achieve the desired water quality goals.
- Conduct public workshops to obtain public input on the draft BMAP.
- Refine and formally adopt the BMAP.

#### **Phase 5: BMAP Implementation**

##### Objectives:

- Begin BMAP implementation, authorized by Section 403.067, F.S., and associated water resource protection and restoration efforts. Implementation refers to any management activity that enhances water quality protection, including the development and implementation of BMPs, habitat protection and restoration, and the issuance of National Pollutant Discharge Elimination System (NPDES) or other permits.

## Tasks:

- Implement projects, BMPs, educational activities, and ordinances as outlined in the BMAP within the agreed-on time frames.
- Renew or reissue wastewater permits in the basin with new effluent limits, as required.
- Renew or reissue NPDES municipal separate storm sewer system (MS4) permits to include the projects listed in the adopted BMAP.
- Assess water quality data to determine trends and to assess progress.
- Plan for subsequent phases of the BMAP, which includes identifying new projects and BMPs that will be planned, developed, and implemented to address the remaining load reductions to meet the TMDL.

### *Florida's BMAPs: Background and Overview*

Florida's highest priority is developing and implementing its BMAPs to restore impaired waters. The state's BMAPs implement the TMDLs and restore water quality over time. The BMAPs focus largely on nutrient and bacterial impairments in the state, and the Department is building on the EPA's Recovery Potential Tool to help prioritize waterbodies for TMDL and BMAP development. Recognizing that there are many impaired waterbodies in Florida and the number of Department staff is limited, the Department is looking for innovative ways to encourage local stakeholders to proactively develop nutrient management plans and reasonable assurance plans for their waterbodies before formal restoration (TMDLs and BMAPs) are initiated by the Department. The Department has a consultant available who can coordinate/facilitate meetings among local entities interested in developing nutrient management or reasonable assurance plans.

During any individual year, the Department is in the process of developing new BMAPs for new waterbodies and presenting them for adoption, preparing annual updates for existing BMAPs, and preparing follow-up "Phase II" BMAPs for additional water quality project implementation in some BMAP areas. All of these activities involve the collection and analysis of additional water quality data. By the five-year anniversary of each BMAP, the Department evaluates the water quality trends in the waterbodies to determine if additional projects are necessary to achieve the TMDL. Because many of the Department's BMAPs cover large watersheds, demonstrating attainment with water quality standards will take quite a few years. However, the Department continues to



work on a methodology to demonstrate successful project implementation and “success stories” at a smaller scale.

In addition, to the annual updates and Phase II BMAP development, the Department continuously looks for water quality improvement projects in the BMAP areas to help the Department achieve water quality restoration goals. NPS staff work closely with BMAP staff to identify opportunities for 319 funding to assist in the implementation of BMAP management strategies.

Recognizing that there may be important water quality restoration projects outside of BMAP areas, the Department also seeks to fund water quality projects for impaired waters not yet covered by a BMAP or to protect unimpaired waters. One example of this is an ongoing effort to engage the Northwest Florida Water Management District (NFWFMD) and several Panhandle counties on the issue of dirt roads and their impact on water quality. The Department is working with these stakeholders as they also work with the Federal Emergency Management Agency (FEMA) to navigate poststorm road reconstruction.

Priorities for the next several years in the BMAP Program include the implementation of the Lake Okeechobee, Caloosahatchee, St. Lucie, and Indian River Lagoon BMAPs; continued monitoring and project development for the existing, adopted BMAPs; the development and adoption of BMAPs for springs areas; the development of an initiative to bring stakeholders in springs areas together to evaluate and develop projects for OSTDS; educating the public about OSTDS and their potential nutrient impacts on springs in certain areas; developing a better statewide inventory of the location of OSTDS; the continued evaluation of the Indian River Lagoon impairment status; and the development and implementation of a compliance strategy for BMP implementation. The Department will allocate 319 funding towards NPS projects (tracking measure 1.1.1[c]), based on a variety of criteria such as the importance of the BMAP to the state of Florida (Tier I or Tier II), nutrient reductions achieved, and cost-effectiveness, among other things.

In September 2013, the EPA declared that Florida’s adopted BMAPs are equivalent to the EPA’s Nine-Element Watershed Plans. A BMAP is the “blueprint” for restoring impaired waters by reducing pollutant loadings to meet the allowable loadings established in a TMDL. It represents a comprehensive set of strategies—for example, permit limits on wastewater facilities, urban and agricultural BMPs, conservation programs, financial assistance, and revenue-generating activities—designed to implement the pollutant reductions established by a TMDL.

**TABLE 1. PRIORITIZED LIST OF ADOPTED BMAPS AND IMPAIRMENTS BEING ADDRESSED**

TP = Total phosphorus; TN = Total nitrogen; BOD = Biochemical oxygen demand; DO = Dissolved oxygen; FC = Fecal coliform

<b>ADOPTED BMAPS</b>	<b>IMPAIRMENT ADDRESSED BY BMAP</b>	<b>TIER</b>
Lake Okeechobee Basin	TP	I
Banana River Lagoon	TN/TP	I
Central Indian River Lagoon	TN/TP	I
North Indian River Lagoon	TN/TP	I
Caloosahatchee Estuary Basin	TN	I
St. Lucie River and Estuary Basin	TN/TP/BOD	I
Santa Fe River Basin	TN/DO	I
Alafia River Basin	FC/TN/TP/DO	II
Bayou Chico (Pensacola Basin)	FC	II
Everglades West Coast	TN/DO	II
Hillsborough River	FC	II
Lake Harney, Lake Monroe, Middle St. Johns River, and Smith Canal	TN/TP	II
Lake Jesup	TN/TP/ Unionized Ammonia	II
Long Branch	FC/DO	II
Lower St. Johns River Basin Main Stem	TN/TP	II
Lower St. Johns River Basin Tributaries I	FC	II
Lower St. Johns River Basin Tributaries II	FC	II
Manatee River Basin	FC/TN/TP/DO	II
Orange Creek	TN/TP/FC	II
Orange Creek - Phase 2	TN/TP/FC	II
Upper Ocklawaha River Basin	TP	II
Upper Ocklawaha River Basin - Phase 2	TP	II

The FWRA outlines the provisions and components of a BMAP, including the requirement that a BMAP be adopted by Secretarial Order, thus making it legally enforceable. Legal requirements are enforced through NPDES wastewater treatment facility (WWTF) permits, NPDES MS4 permits, or the authority of the adopted BMAP itself.

These broad-based plans are developed with stakeholders and rely on their commitment. Department staff meet regularly with stakeholders in the development and implementation process. NPS section staff attend stakeholder meetings periodically to provide information on available funding sources. Stakeholders in the BMAP process include local governments, private citizens, WMDs, SWCDs, environmental groups,

business interests, and state agencies, as well as federal agencies such as the United States Fish and Wildlife Service (FWS) and the USDA–NRCS.

BMAPs build on existing state and local restoration efforts, such as the five WMDs’ Surface Water Improvement and Management (SWIM) plans, the Northern Everglades Restoration Planning documents such as the Lake Okeechobee Watershed Protection Plan and the Caloosahatchee and St. Lucie River Watershed Protection Plans, as well as Regional Planning Council planning documents and others.

A BMAP refines source identification, allocates loadings, describes management strategies, discusses funding opportunities, and provides for water quality monitoring and BMP implementation tracking to assess progress towards the TMDL. The goal of the BMAP Program is to secure commitments to reduce pollutant loading to achieve restoration. BMAPs are developed for nutrient and fecal coliform impairments. Annual reports are submitted to the Department to demonstrate the progress stakeholders are making in implementing their commitments and to describe progress towards meeting the TMDL.

Florida currently has a number of BMAPs under development and adopted. The goals of this program are to prioritize and select new areas for BMAP development, expedite the formal adoption of BMAPs, and assess the implementation of adopted BMAPs.

The [adopted BMAP documents, annual reports, and supporting information](#) are available online.

NPS Management Program contract managers work closely with the BMAP groups and stakeholders to target funding towards restoration activities geared towards the implementation of TMDLs.

### *Other Restoration Alternatives*

Recognizing that there are many impaired waterbodies in Florida, the Department is looking for innovative ways to encourage local stakeholders to proactively develop nutrient management plans and reasonable assurance plans for their waterbodies before formal restoration (TMDLs and BMAPs) are initiated by the Department. The Department has a consultant available who can coordinate/facilitate meetings among local entities interested in developing nutrient management or reasonable assurance plans. While BMAPs are the Department’s primary method of restoration, there are additional methods available to stakeholders, as follows:

1. Stakeholders may, under certain circumstances, develop alternative restoration plans that differ from BMAPs. The Impaired Surface Waters Rule (IWR)

(Chapter 62-303, Florida Administrative Code [F.A.C.]) authorizes the following types of restoration plans:

- a. **4b plans, or Reasonable Assurance Plans (RAPs):** Waterbodies with restoration plans meeting the requirements of Rule 62-303.600, F.A.C., are not placed on the Verified List of Impaired Waters or the 303(d) list. These types of plans provide a mechanism for the restoration of waterbodies to be achieved through a streamlined process without developing a TMDL and then a BMAP. These plans establish a more direct path toward achieving restoration goals. More information on [Florida's RAPs](#) is available online.
  - b. **4e plans:** Waterbodies with restoration plans meeting the requirements of Paragraph 62-303.390(2)(d), F.A.C., are placed on the Study List and the 303(d) list.
  - c. **EPA Approved Nine-Element Watershed Plans:** Watershed restoration plans that utilize EPA's nine key elements and are approved by the EPA.
2. For fecal coliform impairments, the Department provides guidance to stakeholders on how to develop plans to address fecal TMDLs. Since fecal coliforms can come from both natural and human sources, it is important to accurately identify the source. The guidance addresses methods for first identifying whether the source is natural (*e.g.*, wildlife) or human (*e.g.*, poorly functioning sewers or septic tanks, pet waste) and provides information on how to develop a plan to address these sources of fecal coliform. Staff in the Department's BMAP Program work with stakeholders to develop these plans. The [guidance document](#) is available online.

### **Protecting Unimpaired Waters**

Recognizing that there may be important water quality restoration projects outside of BMAP areas, the Department also seeks to fund water quality projects for impaired waters not yet covered by a BMAP or to protect unimpaired waters. One example of this is an ongoing effort to engage the NFWFMD and several Panhandle counties about dirt roads and their impact on water quality. The Department is working with these stakeholders to identify project and funding opportunities as they also work with FEMA to navigate poststorm road reconstruction.

Protecting unimpaired waters is also addressed through the following means:

**1. Florida’s “Outstanding Waters” classification under Rule 62-032.700, F.A.C.** An OFW is a water designated worthy of special protection because of its natural attributes. This special designation is applied to certain waters and is intended to protect existing good water quality. Most OFWs are areas managed by the state or federal government as parks, including wildlife refuges, preserves, marine sanctuaries, estuarine research reserves, certain waters in state or national forests, scenic and wild rivers, or aquatic preserves. Generally, the waters in these managed areas are OFWs because the managing agency has requested this special protection. More information on [Florida’s OFWs](#) is available online.

**2. Statewide BMPs** such as the following:

- Outreach and educational programs.
- Manuals on BMPs for landscaping, fertilizer use, agricultural practices, silviculture, *etc.*
- Pesticide and fertilizer applicator licensing.
- Statewide ordinances such as the model fertilizer ordinance.
- Septic tank programs targeted at reducing NPS pollution.

More information on statewide BMPs can be found in the specific program areas of this plan.

**3. Florida Forever Land Acquisition Program:** The Department’s State Lands Program acquires land to conserve and protect natural resources. More information on the [Florida Forever Program](#) is available online.

**4. Use of water quality trend information:** Florida has the most extensive numeric nutrient criteria (NNC) in the country. The NNC development process includes looking at and evaluating water quality trends. This allows the state to identify waters in need of protection.

## NPS GRANT AND FUNDING ADMINISTRATION



## 2. NPS GRANT AND FUNDING ADMINISTRATION

The NPS Management Section is responsible for the day-to-day administration and implementation of Florida's NPS Management Program. The section is responsible for the administration of the 319(h) Grant Program and the state's TMDL Water Quality Restoration Grant Program, as well as other state-funded NPS projects.

### Section 319 Grant Administration - Challenges

Historically, Florida focused its 319 funds on the construction of turn-dirt, pollution reduction projects. While this project-focused approach results in significant environmental benefit, it makes drawing down the 319 funds more difficult because the liquidation of funds depends on construction schedules. Over the past several years, the Department has been working with the EPA on ways to decrease its unliquidated obligation (ULO). The NPS Management Section has instituted several changes, as follows, to reduce the unliquidated obligation:

- Submit the work plan to the EPA earlier in the year so that approval by the EPA is concurrent with the grant becoming available.
- Revise the request for proposals to solicit projects with time frames of three years or less.
- Adjust contract tasks to allow for earlier payments throughout the project duration.
- Work with the EPA to reduce the project approval time frame to encourage the submission of more shovel-ready projects.
- A committee in the NPS Management Section also meets quarterly to review the status of the projects in each of the active grants.
- Establish a goal of executing contracts within six months of the EPA award
- Identifying earlier in the process leftover funding from older projects

In addition, the Department is working across programs to improve communication and coordination of its various funding programs. The Department anticipates that greater coordination among programs may improve outreach to the stakeholders and help identify additional potential 319 project opportunities. As part of this effort, the

Department is working with its technical support office to develop a database for 319 project information. The Department is drafting a project scope proposal for next fiscal year to begin this effort. The goal is to integrate water restoration project information across various programs in the Department, including the 319 program. This will allow the more timely exchange of information within the Department as well as to stakeholders.

The Department also enters its project information into the EPA's Grants Reporting and Tracking System (GRTS) system and will continue to do so on a timely basis.

The Section 319 Grant Program created two sources of funds: NPS Program (formerly base) and Watershed Project (formerly incremental). Program funds are to be used by the states to implement aspects of their NPS programs, while the project funds are to be primarily used for the implementation of watershed-based plans to restore waters impaired by NPS pollution.<sup>5</sup>

In August 2002, to "ensure that Section 319 projects funded with incremental [project] dollars make progress towards restoring waters impaired by nonpoint source pollution," the EPA created nine elements "critical to assur[ing] that public funds to address impaired waters are used effectively."<sup>6</sup> In September 2013, the EPA declared that all of Florida's adopted BMAPs are equivalent to the EPA's Nine Element Watershed Plans.

The projects funded with Watershed Project funds usually involve three components: BMP implementation, BMP effectiveness monitoring, and public education. Each project results in a comprehensive final report, showing the project from beginning to end, and, often, public education materials. Successful projects demonstrate some measurable improvement to water quality in impaired waters, the protection of unimpaired waters, or an increase in education on NPS pollution to the public. A project summary, called a Project Close Out, is prepared by the contract manager and provided to the EPA as the grant is closed out.

Projects funded with NPS funds are used for NPS program administration and outreach and education programs but may also be used for BMP implementation activities.

To demonstrate that projects are eligible under the 319 MS4 permit guidelines, the NPS Management Section submits the selected projects to the agency's NPDES Program Administrator for review. The Administrator reviews the projects to ensure that there is

---

<sup>5</sup> 68 FR 60653, 60662.

<sup>6</sup> *Id.*



no conflict with the MS4 requirements and drafts a letter to the EPA summarizing the findings for each project. The letter is submitted to the EPA along with the work plan.

At least once a year the NPS Management Section sends out a Request for Applications (RFA) for projects to be funded under the 319 grant. The RFA includes a solicitation guidance letter, an application form, eligibility guidelines, instructions, and the evaluation criteria (scoring criteria for the projects). Applicants identify their projects under the following categories: urban, agricultural, OSTDS, and education only (not tied to a constructed BMP). The projects are evaluated for consistency with the priorities outlined in this plan, and the scores are compared in each category. The percentage of funding available to each category is based on several factors, such as the number of projects submitted in each category, the restoration priority of the category, and the number of projects located in a priority area in each category. Projects are evaluated on criteria such as cost-effectiveness, nutrient load reductions, the use of innovative technologies, and whether the project implements a restoration plan.

Each project funded by a Section 319 grant is assigned to a contract manager in the NPS Management Section to develop a contract for the project. The contract is set up as a cost reimbursement and provides written task requirements, budget details, timelines for task completion, a list of the deliverables that will be provided to the Department contract manager, and performance standards against which the deliverables will be judged. Any changes to the contract, such as changes to timelines, have to be made through a contractual document signed by both parties. The Department contract manager reviews all invoices and supporting documentation and tracks the grant and match funding amounts throughout the duration of the project.

Part of the contract manager's oversight includes visits to the project site during the contract period to assess progress and have "hands-on" involvement. Payments to the grantee are made on the successful completion of each task. It is the responsibility of the Department contract manager to ensure that the project meets all contracted deliverables on time and all EPA grant requirements, and to provide assistance to the lead agency as needed to ensure a successful project. As a result, the Department contract manager and the lead agency contract manager create a close working relationship.

To track grants, the NPS Management Section utilizes a financial tracking system (Florida Accounting and Information Resources [FLAIR]) that meets all federal requirements. FLAIR helps to ensure that all grant funds are spent and tracked properly. Each grant is assigned a unique grant number used to track all grant expenditures. A dedicated staff member in the Watershed Management Bureau enters all grant-related expenditures into a computerized database and tracking system as well as into the EPA's GRTS. At a

minimum, all information in GRTS is updated by April 30 and October 31 of each year until the project and grant close.

The Department's Grants Office works closely with the dedicated contract manager to ensure that all Section 319 grant conditions are met and financial statements are submitted in a timely manner.

### **NPS Program Activities**

The Department has a long history of leadership in its NPS Program. Education about NPS pollution problems and solutions continues to be a priority. To that end, the Department provides technical expertise on NPS issues at various internal and interagency meetings. The Department also prepares and distributes brochures and conducts training related to the NPS Program. Section staff have focus areas, such as agriculture, NPS education, education and data management for OSTDS, and the sediment and erosion control inspector program. Agriculture staff work closely with the partner agencies on a wide variety of issues, including developing BMP manuals, attending technical meetings, and working with USDA-NRCS and FDACS on the National Water Quality Initiative (NWQI). Education staff work on NPS education activities and provide NPS education to school classrooms, special events, *etc.* They also coordinate with Department staff across the state to provide educational opportunities to schools and at special events statewide. They utilize and provide a variety of tools, such as models that demonstrate how NPS pollution affects waterbodies and age-appropriate printed materials. OSTDS staff work with other partners to implement education and data management for OSTDS. The Erosion Control Inspector Program staff works with many partners to provide training for the trainers. Staff also coordinate with the partners to update the BMP manual.

### **NPS Management Plan and Annual Reports**

The Section 319 grant committee reviews the five-year NPS Management Plan annually to determine if updates are needed to the goals and actions in **Appendix 1**. The committee also reviews the plan to determine if there were major changes to any of the program areas described. At least every five years, the plan goes through a more rigorous review process. The Department evaluates whether the identified priorities, goals, and actions are still appropriate for the next NPS Management Plan. This more rigorous review also includes an evaluation of successes and needed improvements to the plan.

As required by Section 319 of the CWA, the state submits an NPS Annual Report to the EPA by December 31 of each year. The report serves as an update on the status of the goals, actions, and tracking measures in the work plan (**Appendix 1**).

### **TMDL Water Quality Restoration Grant Administration**

The NPS Management Section also manages the TMDL Water Quality Restoration Grant Program, which is authorized by Subsection 201.15(8) and Paragraph 403.890(1)(b), F.S. Each year the Florida Legislature appropriates funds for the program. These grants are dedicated to the “implementation of projects to reduce urban nonpoint source pollution discharged to impaired waters” and are distributed through a competitive grant selection process. All projects funded through this state grant require a minimum of 50% matching funds, with at least 25% of the match coming from the local government. Along with BMP implementation, projects include a monitoring component. Educational components to the projects are encouraged. Priority for TMDL Water Quality Restoration Grant funds is given to those projects that are ready for construction within six months of application. Projects are evaluated, ranked, and selected for funding based on the criteria found in the TMDL Water Quality Restoration Grant Rule (Chapter 62-305, F.A.C.).

The TMDL grant funds are managed much like the EPA 319 grant funds. Each project is assigned to an NPS Management Section contract manager.

### **Other State Funds**

The section also manages BMP implementation projects funded directly by the state.

### **Clean Water State Revolving Fund (CWSRF)**

The CWSRF Program provides low-interest loans for planning, designing, and constructing water pollution control facilities. The NPS Management Section does not oversee this program, but the section provides information on the program to local stakeholders and works closely with the Department’s State Revolving Fund (SRF) contract managers to share information on projects that are in the same communities. Additionally, the CWSRF gives priority to projects in BMAP areas to assist in the restoration of Florida’s waters.

### **Partnerships and Interagency Cooperation**

The Department’s NPS Management Section has maintained and fostered a cooperative working relationship with other state agencies, WMDs, USDA–NRCS, universities, and local stakeholders. These partnerships are pivotal in redressing NPS pollution in the

state’s impaired waterbodies. **Table 2** lists the partners and lead agencies for the NPS programs. More information on the partnerships can be found in each program section of this plan.

**TABLE 2. NPS LEAD AGENCIES AND COOPERATING PARTNERS**

<b>NPS Program</b>	<b>Lead Agency</b>	<b>Cooperating Partners</b>
<b>Urban</b>	WMDs Local governments	WMDs, local governments, Florida Association of Stormwater Utilities (FASU), Florida Stormwater Association (FSA), universities, and third-party interest groups.
<b>Agriculture</b>	Florida Department of Agriculture and Consumer Services (FDACS) Department WMDs	FDACS, WMDs, USDA-NRCS, USDA Farm Service Agency, UF-IFAS, FAMU, FDOH, FWCC, other universities, agricultural commodity associations, and third-party interest groups.
<b>Forestry</b>	FDACS–Division of Forestry (DOF)	FDACS DOF, WMDs, Florida Forestry Association, forestry companies, universities, and third-party interest groups
<b>Urban Stormwater</b>	Department WMDs	WMDs, local governments, FASU, FSA, universities, and third-party interest groups.
<b>Mining</b>	Department	WMDs, phosphate industry, universities, and third-party interest groups
<b>On-Site Wastewater</b>	Florida Department of Health (FDOH)	FDOH, local governments, universities, and third-party interest groups
<b>Ground Water</b>	Department WMDs	WMDs, FDACS, local governments, universities, and third-party interest groups

## URBAN STORMWATER MANAGEMENT



### 3. URBAN STORMWATER MANAGEMENT

#### Introduction

Decreasing nutrient pollution from urban areas is a high priority for the Department. One of the major causes of urban stormwater pollution is activity associated with increasing population. Construction activities as well as increased amounts of impervious surface can cause nutrient impairments in nearby waters. The Department addresses urban stormwater issues by using its BMAP process to identify appropriate projects and the collaboration of BMAP and Nonpoint Source Management Program staff to identify urban stormwater projects that are eligible for 319 funding. To measure its success in this high-priority issue, the Department will document the number of urban stormwater projects included in BMAPs each year as well as the number of urban stormwater projects funded in BMAPs each year.

Another priority in addressing nutrient pollution from urban stormwater is public education. Often the public does not understand how daily activities such as fertilizing a lawn or the types of landscaping vegetation used can make a difference in urban stormwater pollution. Some examples of successful public education include the implementation of the Department's Florida-Friendly Landscaping (FFL) Program; the Florida Stormwater, Erosion, and Sedimentation Control Inspector Training Program; and the Green Industries Program. The Department conducts these public education opportunities across the state and awards appropriate nutrient reduction credits to local entities that are committed to these programs. To measure its progress on this priority issue, the Department will document the number of classes provided each year for each program.

The Department conducts workshops to educate landscapers, builders, developers, and the public about FFL opportunities. These help reduce nutrient loading and runoff in urban areas. To help reduce nutrient pollution in urban areas, the Florida Stormwater Erosion and Sedimentation Control Inspector Training Program's goal is to increase the proper design, construction, and maintenance of erosion and sediment controls during construction and to ensure the proper long-term operation and maintenance of stormwater systems after construction is completed. The primary program objective is to provide training to private and public employees in various construction-related fields. In addition, the Department trains and certifies landscape professionals through its Green Industries Program.

By training other individuals in these important practices and techniques, the Department is reaching a broader audience, which is important to the success of the program. These activities are discussed in more detail below.

While the Department conducts these training activities across the state, it also provides incentives for these programs in the BMAP process. The Department incorporates these programs and activities into BMAPs and provides local governments that are committed to these activities appropriate nutrient reduction credits. To encourage innovative technologies, the Department awards provisional nutrient reduction credits that are verified through a monitoring program. The Department is open to and encourages the use of new and innovative nutrient reduction technologies. NPS and BMAP staff work together to identify appropriate funding opportunities for these types of activities.

The 2010 Census shows that Florida has experienced rapid population growth since the early 1970s, with the population almost doubling since 1980 and growing about 17% between 2000 and 2010. With an estimated 19,893,297 residents,<sup>7</sup> Florida is currently the third most populated state in the country, behind California and Texas. According to the United States Census Bureau, within the next two decades, the state's total population is expected to increase by almost 50%. This population growth demands urbanization, both of developed and undeveloped lands.

The United Nations released a report in 1994 describing population growth as a universal contributor to water pollution.<sup>8</sup> The report singles out urbanization as a major factor. As the population of Florida continues to increase, it is apparent that urban sources will increase as potential vectors of water pollution. Focusing efforts on the urban areas that will see the first influx of growth is key to reducing the negative impacts on Florida's waters.

Florida uses a multifaceted approach to address urban sources of pollution. From the erosion and sedimentation of construction sites and unpaved roads, to residential fertilizer application, to new development, the state manages urban stormwater runoff in a variety of ways, including land use planning, regulation, public education, technical and financial assistance, and compliance monitoring.

During the late 1970s and early 1980s, numerous investigations were undertaken in Florida to assess the effects of stormwater on waterbodies, characterize stormwater pollutant loadings from different land uses, and evaluate the performance and cost-

---

<sup>7</sup> [United States Census Fact Finder](#).

<sup>8</sup> [United Nations Food and Agriculture Organization \(FAO\) report](#).



effectiveness of various BMPs. These studies demonstrated that stormwater was a significant source of pollutant loading to the state's surface waters.

The continued implementation of urban NPS programs is essential to minimize the adverse environmental effects associated with the growth and associated changes in land use. The goals of the state's urban NPS Management Program are as follows:

- **Education:** Educate the public and industry through outreach and training on subjects such as personal pollution, erosion control, and fertilizer/pesticide application.
- **Innovative Technologies:** Support the development of innovative technologies to prevent stormwater pollutants from contaminating nearby waterbodies.
- **Watershed Plans:** Work with federal, state, and local stakeholders to develop watershed plans geared towards meeting TMDLs.
- **Support Local Projects with Federal and State Funding:** Use the federal and state grant/loan programs to support local communities in implementing projects that are necessary for meeting TMDLs. Provide information to BMAP stakeholders on the 319(h), TMDL Grant, and CWSRF Grant Programs.

## Education

Educating the public on the causes and possible solutions for NPS pollution is critical. It is not enough to identify the problem to the public; the state must be instrumental in empowering the public to do their part and help be part of the solution. To that end, the Department prioritizes public education in both the urban and agricultural sectors. The following are some examples of the NPS Management Section's educational programs that address urban NPS pollution.

### *Florida-Friendly Landscaping*

The NPS Management Section began providing funding the FFL Program in 1994 under the name Florida Yards and Neighborhoods. As a partnership with the Department and some of the WMDs, and led by UF-IFAS and the Department, this program, which began in four counties, immediately took off and is one of the most successful of its kind in the country. As of 2012, the program was active in at least 48 of Florida's 67 counties (down from a high of 52 due to budget cuts).



The program consists of three subprograms, as follows:

- The **Florida Yards and Neighborhoods Homeowner Program** educates homeowners on how to design, install, and maintain Florida-Friendly Landscapes.
- The **Florida Yards and Neighborhoods Builder and Developer Program** educates builders and developers, landscape architects, homeowners' associations, and property managers on how to design, install, and maintain Florida-friendly landscapes.
- The **Green Industries Best Management Practices Program** trains and certifies landscape professionals.

To assess its program, UF-IFAS, working with the National Oceanic and Atmospheric Administration (NOAA) and the Department's Coastal Training Program staff, began community-based social marketing research to determine whether education was leading to behavioral changes. More information on the [FFL Program](#) can be found online.

#### *Florida Stormwater Erosion and Sedimentation Control Inspector Training Program*

The NPS Management Section is currently implementing the Florida Stormwater Erosion and Sedimentation Control Inspector Training Program. The goal of the program is to increase the proper design, construction, and maintenance of erosion and sediment controls during construction and to ensure the proper long-term operation and maintenance of stormwater systems after construction is completed. The primary program objective is to provide training to private and public employees in various construction-related fields. The training program is primarily directed towards inspectors and contractors; however, permit reviewers, public works staff, and engineers also benefit from this program. The [Florida Stormwater Erosion and Sedimentation Control Inspector's Manual](#) (last updated July 2008) is available online.

The NPS Management Section works closely with local governments to coordinate the training of inspectors in areas around the state, as needed. The program curriculum was developed to educate the inspector on the proper installation, inspection, and maintenance of BMPs for use during and after construction to minimize erosion and sedimentation and to properly manage runoff for both stormwater quantity and quality. Florida's stormwater program is technology based, using performance standards and BMP design criteria. The use of innovative techniques and specifically designed erosion control systems is encouraged to prevent erosion and sedimentation during construction

activity. More information about the [Florida Stormwater Erosion and Sedimentation Control Inspector Training Program](#) (last updated July 2008) can be found online.

### *Golf Course Pollution Prevention*

One of the ongoing efforts for the Department staff is outreach to Florida's golf course community. This is a priority in some of the state's BMAP areas and is an educational and outreach opportunity for staff. To measure progress on this outreach effort, the Department will report the number of golf courses that staff have contacted and obtained information.

As part of the implementation of the state's NPS Management Program, the Department is actively involved in providing general public education programs on stormwater management, educational workshops for design professionals, and technical assistance to local governments and the private sector. One such initiative is the 2007 publication, *BMPs for Enhancement of Environmental Quality on Florida Golf Courses*. This manual discusses possibilities for environmental stewardship and pollution prevention at golf courses. The [Golf Course BMP Manual](#) is available online.

### *Local Educational Projects*

The 319 Grant Program has provided funding to local communities for educational projects pertaining to personal pollution.

### *Innovative Technologies*

Florida encourages the use of innovative technologies to manage urban stormwater through several means. Applications for both the 319 and state TMDL grants are evaluated, giving more weight to projects utilizing innovative technologies.

The state Legislature has appropriated funds for NPS management projects, specifying that innovative technologies must be used.

### **Watershed Plan Development**

A number of the state's urban areas are in an area with either an adopted or developing BMAP. Many impaired waterbodies are in or near urban areas due to a number of pollutants in stormwater runoff, such as lawn fertilizers and pesticides, pet waste, sediments, organic pollutants from impervious surfaces, and septic leachate that migrates through the ground to lower-lying areas. Nutrient pollution is a major concern in Florida's urban areas, and nutrient impairments have become a priority for BMAP development.

## Support Local Communities in Stormwater Pollution Reduction

Stakeholders are provided with information on what types of funding sources are available to assist with the implementation of stormwater BMPs that will help them achieve their TMDLs. NPS Management Section contract managers attend public meetings and participate in teleconferences with stakeholders to present information on funding sources, including the 319(h) and TMDL grant programs as well as the CWSRF loan program.

The 319(h) and TMDL Water Quality Restoration Grants are often utilized for urban stormwater BMPs. Projects are selected primarily based on the percent pollutant reduction to an impaired waterbody. To demonstrate that projects are eligible under the 319 MS4 permit guidelines, the NPS Management Section submits the selected projects to the agency's NPDES Program Administrator for review. The Administrator reviews the projects to ensure that there is no conflict with the MS4 requirements and drafts a letter to the EPA summarizing the findings for each project. The letter is submitted to the EPA along with the work plan.

More recently, projects in environmental justice communities have been encouraged, and contract managers are making efforts to reach out to lower-income communities. It is well understood that low-income areas often suffer disproportionately high and adverse environmental effects. The Section 319(h) grant application and scoring process was amended in 2011 to encourage applicants to work in areas inside environmental justice communities. Specifically, points are awarded for projects that benefit low-income areas.

Examples may include wet or dry retention or detention, treatment wetlands, extensive treatment trains, second-generation baffle boxes, the installation of pervious paving, and stormwater parks. Several stormwater retrofit projects involve constructing wetlands to provide treatment for stormwater runoff. By merging stormwater treatment and green space, Florida is able to educate citizens on the importance and benefits of stormwater retrofits. One example of a successful stormwater park is Capital Cascades in Leon County (constructed in part with Section 319 grants from Fiscal Year [FY] 2004 and FY2010). Florida has incorporated into its NPS management strategy low-impact development (LID) practices that treat stormwater at its source and mimic the natural setting.

There are certain limitations that make treating urban NPS pollution at its source difficult. Florida's shallow water table in the southern and coastal regions can prohibit the use of certain types of LIDs, such as swales. Older urban developments or more concentrated urban areas may not have the available land to treat stormwater NPS pollution at its source.

BMPs must also be effective for the area utilized. Different soil types, climate, topography, and water tables demand different BMPs. For example, retention/infiltration basins should not be used in areas that will not allow the complete infiltration of water into the soil (that is, in areas with slowly percolating soils and/or high water tables).

These BMPs work best if part of a larger treatment train where the first BMP is like the first car in a train. In Florida, 90% of the pollutants resulting from an immediate rain event come from the first one inch of runoff.<sup>9</sup> If this “first flush” can be treated, it stands to reason that significant water quality benefits will be achieved. Infiltration and exfiltration trenches, for example, retain the first flush and reduce runoff at peak times, allowing for treatment, and thus are very popular in Florida. However, if placed alongside a secondary or tertiary system, the treatment train allows a significant amount of the pollutants to be removed prior to discharging to the state’s waters.

More information on [stormwater treatment technologies typically used in Florida](#) is available online.

### **Point Source Stormwater (NPDES Stormwater Permitting)**

In 1987, the United States Congress established Section 402(p) as part of the federal CWA Reauthorization. This section of the law amended the scope of the federal NPDES permitting program to designate certain stormwater discharges as “point sources” of pollution. These stormwater discharges include certain discharges that are associated with industrial activities designated by specific standard industrial classification (SIC) codes, construction sites disturbing one or more acres of land, and the master drainage systems of local governments with certain population thresholds, known as MS4s. The EPA authorized the Department to implement the NPDES stormwater program in 2000.

Though considered point sources, these types of point sources are heavily influenced and affected by NPS pollution. These permitting programs focus on controlling the impact of new sources of stormwater. Therefore, the state’s NPS Management Program addresses urban stormwater through retrofits and the Florida Stormwater, Erosion, and Sedimentation Control Inspector Program.

More information on the Department’s [NPDES Program](#) is available online. The Environmental Resource Permit (ERP) Program also addresses issues related to stormwater. More information on the [ERP Program](#) is available online.

---

<sup>9</sup> Livingston, E., and E. McCarron, [Stormwater management: A guide for Floridians](#), p. 19.

### *Partners*

The Department works with many partners to protect and restore waterbodies in urban areas. These partners include the WMDs, local governments, FASU, FSA, universities, and third-party interest groups.

# SURFACE WATER, COASTAL, AND WETLAND NPS MANAGEMENT



## 4. SURFACE WATER, COASTAL, AND WETLAND NPS MANAGEMENT

### Florida Surface Water

The Department focuses its 319(h) NPS activities in surface water and coastal systems on nutrient and bacterial pollution. The Department's activities in these areas occur largely through the BMAP process, as described previously. The Department has adopted BMAPs for some of the most significant surface water and coastal systems in Florida, including the Lower St. Johns River, the St. Lucie River and Estuary, the Caloosahatchee River and Estuary, and Lake Okeechobee. The Department has ongoing monitoring, data collection and analysis, and project identification activities for all of its adopted BMAPs.

In addition to prioritizing BMAP activities for surface and coastal waters, the Department is working with FDOH to develop a better inventory of OSTDS in Florida. This is a priority activity to help reduce nutrient pollution in Florida's surface and coastal waters. Within its approval for new and operating OSTDS, the EPA stated that Florida "has satisfied" the requirements of the Coastal Zone Act Reauthorization Amendments (CZARA) by "incorporating a well-funded and targeted approach statewide." The approval notes the use of a data systems program; the state's "robust" OSTDS licensing, certification, and standards of inspection program; point-of-sale outreach; and a "very professional" public outreach campaign. The EPA notes "most importantly" that Florida is "providing guidance and technical assistance to the local Health Department offices to help them systematically implement broad [OSTDS] inspection programs on a county-to-county basis and to educate the public about inspections and maintenance." Florida is committed to continue working with county Health Departments on OSTDS inventory and inspection programs.

Surface waters are waters on the surface of the earth, contained in bounds created naturally or artificially, including the Atlantic Ocean, the Gulf of Mexico, bays, bayous, sounds, estuaries, lagoons, lakes, ponds, impoundments, rivers, streams, springs, creeks, branches, sloughs, tributaries, and other watercourses. The landward extent of a surface water is wetlands: the mean high water line elevation for tidal waterbodies; the ordinary high water line for nontidal natural waterbodies; and the top of the bank or seasonal high water line for certain artificial lakes, borrow pits, canals, ditches, and other artificial waterbodies.

### *Surface Water Improvement and Management (SWIM) Program*

The state's WMDs have implemented the SWIM Act of 1987 (Sections 373.451 – 373.4595, F.S.), which was created to address mounting concern over the loss of natural systems

that help maintain water quality and to provide habitat in the state's major waterbodies. It marked a transition from more narrowly focused environmental protection programs to comprehensive watershed management approaches.

The chief impetus for the SWIM Act was the impairment of several major waterbodies that demonstrated the need for large-scale and long-term restoration actions. Poor water quality – together with losses of fisheries and habitat in waterbodies such as Tampa Bay, Lake Okeechobee, Biscayne Bay, Lake Apopka, and the Indian River Lagoon—raised considerable public concern over the ability of existing, single-purpose programs to produce the long-term, coordinated actions needed to restore them. NPS pollution was the primary target of these programs, since point sources of pollution, such as domestic and industrial wastewater discharges, were already being controlled. The SWIM Act recognized that reducing NPS loadings requires a comprehensive, long-term approach that relies on cooperative watershed management among all levels of government.

The state's surface water restoration efforts are addressed through the BMAPs. This is discussed in more detail in Section 1, *Watershed Management*. The SWIM Act was the precursor to the FWRA, which was adopted in 1999. Today, statewide efforts for water quality restoration are prioritized through the FWRA and BMAPs. The WMDs' SWIM Programs assist in restoration by providing local funding and projects for the implementation of BMAPs.

### **SWIM Program Framework**

The SWIM Act established a process and criteria in which the WMDs, in cooperation with local and state agencies, develop plans, programs, and projects to restore and protect waterbodies of statewide significance. Under the provisions of the act, a major emphasis is placed on implementing waterbody and watershed strategies to control NPS pollution and restore and maintain the overall water quality and health of aquatic systems.

To accomplish these objectives, the Florida Legislature provided the following major elements in the SWIM Act:

- The WMDs are responsible for identifying priority waterbodies, developing restoration and protection plans for priority waterbodies, and implementing the plans. The districts are to ensure local government, public, and state agency participation in identifying priority waterbodies and developing and implementing SWIM plans.
- The Department reviews and approves the identification of priority waterbodies and the development of SWIM plans with assistance from



FDACS, the Florida Department of Community Affairs (FDCA), and the Florida Fish and Wildlife Conservation Commission (FWCC). The Department provides general oversight of the program and reviews expenditures of state funds (Chapter 62-43, F.A.C.).

State SWIM funding to implement approved SWIM plans depends on annual legislative appropriations. Despite the variability in funding, the WMDs, local governments, and state agencies continue activities in many SWIM waterbodies using a variety of local funding sources. More information on the [SWIM Act](#) is available online.

### **Coastal Protection**

Protecting Florida's coast is a priority for the Department. Many of the programs that protect Florida's coast reside in other areas of the Department, such as the Florida Coastal Office (FCO), as well as other agencies.

On March 27, 2008, in accordance with the Coastal Zone Management Act, the EPA and NOAA found that "the state of Florida has satisfied all conditions placed on approval of the Florida coastal nonpoint pollution control program..." To date, of the 29 coastal states (excluding territories), Florida is one of 17 states to have a fully approved program. Under the federal Coastal Zone Act Reauthorization Amendments, all of Florida is considered coastal and, as such, represents recognition of Florida's significant statewide efforts to protect its world-famous coastline. The Department works with a number of partners and programs to protect Florida's coastal areas. The [NOAA/EPA Florida Final Decision Document](#) is available online.

The Department's FCO manages more than 4 million areas of submerged lands and select coastal uplands (including 41 aquatic preserves, encompassing almost 2 million acres. They have been protected by law since 1975 under the Florida Aquatic Preserve Act (Section 258.35, *et seq.*, F.S.) for their aesthetic, biological, and scientific values). FCO is also an integral partner in the NPS Management Section's Green Industries BMP Program, discussed in the *Urban* section of this plan.

The Department counts itself one of several partners responsible for preserving and protecting the state's natural coastlines. More information on the Department's [Florida Coastal Office programs](#) is available online.

### **Clean Marina Program**

With more than 1,350 miles of coastline, 50,000 miles of inland and coastal rivers and streams, 700 freshwater springs, and countless lakes, Floridians depend on water more

than any other natural resource. Since 2000, the Department has encouraged clean boating through the development of programs that recognize facilities engaging in environmentally friendly practices, beyond regulatory requirements, in and around Florida's waterways.



The Florida *Clean Marina* Program is a voluntary designation program with a proactive approach to environmental stewardship. Participants receive assistance in implementing BMPs through on-site and long-distance technical assistance, mentoring by other *Clean Marinas*, and continuing education. To become designated as a *Clean Marina*, facilities must implement a set of environmental measures designed to protect Florida's waterways. These measures address critical environmental issues such as sensitive habitat, waste management, stormwater control, spill prevention, and emergency preparedness. Designated facilities and those facilities seeking designation receive ongoing technical support from the Florida *Clean Marina* Program and the *Clean Boating* Partnership. More information on the [Clean Marina Program](#) is available online.

#### *Public Health Issues in Marine Waters*

FDOH is tasked with monitoring beach locations in Florida for fecal coliform and enterococci bacteria. Elevated sources are a result of stormwater runoff, pets, wildlife, or human sewage. Advisories are issued for high results, and if exceedances are seen for a given beach for 21 days, the Department places the waterbody on its list of potentially impaired waters so that the impairment can be verified and sources addressed. On a case-by-case basis the Department evaluates bacterial data to determine the need for restoration plan development. For example, the Department is implementing a plan for Bayou Chico and Lower St. Johns Tributaries, as well as the Hillsborough River.

In addition, the Department works with FDACS to identify bacterial impacts on shellfishing areas. Also related to human health is the issue of red tide. This type of harmful algal bloom (HAB) has caused significant economic losses to the fisheries and tourism industries. It is also responsible for causing respiratory and other health effects on people in locations where blooms are occurring. In Florida, the species that causes most red tides is *Karenia brevis*, which thrives in high-salinity areas and is especially found off the coast of southwest Florida. Red tides typically begin in nutrient-poor water 18 to 74 kilometers offshore; the organisms are able to survive in these areas due to the cells' ability to process nutrients. Increased nutrient levels nearer to the shore allow these harmful algae to multiply, and currents disperse the bloom up and down shorelines.

An interagency and private party task force, the Florida Harmful Algal Bloom Task Force, was established in 1997 to identify gaps in the data that have been collected and to

recommend additional research and monitoring needed on Florida red tides, other HABs, and their associated effects. In 2000, the Florida Fish and Wildlife Research Institute (FWRI) Red Tide Offshore Monitoring Program was established to help monitor and detect HABs in Florida by asking volunteers to collect offshore water samples. Red tide continues to be studied, both in its effects on humans and fisheries, and humans' effect on it. More information on [red tide in Florida](#) is available online.

### ***Beaches and Coastal Systems***

Florida's Coastal Construction Control Line (CCCL) Program ensures that structures do not destabilize or destroy beach and dune systems. A CCCL establishes a jurisdictional area in which special construction siting and design criteria are applied due to anticipated impacts on the beach during a storm event. This includes restrictions that minimize impacts to dune systems, neighboring properties, native salt-resistant vegetation, and marine turtles. More information on the [CCCL Permitting Program](#) is available online.

The Joint Coastal Permit (JCP) Program is the concurrent permitting program for coastal construction authorization, ERP, and sovereign Submerged Lands authorization (Section 161.055, F.S.).

Under the Beach Erosion Control Program, financial assistance is provided to municipalities to conduct activities such as "beach restoration and nourishment activities, project design and engineering studies, environmental studies and monitoring, inlet management planning, inletsand transfer, dune restoration and protection activities, and other beach erosion prevention related activities consistent with the adopted Strategic Beach Management Plan."<sup>10</sup> The program is also responsible for implementing the Beach and Shore Preservation Act, including management plans. More information on the Department's [Coastal Management Program](#) is available online.

### **The Florida Everglades**

Nearly 8.9 million acres of Florida's southern peninsula, from the lakes and marshes of central Florida to Florida Bay, were once composed of interconnected wetlands; of those 8.9 million acres, 4 million were known as the Everglades. To date, Florida has invested \$1.8 billion to improve water quality under the Everglades Forever Act.<sup>11</sup> Additionally, under the 50-50 state federal partnership for the Comprehensive Everglades Restoration Plan (CERP), which encompasses 16 counties over an 18,000-square-mile area, Florida is

---

<sup>10</sup> [Florida Beach Erosion Control Program](#) (last accessed October 10, 2012).

<sup>11</sup> [Everglades Forever](#) (last accessed October 10, 2012).

responsible for 50% of the cost to implement the \$13.4 billion, multidecade plan; to date, the state has invested \$2.4 billion to implement CERP.<sup>12</sup>

Additionally, in 2007, the Florida Legislature expanded the Lake Okeechobee Protection Act (LOPA) to include the protection and restoration of the Lake Okeechobee watershed and the Caloosahatchee and St. Lucie Estuaries with an immediate commitment of \$250 million and an additional \$100 million for future years.<sup>13</sup> Through the Northern Everglades and Estuaries Protection Program (NEEPP), Florida will set aside land, construct treatment wetlands, and identify the water storage areas needed to improve the quality, timing, and distribution of water flowing into Lake Okeechobee and the St. Lucie and Caloosahatchee Estuaries.<sup>14</sup>

Restoring the Everglades' 2.4-million-acre marsh also means reviving the habitat for more than 60 threatened and endangered species, establishing a reliable supply of water for millions of Floridians, and providing flood control to the south Florida area.<sup>15</sup> Advanced water quality technologies and BMPs for farmers have successfully prevented more than 3,500 metric tons of phosphorus from entering the Everglades.<sup>16</sup> The construction of 45,000 acres of man-made treatment marshes, which use native plants to naturally remove excess nutrients from water flowing into the Everglades, combined with the use of improved agricultural practices, have reduced phosphorus concentrations by more than 76%.<sup>17</sup>

### *Everglades Water Quality Improvements*

The state and the South Florida Water Management District (SFWMD) have worked diligently to implement water quality improvements and lower phosphorus levels in Everglades-bound waters. This is being accomplished through the implementation of the farming BMP program, funded in part by the Section 319 Grant Program, and the construction and operation of Stormwater Treatment Areas (STAs) in compliance with the state's Everglades Forever Act.

---

<sup>12</sup> *Id.*

<sup>13</sup> *Id.*

<sup>14</sup> *Id.*

<sup>15</sup> Department, [Everglades Restoration website](#) (last accessed October 10, 2012).

<sup>16</sup> *Id.*

<sup>17</sup> *Id.*

---

## WATER QUALITY IMPROVEMENTS IN THE FLORIDA EVERGLADES<sup>18</sup>

- Five Everglades STAs are operational, with an effective treatment area of 57,000 acres, including 12,000 acres completed in 2012.
- In Water Year (WY) 2013, these constructed wetlands treated more than 1.16 million acre-feet of water, reducing phosphorus loads by 84%.
- To date, the STAs have treated more than 13.4 million acre-feet of water and have retained approximately 1,730 metric tons of phosphorus.
- Farming BMPs under the SFWMD regulatory source control program on 640,000 acres of agricultural lands south of the Lake Okeechobee have resulted in annual average phosphorus reductions greater than 50%, more than twice the amount required by state law.

---

### *Partners*

The Department works with many partners to protect and surface and coastal areas. These partners include the WMDs, FDOH, FDACS, universities, and third-party interest groups.

---

<sup>18</sup> SFWMD, January 2014, [Quick facts on Everglades restoration progress](#).

## GROUND WATER AND SPRINGS NPS MANAGEMENT PROGRAMS





## 5. GROUND WATER AND SPRINGS NPS MANAGEMENT PROGRAMS

Protecting Florida's ground water and springs is a high priority for the Department. Many of Florida's springs are currently impaired for nitrogen in the form of nitrate. The sources of nitrogen pollution to the springs and ground water can include agriculture, septic tanks, and urban fertilizer. The Department focuses its efforts on addressing this issue by identifying appropriate projects through its BMAP process. To measure its progress in this area, the Department will report the number of projects included in springs BMAPs each year.

The Department is developing BMAPs for eight springs at this time and is monitoring and collecting data necessary to evaluate the impairment status of many of the springs systems in Florida. The Department is also prioritizing the development and adoption of TMDLs for impaired springs systems. Springs are largely located in the northern part of the state where the soils are well drained. Because the ground water systems for springs are complicated, the Department is using a number of tools, discussed in more detail below, to help identify potential nutrient sources impacting the springs. In some cases it appears agricultural runoff is a leading contributor to springs impairments. In other cases, it appears that OSTDS are a leading nutrient contributor. In still other cases, it is a combination of the two.

Developing BMAPs and identifying water pollution reduction projects in springs areas is a high priority for the Department. These projects may include septic tank upgrades, septic to sewer projects, and the development and implementation of BMPs in both urban and agricultural areas. The Department is working with FDOH on septic tank inventories and options, and with FDACS on the development and updating of BMPs for agricultural activities. The Department is also working with the USDA-NRCS on its NWQI initiative. The NPS and BMAP groups work with these partners to identify potential 319 funding opportunities as well.

Ground water in Florida is legally defined as "water beneath the surface of the ground within a zone of saturation, whether or not flowing through known and definite channels."<sup>19</sup> Florida lies in the "Coastal Plain physiographic province, which is blanketed by surficial sands and underlain by a thick sequence of bedded limestone and

---

<sup>19</sup> Chapter 62-520, F.A.C.

dolomite.”<sup>20</sup> These sands, limestone, and dolomite together form an enormous ground water reservoir.<sup>21</sup>

Ground water is one of Florida’s most vital resources, as it is the primary source of drinking water for nearly 90% of the state’s population and 42 million annual visitors. Florida’s ground water is a clean, relatively inexpensive, and readily available source of drinking water. About 80% of Floridians are served by public water systems, while the other 20% receive their water from “limited-use” public water systems and private wells. Additionally, over 50% of all other water needs, including agriculture, industry, mining, and electric power generation, are supplied by ground water sources.

Furthermore, most of Florida’s ecosystems depend on ground water, either directly or indirectly. Also, of greatest concern to the state’s residents, most of Florida’s potable water supply comes from ground water, with two aquifer systems being the major ground water sources: the Floridan aquifer, which supplies about 60% of Florida’s potable water supply, and the Biscayne aquifer, which supplies about 18%.<sup>22</sup> In all, Florida’s aquifers provide the state with over 8 billion gallons of water each day.

Ground water is also the source of much of the surface flow in Florida’s streams – in the “Springs Coast region of western Florida, for example, ground water provides 70 to 80% of the flow to rivers in this area.”<sup>23</sup> While there is not a complete count of all springs in Florida, there are more than 1,000, ranging in size from very small seeps discharging little more than a trickle of water, to first-magnitude springs such as Wakulla Spring, Silver Springs, and Weeki Wachee Spring, which discharge hundreds of millions of gallons of water per day. These springs help maintain river flows, as well as salinity balances in some estuaries. Thus, what affects ground water can have important effects on surface waters, fish, and wildlife and their respective habitats. Therefore, protecting and restoring Florida springs is a high priority.

One of the challenges with springs restoration is knowing how changes in land use and other anthropogenic activities affect water quality in the spring and associated springshed. To address this uncertainty, the Department is developing and refining

---

<sup>20</sup> Department, September 2010, [Integrated water quality assessment for Florida: 2010 305\(b\) report and 303\(d\) list update](#), p. 14 (last accessed October 10, 2012).

<sup>21</sup> *Id.*

<sup>22</sup> *Id.* at 14-15.

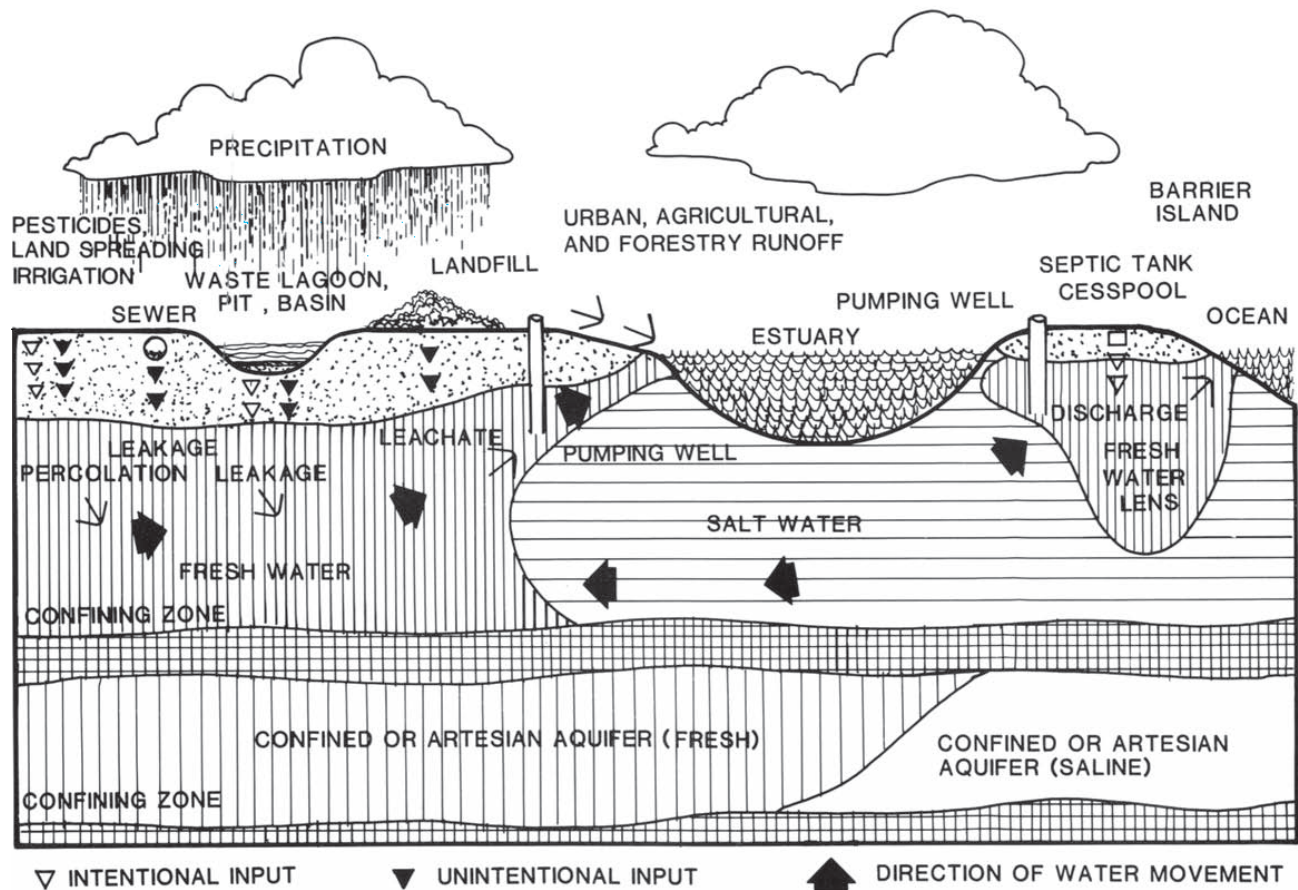
<sup>23</sup> *Id.* at 15.



source tracking tools to better predict the contribution from sources and their impact to springs.

Historically, Florida’s ground water monitoring activities focused almost entirely on protecting drinking water supplies. In addition to this focus, the Department now also integrates ground water data into its watershed assessments to help in the evaluation of ground water impacts on surface water quality. This is especially important in Florida, where ground water is a major source of water to streams, canals, lakes, and estuaries. Because of this ground water–surface water interaction, it is important to assess ground water quality, identify potential pollutants, establish whether they are likely to be discharged to surface water, and identify any potential impacts that may already be expressed as surface water impairments.

FIGURE 2. GROUND WATER ESTUARINE CONNECTION<sup>24</sup>



<sup>24</sup> Livingston, E., and E. McCarron, *Stormwater management: A guide for Floridians, ground water estuarine connection*, p. 12 (last accessed October 12, 2012).

A hydrological divide affects the movement of ground water in Florida. With the notable exceptions of the immense St. Johns River and the Ocklawaha River, little surface or ground water moves across this divide. Waters lying to the north are fed primarily by rain and interstate sources; those lying to the south are fed primarily by rain.

FIGURE 3. FLORIDA'S HYDROLOGICAL DIVIDE<sup>25</sup>



Threats to ground water and springs can come from many sources. The primary pollutant of concern is nitrogen in the form of nitrate. Nature, in the forms of severe weather, droughts, and sinkholes, can play an important role in changing the quality of ground water. However, the major sources of contamination in ground water are from human activities. Some of these include fertilizer and chemical use and animal waste from farming areas; wastewater application areas; OSTDS, or septic systems; and the residential use of chemicals and fertilizers. The major issues impacting the health of springs include population growth, urban sprawl, the expansion of farming areas, a

<sup>25</sup> Department, September 2010, [Integrated water quality assessment for Florida: 2010 305\(b\) report and 303\(d\) list update](#), p. 16, citing Fernald and Purdum, 1998 (last accessed October 10, 2012).

growing demand for ground water, and the introduction of wastewater, fertilizers, pesticides, and other pollutants to springsheds.

Threats to the quality and quantity of water in Florida's ground water and springs fall into three different categories: inputs or the contaminants that are put in; outputs or the amount of water taken out of the aquifer; and impacts or the physical damage caused in and around springs and downstream spring runs. NPS activities that may have adverse impacts on ground water and springs include the excessive fertilization of farmlands, turf, and landscapes; ground water withdrawals for irrigation, municipal, or industrial uses that exceed the capacity of the aquifer; the discharge of stormwater into sinkholes; the use of sinkholes for waste disposal; the disposal of animal waste from livestock farms; the disposal of domestic wastewater in septic tanks and at municipal wastewater application sites; recreational damage to spring basins causing erosion, the trampling of native vegetation, and littering; and invasive species, which are encouraged by heavy nitrates in the water and other human impacts.

To protect its ground water and spring resources, Florida has incorporated ground water protection into many of its programs that regulate water quality at waste treatment facilities, regulate consumptive use from wells, and provide training and guidelines on agricultural stewardship. Also, the state administers the delegated federal Underground Injection Control (UIC) Program, which regulates the underground injection of wastewater and develops responsive monitoring programs.

### **Ground Water Regulatory Programs**

Florida's ground waters are protected and managed through a number of regulatory programs that are implemented by the Department, the WMDs, FDACS, and local governments.

#### ***Florida Department of Environmental Protection***

The Department exercises regulatory authority over ground water quality. Ground water is protected through permitting and monitoring requirements, and the ground water quality standards contained in Department regulations. At present, the Department's ground water rules are specified in Chapters 62-520 and 62-522, F.A.C., and implemented through the chapters of the Florida Administrative Code set forth in **Table 12**.

At the state level, the Department is responsible for ground water *protection* and ground water *regulation*.

Florida's regulation of ground water quality is implemented in the Water Resources Division, whose programs are responsible for the implementation and support of regulatory actions that monitor and protect ground water quality. In Florida, ground water standards are equivalent to drinking water standards.<sup>26</sup> By definition, a violation of any ground water standard or criterion constitutes pollution. Regulatory programs affecting ground water include the following:

- **Ground Water Classes, Standards, and Exemptions.**
- **Underground Injection Control Program.** The Department's UIC Program consists of a team of geologists and engineers dedicated to protecting the state's underground sources of drinking water (USDW) while maintaining the lawful option of disposal of appropriately treated fluids via underground injection wells. The UIC Program also is dedicated to preventing the degradation of the quality of other aquifers adjacent to the injection zone.
- **Ground Water Delineation Program.** In 1988, the Florida Legislature directed the Department to implement the Delineated Areas Program for potable water well construction and water testing standards in areas of known ground water contamination under Chapter 62-524, F.A.C. This action was taken to protect public health and ground water resources, and to promote the cost-effective remediation of contaminated potable water supplies. The rule provides guidelines for the construction of new drinking water wells in areas of delineated ground water contamination.
- **Florida Unique Well Identifier Program.** This program's goal is to simplify water well identification and the exchange of information between state agencies concerned with well construction data, well location, and ground water quality. The program involves tagging wells with a unique alphanumeric code called the FLUWID Well ID (Example: ABC1234).
- **Source Water Assessment and Protection Program.** In 1996 the federal Safe Drinking Water Act was amended to include the Source Water Assessment and Protection Program (SWAPP). SWAPP required each state to assess all public water systems and identify potential sources of contamination that might affect the source waters supplying those systems. Florida's Source Water Assessment approach was approved by

---

<sup>26</sup> The Department exercises regulatory authority over ground water quality under Chapter 62-520, F.A.C.

the EPA Region 4 on April 1, 2000. The Florida assessment is geographic information system (GIS) based and is designed to be repeated every five years. Assessment results are reported to the public water systems, and summary reports are posted at the [SWAPP website](#).

- **Wellhead Protection Program.** The Department implements the wellhead rule to provide the most stringent protection to ground water close to potable water wells.
- **Water Well Contractors Information and Violations Clearinghouse.** The statewide Water Well Contractor Violation Clearinghouse (WWCVC) was established by the Department in conjunction with the WMDs, as required by Section 373.335, F.S. This database is designed to allow the WMDs to easily access information on all Florida licensed water well contractors.

In addition, nonregulatory ground water protection activities associated with the watershed restoration program include ground water and spring monitoring and assessments, the development of ground water–surface water interaction assessment tools, the management of research and monitoring projects, the facilitation of agricultural BMPs, and participation in evaluations of new pesticides that have potential ground water impacts.

### *Water Management Districts*

With respect to the protection and management of ground water, Florida's five WMDs are responsible for the following:

- Regulating ground water contamination from contaminants such as chlorides induced through overuse of the resource (*i.e.*, salinity contamination from consumptive use in coastal areas or where deeper ground water is saline).
- Regulating the ground water impacts of agricultural activities under the Warren S. Henderson Wetlands Protection Act of 1984.
- Exercising regulatory control over the construction of injection wells through working agreements with the Department.
- Regulating the consumptive use permitting program.
- Regulating the construction, repair, or abandonment of water wells.

## *Local Governments*

The Florida Local Government Comprehensive Planning and Land Development Regulation Act<sup>27</sup> directs local governments to develop specific and detailed provisions to protect drinking water wellfields.<sup>28</sup> Consequently, many local governments have adopted ordinances and regulations to minimize ground water contamination and protect aquifers in their communities. Three important types of programs that help to protect ground water are approved local pollution control programs, county water resource management programs, and aquifer or wellhead protection programs. Local requirements usually apply in addition to state and federal regulations. Because only local governments regulate land uses, local ground water requirements have become increasingly important.

## *Ground Water Quality Standards and Criteria*

Because of the relationship between ground water and drinking water, Florida's ground water standards are set as the primary and secondary drinking water standards.<sup>29</sup> There are five classifications of ground water, arranged in order of the degree of protection required, with Class G-I and Class F-I ground water having generally the most stringent water quality criteria and G-IV the least, under Rule 62-520.410, F.A.C. **Table 3** lists the classes.

---

<sup>27</sup> Chapter 163, F.S.

<sup>28</sup> Paragraph 163.3202(2)(c), F.S. The statute provides that when "an activity of a farm operation takes place within a wellfield protection area as defined in any wellfield protection ordinance adopted by a county, and the implemented best management practice, regulation, or interim measure does not specifically address wellfield protection, a county may regulate that activity pursuant to such ordinance." Section 163.3162(4)(a), F.S.

<sup>29</sup> For standards, see Section 62-520, F.A.C.

TABLE 3. GROUND WATER CLASSIFICATIONS

Classification	Description
Class F-I	Potable water use, ground water in a single source aquifer described in Rule 62-520.460, F.A.C., with a total dissolved solids content of less than 3,000 milligrams per liter (mg/L) and was specifically reclassified as Class F-I by the commission.
Class G-I	Potable water use, ground water in a single source aquifer that has a total dissolved solids content of less than 3,000 mg/L and was specifically reclassified by the commission.
Class G-II	Potable water use, ground water in aquifers with a total dissolved solids content of less than 10,000 mg/L, unless otherwise classified by the commission.
Class G-III	Nonpotable water use, ground water in unconfined aquifers with a total dissolved solids content of 10,000 mg/L or greater; or with a total dissolved solids content of 3,000 to 10,000 mg/L and either has been reclassified by the commission as having no reasonable potential as a future source of drinking water, or has been designated by the Department as an exempted aquifer under Subsection 62-528.300(3), F.A.C.
Class G-IV	Nonpotable water use, ground water in confined aquifers with a total dissolved solids content of 10,000 mg/L or greater.

### Installation Discharges to Ground Water: Permitting

Unless exempt, “no installation shall directly or indirectly discharge into ground water any contaminant that causes a violation of the water quality standards or minimum criteria for the receiving ground water,” except within a zone of discharge established by a permit.<sup>30</sup> A zone of discharge is a “volume underlying or surrounding the site and extending to the base of a specifically designated aquifer or aquifers, within which an opportunity for the treatment, mixture or dispersion of wastes into receiving ground water is afforded.”<sup>31</sup> Compliance with the primary and secondary drinking water standards is imposed at the edge of the zone of discharge, and monitoring is required to confirm that compliance with ground water standards is maintained. However, no zone of discharge is allowed for discharges directed into wells or sinkholes, except for projects designed to recharge aquifers with surface water of comparable quality, or projects designed to transfer water across or between aquifers of comparable quality for the purpose of storage or conservation.

Whenever possible, the Department incorporates ground water discharge considerations into appropriate Department permits and does not routinely require a separate permit

<sup>30</sup> Rule 62-520.310, F.A.C.

<sup>31</sup> Subsection 62-520.200(27), F.A.C.



for ground water discharges. The exception to this practice for ground water discharges is the separate permitting required for underground injection projects.<sup>32</sup>

The UIC Program is committed to protecting Florida’s USDW while maintaining the lawful option of disposal of appropriately treated fluids via underground injection wells. Underground sources of drinking water are those aquifers that contains a total dissolved solids concentration of less than 10,000 mg/L. The UIC Program also is dedicated to preventing degradation of the quality of other aquifers adjacent to the injection zone. Subsurface injection, the practice of placing fluids in a permeable underground aquifer by gravity flow or under pressure through an injection well, is one of a variety of wastewater disposal or reuse methods used in Florida.

### Ground Water Monitoring

Ground water monitoring has been and continues to be conducted through multiple monitoring programs in the Department. Each of those is described below. More information on the [Status Monitoring Network](#) is available online.

*TABLE 4. SUMMARY OF GROUND WATER MONITORING PROGRAMS AND DATA SOURCES: PROGRAMS THAT INCLUDE POTABLE GROUND WATER SAMPLING: DEPARTMENT-MAINTAINED MONITORING NETWORKS<sup>33</sup>*

<b>Monitoring Network or Program</b>	<b>Period</b>	<b>Description</b>
<b>Public Water System (PWS) Monitoring</b>	Ongoing	Under Chapter 62-550, F.A.C., all public water systems are required to monitor and report water quality at regular intervals within their compliance cycle. Ground water is the primary source of potable water in the state.
<b>FDOH/Department Water Supply Restoration Program (WSRP)- Private Well Sampling Program</b>	Ongoing	This consists of private well data collected in investigations of potential ground water contamination, maintained in a Department WSRP database. The parameter list is variable, depending on the contaminants of concern.
<b>Monitoring of discharges to ground water</b>	Ongoing	Under Chapter 62-522, F.A.C., facilities discharging to ground water are required to implement a ground water monitoring plan and report those results to the Department.

<sup>32</sup> Rules and permitting process for UIC are found in Chapter 62-528, F.A.C.

<sup>33</sup> *Id.* at 158.



TABLE 5. SUMMARY OF GROUND WATER MONITORING PROGRAMS AND DATA SOURCES:  
DEPARTMENT-MAINTAINED MONITORING NETWORKS<sup>34</sup>

Monitoring Network or Program	Period	Description
Status Network	1999–2003 2004–08	The statewide rotating basin, probabilistic sampling network was based on sampling 60 wells from several basins per year. The 1999–2003 cycle (Cycle 1) completed a statewide survey in four years. During 2004–08, the state adopted the TMDL 29-basin design (Cycle 2), completing the statewide survey in five years. These sample locations were randomly selected from a list frame of wells, with samples collected from 30 unconfined and 30 confined aquifers in each five to six reporting units.
Status Network	2009–ongoing	This statewide probabilistic sampling network samples 240 wells annually. Sample locations are randomly selected from a list frame of wells, with samples collected from 20 unconfined and 20 confined aquifers in each of six reporting units. The data used to characterize water quality on a statewide scale, and the parameters monitored, correspond with those targeted in surface water evaluations.
Background Network and Temporal Variability (TV) Subnetwork	1985–99	A statewide network of 1,600 water wells and monitoring wells used to spatially monitor general <i>background</i> water quality of local aquifers (surficial, intermediate, and Floridan). On average, each well was sampled once every three years for an extensive list of analytes. TV network wells are sampled monthly to quarterly.
Ground Water Temporal Variability (GWTV) Subnetwork	1999–ongoing	The current network consists of 46 wells statewide. It is designed to help correlate Status Network results with seasonal hydrologic variations, and estimate the temporal variance of analytes.
Very Intense Study Area (VISA) Network	1989–99	The network monitored the effects of land uses on ground water quality in 23 selected areas of the state. Individual VISAs consisted of approximately 20 wells sampled three times over an 11-year period. Sampling was carried out for a targeted list of analytes.
Springs Monitoring Network	2001–10	Fifty-eight samples were collected quarterly from 23 first-magnitude and nine second-magnitude spring clusters. The basic analyte list is identical to that used for the Status Network.

### Monitoring Permitted Systems

Generally, all installations (new and existing) must have approved ground water monitoring plans prepared, signed, and sealed by a licensed professional.<sup>35</sup> Installations are required to “provide the Department with a plan containing findings and recommendations for ground water monitoring derived from site-specific information.”<sup>36</sup> The plan is required to “evaluate facility operations, discharges, actual

<sup>34</sup> *Id.* at 157.

<sup>35</sup> Rule 62-520.600, F.A.C.

<sup>36</sup> Subsection 62-520.600(3), F.A.C.

and potential environmental risk, and provide a design that ensures compliance with applicable program-specific rules and water quality criteria depending on where the discharge will take place.”<sup>37</sup> The plan is to be approved only if “it will provide the data needed to evaluate an installation’s compliance with the ground water requirements.”<sup>38</sup>

The location of monitoring wells is critical to successfully monitoring the potential migration of ground water contaminants. Installations must have a background well located upgradient and as close as possible to the site without being affected by the site’s discharge, one intermediate well downgradient from the site and within the zone of discharge, and one compliance well downgradient from the site and at the edge of the zone of discharge.<sup>39</sup> Other wells may also be required based on the “complexity of the hydrogeology of the site, the magnitude and direction of the plume, or the likelihood of threat to the public health...”<sup>40</sup>

## Florida Springs

Florida springs attract visitors year-round with their unique beauty. They have provided immeasurable natural, recreational, and economic benefits for residents and visitors for more than a century. Florida has more first-magnitude springs (meaning they discharge *at least* 64.6 million gallons per day or 100 cubic feet per second [cfs]) than any other state or any other nation in the world – historically, a total of 33 first-magnitude springs (**Figure 4**).<sup>41</sup> Flowing at over 766 cfs, Silver Springs is the largest first-magnitude spring in Florida. Ginnie Springs is the most popular freshwater diving location in the world, and the 15 state parks named for springs across Florida attract more than 2 million visitors, contributing nearly \$7 million in revenue to the state annually.

There are two general types of springs in Florida: seeps (water table springs) and karst springs (artesian springs). For seeps, ground water percolates downward through permeable sediments until it reaches a less permeable or impermeable formation, forcing the water to move laterally. When the water reaches the surface in a lower-lying area, it

---

<sup>37</sup> Subsection 62-520.600(3), F.A.C. Additionally, the rule provides that the “design shall be such that the permittee can detect and monitor adverse impact upon ground water and upon surface waters affected by ground water by facility activities. Design of a ground water monitoring plan is variable and dependant on the complexity of the site hydrogeology, type of facility, and method and characteristics of the discharge.” *Id.*

<sup>38</sup> Subsection 62-520.600(4), F.A.C.

<sup>39</sup> Subsection 62-520.600(6), F.A.C.

<sup>40</sup> Subsection 62-520.600(6), F.A.C.

<sup>41</sup> For more information, see [Florida’s first-magnitude springs](#) (last accessed October 11, 2012).

forms a seep. More common to Florida are karst springs, which form when ground water discharges to the surface through a karst opening.<sup>42</sup>

---

### *GENERAL REQUIREMENTS FOR GROUND WATER MONITORING PLANS*

- (a) Describe the physical and hydrogeologic characteristics of the facility and surrounding area including the following:
    - 1. Direction and rate of ground water flow and ambient ground water characteristics.
    - 2. Primary and secondary porosity, and horizontal and vertical permeability for the receiving aquifer(s).
    - 3. The depth to, and lithology of, the first confining bed(s).
    - 4. Vertical permeability, thickness, competence, and extent of any confining beds.
    - 5. Topography, soil information, and surface water drainage systems surrounding the site.
  - (b) Show the locations of the proposed monitoring wells labeled as background, intermediate, or compliance well.
  - (c) Provide construction and development details of the monitoring wells.
  - (d) Provide a water sampling and chemical analysis protocol.
  - (e) Provide a water sampling schedule.
  - (f) Demonstrate the quality of the receiving ground water prior to discharge.
  - (g) Indicate how to determine natural background (where available) or background quality of the ground water in the vicinity of the site and any deviations in the quality of the receiving ground water in the downgradient monitoring wells.
  - (h) Show the locations of all surface waters and their classifications, including springs within a one mile radius of the site, and on-site sinkholes with depths exceeding the seasonal high water table or that are perched.
  - (i) Identify the location and use of all wells within 1,000 feet of the site.
- 

### *Land Acquisition for Springs Protection*

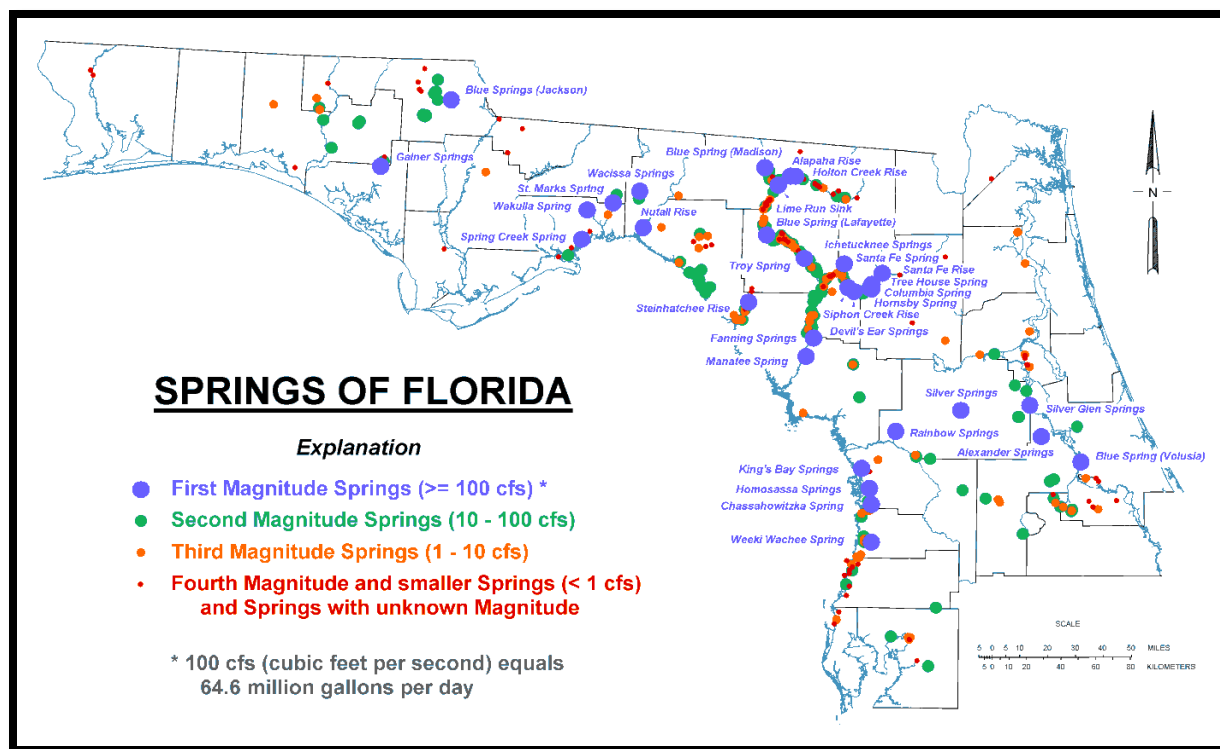
Over the past several decades, Florida has acquired land surrounding springs, primarily first-magnitude springs, in an effort to protect them. To date, 630,230 acres have been acquired around springs with that intention through the Florida Forever Program.<sup>43</sup>

---

<sup>42</sup> Florida Geological Society, *Springs of Florida*, Bulletin 66, p. 8. The vast majority of Florida's more than 700 identified springs and all of the first-magnitude springs are karst springs.

<sup>43</sup> See the [Florida Forever website](#) (last accessed October 11, 2012). The total amount of federal and state conservation lands owned in fee simple is 9.4 million acres, more than half of which is owned by the state. Additionally, the state has acquired easements or other conservation protections on an additional 0.6 million acres.

FIGURE 4. SPRINGS OF FLORIDA<sup>44</sup>



### *An Evaluation of Florida Springs*

Nitrate-nitrogen levels have dramatically risen in many of Florida’s springs in the past 20 years due to human activities in springsheds and has become an important focus of state agencies. Springsheds are the land areas contributing the rainfall and surface flows that percolate to ground water and discharge at springs.

Beginning in 1999, when Florida’s Governor pulled together an interagency Springs Task Force to recommend strategies to protect and restore springs, the state has implemented a variety of actions focused on public education, spring protection through land acquisition, water quality monitoring, the development of minimum flow criteria for springs, and ground water and spring water quality restoration.

According to the Florida Natural Areas Inventory (FNAI), “Factors affecting quality and quantity of spring water include the distribution of karst features within a springshed, thickness of confining units, soil characteristics, topography, potentiometric surfaces, as

<sup>44</sup> Department, September 2012, [Integrated water quality assessment for Florida: 2010 305\(b\) report and 303\(d\) list update](#), p. 14.

well as others.”<sup>45</sup> A large part of identifying contaminants to springs is to properly delineate a springshed. Springsheds are made up of the ground water basin and the surface water basin. “Delineation of ground- and surface-water portions of springsheds, identification of major swallets that receive storm water, and identification of land uses that may lead to contributions of nutrients or other constituents into the ground-water system are important steps in protecting Florida springs.”<sup>46</sup>

Currently, nitrate enrichment stands out as the most pressing issue because of the ecological impacts to spring systems. As of January 2015, the Department has identified 418 spring vents located in waterbodies that are impaired because of nitrate enrichment. The Department has adopted water quality restoration goals or TMDLs for most of these waterbodies. Of the 418 springs, 347 are located in waterbodies for which the Department has adopted a TMDL, and in February 2015, the Department proposed TMDLs for waterbodies containing 40 additional springs.

When the proposed TMDLs are adopted, 93% of the springs located in impaired waterbodies will be covered by a TMDL, and the Department will continue to develop and adopt TMDLs for the remaining springs. A section of this report is dedicated to evaluating and identifying the sources of nitrate that are causing adverse effects in several of these spring systems.

Other concerns in springs include increased salinity (saltwater intrusion and encroachment) and decreased flows, which in some areas can be related to ground water withdrawals from wells.

### *Restoring Florida Springs*

Today the Department and its partners, FDACS, and the four WMDs with springs (Suwannee, St. Johns, Southwest, and Northwest) are focused on actions in their jurisdictions to address spring water quality and flow-related issues. In addition, many local governments and citizens are doing their part to help restore the springs in their areas.

As part of TMDL implementation in springs, the Department is developing eight restoration plans (BMAPs). As part of this effort the Department often identifies priority areas in a springshed to help focus restoration efforts. Pilot projects such as innovative BMPs and other resources are concentrated in these smaller, focused areas. This focus

---

<sup>45</sup> [Florida Natural Areas Inventory](#) (last accessed October 11, 2012).

<sup>46</sup> *Id.* at 23.

allows the Department to evaluate the outcomes, successes, and limitations of these activities before applying them across the springshed.

To assess nutrient contributions from sources on the surface, the Department has developed the Nitrogen Source Inventory Loading Tool (NSILT). The results of these assessments are used to develop actions and activities to address pollutants from these sources. Additionally, statewide initiatives to remove or abate NPS pollution, such as fertilizers from yards,<sup>47</sup> agricultural activities,<sup>48</sup> and septic-related pollution,<sup>49</sup> are a primary focus of springs restoration and protection.

### *Partners*

The Department works with many partners to protect and restore Florida's ground water and springs. These partners include the WMDs, FDACS, local governments, universities, and third-party interest groups.

---

<sup>47</sup> See the Florida-Friendly Landscaping section of this update.

<sup>48</sup> See the Agricultural section of this update.

<sup>49</sup> See the OSTDS section of this update.

## AGRICULTURAL NPS MANAGEMENT





## 6. AGRICULTURAL NPS MANAGEMENT PROGRAMS

Identifying water quality improvements in the agricultural industry in Florida is a priority. The Department works with FDACS as well as universities in the state to identify, develop, and update BMPs for various agricultural activities to reduce NPS nutrient pollution. These practices not only reduce agricultural runoff and nutrients into waterways but also are designed to save farmers money. In addition, the Department is coordinating with the USDA-NRCS for the NWQI. One of the Department's key activities for the next several years is working with stakeholders to evaluate BMP effectiveness in the Lake Okeechobee area. While these activities are a priority to the Department, Florida has a mature agriculture program such that the Department does not focus its 319(h) efforts on this sector.

In 2007, Florida ranked second in the nation in the value of vegetable production, with cash receipts of \$1.6 billion, seventh in all crops with cash receipts of \$6.2 billion, and 11<sup>th</sup> in total cash receipts.<sup>50</sup> In 2008, "Florida had 47,500 commercial farms, utilizing 9.25 million acres to continue to produce a variety of food products," with the total number of farms increasing by 2,500 over the past 10 years.<sup>51</sup> In the same year, "Florida ranked 17<sup>th</sup> in the United States in agricultural exports, with an estimated value of \$2.17 billion. This figure is up by \$224 million from the previous year."<sup>52</sup>

There is no projected slowing of the agriculture business in Florida, and as a result the state must prepare to address the issues that arise in conjunction with it. According to the EPA,<sup>53</sup> improperly managed lands and activities can cause NPS pollution. Agriculture is one of the main industries in Florida and as such is a high priority for implementing water quality and water quantity restoration efforts so that the industry can continue to thrive while being protective of the environment.

Florida takes a functional approach to address the issue of NPS pollutants contributed by agriculture, including regulation, regulatory incentives, technical and financial assistance, public education, and compliance monitoring. However, the state's preferred approach to address agricultural NPS is nonregulatory. The current agricultural NPS Management Program involves a partnership between the Department, FDACS, the five WMDs, SWCD, USDA-NRCS, FSA, UF-IFAS, Cooperative Extension Service (CES), and

---

<sup>50</sup> See [Overview of Florida agriculture](#).

<sup>51</sup> *Id.*

<sup>52</sup> *Id.*

<sup>53</sup> [EPA Agriculture website](#).



agricultural industry associations. Many of these partners have their own mature agricultural programs and funding sources such that the Department does not focus its 319(h) program in this area.

Because Florida's agriculture is highly diverse, the state has employed varied tools to minimize the impact of agricultural production as a nonpoint source of pollution. Because agriculture is so important to Florida's economy and regional food supplies, it is essential that the state's agricultural NPS management program continue to evolve by seeking more effective and affordable means to reduce the NPS impacts associated with agricultural production, while maintaining a viable and cooperative agricultural industry. NPS pollutants from agriculture include nutrients from fertilizer and animal waste, pesticides, and other pollutants that have the potential to impact water resources. The focus on the Department's NPS efforts in agricultural industry is nutrient pollution.

The goal of reducing NPS pollution from agricultural activities is attained through a number of means, as follows:

- Incentive-based measures.
- Interagency partnerships.
- Education.
- Regulation.

### **History of the Florida Agricultural NPS Management Program**

The foundation for Florida's agricultural NPS Management Program was developed in the mid-1970s as part of the state's Section 208 areawide Water Quality Management Planning efforts. The "Agricultural NPS Element" was the first part of the State Water Quality Management Plan to be completed and submitted to the EPA for approval. In conformance with EPA recommendations at the time, this plan established a nonregulatory program to manage agricultural nonpoint sources. A regulatory backstop was established with the adoption of the State Stormwater Rule, Chapter 17-25 (later 62-25), F.A.C., in October 1981.

In 1984, the Florida Legislature adopted the Warren S. Henderson Wetlands Protection Act, greatly increasing wetlands protection, creating Section 403.927, F.S., entitled "Use of Water in Farming and Forestry Activities." This section authorized the WMDs to regulate the construction and operation of agricultural water management systems while limiting the role of the Department's predecessor, the Florida Department of

Environmental Regulation, in ensuring that the discharge from these systems meets water quality standards. Accordingly, the WMDs began to assume a larger role in managing agricultural NPS pollution.

### *Today's Agricultural NPS Management Program*

Today, the state's agricultural NPS management program uses a variety of tools to minimize adverse water quality impacts from agricultural activities, including regulation, regulatory alternatives, incentives, technical and financial assistance, and compliance monitoring. The program depends on a cooperative partnership that involves state, regional, local, and federal programs and organizations, as well as agricultural producer associations and commodity groups.

The USDA-NRCS, in conjunction with the state's 63 SWCDs established under state law, provides conservation planning and implements farm bill programs that contribute to NPS management objectives. "The 2002 Farm Bill provides for additional incentive-based conservation programs and increased funding of farm conservation programs through the USDA-NRCS partnership. Many counties are turning to their county extension programs and to their soil and water conservation partners to help develop both urban and agricultural programs to address these state issues at the local level on both public and private lands."<sup>54</sup>

Florida's current programs form a comprehensive system of incentive and regulatory programs to identify and address NPS pollution from agriculture. The primary emphasis is on the development and implementation of BMPs, or other measures that provide reasonable assurance of meeting water quality standards. Appropriate BMPs are strongly encouraged through technical and financial assistance and the opportunity for a streamlined regulatory process. FDACS's Office of Agricultural Water Policy (OAWP) "also provides additional incentive based conservation programs and funding of farm conservation programs through implementation of best management practices that promote water quality improvements and water conservation through practices such as increasing irrigation efficiencies."<sup>55</sup>

To assist in the continuing evolution of the state's agricultural NPS management program, Florida relies on effective coordinating mechanisms to help resolve important agricultural and water-related issues. These mechanisms, including technical assistance, advisory groups, and educational efforts, are intended to establish and maintain a

---

<sup>54</sup> FDACS, 2011, [\*Florida Soil and Water Conservation Districts supervisor handbook\*](#).

<sup>55</sup> *Id.*

dialogue among public agencies, educational and research communities, and agricultural producers in order to better coordinate goals, strategies, and activities.

FDACS's OAWP is one such mechanism; its staff coordinate with agricultural producer associations, state agencies, WMDs, state universities, and federal agencies. The OAWP serves as a focal point to share information and ideas regarding water quality (and other) issues related to agriculture. The Commissioner of Agriculture and the Secretary of the Department have agreed that the OAWP will serve as a point of input by agriculture to the TMDL process and to the development of an effective strategy to address NPS effects due to agriculture.

Another excellent coordination mechanism is the USDA-NRCS State Technical Committee, made up of representatives from federal and state agricultural and natural resource-related agencies, agricultural associations, environmental groups, and other interested parties. The Department, as lead agency for the state's NPS Management Program and the water quality agency, has two members on the technical committee. The committee normally meets several times a year and provides direct input to NRCS programs such as the Conservation Reserve Program, Environmental Quality Incentives Program (EQIP), Wildlife Habitat Incentives Program, Wetlands Reserve Program, and Forestry Incentives Program.

### **Agricultural Incentive/Technical Assistance Activities**

The Department's NPS Management Section contract managers work very closely with FDACS and USDA-NRCS. Contract managers meet with FDACS staff frequently to review agricultural BMPs and to develop and update BMP manuals for cattle and horse ranching, dairy farming, container and field nurseries, vegetable and agronomic crops, and other commodities. NPS Management Section contract managers are also responsible for conducting research of the literature and determining an initial verification of efficiency of BMPs before FDACS commences rulemaking. They also work with FDACS staff to coordinate the Green Industry BMP training program, FDACS training and certification requirements for fertilizer applicators, and equine BMP manuals for homeowners and hobbyists.

The NPS Management Section works with the USDA-NRCS, FDACS, and other interested partners to implement the NWQI. The initiative utilizes a portion of the EQIP funding to implement agricultural BMPs in priority watersheds. The projects are geared toward improving water quality and reducing impairments. The section coordinates with the other agencies to identify priority watersheds and implement monitoring to assess water quality improvements resulting from the use of BMPs.

Because the Department's partners have mature agricultural programs with independent funding sources, the Department will provide a minimal amount of 319(h) funding to agricultural projects for FY 2014 through FY 2018. The Department remains committed to assisting its partners in identifying opportunities for NPS pollution reductions from the agricultural industry.

### **Agricultural BMPs**

The Department, the WMDs, and FDACS have developed several BMP publications that help the agricultural community select, build, and maintain BMPs to minimize NPS pollution from farming activities. Most of these BMPs, as well as others commonly used on agricultural operations in Florida, have been developed through time, experience, and testing of their effectiveness. The adopted BMP manuals address the unique nature of Florida's geology and hydrology. The BMP manuals include commodity-specific sections on practices to implement in karstic areas (springs areas, around sinkholes and other karst features) and in areas where surface water features could potentially be impacted. If site-specific conditions exist that are not addressed in the BMP manual, the agricultural producer can work directly with the appropriate FDACS staff to develop a unique solution.

The [BMP manuals](#) are available online. Agricultural BMPs have been adopted for the following:

- Citrus groves.
- Vegetable and agronomic crops.
- Container nurseries.
- Cow/calf operations.
- Equine operations.
- Sod farms.
- Specialty fruit and nut operations.
- Conservation plans for specified operations.

## **FDACS' Role in Agricultural BMPs**

### ***Fertilizer BMPs***

With the creation of Section 576.045, F.S., in 1994, the Florida Legislature found that “nitrogen and phosphorus residues have been found in ground water, surface water, and drinking water in various areas throughout the state at levels in excess of established water quality standards” and that “some fertilization-management practices could be a source of such contamination.” The statute authorizes FDACS to adopt rules to reduce the amount of nitrogen entering ground water as a result of the commercial application of fertilizers containing nitrogen. This goal is to be accomplished through developing cost-effective, research-based BMPs that, when placed into practice, will prevent nitrate levels in ground water from exceeding nitrate ground water standards.

Additionally, programs to educate farmers about BMPs and their environmental and production benefits are conducted to help gain acceptance of the BMPs by the agricultural industry. While the use of the BMPs is not mandatory, landowners who implement them will not be held liable for the remediation of drinking water wells contaminated by nitrates from fertilization practices.

This authority led to the adoption of the interim measure, and subsequently the finalized BMP, for Ridge Citrus operations and marked the beginning of a comprehensive program for agricultural BMPs.

### ***Office of Agricultural Water Policy***

FDACS implements several technical assistance programs that help to minimize NPS pollution from agricultural activities. While several FDACS divisions administer these programs, the OAWP facilitates communication among federal, state, and local agencies and the agricultural industry on water quantity and water quality issues involving agriculture.

The OAWP is actively involved in the development of BMPs, addressing both water quality and water conservation on a site-specific, regional, and watershed basis. As a significant part of this effort, the office is directly involved with statewide programs to implement the federal CWA's TMDL requirements, under the FWRA, for agriculture. The OAWP works cooperatively with agricultural producers and industry groups, the Department, the university system, the WMDs, and other interested parties to develop and implement BMP programs that are economically and technically feasible.

---

## OAWP'S ROLE IN AGRICULTURAL BMPs

### Description of Agricultural BMPs

- Agricultural BMPs are practical, cost-effective actions that agricultural producers can take to reduce the amount of fertilizers, animal waste, pesticides, and other pollutants entering water resources.
- BMPs are designed to benefit water quality while maintaining or even enhancing agricultural production.
- FDACS develops and adopts BMPs by rule for different types of agricultural operations. Most of the BMPs are outlined in specific manuals, available online.

### Purpose of Agricultural BMPs

- Florida law provides for farmers to reduce their impacts to water quality through the voluntary implementation of BMPs adopted by FDACS. In some cases, agricultural BMPs or water quality monitoring are required.
- The Department is developing TMDLs, which are target levels for specific pollutants in impaired waterbodies, and will develop BMAPs for many of these TMDLs. Agricultural BMPs or water quality monitoring are required by law in areas of the state where the Department develops a BMAP that includes agriculture.
- Agricultural BMPs or water quality monitoring are also required by law in the Northern Everglades and Estuaries Protection Area.
- Implementing BMPs benefits both the farmer and the environment, and demonstrates agriculture's commitment to water resource protection.

### Agricultural BMP Manuals that Have Been Adopted or Are Being Developed:

- Citrus operations (revised 2012, adopted)
- Vegetable and agronomic crops (adopted 2005; in revision for 2015)
- Container nurseries (revised 2014, adopted)
- Cow/calf operations (revised 2008, adopted; revisions due 2016)
- Sod farms (2008, adopted)
- Specialty fruit and nut operations (2011, adopted)
- Equine operations (2011, adopted)
- Dairy, non-concentrated animal feeding operations (CAFOs) (in progress for 2015).
- Poultry (scheduled for 2016).

### Implementation of Agricultural BMPs

- Any farmer operating in an area covered by applicable FDACS BMPs is eligible to submit a NOI under the appropriate manual or rule.

- In some areas of the state, farmers develop site-specific conservation plans that contain the appropriate BMPs.
- In areas with Department BMAPs that include agriculture, farmers must implement BMPs or conduct water quality monitoring.
- Enrollment in FDACS BMP Programs is continuous. FDACS has a long-term commitment to enlisting and providing assistance to farmers to implement BMPs.

#### **Involvement in Agricultural BMPs**

- OAWP Tallahassee and field staff work directly with farmers and agricultural representatives to assist them in understanding and implementing BMPs.
  - OAWP also contracts with entities such as UF-IFAS), the WMDs, SWCDs, Resource Conservation and Development Councils, and private sector entities to provide cost-share, educational, and technical assistance.
  - OAWP has an “Implementation Assurance” program, to follow up with farmers statewide and evaluate how BMPs are being implemented. This involves a combination of written surveys and site visits.
  - OAWP will be also working with the Department, UF-IFAS, the WMDs, and others to monitor the effectiveness of BMPs in protecting water quality.
- 

#### ***The Conservation Partnership***

Florida’s agricultural producers have access to a long-standing voluntary resource conservation program. Florida’s 63 SWCDs and the USDA-NRCS cooperate in the delivery of federal farm programs under the Farm Bill, and assist private landowners and agricultural producers in conservation and resource management. Farm Bill programs related to water quality include EQIP, Conservation Reserve Program (CRP), Conservation Reserve Enhancement Program (CREP), and others. These programs provide technical assistance, cost-share, and incentive payments to landowners to implement BMPs and other measures to protect water quality.

Through the NRCS and the SWCDs, conservation plans (CPs) were developed to tailor management measures to meet water quality needs and to suit the operational needs of agricultural producers. In some cases (see the section on the St. Johns River Water Management District [SJRWMD]), CPs approved by the SWCDs may satisfy certain requirements for exemptions or regulatory alternatives related to water quality protection. A producer following the detailed management practices contained in a CP may receive a limited presumptive benefit in regulatory programs because these practices are presumed to provide water quality protection.

The SWCDs also contribute to NPS management programs through 319(h) projects, local agreements and services (e.g., land acquisition and management programs), irrigation efficiency services (e.g., mobile irrigation laboratories), equipment rental and demonstration (e.g., no-till drill), and educational programs. In addition, the SWCDs cooperate with others to provide a forum for local youth education projects designed to inform and educate schoolchildren about agriculture and environmental quality (Envirothon, land judging, Ag-in-the-Classroom), including the benefits of NPS management.

To date, partnership efforts have focused on the development of research-based BMPs (animal waste, fertilizer rates), the establishment of a locally-led consensus planning process for resource issues (Suwannee River Basin stakeholders), the improvement of agricultural irrigation management (mobile irrigation laboratories), the improvement of practices for pesticide mixing and loading (Chemical Mixing Centers [CMCs]), and providing funding for priority areas through the Farm Bill Program. The partnership is working to improve the linkage between conservation programs and the state's TMDL Program, and to develop better delivery systems for nonregulatory approaches at the local level. As part of an overall state strategy, these efforts will contribute to the success of nonregulatory approaches for agricultural NPS management.

### **Agricultural Regulatory Programs**

When describing the regulation of agriculture and the degree of exemption available under state law, one must consider the importance of an underlying requirement related to water quality standards. Although Florida law prescribes exemptions from regulation for certain agricultural practices, producers must nonetheless comply with water quality standards.

#### ***Regulation and Agricultural Exemptions***

State law provides an exemption that allows a person engaged in the business of agriculture, silviculture, floriculture, or horticulture to “to alter the topography of any tract of land for purposes consistent with the practice of such occupation. However, such alteration may not be for the sole or predominant purpose of impounding or obstructing surface waters.”<sup>56</sup> Therefore, certain agricultural activities such as clearing upland trees to put in pasture, fences, firebreaks, plowing, brush management, or certain types of access roads (unpaved, at grade) are considered exempt, provided the producer meets a three-part test.

---

<sup>56</sup> Subsection 373.406(2), F.S.



Where a strict regulatory approach is applied to agriculture, producers are required to demonstrate a performance standard for water quality compliance through permitting and monitoring. However, regulatory programs often substitute alternatives to this strict regulatory approach, through the use of BMPs, notice general permits, and rule exemptions. As applied, exemptions take on a similar meaning – a presumptive tool used as a regulatory alternative because it is understood that they protect water quality adequately when used as normal agronomic practices below certain thresholds. Exemptions do not relieve agriculture from the requirement of meeting standards.

As described previously, the Water Resources Act<sup>57</sup> and the Florida Air and Water Pollution Control Act<sup>58</sup> provide the basic authorities, directives, and policies for statewide water management, pollution control, and environmental protection. These are augmented by the Department's Water Resource Implementation Rule,<sup>59</sup> the Florida Water Plan, and District Water Management Plans, which provide guidance for consistent statewide implementation of water-related programs. The agencies with primary responsibilities for protecting water quality and implementing point and NPS management programs are the Department and the WMDs. In addition, FDACS regulates certain agricultural activities. These regulatory programs, by themselves or through cooperative arrangements with other agencies, contribute to NPS water quality objectives.

To facilitate the division of responsibilities between state agencies regarding discharges to waters of the state and the management of point and nonpoint sources of pollution, agricultural activities are divided into the following regulatory categories:

1. Field activities strictly associated with the production of crops or livestock.
2. Nonfield activities associated with the packaging and processing of agricultural products.
3. Field activities associated with the disposal of wastewater generated through the packaging and processing of agricultural products or the disposal of manure from CAFOs.
4. Aquacultural activities.

---

<sup>57</sup> Chapter 373, F.S.

<sup>58</sup> Chapter 403, F.S.

<sup>59</sup> Chapter 62-40, F.A.C.

With some exceptions, the WMDs regulate surface water discharges from agricultural activities defined in number 1 above. Discharges defined in numbers 2 or 3 are primarily regulated by the Department. Certain activities related to freshwater and saltwater aquacultural activity that had been split between the WMDs and the Department now fall under the jurisdiction of FDACS.

Although regulatory programs are administered by agencies according to requirements set in state law, the agencies are provided certain flexibility to develop and apply alternatives to formal regulatory processes where different approaches are effective in achieving the underlying objectives and where desired results may be obtained at reduced costs to the regulated community and/or to the agencies. These regulatory variants and alternatives are also described below.

### *Department's Regulation of Agriculture*

As noted previously, the Department's regulation of agriculture is largely limited to the permitting of CAFOs and activities associated with the disposal of wastewater generated through the packaging and processing of agricultural products.

Animal feeding operations (*e.g.*, dairy, poultry, and swine farms), agricultural product processing plants, and aquaculture operations that are not eligible for general permits are regulated through the Department's Industrial Wastewater Program. Wastewater discharges to surface waters generally are regulated under CWA authority under the NPDES permitting process. The EPA has authorized the Department to administer the NPDES Program in Florida. The management of animal waste from animal feeding operations (AFOs) has become a priority in Florida and throughout the country. AFOs are facilities with large numbers of animals in a confined area that have the potential to contribute nitrogen and phosphorus to the state's waters. Nutrients are the contaminants typically associated with AFOs. The Department has developed wastewater rules for AFOs and provides technical assistance to the livestock industry. AFOs regulated under the Department's industrial wastewater program include dairies, poultry, and horse and swine operations. CAFOs are regulated under the NPDES Program. FDACS regulates non-NPDES aquaculture operations.<sup>60</sup>

Under state NPDES regulations (Chapter 62-670, F.A.C.), permits are required for larger AFOs (>1,000 animal units) that discharge to surface waters for storms that exceed the 25-year, 24-hour storm event. Permits are also required for intermediate-sized operations (300 to 999 animal units) that discharge to surface waters through a constructed conveyance or directly to surface waters that pass through the AFO. Smaller facilities are

---

<sup>60</sup> Department, [Industrial wastewater, animal feeding operations](#) (last accessed October 11, 2012).

regulated on a case-by-case basis that considers the amount of pollutants discharged to surface waters.

In addition to surface water discharge prohibitions, permits require monitoring to determine compliance with state ground water regulations. AFOs that are not subject to NPDES permitting requirements may be required to obtain a permit for a discharge to ground water if the discharge threatens to violate ground water quality standards beyond a ground water zone of discharge that extends laterally 100 feet from the source or to the property boundary, whichever is less.

While the Department's regulation of field activities is very limited, Section 403.927, F.S., authorizes the Department to require a stormwater permit or appropriate permit at the ultimate point of discharge from agricultural water management systems.

### *FDACS' Regulation of Agriculture*

FDACS implements several regulatory programs that help to minimize NPS pollution from agricultural activities. These include pesticide management and animal and dairy industry management.

#### **Pesticide Management**

Because of Florida's vulnerable water resources and the fact that Florida's citizens depend heavily on ground water for drinking purposes, the Division of Agricultural Environmental Services administers a program for pesticide management in Florida under Chapter 417, F.S.

FDACS is empowered by the Legislature to administer a program for the registration of pesticides. The manufacturers of pesticides are required to register a pesticide for sale in the state, and to provide information, where required, in support of a product's use under normal use conditions. The pesticide registration process is performed in consultation with the Department, FDOH, and FWCC, and includes enforcement provisions.

Additionally, the Florida Legislature created the Pesticide Review Council, whose purpose is to "advise the Commissioner of Agriculture regarding the sale, use, and registration of pesticides and to advise government agencies, including the State University System, with respect to those activities related to their responsibilities regarding pesticides."<sup>61</sup> The 11-member council consists of scientific members from:

---

<sup>61</sup> Paragraph 487.0615(1)(a), F.S.

FDACS, the Department, FDOH, FWCC, UF-IFAS, and six additional members appointed by the Governor.<sup>62</sup>

The Council reviews and can recommend “appropriate scientific studies on any registered pesticide when substantive preliminary data indicate that the pesticide could pose an unreasonably adverse effect on the environment or human health”; can conduct scientific studies; can make recommendations to FDACS “for actions to be taken with respect to the sale or use of a pesticide which the council has reviewed”; can “provide advice or information to appropriate governmental agencies, including the state university system, with respect to those activities related to their responsibilities regarding pesticides”; can “review biological and alternate controls to replace or reduce the use of pesticides”; can “consider the development of appropriate advice or recommendations on a pesticide when substantive preliminary data indicate that the pesticide could pose an unreasonably adverse effect on the environment or human health”; and can assist FDACS “in the review of registered pesticides which are selected for special review based upon potential environmental or human health effects.”<sup>63</sup>

UF-IFAS, the state coordinator for the Integrated Pest Management (IPM) Program, started its program in 1997. That program was expanded in 2001 and boasts the accomplishments described below.

---

#### UF-IFAS IPM PROGRAM ACCOMPLISHMENTS<sup>64</sup>

“Established a comprehensive, statewide IPM program for Florida encompassing agriculture, communities and natural areas. Areas of activity included People and Communities, Ornamentals and Turf, Vegetables, Watersheds and River Basins, Pasture and Forage Crops, Citrus, and Deciduous and Small Fruits.”

“Established an IPM grants support program that has cooperatively generated more than \$4 million for multidisciplinary research and Extension projects in entomology, nematology, agronomy, horticulture, plant pathology, and agricultural engineering. An internal *IPM Florida* Innovation Grants Program funded approximately 55 projects for a total of \$260,000. Several projects were selected for multi-county expansion, e.g., School IPM, Biological Control Brain Bowl, and Landscape Management IPM.”

Created Extension resources in response to the needs of Cooperative Extension clientele, including the following:

---

<sup>62</sup> Paragraph 487.0615(1)(b), F.S. The six additional members must “be a pesticide industry representative, a representative of an environmental group, a hydrologist, a toxicologist, a scientific representative from one of the five water management districts rotated among the five districts, and a grower representative from a list of three persons nominated by the statewide grower associations.” *Id.*

<sup>63</sup> Subsection 487.0615(2), F.S.

<sup>64</sup> UF-IFAS, [Integrated Pest Management, About Us](#) (last updated September 4, 2009; last accessed October 11, 2012).

- “Integrated Pest Management in Florida,” the first CD on IPM projects in the state.
- “Grower’s IPM Guide for Florida Tomato and Pepper Production.”
- “Tomato & Pepper Insects” identification deck and screensaver.
- “IPM Toolbox.”
- “Good Lawn Bugs” identification deck.
- “Florida’s Major Agricultural Pests” CD.
- “Integrated Pest Management Policy and Treatment Guidelines for University Housing Pest Control Technicians.”

“Initiated cooperatively a new biosecurity/biosafety educational capability, including a “Certificate in Plant Pest Risk Assessment and Management” in the Plant Medicine Program and an undergraduate curriculum in the Entomology and Nematology Department.”

---

### **Animal Industry and Dairy Programs**

“Florida's livestock inventory includes 26 million poultry, 1.5 million beef cattle, 500,000 horses, 140,000 dairy cattle, 100,000 swine, 30,000 goats, 10,000 sheep, and millions of companion animals.”<sup>65</sup> FDACS’ Division of Animal Industry and Division of Dairy Industry administer programs in animal disease management and dairy product inspection.

The management of animal waste from AFOs, including dairies, poultry, and horse and swine operations, is regulated by the Department’s Industrial Wastewater Program. In addition to regulating the industry, the Department provides technical assistance to the livestock industry.

### **Aquaculture NPS Management Program**

Aquaculture issues and associated NPS pollution is managed almost entirely by FDACS’ Division of Aquaculture. The Legislature regulates aquaculture through the Florida Aquaculture Policy Act (Chapter 597, F.S.). The act requires that FDACS, “in consultation with the Department, WMDs, environmental groups, and representatives from the affected farming groups,” adopt rules that, among other things, “[s]pecify the requirement of best management practices to be implemented by holders of aquaculture certificates of registration” (Subparagraph 597.004(2)(a)1, F.S.).

---

<sup>65</sup> [FDACS Division of Animal Industry, Overview](#) (last accessed October 11, 2012).

The Aquaculture BMPs were last updated by rule in January 2007 (Chapter 5L-3, F.A.C.). The statute and rule set out the procedures for aquafarmers to obtain a certificate of registration from FDACS and require that aquafarmers apply the BMPs identified in the rule. The rule includes a penalty schedule for failure to comply with BMPs (Section 597.004, F.S.; Rules 5L-3.001 and 5L-3.003, F.A.C.).

FDACS' Division of Aquaculture performs annual site visits at certified facilities in an effort to assist aquafarmers with the implementation of BMPs. These include management practices in areas of construction, non-native/restricted species, marine nets and cages, shrimp culture, sturgeon culture, shellfish culture, live rock culture, aquatic plants, including fertilizer application, and health management. More information on the [Division of Aquaculture](#) is available online.

### **[Agricultural Operations and the Water Management Districts](#)**

Each WMD supports activities that provide either technical or financial assistance, or both, to the agricultural industry. These programs may provide technical services—through the use of district technical staff for preapplication meetings or exemption reviews—or may support cost-share for the construction and demonstration of BMPs. Additionally, the permitting of certain agricultural activities is left to the districts.

The districts generally regulate the discharge of agricultural NPS pollutants through one or more of the following programs: Environmental Resource Permits, Consumptive or Water Use Permits, and/or Works of the District Permits (Chapter 373, F.S.).

#### **[Northwest Florida Water Management District \(NFWWMD\)](#)**

The NFWWMD regulates activities that result in the construction, alteration, repair, or abandonment of impoundments, dams, or works that impound, drain, or divert water, specifically designed for agriculture or forestry purposes, such as farm ponds. Ponds dug in wetlands and those creating impoundments or obstructions to a drainage way require a permit. Agricultural ponds must be sited, sized, and designed to avoid, minimize, and compensate for impacts to the natural resources.

The construction of roads, ditches, culverts, bridges, low water crossings, and other activities involving wetlands that are solely to support forestry activities also require authorizations under this program. More information on the [NFWWMD's agricultural programs](#) is available online.

### *Suwannee River Water Management District (SRWMD)*

The SRWMD requires an ERP for the following types of agricultural or silvicultural activities:

- Construction of roads, low-water crossings.
- Culvert installation.
- Construction of borrow pits.
- Construction of barns, outbuildings, and sheds.
- Poultry operations.
- Construction of docks, piers, seawalls, boat ramps, bridges, and ponds.
- Alteration to drainage such as ditches, dikes, and dams.
- Repairs, additions, or modifications to the above.
- Dredging and filling in, on, or over a wetland, lake, or stream.

If any of those activities is conducted in a floodway or floodplain of the five major rivers in the district, a Works of the District permit is required. Lastly, the district also requires Water Well Construction Permits and Water Use Permits.

### *Suwannee River Partnership (SRP)*

In 1997, following the increased awareness of nitrate contamination in ground water, springs, and drinking water wells in the Middle Suwannee River Basin, representatives of public agencies recognized the need to work together with educators, researchers, private stakeholders, and citizens in the basin to focus attention and resources on nutrient problems and acceptable solutions. This group recognized that a new approach is needed to address water quality issues in the Suwannee River Basin, using technical assistance, research, and educational programs in combination with incentives and other nonregulatory tools to address the full scope of nutrient and water quality issues.

The SRP is a group of federal, state, and local agencies; state associations; private businesses; and other organizations that have come together to improve water quality and conserve water in the Suwannee and surrounding watersheds in the SRWMD. The partnership was established to reduce nutrient loading in the Middle Suwannee River Basin by encouraging landowners to use BMPs through voluntary and incentive-based

programs. Over the last decade or so, the partnership has expanded to cover the entire SRWMD.

The SRP provides cost-share opportunities through EQIP, administered by the USDA-NRCS. Priority is given to areas where state or local governments offer financial, technical, or educational assistance, and to areas where agricultural improvements will help meet water quality objectives. More information on [SRP cost-share opportunities](#) is available online.

The SRP has prioritized one-on-one assistance to farmers to enroll in and implement FDACS BMPs; educational workshops, field days, informational materials, and other means of promoting the understanding and implementation of BMPs; and BMP Implementation Assurance through site visits and mail-out surveys to gauge grower participation and evaluate program strengths and weaknesses. A key component of the SRP approach has been to provide cost-share to agricultural producers to help purchase crop tools they can use to manage fertilizer and irrigation.

The University of Florida leads the effort to test BMPs on farms. More information on the [On-Farm Research Program](#) is available online.

### ***St. Johns River Water Management District (SJRWMD)***

The SJRWMD provides both technical and financial assistance for agricultural operations seeking to improve the quality of their discharge. Since 1991, the SJRWMD has provided financial assistance (approximately \$100,000 per year) to the USDA-NRCS to develop define CPs and provide other technical services to specific geographic areas or commodities where a water quality problem has been identified. These include groves and ranches in the headwaters of the St. Johns River, muck farms in the Lake Apopka and Ocklawaha River Basins, ferneries in Volusia County, and potato growers in the Lower St. Johns River Basin.

The SJRWMD also has cost-share programs that provide water quality benefits for all types of NPS runoff. Under this proposal, agricultural operations can also apply for funds. For example, the Alternative Water Supply Construction Cost-Share Program (\$500,000 per year) has funded the construction of tailwater recovery ponds.

The SJRWMD also funds the development of commodity BMPs that address agricultural water resource issues. For example, the district combined its funding with a specific legislative appropriation to the Department, along with Section 319 grant funding, to develop the BMP handbook, *Irrigation and nutrient management practices for commercial leatherleaf fern production in Florida*, published by the University of Florida. SJRWMD



funds also have been combined with Section 319 grant funds to develop and assess the effectiveness of BMPs for potato growers in the Lower St. Johns River Basin. From 2000 through 2010, the district implemented a Phase I BMP cost-share program, in cooperation with federal programs that provided \$163,000 per year for five years to help farmers install BMPs in the Tri-County Agricultural Area (TCAA). The success of the program prompted the Phase II program. The primary objective of the Phase II program was to provide cost-share funding for all vegetable and sod growers in the TCAA to implement BMPs that provided water resource protection above that of the standard BMPs required by the Lower St. Johns River Basin TMDL and BMAP.

Unless exempt or below thresholds, agricultural operations must obtain an ERP to construct or implement a surface water management system. These systems are constructed or implemented to control the flow of water. They include ditches, canals, dams, ponds, culverts, berms, pumps, dredging, filling, and impervious surfaces that restrict water infiltration, such as buildings, roads, and parking lots. Generally, they do not include a well, well pump, and associated irrigation pipe.

Agricultural Surface Water Management Systems are regulated under Chapters 40C-44, 40C-40, or 40C-4, or Rule 40C-400, F.A.C. Currently, greenhouses are regulated under Chapter 40C-42, F.A.C. Only activities that impound or divert water require a permit. As provided for in the statute, normal agricultural activities such as clearing upland trees to put in pasture, fences, firebreaks, plowing, brush management, or certain types of access roads (unpaved, at grade) are exempt. This exemption only applies to commercial agriculture. In the SJRWMD, these activities must follow the USDA-NRCS guidelines to be exempt.

The SJRWMD maintains a compliance program to ensure that a permit is obtained before certain activities are conducted and to determine the level of adherence to permit requirements. Permit threshold information is distributed through brochures and training seminars. Routine vehicular and aerial inspections are carried out to detect unpermitted activities. Once a permit has been issued, the SJRWMD inspects the activity to ensure that it is conducted in a manner consistent with the permit conditions. For construction activities, an as-built certification must be submitted by a licensed professional certified in the state or by the USDA-NRCS.

In addition, the SJRWMD conducts and compiles the data from certain monitoring programs. Permittees are required to collect and report water quality and quantity monitoring data. The SJRWMD conducts independent water quality sampling to substantiate the monitoring results.

### *Southwest Florida Water Management District (SWFWMD)*

The SWFWMD issues three main types of permits, as follows:

- A **Water Use Permit** allows a user to withdraw a specified amount of water, either from a ground water well or from a surface water source. The water can be used for agricultural, industrial, and mining activities; for domestic or commercial uses; or for public drinking supply.
- A **Well Construction Permit** is required prior to the drilling or construction of a new well, and the repair or plugging of an existing well. Well Construction Permits ensure that wells are constructed by qualified contractors to meet safety, durability, and resource protection standards.
- An **ERP** must be obtained before beginning any construction activity that would affect wetlands, alter surface water flows, or contribute to stormwater pollution. This permit regulates activities such as the construction of drainage facilities, dredging and filling in wetlands, stormwater containment and treatment, the construction of dams or reservoirs, and other activities affecting wetlands and other surface waters.

The SWFWMD has also implemented a number of technical assistance and regulatory incentive programs to minimize agricultural NPS pollution. The most comprehensive of these is the **Agricultural Ground and Surface Water Management (AGSWM) Program**, an alternative regulatory process for new and significantly altered agricultural operations.<sup>66</sup> Since the AGSWM Program began in 1991, the district encourages farmers who are planning activities subject to ERP or Water Use Permit regulation to use the AGSWM preapplication review process to help facilitate exemption determination or permit review. Agriculturally trained staff members are available to assist farmers with AGSWM procedures. Information on other [SWFWMD technical assistance programs, activities, and brochures to reduce agricultural NPS pollution](#) is available online.

### *South Florida Water Management District (SFWMMD)*

Like the other WMDs, the SFWMMD regulates agricultural surface water management systems, including stormwater discharges and activities that impact wetlands, and consumptive water use for all land uses in a 16-county area of south Florida. The criteria for issuance of permits are comparable to those of the SRJWMD and SWFWMD.

---

<sup>66</sup> For more information, see the discussion under Water Management District Regulatory Programs.

Additionally, however, the SFWMD requires an Everglades Works of the District Permit<sup>67</sup> for landowners or entities within or discharging to drainage basins in the Everglades Agricultural Area (EAA) or C-139 Basin that ultimately drain to the Everglades. A permit requires a BMP plan and a discharge (water quality and quantity) monitoring plan where applicable. The goal is to achieve a 25% reduction in phosphorus loads from the EAA Basin as a whole and to maintain historical phosphorus discharge loads in the C-139 Basin.

In 1987, the Florida Legislature directed the SFWMD to achieve specific nutrient load reduction targets in Lake Okeechobee. This included research and development, water quality monitoring, on-farm technical assistance through engineering design and construction oversight, cost-share for the construction and implementation of various BMPs, and cost-share to demonstrate alternative management practices that were not yet proven. Since that time, research and demonstration projects have continued to take place, and water quality improvements have been achieved.

The Everglades Forever Act levies an annual Agricultural Privilege Tax on every acre of agricultural land in the EAA and in the C-139 area.<sup>68</sup> The annual tax is “charged for the privilege of conducting an agricultural trade or business on each acre of real property or portion thereof”; the tax was \$35 per acre through November 2013.<sup>69</sup> However, the act provides an opportunity to offset the tax (providing for an incentive credit) for reductions in phosphorus loads.<sup>70</sup>

As of 2009, there were 670,000 acres of BMP permits in the EAA and C-139 Basin areas. In the EAA Basin, the target phosphorus reduction of 25% was exceeded, with an observed 68% reduction.<sup>71</sup> Over a 14-year period, BMPs averaged a 54% load reduction, which prevented 2,118 metric tons from leaving the EAA Basin.<sup>72</sup> The SFWMD is hoping to re-create that success in the C-139 Basin.

---

<sup>67</sup> For more information, see the [Everglades Works of the District \(EWOD\) website](#) (last accessed October 11, 2012).

<sup>68</sup> Subsection 373.4592(6) and (7), F.S.

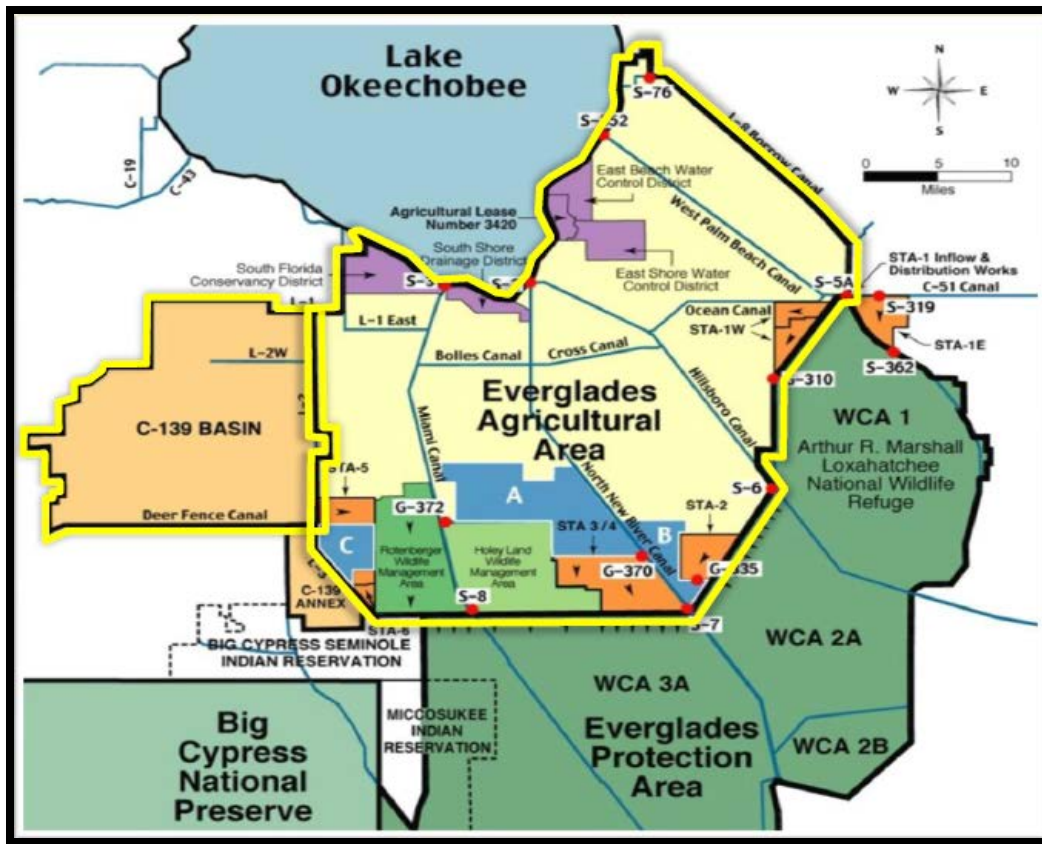
<sup>69</sup> Subparagraph 373.4592(6)(c)1., F.S.

<sup>70</sup> Subparagraph 373.4592(6)(c)2., F.S.

<sup>71</sup> SFWMD, *Everglades Agricultural Area and C-139 Basin Compliance Annual Update presentation*, August 12, 2009.

<sup>72</sup> *Id.*

FIGURE 5. *EAA AND C-139 BASIN MAP*<sup>73</sup>



### The Western Basins and the Northern Everglades and Estuaries Protection Programs

The “Western Basins” include the C-139 Basin, Feeder Canal Basin, and L-28 Basin. The C-139 Basin is included in the Everglades Forever Act (EFA) “Everglades Construction Project (ECP) basins.” The Feeder Canal and L-28 Basins are included in the EFA “Non-ECP” basins. As required in the EFA, the SFWMD monitors the water flow volumes and water quality exiting each basin. These data are captured and analyzed in the [South Florida Environmental Report, Appendix 3-2](#). As such, there is a very good dataset to characterize the “baseline” of water quality.

Passed in 2000, LOPA (Section 373.4595, F.S.) established a restoration and protection program for the lake. In 2007, the Florida Legislature amended LOPA (Section 373.4595, F.S.), which is now known as the Northern Everglades and Estuaries Protection Program (NEEPP).” NEEPP promotes a comprehensive, interconnected watershed approach to

<sup>73</sup> SFWMD, *Everglades Agricultural Area and C-139 Basin Compliance Annual Update presentation*, August 12, 2009.

protect Lake Okeechobee and the Caloosahatchee and St. Lucie Rivers (SFWMD 2014; see reference below).

NEEPP includes the Lake Okeechobee, Caloosahatchee River, and St. Lucie River watershed protection programs. The watershed protection plans (WPPs) developed under NEEPP for each of these three Northern Everglades watersheds identify actions (e.g., programs and projects) to help achieve water quality and quantity objectives for the watersheds and to restore habitat. Water quality objectives are based on TMDLs established by the Department (SFWMD 2014; see reference below). Each of the WPPs contains a research and water quality monitoring plan to track progress towards achieving the water quality and storage targets.

For more information on these important programs, see the following:

- SFWMD, [South Florida Environmental Report 2014, Chapter 8](#), for the Lake Okeechobee Water Protection Plan Update.
- SFWMD, [South Florida Environmental Report 2012, Appendix 10-1](#), for the most recent St. Lucie River Watershed Protection Plan Update.
- SFWMD, [South Florida Environmental Report 2012, Appendix 10-2](#), for the most recent Caloosahatchee River Watershed Protection Plan Update.

### *Partners*

The Department works with many partners to protect and restore waters in the agricultural areas. These partners include FDACS, the WMDs, USDA-NRCS, USDA Farm Service Agency, UF-IFAS, FAMU, FDOH, FWCC, other universities, agricultural commodity associations, and third-party interest groups.

## SILVICULTURE NPS MANAGEMENT





## 7. SILVICULTURE NPS MANAGEMENT PROGRAM

Florida's agricultural industry includes a great deal of silviculture. Identifying water quality improvements in the agricultural industry in Florida is a priority. The Department works with FDACS as well as universities in the state to identify, develop, and update BMPs for various agricultural activities, including silviculture, to reduce NPS nutrient pollution. These practices not only reduce agricultural runoff and nutrients into waterways but also are designed to save farmers money. In addition, the Department is coordinating with the USDA-NRCS for the NWQI.

Florida takes a multifaceted approach to address the issue of NPS pollutants contributed by silviculture activities. This approach includes regulation, regulatory incentives, technical and financial assistance, public education, and compliance monitoring. The silvicultural NPS management program involves a partnership between the Department, FDACS, DOF, the WMDs, the United States Forest Service (USFS), the Florida Forestry Association, a number of conservation groups, and the forest industry.

Florida's forests cover over 16 million acres, or about 47% of the state. The state's forest products and paper companies collectively generate \$15.3 billion annually in manufactured products and inject \$1.3 billion into local communities in payroll. The forest products industry employs over 60,000 Floridians, and another 72,000 jobs are supported by forest product manufacturers.

Florida's forests also help improve our environment: trees provide needed shade and clean the air, while their roots help to control erosion and purify the water. Florida's forests also acts as a haven for thousands of creatures, including the Florida panther, black bear, deer, gopher tortoise, red-cockaded woodpecker, and bald eagle. They also provide outdoor enthusiasts with over 2.5 million acres of recreational lands that include thousands of miles of hiking trails and a multitude of recreational opportunities.

Silviculture is considered a part of the agricultural commodities in Florida, and so is one of the main industries in the state. As such, it is a high priority for implementing water quality and water quantity restoration efforts, so that the industry may continue to thrive while being protective of the environment. Because of the importance of Florida's forests, commercially and recreationally, the state, together with the forest industry, has developed and implemented a cooperative program to minimize NPS pollution from the management and use of forestlands. This chapter describes the program and the tools that are being used to protect the water quality associated with Florida's forests.

## Florida Silviculture NPS Management Program

The foundation for Florida's silviculture NPS management program was developed in the mid-1970s as a result of the 1972 federal CWA. The "Silviculture NPS Element" was the second part of the State Water Quality Management Plan to be completed and submitted to the EPA for approval. In conformance with EPA recommendations at the time, this plan established a nonregulatory program to manage forestry NPS pollution. Today, NPS management of silviculture activities is conducted by FDACS' DOF with input from UF-IFAS, the WMDs, and the Department. Nonpoint source pollutants from silviculture activities that can impact water resources include nutrients from fertilizers, pesticides and erosion.

### DOF BMPs

DOF's mission "is to protect Florida and its people from the dangers of wildland fire and manage the forest resources through a stewardship ethic to assure they are available for future generations."<sup>74</sup> Its core program areas are Wildfire Prevention, Detection and Suppression, State Land Management, and Forestry Technical Assistance. More information on [DOF's programs](#) is available online.

Florida's BMPs for silviculture operations, which began in 1979, represent the "minimum standards necessary for protecting and maintaining the State's water quality as well as some wildlife habitat values while conducting forestry activities."<sup>75</sup> DOF's Forest Hydrology Section is "responsible for BMP development and implementation, as well as monitoring BMP's for both compliance and effectiveness."<sup>76</sup> DOF's BMPs are incorporated in Chapter 5I-6, F.A.C. The rule provides the framework for a nonregulatory, incentive-based program designed to avoid cumulative impacts to the water resources of the state.

The adopted BMP manual addresses the unique nature of Florida's geology and hydrology as it relates to the Timber industry. The BMP manual includes specific sections on practices to implement in karstic areas (springs areas, around sinkholes and other karst features), and in areas where surface water features could potentially be impacted. The manual is a cooperative effort with the Department's Bioassessment Program and DOF, and was last updated in 2008.<sup>77</sup> It updates expanded BMPs "to address additional water resources features, such as sinkholes, smaller lakes, canals, and wetlands" as well

---

<sup>74</sup> [About the Florida Forestry Service](#) (last accessed October 11, 2012).

<sup>75</sup> UF-IFAS, [Florida's silviculture best management practices](#) (last accessed October 11, 2012).

<sup>76</sup> [Division of Forestry, Forest Hydrology](#) (last accessed October 11, 2012).

<sup>77</sup> *Id.*



as “general ecological considerations and wildlife habitat values.”<sup>78</sup> A copy of the [Silviculture BMP Manual](#) is available online.

Over three grant years—FY01, FY02, and FY03—the Department awarded a Section 319(h) grant to DOF for a project titled *Enhancing the Effectiveness of Florida’s Silviculture Nonpoint Source Management Program*. The final project report was submitted to the Department in September 2008 and represented the culmination of \$790,813 in grant funds, with a 44% match. The project was intended to enhance DOF’s NPS program effectiveness through education and outreach and site evaluations in impaired waters. The project identified forestry operations close to surface waters or wetlands and/or those in areas with high slope or high soil erodibility. With that information, DOF trained, educated, and interacted with loggers and landowners to ensure that silviculture BMPs were implemented properly.

In 2013, FDACS’ Florida Forest Service (FFS) completed the 17<sup>th</sup> statewide survey on silviculture BMPs. By delegation from the Department, the FFS is the lead agency for the statewide development, implementation, and monitoring of silviculture BMPs. This survey fulfills the implementation monitoring element of the FFS responsibility for controlling silviculture-related NPS pollution. More information on the [2013 Implementation Survey Report](#) is available online.

### *DOF’s Additional Forest Activities*

In addition to its BMP program, DOF manages, to date, 35 state forests totaling over 1,058,611.5 acres. In the management of state forests, DOF focuses on a “multiple land use management ethic which includes conservation of natural and cultural resources, wildlife management, protection of water resources, and outdoor recreation.”<sup>79</sup> In state forests, DOF’s Forest Hydrology group provides a comprehensive wetland restoration program to address the approximately 30% of the forests that are classified as jurisdictional wetlands. Through partnerships with the WMDs, the Department, and other public and private entities, over 100,000 acres of wetlands in state forests have been enhanced or restored since the program was initiated in 2000, with a total investment of almost \$5 million through October 2010.<sup>80</sup> In 2007, DOF began a Wetland Restoration Needs Assessment on all state forests with impaired wetlands that is still under way.<sup>81</sup>

---

<sup>78</sup> *Id.* at 1.

<sup>79</sup> [DOF, History](#) (last accessed October 11, 2012).

<sup>80</sup> [DOF, Wetland restoration on state forests](#) (last accessed October 11, 2012).

<sup>81</sup> *Id.*

### *Department's NPS Management Section*

By delegation from the Department, DOF is the lead agency for the statewide development, implementation, and monitoring of silviculture BMPs. As a result, the Department's role in the NPS management of silviculture is primarily in the arena of funding BMP effectiveness efforts and supporting DOF's activities.

In addition to funding the project entitled *Enhancing the Effectiveness of Florida's Silviculture Nonpoint Source Management Program*, discussed earlier, the Department's NPS Management Section has funded other projects, such as the *Effectiveness of Silviculture Best Management Practices for Forest Fertilization in Pine Straw Production To Protect Water Quality in Florida*, which primarily address fertilizer use and other practices. The Department has also supported the *Silviculture Best Management Practices Manual*.

### *Other NPS Silviculture Activities*

The Florida Forestry Association and the Florida Sustainable Forestry Initiative State Implementation Committee sponsor the Master Logger educational program in Florida. The program is designed to enhance the professionalism of loggers through training in safety, timber harvesting, business, and environmental regulations. This program, established in 1995, includes curriculum on Florida's Silvicultural BMP Program for protecting water quality during forestry operations, and in regulatory programs of the WMDs related to the construction of forest roads and surface water management systems (e.g., stream crossings).

The full three-day workshop is the initial requirement for being designated a Florida Master Logger, and an additional six hours of continuing education is required yearly to maintain Florida Master Logger status. An additional Master Logger +*Plus* designation is available to Master Loggers who aspire to a higher degree of recognition. The Master Logger +*Plus* is achieved by passing a test that is taken on a voluntary basis and covers material presented at the three-day Master Logger workshop.<sup>82</sup> As of this update, 758 loggers and other participants are actively listed as Master Loggers.

### *Silviculture NPS Technical Advisory Committee (TAC)*

To assure coordination among DOF, the Department, WMDs, forestry industry, and environmental groups, the Commissioner of Agriculture re-established a TAC in 1991. This 22-member TAC includes representatives from each of the agencies, several of the major forestry companies in the state, several environmental groups, and trade associations. The TAC was instrumental in the revision of the Silviculture BMP Manual

---

<sup>82</sup> More information on the [Master Logger and Master Logger +Plus program](#) can be found online (last accessed October 12, 2012).

and now meets biennially to review the status of the Silviculture NPS Management Program and recommend any changes to improve it.

### *Partners*

The Department works with a number of partners to protect and restore waters in the forested areas. These partners include FDACS DOF, the WMDs, Florida Forestry Association, forestry companies, universities, and third-party interest groups.

## ON-SITE WASTEWATER TREATMENT AND DISPOSAL SYSTEM PROGRAM



## 8. ON-SITE WASTEWATER TREATMENT AND DISPOSAL SYSTEM PROGRAM

As discussed in the Ground Water and Surface and Coastal Waters sections, OSTDS can be a source of nutrients to Florida's springs, surface waters, and coastal systems in some circumstances. Addressing OSTDS in areas where they are a significant nutrient contributor to impaired waters is a priority for the Department. The Department is working with FDOH on septic tank inventories throughout the state. These inventories will enable the Department to further its OSTDS efforts.

In addition, the Department has developed several tools to help determine OSTDS' impact on surface and ground water in Florida. These tools are being used in BMAPs to help identify areas where OSTDS projects would be most helpful.

As part of its springs BMAP development, the Department is developing an OSTDS initiative that will bring local governments and stakeholders together to identify an appropriate path forward for OSTDS in impaired springsheds. This will also help identify areas where OSTDS projects would be beneficial. The initiative includes an educational component to help homeowners understand the connection between OSTDS and water quality issues.

The Department is also exploring innovative and less costly approaches to nutrient reduction in OSTDS drainfields. NPS staff work with BMAP staff to identify potential OSTDS projects for funding.

Educating the public, developing a better statewide inventory of OSTDS, and developing an initiative to bring stakeholders in springs areas together to evaluate and develop projects for OSTDS are priorities for the Department.

As part of Florida's ongoing efforts to reduce NPS pollution from OSTDS, FDOH, with assistance from the Department, works to educate homeowners and inspect OSTDS to reduce the NPS pollutants coming from OSTDS.

FDOH estimates, based on permitting data, that a total of 2,679,738 OSTDS are in use in Florida. The average number of repair permits issued each year for the past 10 years is 16,895. This percentage of failures is well below the national estimate that 10% of systems are failing. More information on [FDOH's OSTDS programs](#) is available online.

FDOH is the designated lead agency for the regulation of OSTDS. Under state law, it must ensure that OSTDS are "sized, designed, constructed, installed, repaired, modified, abandoned, used, operated, and maintained in compliance ... to prevent ground water

contamination and surface water contamination and to preserve the public health” (Paragraph 381.0065[3][c], F.S.).

On March 27, 2008, in accordance with the Coastal Zone Management Act, the EPA and NOAA found that “the state of Florida has satisfied all conditions placed on approval of the Florida coastal nonpoint pollution control program ...” To date, of the 29 coastal states (excluding territories), Florida is one of 17 states to have a fully approved program. Within its approval, for new and operating OSTDS, the EPA stated that Florida “has satisfied” the requirements of the Coastal Zone Act Reauthorization Amendments (CZARA) by “incorporating a well-funded and targeted approach statewide.” The approval notes the use of a data systems program; the state’s “robust” OSTDS licensing, certification, and standards of inspection program; point-of-sale outreach; and a “very professional” public outreach campaign. The EPA notes “most importantly” that Florida is “providing guidance and technical assistance to the local Health Department offices to help them systematically implement broad [OSTDS] inspection programs on a county-to-county basis and to educate the public about inspections and maintenance.”

Florida is committed to continue to work with county Health Departments on OSTDS inventory and inspection programs.

### **OSTDS Regulation**

By statute, OSTDS is defined as “a system that contains a standard subsurface, filled, or mound drainfield system; an aerobic treatment unit; a graywater system tank; a laundry wastewater system tank; a septic tank; a grease interceptor; a pump tank; a solids or effluent pump; a waterless, incinerating, or organic waste-composting toilet; or a sanitary pit privy that is installed or proposed to be installed beyond the building sewer on land of the owner or on other land to which the owner has the legal right to install a system. The term includes any item placed within, or intended to be used as a part of or in conjunction with, the system. This term does not include package sewage treatment facilities and other treatment works regulated under chapter 403, [Florida Statutes]” (Paragraph 381.0065[2][j], F.S.).

The Water Quality Assurance Act (Chapter 381, F.S.), passed in 1983, requires permitting, setbacks, performance criteria, pollutant limits, and more.

### **Permitting**

“Where a publicly owned or investor-owned sewerage system is not available, the department [of Health] shall issue permits for the construction, installation, modification,

abandonment, or repair of onsite sewage treatment and disposal systems” (Paragraph 381.0065[1][b], F.S; see also Section 64E-6.003, F.A.C.).

### *Setbacks*

Setbacks are specified based on proximity to such features as drinking water wells, surface waterbodies, stormwater treatment structures, *etc.* Setbacks of at least 75 feet are required for septic systems near potable wells and surface waterbodies.

### *Performance Criteria*

The minimum standards for the construction of conventional septic systems are protective of human health, but in some areas of the state the enhanced treatment of nitrogen is desired. Aerobic treatment units (ATUs) and performance-based treatment systems (PBTS) are permitted by FDOH for enhanced nitrogen removal. Aerobic treatment units are required for coastal residences in some counties, including Monroe County (Florida Keys). Approved PBTS are demonstrated to meet a nitrogen reduction standard of 50% based on independent third-party testing and have been required of some homes in spring areas. These systems must meet “performance criteria applicable to licensed professional-designed systems and must be limited to those necessary to ensure that such systems do not adversely affect the public health or significantly degrade the ground water or surface water” (Subparagraph 381.0065[4][j][1], F.S.). Performance criteria includes “consideration of the quality of system effluent, the proposed total sewage flow per acre, wastewater treatment capabilities of the natural or replaced soil, water quality classification of the potential surface-water-receiving body, and the structural and maintenance viability of the system for the treatment of domestic wastewater. However, performance criteria shall address only the performance of a system and not a system’s design” (Subparagraph 381.0065[4][j][1], F.S.).

### *Pollutant Limits in the Florida Keys*

For the Florida Keys, OSTDS systems must “must comply with Department rules and provide the level of treatment that, on a permitted annual average basis, produces an effluent that contains no more than the following concentrations” or cease discharge by December 31, 2015:

- Five-day biochemical oxygen demand (CBOD<sub>5</sub>) of 10 mg/L.
- Suspended solids of 10 mg/L.
- Total nitrogen (TN), expressed as N, of 10 mg/L.



- Total phosphorus (TP), expressed as P, of 1 mg/L.<sup>83</sup>

## OSTDS Technical and Advisory Committees

The Florida Legislature has created two important mechanisms for coordinating policy and implementation activities for the regulation of OSTDS. These are the Technical Review and Advisory Panel (TRAP) and the Research Review and Advisory Committee (RRAC).

The stated purpose of the TRAP is to “enhance the [FDOH’s] decision-making by drawing on the expertise of representatives from several groups that have an interest in onsite sewage treatment and disposal systems” (Section 381.0068, F.S.). All rules proposed by FDOH relating to OSTDS must be presented to the TRAP for review and comment, but not approval, prior to adoption.

Research is performed in coordination with the direction of the RRAC, which meets semiannually (Paragraph 381.0065[4][o], F.S.). The statutes authorize FDOH to charge a permit fee and provide for a \$5 fee to fund OSTDS research, demonstration, and training projects (Paragraph 381.0066[2][l], F.S.). The committee advises FDOH on the direction for new research, reviews and ranks proposals for research contracts, and reviews draft research reports and makes comments.

In recent years, as required by the Florida Legislature and under the guidance of the RRAC, FDOH has been overseeing a study to evaluate and develop design criteria for passive nitrogen removal systems that can be employed in sensitive areas of the state where enhanced nitrogen removal is needed from OSTDS. When completed, this study, conducted by an FDOH contractor, will provide guidance to engineers and OSTDS contractors in the design and construction of these enhancements, which will be of lower cost and have greater nitrogen removal than earlier designs of PBTS. Information on the [passive nitrogen removal system study](#) is available online.

## Local Ordinances

As of this update, 47 Florida counties had enacted local ordinances specifically addressing OSTDS. Many of these pose more restrictive standards for surface water setbacks (17), wetlands setback (six), lot size (12), density (four), land spreading (16), and ATUs (six). A number of counties (including Polk, Lake, Sarasota, Monroe, Charlotte, Duval, Escambia, Santa Rosa, and Marion) have established or are currently evaluating

---

<sup>83</sup> Section 381.0065(4)(l)(2), Fla. Stat.



inspection and maintenance programs. For example, Escambia and Santa Rosa Counties require system evaluations during real estate transactions.

**TABLE 6. SECTION 319 GRANT FUNDING, FY04–FY11**

- = Empty cell/ no data

Fiscal Year	Section 319 Funding	Match	Total
FY04	\$285,049	\$207,700	\$492,749
FY05	\$424,502	\$210,000	\$634,502
FY06	\$370,784	-	\$370,784
FY07	\$200,000	-	\$200,000
FY08	\$200,000	-	\$200,000
FY09	\$200,000	-	\$200,000
FY10	\$200,000	-	\$200,000
FY11	\$200,000	-	\$200,000
<b>TOTAL</b>	<b>\$1,880,335</b>	<b>\$417,700</b>	<b>\$2,498,035</b>

### Education and Compliance

The OSTDS projects funded by the NPS Management Program often include educational components for OSTDS systems. These educational outreach programs include the design and production of fact sheets, brochures, door hangers, *etc.*, that local governments may use for their outreach activities. They also include radio and television advertisements. For example, local governments have aired a series of radio and television ads, paid for in part by Section 319 funds, on the importance of pumping and preventive maintenance.

In addition, FDOH uses a portion of permit fees to fund a hands-on training center for its staff, septic tank contractors, and other interested parties. The center offers an accelerated training course for FDOH staff, master contractor training, and basic and advanced continuing education courses. FDOH also produces the popular *Septic System Homeowners Guide and Record Keeping Folder*, used by county Health Departments as well as septic tank contractors and their clients.

The Duval County Health Department has become a leader in inspection and education through the implementation of its Lower St. Johns River Initiative Program Septic Tank Enforcement Project. For example, this project utilizes Section 319 grant funds for door-to-door inspections, identified system failures and the direct or indirect potential for the pollution of the St. Johns River and its tributaries.

While inspecting the residences and commercial properties included in the project, Duval County Health Department staff distributed educational materials to help citizens understand their roles in the proper use and maintenance of the treatment and disposal units. Problems discovered during the inspections were followed up with repairs, modifications, replacements, or connections to sewer. When necessary, enforcement proceedings were undertaken. In all, the funding was leveraged to allow the Duval County Health Department to perform over 20,000 door-to-door inspections, discover over 4,000 properties in violation, and bring all sanitary nuisances into compliance with the Florida Administrative Code.

As part of its restoration effort, the Department is identifying areas of high septic tank densities in vulnerable areas, such as those with permeable soils, in springs focus areas, and adjacent to impaired waterbodies. The Department is exploring opportunities for sewerage or upgrading to an enhanced nitrogen removal system. Where the Department has identified these are a significant source of nutrient loading addressing OSTDS issues is a priority.

### **Inventory**

The state and local Health Departments, with funding assistance from the Section 319 grant program, have spent a considerable amount of effort identifying the type and location of OSTDS systems statewide. In 2008, the Florida Legislature provided an additional \$250,000 to FDOH for a statewide inventory project. The project combined FDOH's permitting database with the Florida Department of Revenue's property tax data and service connection records from public and private utilities to create GIS county-by-county mappings of the known or probable locations of OSTDS. Where service connection records were not available, the contractor used an algorithm to determine if a property was likely to have an on-site system.

The Department continues its efforts with FDOH to develop a statewide inventory of septic systems.

### **OSTDS Influence on Springs and Surface Waters**

In recent years, the Department has conducted several research projects to better understand the function of septic systems in vulnerable areas and their influence on ground water and nearby surface waters. The Department continues to support enhancements of a tool developed by the Florida State University (FSU) Department of Scientific Computing to create and enhance a simplified GIS-based model that can be used to estimate/predict nitrogen loading from septic tanks to receiving surface

waterbodies. The model is being used during TMDL development to predict allocation for septic tanks and as a planning tool during the BMAP phase to help stakeholders and the Department better estimate nitrogen reductions associated with sewer line extensions, among other things. This model, [ArcNLET](#), is available to the public and can be downloaded online.

### *Partners*

The Department works with a number of partners to reduce pollution from OSTDS. These partners include FDOH, local governments, universities, and third-party interest groups.

## MINING



## 9. MINING

Mining activities are a major contributor to Florida's economic base. Florida ranks fifth in the nation with an industrial mineral production value of \$1.92 billion. The state's minerals are utilized both within the state and worldwide. To ensure that adverse environmental impacts as a result of these activities are minimized to the maximum extent possible, mining operations are rigorously regulated to reduce these adverse environmental effects, including those associated with nonpoint sources.

[Mine locations in Florida](#) are available online, as is information on Florida's mineral commodities.

### Environmental Impacts of Mining

Environmental concerns occur in all three of the basic phases of mining operations: the preparation of the land, the mining of the commodity, and the reclamation and restoration of the mined area after operations have ceased:

- Common environmental issues associated with preparing the land include land clearing and the construction of storage and processing areas, office and equipment facilities, dams, ditches, berms, roads, and other systems (*e.g.*, pipelines and conveyers). These activities require the removal of vegetation with resultant soil disturbance, which can lead to erosion of the land and subsequent sedimentation of receiving waters.
  - Sand mines are permitted under the Construction Generic Permit (CGP).
  - Sorting, washing operations, *etc.*, for other mines receive Multi-Sector Generic Permits (MSGPs).
- During the actual mining phase, the removal of the commodity causes disturbance of the soil and overburden (if present), topographic alterations, increased erosion and sedimentation, and altered hydrologic patterns. The storage piles of marketable product, overburden, spoil, and tailings are exposed to erosion. In addition, in some areas of Florida either local or regional aquifers are located near the land surface, and the commodity being mined is either below or within an aquifer system(s). In such cases, direct contamination of the aquifer system is possible.
- After mining is completed, the site is reclaimed and restored for a wide variety of land uses. Many of the problems listed above can continue

during the reclamation or restoration construction, along with long-term alteration of the land, topography, and hydrology of the mined area.

### *Mining Regulation*

Active mining is considered to be a point source of pollution; however, inactive mines can contribute to significant NPS pollution. To lessen the impact of these alterations, BMPs are implemented during the various phases of mining operations. BMPs used for erosion and sediment control from construction impacts, urban stormwater runoff, and agricultural activities are suitable and are used for mining activities. In addition, land use and revegetation after mining are designed to minimize the nutrients that enter waterbodies.

WMD ERP Programs ensure that appropriate BMPs are used to minimize NPS problems associated with mining activities. The districts require permits for mining activities that not only address stormwater discharge quantity and quality but also erosion and sediment control, wetlands protection, and water conservation. Accordingly, any and all BMPs that are appropriate for these operations are required as a permit condition.

The Department administers programs for the reclamation of lands disturbed by mining. Under the provisions of Chapters 211 and 378, F.S., the Department has promulgated rules that specify the timing, permitting requirements, design and performance criteria, and BMPs that must be used during the reclamation of mined lands.

Information on the Department's [Mining and Minerals Regulation Program](#) areas is available online.

In addition to mining regulation, mines are often required to apply for and receive coverage under the NPDES Stormwater MSGP or, in the case of sand mines, the CGP.

Because there are mining regulation programs in place within the Department and WMDs, mining is not as high a priority for the NPS Management Section. The section has supported stormwater treatment projects in reclaimed mine areas.

### *Partners*

The Department works with the WMDs, phosphate industry, universities, and third-party interest groups to minimize the environmental impacts of mining.

## BIOASSESSMENT



## 10. BIOASSESSMENT OF WATERBODIES

The Department has historically had a robust Bioassessment Program. With the adoption of Florida's numeric nutrient criteria (NNC), the Bioassessment Program is more important than ever. The ability to use bioassessment tools to fully understand the health of Florida's waterbodies is a cornerstone to Florida's NNC. The use of bioassessment information helps the Department determine if waterbodies are impaired and what which nutrient is the leading cause of the impairment. The bioassessment information and data also help the Department evaluate successes and challenges in its BMAP Program.

The responsibility for monitoring the condition of Florida's surface and ground water resources lies with the Department and its restoration partners, including the WMDs and local governments. Overarching goals driving the Department's Bioassessment Program include the assessment of waterbodies in support of the evaluation of attainment of numeric nutrient standards, the determination of appropriate Site-Specific Alternative Criteria (SSAC), determination of the highest attainable use and appropriate classification, the restoration of waterbodies, and the development of scientifically based assessment tools.

The NPS Management Section works closely with the Standards Development Section, which establishes the criteria that are used for waterbody evaluation; the Watershed Assessment Section, which assesses the impairments of waterbodies; the Watershed Evaluation and TMDL Section, which establishes the TMDLs for waterbodies and helps allocate loads; and the Watershed Monitoring Section, Regional Operating Centers, Bureau of Laboratories, Department District monitoring staff, and the WMDs and local governments, which help collect data in order to reach the state's restoration goals.

### Florida's Bioassessment Program

Biological assessment is an applied scientific discipline that uses the response of resident aquatic biological communities to various stressors as a method of evaluating ecosystem health. Bioassessments play a major role in helping define problem areas and evaluate the effectiveness of pollution control efforts. The Department's Bioassessment Program has developed several bioassessment tools used in various monitoring and regulatory applications throughout the state. These tools directly measure whether the designated aquatic life use, a "well-balanced population of fish and wildlife,"<sup>84</sup> is being attained.

---

<sup>84</sup> Rule 62-302.400, F.A.C.



Bioassessment results are important in determining aquatic life use support because the biota inhabiting a waterbody function as continual natural monitors of environmental quality, capable of detecting the effects of both episodic, as well as cumulative, water quality, hydrologic, and habitat alterations. By monitoring the composition and abundance of these biological communities, the Department is able to determine the health of streams, rivers, lakes, and wetlands. The bioassessment tools are used in conjunction with physical and chemical water quality measurements to determine not only the impairment status of a waterbody but proper strategies for restoration.

The **Stream Condition Index (SCI)**, a composite macroinvertebrate index, and **BioRecon**, a field approach targeting specific numbers of individuals for subsequent laboratory identification, measure the biological health of benthic macroinvertebrates in Florida streams and rivers. The **Stream and River Habitat Assessment (HA)**, which measures eight attributes known to have potential effects on stream biota, assists in data interpretation—since low SCI scores may sometimes be due to a lack of sufficient habitat or altered hydrology rather than impaired water quality. The **Linear Vegetation Survey (LVS)** is a rapid assessment tool for evaluating the ecological condition of streams based on vascular plants. The **Rapid Periphyton Survey (RPS)**, which measures the thickness and extent of periphyton in a 100-meter segment of a stream, is used to quantify the abundance of nuisance or problematic algal growth.

The **Lake Vegetation Index (LVI)** is a composite plant index that measures the biological health of the vascular plant communities in Florida lakes. A **Wetland Condition Index (WCI)**, using vegetation, macroinvertebrates, and algae, has been developed for some freshwater wetland systems (*e.g.*, forested and depressional wetland strands and floodplains). Additionally, Florida has developed geochemical- and biology-based tools to measure the quality of sediments in marine and freshwater systems.

Bioassessments are currently used in the following Department programs:

- **Determination of attainment of the numeric nutrient standard for streams** takes into account numeric thresholds for TN and TP, and an assessment of numeric thresholds for both flora (chlorophyll *a*, algal mats or blooms, nuisance macrophyte growth, and changes in algal species composition, as measured by the RPS, LVS, and algal community composition data) and fauna (as measured by the SCI).
- **Basinwide assessments** evaluate watershed health.
- **Fifth year inspections** evaluate the discharge of domestic and industrial wastewater treatment plants (WWTPs) that discharge to surface waters.

- The **Forestry NPS Program** evaluates the effectiveness of forestry BMPs.
- An **impaired waters determination** evaluates stream or river SCI or BioRecon scores and lake LVI scores to determine if the waterbody should be put on the 303(d) list if a causative pollutant is identified.
- **Mitigation assessments** evaluate the success of created or restored aquatic ecosystems.
- **SSAC development** using SCI and LVI scores to show that a waterbody is biologically healthy under water quality conditions that may be different from the generally applicable criteria.
- **Waterbody reclassification** as part of a Use Attainability Analysis, which is a biological assessment in conjunction with other physical and water quality data and which may provide justification for reclassifying waters to the Class III-Limited category.
- An **educational tool** used in citizen/volunteer monitoring programs to provide basic information about watershed health.

### Surface Water Monitoring Program

Florida utilizes approximately 79 data providers across the state, each of whom conducts ambient monitoring of water chemistry, collects biological data, and samples sediments. Most of these data are entered into Florida's STORET database. Together, these partners and the Department have created the Integrated Water Resources Monitoring (IWRM) Program, which integrates surface water and ground water monitoring.

The elements of Florida's Water Monitoring and Assessment Program are broken into 10 categories, as follows: <sup>85</sup>

- Monitoring objectives.
- Monitoring strategy.
- Monitoring design.
- Indicators.

---

<sup>85</sup> Department, March 26, 2009, *Elements of Florida's Water Monitoring and Assessment Program*, p.2.

- Quality assurance.
- Data management.
- Data analysis and assessment.
- Reporting.
- Programmatic evaluation.
- General support and infrastructure planning.

Each is further explained in the Elements of Florida’s Water Monitoring and Assessment Program website.

### *Integrated Water Resources Monitoring*

The IWRM Program is an efficient, multiresource, tiered, comprehensive monitoring network designed to fulfill many of the Department's monitoring needs. In general, Tier I addresses statewide and regional (in Florida) questions, Tier II focuses on basin-specific to waterbody-specific questions, while Tier III answers site-specific questions. More specifically, Tier I monitoring comprises two monitoring efforts – status monitoring and trend monitoring – which are both designed to answer statewide to regional questions. Tier II monitoring includes basin assessments and monitoring required for TMDL development. This monitoring is more localized in nature than Tier I monitoring, yet may encompass a broader area than that employed in Tier III. Tier III includes all monitoring tied to regulatory permits issued by the Department and is associated with evaluating the effectiveness of point source discharge reductions, BMPs, or TMDLs. The program addresses both surface and ground waters of the state.

For more information on water quality results in Florida, see the latest [\*Florida Integrated Water Quality Assessment Report\*](#) online.

---

### IWRM'S THREE TIERS<sup>86</sup>

- **Tier I** consists of the Department's statewide surface water and ground water Status and Trend Networks. The Status Network<sup>87</sup> uses a probabilistic monitoring design to estimate water quality across the entire state, based on a representative subsample of water resource types. The Trend Network<sup>88</sup> uses a fixed station design to examine changes in water quality over time in river systems and in ground water throughout the state. The objective of these networks is to provide scientifically defensible information on the important chemical, physical, and biological characteristics of surface waters and major aquifer systems of Florida. Both networks are designed to measure condition using a variety of threshold values, including water quality standards, water quality indices, and other appropriate ecological indicators.
  
  - **Tier II** includes the Strategic Monitoring Program, designed to address questions in specific basins and stream segments that are associated with determinations of waterbody impairment for the TMDL Program. Monitoring in response to citizen concerns and environmental emergencies is also considered Tier II. In addition, this tier includes the Springs Initiative, which encompasses all of the extensive monitoring activities begun in 1999 to address the needs of Florida's freshwater spring systems. This fragile and unique resource type is considered to be at risk.
  
  - **Tier III** generally answers site-specific questions that are regulatory in nature. Examples of Tier III monitoring activities include monitoring to determine whether moderating provisions such as SSAC should apply to certain waters, all monitoring tied to regulatory permits issued by the Department, monitoring to establish TMDLs (intensive surveys), and monitoring associated with evaluating the effectiveness of BMPs. On a much more infrequent basis, when state water quality standards are under evaluation for revision or new development, Tier III also includes monitoring activities associated with these efforts.
- 

---

<sup>86</sup> *Id.*

<sup>87</sup> [Status Network](#).

<sup>88</sup> [Trend Network](#).

**TABLE 7. TIER I MONITORING PROGRAMS<sup>89</sup>**

<b>Program</b>	<b>Summary</b>	<b>Resources Addressed</b>
<b>Status Network</b>	Consists of a probabilistic monitoring design to estimate water quality across the entire state based on a representative subsample of water resource types.	Large lakes, small lakes, rivers, streams, confined aquifers, and unconfined aquifers
<b>Trend Network</b>	Comprises a fixed station design to examine changes in water quality and flow over time throughout the state.	Rivers, streams, confined aquifers, and unconfined aquifers

**TABLE 8. TIER I AND TIER II BLENDED MONITORING PROGRAMS<sup>90</sup>**

<b>Program</b>	<b>Summary</b>	<b>Resources Addressed</b>
<b>Springs Initiative</b>	Consists of a fixed station network of freshwater springs intended to enhance the understanding of Florida’s springs, stop the degradation and loss of spring flow, and restore springs to their former health.	First-magnitude springs, second-magnitude springs, subaquatic conduits, river rises, and coastal submarine springs

**TABLE 9. TIER II MONITORING PROGRAMS<sup>91</sup>**

<b>Program</b>	<b>Summary</b>	<b>Resources Addressed</b>
<b>Strategic Monitoring Program</b>	Addresses questions in specific basins and stream segments that are associated with determinations of waterbody impairment for the TMDL Program.	All surface waters based on the schedule in the watershed management cycle

<sup>89</sup> Department, September 2010, [\*Integrated water quality assessment for Florida: 2010 305\(b\) report and 303\(d\) list update\*](#), p. 52 (last accessed October 12, 2012).

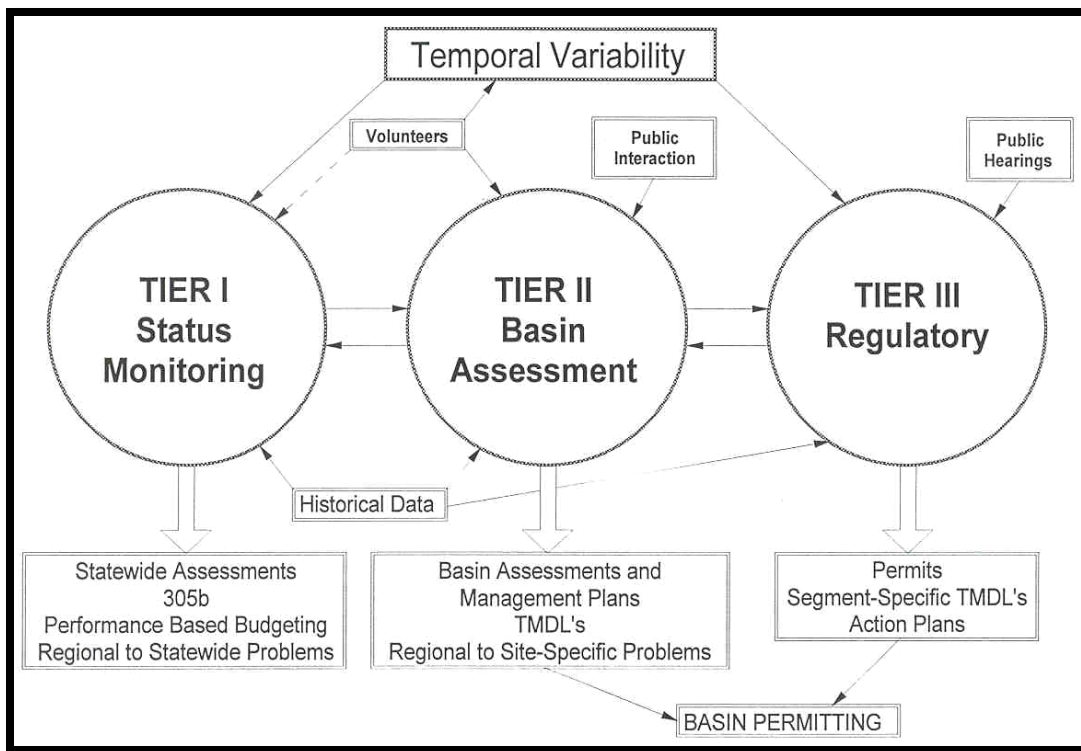
<sup>90</sup> *Id.*

<sup>91</sup> *Id.*

**TABLE 10. TIER III MONITORING PROGRAMS<sup>92</sup>**

Program	Summary	Resources Addressed
<b>Intensive Surveys for TMDLs</b>	Provides detailed, time-limited investigations of the conditions of specific surface water resources that are identified as impaired.	Specific surface water resources identified as impaired
<b>Water Quality Standards Development</b>	Develops, evaluates, and revises new and existing surface water quality standards. Carries out monitoring to determine concentrations to protect aquatic life and human health.	Surface water and ground water
<b>Site-Specific Alternative Criteria</b>	Develops moderating provisions unique to a waterbody that does not meet particular water quality criteria, due to natural background conditions or human-induced conditions that cannot be controlled or abated.	Surface waterbodies to which particular ambient water quality criteria may not be applicable
<b>Fifth-Year Inspections</b>	Achieves and maintains compliance through sound environmental monitoring and permitting practices.	Surface waters that receive point source discharges

**FIGURE 6. TIERS I, II, AND III OF THE IWRM NETWORK<sup>93</sup>**



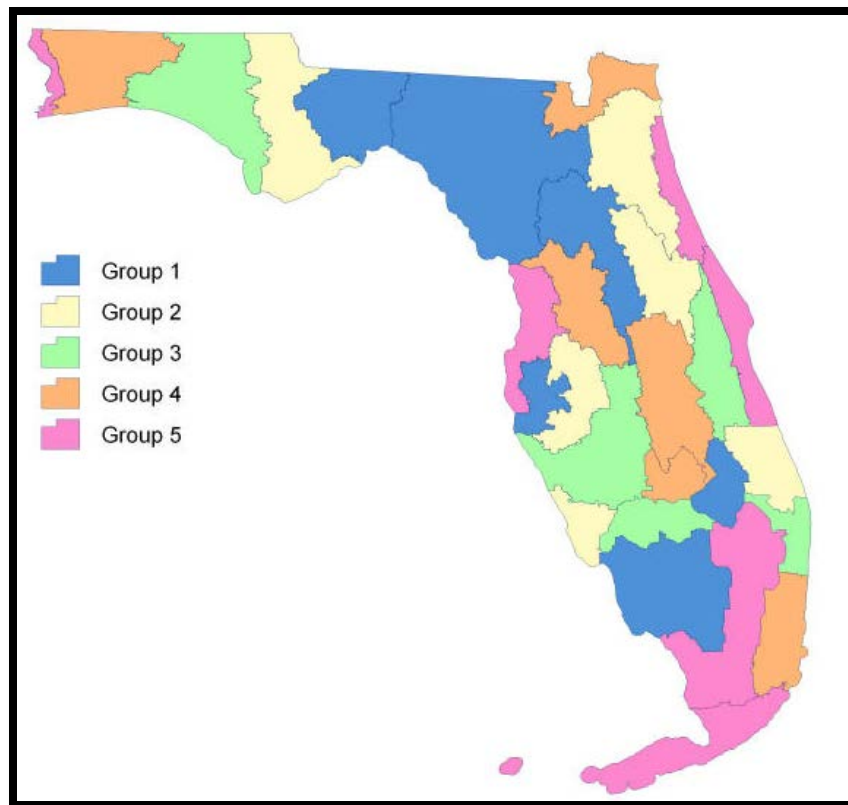
<sup>92</sup> *Id.*

<sup>93</sup> [Elements of Florida's Water Monitoring and Assessment Program](#), March 26, 2009, p.23 (last accessed October 12, 2012).

### *Rotating Basin Approach*

Using data from the monitoring program and other sources, the Department's Watershed Assessment Section evaluates the impacts of wastewater facilities, industries, agriculture, septic tanks, urban development, and other sources of pollution on Florida's surface waters. The state has 52 watersheds, which have been grouped into 29 basins and which make up the foundation for basin assessments. Each year, an assessment is done for the basins in one of the five groups, leading to the development and adoption of the Verified List of Impaired Waters, which identifies surface waters that do not meet water quality standards ("impaired waters"). Florida's surface water quality standards are set forth primarily in Chapter 62-302, F.A.C., and the associated table of water quality criteria. However, the Verified List is developed using the methodology specified in the IWR,<sup>94</sup> which has been adopted as water quality standards for the purposes of these assessments. For those waters that are impaired, TMDLs (water quality restoration targets) are developed and adopted.<sup>95</sup>

**FIGURE 7. FLORIDA'S ROTATING BASIN GROUPS**



<sup>94</sup> Chapter 62-303, F.A.C.

<sup>95</sup> Chapter 62-304, F.A.C.

FIGURE 8. FLORIDA'S 29 RIVER BASINS



### *The IWR*

The designated uses of a given waterbody are established using the surface water quality classification system described in the section on Florida's Water Quality Standards Program. The EPA uses slightly different terminology in its description of designated uses. Because the Department is required to provide use attainment status for both the state's 305(b) report and the state's 303(d) list of impaired waters, it uses EPA terminology when assessing waters for use attainment. The water quality evaluations and decision processes for listing impaired waters that are defined in Florida's IWR are based on the following designated use attainment categories:

- **Drinking Water Use Attainment:** Class I waters.
- **Fish and Shellfish Consumption Attainment:** Class II waters.
- **Limited Fish Consumption; Recreation or Limited Recreation; and/or Propagation and Maintenance of a Limited Population of Fish and Wildlife:** Class III Limited.



- **Aquatic Life Use Support-Based Attainment:** Class I, II, and III waters.
- **Primary Contact and Recreation Attainment:** Class I, II, and III waters.
- **Protection of Human Health:** Class I, II, and III waters.

As part of the watershed management approach, for each river basin in the state, the Department follows the methodology in the IWR to develop a Planning List of potentially impaired waters to be assessed. The methodology for developing the Planning List includes an evaluation of aquatic life use support, primary contact and recreational use support, fish and shellfish consumption use support, drinking water use support, and protection of human health. After further assessment, the Department determines if waters on the Planning List are, in fact, impaired and if the impairment is caused by pollutant discharges. These waters are placed on a Verified List.

### *Delisting*

If it is determined that the original listing was in error, or if it can be demonstrated that water quality criteria are currently being met for a waterbody or segment/analyte combination that was previously included on either the 1998 303(d) list, or on the state's Verified List, the Department may propose that a previously listed waterbody segment be delisted.

## Appendix 1: Goals, Action Plans, and Tracking Measures

1.0 WATERSHED ASSESSMENT .....	2
1.1 WATERSHED RESTORATION .....	3
1.2 WATERSHED PROTECTION .....	4
2.0 NONPOINT SOURCE PROGRAM ADMINISTRATION .....	5
3.0 URBAN STORMWATER MANAGEMENT .....	7
4.0 SURFACE WATER, COASTAL, AND WETLANDS MANAGEMENT .....	9
5.0 GROUND WATER AND SPRINGS .....	10
6.0 AGRICULTURE .....	10
8.0 ON-SITE SEWAGE TREATMENT AND DISPOSAL SYSTEMS .....	11
10.0 BIOASSESSMENT .....	12
11.0 WATERSHED ASSESSMENT - BMAPs .....	13



Caloosahatchee River. Photo by Rae Ann Wessel

Note: X indicates Tracking Measure must be accomplished; - = Empty cell/no data

## 1.0 WATERSHED ASSESSMENT

### 1.0.1 Goal: Assess waterbodies for impairments.

Action	Tracking Measure	2014	2015	2016	2017	2018
(a) <b>Prioritize waterbodies for assessment utilizing up-to-date screening tool.</b>	List of waterbodies to assess for impairment	List	Update as needed	Update as needed.	Update as needed.	Update as needed.
(b) <b>Implement monitoring plans to gather data</b>	List of waterbodies/ parameters monitored	X	Updated schedule	Updated schedule	Updated schedule	Updated schedule

### 1.0.2 Goal: Develop TMDLs for verified impaired waterbodies.

Action	Tracking Measure	2014	2015	2016	2017	2018
(a) <b>Prioritize waterbodies for TMDL development utilizing appropriate tools such as EPA Recovery Potential Screening tool</b>	Prioritized list of waterbodies for TMDL development	List	Updated list	Updated list	Updated list	Updated list
(b) <b>Develop TMDLs for waterbodies based on priority listing</b>	Number of TMDLs adopted into state rule	20	25	20	20	20

## 1.1 WATERSHED RESTORATION

### 1.1.1 Goal: Develop and implement BMAPs to implement TMDLs and restore water quality.

Action	Tracking Measure	2014	2015	2016	2017	2018
(a) Prioritize watersheds for BMAP development utilizing EPA Recovery Potential Screening tool	Prioritized list of areas for BMAP development	X	Updated list	Updated list	Updated list	Updated list
(b) Work with local and regional stakeholders to develop BMAPs for adoption	Number of developing BMAPs	7	4	4	4	4
(b) Work with local and regional stakeholders to develop BMAPs for adoption	Number of adopted BMAPS	3	2	2	2	2
(c) Support projects targeted at implementation of BMAPs	Number of projects, funded annually with 319 grant, that implement BMAP management strategies	7	7	8	8	8

### 1.1.2 Goal: Assess effectiveness of watershed/basin restoration.\*

\*See Appendix 1, Section 11, for assessment schedule for each adopted BMAP.

Action	Tracking Measure	2014	2015	2016	2017	2018
(a) Evaluate water quality trends in BMAP areas to determine overall success of implementation	Progress report on water quality improvement	x	x	x	x	-

**1.1.3 Goal: Restore impaired waters that are not part of a BMAP.**

Action	Tracking Measure	2014	2015	2016	2017	2018
(a) Support local entities in development of RA plans, Nutrient Management Plans, or other water quality restoration plans for waterbodies that are impaired but are not slated for BMAP development	Number of RA plans submitted to EPA	As appropriate	As appropriate	As appropriate	As appropriate	As appropriate
(a) Support local entities in development of RA plans, Nutrient Management Plans, or other water quality restoration plans for waterbodies that are impaired but are not slated for BMAP development	Number and type of other plans	As appropriate	As appropriate	As appropriate	As appropriate	As appropriate
(b) Action: Support projects geared toward restoration of impaired waters that are not part of a BMAP	Numbers of projects implemented and funded through NPS Program	5	5	5	5	7

**1.2 WATERSHED PROTECTION**

**1.2.1 Goal: Protect unimpaired waters.**

Action	Tracking Measure	2014	2015	2016	2017	2018
(a) Support local and statewide programmatic activities	Number of projects funded with 319 grant through NPS Program	1	2	2	2	2
(b) Support projects geared toward protection of unimpaired waters	Number of BMP implementation projects funded with 319 grant	1	2	2	2	2

## 2.0 NONPOINT SOURCE PROGRAM ADMINISTRATION

### 2.1 Goal: Successfully manage the 319 grant program.

Action	Tracking Measure	2014	2015	2016	2017	2018
(a) Reduce unliquidated obligations (ULOs) by utilizing leftover funds, emphasizing five-year time frame in proposal and selection process and evaluating project contracting process	ULO reduction progress	Decrease ULO	Decrease ULO	Decrease ULO	Assess ULO	Assess ULO
(a) Reduce unliquidated obligations (ULOs) by utilizing leftover funds, emphasizing five-year time frame in proposal and selection process and evaluating project contracting process	Review/update proposal and contracting process	X	X	X	X	X
(a) Reduce unliquidated obligations (ULOs) by utilizing leftover funds, emphasizing five-year time frame in proposal and selection process and evaluating project contracting process	Percentage of projects with executed contracts within six months of EPA award, and again within one year of award	50% and 100%	50% and 100%	60% and 100%	60% and 100%	60% and 100%
(a) Reduce unliquidated obligations (ULOs) by utilizing leftover funds, emphasizing five-year time frame in proposal and selection process and evaluating project contracting process	Status of leftover funding from older projects	Decrease funding.	Decrease funding.	X	X	X
(b) Evaluate and update NPS Management Plan on ongoing basis and at least every five years	Report progress to EPA on meeting goals, using tracking measures	In NPS Annual Report	In NPS Annual Report	In NPS Annual Report	In NPS Annual Report	In NPS Annual Report
(b) Evaluate and update NPS Management Plan on ongoing basis and at least every five years	Review and update plan	Annually or as needed	Annually or as needed	Annually or as needed	Annually or as needed	Annually or as needed
(c) Maintain 319 project data in GRTS system	Enter all projects into system by required deadlines	X	X	X	X	X

**2.2 Goal: Develop a centralized system to track all NPS restoration projects managed by the NPS Program or geared toward BMAP implementation.**

Action	Tracking Measure	2014	2015	2016	2017	2018
(a) Evaluate systems for suitability	Develop/select database (goal)	-	-	-	12/31/17	-
(a) Evaluate systems for suitability	Update database (annually after in production)	-	-	-	-	x

**2.3 Goal: Administer an effective NPS management program.**

Action	Tracking Measure	2014	2015	2016	2017	2018
(a) Provide technical expertise on issues relating to NPS management through meetings and inter- and intraagency cooperation	List of the types of meetings attended by NPS Program staff	X	X	X	X	X
(b) Provide educational materials and training on NPS management	List of printed brochures provided by NPS Program	X	X	X	X	X
(b) Provide educational materials and training on NPS management	List of online materials provided by NPS Program	X	X	X	X	X
(b) Provide educational materials and training on NPS management	Types of training events provided by NPS Program staff, not covered under a specific area	X	X	X	X	X

### 3.0 URBAN STORMWATER MANAGEMENT

#### 3.1 Goal: Educate the public and industry through outreach and training.

Action	Tracking Measure	2014	2015	2016	2017	2018
(a) Increase use and understanding of Florida-friendly landscaping™ (FFL) principles	Number of classes provided	25	25	25	25	25
(a) Increase use and understanding of FFL principles	Number of surveys indicating successful results of FFL Program	200 surveys/ 95% success rating	250 surveys/ 97% success rating	250 surveys/ 97% success rating	250 surveys/ 97% success rating	250 surveys/ 97% success rating
(b) Educate green industry professionals about BMPs	Number of classes provided	60	60	65	65	65
(c) Coordinate with local and regional stakeholders to “train the trainers” for statewide training on erosion and sediment control BMPs, through BMP manuals, classroom training, outdoor exercises, and video-conferencing	Number of classes provided	18	20	20	20	20
(d) Support projects on local level that educate public on NPS pollution prevention	Number of projects supported	3	3	4	4	5



**3.2 Goal: Support projects that use innovative technologies in their BMPs.**

Action	Tracking Measure	2014	2015	2016	2017	2018
(a) Prioritize projects for funding consideration that utilize innovative technologies	Number of projects that utilize innovative technologies	2	2	3	3	4

**3.3 Goal: Support local projects geared towards meeting TMDLs, BMAPs preventing erosion or protecting unimpaired waters in urban areas.**

Action	Tracking Measure	2014	2015	2016	2017	2018
(a) Support local projects with 319 grant funding	Number of BMP projects within BMAPs funded with 319 grant funds annually	5	5	6	7	7
(b) Provide information to golf courses on urban stormwater management	Number of golf courses contacted and provided with information	12	15	15	18	18
(c) Support projects with 319 grant funding geared towards reducing contamination of waterbodies from erosion and sediment	Number of sediment/erosion control projects funded with 319 grant funds	2	3	3	3	3

## 4.0 SURFACE WATER, COASTAL, AND WETLANDS MANAGEMENT

The watershed assessment, restoration, and protection goals, described in Sections 1.1, 1.2, and 1.3 of this appendix, address NPS pollution in surface waters.

### 4.1 Goal: Protect coastal waters through implementation of NPS programs and projects.

Action	Tracking Measure	2014	2015	2016	2017	2018
(a) Support projects directed at reducing/preventing NPS pollution in coastal waters	Number of projects supported/implemented annually	3	3	3	3	3
(b) Continue to support implementation of OSTDS projects to reduce and prevent NPS pollution of coastal waters, in support of Coastal Zone Act Reauthorization Amendments	Number of projects funded with the 319 grant	2	2	3	3	3
(c) Participate in other state partnership programs	List number of work groups and type of work groups participated in	X	X	X	X	X

## 5.0 GROUND WATER AND SPRINGS

### 5.1 Goal: Protect Florida springs and ground water.

Action	Tracking Measure	2014	2015	2016	2017	2018
(a) Assess ground water and springs through monitoring efforts	Schedule for monitoring ground water wells	X	X	X	X	X
(a) Assess ground water and springs through monitoring efforts	Status of data review	X	X	X	X	X
(b) Support projects geared toward ground water and springs protection/restoration	Number of projects funded with 319 grant	2	2	2	2	2

## 6.0 AGRICULTURE

### 6.1 Goal: Reduce NPS pollution from agricultural activities.

Action	Tracking Measure	2014	2015	2016	2017	2018
(a) Action: Support projects that improve existing BMPs	Number of projects funded with 319 grant	1	2	2	3	3
(b) Action: Participate in the NWQI program to support agricultural projects	Number of watershed areas submitted to the program for improvement projects	2	2	2	2	2
(b) Action: Participate in the NWQI Program to support agricultural projects	Monitoring information submitted to EPA for selected projects	X	X	X	X	X
(c) Work with intra- and interagency partners to develop and update BMP manuals	Number of manuals updated	1	1	As needed	As needed	As needed
(c) Work with intra- and interagency partners to develop and update BMP manuals	Number of manuals developed	1	0	As needed	As needed	As needed
(d) Support projects utilizing BMPs that reduce/prevent NPS pollution typically found in rural and agricultural areas	Number of projects/funding amounts funded with the 319 grant	3	4	4	5	5

## 8.0 ON-SITE SEWAGE TREATMENT AND DISPOSAL SYSTEMS

### 8.1 Goal: Reduce and/or eliminate NPS pollution from OSTDS.

Action	Tracking Measure	2014	2015	2016	2017	2018
(a) Develop and/or support projects designed to reduce or eliminate NPS pollution from OSTDS through reduction of OSTDS, BMPs, or other means, including maintenance and inspections	Number of projects funded by 319 grant that contribute to NPS pollution reduction from OSTDS through BMPs or other means	2	3	4	5	5
(b) Coordinate with inter- and intraagency groups to support development of statewide inventory, and database, of all OSTDS systems	Progress report on inventory system	X	X	X	X	X
(b) Coordinate with inter- and intraagency groups to support development of statewide inventory, and database, of all OSTDS systems	List of areas that have been inventoried	X	X	X	X	X
(c) Educate homebuilders, local governments, and citizens on OSTDS BMPs	Number and types of outreach programs	1	1	1	2	2
(c) Educate homebuilders, local governments, and citizens on OSTDS BMPs	Number and types of educational materials developed	1	1	1	1	1

## 10.0 BIOASSESSMENT

### 10.1 Goal: Evaluate waterbodies for NPS pollution through a bioassessment program.

Action	Tracking Measure	2014	2015	2016	2017	2018
(a) Improve integration of existing bioassessment tools into statewide monitoring and assessment programs as well as water resource programs	Number and type of statewide conferences supported by 319 funding	1	1	1	1	1
(b) Continue to provide technical support staff to statewide bioassessment program to both implement and expand sampling programs and manage flow of statewide data collection, analysis, and reporting to program managers and public	Status of bioassessment monitoring progress	X	X	X	X	X

## 11.0 WATERSHED ASSESSMENT – BMAPs

### 11.1 Goal: Assess adopted BMAPs for progress towards restoration.

#### All adopted Tier 1 and Tier 2 BMAPs

Action	Tracking Measure	2014	2015	2016	2017	2018
(a) Monitor progress of BMAP-specific projects	Collect and update BMAP project tables	X	X	X	X	X
(b) Water quality analysis	Assess water quality data, such as source assessment, trends, and/or compliance	X	X	X	X	X
(c) Education	Report number of education and outreach projects and/or activities implemented in BMAP area	X	X	X	X	X