

9/30/99 Final DRAFT

**A Framework for Implementing
a Watershed Approach:
Division of Water Resource Management**

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Tallahassee, Florida*

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LIST OF ACRONYMS

AMS	Ambient Monitoring Section
BMP	Best Management Practice
CWA	Clean Water Act
CWAP	Clean Water Action Plan
DACS	Florida Department of Agriculture and Consumer Services
DCA	Florida Department of Community Affairs
DEP	Florida Department of Environmental Protection
DOH	Florida Department of Health
DWMP	District Water Management Plan
DWRM	Division of Water Resource Management
EM	Ecosystem Management
EMA	Ecosystem Management Area
EPA	U.S. Environmental Protection Agency
F.A.C	Florida Administrative Code
FFWCC	Florida Fish and Wildlife Conservation Commission
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
F.S.	Florida Statutes
HUC	Hydrologic Unit Code
IWRM	Integrated Water Resources Monitoring
MAP	Management Action Plan
NEP	National Estuary Program
NPDES	National Pollutant Discharge Elimination System
NPS	Nonpoint Source
OFW	Outstanding Florida Water
OGC	Office of General Counsel
PLRGs	Pollutant Load Reduction Goals
SWAP	Source Water Assessment and Protection
SDWA	Safe Drinking Water Act
SRF	State Revolving Fund
SWIM	Surface Water Improvement and Management
TMDL	Total Maximum Daily Load
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
VISA	Very Intense Study Area
WMD	Water Management District
WMP	Watershed Management Program
WPCS	Watershed Planning and Coordination Section
WQAS	Water Quality Assessment Section
WQBELs	Water Quality Based Effluent Limitations
WQSS	Water Quality Standards and Source Water Protection Section

EXECUTIVE SUMMARY/PREFACE

(To be written once the Framework Document is finalized.)

Chapter 1

INTRODUCTION

Purpose of the Framework Document

This document provides the framework for using a *watershed approach* to address the water resource–related programs within the statutory responsibilities of the Division of Water Resource Management (DWRM), Florida Department of Environmental Protection (DEP). Adapting all of these statutory responsibilities to the watershed approach will allow DWRM to address more effectively the nonpoint source issues and adverse environmental impacts resulting from population growth and development, while continuing to address historical responsibilities via a more efficient use of resources.

A key initiative that will be addressed by DWRM’s watershed approach is Total Maximum Daily Loads (TMDLs), which are required under Section 303(d) of the federal Clean Water Act for water bodies that do not meet water quality standards. TMDLs limit point and nonpoint source pollution based on each individual water body’s assimilative capacity. In 1999, the Florida legislature enacted the Florida Watershed Restoration Act, which provides a process for restoring waters through the establishment and implementation of TMDLs for pollutants of impaired water bodies. DEP is the lead agency in administering the state’s TMDL program. The requirements for administering and implementing the program under the act are a key component in implementing the watershed approach and have been incorporated into this document.

Other important initiatives that will also be addressed by the watershed approach include the Ambient Monitoring, Water Quality Reporting, Nonpoint Source Control, Water Quality Standards, and Source Water Assessment and Protection (SWAP).

While the scope of this document is specifically limited to DWRM programs, the watershed approach is intended to serve as a basis for achieving broader, ecosystem-level objectives and is designed to complement other watershed management programs in the state, including the Surface Water Improvement and Management (SWIM) Program of the Water Management Districts (WMDs) and the National Estuary Program (NEP). DWRM will work with outside agencies and organizations at state, federal, regional, and local levels, as well as individual citizens. To truly achieve the potential of the watershed approach, other agencies and stakeholders will need to embrace and participate in the basin management cycle described in this document.

The framework described here provides a support structure for implementing the watershed approach, making it easier to coordinate management efforts and establishing a lasting process for participants to work together on the problems and issues of their individual basins. This support structure comprises agreed-upon standard operating procedures, timelines, and forums for participants to communicate

with each other. It also allows participants to work at different geographic scales, weigh multiple management objectives, and address unique local concerns.

Organization of the Framework Document

This document opens (Chapter 1) with a brief description of its purpose, some background information about the watershed approach, a summary of program goals and expectations, and a discussion of how the watershed approach will be integrated with existing programs. Chapter 2 outlines the major components of the watershed management framework and the five phases of the basin management cycle, describes key participants, and details how this approach will be implemented both within DEP and with other agencies and organizations. Chapter 3 outlines the schedule for implementing the basin management cycle statewide. Finally, Chapter 4 discusses resource needs for making the transition to the watershed approach, including staffing and funding. Appendix A describes Florida's "Water Resource Management Program," including the federal and state statutory framework within which DEP and other agencies operate.

The Watershed Approach

History

Watershed management is not a new concept in Florida and has a long evolutionary history. The Florida Water Resources Act passed in 1972 established five regional water management districts divided along hydrologic boundaries and for the first time allowed statewide regulation of water resources. The act also designated DEP's predecessor agency the Florida Department of Pollution Control as the oversight authority for the activities of the water management districts and required the development of a state water plan.

In the mid-1980s the state's SWIM Program was created to address large-scale and long-term restoration of water bodies of statewide significance. Although the WMDs directly administered the program, DEP retained oversight. SWIM priority water bodies were given priority funding for nonpoint source control by DEP's Stormwater Management Program and purchases of land through the Conservation and Recreational Lands (CARL) Program and the WMDs' Save Our Rivers program.

The 1993 Environmental Reorganization Act that created DEP directed the agency to "protect the functions of entire ecological systems through enhanced coordination of public land acquisition, regulatory, and planning programs." This was accomplished through a concept known as Ecosystem Management. This concept was incorporated into DEP's daily activities and programmatic design through four principles: place-based management, common sense or flexibility in regulation, cultural change from a command-and-control approach to cooperative partnerships with stakeholders, and firm foundations based on sound science and environmental education. This approach required a higher degree of interaction between government and the public and a more

open planning process than was possible under a purely regulatory approach to environmental protection.

Under this approach, the state was divided into a number of Ecosystem Management Areas based on watershed boundaries. The initiative carried out site-specific ecosystem management projects, land stewardship, and restoration planning, and represented DEP in a variety of environmental forums. Ecosystem Managers have been active in the six DEP district offices and serve as local coordinators for ecosystem issues.

The Next Step

The watershed approach is the next logical step toward the coordination and focusing of local, regional, state, and federal resources to protect natural resources in the state. Building on the foundations of Ecosystem Management and using a hydrologic framework, rather than political or regulatory boundaries, this approach allows integration and coordination with other watershed programs such as SWIM and NEP. Table 1 describes the general characteristics of the watershed approach. On a basic level, it provides a mechanism to focus resources on specific units (basins). This focusing of resources alone will allow the state's water resource issues to be addressed more efficiently, since DEP staff will be able to concentrate on resolving problems in individual basins.

The watershed approach also provides a structure that allows for the management of entire systems rather than of their separate parts. The process draws together all the participants and stakeholders in each basin to decide what problems affect the basin, which are most important, and how they will be addressed. Through this more holistic approach, a basin's environmental health will improve because individual activities are more likely to be coordinated and will better address cumulative impacts.

The watershed approach also institutes a cyclical process of environmental assessment, priority setting, monitoring, and implementation of management strategies in identified priority basins. This basin management cycle, described in detail in Chapter 2, provides a set schedule that both organizes work activities and ensures that all waters are addressed in a timely manner. At the conclusion of the cycle, the process begins anew, allowing participants to respond to changing conditions or adjust strategies that have not performed as anticipated.

While the watershed approach requires a broader management perspective than the traditional regulatory approaches, it does not compete with existing programs. Instead, it integrates them, allowing DWRM to meet its responsibilities more effectively and efficiently. This framework will establish mechanisms for DWRM to define priorities, improve coordination, integrate program goals, and allocate finite resources within these geographic areas. It will also better address the issue of impaired water quality caused by nonpoint sources.

Table 1: General Characteristics of the Watershed Approach

- Is place based and defined by hydrologic boundaries, rather than political or social boundaries or individual permittees.
- Through a common framework of Hydrologic Unit Codes (HUCs), addresses water resource issues at different geographic scales within a basin.
- Provides a five-year basin management cycle and a detailed schedule of activities to meet statutory and administrative requirements.
- Coordinates existing activities so that each basin's water resources are managed efficiently and cost-effectively, without duplicated effort.
- Establishes a collaborative, consensus-based process by which a basin's diverse stakeholders can identify shared goals, build a common vision, define and prioritize problems, target resources, and implement management actions.
- Obtains commitments from stakeholders to work on resolving the basin's problems and to take responsibility for specific management tasks.
- Brings together stakeholders in each basin in formal, organized partnerships.
- Creates a process through which political and organizational obstacles to resolving a basin's water resource problems can be overcome.
- Strengthens the use of scientific data as a factual basis for decision making.
- Uses an interdisciplinary approach to identify, prioritize, and solve problems.
- Sets specific, quantifiable goals for restoration and protection.
- Establishes a cooperative monitoring program to measure the effectiveness of management actions and incorporates the results into the next basin management cycle.
- Emphasizes the transfer of information to the public and other governmental agencies to achieve management goals.

Goals and Expectations

Watershed Management Goals

DWRM administers programs to ensure that Florida's waters are fishable, swimmable, and drinkable. It oversees drinking water and domestic and industrial wastewater treatment plants. It administers the state's reuse, ground water protection, and nonpoint source programs, and oversees mined land reclamation and environmental resource permitting. DWRM also has the major share of responsibility for implementing Chapter 403, Florida Environmental Control Act, as well as the federal Clean Water Act (CWA) and Safe Drinking Water Act (SDWA).

Implementing the following DWRM initiatives is crucial to developing the watershed approach:

- **Total Maximum Daily Loads (TMDLs).** *Section 303(d) of the CWA requires the states to submit lists of surface waters that do not meet applicable water quality standards and establish TMDLs for these waters on a prioritized schedule. TMDLs establish the maximum amount of a given pollutant that a particular water body can assimilate without exceeding surface water standards that protect natural system function and human health. State authority for Florida's TMDL program was recently established as part of the 1999 Florida Watershed Restoration*

Act, which provides a process for listing impaired waters and for developing, adopting, and implementing TMDLs (see Table 2 for details of the new legislation). This process is a major focus of the watershed approach.

- **The Comprehensive State Water Quality Assessment (305[b] report).** *The CWA establishes a process for states to develop information on the quality of the nation's water resources. Each state must develop a program to monitor the quality of its surface and ground waters and prepare a report describing the status of its water quality. This report, commonly known as the 305(b) report, is used to evaluate whether state waters meet water quality standards, progress in maintaining and restoring water quality, and the extent of remaining problems. The 305(b) report is also used as the basis for the list of surface waters for which TMDL assessments will be conducted.*
- **Ambient Monitoring.** *DEP monitors the ambient water quality of Florida's surface and ground waters to determine the status of and trends in water bodies. The monitoring, when combined with data from other agencies, provides the information needed for both state-level assessments (the 305[b] report) and detailed assessments of specific water bodies.*
- **Nonpoint Source Program.** *DEP administers the state's stormwater rule and Environmental Resource Permit (ERP) program through the WMDs. The program works to reduce pollution from older systems and improve the effectiveness of Best Management Practices (BMPs), especially for controlling erosion and sedimentation. It also educates the public on the importance of stormwater management and is working to develop a statewide training and certification program for inspecting stormwater systems. DEP is modifying the guidelines and procedures of the U.S. Environmental Protection Agency (EPA) for sampling sediments, water chemistry, habitats, and biological communities for use in Florida streams and lakes.*
- **Source Water Assessment and Protection (SWAP).** *Created under the 1996 amendments to the SDWA, which provides funding and focuses resources for the protection of drinking water sources, SWAP requires the states to identify public drinking water supplies, delineate assessment areas, identify potential sources of contamination, determine the susceptibility of drinking water supplies to the sources of contamination, and provide the assessments to the public.*

Expanding the Goals

If the full potential of the watershed approach is to be achieved, sister agency goals should also be included. The goals of this document will be expanded as it undergoes review by staff outside DEP, since the input of other parties will be needed to help define their role in the process and their individual goals. DWRM staff will work closely with the staff of other agencies to clearly define their long-term objectives and level of participation.

Integration with Other Watershed Programs

Partnerships are critical to the successful implementation of the watershed approach. The initiation of this approach will require DWRM to develop or strengthen its formal or informal collaborative partnerships and relationships with other DEP programs and other agencies. Table 3 describes some of the lessons that were learned from the Tampa Bay restoration about designing a watershed approach that works.

Given the state's limited resources, the work of WRM needs to complement, rather than duplicate, the work of other programs that have made significant progress towards addressing water quality issues on a watershed basis in Florida. The WMDs, for example, have developed comprehensive Surface Water Improvement and Management (SWIM) plans for restoring and preserving priority water bodies across the state, and many of Florida's Aquatic Preserves have management plans already in place. The National Estuary Program (NEP) has also developed Comprehensive Conservation and Management Plans (CCMPs) for several estuarine systems. Appendix A describes these programs in more detail.

In particular, it will be critically important for DEP to work with the SWIM Program. Given that SWIM waters vary in scale from water bodies to entire basins, the watershed approach will need to be tailored to the number and areal coverage of SWIM waters in each basin. In cases where only a small portion of the basin waters are SWIM waters, the Management Action Plans (MAPs) developed under the watershed approach will refer to the SWIM documentation (and recommendations) for these water bodies, and DWRM will concentrate on other non-SWIM waters in the basin.

Table 2: The 1999 Florida Watershed Restoration Act

Under Section 303(d) of the federal Clean Water Act, all the states are required to submit to the EPA a list of waters that do not meet applicable water quality standards and to develop TMDLs for these waters. This list is referred to as the 303(d) list. The Florida legislature enacted the 1999 Florida Watershed Restoration Act to clarify the statutory authority for requiring TMDLs and define the approval process. The state legislation contains the following provisions:

- *Establishes that the initial 303(d) list submitted to the EPA is for planning purposes only.*
- *Requires the Secretary of DEP to adopt 303(d) listing criteria (that is, the methodology used to define impaired waters) by rule.*
- *Requires DEP to validate impairment in 303(d) listed waters and establish basin-specific lists. DEP is also required to evaluate whether proposed pollution control programs are sufficient to meet water quality standards, list the specific pollutant(s) and concentration(s) causing impairment, and adopt the final 303(d) list by Secretarial Order.*
- *Requires the Secretary of DEP to adopt TMDL allocations by rule. The legislation requires DEP to establish "reasonable and equitable" allocations of TMDLs but does not mandate how allocations will be made among individual sources.*
- *Requires TMDL allocations consider existing treatment levels and management practices; the differing impacts that pollutant sources may have; the availability of treatment technologies, Best Management Practices (BMPs), or other pollutant reduction measures; the feasibility, costs, and benefits of achieving the allocation; reasonable time frames for implementation; the potential applicability of moderating provisions; and the extent that nonattainment is caused by pollution from outside Florida, discharges that have ceased, or alteration to a water body.*
- *Requires a report to the legislature by February 2001 addressing the allocation process.*
- *Authorizes DEP to develop basin plans to implement TMDLs, coordinating with other agencies and conducting at least one public meeting. Implementation is voluntary if not covered by regulatory programs.*
- *Requires DEP to develop basin plans to implement TMDLs and to coordinate with the WMDs, the Florida Department of Agriculture and Consumer Services (DACs), the Soil and Water Conservation Districts, regulated parties, and environmental groups in assessing water bodies for impairment, collecting data for TMDLs, and developing TMDLs.*
- *Directs DEP and DACs to develop interim measures and BMPs to address nonpoint sources. While BMPs would be adopted by rule, they would be voluntary if not covered by regulatory Programs. If they were adopted by rule and DEP verified their effectiveness, then Implementation would presume compliance with water quality standards.*
- *Directs DEP to document the effectiveness of the voluntary approach and report to the legislature by January 1, 2005. The report will include participation rates and recommendations for statutory changes.*

Table 3: Tampa Bay: A Model for Watershed Management

A number of lessons from the Tampa Bay restoration process can be applied to implementing a watershed approach in Florida.

The Tampa Bay Restoration.¹ The restoration of Tampa Bay began thirty years ago. The bay, on Florida's west coast, is the state's largest open-water estuary, spanning almost 400 square miles. Its 2,200-square-mile watershed is home to nearly two million people whose everyday activities influence the bay's environmental health. The bay encompasses a rich mosaic of underwater and coastal habitats, important to sea life and birds. Trade, tourism, development, and fishing in and around Tampa Bay contribute billions of dollars annually to the state economy.

The area's natural habitat was heavily damaged through the years because of human activities, including extensive point and nonpoint source pollution and dredging and filling. Beginning in the early 1900s, over 13,000 acres of bay bottom were filled, mainly in shallow areas populated with seagrasses, which provide especially valuable habitat for many species. About half of the bay's natural shoreline and 40 percent of its seagrasses were destroyed. Such extensive habitat destruction killed shellfish and destroyed fisheries, devastating the local economy.

Although ad hoc efforts to clean up Tampa Bay began in the late 1960s, the turning point came in 1988, when the bay was nominated for inclusion in NEP. The program was designed to establish management objectives, characterize environmental quality, and carry out comprehensive resource planning and implementation. The Tampa Bay project's long-term goal was to develop a Comprehensive Conservation and Management Plan that outlined goals and actions to address water and sediment quality, bay habitats, fish and wildlife, spill prevention and response, and dredging and the disposition of dredged material.

The highly structured, collaborative NEP process operated under the premise that strong and active local government involvement was vital to the project's success. The initial Management Conference included more than 300 individuals representing a broad range of interests.

Lessons of the Tampa Bay Model.² The Tampa Bay NEP model provides a number of important lessons that have influenced the development of this framework document. Key lessons learned include the following:

- 1. The Tampa Bay experience shows that understanding and working with the political and organizational environment within which a project is carried out is critical to success. In implementing the watershed approach, a process of collaborative decision making engages the basin's important diverse stakeholders within their political and organizational environment.*
- 2. In Tampa Bay, participants defined a shared problem, the deterioration of the bay's environment and natural resources. In the process they created a sense of mutual interdependence and trust, identified shared goals, and built a common vision. Using the watershed approach, the basin team works to define the basin's problems and issues through the preliminary assessment, and develops a consensus on the major water quality problems in the basin.*

¹ The material in this section is adapted from *Tampa Bay Issues and Options: Protection and Restoration of the Bay's Living Resources*, Tampa Bay National Estuary Program, July 29, 1997 (Draft). The DWRM thanks Holly Greening for generously allowing this material to be used.

² An article by Robert E. Deyle, "Integrated Water Management: Contending with Garbage Can Decisionmaking in Organized Anarchies" (*Water Resources Bulletin*, June 1995), provided a useful structure for describing the lessons learned from the Tampa Bay restoration.

Table 3: Tampa Bay: A Model for Watershed Management (continued)

3. *Tampa Bay's experience illustrates that setting quantifiable restoration and protection goals is essential, so that specific actions can be taken and progress towards goals measured. In the watershed approach, management goals and objectives should be established early in the process, and agreed-upon performance measures should establish how the effects of each management action will be determined.*
4. *In Tampa Bay, a third-party "convener"—the Tampa Bay NEP—wielded enough power to compel, but not hinder, participation. With the cycle provided by the watershed approach, DEP would assume the role of convener, acting as a catalyst, using a problem-solving approach that would involve both nonregulatory and regulatory actions.*
5. *The Tampa Bay model illustrates how the group's loosely organized linkages evolved into more formal, permanent, and centralized organizations with some type of management structure. It also shows that a formal structure should not be imposed too soon, that participants should tailor a structure to their own requirements, and that the process needs to develop over time. While the watershed approach will begin without a formal, local management structure, DEP plans to support the development of a more formal structure at the local level. The approach will require time because of the variation in the management structure at the local level.*
6. *The Tampa Bay initiative demonstrates the importance of developing a long-term cooperative monitoring program, built on existing programs, to generate reliable, useful data. The watershed approach would incorporate this essential tool for tracking progress.*

In other basins where SWIM waters constitute the majority of the basin, the WMDs will have already made significant progress, including activities analogous to components of the watershed approach's basin management cycle. As such, DEP will build on this progress and focus on specific issues that are not addressed in the SWIM process.

The need for coordination is not limited to SWIM water bodies. DWRM will need to coordinate with the WMDs in all basins. A variety of formal and informal mechanisms will facilitate this coordination. For example, the District Water Management Plans (DWMPs), which will include a section on watershed management, will serve as an important formal mechanism for coordination between the districts and DEP on watershed management issues.

While this document focuses on the many agencies involved in water resource protection, public participation is also a key element of the watershed approach. In fact, the broader management goals required by this approach often fall beyond the statutory authority of DWRM, or even DEP (or any single agency adopting such an approach). Thus, these goals can only be fully achieved through active participation by the residents of the basin. As such, the watershed approach has been designed to provide multiple opportunities for public participation throughout the management cycle. DEP has already made dramatic progress in citizen participation through Ecosystem Management.

Table 4 lists potential stakeholders in the watershed approach.

Table 4: Stakeholders in Florida's Watershed Approach

Federal	U.S. Environmental Protection Agency U.S. Fish and Wildlife Service U.S. Geological Survey U.S. Army Corps of Engineers U.S. Department of Agriculture Natural Resource Conservation Service U.S. Forest Service National Park Service National Oceanic and Atmospheric Administration National Estuary Programs National Wildlife Refuges U.S. Department of Transportation
State and Regional	Florida Department of Environmental Protection Division of Water Resource Management Division of Administrative and Technical Services Division of Waste Management Division of Resource Assessment and Management Division of Air Resources Management Division of State Lands Regulatory districts Florida Natural Areas Inventory Florida Department of Community Affairs Florida Department of Agriculture and Consumer Services Florida Fish and Wildlife Conservation Commission Florida Department of Health Florida Department of Transportation Florida Department of Education Regional Planning Councils Water Management Districts
Local	County and city commissions County and city planning departments County and city pollution control programs School boards County agricultural cooperative extension programs Municipal drinking water plants Municipal wastewater treatment plants
Tribal	Tribal governments and natural resource protection managers
Others	Academic institutions and research centers Public interest groups Chambers of commerce Trade associations Industries and businesses Farmworker associations Recreational and sports organizations Environmental organizations Private citizens

Benefits of the Watershed Approach

The watershed approach—with its cyclical structure, coordinated activities, defined timelines, built-in mechanisms for feedback, and diverse participants—will benefit DEP and other participants and stakeholders. These benefits include the following:

- *The watershed approach builds on the existing assessment and restoration efforts of DEP and other agencies.*
- *The watershed approach focuses a wide array of resources on individual basins' problems, resulting in a more efficient use of and greater accountability for the limited federal, state, local, and private dollars available for environmental issues.*
- *The watershed approach fosters the coordinated implementation of programs within DEP and other agencies, including stormwater runoff, drinking water, and wetlands protection.*
- *The watershed approach encourages cooperation among a number of state, federal, regional, and local agencies, since different governmental units and nongovernmental interests build agreements on issues that cut across jurisdictional lines.*
- *The watershed approach is a tool to educate participants on the complex nature of problems and issues in a basin and the range of concerns that must be addressed. It also allows participants to understand and work within each basin's unique political and organizational environment.*
- *The watershed approach encourages accountability and the long-term involvement of the public, landowners, and businesses in individual basins.*
- *Because the watershed approach includes the development of a long-term cooperative monitoring program, built on existing programs, to generate reliable, useful data, participants track progress against specific goals and identify the most cost-effective controls.*
- *The watershed approach speeds up the implementation of management actions, since participants understand that a plan or policy reflects their input and has been crafted to meet their interests.*

Chapter 2

THE COMPONENTS OF THE WATERSHED APPROACH

The watershed approach is based on the following major components:

- *The **basin management unit** is the geographic or spatial unit used to divide the state into smaller areas for assessment—generally groups of Hydrologic Unit Codes (HUCs).*
- *The **basin management cycle** is the five-year cycle within which watersheds are assessed and management plans developed and implemented.*
- *The **Management Action Plan (MAP)**, a document developed over the five-year cycle and subsequently updated every five years, describes the watershed's problems and how participants plan to address them.*
- ***Forums and communications networks** allow participants to collect and evaluate as much information as possible on their individual basins and to reach a consensus on strategic monitoring, priority water bodies, and management strategies.*
- *The statewide **basin management schedule** establishes the proposed sequence for assessing individual watersheds.*

This chapter discusses the basin management unit and the basin management cycle's five phases, which culminate in the development of the MAP. It also describes the key participants in the watershed approach, the forums and communication networks needed, and, for each phase, implementation details. Chapter 3 addresses the final component, the statewide basin management schedule. For each component, an intensive collaborative effort will be required among all those involved in managing Florida's water resources, so that scarce resources are allocated and used cost-effectively and effort is not duplicated.

Basin Management Unit

To implement the watershed approach in Florida, the task must be made manageable and a structure must be established that allows the results of specific management actions to be measured. Florida has been subdivided into smaller geographic or spatial units, and these subdivisions provide a basic structure for carrying out the basin assessments.

DWRM started with the eight-digit HUCs developed by the U.S. Geological Survey (USGS). These are the basin management units used to define Florida’s major river basins. HUCs are a nationwide cataloging system commonly used for watershed assessment and management. They provide a common framework for delineating and cataloging watersheds and their boundaries at a number of different geographic scales. The eight-digit unit is commonly used to categorize fairly large watersheds, which are typically hundreds to thousands of square miles each (see Table 5).

While the eight-digit HUC provides a sound hydrologic framework for watershed management, Florida has too many HUCs (fifty-one) to use them as the main basin management unit for scheduling and reporting. As such, the HUCs were aggregated into groups, with a goal of creating five roughly equivalent groups within each DEP district (Figure 1 shows DEP’s watershed management groups and the HUCs within those groups). This grouping was designed to allow DEP to follow the five-year management cycle within each district, which is where the majority of field and permitting staff are located. Each group was then assigned a number indicating the proposed order for carrying out the basin management cycle.

The basin management groups generally correspond with Florida’s Ecosystem Management Areas (EMAs). The lone exception is the Suwannee River Basin, which is an aggregate of two EMAs.

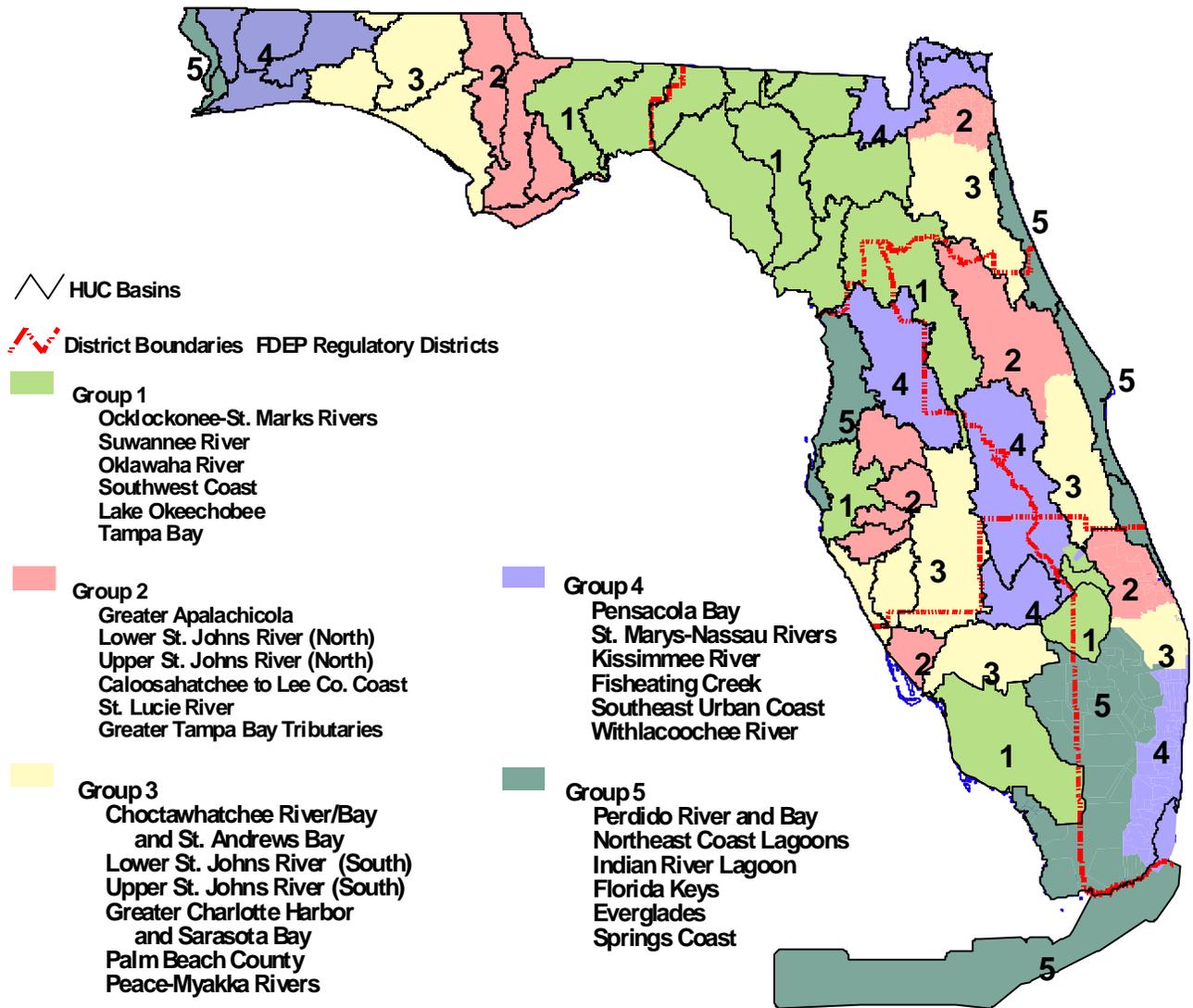
Table 5: Watershed Definition, Scales, and Hierarchy

Before an environmental assessment at the watershed scale can begin, it is essential to have a consistent vision of the size of the area to be studied. Unfortunately, the size of the area that one person associates with the term “watershed” may be larger or smaller than the area that another person has in mind. The following set of commonly used terms describes the relative size of geographic areas in the watershed hierarchy:

Hierarchy Terms	Examples
Region	South Atlantic–Gulf (USGS two-digit HUC)
Subregion	St. Marks–Ochlockonee (USGS six-digit HUC)
River basin	St. Marks River (USGS eight-digit HUC)
Subbasin	Unnamed closed basin (USGS common twelve-digit HUC)
Watershed	Lake Lafayette (USGS fourteen-digit HUC)
Subwatershed	Lower Lake Lafayette (USGS eighteen-digit HUC)
Site	Meadows at Woodrun Wastewater Treatment Plant

Any size land area can be selected for watershed assessment. The size of the area chosen for study depends on the purpose of the assessment, the issues to be evaluated, and the area’s physical, biological, and social complexity. Not only does a watershed include surface water and ground water, it also includes air, land, and living communities—all of which influence and are influenced by cultural and natural activities and events in that watershed. Ground watersheds and surface watersheds are not necessarily directly related in terms of direction of flow, connectivity, or water quality.

Figure 1: DEP's Watershed Management Groups and HUC Boundaries



Basin Management Cycle

The basin management cycle is the five-year cycle within which watersheds are assessed under the watershed approach. Each individual basin cycle will take five years to complete, and the cycle within that basin will be repeated every five years. Table 6 shows the five phases of the cycle, the proposed schedule, and the activities to be carried out during each phase.

Table 6: Basin Management Cycle

Phase	Schedule	Activities
Phase 1: Preliminary Basin Assessment	Years 1-2	Identify stakeholders/participants Build basin team Prepare draft Status Report: Prepare basin assessment <ul style="list-style-type: none"> • <i>Identify and prioritize management goals and objectives, resource issues of concern</i> • <i>Finalize list of TMDL water bodies</i> • <i>Inventory existing and proposed management activities</i> • <i>Develop Plan of Study</i> • <i>Hold public meetings</i> • <i>Carry out environmental education throughout cycle</i>
Phase 2: Strategic Monitoring	Years 1-3	Carry out strategic monitoring to collect additional data
Phase 3: Data Analysis and TMDL Development	Years 2-4	Compile and evaluate new data and incorporate findings into Status Report Complete TMDLs and source water assessments
Phase 4: Management Action Plan	Years 4-5	Finalize management goals/objectives Develop draft MAP, including TMDL allocation Identify monitoring and management partnerships, needed rule changes and legislative action, funding opportunities Develop Monitoring and Evaluation Plans Seek funding Obtain participants' commitment to implement plan
Phase 5: Implementation	Year 5+	Implement MAP Carry out rule development/legislative action

Each of the cycle's five phases has its own unique products and results. Updated in each subsequent reiteration of the cycle, these products and results document the watershed's most urgent problems and help participants plan to address them. Products include a Status Report (which commences with a detailed assessment and concludes with a Plan of Study), data collection, Status Report update, MAPs, and follow-up Monitoring and Evaluation Plans.

Each of the different elements comprises a building block in the final MAP that is the culmination of the basin management cycle. The MAP evolves out of the first three phases. It focuses the work effort and documents how decisions are made and

solutions selected. It also identifies specific management tasks and projects, who is going to do the work, and how the work will be funded.

This management cycle is an iterative process, with additional progress being made in each future cycle to address a basin's problems. In most basins, it will not be possible to address all of the water quality problems in the first basin cycle, and work will focus on priority water bodies in the basin. Even in targeted waters, it will take time for management activities to produce a quantifiable improvement in water quality. As such, the MAPs will include performance measures, both water resource-related goals and target BMP implementation rates, and monitoring in subsequent cycles will be used to determine the effectiveness of previous management activities.

Key Participants. Initially, DWRM's five sections within the Bureau of Watershed Management (BWM) will be the main participants in implementing the basin management cycle, assuming different roles and responsibilities at different times. The challenge of the watershed approach will be to develop similar commitments among all those who participate. For the most part, the BWM will not be taking on new roles and responsibilities, but rather, coordinating its existing activities better, as follows.

- *The Watershed Planning and Coordination Section (WPCS) will take the lead in coordinating the basin management cycle, with support from the DEP district watershed management coordinators and other DEP staff.*
- *The Ambient Monitoring Section (AMS) will help to identify data sources and existing monitoring networks in each basin, provide guidance on the design and implementation of monitoring networks, and provide guidance in the management and assessment of water quality data.*
- *The Nonpoint Source/Stormwater Management Section (NPS) will provide technical assistance in conducting biological assessments, develop and fund management strategies for addressing nonpoint source pollution, and evaluate the success of management actions using biological assessment tools.*
- *The Water Quality Assessment Section (WQAS) will play a major role in analyzing and interpreting water quality data, identifying resource issues of concern, collecting site-specific data, and developing TMDLs.*
- *The Water Quality Standards and Source Water Protection Section (WQSS) will provide technical assistance in interpreting water quality standards and classifications, the environmental impacts of pesticides, and the vulnerability of drinking water supplies to contamination.*

Other key DEP participants who will play an important role throughout the basin management cycle include DEP's district offices, Intergovernmental Programs, the Division of Administrative and Technical Services, and the Office of General Counsel. DEP district offices can help identify other stakeholders, coordinate their activities, and bring together technical expertise and data—for example, local governments' stormwater modeling and loading calculations or mapping of stormwater systems. They can also help to develop a management structure for the basin groups and can work to educate stakeholders and the public, including neighborhood and community groups. Extensive public education materials already exist on a wide range of topics, including general nonpoint source management; urban stormwater management; best management practices for agriculture, golf courses, and silviculture; bioassessments; and lake management.

Intergovernmental Programs can help the BWM establish cooperative liaisons with other DEP divisions and district offices, as well as other governmental agencies. The Division of Administrative and Technical Services' Bureau of Laboratories can provide assistance in sampling design, quality assurance and quality control procedures, and laboratory analysis. The Office of General Counsel can provide guidance on legal and regulatory issues.

The WMDs, which are already carrying out restoration and preservation activities for SWIM water bodies across the state, will be key to implementing the basin management cycle. Table 7 shows the SWIM water bodies within each WMD for which plans have been developed. The districts have made significant progress towards addressing water quality issues on a basin scale in Florida, including activities analogous to components of the basin management cycle. Given the state's limited resources, it will be very important for DEP to complement their work, building on their progress and focusing either on issues that the districts have not addressed or on non-SWIM waters in each basin.

The District Water Management Plans (DWMPs), which will include a section on watershed management, will serve as an important formal mechanism for coordination between the districts and DEP on watershed management issues. Through the development and review of DWMPs, DWRM will identify priority issues in each basin. Other mechanisms for coordination include regularly scheduled teleconferences, workshops, and Memoranda of Agreement.

Table 7: Surface Water Improvement and Management (SWIM) Water Bodies and Date of Most Recent SWIM Plan

Northwest Florida Water Management District

1. Apalachicola River and Bay (1996)
2. Choctawhatchee River and Bay System (1997)
3. Deer Point Lake (1991)
4. Lake Jackson (1997)
5. Pensacola Bay System (1997)
6. St. Marks River Watershed (1997)

South Florida Water Management District

1. Biscayne Bay (1995)
2. Everglades/East Everglades (1992)
3. Indian River Lagoon (1994)
4. Lake Okeechobee/Kissimmee River (1997)

Southwest Florida Water Management District

1. Banana Lake (1995)
2. Charlotte Harbor (1993)
3. Crystal River/Kings Bay (1999)
4. Lake Panasoffkee (1999)
5. Lake Tarpon (1994)
6. Lake Thonotosassa (1996)
7. Rainbow River (1995)
8. Sarasota Bay (1997)
9. Tampa Bay (1999)
10. Winter Haven Chain of Lakes (1998)

St. Johns River Water Management District

1. Indian River Lagoon (1994)
2. Lake Apopka (1993)
3. Upper Ocklawaha (1995)
4. Lower St. Johns (1993)

Suwannee River Water Management District

1. Alligator Lake (1997)
2. Aucilla River (1991)
3. Coastal Rivers (1996)
4. Santa Fe River (1995)
5. Suwannee River (1992)
6. Waccasassa River (1996)

In addition, many local governments will have generated valuable data from their studies and will often have ideas and plans for remediating existing water resource impairment. Given their communities' investments in long-term water quality, they will frequently have thorough documentation of conditions in individual water bodies.

These local and regional entities, all of which are generating information, will look to the state to provide funding and technical expertise and help participants reach a consensus on the problems of individual basins. From the state's perspective, it is looking to identify the issues, target environmental resources, prioritize and coordinate

activities, and develop TMDLs, as well as provide an unprecedented level of technical assistance to local communities. While DEP can give assistance, the solutions to problems in individual watersheds are likely to come from the local and regional level. At all levels, however, the goal is the same: to protect and restore those water bodies most in need of attention. The process of carrying out the basin management cycle through a consensus-based watershed approach allows participants at all levels to meet this objective.

Public involvement will be essential. Members of the public will participate in the basin planning process. There will also be opportunities for public review and comment in forums and workshops held throughout the basin management cycle.

The Five Phases of the Basin Management Cycle

In the following sections, the components of each phase of the basin management cycle are described. Each step has its own products, such as reports or plans that result during different stages of the cycle. The order in which these steps are taken is important because the sequence provides a general structure for implementing the cycle. However, the details of each phase may vary from basin to basin, depending on available funding and staffing and each basin's specific issues.

Implementation details for each phase are also discussed in the following sections. The sections describe the roles of various participants in each step of the basin management cycle, as well as the variety of formal and informal mechanisms that can be used to facilitate coordination with the WMDs and other governmental agencies.

The basin management cycle is an integrated, comprehensive process that is grounded in the basin's physical structure. Each basin management cycle connects and coordinates a series of phased activities among stakeholders. Built into the cycle are mechanisms for obtaining feedback and fine-tuning management activities, based on the information that is collected.

Initially, the process is initiated within the BWM. However, a more formal structure for organizing activities will evolve. Participants' roles and responsibilities change throughout the cycle. Eventually what develops is a tool for empowering decision making by all participants all the way down to the local level.

The following sections describe activities and products in each phase:

Phase 1: Preliminary Basin Assessment

The preliminary basin assessment, which initially addresses readily available data from the 305(b) report, accomplishes the following:

- *Characterizes the general ecological health of the basin and the water quality of its individual water bodies and aquifers.*

- *Through the 305(b) report, identifies water bodies that may require protection, restoration, and/or TMDL development.*
- *Identifies water bodies where further study is needed because of water quality problems or a lack of data.*
- *Identifies sources of pollution.*
- *Proposes goals and objectives for consideration through the basin management cycle.*

The assessment will also be used to refine the state's 303(d) list of impaired waters that do not meet water quality standards as required under the federal Clean Water Act, prioritize which waters will be studied during the basin management cycle, and develop a verified list for TMDL development.

Source water assessments will also be performed during Phase 1. The SWAP Program will identify source water assessment areas around drinking water systems and inventory potential contamination sources within those areas. A susceptibility determination will be made to assess the threat that the identified sources pose to the drinking water systems which use a ground water supply. More detailed assessments may be conducted during Phase 3 for drinking water systems that use particularly vulnerable ground water supplies or a surface water source.

The key product of Phase 1 is the Status Report. Table 8 shows a draft outline for a typical document. The assessment chapter of the draft Status Report is prepared early in the process as a foundation for subsequent phases.

Table 8: Draft Outline for Status Report

I. Executive summary

II. Introduction

III. Basin overview

A. Setting

B. Climate

C. Physiography

1. Physiographic divisions
2. Geomorphic features
 - a. Surface waters (identification of lakes, rivers, springs, sinkholes, wetlands, bays, canals, other)
 - b. Other

D. Geology

1. Geologic history
2. Regional structures
3. Stratigraphy/lithology
4. Economic geology

E. Hydrology

1. Ground water
 - a. Hydrogeologic units
 - b. Recharge areas
 - c. Groundwater vulnerability (Drastic, FAVA)
2. Surface water (descriptions of lakes, rivers, springs, sinkholes, wetlands, bays, canals, other)
3. Discharge
 - a. Flooding (areas of known and potential flooding, 50- and 100-year flood maps)
 - b. Drought

F. Biology

1. Land cover
2. Habitat
 - a. Benthic mapping
 - b. Endangered species
 - c. Indigenous species
 - d. Nonindigenous species (ship ballast, shrimp virus)
 - e. Wetland inventories
 - f. Coastal emergent wetlands
 - g. Marine fisheries
 - h. Shellfish beds

IV. Human impacts

A. Demographic summary

B. Land use (historical, existing, future)

C. Potential sources of pollution

1. Point sources
 - a. Permitted (treatment plant effluent, treatment facility stormwater runoff)
 - b. Compliance and enforcement issues
 - c. Waste cleanup activities

Table 8: Draft Outline for Status Report (continued)

<ul style="list-style-type: none">2. Nonpoint sources<ul style="list-style-type: none">a. Atmosphericb. Stormwater from conveyance systems (residential, industrial, commercial, agricultural, mining, transportation, silviculture)c. Ground water (petroleum and other underground storage tanks, septic tanks, domestic and hazardous waste landfills, land application of reclaimed water, stormwater ponds)3. Chemical application areas (Department of Transportation, railroad rights of way, power lines, agricultural areas, Bureau of Aquatic Plants, other) <p>D. Water use</p> <ul style="list-style-type: none">1. Permitted consumptive use (public well locations)2. Water supply plans3. Minimum flows and levels <p>E. Water resource designations</p> <ul style="list-style-type: none">1. Classifications (federal, state, WMDs)<ul style="list-style-type: none">a. Surface water use designations (areas of site-specific criteria, exemptions from water quality standards, variances, mixing zones)b. Local wellhead designationsc. Aquifer designationsd. Source water protection designations2. Special waters (NEP water bodies)3. Outstanding Florida Waters (OFWs) (Aquatic Preserves, special designations, other designations)4. SWIM water bodies5. Water conservation districts6. Special drainage districts <p>V. Assessment</p> <p>A. Methods</p> <ul style="list-style-type: none">1. Drainage analysis based on HUCs (accounting unit, cataloging unit, extended HUC)2. 305 (b)3. 303 (d)4. Bioassessment <p>B. Individual waterbody assessments</p> <ul style="list-style-type: none">1. Water quality<ul style="list-style-type: none">a. Surface water<ul style="list-style-type: none">1) Surface water quality assessment (chemical, biological, physical, specific contaminants of concern)b. Ground water<ul style="list-style-type: none">1) Ground water quality assessment (chemical, biological, physical, specific contaminants of concern)c. Bioassessment<ul style="list-style-type: none">1) Methods2) Results3) Aquatic plants (methods, results)4) Fish (fish advisories, fish tissue, fish kills)

Table 8: Draft Outline for Status Report (continued)

<p>VI. Ongoing management activities and monitoring</p> <p>A. Federal, state, regional, local (existing and proposed)</p> <ol style="list-style-type: none">1. Basin water quantity studies2. Best Management Practices (BMPs) (agricultural, other BMPs)3. District Water Management Plans (DWMPs)4. NEP Comprehensive Conservation and Management Plans (CCMPs)5. Pollutant Load Reduction Goals (PLRGs)6. Restoration activities7. Special drainage districts8. Stormwater retrofits9. SWIM Plan(s)10. Volunteer monitoring11. Water supply plans12. Source Water Assessment and Protection (SWAP) Plans13. Local government comprehensive plans14. Other <p>VII. Recommendations</p> <p>A. Identifies priority watersheds and water bodies needing further study and justification</p> <p>B. Identifies goals, objectives, and strategies for protecting each water body</p> <p>C. Identifies funding and resource allocation</p> <p>PLAN OF STUDY (Develops individual plans for water bodies and watersheds that describe TMDL intensive monitoring, monitoring to characterize existing conditions, or monitoring to evaluate the success of management actions)</p> <p>A. Introduction</p> <ol style="list-style-type: none">1. Intent of study2. Study area3. Model description* <p>B. Sampling program (for surface water and/or ground water)</p> <p>C. Program design</p> <p>D. Water quality sampling</p> <p>E. Water quantity sampling</p> <p>F. Other data collection (e.g., dye studies, light penetration measurements, sediment oxygen demand measurements)</p> <p>G. Personnel and equipment requirements (identifies sampling to be performed by other agencies)</p> <p>H. Quality assurance</p> <ol style="list-style-type: none">1. Meter calibration2. Bottle sample quality assurance3. Chain of custody <p><i>*Activities for TMDL intensive surveys</i></p>

Water quality data provided by the WMDs, NEPs, and local governments will contribute valuable information for the Status Report. In some parts of the state, the WMDs and others will also have done a significant amount of work in the SWIM planning process. Rather than duplicate effort in those basins, the basin team will summarize the prior work, including portions of the SWIM plans, and build on it in a collaborative effort. The initial assessment ends with the development of a preliminary list of priority watersheds.

The Management Activities chapter of the Status Report will list existing and proposed activities, including anticipated changes in the basin from land use changes, pollution sources currently under construction such as new facilities or expansions to permitted capacities, and BMPs whose effectiveness has not yet been realized. It will also identify management goals and objectives and prioritize resource issues of concern in the basin.

These activities provide information from which a detailed Plan of Study can be generated. The purpose of the Plan of Study is to address information gaps that the basin team has identified in the basin. For example, the basin team may have limited data indicating water quality criteria have been exceeded, but not have sufficient data to characterize the extent or determine the source of the pollution.

The Plan of Study prioritizes programmatic, management, and data needs and targets environmental resources. It describes the proposed monitoring; outlines which participants will carry out the monitoring; describes how the monitoring will be coordinated among different partners; provides a schedule for completion; defines quality assurance and quality control procedures for sampling, and analysis activities; and identifies specific monitoring activities and needs. The monitoring activities might include setting up flow gauges at key points to augment the USGS network; carrying out monthly monitoring of a secondary network of sampling stations; conducting intensive monitoring in 303(d) listed waters to perform modeling; conducting rapid bioassessments; studying gaps identified in the 305(b) report, and carrying out special, parameter-specific studies and ground water studies.

At least one public meeting will be held in the basin to allow citizens to review and comment on completed chapters of the draft Status Report, including the 303(d) list of impaired waters in the basin, and the Plan of Study. The list of impaired waters will then be formally adopted by order of the Secretary of DEP, a process that also provides a point of entry for interested parties concerned about the accuracy of the list.

Implementation Details. In Phase 1, the first step will be to select a basin coordinator from the WPCS who will lead the coordination effort within the BWM. The BWM basin team will prepare a draft preliminary assessment by compiling and summarizing existing data on the basin.

The starting point for the preliminary basin assessment is the 305(b) assessment for the basin. The basin team will then assess in detail what is currently known about the basin's physical, chemical, biological, and cultural features. This initial assessment provides team members with a common factual basis for measuring future changes, identifying information gaps and major issues, and determining future strategies and actions to preserve, protect, or restore the basin. Understanding the physical framework of each basin allows the basin team to develop a more accurate picture of the areas that are most contaminated or most vulnerable to contamination.

Once the draft assessment has been prepared, the team will then broaden its scope, identifying and contacting key participants from other DEP programs such as Water Facilities Regulation, Biology, Water Policy, the district offices, and others. To begin educating participants, the BWM team will prepare briefing materials and begin a series of presentations that culminate in broader commitments to participate.

In turn, the basin team will identify a broader range of potential participants and stakeholders. These include federal, state, regional, and local governments; various interest groups; and members of the public. The participants and stakeholders are the individuals—each with their own agendas and concerns—who are crucial to the development of a consensus-based MAP. Notices will be mailed to interested parties, notifying them that DEP is initiating the basin management process for the basin. The basin team will coordinate with DEP staff to access their extensive outreach mechanisms for recruiting and coordinating with stakeholders and encouraging their involvement early in the basin management cycle. This initial coordination will greatly facilitate the chances of success in Phase 4, when DEP will work with local stakeholders to develop the MAPs.

Using a consensus-building approach that will continue through the entire cycle, the basin team will identify management goals and objectives for the basin, establish priorities for resource issues of concern, and inventory existing and proposed management activities. The team will evaluate existing water quality data for the basin and verify whether 303(d) listed waters in the basin are in fact impaired, using procedures to be defined by rule. It will also identify additional collection needs in the basin and draft a Plan of Study that prioritizes programmatic, management, and data needs, and targets environmental resources in the basin. An important element at this stage will be to evaluate how monitoring and management activities can be coordinated among the many agencies involved. The team will also provide technical support for scientifically based decision making during the cycle.

In addition, information will need to be gathered from other DEP division monitoring activities such as the Divisions of Waste and Air.

The Plan of Study will detail how the monitoring will be carried out and who will fund the monitoring. If needed, the development of these activities could extend into Phase 2, for as the strategic monitoring is carried out, new insights may cause design changes in the monitoring network. Training on proper field sampling techniques may be provided as part of the strategic monitoring effort.

Collaboration with other governmental agencies with jurisdiction in the basin is essential, as information gaps as well as programmatic, management, and data needs may be satisfied by current or proposed monitoring by the WMDs, NEPs, and local governmental programs. Other agencies may also be able to satisfy the monitoring requirements for specific waters either partially or completely. Quality assurance for sampling and laboratory analysis are especially important, given that many different agencies and groups will be carrying out the sampling.

Review and comment from stakeholders and the public will be sought and incorporated into the Plan of Study. At least one public workshop—or multiple workshops in large, complex, or populous basins—will be held in each basin to educate and inform citizens about the results of the basin assessment and to receive comments. As individual government entities begin the process of committing funds, each will also have its own legal requirements for notifying the public about proposed expenditures and for making spending decisions.

Following the public meeting (or meetings), the list of waters for which TMDLs will be developed will be finalized, taking into account pollution control programs under local, state, or federal authority that may result in the attainment of water quality standards. During the development of the 303(d) list, waters may be removed from the list if pollution control program activities will result in the attainment of surface water quality standards or if data are provided that indicate water quality criteria are being attained. This basin-specific 303(d) list will be adopted by Secretarial Order, allowing a point of entry for interested parties to become involved. The list must be submitted to the EPA every two years.

Phase 2: Strategic Monitoring

Additional data are gathered based on the Plan of Study, in a coordinated effort with DEP district offices, local programs, and other agencies. DEP's Tier II Assessment Network, described in Table 9, will be used to provide data. Monitoring may focus on further characterizing conditions in the basin, investigating areas with identified or potential water resource issues, evaluating the effectiveness of management actions, or collecting data for TMDL development. This is when studies of ground water quality and ground water/surface water interactions will be initiated under the Very Intense Study Area (VISA) ground water network (see Table 9 for a description of this network).

The BWM's monitoring will be conducted under an umbrella design plan recently developed for DEP. This Integrated Water Resources Monitoring (IWRM) design uses a three-tiered approach to statewide monitoring, as follows:

Table 9: DEP's Integrated Water Resources Monitoring Design³

- **Tier I (Status Network)** uses a probability-based monitoring design to characterize statewide, regional, and specific basinwide conditions of Florida's water resources and determine if those conditions are changing over time. It can provide a statewide reference for comparing similar water resource types. The information from sampled stations can be used to make statistically significant statements on water quality for the entire state. Sampling is performed over five years but begins one year before the implementation of the basin management cycle, so that the information can be incorporated into the basin assessments. Information collected will be used to generate the Status Report in Phase 1 of the basin management cycle. The monitoring is scheduled to start in October 1999.
- **Tier II (Assessment Network)** monitoring will be conducted to assess, in detail, targeted water bodies in each of the fifty-one hydrologic units or major watersheds of Florida. This tier of monitoring will identify specific water resource problems and determine the extent and severity of the problems. It will collect the additional data identified in the Plan of Study and will comprise Phase 2 of the basin management cycle. An important component will be the redesigned Very Intense Study Area (VISA) ground water network. Originally designed to measure the general effects of broad categories of land use on ground water quality, this network will be modified to address specific issues of ground water quality and the interaction of ground water and surface water.
- **Tier III (Compliance Monitoring Network)** monitoring will determine if permitted facilities are in compliance with their permits. This monitoring will provide a basis for evaluating the effectiveness of management options.
- The **Temporal Variability Network** for surface water is a fixed station network, assessed at the scale of the state's fifty-one eight-digit HUCs and consisting of water quantity, water quality, and biological monitoring. Sampling locations are major rivers entering Florida, downstream discharges of major rivers to estuaries, and a number of stream and lake locations. The network will provide loading information for estuaries and the state, and measure seasonal variations in support of Tier I sampling. A second temporal variability network for ground water is under development.

Implementation Details. While most of the key coordination with other agencies involved with monitoring will be carried out during the development of the Plan of Study in Phase 1, continued coordination among the many agencies involved in monitoring will be essential. Basin team members will need to continue meeting regularly to discuss progress on monitoring activities, exchange results, and coordinate on logistics for intensive surveys.

As participants carry out the monitoring, data management will be crucial. Different agencies will need to accept responsibility for collecting, managing, and storing portions of the data collected in Phase 2. Data sharing will be critical, as the basin team will need to obtain data from the numerous agencies responsible for parts of the coordinated monitoring effort. The information will be uploaded to STORET, the EPA's national database on water quality maintained by DEP. Once the data are made available, feedback from a statewide audience will allow the monitoring to be fine-tuned or errors to be corrected. The information gathered as part of the basin management cycle will go into DEP's periodic statewide water quality assessments (the 305[b] report).

³The full scope of the design is described in Copeland et al., 1998, *Overview of the Florida Department of Environmental Protection's Integrated Water Resource Monitoring Efforts and the Design Plan of the Status Network*.

Phase 3: Data Analysis and TMDL Development

Participants compile, assess, and interpret the data identified or collected in Phases 1 and 2 and evaluate whether these data meet the objectives defined in the Plan of Study. This phase can include, for example, an analysis of historical and strategic monitoring data; evaluation of flow data to calculate statistics on worst-case conditions and note differences in flow from long-term averages; or documentation of the results of intensive monitoring, biological assessments, and special studies such as Very Intensive Study Area (VISA) investigations. Changes and new information are summarized and integrated into the Status Report as a separate section.

The next step is to develop TMDLs by defining the assimilative capacity for particular water segments, water bodies or watersheds (based on existing data, the intensive monitoring data collected in Phases 1 or 2, and other relevant information) and to allocate the acceptable loading to the level of major source categories. TMDLs are developed using modeling techniques that explain the relationship between pollutant loadings and surface water quality. A margin of safety is applied by incorporating conservative assumptions or by not allocating a portion of the TMDLs to pollutant sources. Once completed, the TMDLs for a basin will be adopted by rule by the Secretary of DEP.

Phase 3 also includes the susceptibility determination component of SWAP for drinking water systems using a surface water supply. This determination will assess the threat posed from potential contamination sources in the delineated source water protection area. It will also provide a review of data collected during the strategic monitoring activities.

Implementation Details. The basin team will compile, analyze, and interpret the new data and evaluate whether the data meet the objectives of the monitoring plan. The data analysis will include SWAP susceptibility analyses and VISA results. The results will be summarized for individual watersheds and water bodies and used to update the Status Report. The WQAS will take the lead role in analyzing and interpreting surface water quality data, while the WPCS will use its eBASE Web site (<http://ebase.dep.state.fl.us>) as a major tool for disseminating the information to other agencies and the public.

The WQAS will take the lead in TMDL development, which will be performed using the intensive survey data collected for the 303(d) listed waters. The data from these surveys will first be used to develop a surface water model and then to develop TMDLs. The model will be developed using the water quantity and quality data and loading estimates for parameters of concern from all significant point and nonpoint sources. Models will be calibrated and validated to ensure that they adequately simulate the conditions observed during the intensive surveys. Once calibration and validation are complete, the receiving water design conditions (i.e., critical flow periods) will be simulated with the model to determine the assimilative loading capacity that results in

the attainment of water quality standards. During this phase of the modeling, model runs will also incorporate proposed management activities and evaluate whether they will result in the attainment of water quality standards. Depending on the impairment, however, additional reductions in loading (beyond the scope of proposed actions) may be necessary.

The results from modeling the design conditions will be used to allocate the loadings (TMDLs) to the major pollutant source categories (such as point sources, urban runoff, agricultural nonpoint sources, and atmospheric deposition). The modeling procedures and TMDL development results will then be documented in TMDL reports and incorporated into the MAP during Phase 4. For SWIM waters, it will be essential to coordinate with the WMDs on PLRGs, which will provide the basis for some TMDLs.

Upon completion of the TMDLs, the TMDLs and their allocations will be adopted by rule by the Secretary of DEP. The rule-making process will include several opportunities for public comment, including at least one public workshop in the vicinity of each water body for which a TMDL is being developed.

Phase 4: Management Action Plan

In this phase, a draft Management Action Plan (MAP) is developed that describes actions needed to address water resource impairment in the basin. This MAP, which will also serve as a TMDL implementation plan, is based on the conclusions reached in Phase 3 and on extensive coordination with local stakeholders developed during the first three phases. It focuses the work effort over the next five years by identifying specific actions needed to address water resource issues and also documents how decisions were made and solutions selected. Portions of the documents created in earlier phases are incorporated into the MAP, as the sample outline in Table 10 illustrates.

The MAP will include performance measures for both water resource monitoring and the voluntary implementation of BMPs and other management strategies and controls. To evaluate performance measures, a Monitoring and Evaluation Plan for measuring the effectiveness of various management activities will be developed for use in the next cycle. The MAP will also identify funding sources for planned monitoring and restoration activities (see Chapter 4), as well as needed rule changes and legislative action.

It should be noted that stakeholder involvement in developing the MAP is crucial. Participants will be expected to endorse the action plan formally and commit themselves to implementing certain management actions. Public comments on the draft MAP will be solicited at a public meeting before the MAP is finalized.

Implementation Details. In Phase 4, under the leadership of the WPCS staff, the basin team will finalize its list of management goals, develop a draft MAP for activities over the next five years, and begin to seek funding for those activities. The MAP is in fact a kind of map that specifies where, what, when, and how management activities will

be carried out and who will take responsibility for them. Most important, each MAP will include TMDL implementation plans, as well as methods for measuring the effectiveness of management activities that will allow the team to redefine each basin's problems using new information.

Table 10: Draft Outline for MAP

<p>INTRODUCTION</p> <p>Summary of Basin Assessment This section will be a summary from the updated Status Report for each eight-digit HUC basin in the group.</p> <p>Basin 1 Watershed 1 Watershed 2, etc.</p> <p>Basin 2 Watershed 1 Watershed 2, etc.</p> <p>RESOURCE ISSUES OF CONCERN This section will describe the existing and proposed action plans for each category in the Status Report outline.</p> <p>Water use in the basin Existing action plans Proposed action plans</p> <p>Water quality Summary of TMDLs Existing action plans Proposed action plans</p> <p>Natural systems Existing action plans Proposed action plans</p> <p>FINANCING</p> <p>PERFORMANCE MEASURES</p> <p>MONITORING AND EVALUATION PLANS</p>
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The MAP focuses attention on those water bodies that the basin assessment and strategic monitoring phases have identified as highest priority. While TMDLs will be developed and allocated to the major categories of pollutant sources in Phase 3, in this phase the basin team will work with major stakeholders in the basin to allocate TMDLs to individual point and nonpoint sources. The allocation of loads to individual sources is a critical step towards providing reasonable assurance that the TMDLs will be achieved. Allocations will take into account the level of treatment provided by existing treatment facilities and management practices; the impacts that pollutant sources may have on water quality; the availability of treatment technologies, BMPs, and other pollutant reduction measures; the environmental, economic, and technological feasibility of

achieving the allocation; the costs associated with achieving the allocation; reasonable time frames for implementation; and the applicability of any moderating provisions such as mixing zones.

The allocation of nonpoint sources of pollution and the subsequent implementation of management activities to control such pollution will be critical to the effective restoration of impaired waters in many basins. DEP has clear regulatory authority for point sources of pollution through the federally delegated NPDES Program and the state's wastewater program, and will implement TMDLs for point sources using NPDES permitting. The regulatory authority for some kinds of nonpoint source pollution has not been established. Given the number of nonpoint sources that exist and the complexity of nonpoint issues, a voluntary, nonregulatory, incentive-based approach is encouraged. This approach will require unprecedented coordination with other agencies and consensus with local stakeholders to provide reasonable assurance that the nonpoint components of TMDLs will be fully implemented.

For basins with significant agricultural nonpoint sources, DEP will work closely with DACS, the WMDs, the Soil and Water Conservation Districts, and the Natural Resources Conservation Service. DACS may adopt rules for BMPs or other measures necessary to achieve pollution load reductions for TMDL allocations made to agricultural pollutant sources. Implementation would be carried out by the parties responsible for the pollutant sources, with assistance from DEP, the WMDs, and DACS. The agencies will work together to establish funding priorities for impaired waters, so that cost-share monies will be available to implement conservation easements and BMPs. They will also work together in the TMDL rule-making process and will coordinate with individual farmers and various commodity groups to develop BMPs for specific agricultural activities and encourage participation in incentive-based programs.

For basins with significant nonagricultural nonpoint sources, DEP will work closely with local municipalities, EPA's Region IV, and the WMDs. While NPDES and the state's stormwater program largely provide the regulatory authority for urban nonpoint sources, close coordination will be required to ensure that nonpoint pollutant reductions are implemented. DEP and the WMDs may adopt rules for BMPs or other measures necessary to achieve pollution load reductions for TMDL allocations made to nonagricultural pollutant sources. Implementation would be carried out by those parties responsible for the pollutant sources, with assistance from DEP and the WMDs. In many cases, municipalities with significant nonpoint sources also have domestic wastewater facilities that discharge to the same basin. Pollutant trading may be considered within individual basins.

Key actions necessary to implement the TMDL allocations will be described in the MAP, including the activity (such as stormwater retrofits, BMPs to be implemented, restoration actions, or wastewater facility construction), the responsible parties, and potential sources of funding. The MAP will also summarize other key management activities, including actions described in water supply plans, PLRGs, SWIM plans, and NEP plans for waters in the basin.

Another key activity in Phase 4 is the development of a Monitoring and Evaluation Plan to measure the effectiveness of management activities that are currently being implemented or will be implemented during the upcoming cycle. Participants will agree to performance measures that will provide feedback and allow management actions to be fine-tuned during the next cycle. Performance measures will address both the tracking of management activities as they are implemented (the number of BMPs, for example) and direct measures of water quality improvement in the basin.

Once a draft MAP is prepared, at least one public meeting will be held to obtain input from the public at large (major stakeholders should be involved throughout the development of the MAP). To the extent possible, key participants will sign formal agreements to demonstrate their commitment to implementing the management activities described in the MAP.

Phase 5: Implementation

In Phase 5, participants begin (or continue) implementing the MAP. Implementation can include any activity that enhances water quality, such as the implementation of BMPs for agriculture and stormwater, public education, habitat protection and restoration, and the issuance or revision of NPDES permits.

Although it will not be possible during the initial basin management cycles, DEP's long-term implementation goal is to coordinate the permitting cycle for wastewater facilities within the watershed so permits are issued in the fifth year of the cycle. This coordination includes stormwater permits, once the EPA delegates the NPDES stormwater program to DEP.

Rule development and/or legislative action will be initiated as needed to strengthen the management tools available for use in later cycles. It is also important in this phase to transfer the information gained during the cycle to the public and governmental entities outside the BWM. Public education to achieve restoration and protection goals is essential if the watershed approach is to succeed.

Implementation Details. While the various pollution sources will take primary responsibility for implementing the proposed management activities, the basin team will continue to be involved. As part of the 319 Nonpoint Source Management Program, staff in DEP's Nonpoint Source Section will process grants for implementing BMPs that reduce nonpoint loading, with priority given to projects in impaired waters. In cooperation with other participants, staff in the WQSS will take the lead on rule development needed for reclassification of waters in the basin or any changes in standards (such as site-specific alternative criteria). The BWM's other sections will provide important technical assistance, review projects, monitor progress, and help to troubleshoot problems as needed.

As mentioned in Chapter 1, a key long-term goal of the watershed approach is to integrate permitting activities into the basin management cycle so that permits within a

basin can be renewed during Phase 5. However, this integration will require the synchronization of the permits, which would require permits to either be administratively continued beyond five years or to be issued for less than five years. Given the workload implications of either synchronization method, DEP plans to assess the success of the watershed approach before committing to basinwide permitting.

The watershed approach is an iterative process that will focus on issues incrementally, as resources allow, within each basin management cycle. Not all issues will be addressed in the first cycle. Successive cycles will expand the issues addressed and evaluate performance on work already implemented.

Chapter 3

SCHEDULE FOR IMPLEMENTATION OF THE WATERSHED APPROACH

This chapter provides schedules for initiating the watershed approach, including the schedule for transitional issues and a long-term schedule for implementing the approach in all basins in Florida. The previous chapters describe the activities conducted during each phase of the basin management cycle.

Some key partnerships will need to be established before the initiation of the management cycle. These partners include DEP's Division of Technical Services, DEP's district offices, and the WMDs. The BWM will need these early partnerships to initiate the watershed approach, since they can provide program products, staff, or other services. Many other potential partners will be asked to join the process as the cycle moves into specific basins.

The initiation of the watershed approach will require building either formal or informal collaborative relationships with agencies such as the WMDs and the Fish and Wildlife Conservation Commission, regulated industry, and the general public. Partnerships are critical to the successful implementation of the watershed approach. For example, the activities of the BWM will be coordinated with the activities of existing SWIM and NEP committees.

The review and discussion of the document will be used as the forum to build these necessary partnerships. Based on a proposed starting date of July 1, 2000, time will be available to build the needed interagency and interprogram relations. Table 11 contains a timeline for review of the document, with the goal of making it final by June 2000. The dates listed are targets for completing key tasks.

The proposed starting date reflects the beginning of the state budget year, July 1. The advantage to using the state budget year is that new legislative requirements, additional staffing, and funding will be available at the start of a basin management cycle. Water quality information collected to evaluate the current status of water resources will become available during the first half of year one of each cycle and can be incorporated into the Status Report.

Table 11: Target Dates

Date	Activity
End of July through September 1999	1. Distribute draft document to BWM for review
End of July through November 1999	2. Present plan and request comments from DWRM's senior management, Secretary's Office, district offices, and other DEP divisions
End of November 1999	3. Deadline for comments
December 1999	4. Complete revisions to document
	5. Present to and request endorsement from Secretary of DEP
January through March 2000	6. Present plans and request comments and participation from WMDs, and other state and regional agencies and local government
	7. Hold public workshops and request comments
April through June 2000	8. Final revisions to plan due; make provisions to initiate cycle
July 1, 2000	9. Start basin management cycle

It is important to note that the implementation of the watershed approach will begin in only one-fifth of the state. Another one-fifth will be added each year until full-scale implementation is reached in five years.

With the full implementation of the watershed approach, the BWM will have some level of activities going in every reporting unit across the state. Table 12 provides the schedule for implementing the basin management cycle statewide. Each basin group has been assigned a number indicating the proposed order for carrying out the cycle (see Figure 2).

Figure 2: Proposed Order for Implementing the Basin Management Cycle

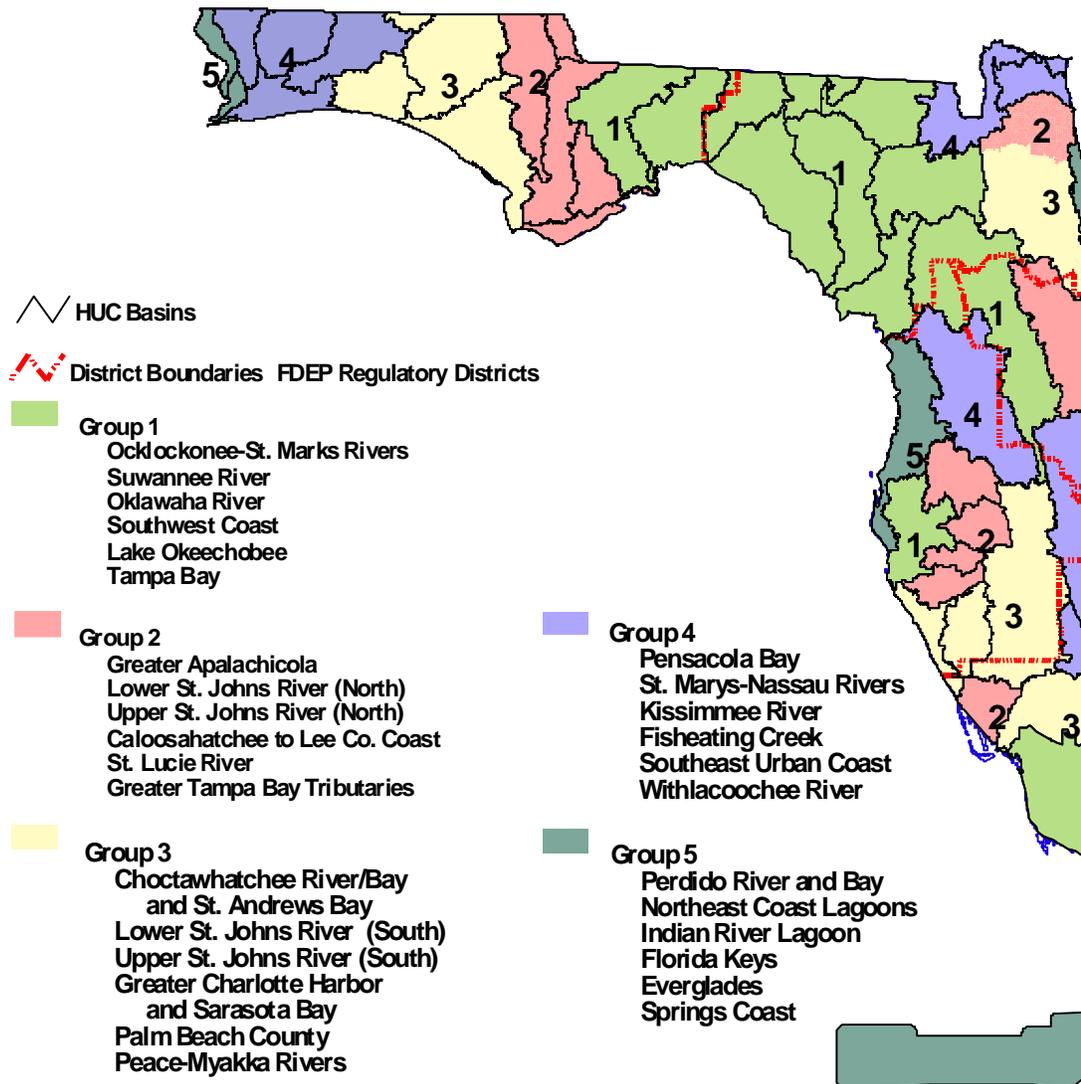


Table 12: Schedule of Activities

	2000	2001	2001	2002	2002	2003	2003	2004	2004	2005	2005	2006	2006	2007	2007	2008	2008	2009	2009	2010	
	FY 2000		FY2001		FY2002		FY2003		FY2004		FY2005		FY2006		FY2007		FY2008		FY2009		
BASIN GROUP																					
GROUP 1	PHASE 1	PHASE 2		PHASE 3		PHASE 4		PHASE 5		PHASE 1	PHASE 2		PHASE 3		PHASE 4		PHASE 5				
GROUP 2			PHASE 1	PHASE 2		PHASE 3		PHASE 4		PHASE 5		PHASE 1		PHASE 2		PHASE 3		PHASE 4			
GROUP 3					PHASE 1	PHASE 2		PHASE 3		PHASE 4		PHASE 5		PHASE 1		PHASE 2		PHASE 3			
GROUP 4							PHASE 1	PHASE 2		PHASE 3		PHASE 4		PHASE 5		PHASE 1		PHASE 2			
GROUP 5									PHASE 1	PHASE 2		PHASE 3		PHASE 4		PHASE 5		PHASE 1			

Legend:

Group 1	Group 2	Group 3
Ochlocknee/St. Marks Rivers	Greater Apalachicola	Choctawhatchee River/Bay and St. Andrew Bay
Greater Suwannee River/Nature Coast	Lower St. Johns River (North)	Lower St. Johns River (South)
Ocklawaha River	Upper St. Johns River (North)	Upper St. Johns River (South)
Southwest Coast	South Florida–Everglades Agricultural Area/ St. Lucie River	Greater Charlotte Harbor/Sarasota Bay
Lake Okeechobee	Caloosahatchee River to Lee Coast	Palm Beach County
Greater Tampa Bay	Greater Tampa Bay tributaries	Peace/Myakka Rivers
Group 4	Group 5	
Pensacola Bay	Perdido River and Bay	
St. Marys/Nassau Rivers	Indian River Lagoon	
Kissimmee River/Fisheating Creek	Florida Keys	
Urban Southeast Coast	Everglades	
Withlacoochee River	Springs Coast	

Chapter 4

RESOURCE NEEDS FOR MAKING THE TRANSITION

Many of the resources needed to implement the watershed approach will come from more efficiently using existing resources and improving coordination among federal, state, regional, and local agencies and organizations. While existing resources are expected to carry out much of the work, some additional staff and funding will be essential. As the basin management cycle is implemented, staff time and expenditures will be tracked so that DEP can develop a staffing analysis and budget needed for accomplishing the goals of the watershed approach. The amount of additional staff and funding will partly depend on the degree of participation of other governmental agencies as well as DEP staff outside the BWM.

Staffing

At the present time it is uncertain how many additional program staff will be needed to accomplish the activities outlined in this document. Currently, the BWM has sixty-six staff positions, forty-four of which are career service positions. The BWM anticipates that the present staff can handle the workload in the first few years, since only a portion of the state's basin groups will be addressed during the initial phases of the management cycle.

Based on the identification of participants for implementing the watershed approach in Chapter 2, it is anticipated that new technical positions will be needed to carry out the function of basin coordinator and to perform TMDL development. Additional staff may also be needed to carry out additional responsibilities within the WPCS, AMS, WQAS, and WQSS. Currently, the BWM has ongoing pilot studies to assess the potential workload in selected phases of the management cycle. As these pilot studies are completed and work activities tracked through the first cycle, DWRM will be better able to define the number of new staff needed to implement the watershed approach effectively.

Funding

Financial support will be essential for successfully implementing the watershed approach. Although a number of potential funding sources exist for watershed management activities, it is uncertain if the existing funding levels will be adequate to implement all of the management activities fully. For example, last year only \$740,000 in EPA funds was available for TMDL development in the Southeast region of the United States. To carry out TMDL activities for approximately 700 waterbody segments on the 303(d) list in Florida under the ambitious thirteen-year schedule, it is imperative that other funds be made available for TMDL development. The following sections describe some of the common federal and state funding sources that provide money for watershed management activities. Additional sources of funding can be found in the EPA document, *Catalog of Federal Funding Sources for Watershed Protection*.

CWA Section 106 Water Pollution Control Program Grants

Section 106 of the CWA authorizes the EPA to provide federal assistance to the states and interstate agencies to establish and implement ongoing water pollution control programs. Prevention and control measures supported by state water quality management programs include permitting, pollution control activities, surveillance, monitoring, and enforcement; advice and assistance to local agencies; and training and public information.

Increasingly, the EPA and the states are working together to develop basinwide approaches to water quality management. The Section 106 program is helping to foster a watershed protection approach at the state level by looking at the states' water quality problems holistically and targeting the limited finances available for effective program management.

In the last fiscal year the state received approximately \$2.1 million from this grant. The funds are used for salaries, equipment purchases, and contractual support. In the basin management cycle a significant portion of the state's funds are expected to be used for monitoring, TMDL development, and MAP development.

CWA Section 104(b)(3) Water Quality Cooperative Agreements

Under the authority of Section 104(b)(3) of the CWA, the EPA makes grants to state water pollution control agencies, interstate agencies, and other nonprofit institutions, organizations, and individuals to promote the coordination of environmentally beneficial activities. These activities include stormwater control, sludge management, and pretreatment. The efforts eligible for funding under the Section 104(b)(3) program include research, investigations, experiments, training, environmental technology demonstrations, surveys, and studies related to the causes, effects, extent, and prevention of pollution.

The EPA's regional offices select grant proposals that are most likely to advance the states' and EPA's ability to deal with water pollution problems. EPA headquarters also manages grants that address concerns of a national scope. Unlike the Section 106 program, Section 104(b)(3) grants may not be used to fund ongoing programs or administrative activity.

The state received \$276,000 in the grant awarded for a four-year period beginning in August 1996. The state uses the majority of this money for monitoring activities and will continue to do so as the watershed approach is implemented.

CWA Section 319 Nonpoint Source Management Program

The program provides grants to the states to implement nonpoint source projects and programs in accordance with Section 319. Under Section 319, the states receive grant money that supports a wide variety of activities, including technical assistance, financial assistance, education, training, technology transfer, demonstration projects, implementing management controls, and monitoring to assess the success of specific

nonpoint source implementation projects. Examples of previously funded projects include the installation of BMPs for animal waste; the design and implementation of BMP systems for stream, lake, and estuary watersheds; basinwide landowner education programs; and lake projects previously funded under the CWA Section 314 Clean Lakes Program.

During the last few years, the state has received \$3.8 million in 319 funds. Approximately 20 percent of these funds are used to support DEP's nonpoint source and bioassessment programs, and the remainder is used to fund grants and contracts. Part of the funds in the state's 319 program is used to support the goals and objectives of the SWIM Program and integrated watershed management. Last year, the EPA provided an additional \$3.8 million as part of the Clean Water Action Plan (CWAP). This additional funding is to be spent in the priority watersheds established in the Unified Watershed Assessment, with up to 20 percent of the funds used to support departmental monitoring and TMDL development in priority watersheds.

CWA Section 604

Funds allotted to the states under this section are used to carry out planning under Sections 205(j) and 303(e) of the CWA. Under Section 205(j) the grants are used to carry out water quality management planning, such as point and nonpoint source implementation plans to meet and maintain water quality standards, as well as to determine the degree of water quality problems. The states use the funds allocated under Section 303(e) to prepare a continuous planning process that provides schedules, which include developing effluent limitations and TMDLs and revisions to water quality standards.

The state received a \$708,000 grant in the last fiscal year and used this money for monitoring activities. The use of these funds in the watershed approach will also be targeted for the monitoring phase of the cycle.

Environmental Quality Incentives Program

The Environmental Quality Incentives Program (EQIP), administered by the U.S. Department of Agriculture (USDA), was established to provide a single, voluntary conservation program for farmers and ranchers to address significant natural resource needs and objectives. Nationally, the program provides technical, financial, and educational assistance, half of it targeted to livestock-related natural resource concerns and the other half to more general conservation priorities. Under EQIP, the USDA can provide cost-share assistance to family-sized farms and ranches for up to 75 percent of the costs of certain environmental protection practices, such as grassed waterways, filter strips, manure management facilities, capping abandoned wells, and wildlife habitat enhancement. The program is available primarily in priority areas where there are significant natural resource concerns and objectives.

These funds are expected to be available for activities associated with the implementation phase of the basin management cycle.

Conservation Reserve Enhancement Program

The Conservation Reserve Enhancement Program (CREP) is part of the USDA's Conservation Reserve Program (CRP). Under CREP, federal CRP and state resources are combined to provide special financial incentives to farmers and ranchers to help solve agriculture-related environmental problems. In exchange for payments, farmers and ranchers agree to take their most environmentally sensitive lands out of production for periods of at least ten years and plant native grasses, trees, or other vegetation to reduce erosion, improve water quality, and provide habitat for threatened wildlife.

DEP will request these funds for carrying out activities in the implementation phase of the basin management cycle.

Clean Water State Revolving Funds

The EPA awards grants to the states to capitalize their Clean Water State Revolving Funds (SRFs). The states, through the SRF, make loans for high-priority water quality activities. The states lend money to municipalities, communities, citizens' groups, nonprofit organizations, and private citizens implementing nonpoint source and estuary management activities (provided for in state plans developed under CWA Sections 319 and 320). As loan recipients pay back into the fund, money is available for new loans to be issued to other recipients.

In 1997, the Florida legislature amended the SRF law to allow up to 10 percent of the funds to be used for stormwater management. The primary objective is for stormwater quality retrofitting projects. These funds will be targeted for use in the implementation phase of the cycle.

Source Water Assessment and Protection (SWAP) Program

The 1996 amendments to the SDWA require states to develop and implement an approved SWAP program designed to assess potential sources of pollution to public drinking water supplies. The program has four required components: the delineation of the source water assessment area, an inventory of potential contaminants, a susceptibility analysis, and a means for releasing the assessment results to the public. Funds for this program are available through the Drinking Water State Revolving Fund. Through the fund, the state can provide loans to local governments to conduct contaminant source inventories that meet the source water assessment requirements.

The implementation of the SWAP program components will be coordinated with the watershed approach's basin management cycle, where possible. For example, in basins where there are concurrent schedules for both programs, it is expected that source water assessments will be conducted as part of the preliminary basin assessment.

Water Quality Assurance Trust Fund

This trust fund was established by the state as a very broad-based fund for use in responding to incidents of contamination (other than petroleum fuels) that pose a

serious danger to the quality of ground water and surface water resources or are threats to public health or safety. Authority is granted under Chapter 376.307, F.S.

Approximately \$10.5 million of trust fund monies are appropriated to the DWRM. The funds are used for private drinking water well cleanup, the delineation of ground water contamination, ambient water quality monitoring networks, ground water quality investigations, a University of Florida volunteer citizen-based monitoring program called Lake Watch, and cooperative funding with the USGS for water resource investigations.

The trust fund will provide limited future funding for ground water quality investigations indicated by basin Plans of Study.

Florida Forever

The Florida Forever program, the successor to the P2000 program that provided funding for land acquisition, funds watershed restoration and protection activities and also continues funding for the acquisition of environmentally significant lands. To address water quality impacts associated with nonpoint sources, a percentage of the money will be divided equally between DEP and DACS. The funds available to each agency are estimated to be greater than \$2 million apiece for each of the next ten years. They are to be used for research, development, demonstration, and implementation of suitable BMPs or other measures used to achieve surface water quality standards. The implementation of BMPs and other measures may include cost-share grants, technical assistance, implementation tracking, and conservation leases or other agreements for water quality improvement.

Appendix A

FLORIDA'S WATER RESOURCE MANAGEMENT PROGRAM: A GOOD FOUNDATION

The environmental protection laws enacted by Congress and the states in the early 1970s established the foundation for the significant improvements in air and water quality observed over the last three decades in areas that were impaired. These laws authorized programs for the control, abatement, and remediation of a wide variety of pollution sources and continue to serve as the foundation for water resource protection. Since the 1970s, the state has built on this foundation with additional protective laws and the implementation of programs to protect water resources through regulatory, planning, or restoration activities. Collectively these laws and programs describe what can informally be called Florida's water resource management program.

The following sections briefly discuss the statutory and programmatic framework for Florida's existing water resource programs. Emphasis is given to the statutes and programs that most involve or affect the BWM within DWRM. This review summarizes environmental protection in Florida, emphasizing the complexity of existing environmental laws and the diversity of the implementing authorities.

Statutory Framework

Federal Water Resource Protection Statutes

The EPA administers the environmental laws passed by Congress. State statutes frequently mirror federal law and provide state agencies with the authority to accept the delegation of federal programs. Florida has obtained delegation for most of the federal programs administered by the EPA. State programs are required to be at least as stringent as federal requirements, but flexibility is provided for the states to adopt more stringent requirements based on local needs.

The following sections briefly discuss the federal statutes that pertain to the BWM:

Clean Water Act. The CWA was established to maintain and restore the chemical, physical, and biological integrity of the nation's waters. The CWA authorizes many activities to achieve these goals, including the following:

1. *NPDES requires permits for the discharge of wastewaters from point sources into the nation's surface waters.*
2. *The Pretreatment Program requires the treatment of toxic pollutants from nondomestic sources before discharge into a publicly owned treatment facility.*

3. *Authority is provided to set industry-specific effluent standards (TBELs) and to set water quality standards for all contaminants in surface water.*
4. *Funding for the construction of sewage treatment plants and stormwater projects is provided through a State Revolving Fund Program.*
5. *The EPA uses the information from each state's biennial Water Quality Assessment, more commonly known as the 305(b) report, to report to Congress on national water quality.*
6. *States are required to identify waters that are not meeting water quality standards and to establish TMDLs for water bodies, as discussed in Chapter 1. TMDLs specify the amount of pollution that can be assimilated in a water body and are then used as the basis to allocate pollution control responsibilities among the contributors.*
7. *The CWA provides funding and direction for the control of nonpoint source pollution control mechanisms.*
8. *The Clean Water Action Plan addresses protection efforts on a watershed scale.*

Safe Drinking Water Act. The SDWA was established to protect the quality of drinking water in the United States. The act authorized the EPA to establish national standards for toxic and nontoxic contaminants in drinking water systems, create a program to regulate underground injection wells, and protect sole-source aquifers. It also requires each state to implement wellhead and source water protection programs.

The EPA may designate sole-source aquifers at the request of citizens or other government agencies. These designations provide enhanced oversight requirements to limited drinking water supplies. Projects involving federal entities or funding that may affect designated sole-source aquifers may require more stringent environmental protection requirements.

National Status and Trends Program. The National Oceanic and Atmospheric Administration (NOAA) collects and chemically analyzes sediment samples from sites located in part of the National Status and Trends Program. This program is part of NOAA's responsibilities under Title II of the Marine Protection, Research and Sanctuaries Act of 1972; Section 6 of the National Ocean Pollution Planning Act of 1978 ; and other federal laws.

Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). FIFRA authorizes the EPA and delegated state agencies to control the distribution, sale, and use of pesticides. All pesticides used in the United States must be registered (licensed) by the

EPA. The registration process requires the submittal of data that detail the product's environmental and public health impacts. The information in support of registration must include impacts to ground and surface water quality, toxicological information, and physical and chemical characteristics of the chemical and its metabolites. The act also provides the authority to require designated pesticide users to register pesticide purchases and for commercial applicators to receive certification.

It is acknowledged that pesticides are by their nature toxic, but *significant* harm to the environment should not result from their use. Registration is designed to provide reasonable assurance that pesticides will be properly labeled and if applied in accordance with the label specifications, unreasonable harm to the environment will not result.

Table 13 lists these and many other federal statutes that address environmental protection.

Table 13: Federal Statutory Framework

TITLE	AUTHORIZED ACTIVITY
Clean Air Act (CAA)	Regulates air emissions from area, stationary, and mobile sources
Clean Water Act (CWA)	Protects, conserves, and maintains water quality
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)	Establishes requirements for closed and abandoned hazardous waste sites
Endangered Species Act (ESA)	Requires the conservation of endangered plants and animals and their habitats
Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)	Regulates pesticides
Food Quality Protection Act (FQPA)	Contains measures to decrease exposure to toxic chemicals in the food supply
National Environmental Policy Act (NEPA)	Creates a national charter for environmental protection, establishing policy and goals
Pollution Prevention Act (PPA)	Contains strategies to avoid the generation of pollution
Resource Conservation and Recovery Act (RCRA)	Addresses the generation, treatment, transportation, storage, and disposal of hazardous waste
Safe Drinking Water Act (SDWA)	Protects drinking water quality
Superfund Amendments and Reauthorization Act (SARA)	Provides additional authority for the Superfund program
Toxic Substances Control Act (TSCA)	Requires testing for possible toxic effects before commercial manufacture

Florida Water Resource Protection Statutes

Florida’s environmental statutes are organized primarily under the following two sections of the Florida Statutes:

- Title XXVIII – Natural Resources, Conservation, Reclamation, and Use***
- Title XXIX – Public Health***

DEP derives its primary authority for environmental management under the following three statutes:

Chapter 403, F.S. – Environmental Control. Chapter 403, F.S., creates DEP and establishes its authority to adopt rules and to implement a broad range of water and water-related protection programs. Specifically, the statute authorizes the development of water quality standards, ground water quality monitoring, the state’s regulatory program, acceptance of federal program delegation, nonpoint source control, drinking water oversight, and wetlands permitting. It also establishes solid and hazardous waste control programs. As part of the 1999 Florida Watershed Restoration Act, Chapter 403 now provides authority for the TMDL program and establishes a process for the listing of impaired waters and for the development, adoption, and implementation of TMDLs. The BWM and DWRM generally operate under the authority of this chapter.

Chapter 373, F.S. – Water Resources. Chapter 373, F.S., is the primary statute addressing water management issues, including water supply, flood control and protection, water quality protection, and natural systems consideration. The statute provides authority to the state’s five regional WMDs to implement rules and programs, and creates the SWIM and Save Our Rivers programs. The WMDs operate under the general supervisory authority of DEP, and the agencies share the authorities granted under this chapter. Activities authorized under this chapter include water resource planning, well construction standards and water well contractor requirements, flood and erosion control, water use regulations, surface water management systems regulation, and stormwater control.

Chapter 376, F.S. – Pollutant Discharge Prevention and Removal. Chapter 376, F.S., provides authority to DEP to implement many surface and ground water remediation activities. Activities authorized under this chapter include sampling for contamination and remediation of private drinking water wells, remediation of petroleum- or solvent-contaminated sites, and implementation of a brownfields redevelopment program. This chapter establishes the Water Quality Assurance and Inland Protection Trust Funds.

The following five statutes that significantly impact DWRM’s programs are implemented by other state agencies:

Chapter 163, F.S. – Intergovernmental Programs. Chapter 163, Part II, F.S., the Local Government Comprehensive Planning and Land Development Regulation Act, requires local governments to develop and implement comprehensive plans and accompanying regulations to assure that new growth minimizes adverse social, financial, and environmental impacts. The program is implemented by the Florida Department of Community Affairs (DCA), which reviews and approves the local plans, regulations, and amendments to assure that they are consistent with the State Comprehensive Plan and other relevant resource management laws and rules.

Chapter 186, F.S. – State and Regional Planning. Chapter 186, F.S., the Florida State Comprehensive Planning Act of 1972, requires state and regional agencies to develop and implement strategic plans consistent with the State Comprehensive Plan. The statute provides a process for the development and revision of the State Comprehensive Plan. It also creates Regional Planning Councils and authorizes their activities.

Chapter 187, F.S. – State Comprehensive Plan. Chapter 187, F.S., provides long-range policy guidance for the social, economic, and physical growth of the state. The plan contains specific goals and policies for twenty-six different areas, fifteen of which are water related, including water resources, coastal and marine resources, natural systems and recreational lands, mining, land use, and agriculture. The State Comprehensive Plan has a major bearing on all water planning activities. Chapter 186, F.S., State and Regional Planning, contains guidelines for implementing the State Comprehensive Plan at the state and regional level and includes provisions for water planning processes.

Chapter 381, F.S. – Septic Tanks and Other Public Health Issues

Chapter 487, F.S. – Pesticides. Chapter 487, F.S., provides the framework for managing pesticide use in Florida and establishes the Department of Agriculture and Consumer Services (DACS) as the state lead agency on pesticide use. The statute also establishes the Pesticide Review Council (PRC) and directs DEP to appoint a scientific representative as a member. The PRC advises the Commissioner of DACS on the registration, sale, and use of pesticides. The registration process authorized under this statute evaluates the potential environmental and public health impacts from pesticide use. Other activities authorized under this chapter include enforcement, the licensing of pesticide applicators, and reporting requirements for specific types of pesticide use. DEP maintains a Memorandum of Understanding with DACS that addresses the coordination of effort on this area of shared concern.

Table 14 lists the laws comprising Florida’s statutory framework.

Table 14: Florida’s Statutory Framework

STATUTE	TITLE	AUTHORIZED ACTIVITY
Chapter 161, F.S.	Beaches and Shore Preservation	Coastal construction regulation and protection
Chapter 163, F.S.	Intergovernmental Programs	Local government planning mechanisms
Chapter 186, F.S.	State and Regional Planning	State and regional agency planning mechanisms
Chapter 187, F.S.	State Comprehensive Plan	Long-range policy guidance
Chapter 258, F.S.	State Parks and Preserves	State parks, aquatic preserves, and wild and scenic rivers
Chapter 298, F.S.	Drainage and Water Control Districts	Subregional water control districts, water control plans
Chapter 369, F.S.	Conservation	Aquatic plant management
Chapter 373, F.S.	Water Resources	Water management issues
Chapter 375, F.S.	Multipurpose Outdoor Recreation; Land Acquisition, Management, and Conservation	Acquisition and management of environmentally sensitive lands
Chapter 376, F.S.	Pollutant Discharge Prevention and Removal	Water quality remediation
Chapter 378, F.S.	Land Reclamation	Reclamation of mined lands
Chapter 380, F.S.	Land and Water Management	Land planning
Chapter 381, F.S.	Septic Tanks and Other Public Health Issues	Septic tanks
Chapter 388, F.S.	Mosquito Control	Pesticide use to control mosquitoes
Chapter 403, F.S.	Environmental Control	Primary environmental protection statute
Chapter 487, F.S.	Pesticides	Pesticide management
Chapter 576, F.S.	Agricultural Fertilizers	Fertilizer use
Chapter 581, F.S.	Plant Industry	Pesticide use during agricultural emergencies
Chapter 582, F.S.	Soil and Water Conservation	Practices to conserve soils
Chapter 597, F.S.	Aquaculture	Environmental impacts of aquaculture facilities

Programmatic Framework

Federal Environmental Protection Programs

Many federal agencies implement environmental protection programs. The Departments of Agriculture and Interior, the Fish and Wildlife Service, and the Army Corps of Engineers all maintain active programs in Florida and will interact with the BWM. This document, however, only addresses those programs that will interact consistently with the BWM on a wider spectrum of issues.

Environmental Protection Agency. The EPA, the nation's lead organization for implementing environmental law, is integral to the success of watershed management. Serving as the model for which most state environmental agencies are organized, the EPA implements the nation's air and water protection programs, solid and hazardous waste management, and environmental remediation activities. It is also the nation's lead agency for regulating pesticides, which differs from most state organizational hierarchies that invest this authority in state departments of agriculture.

The EPA is organized into ten regional offices. Florida is within Region IV, which is based in Atlanta, and will interact at this level most often. The Region IV office is organized into seven divisions or offices. Table 15 lists these divisions and their primary program responsibilities.

Table 15: Environmental Protection Agency – Region IV

DIVISION OR OFFICE NAME	PROGRAM RESPONSIBILITIES
Policy and Management	Provides budget, planning, fiscal, information system support, and personnel services
Congressional and Public Affairs	Contains the Office of the Regional Administrator
Water Management	Implements CWA and SDWA programs to protect surface and ground water quality and ensure a safe drinking water supply
Waste Management	Implements RCRA and CERCLA programs to remediate contaminated sites
Air, Pesticides, and Toxics Management	Implements CCA, FIFRA, and TSCA programs to protect air quality, manage pesticides, and control toxics
Science and Ecosystem Support	Provides laboratory and support services
Environmental Accountability	Manages Aquatic Preserves, National Estuarine Research Reserves, state Buffer Preserves. Assists with management of the Florida Keys National Marine Sanctuary. Also monitors and regulates shellfish-harvesting areas, protects endangered aquatic species, conducts marine research, and conducts outreach

National Estuary Program. Created in 1987 by amendments to the CWA, NEP establishes a forum for stakeholders to work together to identify problems in estuaries, addresses those problems, and creates a framework for implementing formal management plans for restoration and protection. The program focuses on maintaining the integrity of entire estuarine systems by considering their physical, chemical, and

biological properties, as well as their economic, recreational, and aesthetic values. The Tampa Bay NEP played a critical role in the successful development of a restoration management plan for this estuary. Florida currently has four NEP designations: Charlotte Harbor, Indian River Lagoon, Sarasota Bay, and Tampa Bay. The Charlotte Harbor, Sarasota Bay, and Tampa Bay NEPs all participate in the Gulf of Mexico Program.

Gulf of Mexico Program (GMP). The GMP was formed in 1988 to develop and implement voluntary, incentive-based management strategies to protect, restore, and maintain the health and productivity of the Gulf of Mexico ecosystem. Underwritten by the EPA, it is a partnership program designed to operate through a network of citizens and institutions. GMP provides a tool to leverage the resources of eighteen different federal agencies; a variety of environmentally minded agencies from Florida, Alabama, Mississippi, Louisiana, and Texas; and numerous public and private organizations. The GMP extends its influence in Florida from Pensacola to Florida Bay. A unique experiment in better government, the program's success comes from its ability to engage many people across the Gulf region in leadership and to implement projects that move the state in an environmentally and economically sound direction.

Department of the Interior.

Florida Environmental Protection Programs

Florida has a comprehensive set of programs that implement the environmental programs authorized by statute. These programs are distributed across a number of state and regional agencies. This section briefly lists the programs and describes those most directly involved with the initial implementation of the watershed approach.

Department of Environmental Protection. DEP wields broad and diverse authority to protect, conserve, and manage Florida's environment and natural resources. The department implements programs that protect air and water quality, remediate contaminated sites, control invasive pests, manage state-owned lands and aquatic preserves, investigate environmental crimes, and operate more than 150 state parks.

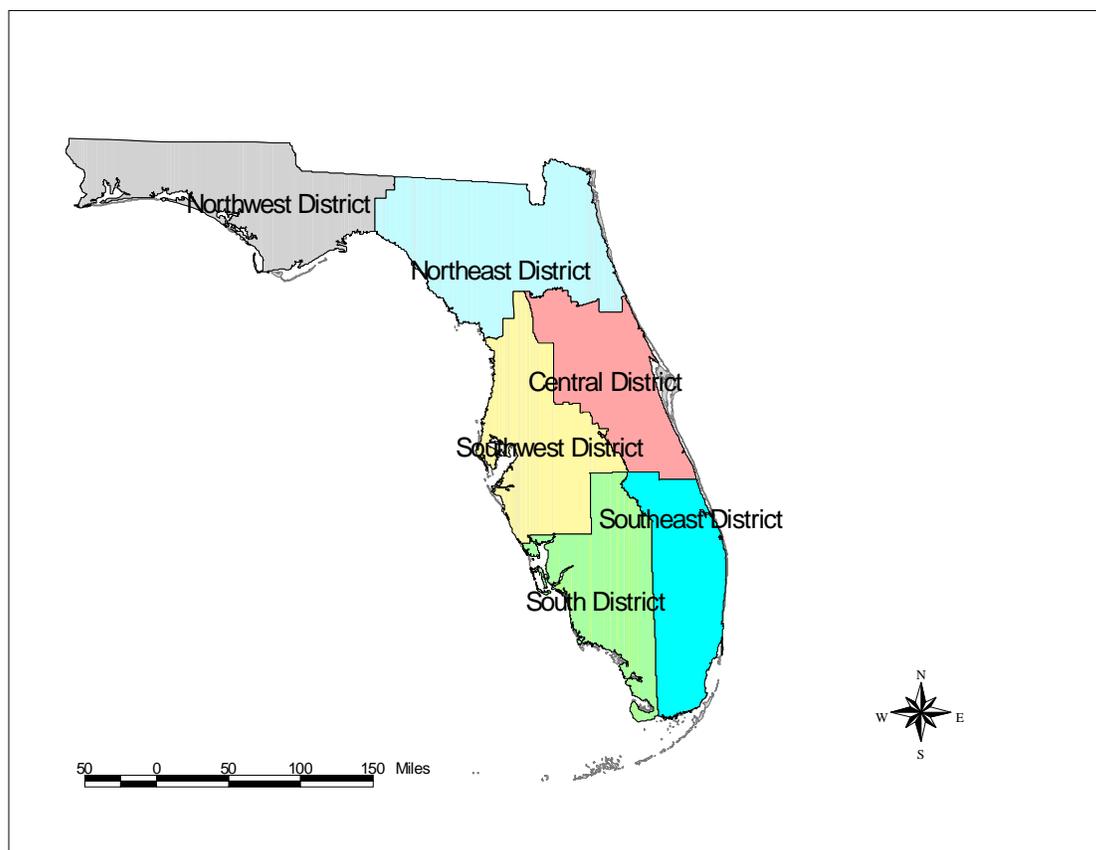
DEP is organized into seven divisions, six regulatory district offices, and several district, branch, and satellite offices that implement programs at a local level. Table 16 lists the department's divisions and their primary program responsibilities. The Office of Ecosystem Management, organized within the Secretary's Office, is listed to reflect its important role in watershed management.

Many DEP programs are implemented through regional or local offices, or are delegated to regional agencies or local governments. DEP's six regulatory district offices implement many of the permitting activities performed by the department and provide technical expertise at a regional level. Figure 3 shows the district boundaries.

Ecosystem Management at DEP

As part of the 1993 legislation creating DEP, the agency was directed to "protect the functions of entire ecological systems through enhanced coordination of public land acquisition, regulatory, and planning programs." The department, working with other state agencies and private citizens, has developed an Ecosystem Management (EM) strategy to accomplish this mission. The goals of EM are to provide the following:

Figure 3: Department of Environmental Protection Districts



- *Better protection and management of Florida's ecosystems.*
- *An agency structure and culture based on a systems approach to environmental protection and management.*
- *An ethic within the citizenry of shared responsibility and participation in the protection of the environment.*

EM encourages innovative and cooperative solutions to environmental problems, accountability in decision making, better integration of governmental and private programs, and the dismantling of institutional barriers to wise stewardship of Florida's natural and cultural resources.

Stewardship is the central theme of EM. Stewardship conveys a strong sense of responsibility, pride, and ownership for Florida's land, air, water, and other resources. It acknowledges that government cannot preserve Florida's ecosystems without the involvement and support of all its citizens.

EM is designed around four fundamental concepts: place-based management, commonsense regulation, cultural change, and "foundations." These concepts address the need for a holistic analysis of geographic areas, a focus on the intent of protective regulations, a higher degree of interactivity between government and the public, and an open planning and implementation infrastructure to achieve goals. The watershed approach described in this document represents DWRM's effort at implementing EM concepts in Florida.

Division of Water Resource Management

DEP's DWRM administers programs to ensure that Florida's waters maintain their designated uses. DWRM oversees the construction and operation of drinking water treatment facilities and domestic and industrial wastewater treatment plants. It administers the state's reclaimed water, reuse, and ground water protection program, and oversees mined land reclamation, beach management and restoration, and environmental and wetlands permitting.

DWRM has the major share of responsibility for implementing the requirements of Florida's Environmental Control Act and the federal CWA and SDWA. It is organized into six bureaus (including the Office of Water Policy Section), although some programs are organized directly under the Assistant Division Director (see the following section). Table 17 describes DWRM's organization and program responsibilities.

The Office of Water Policy Section works closely with the WMDs on planning, policy, and general coordination issues. The Water Policy Section implements Chapter 62-40, F.A.C., Water Policy. This policy rule provides goals, objectives and plans for the implementation of the programs required by Chapters 187, 373, and 403, F.S.

State water policy requires the development of DWMPs for the individual WMDs. The Water Policy Section works closely with the WMDs during this process. Current planning efforts focus on the inclusion of a watershed section within each of the DWMPs. The section also supervises the development of the Florida Water Plan that encompasses DEP activities and incorporates the DWMPs.

Table 16: Department of Environmental Protection

DIVISION NAME	PROGRAM RESPONSIBILITIES
Administrative Services	Provides a budget, planning, fiscal, and personnel services
Air Resource Management	Develops air quality standards, permits air pollution sources, monitors air quality, performs compliance inspections of permittees
Resource Assessment and Management	Provides information system support, laboratory and geologic technical services
Recreation and Parks	Operates and maintains more than 150 Florida state parks
State Lands	Manages Florida's large land acquisition program, regulates the control of invasive plants
Waste Management	Implements state and federal environmental cleanup programs, manages solid and hazardous waste, manages above and underground storage tanks and pollution prevention and recycling programs
Water Resource Management	Develops water quality standards; permits wastewater dischargers; oversees mined land reclamation, TMDL development, and water quality monitoring; manages eroding beaches; permits wetland and aquatic construction activities; develops management practices for nonpoint source pollution

Table 17: Division of Water Resource Management

BUREAU NAME	PROGRAM RESPONSIBILITIES
Mine Reclamation	Administers programs for mine reclamation and mine environmental resource permits, manages phosphogypsum stack systems, provides mine safety training
Submerged Lands & Environmental Resources	Administers and provides oversight of Environmental Resource Permitting program, provides training and technical support to district offices and WMDs, carries out wetlands delineation, assists in the development of nonpoint source management practices, provides technical assistance for responsibilities under the Everglades Forever Act, administers the mangrove statutes
Water Facilities Funding	Provides financial and technical assistance for construction of drinking water and wastewater treatment facilities, and for stormwater management systems
Water Facilities Regulation	Manages drinking water, domestic/industrial wastewater, and underground injection control programs; oversees domestic residuals and reclaimed water reuse programs; implements industrial pretreatment and power plant regulations; provides compliance/enforcement and technical assistance to district offices and local governments
Watershed Management	Establishes water quality standards and classifications, coordinates ambient monitoring of state waters, delineates areas of known ground water contamination, protects potable water supplies through source water assessments, prepares reports on ambient water quality, identifies impaired surface waters, and performs water quality assessments designed to identify the maximum amounts of pollutants that state waters can assimilate without exceeding applicable water quality standards
Office of Water Policy / SWIM Section	Develops and analyzes water management policy, provides oversight and coordination with the WMDs, develops the Florida Water Plan, and administers the SWIM Program

Bureau of Watershed Management

The BWM, organized within the Assistant Director's Office in DWRM, is charged with developing the watershed approach. The BWM comprises five sections that address ground and surface water protection. Table 18 describes these sections and their program responsibilities.

This document focuses primarily on the responsibilities of the BWM and how its activities will be accomplished using the watershed approach. The watershed approach will be extended to the rest of DWRM in the future.

Table 18: Bureau of Watershed Management

SECTION NAME	PROGRAM RESPONSIBILITIES
Ambient Monitoring	<ul style="list-style-type: none"> • Ambient Monitoring Program: network design, data analysis, and data management • Very Intense Study Area (VISA) Program: land use and water quality studies • Primary contact on water quality monitoring network • Carries out statewide water quality monitoring • Provides public with ambient water quality conditions by county for download on the Internet, based on historical and most recently reviewed and released VISA and Background Network results • Presents monitoring project results in newsletter • Carries out discussions on IWRM • An aquatic sediment monitoring and evaluation system will be established in the near future
Watershed Planning and Coordination	<ul style="list-style-type: none"> • 305(b): carries out continuing analysis of statewide water quality • Acts as state coordinator for the STORET database (national water quality database) • Coordinates and provides technical assistance in the implementation of the watershed approach • eBASE: develops and maintains watershed approach database for basin assessments
Nonpoint Source/Stormwater Management	<ul style="list-style-type: none"> • Develops biological assessment tools • Develops and funds strategies for addressing nonpoint source pollution • Evaluates the success of stormwater management actions using biological assessment tools
Water Quality Assessment	<ul style="list-style-type: none"> • 303(d): Maintains current list of waters suspected of being impaired • TMDL program • Conducts Minimum Negative Impact (MNI) analysis on certain wastewater discharges • Establishes Water Quality Based Effluent Limitations (WQBELs) • Mixing zone analyses • Technical assistance on surface water issues
Water Quality Standards and Source Water Protection	<ul style="list-style-type: none"> • Establishes water quality standards and classifications • SWAP Program • Delineation Program: identifies areas of known ground water contamination • Water well construction standards • Florida Unique Water Well Identifier Program • OFW Program • Primary contact for pesticide issues • Private Drinking Water Well Sampling Program: tests private drinking water wells for contamination and remediates contaminated wells • Technical assistance on ground water Issues • Designated state contact on federal ground water issues

Water Management Districts. Florida's WMDs manage the state's water resources, maintaining the water needs of current and future users while protecting and maintaining the natural systems that provide Florida with its existing and future water supply. The districts implement Chapter 373, F.S., the Water Resources Act, and direct a wide range of programs and initiatives to accomplish its goals. The WMDs operate under the general supervision of DEP, and both agencies share authority under that statute. Figure 4 shows the WMD boundaries.

While the WMDs implement a variety of surface and ground water programs, the following programs or initiatives are fundamental to watershed management and common to most of the districts:

Consumptive Use or Water Use Permits (CUPs or WUPs)

A CUP or WUP is required for the withdrawal of surface or ground water, if the quantity exceeds specified thresholds. Agricultural operations are often required to obtain either permit for irrigation, freeze protection, and processing. Within certain WMDs, the water use and subsequent discharge cannot violate state water quality standards.

The WMDs also regulate water well construction activities by implementing Chapters 62-531 and 62-532, F.A.C., which regulate the licensing of water well contractors and list well construction requirements.

Environmental Resource Permits (ERPs)

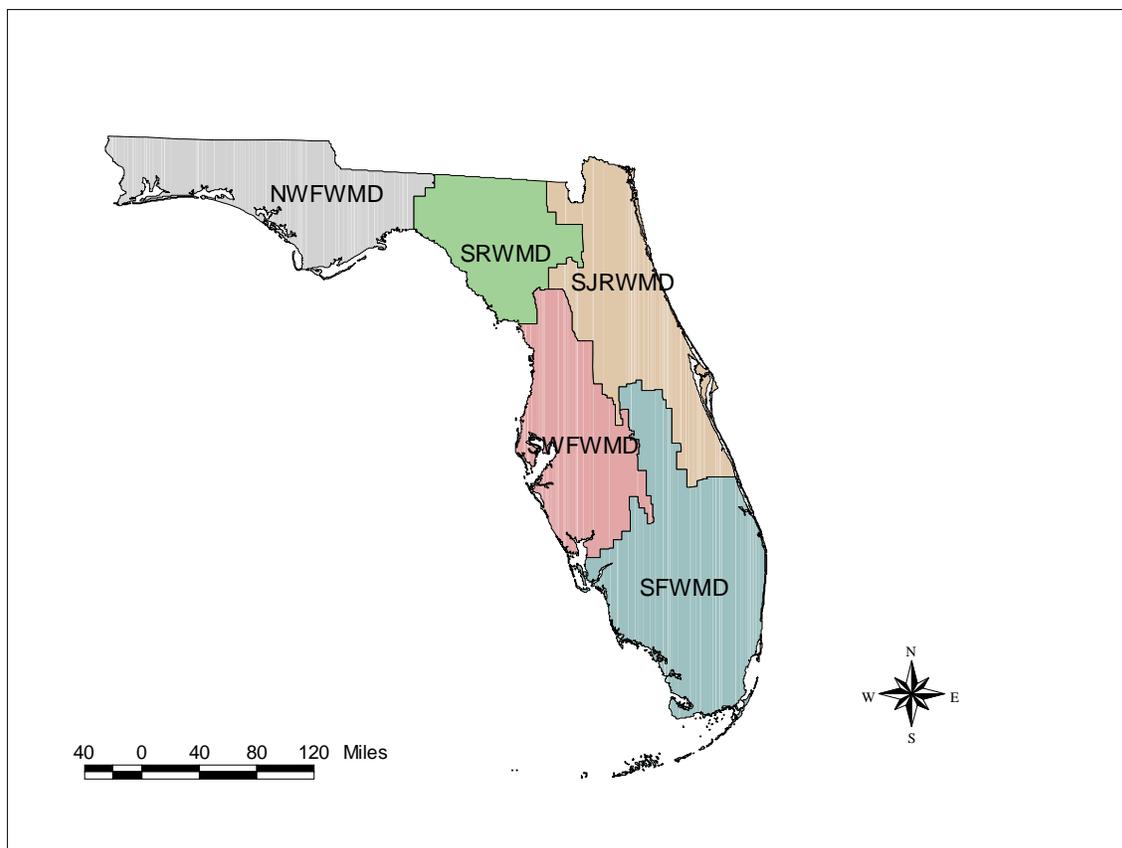
Works of the District (WOD) Permits

The WMDs determine the manner in which persons may make use of Works of the District (WOD), which include those canals, water control structures, rights of way, lakes, streams, and other water resources for which a district has responsibility or owns. Agricultural and forestry operations within a WOD-designated area may be subject to higher standards of engineering and environmental scrutiny.

Surface Water Improvement and Management Program.

The 1987 SWIM Act addressed mounting concern over the loss of natural systems that maintained water quality and provided habitat in the state's major water bodies. It marked a transition from more narrowly focused environmental protection programs to comprehensive EM actions.

Figure 4: Water Management District Boundaries



SWIM was enacted to address large-scale and long-term restoration actions necessitated by habitat and water quality decline in water bodies. It was determined that, while point sources of pollution, sewage and industrial wastewater were being controlled, more pervasive nonpoint discharges needed additional cooperative watershed management among all levels of government.

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 water bodies of statewide significance. Major emphasis is placed on implementing waterbody and watershed strategies to control nonpoint 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 act provides the statutory basis for identifying priority water bodies and establishing watershed restoration and protection*

plans under public review and an explicit intergovernmental participation process. Other state programs rely on the priority-setting requirements in the SWIM Act and coordinate their efforts within these priority basins.

- *The act moves away from year-to-year funding of projects on a piecemeal basis and requires that state funds for restoration be spent within a priority-setting and long-range planning framework.*
- *The WMDs are responsible for identifying priority water bodies, developing restoration and protection plans for priority water bodies, and implementing the plans. The districts are to ensure local government, public, and state agency participation in identifying priority water bodies and developing and implementing SWIM plans.*
- *DEP reviews and approves the identification of priority water bodies and the development of SWIM plans with assistance from DACS, DCA, and the Florida Fish and Wildlife Conservation Commission. DEP generally oversees the program and reviews expenditures of state funds.*

The initial legislation identified six water bodies that would be part of the SWIM Program: Lake Apopka, Tampa Bay, Lake Okeechobee, Biscayne Bay, Indian River Lagoon, and Lower St. Johns River. The WMDs added other water bodies through SWIM's priority-setting process and, at present, twenty-nine SWIM water bodies have plans approved.

SWIM represents the earliest initiatives of implementing a watershed management approach in Florida, and the BWM will work closely with this program in implementing the watershed approach described in this document.

Pollutant Load Reduction Goals

Pollutant Load Reduction Goals (PLRGs) are estimated numeric reductions in pollutant loadings needed to preserve or restore the designated uses of waters and maintain water quality consistent with applicable state water quality standards. They are established primarily to address unacceptable pollutant loadings from older stormwater management systems and are used in identifying needed stormwater management measures, evaluating the success of runoff controls, and directing waterbody restoration strategies.

The development and implementation of PLRGs are to be accomplished by establishing them in SWIM plans, watershed management plans, or districtwide or basin-specific rules. For water bodies not subject to SWIM plans, specific PLRGs are to be developed on a priority basis according to a schedule provided in DWMPs.

PLRGs are developed by establishing a baseline or historical condition in terms of water quality or biological state. PLRG development has primarily focused on the reduction of nutrient levels in priority water bodies but may address other pollutants of concern, including salinity.

District Water Management Plans (DWMPs)

The WMDs develop DWMPs to guide water management efforts. These plans project a twenty-year time frame and are updated every five years. The DWMPs analyze programs, discuss options, provide policies, and determine implementation strategies within each of the following areas of responsibility:

- *Water supply*
- *Flood protection*
- *Water quality*
- *Natural systems management*

Each plan contains an Integrated Plan section where the pertinent data from the four areas of responsibility are presented on a county-by-county basis. This has been a great aid in coordinating water management strategies with local government agencies. The WMDs also hold public workshops to solicit public comment. DEP's Water Policy Section works closely with the districts in developing these plans.

Department of Agriculture and Consumer Services (DACS). DACS is the state lead agency for pesticides, implementing Chapter 487, F.S., the Florida Pesticides Law, and provisions of FIFRA. The primary responsibility for environmental issues is centered in the Division of Agricultural Environmental Services. The Office of Agricultural Water Policy (OAWP) represents DACS in statewide water policy issues.

The OAWP communicates the needs of Florida's agricultural industry to the legislature, DEP, and the WMDs, and ensures early and effective participation of agriculture in the development and implementation of water policy decisions. The OAWP plays an essential coordination role and serves as a forum for watershed management issues within the agricultural community.

The Division of Agricultural Environmental Services administers programs which ensure that pesticides are properly registered and used in accordance with federal and state requirements; that mosquito control programs are effectively conducted; and that feed, seed, and fertilizer products are safe and effective. The division is organized into four bureaus. The BWM most often interacts with the Bureau of Pesticides on environmental issues. Table 20 lists the division's bureaus and their program responsibilities. The Bureau of Pesticides description is subdivided into the bureau's four sections, representing the amount of interaction between these sections and the BWM.

Table 19: DACS Division of Agricultural Environmental Services

BUREAU NAME	PROGRAM RESPONSIBILITIES
Bureau of Compliance Monitoring	Regulates the sale, distribution, and use of registered pesticides (>12,600), ensures that feed, seed, and fertilizer products are registered or licensed, licenses restricted use pesticide applicators, and licenses organic food certifying agents
Bureau of Entomology and Pest Control	Regulates mosquito control and the commercial pest control industry
Bureau of Feed, Seed, and Fertilizer Laboratories	Analyzes regulatory samples to ensure that quality feed, seed, and fertilizers are available to consumers.
Bureau of Pesticides: Pesticide Laboratory	Provides laboratory support to field surveys and monitoring, the registration process, enforcement activities, and other environmental samples as they pertain to pesticides
Bureau of Pesticides: Pesticide Registration	Administers pesticide registration process, including experimental permits, emergency exemptions, and Florida-specific labels; coordinates pesticide registration reviews
Bureau of Pesticides: Scientific Evaluation	Provides technical support in geology, soil science, hydrology, toxicology, and modeling; reviews pesticide registration requests; manages the farmworker protection program; administers the ground water protection program, including monitoring and field survey projects; and oversees the protection of endangered species from pesticide impacts
Bureau of Pesticides: Surface Water	Provides technical and policy support regarding agrichemical water quality impacts in priority watersheds, coordinates bureau activities with OAWP

Department of Health (DOH). The department’s mission is to promote and protect the health and safety of all Floridians. DOH prevents and controls the spread of acute, chronic and infectious disease; provides basic family health care services to persons unable to access care from the private sector; and monitors the sanitary status of water and on-site sewage systems, group living facilities, and other activities that have the potential to threaten public health.

The primary responsibility for environmental issues is centered in the Division of Environmental Health. The division’s programs protect the health of Florida’s citizens by promulgating the maintenance of a healthy environment. The division is organized into four bureaus that address the program areas of on-site sewage treatment and disposal (septic tanks), drinking water hygiene, facility sanitation, community hygiene, environmental toxicology, and environmental epidemiology. The BWM most often interacts with the DOH on drinking water, septic tank, and toxicology issues. Table 21 lists the division’s bureaus and their program responsibilities.

Table 20: DOH Division of Environmental Health

SECTION NAME	PROGRAM RESPONSIBILITIES
Environmental Epidemiology	Provides on-going surveillance and investigation of disease and illness caused by exposure to environmental factors; studies spatial and temporal patterns of environmentally related diseases and their impact on communities, including food and waterborne disease outbreaks, environmentally related disease clusters, surveillance of lead-poisoned children, and well sampling for petroleum contamination
Environmental Toxicology	Performs toxicological risk assessments of hazardous chemicals (including radon), assessments of hazardous waste sites, inspections of residential indoor air, licensing of radon and lead inspectors/contractors, toxicological consultations with the public and other state and federal agencies. Also issues public health advisories and provides a training program for health care professionals
Facilities Programs	Administers regulatory preventive programs designed to protect the public (such as migrant labor camps and group care facilities) from environmental threats that may cause illness or injury, including food hygiene and biomedical wastes program
Water and On-Site Sewage Treatment and Disposal Programs	Ensures that public and private drinking water systems produce water that is safe for human consumption; ensures that all new and repaired on-site sewage treatment and disposal systems (primarily septic tanks and drainfield systems) are adequate to handle residential and commercial building plumbing wastewater, do not create unsanitary conditions, and do not degrade surface or ground water quality

Florida Fish and Wildlife Conservation Commission. The recently created FFWCC merges the Florida Game and Fresh Water Fish Commission with the Marine Fisheries Commission and some programs that were formerly organized under DEP. This new agency will continue to implement the authorities and programs that were overseen prior to the reorganization.

The new agency has jurisdiction over terrestrial and aquatic wildlife and implements programs to manage and protect them. Because the internal organization of the new agency is not yet final, it cannot be described here.

Florida Department of Community Affairs. DCA oversees the implementation of local government comprehensive plans, as well as emergency response to floods, hurricanes, and other environmental disasters.