

Building Strong Collaborative Relationships for a Sustainable Water Resources Future:

STATE OF FLORIDA

SUMMARY OF STATE WATER PLANNING

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The findings contained in this report are based on the information collected from the literature search and interviews for this initiative and should not be construed as an official Department of the Army position, policy or decision unless so designated by other official documentation.

STATE OF FLORIDA

1. STATE/REGIONAL WATER PLANNING STATUS

Florida's Department of Environmental Protection (DEP) Division of Water Resources (DWRM) is responsible for water resources management in the State. DEP's Office of Water Policy (OWP) develops the FWP, the state's Water Resources Implementation Rule (WRIR) (62-40, Florida Administrative Code (F.A.C.)), and the Annual Report on Regional Water Supply Planning.

The "Florida Water Plan: Implementing Watershed Management (FWP)," released in 2001, is Florida's comprehensive statewide water resources plan, which updated the 1995 water plan. The FWP aims to ensure the long-term sustainability of Florida's water resources and associated natural systems in recognition of the importance of these systems to the state's economy, the quality of life of its citizens, and the survival of flora and fauna. The FWP provides the state with an underlying, conceptual framework. The WRIR is a set of adopted policies/rules that carry the weight of the law, mandating the implementation of elements of the FWP.

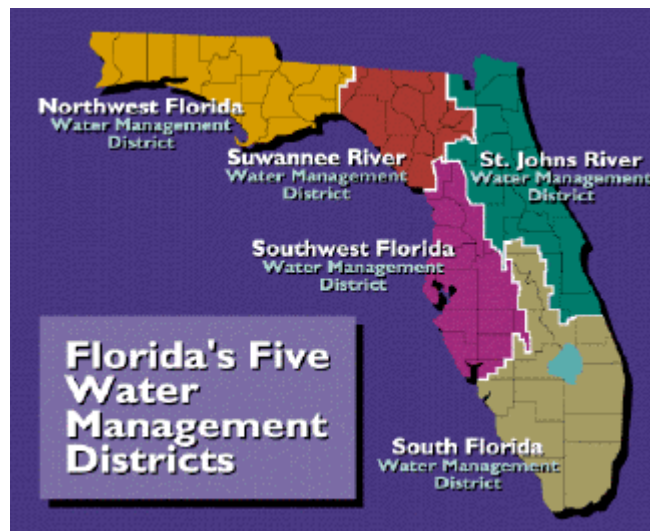


Figure 1. Florida's Water Management Districts (DEP, Nov. 12, 2008)

The plan is intended to help DEP, especially the DWRM, the five water management districts (WMDs) (Figure 1) and six DEP regulatory districts (Figure 2), focus on the highest water resources protection priorities facing the state, organize water management responsibilities, and build water management partnerships at a strategic vs. specific operational level. It identifies water priority issues, states major strategies for addressing these issues, focuses on accountability through performance measures, emphasizes the use of watershed management and coordination, emphasizes the best use of current information technologies to set priorities, assesses effectiveness, and improves public access to data about environmental protection activities, and seeks to strengthen partnerships with the WMDs and others.

Its intended audiences include the DEP (to provide guidance and measures of effectiveness), the general public (to inform them about water management issues and strategies), water management partners of the DEP (to inform them on steps that will be taken to address priorities), elected officials and other interested parties (to inform them about mechanisms of accountability). It includes strategic goals, objectives, strategies, action steps, responsible agents, target dates for accomplishment, and performance measures to help assess the success of the DEP's and WMDs' water resource management efforts and the health of the environment.

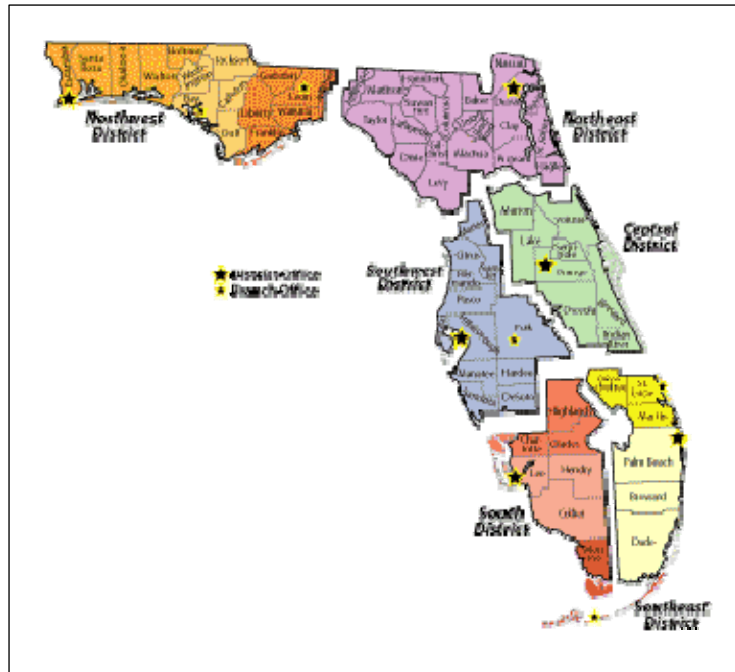


Figure 2. DEP's Regulatory Districts (DEP, Nov. 12, 2008).

Since the FWP was adopted in 2001, the WRIR has been updated twice with the most recent revision in 2006. Another update of the WRIR is expected in 2009 (Swihart, 2008). Currently, there are no plans to update the FWP.

2. RESPONSIBLE STATE AGENCIES/REGIONAL ENTITIES

The DEP has five bureaus: Water Facilities Regulation (BWFR), Watershed Management (BWM), Water Facilities Funding (BWFF), Submerged Lands and Environmental Resources (BSLER), and Mine Reclamation (BOMR). Florida has a system of five regional WMDs that operate under the general supervision of DEP: Northwest Florida (NFWMD), Suwannee River (SRWMD), South Florida (SFWMD), Southwest Florida (SWFWMD), and St. Johns River (SJRWMD). WMDs (Figure 1) develop implementing plans based on strategic goals and objectives, strategies, and action steps to address water supply, flood protection and floodplain management, water quality and protection of natural systems.

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3. WATER MANAGEMENT VISION AND GOALS

Following the DEP's motto, "More protection, less process," the FWP seeks to provide more protection of its water resources through an integrated, streamlined, watershed-scale management approach. The FWP advocates a Watershed Approach (Livingston, 2008) hence the name of the FWP, "Implementing Watershed Management". There are six key focus areas in the FWP that help to explain the adoption of the Watershed Approach: watershed management; water supply; water quality; natural systems; flood protection and floodplain management; and management support, coordination, and evaluation. Each key focus area lists several goals, often adopted verbatim from passages in the Water Resources Act, the Air and Water Pollution Control Act (Chapter 403, Florida Statutes (F.S.)), and the Water Resource Implementation Rule. For each action step outlined in the FWP, a target achievement date is listed as well as Florida departments, divisions, bureaus, and/or WMDs responsible for implementing those actions. These five key areas and their associated goals are:

Watershed Management

- *Protect the functions of entire ecosystems through enhanced coordination of public land acquisition, regulatory, and planning programs. [Chapter 94-356, F.S. (Environmental Reorganization Act of 1993)]*
- *The concept of developing comprehensive watershed management plans in designated watersheds is intended not only to prevent existing environmental, water, quantity, and water quality problems from becoming worse, but also to reduce existing flooding problems, to improve existing water quality, and to preserve or restore the values of natural systems. [§ 62-40.432(1)(e), F.A.C.].*
- *In developing and implementing the Total Maximum Daily Load for a water body, the department, or the department in conjunction with a water management district, may develop a watershed or basin management plan that addresses some or all of the watersheds and basins tributary to the water body. These plans will serve to fully integrate the management strategies available to the state for the purpose of implementing the Total Maximum Daily Loads and achieving water quality restoration. [§ 403.067(7) (b), F.S.]*
- *Accomplish long-term restoration of the Everglades system, in a manner which preserves the natural values in the Everglades while also maintaining the quality of life for all residents of South Florida. [§ 373.4592(e), F.S.]*

Water Supply

- *Promote the availability of sufficient water for all existing and future reasonable-beneficial uses and natural systems. [§ 373.016(3)(d), F.S.]*

Water Quality

- *Improve and restore the quality of waters not presently meeting water quality standards. [§ 187.201(8)(a), F.S. – State Comprehensive Plan]*
- *Conserve the waters of the state and to protect, maintain, and improve the quality thereof for public water supplies, for the propagation of fish and other aquatic life, and for domestic, agricultural, industrial, recreational, and other beneficial uses and to provide that no wastes be discharged into any waters of the state without first being given the degree of treatment necessary to protect the beneficial uses of such water. [(§ 403.021(2), F.S.)]*
- *Minimize the degradation of water resources caused by the discharge of stormwater. [§ 373.016(2)(e), F.S.]*
- *Develop and implement strategies to prevent pollution, including public information programs and education programs. [(§ 403.073), F.S.]*
- *Adopt a comprehensive program for the prevention, control, and abatement of pollution of the air and waters of the state, and from time to time review and modify such program as necessary. [§ 403.061(9), F.S.]*

Natural Systems

- *Provide for the management of water and related land resources. [§ 373.016(2)(f), F.S.]*
- *Manage water resources in a manner which considers cumulative impacts and ensures resource sustainability. [§ 373.013(2), F.S.]*
- *Preserve natural resources, fish and wildlife. [(§ 373.016(2)(f), F.S.)]*
- *Reserve from use that water necessary to support essential non-withdrawal demands, including navigation, recreation, and the protection of fish and wildlife. [§ 187.201(8)(b), F.S.]*

Flood Protection and Floodplain Management

- *Prevent damage from Floods, soil erosion, and excessive drainage. [§ 373.016(3)(e), F.S.]*
- *Manage the construction and operation of facilities which dam, divert, or otherwise alter the flow of surface waters to minimize damage from flooding, soil erosion, or excessive drainage. [§ 62-40.310(3)(b), F.A.C.]*

Management Support, Coordination, and Evaluation

- *To provide efficient governmental services to the public. [paraphrased from Chapter 94-356, Laws of Florida, Environmental Reorganization Act of 1993]*
- *To carry out the powers, duties, and responsibilities of the environmental agencies of the state in the most efficient and effective manner. [paraphrased from Chapter 94-356, Laws of Florida, Environmental Reorganization Act of 1993]*

Overall, Florida seeks efficient and effective water management through protection, conservation, and reuse activities employed by its designated water management agencies/entities, with a focus on the highest water resource protection priorities, well-coordinated and organized water management responsibilities, water management partnerships, a focus on accountability, and a coordinated and consistent watershed approach. A rapidly growing population is creating ever-increasing demands on water supply. The state, therefore, aims to achieve adequate water supply through identification of alternative water supplies with clear recognition that quality groundwater supply is diminishing rapidly – in fact, many areas of

that state has capped wells. Water conservation planning and implementation is an important management tactic and has been very evident in Florida for 20 years plus. Protection and improvement of natural systems and water quality is another key management direction through the establishment and maintenance of TMDLs and minimum flows. Finally, floodplain management and protection of floodplains from flood damages is an important focus, with approximately 30 percent of the nation's flood insurance policy holders residing in Florida (Swihart, 2008).

4. SCOPE OF WATER RESOURCES PLANNING AND MANAGEMENT

Watershed management planning in the FWP primarily focuses on water management strategies (e.g., the Watershed Approach and WMDs) and regional analysis of water resources. In addition, the FWP identifies several areas in Florida with historical water resources issues that need to be addressed. In South Florida (SFWMD), there is the long-term restoration of the Everglades system, the Kissimmee River, and Lake Okeechobee. In central and north Florida, a Springs Task Force is improving scientific understanding and public awareness of natural springs. In Southwest Florida (SWFWMD), phosphate mining activities Peace River Basin require permitting and reclamation activities to improve flow patterns and water quality in the river.

Water supply planning in the FWP focuses on population and demand projections, water supply assessments (including gap analysis), alternative water sources, and conservation. WMDs are responsible for projecting future water demand under §373.0361 F.S. Districts generally report water demand by category (e.g., public supply, self-supplied commercial/industrial, agricultural, etc.) or by total demand per county. Population projections are reported as total population growth or growth by county. The FWP considers supplementing water supply through water reuse and conjunctive use, and developing pilot projects and legislation to support usage of alternative supplies. To increase efficient water use, the FWP promotes education and conservation programs throughout the State.

The water quality planning section in the FWP focuses on strategic water quality monitoring, including the development of Total Maximum Daily Loads (TMDLs) as part of each basin's 5-year management cycle, maintenance of a water quality database, and establishment of a groundwater quality criteria index. The FWP also seeks to minimize non-point source pollution through low-impact designs and promotion of stormwater best management practices (BMPs).

Since natural ecosystems are considered major force in the State's economy, an entire section is devoted to restoration of degraded systems. In addition to areas with historical water issues, the FWP focuses on the overall management of water resources to support navigation, recreation, and protection of fish and wildlife. Two essential programs important to restoring and maintaining natural ecosystems are the consumptive use permitting program [§ 373, F.S.] and the environmental resource permitting program [§ 373 and § 403, F.S.].

Responsibilities of flood protection and floodplain management in Florida are shared among federal, state, regional, and local governments. The U.S. Army Corps of Engineers (USACE) is the coordinator of several major federal flood control projects. It is the responsibility of local

governments to control land uses in flood prone areas under Florida Law and as sponsors of the Federal Emergency Management Agency flood insurance program. The FWP seeks to minimize damage caused by flooding by promoting non-structural approaches (e.g., restoration of riparian areas and land acquisition) and developing engineering design standards for stormwater systems, reservoirs, and dams.

The FWP calls for “drought resistant” water supply methods (e.g., desalination, demineralization, reclamation) and outlines management strategies for non-emergency times. Under F.S. §373.246(1), each WMD is required to create and maintain a Water Shortage Plan [NFWFMD – 40A-21, SJRWMD – 40C-21, SFWMD – 40E-21, SWFWMD – 40D-21, and SRWMD – 40B-21, F.A.C.].

Increased population growth is the biggest source of water resources problems in the State and is the primary motivation for water resources planning. Other key assumptions in the FWP are: water demand will continue to grow; technology is becoming increasingly affordable and environmentally-safe (e.g., membrane filtration); consumers are driven by price and market signals, and will likely respond well to incentives and changes in water rates; risks associated with flood damage are increasing; and legislation will support and finance water resources conservation. Another key assumption made by the FWP is that engineers, planners, and stakeholders will voluntarily assist in the move toward environmentally-friendly practices and designs.

There are several key analytical tools and data support services already in existence to support the planning and management strategies of the FWP. EPA’s STORET (STOrage and RETrieval) is the central repository of the State's water quality data. A water well identifier system is used to coordinated well data between the DEP, the WMDs, and the Florida Geological Survey. DEP’s Surface Water Improvement and Management (SWIM) program is a comprehensive statewide program use to identify, restore, and protect priority surface waters. Groundwater vulnerability mapping is conducted using the Florida Aquifer Vulnerability Assessment model. The DWRM’s Data Services Section-GIS Subsection provides GIS support to DEP programs, including providing GIS coverage of impaired waters and priority waterbodies and watersheds for TMDL programs. An ArcMap report-writing extension and desktop application, Environmental Resources Analysis Tool (ERATools), is widely used by the DEP. In the future, the FWP hopes that “better advantage of existing and emerging information technologies,” is taken. DEP hopes to develop analytical tools and data support services such as web-based applications and permitting.

Florida also pursues other water resources planning and management initiatives outside the framework of the FWP. One example is the Governor’s Action Team on Energy & Climate that was established by Governor Crist in 2007 through Executive Order 07-128 (DEP, 2008). In 2008, the Action Team submitted its final report, “Florida’s Energy & Climate Change Action Plan,” that includes a chapter on adaptation strategies which covers several far-reaching areas including (Action Plan, 2008):

1. Advancing science data and analysis for climate change—More data, analyses, and predictive modeling is needed to understand how climate will change, the consequences of change, and to identify possible solutions.
2. Comprehensive planning—All state, regional, and local comprehensive plans should be amended to prepare the state for adapting to the future impacts of climate change.
3. Protection of ecosystems and biodiversity—Ecosystems should be managed for resiliency and beach management and coastal construction regulatory programs should incorporate climate change.
4. Water resources management—Adequate water supply to meet basic reasonable and beneficial needs while meeting the requirements of natural systems, requires state and local governments need to pursue intense conservation of all water uses and alternative water sources, and include stakeholder involvement in statewide and regional water supply planning processes. Climate change may impact existing sources due to many factors including altered rainfall patterns and salt water intrusion into coastal aquifer systems. Methods to quantify and plan for uncertainties and risks related to population growth, climate change, and environmental regulations will be needed.
5. Built environment, infrastructure and community protection—Make reduction of potential damage due to natural hazards associated with climate change a high priority for all levels of government and the private sector.

Although originally a separate planning initiative, policies, objectives, and actions of the Energy & Climate Change Action Plan will be incorporated into the next update of the WRIR (Swihart, 2008).

5. PARTNERSHIPS, STAKEHOLDER, AND PUBLIC INVOLVEMENT

Several federal, state, regional, and non-government organizations have partnered with the DEP to carry out the State's FWP. In addition to the various DEP Bureaus within the DWRM, the Department of Health, Department of Transportation, and Executive Office of the Governor provide assistance with the FWP.

The U.S. Environmental Protection Agency works with the State to implement the Clean Water Act and Safe Drinking Water Act. DEP also works with the USACE, U.S. Fish and Wildlife Service, and the U.S. Geological Survey. A key element of federal support to state water management is data and information which can be used to establish planning action and monitor actions implemented.

Integrated water resources planning and management is highly promoted in Florida. The state has a unique system of comprehensive planning that requires numerous collaborations, especially between the state and the five WMDs. Partnerships between WMDs and federal entities vary by region and corresponding regional issues.

Agriculture is the major source of water use in the State. In 2001, the Florida Legislature created §570.085, F.S. This new law directed the Florida Department of Agriculture and Consumer Services (DACS) to establish an agricultural water conservation program that includes the development and implementation of water conservation BMPs, expansion of the Mobile Irrigation Laboratory program, and a cost share program for implementing agricultural water conservation practices [DACS, Nov. 12, 2008]. These agricultural BMPs are coordinated with the DEP and WMDs.

A major component of the Watershed Approach is the provision for forums and communication networks. This allows local-governments and stake-holders to be involved in regional-level planning initiatives. In watersheds where TMDLs have been adopted, affected stakeholders are involved in the establishment and implementation of the watershed's Management Action Plan.

6. PLAN IMPLEMENTATION STRATEGY

To manage water resources effectively, emphasis is placed on the coordination between the DEP and WMDs. The Water Resources Implementation Rule defines this organizational framework and provides policy goals and guidance for the FWP and WMD Plans.

Much of the FWP implementation strategy is embedded in the Watershed Approach (Figure 3). The Watershed Approach:

- Divides the State into basin management units equivalent to groups of Hydrologic Unit Codes (HUC)
- Is a five-step basin management cycle (repeated roughly every 5 years)
- Has a statewide schedule to assess each basin's management actions every 5 years
- Develops inter- and intra-basin forums and communication networks
- Requires the development of a Strategic Monitoring Plan for each basin
- Requires the development and implementation of a Management Action Plan for each basin

In the Watershed Approach, the State's 51 major watersheds are divided into five groups of basin management units. Units are spread among the five districts (i.e., management groups are not equivalent to the districts). Start times for each group's basin management cycles are staggered in an effort to assist in the review and assessment of all basins. For example, Group 1 began its first year in the management cycle in 2000. Group 2 began its cycle in the following year and so forth.

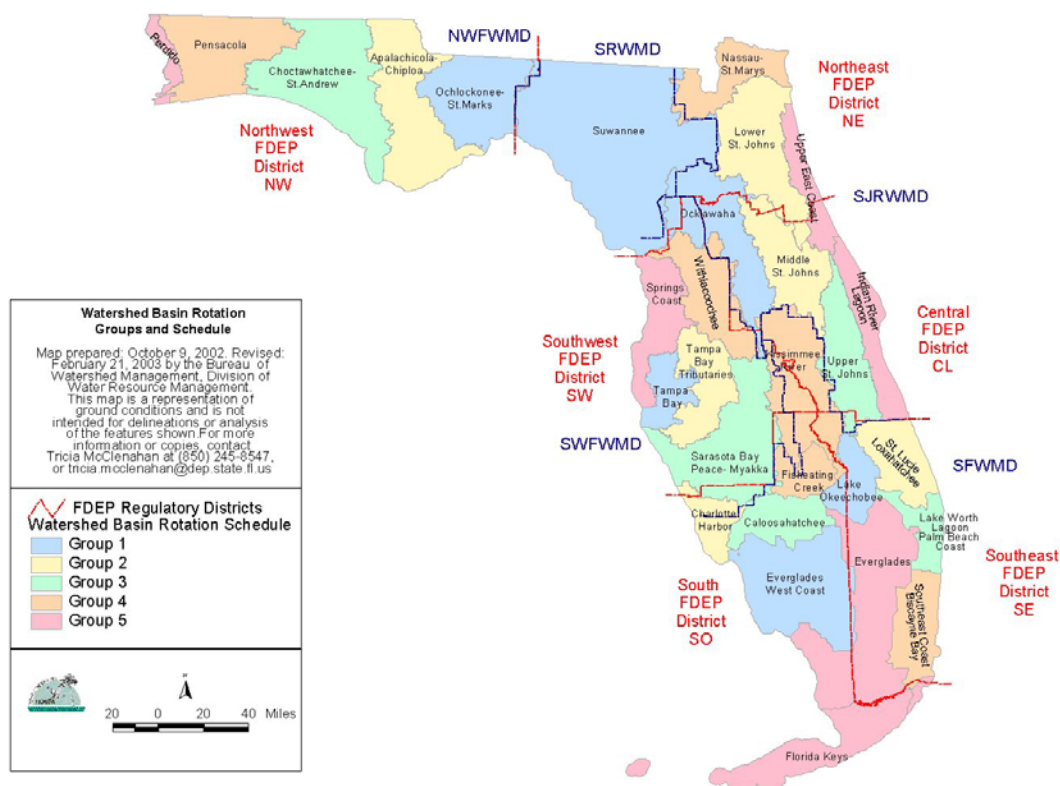


Figure 3. Delineation of Watersheds in Basin Rotation Schedule and Location of DEP Regulatory Districts and WMDs (DEP, Nov. 12, 2008).

In addition to guidance given by the Water Resource Implementation Rule, each WMD follows implementation strategies described in their 5-Year Water Resource Development Work Program [§373.536(6)(a)4, F.S.]. Implementation strategies in the Work Plan correspond to various components of the WMD’s Regional Water Supply Plan(s). The Work Program is submitted to over 45 separate entities, including the Governor, the President of the Senate, the Speaker of the House of Representatives, legislative committees, and counties constituting the WMD.

The FWP is being used to shape policy and inform regulations in several ways. Some key articles of legislation and intended actions are highlighted in the FWP. These are:

- Amendments to the Water Resource Implementation Rule [62-40, F.A.C.] to encourage conservation-based water rates for public water suppliers
- Revision of the Air and Water Pollution Control Act [403, F.S.] to streamline the regulatory and permitting processes to implement high quality membrane filtration technology projects, and aquifer storage and recovery systems projects
- Revision of the Florida Water Resources Act [373, F.S.], and/or Environmental Resource Permitting Rules to provide engineering design standards for stormwater system and water supply reservoir dams

Other strategies in the FWP aim to direct funding to high-priority projects and programs. Obtaining funding is the primary responsibility of the DWRM’s Bureau of Water Facilities Funding. Targeted legislation includes:

- Amendment of 62-503 and 62-504, F.A.C., so the Clean Water State Revolving Fund (SRF) corresponds to priorities of the Watershed Approach
- Amendment of §403.1835 and §403.1837, F.S., so the Clean Water SRF has the authority to increase funds available to implement the Watershed Approach
- Prioritizing the use of funding set-asides from the Drinking Water SRF program

The FWP also cites a few general policy goals:

- Developing rules to support the increase of efficiency and effectiveness of reclaimed water use
- Promoting greater consistency among the various rules and statutes relating to water resource management
- Continuing the process of coordinating requests for congressional and state legislative funding for alternative water supply projects

The FWP and WMD Plans have 20-year planning periods. Many of the actions listed in the Plans are intended to achieve short-term goals (e.g., to meet intermediate water supply projections), which ultimately help to accomplish long-term goals. So long as plans are updated at the proposed 5-year intervals, this adaptive management approach can continue indefinitely.

7. OUTCOMES ASSESSMENT PROCESS

Implementation actions of the FWP and WMD plans are monitored and appraised either annually and every five years. Each key focus area of the FWP has a list of performance measures that DEP and/or the WMDs must report on. Performance measures either evaluate environmental health or track accomplishments of specific tasks. Many of the measures are linked to a DEP document called, “Florida’s Water Management Performance Measures (DEP, 2004).” Performance measures are of two types. The first type is specific to DEP programs and is reported on annually by DEP. The second type of performance measure is jointly developed by DEP, the WMDs, and the Executive Office of the Governor. WMD annual reports are reviewed and checked for consistency with the FWP and other WMD plans.

Objectives and performance measures reported on by WMDs are (DEP, 2004):

1. Water supply measures:
 - Objective 1: Increase available water supplies and maximize overall water use efficiency to meet identified existing and future needs
 - (a) Percentage of domestic wastewater reuse
 - (b) Gross per capita water use (Public Supply) by district and water supply planning regions
 - (c) Within each water supply planning region: (1) the estimated amount of water supply to be made available through the water resource development component

of the regional water supply plan; (2) percent of estimated amount under development; and (3) percent of estimated amount of water actually made available

- (d) Within each water supply planning region, the estimated additional quantities of water supply made available through district water supply development assistance

Objective 2: Prevent contamination of water supplies

- (a) Percentage of surface water supply sources for which water quality fully attains the designated use

2. Water quality measures:

Objective 1: Protect and improve surface water quality

- (a) Percentage of water bodies that attain or potentially do not attain their designated uses under the TMDL program

Objective 2: Protect and improve ground water quality

- (a) Improving, degrading and stable trends in groundwater quality
- (b) Improving, degrading and stable trends in nitrate concentrations in springs

3. Natural systems measures:

Objective 1: Maintain the integrity and functions of water resources and related natural systems

- (a) Number of MFLs, by water body type, established annually and cumulatively
- (b) Percentage of MFLs established in accordance with previous year's schedule
- (c) For the previous fiscal year, the total acres of wetlands or other surface waters authorized by environmental resource permit to be impacted, and the number of acres required to be created, enhanced, restored and preserved.

Objective 2: Restore degraded water resources and related natural systems to a naturally functioning condition

- (a) Acres of invasive nonnative aquatic plants in inventoried public waters
- (b) Acres of District managed lands infested with invasive nonnative upland plants
- (c) Acres of district-owned land identified in land management plans as needing restoration; acres undergoing restoration; and acres with restoration activities completed

4. Flood protection measures:

Objective 1: Minimize damage from flooding

- (a) Percentage of District works maintained on schedule

Objective 2: Promote non-structural approaches to achieve flood protection and to protect and restore the natural features and functions of the 100-year floodplain.

- (a) Number of acres identified for acquisition to minimize damage from flooding and the percentage of those acres acquired.

Florida Performs is the Florida's statewide agency report card. The report card focuses on six areas that affect the wellbeing of Floridians: public safety, health and family, transportation, education, economy and taxes, and environment/conservation. Under the area of environment/conservation, the state aims to:

- Preserve beaches
- Promote the use of alternative energy
- Promote conservation and recycling
- Complete the Everglades Restoration
- Improve air quality
- Reduce carbon emissions
- Improve water quality and supply

The state's performance trends in water quality and water supply is classified as "maintaining" while the Everglades restoration effort is classified as "increasing/improving" (Florida Performs, 2008). Scores in Florida Performs are based on state agency performance measures. In the case of DEP, these measures are found in DEP's "Final Long-Range Program Plan for FY 2009-10 through FY 2013-14 (DEP, 2007)."

In 2005, the Water Resources Act was amended to encourage better, more efficient, and unified statewide reporting of WMD activities. Starting in 2006, WMDs can submit a 5-year strategic plan in lieu of a DWMP (§ 373.036(2)(e), F.S.). By March 1 of each year, each WMD must submit a consolidated annual report to DEP, the Governor, the President of the Senate, and the Speaker of the House (§ 373.036(7), F.S.). The consolidated report incorporates the following:

- The District Water Management Plan Annual Report
- Approved minimum flows and levels annual priority list
- Annual 5-year capital improvement plan
- Final annual 5-year Water Resources Development Work Program
- Alternative Water Supplies Annual Report
- Florida Forever Water Management District Work Plan Annual Report
- Mitigation Donation Annual Report
- SWIM Program and Watershed Restoration Summary Report (optional)

The intent of the consolidate reports are to assist WMDs, rather than DEP itself, in assessing the progress of plan implementation (Swihart, 2008). Since amended of the Water Resources Act, DEP has not issued any annual reports that analyze the consolidated annual reports and assess the effectiveness of the FWP.

8. NEEDS, CHALLENGES AND CRITICAL PRIORITIES - INTERVIEW INSIGHTS

The key water resources issues/needs in the State of Florida are:

- Meeting future water supply needs for a rapidly growing population
- Identifying and developing alternative water supplies to meet future needs
- Developing and implementing of TMDLs

- Flooding—30 percent of flood insurance policy holders nation-wide are Floridians
- Establishing/maintaining minimum flows
- Managing impacts of climate change

Although many states look to Florida as an example of effective, integrative and comprehensive water resources planning and management, there is always room for improvement. Currently, Florida’s relationship with its federal partners, including the USACE, USEPA, and USGS, vary from region to region and from issue to issue. Through increased funding and information, these federal partners could better assist the state with meeting future water demand and managing the impacts of climate change. Finally, progress on interstate water allocation issues has been slow and conflicts such as those in the Apalachicola-Chattahoochee-Flint River Basin persist. Therefore, meeting future water demand will also require interstate cooperation.

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