Florida Drought Action Plan

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prepared by the

Florida Department of Environmental Protection

Florida Division of Emergency Management

Florida Department of Agriculture and Consumer Services

South Florida Water Management District

Florida Department of Agriculture
and Consumer Services

Introduction

In early 2007, as in other periods in the past, a severe drought is affecting parts of Florida. Water users and natural systems both are threatened from a prolonged period of below average precipitation. Presently, the drought is severely affecting south Florida and is beginning to have adverse effects on the west central portions of the state.

The Florida Water Resources Act (Chapter 373, F.S.) is the state's fundamental framework for addressing water supply problems, including water shortages. Repeated experiences with drought have led to a mature system of water management district, state, and local actions to address the effects of drought. In particular, the 1999-2001 drought resulted in many improvements in the state's water management and drought response system as described in the attachments to this plan. State, regional, and local organizations are now in the midst of efforts to minimize the damaging effects of the drought to the extent possible. The response to the current drought should build upon the current water management structure to improve its effectiveness, rather than create a duplicative new drought response system.

This Drought Action Plan is not intended as a substitute for the specific operational drought response plans of the Division of Emergency Management or the water management districts. Rather, the purposes of this Action Plan are to improve coordination and communication among key participating agencies, facilitate outreach to concerned parties, and express the basic short- and mid-term action steps now thought necessary to address the drought. If the drought continues and intensifies, this Action Plan may be revised and updated to reflect new needs.

This Drought Action Plan provides background on the recent history of drought management in the state, summarizes the current drought being experienced in Florida, describes the current institutional structure for addressing water shortages, and sets out specific Action Steps to respond to the current drought. Additional information may be found in a series of Attachments:

Attachment 1: Water Use, Droughts, and Alternative Water Supplies

Attachment 2: Joint Statement of Commitment on Water Conservation in Public Water Supply; Conserve Florida Program

Attachment 3: Connecting Water Supply and Growth

Attachment 4: Committee on Landscape Irrigation and Florida-Friendly Design

Attachment 5: Summary of Recommendations of the April 2002 Water Conservation Initiative

Background on Droughts in Florida

The climate and rainfall patterns in Florida, in combination with patterns of water use in this state, create particular drought challenges. Periods of low rainfall occur naturally in Florida. Major statewide or regional droughts occurred in recent decades, including the early 1970s, the early 1980s, the 1989-1990 period, and 1999-2001. Even though average annual rainfall in Florida is 54 inches (greater than any other state but Louisiana), it is not evenly distributed and has some unusual characteristics that tend to produce periods of water shortages. For example, Florida is first, or tied for first, in the country for the proportion of summer versus winter rainfall, the difference in rainfall between the normally wettest and driest months, and the difference in rainfall between relatively wet and dry summers.[1] Climatological conditions like these, in a state with more than eighteen million residents, result in vulnerability to drought.

Only a few years ago, Florida experienced a historically severe drought across most of the state. In the South Florida Water Management District, the year 2000 was the driest year on record and the period from November 1999 through May 2001 was the driest recorded sequence of dry-wet-dry seasons. Water levels in Lake Okeechobee dropped to the lowest levels ever recorded, making it necessary for some public water supply utilities to modify pumps and intake lines to avoid the risk of not being able to supply water to homes.

In the Southwest Florida Water Management District, the drought began in October 1998, and by March 2000, the U.S. Drought Monitor characterized this region as experiencing the most severe level of drought. District-wide, rainfall during 2000 was the lowest year on record. During January 2000, the Withlacoochee, Hillsborough, and Peace Rivers were at record low levels.

In the St. Johns River Water Management District, the drought began in the spring of 1998 and intensified during the first part of 2001. As a result of prolonged dry conditions, groundwater and surface water levels were at or below record low levels in January 2001. In May 2000, over 500 domestic self-supply wells lost natural artesian flow, resulting in a reduction or loss of water supply to homes in the area. Lowered groundwater levels were thought to be a significant factor contributing to the increased sinkhole development noted in May and June 2000.

In the Suwannee River Water Management District, the year 2000 was the fourth lowest rainfall year since 1931. In the spring of 2001, most of the gauging stations in the Suwannee, Santa Fe, and Withlacoochee rivers recorded record low flows. Fifty-two of the district's eighty-five Floridan Aquifer monitoring stations set record low levels. Many of the district's springs had either ceased flowing or had greatly reduced flows.[2]

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[1] James A. Henry, Kenneth M. Portier, and Jan Coyne, *The Climate and Weather of Florida*, Pineapple Press, 1994, p. 102.

[2] Florida Department of Environmental Protection, Florida Water Conservation Initiative, April 2002, pp. 6-7.

Current Statewide Water Shortage Conditions

In the current drought, the water management districts have implemented different measures, based on the varying degree of seriousness of the drought in their regions, the particular mix of sources and water users, and the experience acquired in previous droughts. Each of the five water management districts has approved plans and rules for addressing water shortages. In mid-April, in broad summary, the conditions were as follows:

South Florida Water Management District (SFWMD)

The SFWMD has issued several water shortage orders and adopted more stringent ones on April 12. A Phase I (moderate) water shortage order requires water users to limit outdoor water use with the goal of reaching a 15% reduction in overall demand for water. A Phase II (severe) water shortage order restricts outdoor water use with the goal of producing a 30% reduction in overall demand. Phase III (severe) water shortage restrictions have the goal of achieving a 45% water demand reduction. The specific methods for achieving these reduction levels differ by phase and by user category (domestic, commercial, agricultural, etc.).

Lake Okeechobee Service Area: The level of Lake Okeechobee was at 10.07 feet on April 11, 2007. The lake was 0.29 feet lower than the previous week and 4.46 feet below normal for this time of year. If the drought continues, the lake is expected to drop below the historic low of 8.97 feet reached in May 2001.

The Everglades Agricultural Area basins are under a Modified Phase III water shortage declaration. Existing Phase II restrictions continue for the remaining portions of the service area.

Upper East Coast Service Area (Martin and St. Lucie Counties): This service area is under a Phase I water shortage order. The C-23, C-24 and C-25 canals affected by the water shortage order remain above the 14.0 feet criteria for restrictions on water supply pumping, but remain a concern. Surface water users are under a declared water shortage order, which limits withdrawals from the canals. In addition, there is a cease withdrawal order for SFWMD-permitted agricultural users in these counties withdrawing water from SFWMD canals.

Lower East Coast Service Area (eastern Palm Beach, Broward, Miami-Dade and Monroe counties, along with a small portion of Martin County served by Tequesta Water Utilities): The service area is under a Phase II water shortage order.

Lower West Coast Service Area (Lee, Collier, Hendry, Glades, and a portion of Charlotte counties): The area is under a Phase II water shortage order. (The Lower West Coast has had, for several years, a mandatory, year-round set of water use restrictions, which limit irrigation to three times a week.)

The sodium concentration at the Lee County Olga Water Treatment Plant, which obtains its water supply from the Caloosahatchee River, was 197 parts per million and the chloride concentration was 330 parts per million. These test results mean the primary (health-related) drinking water standard for sodium (160 parts per million) and the secondary (aesthetic) drinking water standard for chloride (250 parts per million) have been exceeded. Consequently, the Lee County Utilities is issuing a health advisory for sodium. The advisory recommends that individuals susceptible to sodium-sensitive hypertension or diseases that cause difficulty in regulating body fluid volume consult their physician for advice on how to take into account the sodium in their drinking water. There is no immediate health risk.

Lake Istokpoga Area: The Governing Board approved a detailed Water Delivery Plan affecting agricultural users in the Lake area. Phase II restrictions are in effect for other users in this area.

Additional Actions: The SFWMD Governing Board has authorized the initiation of rulemaking to implement permanent water use restrictions throughout the District.

Southwest Florida Water Management District (SWFWMD)

Water levels in the Floridan and Intermediate aquifers are declining, yet remain within the normal range for the central counties in the district. Northern counties are 1.10 feet and southern counties are 0.51 feet below the low end of the normal range, as of April 9. Major rivers are well below normal; for example, the Withlacoochee River near Holder is only flowing at the 4th percentile.

A Modified Phase II Water Shortage Order is in effect, with restrictions on lawn watering equivalent to Phase IV (Lawn watering only allowed once per week on address-specific day, allowable times are four hours shorter than normal year-round water conservation measures; also specific measures for agriculture, golf courses, commercial, etc.)

Several public water supply systems are being closely monitored. The City of Tampa's in-stream reservoir on the Hillsborough River, as measured near Zephyrhills, has streamflow in only in the 8th percentile and the City is purchasing treated water from Tampa Bay Water to meet demand. The City is using Sulphur Springs as an emergency source and has not reported any specific operating difficulties or violations. The primary and secondary drinking water quality standards are being met.

For Tampa Bay Water, surface water sources include the Alafia River (which is near the low end of the normal range, with streamflow at the 26th percentile) and the C.W. Bill Young Reservoir, which is at approximately half capacity, due to dry season withdrawals. The seawater desalination plant is operating at 20 MGD and is initiating testing at the design flow rate of 25 MGD.

For the Peace River/Manasota Regional Water Supply Authority, low flows in the Peace River are causing reductions in withdrawals and may eliminate withdrawals if the drought continues. The Authority's off-line reservoir is being depleted and may be down to a one-week supply by spring's end if drought conditions worsen. The associated aquifer storage and recovery operations are being monitored closely.

On April 4, 2007, the Authority declared a water shortage emergency and suspended withdrawals from the Peace River because flows fell below the established minimum flow requirement of 90 cubic feet per second. The emergency order will make it easier to move water from utilities in Manatee and Sarasota counties to storage wells in Desoto County. It also urges counties to cut their water usage, step up enforcement against illegal lawn watering, and plug any leaks in their water lines.

St. Johns River Water Management District (SJRWMD)

No water shortage order has been issued, but SJRWMD does have a permanent lawn and landscape irrigation rule wherein irrigation is prohibited between 10 a.m. and 4 p.m. and limited to no more than two days per week, per zone. Water users choose their own irrigation days unless their local government adopts an ordinance and specifies their irrigation days. No water supply problems identified at this time.

Suwannee River Water Management District (SRWMD)

A Phase I Water Shortage Advisory was issued on November 14, 2006 with voluntary water restrictions. No water supply problems are identified at this time.

Northwest Florida Water Management District (NWFWMD)

No water shortage orders have been issued and no water supply problems are identified at this time.

The 2007 Drought in South Florida

The South Florida Regional System and Water Supply

The regional water system begins in Orlando with the Kissimmee Chain of Lakes and the Kissimmee River and flows south to the Everglades and supplies water to the following segments:

- Lake Istokpoga water is conveyed southward to the Indian Prairie Basin, for use by agricultural users and the Seminole Tribe.

- Lake Okeechobee supplies water to the Everglades Agricultural Area (south of the lake) and agricultural users along the St. Lucie Estuary (to the east) and the Caloosahatchee River (to the west).

- Major canals drain southward from Lake Okeechobee to the Water Conservation Areas, continually recharging the Lower East Coast urban wellfields, groundwater tables, and secondary canal networks.

Why is the Problem So Severe and Different from 2001?

Typically, when one part of the regional system is experiencing drought conditions, backup water supplies are available through operation of the Central and Southern Florida Flood Control Project. The SFWMD has never experienced a situation where all three major water storage areas of the system – the Upper Kissimmee Chain of Lakes, Lake Okeechobee, and the Water Conservation Areas – are substantially below normal water levels, and approaching record low levels. Lakes in the Upper Kissimmee area are below their regulation schedule and not available as a source of water to Lake Okeechobee. Lake Okeechobee is anticipated to reach a new record low level this year and is unavailable to send backup water supplies to the Lower East Coast. The Water Conservation Areas are nearing their minimum regulation schedule, below which no water may be withdrawn. Unless a schedule deviation is authorized by the U.S. Army Corps of Engineers, the District will not be able to withdraw water from these areas to recharge the coastal canals.

The period from November 2005 to March 2007 ranks as the third driest period in recorded history. Since the Governing Board of the District imposed mandatory water shortage restrictions in areas around Lake Istokpoga in October 2006, around Lake Okeechobee in November 2006 and in Southeast Florida in March 2007, drought conditions have intensified substantially. Compounding the lack of rainfall has been the consistently windy conditions, low humidity, and lack of cloud cover resulting in above average evapotranspiration rates. Little rainfall is predicted for the next two months.

What is the Risk?

The risks of the water shortage in South Florida include increased potential of saltwater intrusion into coastal wellfields, lack of water for fire protection, and significant economic loss to agriculture, nurseries, and other water-dependent businesses. Lack of water threatens the District's ability to deliver water from the Water Conservation Areas to the Lower East Coast, which poses a risk of saltwater intrusion and permanent loss of coastal public water supply wellfields. Lowered water levels in canals and surface waters could hamper the ability to fight fires in rural areas. Lack of water is likely to result in crop losses, particularly for this time of year when evapotranspiration losses are highest and crop needs are the most intense.

What is the Overall SFWMD Strategy?

In basic terms, the strategy is:

1. Prioritize application of remaining water supplies. (Normal water deliveries from the Water Conservation Areas to coastal areas have ceased. These areas normally deliver 500-600 million gallons per day to maintain groundwater levels and supply users in the dry season.)
2. Make strategic water deliveries from the Water Conservation Areas and regional canal system to:
    - Protect coastal wellfields from saltwater intrusion.
    - Maintain fire protection capabilities in designated canals in rural areas.
    - Meet the needs of power generating plants.
3. Operate forward pumps to deliver limited Lake Okeechobee supplies to agricultural industry. Maximize the limited opportunity to move some Lake Okeechobee water for storage in the Lower East Coast regional system.
4. Work with agribusiness to make targeted deliveries to minimize crop loss within the context of the allocation provided.
5. Reduce water use by imposing and vigorously enforcing water use restrictions.
6. Expand the public outreach campaign.
7. Update and implement options from the SFWMD Water Shortage Plan.

South Florida Water Management District Emergency Operations Center (EOC)

The SFWMD's EOC is fully activated in response to the water shortage emergency. Water conditions are being continually evaluated and water supply contingency plans are being developed. The SFWMD is updating the existing Water Shortage Plan to reflect ongoing drought management activities and development of new contingency plans.

Goals of the Drought Action Plan

1. Monitor: Collect and analyze drought-related information in a timely and systematic manner.

2. Assess: Assess impacts of the drought on water users and the environment.

3. Coordinate: Coordinate the drought response plans of relevant agencies and organizations.

4. Communicate: Communicate accurate information to decision makers and other interested parties.

5. Act: Take coordinated actions to reduce the adverse effects of the drought and assess the effectiveness of mitigation actions being taken.

6. Prepare: Develop actions to reduce Florida's vulnerabilities to the next drought.

Participants

It is recognized that adequate drought response relies on the actions of many agencies and organizations. This plan presents actions to be taken by the following key agencies: Florida Division of Emergency Management (DEM), the Florida Department of Environmental Protection (DEP), the Florida Department of Agriculture and Consumer Services (DACS), and the South Florida Water Management District (SFWMD).

Communication

Effective means for communication is critically important and will include:

1. Weekly written status updates from each water management district. (Depending on conditions in each water management district, water shortage orders may be declared and those districts may become direct participants in the Drought Action Plan.) Each status update is to include:

    - Rainfall and water availability status and trends.

    - Whether water shortage orders have been issued and in what parts of the district. Because water shortage phases are not consistent among districts, the restrictions imposed by each order should be specified.

    - Results of the water shortage orders and any difficulties in enforcement.

    - Observed environmental or other damage that has occurred from the drought, or is anticipated if the drought continues.

- Facilities or water sources at risk.
- Any short-term actions the district has taken, in addition to issuing water shortage orders, to deal with the drought.
- Particular problem situations of which the agency heads and the Governor should be aware.
- Suggestions for additional short-, mid-, and long-term measures that could be taken to address the drought.

2. Weekly written status updates from the Florida DEP regarding drinking water facilities. The drinking water status updates are to include:
    - Variances to water quality standards requested/issued.
    - Other drinking water system facility issues.
    - Emergency orders under consideration/issued.
3. Weekly teleconferences of the Drought Working Group, consisting of the DEP, DEM, DACS, SFWMD, and the U.S. Army Corps of Engineers. Other agencies will be invited to participate as needed.

Outreach

It is important to deliver accurate and timely information to other parties, including local governments, news media, and water users. The Florida Department of Agriculture and Consumer Services, Division of Forestry, is currently conducting a statewide wildland fire prevention campaign to reduce human caused wildfires. The Florida Department of Environmental Protection, in coordination with other communication staffs, will develop a comprehensive communications plan, which may include:

1. Continue water management district outreach activities:
    - Periodic press conferences/releases/briefings.
    - Press releases.
    - Media kits.
    - Contribute articles for water management district regular publications.
    - Distribute to stakeholders, including elected officials, business, civic, community groups, etc., a weekly E-newsletter that provides an update on conditions, restrictions, and helpful contact information.

2. Schedule TV and radio interviews/appearances for staff to emphasize importance of conservation.

3. Submit op-ed column on importance of water conservation, current restrictions in place, etc.

4. Public education campaign.

    - Informational booths at local government or organization meetings.

    - Provide information at our normal public outreach events (boat shows, etc.).

    - Provide information to homeowner associations.

5. Targeted media placements.

    - Purchase “ad space” in major dailies.

    - Design public information insert to be delivered with paper.

6. Write article/column for smaller weekly/community newspapers.

7. Create public service announcements for television and radio. Consider employing a paid advertising campaign of public service announcements to ensure consistency of message and to assure reach to consumers. Review previous announcements from 2000-2001 season to see if any remain relevant.

8. Create/modify a user-friendly webpage on DEP web site to include specific information on drought – current restrictions, fact sheet/FAQs, etc.

9. Continue citizen information “hotline.”

Drought Action Steps: Short-Term

Short-Term Action Step	DEM	DEP	DACS	SFWMD
Weekly teleconferences of the Drought Working Group, consisting of the DEP, DEM, DACS, SFWMD, and the U.S. Army Corps of Engineers, to monitor the status of the drought and identify problems and issues.	✓	✓	✓	✓
Prepare weekly written status reports.	✓	✓	✓	✓
Deliver accurate and timely information to other parties, including local governments, news media, and water users.	✓	✓	✓	✓
Use existing rule and statutory emergency authorities, as appropriate, to allow actions required to meet urgent water supply (including agricultural) needs while protecting public health, safety, and welfare, as well as our natural systems.	✓	✓		✓
Move funds within an agency, as necessary, to address critical drought issues. This will allow resources to be devoted to the highest priority needs.	✓	✓	✓	✓
Seek assistance from other parties including representatives of local governments, agriculture, industry, and local water suppliers.	✓	✓	✓	✓
Collaborate with Federal Government. Meet with the Federal Emergency Management Agency, the U. S. Department of Agriculture, and the U. S. Army Corps of Engineers, as appropriate, to discuss drought conditions and the potential need for federal assistance.	✓	✓	✓	✓
Update water shortage orders as appropriate.				✓
Encourage local governments to place a high priority on enforcement of water use restrictions.				✓
Conduct enforcement and compliance training sessions with local governments.				✓
Install and operate emergency water supply facilities, such as the forward pumps on Lake Okeechobee.				✓
Receive from the Army Corps of Engineers authorization for temporary deviations (i.e. lower levels) from the established minimum regulation schedules for WCA-1, WCA-2, WCA-3, and Lake Istokpoga.		✓		✓
Fully activate the SFMWD Emergency Operations Center.				✓
Review potential uses of reclaimed water for additional aquifer and canal recharge and irrigation purposes. Issue Emergency Orders to allow such uses where appropriate.		✓		✓

Short-Term Action Step	DEM	DEP	DACS	SFWMD
Develop a detailed contingency plan, including the most effective water management actions based on possible scenarios of rainfall, and triggers for actions.	✓	✓	✓	✓
Issue an Emergency Order for drinking water treatment plants establishing alternate standards for total dissolved solids, chloride, sulfate, pH (secondary standards) and sodium (primary standards). The alternate standards established shall be protective of public health.		✓		
Identify potential consequences of drought across stakeholder groups, including Utilities (power generation, drinking water); Health & Safety (including pre-existing health conditions/special needs); and Fire suppression operations.	✓	✓	✓	
Document current economic profiles in impacted areas (Business, Industry & Economic Stabilization); Tourism (recreational fishing, hunting, other); Agriculture (nurseries, citrus, cattle, crops, etc.); and Revenue impacts.	✓		✓	
Identify alternative water sources, treatment, and capacities, to ensure drinking water is available even under worse case scenarios.	✓	✓		✓
Monitor statewide wildfire situation.	✓		✓	
Advise DEM, SFWMD, and DEP on an ongoing basis of the potential impact to agriculture of proposed emergency orders or supply side management options under consideration for implementation.			✓	
Consider interim Lake Okeechobee management practices that preserve and enhance its water supply capability until alternative water supplies are available.		✓	✓	✓
Maintain the unified command structure with fire cooperators (Florida Division of Forestry, Division of Emergency Management, USDA Forest Service, Federal Emergency Management Agency, the State Fire Marshall, the Florida National Guard, the National Park Service and the U.S. Department of Interior)	✓		✓	✓
Deliver wildland fire prevention campaign.			✓	

Drought Action Steps: Mid-Term

Mid-Term Action Step	DEM	DEP	DACS	SFWMD
Continue to implement the Conserve Florida program and consider implementation of any of the fifty-one recommendations in the 2002 Florida Water Conservation Initiative not yet fully implemented (Attachments 2 and 5)		✓	✓	✓
Continue to develop alternative supplies of water. The development of water supplies should emphasize alternatives that protect our natural systems and are more drought-resistant (such as reuse of reclaimed water, capture and reuse of agricultural irrigation water, seawater desalination, and demineralization of brackish groundwater). (Attachments 1 and 3)		✓	✓	✓
State Leadership in Water Conservation. The state should lead by example and ensure that state operated facilities, such as universities, prisons, and government offices aggressively pursue water conservation. For example, conduct water conservation audits at state operated facilities and institute water conservation measures and incentives. Local governments are encouraged to also conduct such audits and reviews.	✓	✓	✓	✓
Prioritize Funding. Emphasize drought resistance in making decisions on financial assistance for the development of alternative water supplies.		✓	✓	✓
Complete the revision of the Reuse Feasibility Guidelines. These guidelines under revision will strengthen the connection between water supply planning and reuse of reclaimed water.		✓		✓
Convert water disposal to water reuse - Develop approaches to convert ocean outfalls and deep well injection of domestic wastewater to beneficial reuse of water. Statewide, hundreds of millions of gallons of treated domestic wastewater are lost by injection into deep wells or discharged via ocean outfalls. These discharges should be converted to beneficial uses of water.		✓		✓
Continue implementing the water supply/growth management linkage in the 2005 legislative reforms. (Attachment 3)		✓		✓
Seek to have local governments adopt local ordinances implementing the recommendations of the Committee on Landscape Irrigation and Florida-Friendly Design (Attachment 4)		✓		✓
Evaluate issues associated with muck fires in Lake Okeechobee.		✓	✓	✓

Attachment 1: Water Use, Droughts, and Alternative Water Supplies

The Department of Environmental Protection prepares each year a "Status Report on Regional Water Supply Planning" which summarizes projected twenty-year water demands and the water management district plans developed to meet those demands. The latest version is in preparation, but will report that Floridians used an estimated 6.5 billion gallons per day of fresh water in 2005. Agriculture was the largest use category and accounted for approximately 43% of the fresh water use. Public water supply was the next largest user and accounted for approximately 37% of the total use.

By 2025, the demand for fresh water is estimated to increase by about 2 billion gallons per day to 8.5 billion gallons per day. This is an increase of 29.5%. Agriculture, the sector with the smallest projected increase in use over the next 20 years, will no longer be the largest user and its percentage of total use will decline to 35%. By 2025, public water supply is expected to increase by 49% and become the largest user of fresh water (43% of total fresh water use). The sector with the largest percentage increase over the next 20 years is expected to be power generation. However, this sector is still expected to account for only 5% of the total fresh water use.

The regional water supply plans of Florida's five water management districts, in conjunction with the plans of local water providers, identify ways to meet the twenty-year demands under a 1-in-10 year drought condition. Several of the regional water supply plans adopted in 2000 indicated that the development of traditional sources, such as fresh groundwater, will not be enough to meet the future reasonable-beneficial needs, while sustaining our natural systems. The shortfall of traditional sources is even more pronounced during more severe drought conditions, so the plans identified several alternative sources that should be developed. The Water Protection and Sustainability Program was established, in 2005, to help water suppliers fund alternative water supply projects. "Alternative water supplies" are defined as,

> "..salt water; brackish surface and groundwater; surface water captured predominately during wet-weather flows; sources made available through the addition of new storage capacity for surface or groundwater; water that has been reclaimed after one or more public supply, municipal, industrial, commercial, or agricultural uses; the downstream augmentation of water bodies with reclaimed water; stormwater; and any other water supply source that is designated as nontraditional for a water supply planning region in the applicable regional water supply plan." (section 373.019(1), F.S.)

With the assistance of the Water Protection and Sustainability Program established by the legislature in 2005, a great many alternative water supply projects are being constructed. During the last two years, the water management districts helped fund 238 projects. The total construction cost of these projects is approximately $2.5 billion. For the first two years, the Water Protection and Sustainability Program will provide $160 million towards the construction of these projects. In addition to this state contribution, the water management districts will contribute approximately $132 million, and water suppliers will contribute about $1.6 billion.

Generally speaking, alternative water supplies are considered “drought resistant.” This means that the use of these supplies will not be affected by drought conditions and will not result in unacceptable impacts to natural resources. All the regional water supply plans were updated in 2007 and identified a mix of traditional and alternative sources to meet the future demands. Spreading out the demand among a variety of sources helps drought proof water supplies.

For the purposes of this Drought Action Plan, it is very significant that reclaimed water and brackish water demineralization are the dominant sources of new water supplies. These two types will provide approximately 77% of the water developed by the alternative water supply projects. When completed, these projects are expected to provide 725 million gallons per day of “new” water. Both reclaimed water and brackish water demineralization are drought resistant sources and would not usually be depleted even in a severe drought. However, most of these projects are at least several years away from completion and, in the near term, the state will still rely, in large part, on sources that are more vulnerable to drought.

Attachment 2: Joint Statement of Commitment on Water Conservation in Public Water Supply; Conserve Florida Program

In 2004, following the execution of a "Joint Statement of Commitment for the Development and Implementation of a Statewide Comprehensive Water Conservation Program for Public Water Supply", the FDEP, the five water management districts, the Florida Public Service Commission, the Florida Rural Water Association, the Florida Water Environment Association, and the Florida Section of the American Water Works Association, set out to develop a comprehensive statewide water conservation program for public water supply utilities. That effort was codified by the 2004 legislature through the enactment of section 373.227, F.S., which directed the FDEP to develop a statewide water conservation program.

Since that time, the Florida Department of Environmental Protection and nine other agencies and organizations joined to form *Conserve Florida* for the purpose of developing a comprehensive statewide water conservation program for public water supply utilities.

The Conserve Florida program has three related elements:

1. Development of consistent metrics and performance measures for water conservation programs. Completion of this element enabled the tracking and assessment of effectiveness of water conservation programs and the subsequent development of the other elements.

2. Development and maintenance of a Florida-specific water conservation Guide to assist public water suppliers in the design and implementation of utility-specific water conservation programs. The Guide is an interactive web-based application (working software and database) to aid utilities in developing utility specific, goal-based conservation plans, and evaluating and reporting results. This application is hosted by the Water Conservation Clearinghouse operated by the University of Florida under contract with the Department of Environmental Protection.

3. Development of a statewide database and Clearinghouse on water conservation to receive, store, analyze, and disseminate information on water conservation program effectiveness. The Clearinghouse has been funded for its second year.

Attachment 3: Connecting Water Supply and Growth

In 2005, the Florida Legislature recognized that it was critical to strengthen the link between land use and water supply planning. Building upon the water management districts' regional water supply plan efforts, each local government must now include, in its comprehensive plan's potable water element, a minimum 10-year water supply facility work plan for building all public, private, and regional water supply facilities necessary to serve existing and new development within its jurisdiction. These water supply facility work plans must project future water supply demands, identify the water supply sources available to meet those demands and identify all water supply projects that need to be constructed. They will also include the schedules for permitting, constructing, and operating all needed public, private, and regional water supply facilities within the local government's jurisdiction.

The 10-year water supply facility work plans must be adopted by the local government into their comprehensive plans within 18 months following the approval of an update to an existing regional water supply plan. (However, local governments located within the Wekiva River Study Area were required to adopt their water supply facility work plan by December 1, 2006.)

The Department of Community Affairs held workshops during the fall of 2005 to discuss the new growth management legislation in each regional planning council area. The water management districts must provide technical and financial assistance to local governments and water suppliers to help them identify, plan, design, and build alternative water supply projects.

Attachment 4: Committee on Landscape Irrigation and Florida-Friendly Design

Up to one-half of public water supply in Florida is devoted to landscape irrigation. Given Florida's limited water resources, in combination with a rapidly growing population, wise irrigation practices will play an essential role in providing a sustainable water future for our state. Proper landscape design and irrigation system standards can help save significant amounts of water and money, and achieve both attractive landscapes and protection of our natural resources. Section 373.228, F.S. recognized these issues, and resulted in the formation of the Committee on Landscape Irrigation and Florida-Friendly Design Standards, which developed improved landscape irrigation and design standards.

In early 2007, the Committee developed "Standards" to be used by local governments when developing landscape irrigation and Florida-Friendly ordinances. To aid in the implementation of the Standards, the Committee also made specific recommendations to agencies and other entities. The final recommendation of the Committee addresses the development of scientifically based Guidelines for urban, commercial, and residential landscape irrigation.

Attachment 5: Summary of Recommendations of the April 2002 Water Conservation Initiative by Work Group Area

The 2002 Water Conservation Initiative resulted in fifty-one separate recommendations for increased water use efficiency. Many of the recommendations have been implemented in the Conserve Florida Program (section 373.227, F.S.,) the Landscape Irrigation and Florida-Friendly Design Committee (section 373.228, F.S.), the Water Protection and Sustainability Program (sections 403.890 and 373.1961, F.S.), and other programs. However, there are still many recommendations made in response to the last major Florida drought that have not yet been fully implemented and should be reconsidered.

Recommended Water Conservation Alternatives[3]

Water Conservation Alternative	Priority	Total Score	Amount of Water Saved (1 to 5)[4]	Cost-Effectiveness (1 to 3)[5]	Ease of Implementing (1 to 3)[6]
Agricultural Irrigation					
AI-1: Cost share and other incentives	High	10	♦♦♦♦♦	$$$	✓✓
AI-2: More mobile irrigation labs to achieve water conservation BMPs	High	10	♦♦♦♦♦	$$$	✓✓
AI-3: Increase rainfall harvesting and recycling of irrigation water	High	9	♦♦♦♦♦	$$$	✓
AI-4: Increase the reuse of reclaimed water	High	9	♦♦♦♦♦	$$$	✓
AI-5: Improve methods for measuring water use and estimating agricultural water needs	Medium	8	♦♦♦♦	$$	✓✓
AI-6: Conduct additional research to improve agricultural water use efficiency	Medium	8	♦♦♦♦	$$	✓✓
AI-7: Increase education and information dissemination	Medium	8	♦♦♦	$$	✓✓✓
AI-8: Amend WMD rules to create incentives for water conservation	Medium	8	♦♦♦♦	$$	✓✓

[3] The "scores" assigned to each alternative have been made by the Department of Environmental Protection, with the benefit of the recommendations of participants in the Water Conservation Initiative.

[4] A score of 1 indicates the least water saved, 5 the most.

[5] A score of 1 indicates the least cost-effective, 3 the most cost-effective.

[6] A score of 1 indicates relatively difficult to implement, 3 relatively easy.

Water Conservation Alternative	Priority	Total Score	Amount of Water Saved (1 to 5)[4]	Cost-Effec-tiveness (1 to 3)[5]	Ease of Imple-menting (1 to 3)[6]
Landscape Irrigation					
LI-1: Develop and adopt state irrigation design & installation standards and require inspection.	High	10	💧💧💧💧💧	$ $ $	✓ ✓
LI-2: Expand and coordinate educational/outreach programs on water-efficient landscaping.	High	9	💧💧💧💧	$ $ $	✓ ✓
LI-3: Establish a statewide training and certification program for irrigation design and installation professionals.	High	9	💧💧💧💧	$ $ $	✓ ✓
LI-4: Develop environmentally sound guidelines for the review of site plans	Medium	8	💧💧💧💧	$ $ $	✓
LI-5: Conduct applied research to improve turf and landscape water conservation	Medium	8	💧💧💧💧	$ $	✓ ✓
LI-6: Establish a training and certification program for landscape maintenance workers.	Medium	7	💧💧💧💧	$ $	✓
LI-7: Evaluate the use of water budgeting as an effective water conservation practice	Low	6	💧💧💧💧	$	✓
LI-8: Evaluate the need to establish consistent statewide watering restrictions for landscape irrigation	Low	6	💧💧💧	$ $	✓
Water Pricing					
WP-1: Phase in conservation rate structures	High	10	💧💧💧💧💧	$ $ $	✓ ✓
WP-2: Require drought rates as part of utility conservation rate structures	Medium	8	💧💧💧	$ $ $	✓ ✓
WP-3: Consider using market principles in the allocation of water, while still protecting the fundamental principles of Florida water law	Medium	7	💧💧💧	$ $ $	✓
WP-4: Improve cost-effectiveness in the next cycle of regional water supply plans	Medium	7	💧💧	$ $ $	✓ ✓
WP-5: Phase in informative billing	Medium	7	💧💧	$ $ $	✓ ✓
WP-6: Require more measurement of water use, including metering and sub-metering					
a) Sub-metering of new multi-family residences	Medium	7	💧💧💧	$ $	✓ ✓
b) Sub-metering retrofit of existing multi-family residences	Low	6	💧💧💧💧	$	✓

Water Conservation Alternative	Priority	Total Score	Amount of Water Saved (1 to 5)[4]	Cost-Effectiveness (1 to 3)[5]	Ease of Implementing (1 to 3)[6]
WP-7: Adopt additional state guidance on water supply development subsidies	Low	6	💧 💧	$ $	✓ ✓
Industrial/Commercial/Institutional					
ICI-1: Consider establishing a "Conservation Certification" program	High	10	💧 💧 💧 💧	$ $ $	✓ ✓ ✓
ICI-2: Consider a range of financial incentives and alternative water supply credits	High	10	💧 💧 💧 💧	$ $ $	✓ ✓ ✓
ICI-3: Consider cooperative funding for the use of alternative technologies to conserve water	High	9	💧 💧 💧 💧	$ $ $	✓ ✓
ICI-4: Implement additional water auditing programs	Medium	8	💧 💧 💧 💧	$ $	✓ ✓
ICI-5: Promote utilization of reclaimed water	Medium	8	💧 💧 💧 💧	$ $	✓ ✓
ICI-6: Investigate methods of assuring that large users from public suppliers have the same conservation requirements as users with individual permits	Low	6	💧 💧 💧	$ $	✓
Indoor Water Use					
IWU-1: Expand programs to replace inefficient toilets	High	10	💧 💧 💧 💧 💧	$ $ $	✓ ✓
IWU-2: Require that inefficient plumbing fixtures be retrofitted at time of home sale	High	9	💧 💧 💧 💧	$ $ $	✓ ✓
IWU-3: Provide incentives to retrofit inefficient home plumbing fixtures	High	9	💧 💧 💧 💧	$ $ $	✓ ✓
IWU-4: Support national dishwasher and clothes washer standards; offer incentives for purchasing efficient washers	High	9	💧 💧 💧 💧	$ $ $	✓ ✓
IWU-5: Create a water auditor inspection program for the sale of new and existing homes, supported by a refundable utility service fee	Medium	8	💧 💧 💧 💧	$ $ $	✓
IWU-6: Coordinate and expand the statewide water conservation campaigns	Medium	8	💧 💧 💧 💧	$ $	✓ ✓
IWU-7: Evaluate the potential for gray water use	Low	5	💧 💧 💧	$	✓

Water Conservation Alternative	Priority	Total Score	Amount of Water Saved (1 to 5)[4]	Cost-Effec-tiveness (1 to 3)[5]	Ease of Imple-menting (1 to 3)[6]
IWU-8: Investigate the potential for cisterns	Low	4	💧 💧	$	✓
Reuse of Reclaimed Water					
RW-1: Encourage metering and volume-based rate structures for reclaimed water service	High	10	💧 💧 💧 💧 💧	$ $ $	✓ ✓
RW-2: Education and Outreach	High	9	💧 💧 💧 💧	$ $	✓ ✓ ✓
RW-3: Facilitate seasonal reclaimed water storage (including ASR)	High	9	💧 💧 💧 💧	$ $ $	✓ ✓
RW-4: Link reuse to regional water supply planning	High	9	💧 💧 💧 💧	$ $ $	✓ ✓
RW-5: Implement viable funding programs	High	9	💧 💧 💧 💧 💧	$ $	✓ ✓
RW-6: Promote agency support of groundwater recharge and indirect potable reuse	High	9	💧 💧 💧 💧 💧	$ $	✓ ✓
RW-7: Encourage reuse in Southeast Florida	High	9	💧 💧 💧 💧 💧	$ $	✓ ✓
RW-8: CUP incentives for utilities that implement reuse programs	Medium	8	💧 💧 💧 💧	$ $	✓ ✓
RW-9: Encourage use of supplemental water supplies	Medium	7	💧 💧 💧	$ $	✓ ✓
RW-10: Assist in ensuring economic feasibility for reuse utilities and end users	Medium	7	💧 💧 💧	$ $	✓ ✓
RW-11: Encourage reuse system inter-connects	Medium	7	💧 💧 💧	$ $	✓ ✓
RW-12: Enable redirection of existing reuse systems to more desirable reuse options	Low	6	💧 💧 💧	$ $	✓
RW-13: Facilitate permitting of backup discharges	Low	6	💧 💧	$ $	✓ ✓