Chapter 5: Water Supply

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INTRODUCTION

This year, the Five-Year Water Resource Development Work Program and the Alternative Water Supply Annual Report are combined in this single Water Supply chapter of the *2006 South Florida Environmental Report – Volume II*. Together these reports reflect Florida's 2005 growth management legislation partially identified in Section 373.0361, Florida Statutes (F.S.), which requires regional water supply plans to specifically identify Alternative Water Supply (AWS) projects in addition to water supply development sources.

This chapter also fulfills the reporting mandates of Section 373.536(6)(a)4, F.S., requiring each water management district to annually prepare a five-year water resource development work program that projects future expenditures to implement regional water supply plans and Section 373.19613(n), F.S., requiring each water management district to submit an annual report to the governor and Florida Legislature on AWS funding.

FIVE-YEAR WATER RESOURCE DEVELOPMENT WORK PROGRAM

The Five-Year Water Resource Development Work Program provides an implementation update of the South Florida Water Management District (SFWMD or District) regional water supply plans. A regional water supply plan was developed for each of the District's four planning areas – the Upper East Coast Water Supply Plan (completed in 1998) and the Kissimmee Basin, Lower West Coast, and Lower East Coast water supply plans (completed in 2000). The water supply plans identify water supply sources that when developed will serve the projected need without harming the environment.

In 1997, amendments to Chapter 373, F.S., required plans to be updated at least every five years. Accordingly, the Upper East Coast Water Supply Plan was updated in 2004. All future updates of the water supply plans will now be guided by the substantial growth management reform to Chapter 373 that occurred during the 2005 legislative session in Senate bills (SB) 360, 444, and 332. Chapter 373, F.S., now requires a higher level of water supply planning coordination between the water management districts and local government. Senate bills 444 and 332, which create the Water Resource Protection and Sustainability Program, and its accompanying trust fund, establish a firm link between development and water supply planning by ensuring intergovernmental coordination of future land use plans with adequate potable water supplies.

The regional water supply plans must now provide sufficient AWS project details and recommendations to ensure that facilities needed to supply new sources of water will be available when needed. Local governments in turn must select and incorporate AWS projects into comprehensive plans, implementing a work plan for building needed facilities. The laws require that the comprehensive plan's evaluation and appraisal process include a review of progress made in implementing the AWS projects. As project recommendations change and regional water supply plans are updated, information will be included in subsequent five-year water resource development work programs.

The SFWMD is aggressively implementing the new growth management legislation. Three of the District's water supply plans – the Kissimmee Basin, Lower West Coast, and Lower East Coast – are being updated to meet new legislative requirements and are due for completion in 2006. An addendum fulfilling the recent legislative requirements will also be added to the Upper East Coast Water Supply Plan in 2006. As the District is transitioning between the 2000 and 2006 regional water supply plans, this report highlights specific water resource development projects that are included in the existing water supply plans. Because many of the water resource development recommendations from the 2000 and 2004 water supply plans have been completed or merged into other projects, tracking of those recommendations is being coordinated with the Florida Department of Environmental Protection (FDEP).

Funding

The SFWMD has allocated $12,824,382 in Fiscal Year 2006 (FY2006) for water resource development projects. Over the FY2006–FY2010 period it is anticipated that the SFWMD will spend $55,233,930 on water resource development projects (**Table 5-1**). In addition, during FY2006 the SFWMD is expected to allocate approximately $1.65 million to implement the District's Water Conservation Program and establish Mobile Irrigation Laboratories (MILs) (**Table 5-3**).

The funding described does not include Comprehensive Everglades Restoration Plan (CERP) and Everglades Restoration Accelerated Program (Acceler8) projects. For a full discussion of CERP and Acceler8 projects, see Chapter 7A of the *South Florida Environmental Report – Volume I.*

Water Made Available

The intent of water resource development projects is to support and enhance water supply development projects. While water resource development projects may not directly provide additional water for consumptive use, the projects may incorporate additional water made available for future years, as reflected in **Table 5-2**. The water conservation programs described are estimated to result in 2.66 million gallons per day (mgd) of additional available water in FY2006 and 16.14 mgd of additional water by FY2010 (**Table 5-4**).

Meeting Water Supply Needs for a 1-in-10 Drought Event

Regional water supply plans will provide sufficient water to meet the needs of existing and future reasonable-beneficial use for a 1-in-10 drought event through the use of a water shortage plan. Through the SFWMD Water Shortage Plan, the District implements its water shortage authority by restricting consumptive uses based on the concept of shared adversity between users and water resources [Chapter 40E-21, Florida Administrative Code (F.A.C.)]. Under this plan, different levels or phases of water shortage restrictions with varying levels of severity are imposed relative to the severity of drought conditions. The four phases of current water shortage restrictions are based on progressively increasing resource impacts leading up to serious harm. Under the District's plan, Phase I and II water shortages primarily reduce water use through conservation techniques and minor use restrictions, such as restrictions on or temporary elimination of car washing and lawn watering. Phase III and IV, however, require use cutbacks associated with some level of economic impact to the users, such as the potential for crop damage due to agricultural irrigation restrictions.

Table 5-1. Summary of estimated SFWMD costs for water resource development projects.

Project	FY2006	FY2007	FY2008	FY2009	FY2010	Total
Water Resource Development Projects						
Upper East Coast [+]						
Northwest Fork of the Loxahatchee River Restoration Plan	$300,000	#	#	#	#	$300,000
Northern Palm Beach County Water Management Plan (see Lower East Coast)	see Lower East Coast	see Lower East Coast	see Lower East Coast	see Lower East Coast	see Lower East Coast	see Lower East Coast
Kissimmee Basin [+]						
Wetlands Monitoring Network	*	*	*	*	*	*
Hydrologic Testing and Monitoring	*	*	*	*	*	*
Surface Water Evaluations	*	*	*	*	*	*
MFL Development for Lake Istokpoga	^	^	^	^	^	^
Lower West Coast [+]						
Big Cypress Basin						
Lake Trafford Restoration	$3,000,000	0	0	0	0	$3,000,000
Henderson Creek Restoration	0	$1,500,000	0	0	0	$1,500,000
Henderson Creek Improvements	0	$1,000,000	0	0	0	$1,000,000
Belle Meade Rehydration Plan	0	$1,000,000	0	0	0	$1,000,000
Golden Gate Canal Weir #3 Retrofit	$1,500,000	0	0	0	0	$1,500,000

[+] The water supply plan for this planning area is currently being updated.

[*] The costs are included in the District-wide hydrogeologic projects.

[^] Staff time only

[#] The budget for this project will be based on a science plan under development that will project costs on an annual basis for the next five years.

Table 5-1. Continued.

Project	FY2006	FY2007	FY2008	FY2009	FY2010	Total
Golden Gate Canal Weir #6 and #7 Retrofit	0	0	$1,700,000	0	0	$1,700,000
Baron River Canal Structures retrofit Phase 1	0	0	$1,800,000	0	0	$1,800,000
Henderson Creek Spreader Channel	0	0	0	$1,500,000	0	$1,500,000
Golden Gate Canal Weir #5 Retrofit	0	0	0	$2,000,000	0	$2,000,000
Baron River Canal Structures Retrofit Phase II	0	0	0	$1,500,000	0	$1,500,000
Lower East Coast [+]						
Northern Palm Beach County Comprehensive Water Management Plan (project shared with Upper East Coast planning area)	$339,316	$580,000	$30,000	$30,000	$30,000	$1,009,316
Broward Urban Enhancement	&	&	&	&	&	&
Eastern Hillsboro Regional ASR Pilot Project	Costs included in Other District-wide Projects	Costs included in Other District-wide Projects	Costs included in Other District-wide Projects	Costs included in Other District-wide Projects	Costs included in Other District-wide Projects	Costs included in Other District-wide Projects
Floridan Aquifer System Ground Water Model	*	*	*	*	*	*

[+] The water supply plan for this planning area is currently being updated.

[*] The costs are included in the District-wide hydrogeologic projects.

[&] To be determined

Table 5-1. Continued.

Project	FY2006	FY2007	FY2008	FY2009	FY2010	Total
District-wide Hydrogeologic Projects						
Exploratory Drilling and Testing	$1,736,000	$2,007,000	$2,195,200	$2,402,220	$2,629,942	$10,970,362
Floridan Model and Database Development	$135,000	$206,000	$223,100	$241,910	$262,601	$1,068,611
Groundwater Monitoring	$809,511	$850,687	$893,221	$937,882	$984,776	$4,476,077
Groundwater and ET Assessments – Co-funded USGS Projects	$385,000	$500,000	$525,000	$551,250	$578,813	$2,540,063
Other District-wide Projects						
District-wide feasibility studies to support water resource and water supply development	$950,000	$950,000	$900,000	$900,000	$900,000	$4,600,000
Cooperative projects to support water resource and water supply development	$1,159,501	$1,000,000	$1,000,000	$1,000,000	$1,000,000	$5,159,501
Regional Aquifer Storage and Recovery (ASR) Development	$2,510,000	$2,600,000	$2,300,000	$600,000	$600,000	$8,610,000
Total	**$12,824,328**	**$12,193,687**	**$11,566,521**	**$11,663,262**	**$6,986,132**	**$55,233,930**

[+] The water supply plan for this planning area is currently being updated.

[*] The costs are included in District-wide hydrogeologic projects.

[^] Staff time only

[#] The budget for this project will be based on a science plan under development that will project costs on an annual basis for the next five years.

[&] To be determined

Table 5-2. Expected total quantity of water to be made available from water resource development projects.

Project	FY2006	FY2007	FY2008	FY2009	FY2010	Total
Water Resource Development Projects						
Upper East Coast						
Northwest Fork of the Loxahatchee River Restoration Plan	&	&	&	&	&	&
Northern Palm Beach County Water Management Plan (project shared with Lower East Coast)	See Lower East Coast	See Lower East Coast	See Lower East Coast	See Lower East Coast	See Lower East Coast	See Lower East Coast
Kissimmee Basin						
Wetlands Monitoring Network	*	*	*	*	*	*
Hydrologic Testing and Monitoring	*	*	*	*	*	*
Surface Water Evaluations	*	*	*	*	*	*
MFL Development for Lake Istokpoga	+	+	+	+	+	+
Lower West Coast						
Big Cypress Basin						
Golden Gate Canal Weir #3 Retrofit	&	&	&	&	&	&
Henderson Creek Diversion	&	&	&	&	&	&
Henderson Creek Improvements	&	&	&	&	&	&
Belle Meade Rehydration Plan	&	&	&	&	&	&
Golden Gate Canal Weir #6 & #7 Retrofit	&	&	&	&	&	&

* These projects are related to hydrogeologic data collection and analysis and do not produce water.

+ This project does not produce water, however is important for quantification of water resource development of Lake Istokpoga.

& To be determined

Table 5-2. Continued.

Project	FY2006	FY2007	FY2008	FY2009	FY2010	Total
Barron River Canal Structures Retrofit, Phase 1	&	&	&	&	&	&
Henderson Creek Spreader Channel	&	&	&	&	&	&
Golden Gate Canal Weir #5 Retrofit	&	&	&	&	&	&
Barron River Canal Structures Retrofit Phase II	&	&	&	&	&	&
Lower East Coast						
Northern Palm Beach County Comprehensive Water Management Plan (project shared with Upper East Coast planning area)	&	&	&	&	&	&
Broward County Urban Environmental Enhancement	#	#	#	#	#	#
Eastern Hillsboro Regional ASR Pilot Project	&	&	&	&	&	&
Floridan Aquifer System Ground Water Model	*	*	*	*	*	*
District-wide Hydrogeologic Projects						
Exploratory Drilling and Testing	*	*	*	*	*	*
Floridan Model and Database Development	*	*	*	*	*	*
Groundwater Monitoring	*	*	*	*	*	*
Groundwater and ET Assessments – Co-funded USGS Projects	*	*	*	*	*	*
Exploratory drilling and testing	*	*	*	*	*	*
Other District-wide Projects						
District-wide feasibility studies to support water resource and water supply development	&	&	&	&	&	&
Cooperative projects to support water resource and water supply development	&	&	&	&	&	&
Regional Aquifer Storage and Recovery (ASR) Development	&	&	&	&	&	&
Total	**&**	**&**	**&**	**&**	**&**	**&**

* These projects are related to hydrogeologic data collection and analysis and do not produce water.

+ This project does not produce water; however, is important for quantification of water resource development of Lake Istokpoga.

Associated projects are for environmental enhancement only.

& To be determined

Table 5-3. Summary of estimated SFWMD costs for District-wide conservation programs.*

Conservation Program	FY2006	FY2007	FY2008	FY2009	FY2010	Total
Water Savings Incentive Program (WaterSIP)	$450,000	$1,000,000	$1,500,000	$2,000,000	$2,500,000	$7,450,000
Conservation Outreach, Research and Technical Assistance	$500,000	$500,000	$500,000	$500,000	$500,000	$2,500,000
Mobile Irrigation Laboratories	$703,000	$703,000	$703,000	$703,000	$703,000	$3,515,000
Total	**$1,653,000**	**$2,203,000**	**$2,703,000**	**$3,203,000**	**$3,703,000**	**$13,465,000**

* Excludes staff costs

Table 5-4. Expected total quantity of water to be made available by water conservation programs in mgd.

Conservation Program	FY2006	FY2007	FY2008	FY2009	FY2010	Total
Water Savings Incentive program (WaterSIP)	0.66	1.37	1.37	1.37	1.37	6.14
Conservation Outreach, Research and Technical Assistance	*	*	*	*	*	*
Mobile Irrigation Laboratories	2.00	2.00	2.00	2.00	2.00	10.00
Total (mgd)	**2.66**	**3.37**	**3.37**	**3.37**	**3.37**	**16.14**

* These programs provide support for the Water Conservation Program and do not produce water.

PROJECT STATUS HIGHLIGHTS

UPPER EAST COAST PLANNING AREA

The Upper East Planning Area is projected to experience substantial population growth by year 2025. Population is forecast to increase by more than 50 percent from year 2000 to almost a half million, with expansion occurring mostly in coastal areas. Agriculture, primarily citrus located in the western portion of the region, is projected to decrease due to current industry markets, citrus canker, and development pressure. This region receives an average of 55 inches of rainfall annually, but with a wide range both seasonally and annually. Meeting human water demands while addressing the water needs of the environment makes development of proactive water supply strategies imperative to the economic and environmental sustainability of this area.

Northwest Fork of the Loxahatchee River Restoration Plan

The District, in cooperation with the FDEP, will develop a restoration plan for the Northwest Fork of the Loxahatchee River (**Figure 5-1**) that incorporates environmental water needs while maintaining existing levels of flood protection and public water supply. The Northwest Fork of the Loxahatchee River Restoration Plan was included in the Upper East Coast Regional Water Supply Plan because key elements of the Northwest Fork reside in the Upper East Coast Planning Area (Martin County). Development of the restoration plan was initiated in FY2004. The District anticipates that a final restoration plan will be presented to the SFWMD Governing Board in February 2006.

Figure 5-1. Northwest Fork of the Loxahatchee River (source: SFWMD).

Northern Palm Beach County Comprehensive Water Management Plan

This project provides benefits for the Upper East Coast and Lower East Coast planning areas. See the *Lower East Coast Planning Area* section of this chapter for the project update.

KISSIMMEE BASIN PLANNING AREA

Population in the Kissimmee Basin Planning Area is forecast to increase by more than 170 percent from year 2000 to more than one and a quarter million by year 2025, with expansion occurring in the metro-Orlando region. As a result of development pressure, agriculture located in Orange, Osceola, and Polk counties is projected to decrease, while agriculture in the southern portion of the basin is expected to remain the same. Rainfall is responsible for nearly all surface water inflows and outflows in the Kissimmee Basin Planning Area and is an important source of recharge to the surficial and Floridan aquifer systems. The mean annual rainfall for the Kissimmee Basin Planning Area is 51 inches with a wide range seasonally and annually.

Wetlands Monitoring Network

In 2005, the SFWMD continued its efforts to expand its wetlands monitoring network in Central Florida by adding two new stations (**Figure 5-2**) to five existing sites. Both stations have continuous monitoring recorders installed. The purpose of the program is to observe and confirm potential wetland impacts resulting from water use.

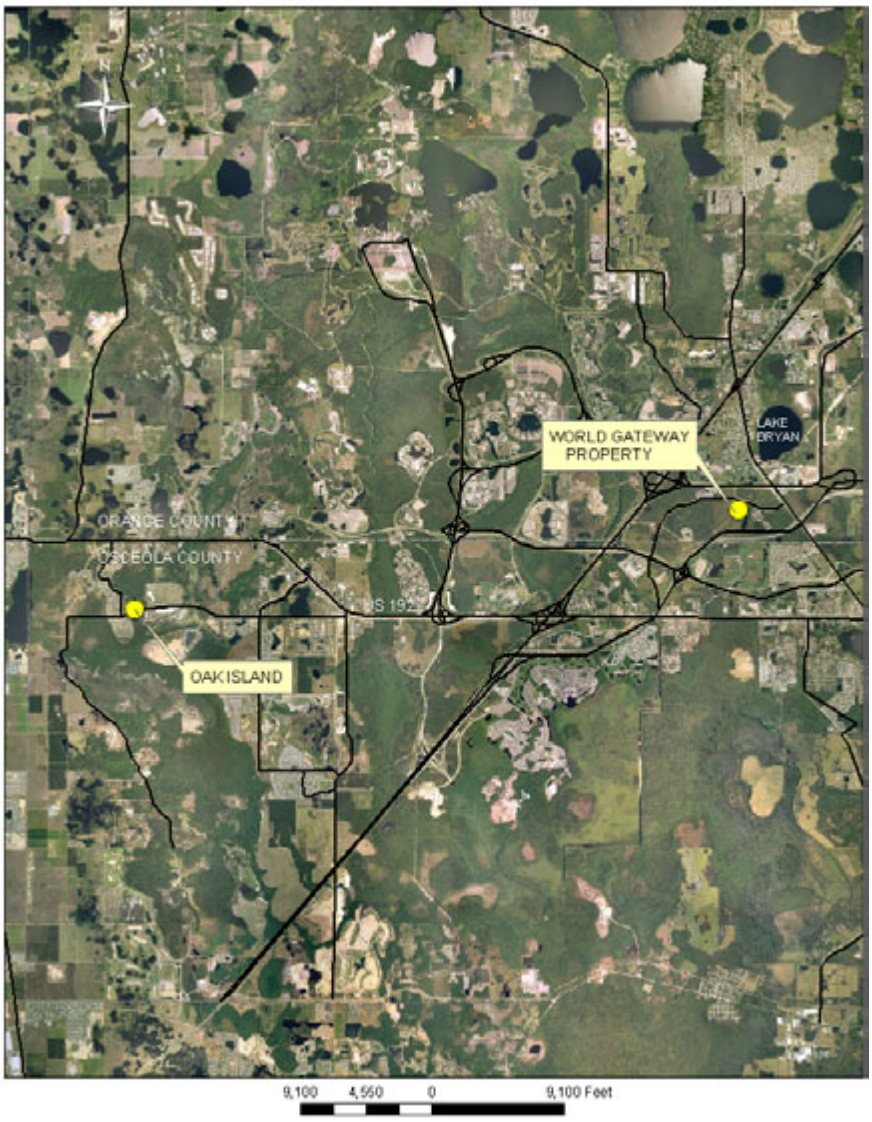

Figure 5-2. Orange/Osceola counties wetland monitoring sites (source: SFWMD).

Hydrogeologic Testing and Monitoring

PAIRED WELL MONITORING

Three new paired well stations were installed as part of the District's effort to update and improve shallow and Floridan aquifer level monitoring. These stations add to the 29 other sites (**Figure 5-3**) that have been updated or modified over the past three years. Each station includes a minimum of two wells, one in the shallow aquifer and one in the upper Floridan aquifer, and has continuous recorders for monitoring.

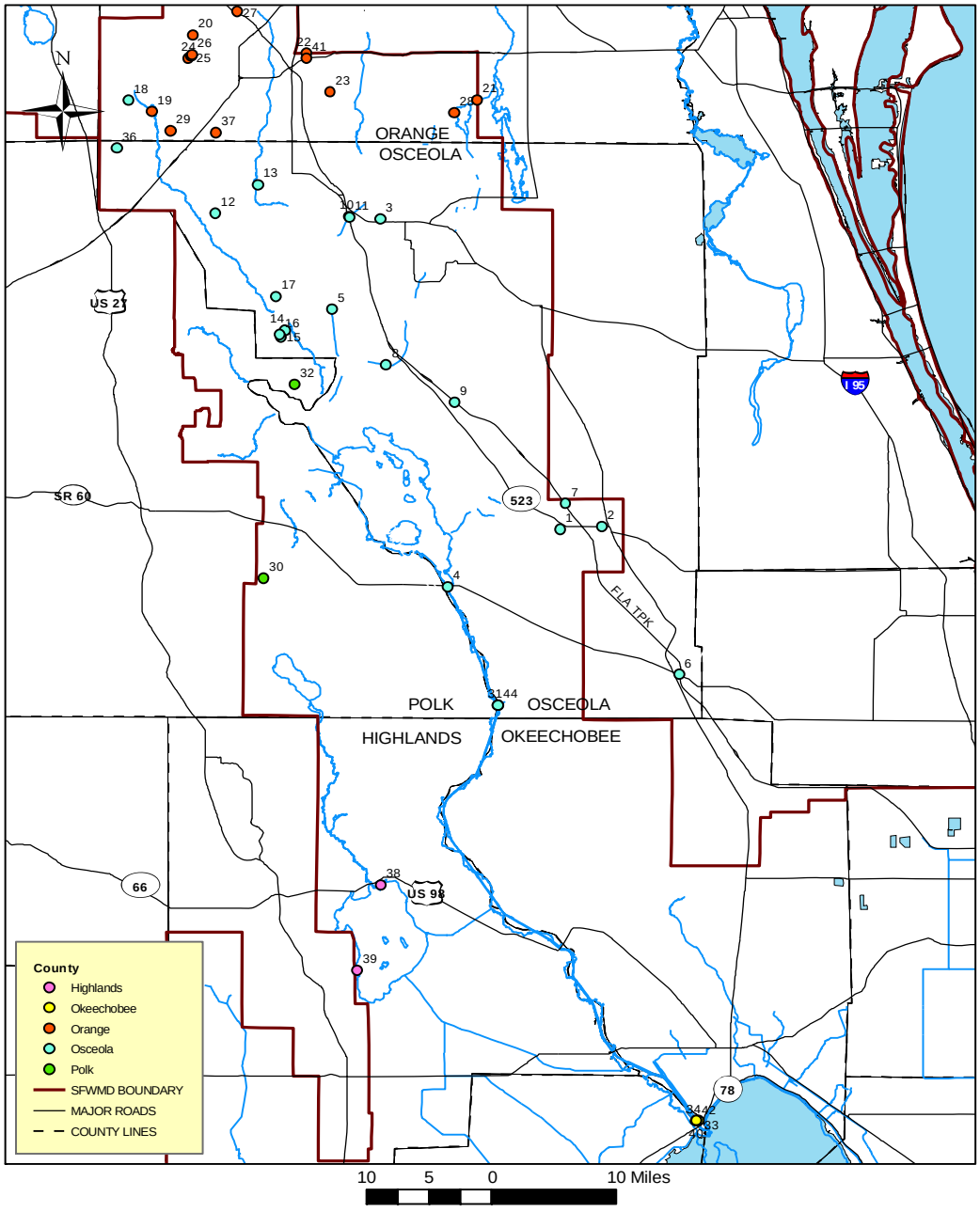

Figure 5-3. Paired well monitoring sites (source: SFWMD).

FLORIDAN WELL DRILLING

In 2005, the SFWMD completed one new upper Floridan well identified as the Polk County Floridan well (POF-20R) and one lower Floridan exploratory well, the Osceola County Floridan well (OSF-104), at the S-65A structure located at the south end of Lake Kissimmee (**Figure 5-4**). Field investigation activities included geophysical logging, groundwater sampling, and water quality analysis. Well construction of POF-20 and aquifer performance testing is scheduled to begin in 2006. These wells are part of an expanding network to monitor the effects of Floridan aquifer water use.

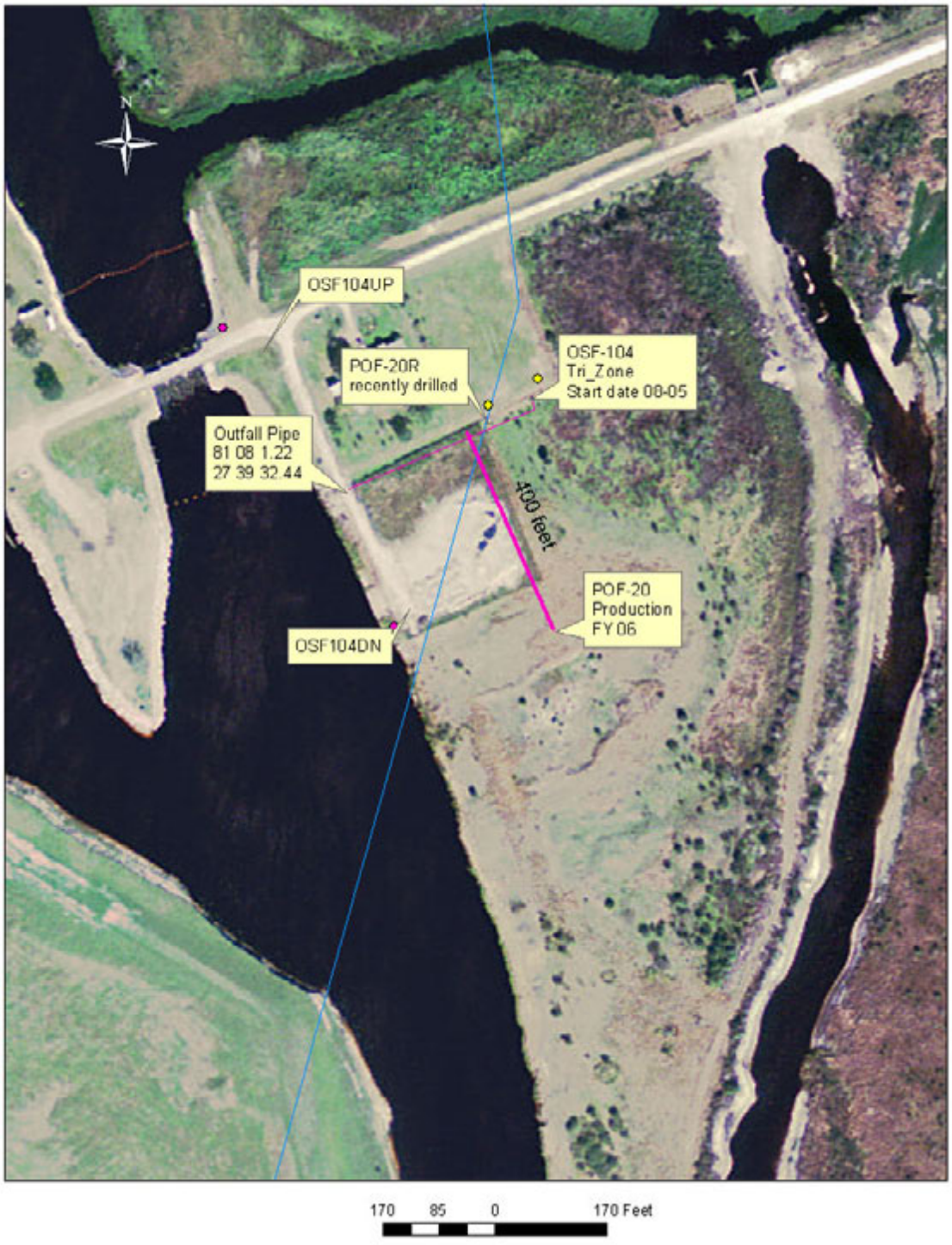

Figure 5-4. Polk/Osceola County Floridan aquifer testing sites (source: SFWMD).

LAKE ISTOKPOGA MONITORING

Lake Istokpoga has been identified as a source for expanding agricultural demands in the southern portion of the Kissimmee Basin Planning Area. The District has undertaken a comprehensive evaluation of the lake basin resources to devise an improved operations plan for structures to improve water supply deliveries. In addition, the District installed two new water level monitoring stations on Lake Istokpoga (**Figure 5-5**) as recommended in the 2000 Kissimmee Basin Water Supply Plan. The two stations were installed to improve accuracy of water level measurements on the lake, which in turn may impact operation of the water control structure on the lake.

Figure 5-5. New Lake Istokpoga water level monitoring station (source: SFWMD).

Surface Water Evaluations

In 2005, the SFWMD completed preliminary evaluations of water supply availability for the Kissimmee Chain of Lakes and Shingle/Boggy Creek tributaries. These assessments show the merits of pursuing alternative water supplies from these systems in the future. The SFWMD sponsored the Toho Water Authority in 2003, 2004, and 2005 in its efforts to develop water supplies from Shingle Creek as a supplemental source to reclaimed water. District funding has exceeded $650,000 in the past three years.

A regional reclaimed water evaluation was completed in 2005 for Central Florida to address the potential for reclaimed water by the year 2025. The assessment showed that reclaimed water will play a central role in meeting Central Florida's reclaimed water supply needs. The SFWMD is supporting several reclaimed water system expansion projects in support of this goal.

Minimum Flow and Level Development for Lake Istokpoga

In 2005, the SFWMD completed development of the Minimum Flows and Levels (MFLs) for Lake Istokpoga. Work was completed on a technical publication that supported the MFL selection and several workshops were held in support of rule development. The rule to establish a minimum level for Lake Istokpoga was adopted in December 2005.

LOWER WEST COAST PLANNING AREA

In the Lower West Coast Planning Area the population is forecast to increase by more than 100 percent from year 2000 to almost one and a half million by year 2025. Because the population expansion is occurring in the coastal areas and to the east, agriculture located in the eastern portion of the region is projected to decrease. Rainfall is responsible for nearly all surface water inflows and outflows in the Lower West Coast Planning Area and is an important source of recharge to the surficial aquifer system, the lower Tamiami aquifer system, and the Sandstone aquifer system. The mean annual rainfall for the Lower West Coast Planning Area is 53 inches with a wide range seasonally and annually.

Retention Projects

During 2005, the Faka Union No. 4 Regional Retention Project (**Figure 5-6**), and a local retention project, the Corkscrew Canal Weir No. 2 and canal improvements project, were completed. The Faka Union No. 4 is a water resource development project located in the Big Cypress Basin at the south end of the city of Naples Golden Gate wellfield. The Faka Union No. 4 new weir will result in raising groundwater levels in the water table aquifer up to 1.25 feet in the immediate vicinity of the weir, and reduce canal outflow by 42 percent during an average dry season. The primary purpose of the project is to increase the conservation pool capacity to enhance groundwater recharge for the city of Naples eastern Golden Gate wellfield. This will result in making additional water available for consumptive use by the city and the self-supplied users of northern Golden Gate Estates.

The Corkscrew Canal Weir No. 2 and canal improvements project will reduce overdrainage from the Bird Rookery swamp of the Corkscrew Regional Ecosystem Watershed and raise water table elevations of an average year dry season by 0.3 feet. The primary purpose of Corkscrew Canal improvements and Weir No. 2 modification is to enhance the wet season conveyance capacity and to reduce overdrainage from Bird Rookery Swamp during the dry season. No direct enhancement of consumptive use water is intended.

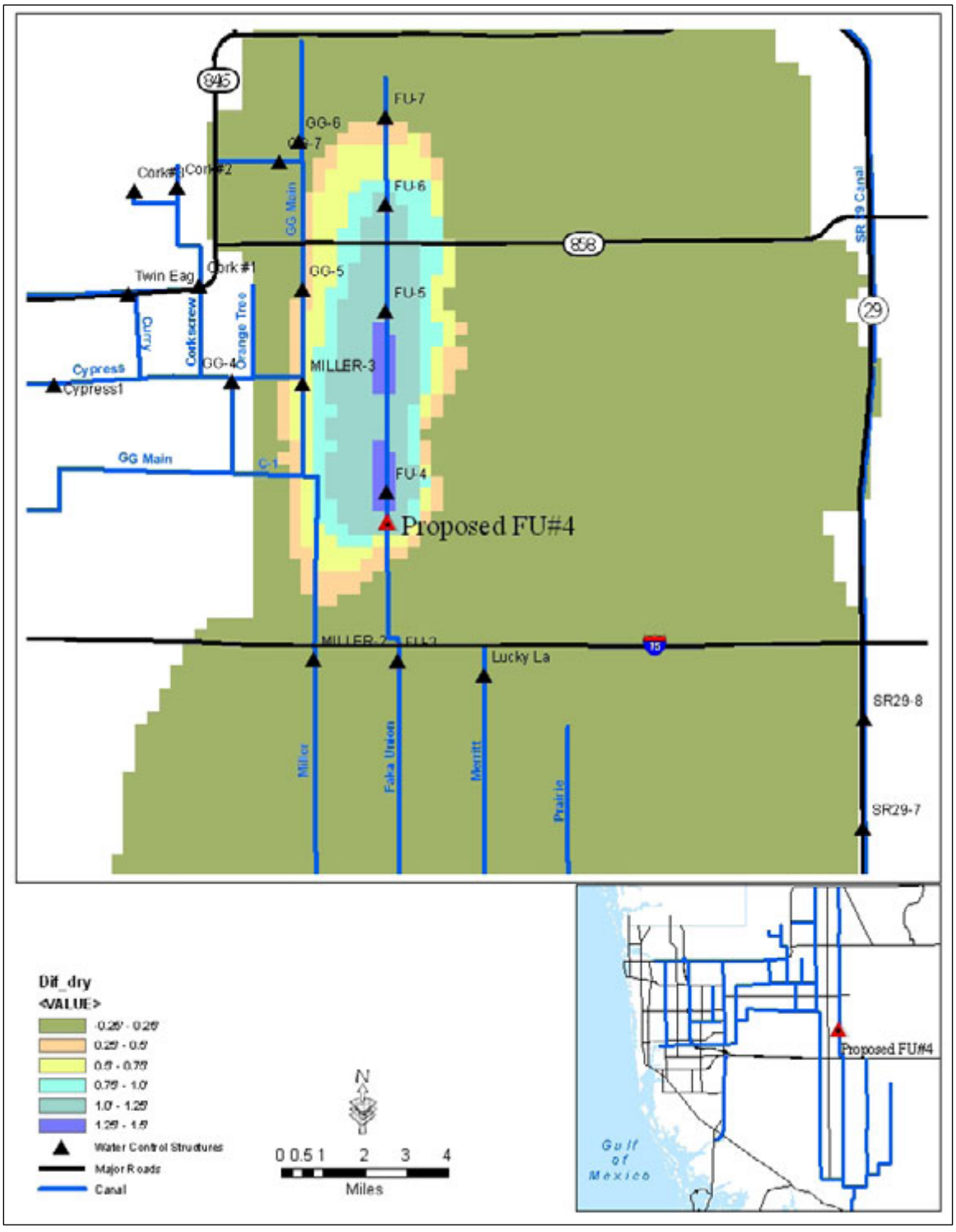

Figure 5-6. Faka Union No. 4 Regional Retention Project (source: SFWMD).

LOWER EAST COAST PLANNING AREA

The Lower East Coast (LEC) Planning Area is approximately 6,100 square miles and includes Miami-Dade, Broward, and Palm Beach counties, most of Monroe County, and the eastern portions of Hendry and Collier counties. The planning area is expected to grow over 40 percent between now and 2025, increasing to more than seven million residents and creating additional demands on the regional water supplies. In addition, the Everglades Agricultural Area includes more than a half million acres of highly productive organic soils relying on an extensive network of water supply and drainage canals. Providing sufficient water supply deliveries for the natural systems of this planning area includes the protection and conservation of world-renowned ecosystems including the Everglades, Lake Okeechobee, Florida Bay, and Biscayne Bay. Therefore, comprehensive planning of water resource and water supply development projects is needed to meet the human and urban needs while preventing loss to the natural resources.

Northern Palm Beach County Comprehensive Water Management Plan

Implementation of the Northern Palm Beach County Comprehensive Water Management Plan continues and will provide benefits for both the Upper East Coast and Lower East Coast planning regions. Approximately 47,000 acre-feet of storage has been purchased in the L-8 reservoir. The G-160 Loxahatchee Slough water control structure (**Figure 5-7**) was completed in January 2004 and the G-161 structure has been designed and scheduled for completion in March 2006. Surface and groundwater monitoring wells have been installed. Improvements to storage and water conveyance infrastructure will capture water currently lost to tide in the wet season and provide supplemental supplies in the dry season, meeting environmental needs and projected urban and agricultural demands.

Figure 5-7. G-160 Loxahatchee Slough water control structure (source: SFWMD).

Broward County Urban Environmental Enhancement

Available sources and methods are being investigated for the distribution of surface water benefiting wetland restoration systems in Broward County's Integrated Water Resource Plan. Once the environmental demands (quantities and timing of deliveries) are known, the county and the District are prepared to assess the availability of the regional and alternative sources of water to meet this demand. The SFWMD will address reservations of water and encourage the development of alternative sources such as reuse of reclaimed water. Funding proposals have been submitted for Warbler Wetland (**Figure 5-8**), Tradewinds Environmentally Sensitive Land and Forman projects. A pump installation at Tall Cypress is in the process of being contracted, as is the construction of Tall Cypress rehydration. The Environmental Resource Permit (ERP) modifications for Tall Cypress, and a new ERP for Warbler Wetland, are being submitted to the District.

Figure 5-8. Warbler Wetland
(source: Broward County Parks and Recreation Division).

Eastern Hillsboro Aquifer Storage and Recovery Pilot Project

This cooperative project will develop a functional Aquifer Storage and Recovery (ASR) to store excess water from the Hillsboro Basin for later beneficial use and is associated with the development of a new wellfield to serve the Palm Beach County's Water Treatment Plant No. 9. The hydrogeologic information from the Upper Floridan Aquifer will be obtained and the suitability of the aquifer for ASR application will then be evaluated. Upon completion of testing in early FY2006, the Palm Beach County Water Utilities Department will request an operational permit from the FDEP. For further discussion of regional aquifer storage and recovery development, see the *Other District Projects* section of this chapter.

Floridan Aquifer System Groundwater Model

Development of the Lower East Coast Density-Dependent Floridan aquifer system (FAS) model was specifically recommended in the 2000 LEC Water Supply Plan, as use of this water source has grown over the past decade and is anticipated to expand even faster in future decades. However, the depth and brackish water quality of the FAS significantly increases the cost to develop it relative to the surficial aquifer in this area.

The first phase (Phase I) of the model is the District's effort to quantitatively assess the FAS along the east coast of Florida. The District will refine the existing FAS groundwater flow model using data collected for the construction of aquifer storage and recovery projects associated with CERP and individual utilities with deep well injection facilities. The model will be expanded to include the Upper East Coast (Phase II), which includes Martin and St. Lucie counties.

Tasks completed within Phase I are collection of the supporting data for the model development including hydraulic properties, water levels and quality, and, water use (pumpage) information. The development of the steady-state component will be completed this fiscal year. Water quality sampling will continue in conjunction with the new exploratory Floridan wells installed within the LEC planning area.

DISTRICT-WIDE PROJECTS

Hydrogeologic Data Collection and Analysis

Hydrogeologic activities involve managing and monitoring groundwater resources. This is achieved through the collection and analyses of reliable hydrogeologic and groundwater data from established monitoring well networks using appropriate technology. These data collection networks are continually upgraded so that monitoring programs are operating cost-effectively while providing the required information to meet water management goals and objectives.

EXPLORATORY DRILLING AND TESTING PROGRAM

The Floridan aquifer remains a viable alternative water supply source in the SFWMD. Uses include future reverse osmosis (RO) and blending as well as target storage zones for ASRs. The SFWMD aggressively encourages its use for alternative supply. However, it is not an infinite source and can become depleted and more salty with cumulative withdrawals. Regional aquifer capacity information is required in the form of aquifer characteristics and water quality information. Surficial and intermediate aquifer data are also needed. Exploratory drilling and testing is needed to obtain the data.

FLORIDAN MODEL AND DATABASE DEVELOPMENT

As new Floridan exploratory wells are drilled and Floridan water supply wells constructed and tested, assessment of aquifer capacity will evolve by updating the database and models. This project funds updating the East Coast Floridan model only.

GROUNDWATER MONITORING – CONTINUATION

Monitoring of groundwater aquifers is essential to assess the cumulative impacts on water supplies resulting from increased withdrawals, droughts, and saltwater intrusion. In addition to assessing groundwater conditions, data from this type of monitoring is required to upgrade and update groundwater models.

GROUNDWATER AND EVAPOTRANSPIRATION ASSESSMENTS – CO-FUNDED USGS PROJECTS

Specialized hydrogeologic studies and professional papers developed by the U.S. Geological Survey (USGS) in cooperation with the District are needed to enhance understanding of aquifers and evapotranspiration rates across the District. Each project requires several years of focused effort by USGS professionals. This continuity of focus is unique to the USGS, and USGS documents are peer reviewed and highly respected in the industry, which makes them invaluable references for District groundwater models, assessments, and policy making.

Other District-wide Projects

DISTRICT-WIDE FEASIBILITY STUDIES TO SUPPORT WATER RESOURCE AND WATER SUPPLY DEVELOPMENT

The District is performing feasibility studies to determine the viability of water resource development options and increase water availability through water resource alternatives. This effort involves collecting and analyzing data and modeling. Current projects involve a sewer mining feasibility study, a canal recharge/reuse study, water user supply costs relationships, and engineering analysis of new water resource initiatives.

COOPERATIVE PROJECTS TO SUPPORT WATER RESOURCE AND WATER SUPPLY DEVELOPMENT

Cooperative efforts enable the cost-sharing of projects with water authorities or utilities for the development of water resource options. Service centers and Big Cypress projects are included in this category for the regional research database. Consulting services may be required to assist in analyzing data collected during the SB 444 grant application and implementation of SB 444.

REGIONAL AQUIFER STORAGE AND RECOVERY DEVELOPMENT

The aquifer storage and recovery (ASR) technology remains a viable alternative water supply technology for the District. Surface water currently discharged to tide is a valuable resource that can be stored via ASR systems during wet periods for subsequent recovery during dry periods. The Hillsboro ASR Pilot Project, located adjacent to the Hillsboro Canal in southern Palm Beach County, will not only store water at a rate of 5 mgd, but will also assist in answering technical questions about subsurface storage. The Indian Prairie Basin ASR Project, located on the Seminole Tribe's Brighton Reservation near Lake Okeechobee, will store water at approximately 2 mgd and will provide a similar opportunity to address technical issues, in this case, in an area where water resources are severely limited.

Comprehensive Water Conservation Program

The District's overall water conservation goal is to prevent and reduce wasteful, uneconomical, impractical, or unreasonable uses of water resources. In addition to improving the efficiency of water use, the conservation program strives to improve management of traditional supplies and encourage development of alternative or diverse water supply sources. This includes development of brackish water, reclaimed water for reuse, and aquifer storage and recovery. To better promote the water conservation goal, the District funds outreach and educational programs to encourage water users to make efficient use of water resources through conservation and reuse, and to increase diversity of water supplies by developing alternative sources.

WATER CONSERVATION PROGRAM

The SFWMD supports the following outreach and education activities in its District-wide Water Conservation Program:

- Providing technical assistance to utilities designing conservation programs, reuse projects, or other alternative water supply activities
- Partnering with local governments by providing funds for local conservation activities, outreach and educational programs, often as elements of integrated water management programs
- Providing media for the public, agencies, and businesses offering guidelines for water-efficient landscapes
- Providing cooperative funding in partnership with other stakeholders to establish water conservation technologies and Xeriscape™ standards related to landscape and agricultural best management practices

WATER-SAVINGS INCENTIVE PROGRAM

The Water Savings Incentive Program (WaterSIP) was created by the SFWMD Governing Board in 2002 to recognize that the least expensive water is the water that has already been developed. This annual funding program provides matching funds up to $50,000 to water providers for water-saving technologies such as low-flow plumbing fixtures, rain sensors, fire hydrant flushing devices, and other hardware. WaterSIP is an annual funding program for non-capital projects that implement water conservation. Applications are evaluated by a selection committee composed of Governing Board-appointed members and District staff that recommend projects to the Governing Board for funding based on set guidelines and project eligibility criteria, such as amount of water saved and cost-effectiveness. Since its inception, the number of applications has increased each year, with 14 projects recommended for funding in FY2006. Some of the projects that have received funding are automatic flushing devices for hydrants, pressure stabilization valves, indoor plumbing retrofits, large-area irrigation controls, soil moisture technology, and rain shut-off devices for irrigation systems.

MOBILE IRRIGATION LABORATORIES

The Mobile Irrigation Laboratory (MIL) Program consists of specialized labs on wheels designed to conduct irrigation audits on agricultural and urban irrigation systems. The purpose of the labs is to reduce irrigation water waste. Lab personnel make presentations on water conservation as well as recommendations to improve the operation, maintenance, and design of systems. The first agricultural lab was established in Collier County in 1988. The first urban labs were established in Lee and Palm Beach counties in 1994. At present 11 labs perform evaluations in 12 of the 16 counties the District serves. Ten of the labs are supported by District funds. The program is a partnership between the SFWMD, the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS), the Florida Department of Agriculture and Consumer Services, and local soil and water conservation districts and resource conservation and development councils. The soil and water conservation districts and resource conservation and development councils employ the staff to operate the labs. The SFWMD currently supports MILs in the Kissimmee Basin, Lower East Coast, Lower West Coast, and Upper East Coast planning areas. The Kissimmee Basin urban lab costs the District $50,000 per year and saves more than 50 million gallons of water per year. Urban labs in the other planning areas cost the District $56,700 each per year and save more than 50 million gallons of water per year per lab. The agricultural labs cost the District $104,000 per year and save more than 200 million gallons of water per year.

Comprehensive Everglades Restoration Plan and Everglades Restoration Accelerated Program

The Comprehensive Everglades Restoration Plan (CERP) is a 38-year effort with components in all four planning areas. Most CERP components will be completed by 2020 and are included in all regional water supply plans. The Everglades Restoration Accelerated Program (Acceler8) is an expedited course of action for achieving restoration benefits for the Everglades ahead of schedule and under budget. It consists of eight projects, some with multiple components that, when completed, will provide immediate environmental, flood control, and water supply benefits. Information on the progress of implementing CERP and the Acceler8 projects can be found in Chapter 7A of the *2006 South Florida Environmental Report – Volume I*. Additional information on CERP and Acceler8 projects is available online at http://www.evergladesplan.org.

ALTERNATIVE WATER SUPPLY ANNUAL REPORT (WATER PROTECTION AND SUSTAINABILITY PROGRAM)

For more than a decade the SFWMD has been engaged in cooperative funding agreements for AWS systems. From 1997 to 2003 the District provided annual grants to entities pursuant to Chapter 373, which directed the water management districts to share their *ad valorem* tax revenues with public and private concerns willing to develop suitable alternative water resources. During that time period the District funded 169 projects with $35 million and created 400 mgd of additional alterative water capacity leveraging half a billion dollars in total construction costs.

New Legislative Direction

During the 2005 state legislative session, a bill creating the Water Protection and Sustainability Program, or SB 444, was enacted, providing significant state funding for construction of AWS projects. The state appropriated $100 million for the program to be divided among the water management districts with the stipulation that each one of the districts must match the amount provided with projects involving AWS projects from its existing budget. The new legislation also defined AWS projects as:

> Saltwater and brackish water projects; surface water captured predominately during wet-weather flows; sources made available through the addition of new storage capacity; reclaimed water; stormwater (for use by a consumptive use permitee); and any other source designated as nontraditional in a regional water supply plan.

The SFWMD was able to provide the match, and received $30 million from the program. The agency had a line item already in its budget for alternative water supply funding of $6 million, and thus had $36 million to offer potential applicants. Funded projects are listed in **Table 5-5**. An additional $7.1 million was provided by two regional service centers for projects not shown in **Table 5-5**.

New Process for New Legislation

The Governing Board has directed the District to produce as much alternative water supply as possible as quickly as possible. An interim selection process was developed by the District including mail-outs, a web site, and informational workshops. Selected projects were given a completion deadline of August 1, 2006, and certain readiness standards were imposed, namely that permits must be in hand and contractors selected.

This effort yielded a response of 119 applicants including 43 reclaimed water projects, 46 brackish water projects, 11 aquifer storage and recovering projects, and 19 projects involving storage or other alternative water supply methods. The legislation provided factors to be given

consideration for selecting projects for funding and these factors, as well as an engineering review, were used in selecting 80 projects to receive $43.1 million in funding (**Table 5-5**). An additional $6 million was budgeted for the former program prior to the enactment of the new funding program. The projects funded will create 172 mgd of new water when they are completed in late summer of 2006, and 304 mgd ultimately when completed.

The projects were submitted to the District on September 2, 2005 and the recommended list of projects presented to the Governing Board on October 12. The recommended projects were approved by the Governing Board and contracts were issued at that time. Although District offices were closed for a week in late October due to Hurricane Wilma, all the contracts had been sent by month's end. Projects submitted by the same entity that were parts of the same alternative water supply project were treated as one funding contract in some cases, and others were combined when coming from the same entity. Funding levels included $500,000 for most projects, and $1 million or more for several crucial projects. The deadline for completion of all projects, regardless of funding, is August 1, 2006, with an interim invoicing date of April 1, 2006.

The process for the FY2007 solicitation is under way. The water supply planning group has a list of more than 300 preliminary projects for the water supply plans that are being updated in mid-2006.

Table 5-5. List of FY2005–FY2006 Alternative Water Supply projects.

KISSIMMEE BASIN PROJECTS	Alternative Water Source	Planning Region	County	Quantity of Water Made Available (mgd)		Construction Cost This Phase	SFWMD Funding
				This Phase- by Aug 1, 2006	Total		
Orange County South Service Area Reclaimed Water Transmission Canadian Court to John Young Parkway Connector Road Ph I	Reclaimed Water	KB	Orange	0.00	3.00	$2,907,000	$500,000
Ocoee Reuse Main to Windsor Landings Subdivision	Reclaimed Water	KB	Orange	0.10	0.50	$280,000	$50,000
Total for Orange County				0.10	3.50	**$3,187,000**	**$550,000**
Toho Water Osceola Parkway Reclaimed Water Main	Reclaimed Water	KB	Osceola	16.00	16.00	$3,715,000	$500,000
Toho Water Shingle Creek Stormwater Reuse	Reclaimed Water	KB	Osceola	6.00	6.00	$5,830,000	$500,000
Total for Osceola County				22.0	22.0	**$9,545,000**	**$1,000,000**
101 Ranch 17.2 Acre Reservoir	Storage	KB	Okeechobee	0.12	0.12	$105,000	$42,000
101 Ranch 44 Acre Reservoir	Storage	KB	Okeechobee	0.32	0.32	$89,000	$35,000
Cornerstone Farms Stormwater Irrigation	Storage	KB	Okeechobee	0.43	0.43	$112,840	$45,136

Table 5-5. Continued.

KISSIMMEE BASIN PROJECTS	Alternative Water Source	Planning Region	County	Quantity of Water Made Available (mgd)		Construction Cost This Phase	SFWMD Funding
				This Phase- by Aug 1, 2006	Total		
DHW Sod and Cattle Stormwater Irrigation	Storage	KB	Okeechobee	0.12	0.12	$129,800	$51,920
Total for Okeechobee County				.99	.99	**$436,640**	**$174,056**
Total for Kissimmee Basin				23.09	26.49	**13,168,640**	**1,724,056**
LOWER EAST COAST PROJECTS	**Alternative Water Source**	**Planning Region**	**County**	**Quantity of Water Made Available (mgd)**		**Construction Cost This Phase**	**SFWMD Funding**
				This Phase- by Aug 1, 2006	**Total**		
Ft. Lauderdale Floridan Wells (2) and Portions of 6 mgd RO Facility	Brackish	LEC	Broward	0.00	6.00	$5,580,000	$1,493,590
Gulfstream Park 0.50 mgd RO Facility for Irrigation	Brackish	LEC	Broward	0.50	0.50	$1,473,690	$500,000
Pompano Reclaimed Water Distribution Expansion in Areas I/II	Reclaimed Water	LEC	Broward	1.25	3.10	$370,000	$148,000

Table 5-5. Continued.

LOWER EAST COAST PROJECTS	Alternative Water Source	Planning Region	County	Quantity of Water Made Available (mgd)		Construction Cost This Phase	SFWMD Funding
				This Phase- by Aug 1, 2006	Total		
Sunrise Sawgrass WTP Floridan Blending Well	Brackish	LEC	Broward	2.00	2.00	$1,000,000	$400,000
Total for Projects in Broward County				3.75	11.6	**$8,423,690**	**$2,541,590**
FPL Turkey Point Unit 5 Cooling Floridan Wells (3) and Monitoring Well	Brackish	LEC	Miami-Dade	14.06	14.06	$7,572,216	$500,000
Miami-Dade Southwest Wellfield ASR Monitoring Well	ASR	LEC	Miami-Dade	10.00	10.00	$660,937	$150,000
North Miami Beach Floridan Aquifer Low Pressure RO	Brackish	LEC	Miami-Dade	6.50	6.50	$8,000,000	$1,493,590
Total for Projects in Miami-Dade County				30.56	30.56	**$16,233,153**	**$2,143,590**
FKAA ASR Well (1)	ASR	LEC	Monroe	3.00	3.00	$4,163,000	$500,000
Total for Projects in Monroe County				3.00	3.00	**$4,163,000**	**$500,000**
Lake Region Treatment Plant	Brackish	LEC	Palm Beach	0.00	10.00	$11,271,350	$5,000,000
Addison Reserve Reclaimed Water Pump Station	Reclaimed Water	LEC	Palm Beach	1.50	1.50	$600,000	$240,000

Table 5-5. Continued.

LOWER EAST COAST PROJECTS	Alternative Water Source	Planning Region	County	Quantity of Water Made Available (mgd)		Construction Cost This Phase	SFWMD Funding
				This Phase- by Aug 1, 2006	Total		
Boynton Beach Floridan Test/Production Wells (2)	Brackish	LEC	Palm Beach	0.00	20.00	$1,395,485	$500,000
Boynton Beach ASR Well (2)	ASR	LEC	Palm Beach	3.50	3.50	$1,307,500	$222,800
Delray Beach Areas 2 & 3 Reclaimed Water System	Reclaimed Water	LEC	Palm Beach	1.94	2.58	$2,060,900	$500,000
Jupiter 1.7 mgd Expansion	Brackish	LEC	Palm Beach	1.70	1.70	$1,267,000	$500,000
Lake Worth RO Project	Brackish	LEC	Palm Beach	0.03	4.50	$4,645,000	$1,000,000
Loxahatchee River District 3 mgd Reclaimed Water Plant Expansion	Reclaimed Water	LEC	Palm Beach	3.00	11.00	$2,300,000	$500,000
Northern Palm Beach County Improvement District Operable Gate Site 20 Structure	Other	LEC	Palm Beach	0.53	0.53	$100,000	$40,000
Northern Palm Beach County Improvement District Re-pump Station for Regional Center	Other	LEC	Palm Beach	0.54	0.54	$220,000	$88,000
Palm Beach County Century Village North Reclaimed Water Pipeline	Reclaimed Water	LEC	Palm Beach	0.00	3.00	$466,402	$186,000

Table 5-5. Continued.

LOWER EAST COAST PROJECTS	Alternative Water Source	Planning Region	County	Quantity of Water Made Available (mgd)		Construction Cost This Phase	SFWMD Funding
				This Phase- by Aug 1, 2006	Total		
Seminole Improvement District Reclaimed Water Main to Seminole High Ridge School	Reclaimed Water	LEC	Palm Beach	0.02	0.02	$470,000	$188,000
South Central Regional Reclaimed Water Treatment Expansion	Reclaimed Water	LEC	Palm Beach	0.00	6.00	$2,500,000	$1,493,590
Tequesta Floridan Well #4 and Raw Water Main	Brackish	LEC	Palm Beach	1.58	1.58	$1,210,000	$484,000
The Hamlet Country Club Reclaimed Storage (Delray)	Reclaimed Water	LEC	Palm Beach	0.70	0.70	$1,290,000	$500,000
West Palm Beach Alternative Sites 1 & 2 Reclaimed Wetland Rehydration	Reclaimed Water	LEC	Palm Beach	1.50	1.50	$255,000	$102,000
West Palm Beach Wetlands-based Water Reclamation Project - Phase III	Reclaimed Water	LEC	Palm Beach	1.00	1.00	$950,000	$380,000

Table 5-5. Continued.

LOWER EAST COAST PROJECTS	Alternative Water Source	Planning Region	County	Quantity of Water Made Available (mgd)		Construction Cost This Phase	SFWMD Funding
				This Phase- by Aug 1, 2006	Total		
Boca Raton IRIS Transmission Extension to West of I-95	Reclaimed Water	LEC	Palm Beach	1.40	2.00	$1,517,535	$500,000
Seacoast 4 mgd Reclaimed Water Treatment Expansion	Reclaimed Water	LEC	Palm Beach	4.00	4.00	$10,250,600	$500,0000
Total for Projects in Palm Beach County				22.94	75.65	**$44,076,772**	**$12,924,390**
Total for Projects in LEC				60.25	120.81	**$72,896,615**	**$18,109,570**
LOWER WEST COAST PROJECTS	**Alternative Water Source**	**Planning Region**	**County**	**Quantity of Water Made Available (mgd)**		**Construction Cost This Phase**	**SFWMD Funding**
				This Phase- by Aug 1, 2006	**Total**		
Ave Maria 0.9 mgd Reclaimed Water Production Facilities	Reclaimed Water	LWC	Collier	0.90	4.70	$1,200,000	$480,000
Club Pelican Bay Reclaimed Water ASR	ASR	LWC	Collier	0.94	0.94	$572,080	$228,000
Collier County North Floridan Aquifer Wells	Brackish	LWC	Collier	4.00	4.00	$6,941,000	$1,000,000

Table 5-5. Continued.

LOWER WEST COAST PROJECTS	Alternative Water Source	Planning Region	County	Quantity of Water Made Available (mgd)		Construction Cost This Phase	SFWMD Funding
				This Phase- by Aug 1, 2006	Total		
Collier County 12th Ave. Tamiami Interconnect to Blend Tamiami and Floridan Water	Brackish	LWC	Collier	5.90	5.90	$1,083,000	$433,000
Collier County South Reclaimed Water Project	Reclaimed Water	LWC	Collier	2.00	12.00	$1,800,000	$720,000
Collier County Reclaimed Water ASR	Reclaimed Water	LWC	Collier	1.00	5.00	$1,870,000	$500,000
Marco Island 2 mgd WWTF Expansion - Convert to Membrane Bioreactor (This project is still being evaluated.)	Reclaimed Water	LWC	Collier	2.00	5.00	$8,400,000	$500,000
Naples Reclaimed Water System Expansion - Phase 1	Reclaimed Water	LWC	Collier	0.05	4.25	$4,000,000	$400,000
Total for All Projects in Collier County				16.79	41.79	**$25,866,080**	**$4,261,000**
C & B Farms Tail Water Recovery	Other	LWC	Hendry	31.70	31.70	$234,000	$93,600
Clewiston Floridan Aquifer Wells (4)	Brackish	LWC	Hendry	0.00	3.00	$1,732,000	$1,732,000

Table 5-5. Continued.

LOWER WEST COAST PROJECTS	Alternative Water Source	Planning Region	County	Quantity of Water Made Available (mgd)		Construction Cost This Phase	SFWMD Funding
				This Phase- by Aug 1, 2006	Total		
Total for All Projects in Hendry County				31.7	34.7	**$1,966,000**	**$1,825,600**
Bonita Springs Reuse Project	Reclaimed Water	LWC	Lee	0.00	6.00	$5,094,300	$500,000
Cape Coral RO Expansion Project	Brackish	LWC	Lee	8.86	8.86	$4,321,740	$1,493,590
Cape Coral Reclaimed Water Transmission for SE-1 Southwest Area	Reclaimed Water	LWC	Lee	0.41	0.41	$1,339,336	$500,000
Fort Myers Central 4 mgd Reclaimed Water Treatment Expansion	Reclaimed Water	LWC	Lee	4.00	4.00	$7,700,000	$1,000,000
Lee County Olga - ASR Well #2	ASR	LWC	Lee	0.17	0.17	$425,000	$170,000
Lee County Pinewoods Floridan Wells (4) and 3.2 mgd RO Treatment Plant	Brackish	LWC	Lee	3.20	3.20	$10,900,000	$1,000,000
Lee County Waterway Estates Lochmoor Reclaimed Storage Tank	Reclaimed Water	LWC	Lee	1.00	1.00	$1,450,000	$500,000

Table 5-5. Continued.

LOWER WEST COAST PROJECTS	Alternative Water Source	Planning Region	County	Quantity of Water Made Available (mgd)		Construction Cost This Phase	SFWMD Funding
				This Phase- by Aug 1, 2006	Total		
Total for All Projects in Lee County				17.64	23.64	**$31,230,376**	**$5,163,590**
Total Projects in Lower West Coast funded by District				66.13	100.13	**$59,062,456**	**$11,250,190**
UPPER EAST COAST PROJECTS	**Alternative Water Source**	**Planning Region**	**County**	**Quantity of Water Made Available (mgd)**		**Construction Cost This Phase**	**SFWMD Funding**
				This Phase- by Aug 1, 2006	**Total**		
Martin County North - 1.2 mgd Reclaimed Water Treatment Expansion	Reclaimed Water	UEC	Martin	1.20	2.40	$529,500	$211,000
Martin County Tropical Farms RO (Trains A, B, and D)	Brackish	UEC	Martin	6.0	8.00	$10,991,500	$1,493,590
Martin County Tropical Farms 3.75 mgd Reclaimed Water Treatment Expansion	Reclaimed Water	UEC	Martin	3.75	3.75	$1,336,631	$500,000

Table 5-5. Continued.

UPPER EAST COAST PROJECTS	Alternative Water Source	Planning Region	County	Quantity of Water Made Available (mgd)		Construction Cost This Phase	SFWMD Funding
				This Phase- by Aug 1, 2006	Total		
South Martin Regional (SMRU) Irrigation Quality Water Improvement Program	Reclaimed Water	UEC	Martin	1.39	1.39	$547,000	$218,000
Stuart Reclaimed System - Phase 2	Reclaimed Water	UEC	Martin	1.33	1.33	$1,819,000	$500,000
Total for Projects in Martin County				13.67	16.87	**$14,694,131**	**$2,922,590**
Fort Pierce Utilities Authority 4.27 mgd RO Expansion	Brackish	UEC	St. Lucie	4.27	4.27	$2,800,000	$500,000
Port St. Lucie Glades Reclaimed System Ph 1 and 2	Reclaimed Water	UEC	St. Lucie	6.00	6.00	$6,521,090	$1,493,590
Total for Projects in St. Lucie County				10.27	10.27	**$9,321,090**	**$1,993,590**
Total for Projects in UEC				23.94	27.14	**24,015,221**	**4,916,180**