

Chapter 5A: Five-Year Water Resource Development Work Program

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INTRODUCTION

This chapter presents the Five-Year Water Resource Development Work Program, as mandated by state law. Section 373.536(6) (a) 4 of the Florida Statutes (F.S.), requires each water management district to prepare an annual Five-Year Water Resource Development Work Program describing the agency's implementation strategy for the water resource development component of each approved regional water supply plan developed or revised under Section 373.0361, F.S. In addition, Section 373.1961(2), F.S., requires each water management district to submit an annual report to the Florida legislature and governor on Alternative Water Supply (AWS) funding, which is provided in Chapter 5B of this volume. For further information on the District's role in managing the region's water resources, visit the District web site at www.sfwmd.gov/watersupply.

Florida water law identifies two types of projects to meet water needs: Water Resource Development projects and Water Supply Development projects. Water Resource Development projects are regional in nature and are primarily the responsibility of the South Florida Water Management District (SFWMD or District). They support water supply development at the local level and are intended to assure the availability of adequate water supplies for all competing uses deemed reasonable and beneficial and to maintain the functions of natural systems. These projects could include data collection and evaluation; water resource management and protection programs; regional water resource implementation programs; major public works facilities projects to provide for flood control, water storage, groundwater recharge augmentation; and related technical assistance to local governments and water utilities. Water Supply Development projects are local in nature and are generally implemented by local water users, i.e., utilities. These projects generally involve public or private facilities for water collection, treatment, and transmission.

The Five-Year Water Resource Development Work Program provides an implementation update of the water resource development component of the District's regional water supply plans. Pursuant to Chapter 373, F.S., regional water supply plans encompass a 20-year planning horizon and are updated every five years. Water resource development is defined in Section 373.019(22), F.S., as the formulation and implementation of regional water resource management strategies, including the collection and evaluation of surface water and groundwater data; structural and nonstructural programs to protect and manage water resources; the development of regional water resource implementation programs; the construction, operation, and maintenance of major public works facilities to provide for flood, surface, and underground water storage and

groundwater recharge augmentation; and related technical assistance to local governments and to government-owned and privately owned water utilities.

PLANNING REGION OVERVIEW

The SFWMD comprises four planning areas: the Upper East Coast (UEC), the Kissimmee Basin (KB), the Lower West Coast (LWC), and the Lower East Coast (LEC). Regional water supply plans for these planning areas were completed in 2000, and the five-year updates to these plans have been completed. The UEC Water Supply Plan was updated in 2004 (2004 UEC Plan Update) and amended in 2006 (2006 UEC Plan Amendment). The 2000 LWC and KB Water Supply Plans were updated in 2006 (2005–2006 LWC Plan Update and 2005–2006 KB Plan Update), and the 2005–2006 update to the 2000 LEC Water Supply Plan was completed in early 2007. The 2005–2006 Water Supply Plan Updates and 2006 UEC Plan Amendment identify Water Resource Development and Water Supply Development projects expected to meet the needs of all reasonable-beneficial uses for the year 2025 during a 1-in-10 year drought event while sustaining the region's water resources and related natural systems. District-wide, the population is projected to total approximately 10.6 million by 2025. This represents a population increase from 2005 through 2025 of approximately 91 percent in the KB Planning Area, 53 percent in the UEC Planning Area, 74 percent in the LWC Planning Area, and 31 percent in the LEC Planning Area. Accordingly, utility raw water demand is anticipated to increase District-wide from 3.4 billion gallons per day (bgd) in 2005 to 4.3 billion bgd in 2025. In 2009, the University of Florida Bureau of Economic and Business Research future population projections either decreased or remained constant through the year 2030 for most areas within the District. The District will reevaluate the population projections and demands through the year 2030 in the next update of the water supply plans.

WATER RESOURCE DEVELOPMENT PROJECTS

The Water Resource Development projects described in this report — drilling and testing, groundwater and wetland monitoring, groundwater and evapotranspiration assessments, District-wide feasibility studies, modeling, comprehensive water conservation, Minimum Flows and Levels (MFLs), and Water Reservations — are primarily District-wide projects. In addition, this report describes regional Water Resource Development projects that are specific to each planning area. Implementation schedules and costs are provided and summarized in **Tables 5A-1** and **5A-2**.

Most Water Resource Development projects support and enhance Water Supply Development projects, but do not by themselves yield specific quantities of water. For example, projects such as hydrologic investigations and groundwater monitoring and modeling all provide important information about aquifer characteristics (such as hydraulic properties and water quality), but do not provide water. Information derived from these Water Resource Development projects is used in support of Water Supply Development projects (e.g., in developing an appropriate facility design, identifying safe aquifer yields, evaluating the economic viability of projects, etc.).

District-wide and region-specific Water Resource Development projects are identified in Chapter 6 (Water Resource Development Projects) of the 2005–2006 Plan Updates. Water Resource Development projects specific to the UEC Planning Area are discussed in the 2004 UEC Plan Update and 2006 UEC Plan Amendment.

Projects that provide water supply primarily for the environment are excluded from this report and Chapter 6 of the 2005–2006 Plan Updates and the 2006 UEC Plan Amendment.

Table 5A-1. Implementation schedule and costs for District-wide Water Resource Development projects.

District-wide Water Resource Development Projects	Plan Implementation Schedule and Costs (\$ in thousands)					
	FY2010	FY2011	FY2012	FY2013	FY2014	Total
	\$	\$	\$	\$	\$	\$
Drilling and Testing Est. start date: 1990 Est. finish date: ongoing	0	0	0	0	0	0
Groundwater and ET Assessments Est. start date: 1954 and 2002, respectively Est. finish date: ongoing	150	0	0	0	0	150
Groundwater and Wetland Monitoring Est. start date: 2002 Est. finish date: ongoing	381	437	459	482	506	2,265
District-wide Feasibility Studies Est. start date: 2001 Est. finish date: ongoing	0	0	0	0	0	0
Modeling Est. start date: 1998 Est. finish date: ongoing	Staff Time	Staff Time	Staff Time	0	0	0
Comprehensive Water Conservation Program Est. start date: 1977 Est. finish date: ongoing	580	801	1,022	1,243	1,464	5,110
MFL and Water Reservation Activities¹ Est. start date: 1995 Est. finish date: ongoing	179	0	0	0	0	839
Total	1,290	1,238	1,481	1,725	1,970	7,704

FY – Fiscal Year (for the District, October 1 through September 30)

1 - As of 10/1/09, program has moved to Everglades Restoration and Capital Projects. Any future money allocated for this work will be reflected in that program's budget.

Table 5A-2. Implementation schedule and costs for regional Water Resource Development projects.

Regional Water Resource Development Projects	Plan Implementation Schedule and Costs (\$ in thousands)					
	FY2010	FY2011	FY2012	FY2013	FY2014	Total
	\$	\$	\$	\$	\$	\$
Central Florida Water Supply Planning (KB)	500	0	0	0	0	500
Central Florida Coordination Area (CFCA) Project Facilitator (KB Planning Area)	25	25	10	0	0	60
Central Florida Aquifer Recharge Feasibility Study (KB) Est. start date: 2008 Est. finish date: 2012	Staff Time	Staff Time	Staff Time	0	0	0
Kissimmee Chain of Lakes Long-Term Management Plan/KB Modeling & Operations Study (KB) Est. start date: 2004 Est. finish date: 2011	Staff Time	Staff Time	0	0	0	0
Central Florida Water Supply Coordination (KB) Est. start date: 2006 Est. finish date: 2013	Staff Time	Staff Time	Staff Time	Staff Time	0	0
Total	525	25	10	0	0	560

WATER CONSERVATION PROGRAM

The Comprehensive Water Conservation Program, which includes the Water Savings Incentive Program (WaterSIP) and the Mobile Irrigation Laboratory (MIL) Program, encourages water users to make efficient use of water resources through conservation and reuse. In effect, water savings achieved through conservation measures are the most cost-efficient way to expand current water supplies. Implementation of the WaterSIP and MIL programs are included in this report. For more detailed information about the Water Conservation Program, see the *Conservation (DD)* section of this chapter.

WATER MADE AVAILABLE

The Water Resource Development projects described in this report do not directly provide additional water for consumptive use. The District's Comprehensive Water Conservation Program is estimated to result in 2.7 million gallons per day (mgd) of additional available water in Fiscal Year 2010 (FY2010) (October 1, 2009 – September 30, 2010) and 2.7 mgd of additional available water in FY2011. During FY2010–FY2014, the estimated additional water made available through this program is 13.5 mgd (**Table 5A-3**). Funding levels for the WaterSip Program have hovered between \$400,000 and \$500,000 per year for the last several years with the FY2009 program receiving over \$1.4 million. The FY2010 funding level of \$150,000 is reflective of the budget constraints state and local governments are experiencing. Projected water savings in **Table 5A-3** for the WaterSip Program assume future funding remains between \$400,000 and \$500,000.

Table 5A-3. Estimated additional water made available during FY2010–FY2014 through the Comprehensive Water Conservation Program.

Conservation Program	FY2010	FY2011	FY2012	FY2013	FY2014	Total
WaterSIP	1.5	1.5	1.5	1.5	1.5	7.5
Mobile Irrigation Laboratories	1.2	1.2	1.2	1.2	1.2	6.0
Total (mgd)	2.7	2.7	2.7	2.7	2.7	13.5

FUNDING

The SFWMD has allocated \$1.8 million in FY2010 for Water Resource Development projects. During the FY2010–FY2014 time frame, the SFWMD anticipates spending \$8.3 million on Water Resource Development projects (the total amount of **Tables 5A-1** and **5A-2**). These allocations include \$580,000 in funding for the Comprehensive Water Conservation Program during FY2010 and \$5.1 million for FY2010–FY2014.

The funding described in this report does not include projects associated with the Comprehensive Everglades Restoration Plan (CERP) or Everglades expedited projects (see *Volume I, Chapter 7A*) or costs associated with staff time.

The funding allocation for FY2010 is less than the funding allocation for FY2009, and the funding projected for FY2010–FY2014 is less than what was projected for FY2009–FY2013. Funding for primarily environmental projects, such as capital improvement projects in the Big Cypress Basin (BCB), Aquifer Storage and Recovery (ASR), and projects not

identified in Chapter 6 of the 2005–2006 Plan Updates and 2006 UEC Plan Amendment are not included in this report.

The District's Water Supply Program, for budget purposes, is divided into seven elements. In order to better match up the budgeted projects within this chapter to the actual budget spreadsheets, this report is organized to follow the Water Supply Program's elements with associated projects for each element. Crosswalk tables that correspond to Water Supply Plans, Water Resource Development projects, and funding with internal order numbers, program elements, and report sections are found in **Tables 5A-4** and **5A-5**, respectively. The Water Supply Program's elements are as follows:

- **Planning (Da)** [includes Regional Coordination (Da01) and Local Coordination (Da02)].
- **Implementation Projects (Db)** [Implementation (Db01)].
- **Rulemaking (Dc)** [includes Minimum Flows and Levels (Dc01), Initial Water Reservations (Dc02), Project Reservations (Dc03), and Lake Okeechobee Water Shortage Management (Dc04)].
- **Conservation (Dd)** [includes Conservation (Dd01), Water Savings Incentive Program (Dd02), and Mobile Irrigation Labs (Dd03)].
- **Alternative Water Supply (De)** [includes Pre-2006 Alternative Water Supply (De00), Alternative Water Supply (SB444) (De01), Alternative Water Supply (non-SB444) (De02), and Alternative Water Supply (non-SB444) (De03)].
- **Resource Evaluation (Df)** [includes Hydrogeology (Df01) and Modeling (Df02)].
- **Program Support (Dz)** [Program Support (Dz00)].

Table 5A-4 identifies all the Water Resource Development projects contained in the regional water supply plans, and **Table 5A-5** identifies specific projects funded by the District during the current fiscal year to implement the water resource development components of the regional water supply plans.

MEETING WATER SUPPLY NEEDS FOR A 1-IN-10 YEAR DROUGHT EVENT

The goal of the regional water supply plans is to ensure an adequate supply of water to meet the needs of all existing and future reasonable-beneficial uses, and to protect natural systems from harm during a 1-in-10 year drought event. Through the SFWMD's Water Shortage Plan, the District implements its water shortage authority by restricting consumptive uses based on the concept of shared adversity between users [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. These phases are based on progressively increasing resource impacts, leading up to serious harm. Under the District's plan, water demand is reduced through conservation measures and minor use restrictions, such as restrictions on or temporary elimination of lawn watering and other outdoor uses of water. Severe shortages, however, require the use of cutbacks associated with some level of economic impact to the users, such as the potential for crop damage due to agricultural irrigation restrictions. On November 13, 2009, the SFWMD Governing Board will vote to adopt new changes to Sections 40E-2, 40E-20 and 40E-24, F.A.C., to (1) implement District-wide mandatory year-round landscape irrigation measures, (2) create a general permit by rule for outdoor residential consumptive uses of water, and (3) amend related water conservation requirements for public water supply permits. These measures are intended to help stretch and protect regional water resources for public supply and minimize the impact of future drought events.

Table 5A-4. Crosswalk for Water Supply plans, Water Resource Development projects, and report sections.

Supply Plan	Recommended Projects	Status	Report Section	Coverage Area
2004 UEC	Aquifer Storage and Recovery	Ongoing	N/A (CERP Project)	District-wide
2004 UEC	Mobile Irrigation Labs	Ongoing	Water Conservation Program	District-wide
2004 UEC	Water Conservation Rulemaking	Ongoing	Water Conservation Program	District-wide
2004 UEC	Water Savings Incentive Program	Ongoing	Water Conservation Program	District-wide
2004 UEC	Water Conservation Outreach and Education	Ongoing	Water Conservation Program	District-wide
2004 UEC	Comprehensive Regional Floridan Aquifer Monitoring Well Network	Ongoing	Groundwater and Wetland Monitoring	District-wide
2004 UEC	Floridan Aquifer Density-Dependent Flow Model	On Hold	Modeling (currently unfunded)	District-wide
2004 UEC	Floridan Aquifer Exploratory Well Program	Ongoing	Drilling and Testing Program	District-wide
2004 UEC	Floridan Aquifer Tracer Test	On hold	Drilling and Testing Program (currently unfunded)	District-wide
2004 UEC	Floridan Aquifer Well Inventory	Ongoing	Groundwater and Wetland Monitoring	District-wide
2004 UEC	Reclaimed Water Interconnects	Ongoing	N/A (no current projects)	District-wide
2004 UEC	Efficient Use of Reclaimed Water	Ongoing	N/A (no current projects)	District-wide
2004 UEC	Mandatory Reuse Zones	Ongoing	N/A (no current projects)	District-wide
2004 UEC	Northern Palm Beach County Comprehensive Water Management Plan	Ongoing	N/A (CERP Project)	Regional
2004 UEC	CERP North Palm Beach County Project – Part 1	Ongoing	N/A (CERP Project)	Regional
2004 UEC	Loxahatchee River Restoration Plan	Complete	N/A (CERP Project) (completed 2006)	Regional
2004 UEC	Initial Reservation for Northwest Fork of Loxahatchee River	Ongoing ¹	MFL and Reservation Activities (currently unfunded)	Regional
2004 UEC	Review MFL for Northwest Fork of Loxahatchee River	Ongoing ¹	MFL and Reservation Activities	Regional
2004 UEC	Establish MFLs for Northwest Fork of Loxahatchee River Tributaries	Ongoing ¹	MFL and Reservation Activities (currently unfunded)	Regional

Table 5A-4. Continued.

Supply Plan	Recommended Projects	Status	Report Section	Coverage Area
2004 UEC	Ten Mile Creek	Complete	N/A (CERP Project)	Basin-specific
2004 UEC	CERP Indian River Lagoon – South	Ongoing	N/A (CERP Project)	Basin-specific
2004 UEC	C-25 to C-52 Basin Connectivity Study	Ongoing	District-wide Feasibility Studies (expected completion Q1 FY2010)	District-wide
2004 UEC	Surficial Aquifer Modeling	On hold	Modeling (currently unfunded)	District-wide
2004 UEC	Coordinate UEC Water Supply Plan with Other Efforts	Ongoing	N/A (no current projects)	Basin-specific
2004 UEC	Coordinate Land Use and Water Supply Planning	Ongoing	N/A (no current projects)	District-wide
2004 UEC	Alternative Water Supply Program	Ongoing	Alternative Water Supply	District-wide
2006 UEC	Sub-Regional Feasibility Study of Water Supply Integration for St. Lucie County	Complete	Regional Water Resource Development Project (completed in FY2007)	Regional
2006 KB	Floridan Aquifer Exploratory Well Program	Ongoing	Drilling and Testing Program	District-wide
2006 KB	Surficial Aquifer Well Pairing Network	Ongoing	Groundwater and Wetlands Monitoring (unfunded FY2010)	Regional
2006 KB	Wetlands Monitoring Network	Ongoing	Groundwater and Wetlands Monitoring	District-wide
2006 KB	USGS Water Quality Module	Ongoing	Groundwater and ET Assessments	District-wide
2006 KB	ET Measurement Project	Ongoing	Groundwater and ET Assessments	District-wide
2006 KB	Comprehensive Water Conservation Program	Ongoing	Water Conservation Program	District-wide
2006 KB	Water Savings Incentive Program	Ongoing	Water Conservation Program	District-wide
2006 KB	Mobile Irrigation Labs	On hold	Water Conservation Program (currently unfunded)	District-wide
2006 KB	Water User and Supply Cost Relationship Study	Complete	District-wide Feasibility Studies (completed in FY2007–FY2008)	District-wide
2006 KB	Lower Kissimmee Basin Model Upgrade	On hold	Modeling (currently unfunded)	Basin-specific
2006 KB	Upper Kissimmee Basin Transient Groundwater Model	Ongoing	Modeling	Basin-specific
2006 KB	Floridan Aquifer System Groundwater Model and Database Development	On Hold	Modeling (currently unfunded)	District-wide

Table 5A-4. Continued.

Supply Plan	Recommended Projects	Status	Report Section	Coverage Area
2006 KB	MFL Activities	Ongoing ²	MFL and Reservation Activities	District-wide
2006 KB	Reservation Activities	Ongoing ²	MFL and Reservation Activities	District-wide
2006 KB	Central Florida Aquifer Recharge Feasibility Study	On hold	Regional Water Resource Development Project (currently unfunded)	Basin-specific
2006 KB	Modeling for Kissimmee Chain of Lakes Management Plan	Ongoing	Regional Water Resource Development Project	Basin-specific
2006 KB	Central Florida Coordination Area Action Plan	Ongoing	Regional Water Resource Development Project	Basin-specific
2006 LWC	Floridan Aquifer Exploratory Well Program	Ongoing	Drilling and Testing Program	District-wide
2006 LWC	Groundwater Monitoring	Ongoing	Groundwater and Wetlands Monitoring	District-wide
2006 LWC	Wetlands Monitoring Network	Ongoing	Groundwater and Wetlands Monitoring	District-wide
2006 LWC	USGS Water Quality Module	Ongoing	Groundwater and ET Assessments	District-wide
2006 LWC	ET Measurement Project	Ongoing	Groundwater and ET Assessments	District-wide
2006 LWC	Comprehensive Water Conservation Program	Ongoing	Water Conservation Program	District-wide
2006 LWC	Water Savings Incentive Program	Ongoing	Water Conservation Program	District-wide
2006 LWC	Mobile Irrigation Labs	Ongoing	Water Conservation Program	District-wide
2006 LWC	Water User and Supply Cost Relationships	Complete	District-wide Feasibility Studies (completed in FY2007–FY2008)	District-wide
2006 LWC	Co-Located Desalination Feasibility Study	Complete	District-wide Feasibility Studies (completed in FY2007)	District-wide
2006 LWC	Modeling for MFLs	Complete	N/A (completed in FY2006)	District-wide
2006 LWC	Modeling for Regional Irrigation Distribution System	On hold	N/A (currently unfunded)	District-wide
2006 LWC	Surficial, Intermediate, and Floridan Aquifer Model Development	Ongoing	Modeling	District-wide
2006 LWC	MFL Activities	Ongoing	MFL and Reservation Activities	District-wide
2006 LWC	Reservation Activities	Ongoing	MFL and Reservation Activities (Water Reservation for the Picayune Strand/ Fakahatchee Estuary effective July 2, 2009)	District-wide

Table 5A-4. Continued.

Supply Plan	Recommended Projects	Status	Report Section	Coverage Area
2006 LEC	Floridan Aquifer Exploratory Well Program	Ongoing	Drilling and Testing Program	District-wide
2006 LEC	Groundwater Monitoring	Ongoing	Groundwater and Wetlands Monitoring	District-wide
2006 LEC	Wetlands Monitoring Network	Ongoing	Groundwater and Wetlands Monitoring	District-wide
2006 LEC	USGS Water Quality Module	Ongoing	Groundwater and ET Assessments	District-wide
2006 LEC	ET Measurement Project	Ongoing	Groundwater and ET Assessments	District-wide
2006 LEC	Comprehensive Water Conservation Program	Ongoing	Water Conservation Program	District-wide
2006 LEC	Water Savings Incentive Program	Ongoing	Water Conservation Program	District-wide
2006 LEC	Mobile Irrigation Labs	Ongoing	Water Conservation Program	District-wide
2006 LEC	Water User and Supply Cost Relationships	Complete	District-wide Feasibility Studies (completed in FY2007-FY2008)	District-wide
2006 LEC	Reuse Feasibility Study	Complete	District-wide Feasibility Studies (completed in FY2008)	District-wide
2006 LEC	Groundwater Replenishment via Canal Recharge Augmentation Study	Complete	District-wide Feasibility Studies (completed in FY2007)	District-wide
2006 LEC	Modeling for MFLs	Ongoing	Modeling	District-wide
2006 LEC	Floridan Aquifer System Model and Database Development	On Hold	Modeling (currently unfunded)	District-wide
2006 LEC	MFL Activities	Ongoing	MFL and Reservation Activities	District-wide
2006 LEC	Reservation Activities	Ongoing	MFL and Reservation Activities	District-wide

CERP – Comprehensive Everglades Restoration Plan

ET – Evapotranspiration

KB – Kissimmee Basin

LEC – Lower East Coast

LWC – Lower West Coast

MFL – Minimum Flow and Level

N/A – Not Applicable

UEC – Upper East Coast

USGS – U.S. Geological Survey

Ongoing¹ – the 2007 Regional and Water Availability Rule provides an additional tool for limiting water use in the Loxahatchee Basin

Ongoing² – KB Water Reservation rule under development; peer review completed in FY2009.

Table 5A-5. Crosswalk for Fiscal Year 2010 (FY2010) budget, Water Resource Development projects, and report sections.

Budget Line Item	Internal Order/ Functional Area	Program Element	Sub-program Element	Amount	Project	Report Section
23496	DA0300011580	Planning	Planning	\$25,000	Central Florida Coordination Area Facilitator	Regional Water Resource Development Project
23668	DB0300011590	Implementation	Implementation	\$500,000	Kissimmee Regional Water Supply STOPR Study	District-wide Feasibility Studies
23784	DC02	Rulemaking	MFLs	\$100,000	Rulemaking for Water Reservation C-43	MFL and Water Reservation Activities
22317	DC0300021841	Rulemaking	MFLs	\$28,617	USGS SW Loxahatchee MFLs	MFL and Water Reservation Activities
23413	DC04	Rulemaking	MFLs	\$50,000	Central Florida Coordination Area Rulemaking Efforts	MFL and Water Reservation Activities
23435	DD0100031590	Conservation	Conservation	\$150,000	Conserve Florida Clearinghouse	Comprehensive Water Conservation
23434	DD02	Conservation	WaterSIP	\$150,000	Water Savings Incentive Program	Comprehensive Water Conservation
22382	DD03	Conservation	MIL	\$55,000	Mobile Irrigation Lab – BCB	Comprehensive Water Conservation

Table 5A-5. Continued.

Budget Line Item	Internal Order/ Functional Area	Program Element	Sub-program Element	Amount	Project	Report Section
23433	DD0400011590	Conservation	Conservation	\$100,000	Florida Automated Weather Network (FAWN)	Comprehensive Water Conservation
23412*	DD0500031590	Conservation	Conservation	\$25,000	Orange County Conservation Study	Comprehensive Water Conservation
22349	DD0700012380	Conservation	Conservation	\$20,000	FGCU Wings of Hope – BCB	Comprehensive Water Conservation
23447*	DD07	Conservation	Conservation	\$50,000	The Great Water Odyssey	Comprehensive Water Conservation
23780*	DD07	Conservation	Conservation	\$20,000	Panther Posse – LWC	Comprehensive Water Conservation
22340	DD08	Conservation	Conservation	\$7,800	Display/Meetings – BCB	Comprehensive Water Conservation
22353	DD08	Conservation	Conservation	\$2,082	Water Symposium – BCB	Comprehensive Water Conservation
20731	DF0100021841	Resource Evaluation	Hydrogeology	\$327,040	USGS GW Monitoring – FTL	Groundwater and Wetland Monitoring ^{GM}

Table 5A-5. Continued.

Budget Line Item	Internal Order/ Functional Area	Program Element	Sub-program Element	Amount	Project	Report Section
23346	DF0100021890	Resource Evaluation	Hydrogeology	\$114,936	USGS Evapotranspiration Study	Groundwater and ET Assessments
19719	DF0500031841	Resource Evaluation	Hydrogeology	\$16,058	USGS GW Monitoring-ORL-Potentiometric	Groundwater and Wetland Monitoring ^{WQ}
23347	DF0500011890	Resource Evaluation	Hydrogeology	\$35,000	USGS Hydrogeology and GW Quality – Highlands County	Groundwater and ET Assessments
19718	DF0500021841	Resource Evaluation	Hydrogeology	\$37,966	USGS GW Monitoring-ORL-Kissimmee Basin Floridan	Groundwater and Wetland Monitoring ^{WQ}

* – Project Funded for First Time
 BCB – Big Cypress Basin
 ET - Evapotranspiration
 FGCU – Florida Gulf Coast University
 FTL – Fort Lauderdale
 GM – Groundwater Monitoring
 GW – Groundwater
 LWC – Lower West Coast

MFL – Minimum Flow and Level
 MIL – Mobile Irrigation Lab
 ORL – Orlando
 STOPR – St. Cloud, Toho Water Authority, Orange County, Polk County, and Reedy Creek Improvement District
 USGS – U.S. Geological Survey
 WaterSIP – Water Savings Incentive Program
 WQ – Water Quality Monitoring

DISTRICT-WIDE WATER RESOURCE DEVELOPMENT PROJECTS

The following section provides project descriptions of the District-wide Water Resource Development efforts funded by the District's Water Supply Program by element for FY2010. Additional information, including the implementing entities, activities proposed for FY2010, estimated completion dates, and funding sources, is presented in each project summary.

PLANNING (DA)

There are no District-wide Water Resource Development projects currently planned or budgeted for the Water Supply Program's Planning element.

IMPLEMENTATION PROJECTS (DB)

District-Wide Feasibility Studies (DB01 and DB02)

The SFWMD is performing feasibility studies to determine the viability of water resource development options in order to increase water supply through water resource alternatives. This effort involves collecting and analyzing data and modeling.

Implementing entity: SFWMD in partnership with local water utilities.

Estimate of quantity of water produced by project: Projects are not designed to make water available.

Completed implementation activities:

- Concentrate Management – Desalination. The District conducted a water desalination concentrate management and piloting project to assess suitable technologies to recover additional water from reject water. The pilot project is located at the City of North Miami Beach's reverse osmosis (RO) water treatment plant. This project investigates the ability to recover additional water at existing and future RO brackish water treatment plants across the 16-county region of the District. Currently, there are 31 plants across the region and seven new plants under construction with an estimated total capacity of 250 mgd by 2012. Of this capacity, about 50 mgd will be wasted or disposed to deep underground wells.

During 2009, 14 facilities, including North Miami Beach, were evaluated to determine characteristics limiting additional recovery. The North Miami Beach RO plant was identified as the most appropriate facility to conduct the pilot test because it is most representative of the RO facilities in South Florida. In addition, current results from the pilot project demonstrate that further treatment by chemical precipitation and secondary RO treatment will achieve additional recovery comparable to other concentrate recovery technologies.

- Project Culvert-15 Operations Protocol Development (LEC Planning Area). The goal of this project was to develop an operational protocol to aid District staff in the operation of the PC-15 culvert, which is located in Northern Palm Beach County and

- part of the regional water management system, The operational protocol was designed to better maintain the hydroperiod of the Loxahatchee Slough by providing additional regulated delivery to the C-18 canal for flow augmentation to the Northwest Fork of the Loxahatchee River as well as stage-volume curves for incremental storage in the Loxahatchee Slough for dry season water delivery to the river. During May 2009, the newly developed operational protocol was successfully used to deliver Minimum Flows and Levels to the Northwest Fork of the Loxahatchee River.
- *Desalination Initiatives.* As part of the efforts to encourage utilities within the District to implement new desalination technologies at their facilities, the District participated in and facilitated the first Florida Reverse Osmosis/Nanofiltration Concentrate Management Summit. The meeting participants included consultants, water utility managers, the Florida Department of Environmental Protection (FDEP), St. Johns River Water Management District (SJRWMD), Southwest Florida Water Management District (SWFWMD), and Tampa Bay Water. Issues discussed and presented included regional and regulatory challenges, needs, and developing solutions.
 - Water Resource Study to Address Surface Water in St. Lucie and Indian River Counties (AKA C-25 Basin Water Availability Study) (UEC Planning Area). The objective of this study was to (1) address excess surface water in St. Lucie and Indian River counties currently being discharged to the Indian River Lagoon by capturing, conveying, and storing the water to make it available for beneficial use, and (2) to provide for increased flexibility of water management in these counties. Five selected alternative plans were modeled and the results were analyzed and ranked. A preferred alternative was selected, and a detailed cost and implementation strategy was determined. The study completion date is November 2009, with a 60-day no cost extension in place in order to complete public review and finalize the report. This study is 50-50 cost-shared with SJRWMD.
 - *Upper Kissimmee Basin Regional Water Supply Effort – Phase II* (KB Planning Area). Phase II further investigated the availability of surface water as an alternative to the traditional water supply source in the region (i.e., groundwater from the Upper Floridan aquifer). Evaluation of surface water as a supply source was conducted in conjunction with the ongoing Water Reservations process associated with the Kissimmee River and seven Lake Management Areas of the Upper Kissimmee Basin. In addition, the SFWMD provided technical support and co-funding to the Tohopekaliga Water Authority for an exploratory well and testing at the proposed Cypress Lake wellfield, designed to tap the Lower Floridan aquifer as an alternative water supply source.

Activities proposed for FY2010:

In the FY2010 District budget, the Kissimmee Regional Water Supply St. Cloud, Toho Water Authority, Orange County, Polk County, and Reedy Creek Improvement District (STOPR) Study is categorized as a District-wide Feasibility Study; however, for the purposes of this report, information about this study can be found in the *Regional Water Resource Development Projects* section of this chapter.

Funding sources: SFWMD and cost share with local water utilities.

Cost per thousand gallons: Feasibility study projects are not designed to make water available.

Total spent to date:

- LWDD C-51 Pump Replacement: FY2008 — \$300,000.
- C-25 Reconnection Feasibility Study: FY2006–FY2009 — \$175,000.
- Upper Kissimmee Basin Regional Studies: FY2007–FY2009 — \$1,000,000.
- L-40 Funding: FY2007–FY2008 — \$200,000.
- Water Supply Cost Estimation Study: FY2007–FY2008 — \$200,000.
- Advanced Wastewater studies and Pilot Projects: FY2007–FY2008 — \$775,000.
- Project Culvert-15 Operations Protocol Development (LEC Planning Area): \$24,000.
- Desalination Initiatives: FY2002–FY2009 — \$735,000.

Total project cost: FY2006–FY2008 — \$3,409,000.

Proposed expenditures:

Cost	FY2010	FY2011	FY2012	FY2013	FY2014	Total
Dollars (\$1,000)	0	0	0	0	0	\$0

RULEMAKING (DC)**MFL and Water Reservation Activities (Dc01–Dc04)**

Minimum Flows and Levels (MFLs) are developed pursuant to the requirements contained in Sections 373.042 and 373.0421, F.S., as part of a comprehensive water resources management approach to assure the sustainability of South Florida's water resources. Activities include producing technical documents that set scientifically based criteria for defining significant harm, conducting external peer reviews of the science and completing rulemaking. The District conducts assessments to determine whether MFL criteria are being met, and if the criteria are not being met, develops and implements a recovery or prevention strategy.

The Governing Board has also authorized rule development to establish Water Reservations in accordance with Section 373.223(4), F.S. The District has selected its Water Reservation authority to quantify water needed to protect fish and wildlife resources. Establishment of a Water Reservation is also required in order for the District and the U.S. Army Corps of Engineers (USACE) to enter into a Project Cooperation Agreement (PCA) as required by the Water Resources Development Act (WRDA). This agreement is to construct several CERP project components, such as reservoirs, Stormwater Treatment Areas, and water diversion structures as outlined in Project Implementation Reports (PIRs). Additional information on MFLs and Water Reservations is presented in Chapter 3 of this volume.

Beginning in FY2010, these activities were transferred to the Everglades Restoration and Capital Projects Program. Future monies allocated for this work will be reflected in that program's budget and will no longer be reported under the Water Resource Development Work Program.

Implementing entity: SFWMD.

Estimate of quantity of water produced by project:

- Water Reservation projects will reserve quantities of water consistent with the PIR.
- MFLs define the flow or level below which significant harm would occur to the water body, which helps in determining the amount of water that may be available to meet other reasonable-beneficial needs. MFL projects are not designed to make water available.

Completed implementation activities:

- To date, MFLs have been adopted for 12 water bodies within the District boundaries, including Florida Bay, the Everglades (including Water Conservation Areas 1, 2, and 3, and Everglades National Park), the northern portion of the Biscayne Aquifer, Lake Okeechobee, Caloosahatchee River and Estuary, Lower West Coast (LWC) aquifers, St. Lucie River and Estuary, Northwest Fork of the Loxahatchee River, and Lake Istokpoga.
- The District's first Water Reservation for the Picayune Strand and Fakahatchee Estuary became effective on July 2, 2009.
- Completed peer review for following Water Reservation projects:
 - Kissimmee River and Kissimmee River Chain of Lakes.
 - Comprehensive Everglades Restoration Plan (CERP) Indian River Lagoon (IRL) – South Water Reservation (St. Lucie Estuary).
 - Biscayne Bay.
- Completed U.S. Geological Survey (USGS) monitoring for Loxahatchee MFL station.
- Continued baseline wetland monitoring in the Central Florida Coordination Area (CFCA) in anticipation of MFL and Water Reservation activities.
- Continued monitoring of previously established MFLs.

Activities proposed for FY2010:

- The Kissimmee River and Kissimmee River Chain of Lakes, and CERP IRL – South are currently going through the rule development process.
- Complete the technical report and peer review in support of the Water Reservation rule for the Caloosahatchee Estuary and CERP C-43 Reservoir Project (DC02, \$100,000).
- Continue ongoing USGS monitoring for the Loxahatchee MFL station (DC0300021841, \$28,617).
- Continue ongoing monitoring of wetlands in support of the CFCA Rulemaking (DC04, \$50,000).

Estimated completion date:

- Complete rule development process for Kissimmee River and Kissimmee Chain of Lakes and CERP IRL – South in FY2010.
- Complete the technical report and peer review in support of Water Reservation rule for the Caloosahatchee Estuary and CERP C-43 Reservoir Project in FY2010.
- Complete USGS monitoring for the Loxahatchee MFL in FY2010.
- Complete CFCA baseline wetland monitoring.

Funding source: SFWMD.

Cost per thousand gallons: Cannot be estimated prior to completion of projects.

Total spent to date: FY2009 — \$800,259.

Total project cost: Ongoing.

Proposed expenditures:

Cost	FY2010	FY2011	FY2012	FY2013	FY2014	Total
Dollars (\$1,000)	179	220	220	220	220	1,059

CONSERVATION (DD)**Comprehensive Water Conservation Program**

The SFWMD's overall water conservation goal is to prevent and reduce wasteful, uneconomical, impractical, or unreasonable uses of water resources. In addition to improving efficiency of water use, the state-wide Water Conservation Program, known as Conserve Florida, provides information and tools to improve water conservation through the development of utility-specific, goal-based water conservation programs. To better promote the conservation goal, the SFWMD provides grants and cost-share programs. These programs encourage water users to make more efficient use of water resources through conservation and reuse. Further information is available at Conserve Florida's web site at www.conservefloridawater.org.

Since the Comprehensive Water Conservation Program was adopted by the District's Governing Board in September 2008, programs have been implemented in all three categories during FY2009, with water saving benefits expected in the future. This program is organized into three components: (1) regulatory, (2) voluntary and incentive-based, and (3) educational and marketing initiatives. From a regulatory perspective, a greater emphasis has been placed on water conservation requirements in the consumptive use permitting process that will compel municipalities to adopt and enforce effective conservation measures. From local landscape ordinances to year-round irrigation conservation measures, new regulatory measures put in place will advance water use efficiency, promote water conservation as the least-cost source of new water, protect the natural environment, and result in quantifiable water savings. Voluntary and incentive-based initiatives, including financial assistance, technical assistance and recognition programs, will supplement regulations and build goodwill, leverage investments, bring wider environmental benefits, and significantly improve the quality of life in the District's communities.

Education, outreach, and social marketing will complement and sustain these efforts by instilling a lasting conservation ethic in South Florida businesses and communities. Further information is available from the District's web site at www.sfwmd.gov/watersupply. Through the Water Savings Incentive Program (WaterSIP), the SFWMD provides matching funds up to \$75,000 to water providers and users (i.e., cities, utilities, industrial groups, schools, hospitals, and homeowners associations) for water-saving technologies. These technologies include low-flow plumbing fixtures, rain sensors, fire hydrant flushing devices, and other hardware. The Mobile Irrigation Laboratory (MIL) Program conducts efficiency audits of agricultural and urban irrigation systems. The MILs are operated by the Soil and Water Conservation Districts, a subdivision of the state of Florida created under Chapter 582, F.S.

The Conserve Florida Clearinghouse — funded by the FDEP and the state's largest water management districts — supports the ongoing operations of the University of Florida Water Institute and serves as a centralized information repository equipped with tools to facilitate the efforts of utilities and other stakeholders to achieve their water conservation goals. The University of Florida/Institute of Food and Agricultural Sciences (UF/IFAS) operates the Florida Automated Weather Network (FAWN), a state-wide research and data project with operations aimed at reducing agricultural irrigation during droughts and freezes. The District's Water Conservation Program is a decade-long, comprehensive demand management effort aimed at reducing water use in each sector to the lowest level feasible.

Implementing entity:

- WaterSIP Program: SFWMD.
- MIL Program: SFWMD, Florida Department of Agriculture and Consumer Services (FDACS), and the Soil and Water Conservation Districts.
- Conserve Florida Clearinghouse: SFWMD, FDEP, two other water management districts, and UF/IFAS.
- Florida Automated Weather Network: SFWMD, UF/IFAS, FDACS, and other water management districts.
- Florida Gulf Coast University (FGCU) Wings of Hope: SFWMD and Big Cypress Basin through FGCU.
- Orange County Conservation Study: SFWMD, Water Supply Implementation Division.
- The Great Water Odyssey: SFWMD, Regulatory and Public Affairs Department, and Water Supply Implementation Division.
- Panther Posse – LWC: SFWMD and Lower West Coast Service Center.
- Big Cypress Basin Conservation Outreach: SFWMD and Big Cypress Basin Service Center.
- Water Symposium: SFWMD and Big Cypress Basin Service Center.

Estimate of quantity of water produced by project:

- WaterSIP Program. During FY2002–FY2009, 116 projects cumulatively saved 5.76 mgd of water, and in FY2009, 1.51 mgd of water was saved. For FY2010, five proposed projects are anticipated to save 0.28 mgd of water, and 7.5 mgd is expected to be conserved for FY2010–FY2014.

- MIL Program. The MIL Program was created in 1989. An estimated 3.265 million gallons (mg) of water has been accounted for as actual water savings between FY2003 and FY2009, which is equivalent to 1.3 mgd. In FY2009, approximately 595 mg of water was saved (1.63 mgd), and for FY2010, 1.2 mgd is estimated to be saved. The quantity of water anticipated to be saved during FY2010–FY2014 is 2,190 mg (an average of 1.2 mgd per year).
- Water Conservation Program. This program is organized into three components: (1) regulatory, (2) voluntary and incentive-based, and (3) educational and marketing initiatives. Programs have been implemented in all three categories during FY2009, with water saving benefits expected in the future.
- Florida Automated Weather Network. The university calculates all estimates of water savings on a state-wide basis.

Completed implementation activities:

- Conserve Florida Clearinghouse. Funded from FY2004–FY2009.
- WaterSIP Program. Funded 72 projects District-wide from FY2002–2009.
- MIL Program. There are five operational MILs District-wide, all cost-shared by the District.
- Florida Automated Weather Network (FAWN). Funded from FY2004–FY2009; expansion continued of the FAWN database access to urban irrigation systems.
- Water Audit Leading by Example. Conducted indoor water audit of all District facilities in conjunction with the Comprehensive Water Conservation Program Leading by Example Action Step. Twelve District facilities were audited by Water Management, Inc., which ascertained current water use at each location and provided advice on conserving water, reducing costs, and return on investment for recommendations detailed in the water audit report.
- FGCU Wings of Hope. In FY2009, the program provided 440 FGCU students with knowledge of Southwest Florida wildlife species, habitats, water conservation, and environmental sustainability. The students in turn taught what they learned to approximately 4,000 fourth- and fifth-grade pupils in Lee and Collier counties at FGCU. Additionally, the Wings of Hope Program was brought to over 1,000 fourth- and fifth-grade students at outlying schools. Other FY2009 activities included: (1) introducing fourth- and fifth-grade students to the Corkscrew Regional Ecosystem Watershed (CREW) Environmental Educational Hiking Trails Program to learn about wildlife as well as the importance of CREW, (2) “Nature Rocks,” an activity involving student discussions about what nature means to them, and (3) the “Water Umbrella Resource” Poster Contest, allowing students to display their creative posters in libraries, government buildings, colleges, and the state capital.
- Water Conservation Outreach, Education, and Social Marketing. Completed regional water resource training workshops for 644 teachers to educate their students on current and future water supply and water quality issues confronting South Florida; as a result, an estimated 14,812 students have benefited from this training. Developed a local government handbook for the Leading by Example Project, which will be completed in FY2010. Created and published Florida Water Star Bronze criteria with Certifier Training workshops in FY2010. The District established a partnership with the U.S. Environmental Protection Agency and its EPA WaterSense Program to

- promote the program to local governments, and initiated the WaterCHAMP (Water Conservation Hotel and Motel Program) pilot program in the Florida Keys, resulting in the participation of 11 hotels totaling 547 rooms. The SFWMD contacted three regional airports to establish a water conservation print/visual public service announcement campaign, and published an article in the August 2009 Florida Water Resources Journal promoting the benefits of water conservation in South Florida.
- *Big Cypress Basin Conservation Outreach.* BCB staff conducted over 25 presentations on basin projects, water management, water supply, irrigation restrictions, and water conservation to civic groups and homeowner associations. Staff also organized educational field trips for Collier County School District students to the Big Cypress National Preserve, Corkscrew Swamp Sanctuary, Rookery Bay, and Picayune Strand. Using the District's Great Water Odyssey software, instruction was given to 1,325 Collier County elementary school students on water conservation. The District also provided outreach at the following Southwest Florida local events:
 - Leadership Collier.
 - Water Symposium.
 - Know the Flow workshop.
 - Living in Naples business trade show.
 - Collier County Fair.
 - Earth Day at the Conservancy of Southwest Florida.
 - Career fairs at local high schools.
 - Estuaries Day.

District outreach efforts were estimated to reach over 3,775 people.

Activities proposed for FY2010:

- *Conserve Florida Clearinghouse.* This continuing program collects, analyzes, and provides research information and technical assistance to public water supply utilities and water managers for use in developing effective and efficient water conservation programs (DD0100031590, \$150,000).
- *WaterSIP Program.* Five projects will receive funding in FY2010 (DD02, \$150,000).
- *MIL Program (BCB).* Four agricultural MILs and one urban MIL will continue to be funded. This year, the District is providing \$100,000 to FDACS through reserve funds to sponsor four agricultural MILs (DD03, \$55,000).
- *Florida Automated Weather Network (FAWN).* Collection of weather data will continue and be stored in a database whose searchable function provides immediate access to weather data (DD0400011590, \$100,000).
- *Orange County Conservation Study.* Orange County Utilities and the UF/IFAS will conduct a study to test soil moisture sensors and evapotranspiration controllers, and evaluate at a minimum one Central Controlled Irrigation System across a range of residential and commercial properties. The scope of work proposes two levels of

contractor training and a follow-up on controller operation and performance. The study will target two areas of Orange County with distinct soil differences, i.e., sandy versus flatwoods soil (DD0500031590, \$25,000).

- *FGCU Wings of Hope*. The Wings of Hope Program is an integral part of FGCU's Environmental Humanities curriculum and service learning. University students will continue to be introduced to native Southwest Florida wildlife species, habitats, water conservation, and environmental sustainability. The students will share this knowledge with younger students in fourth and fifth grades at public and private schools in Collier and Lee counties through science-based environmental education programs. Elementary school students are either transported to FGCU to participate in the programs or participate in the programs at their respective schools (DD0700012380, \$20,000).
- *The Great Water Odyssey*. Elementary school students (third, fourth and fifth graders) will use a computer-based interactive curriculum that focuses on water conservation, providing a multidisciplinary educational experience consistent with Florida's Sunshine State Standards. This program will assist students in the successful completion of the Florida Comprehensive Assessment Test (FCAT) (DD07, \$50,000).
- *Panther Posse – LWC*. Offered through the FGCU's Wings of Hope Program, this environmental education project allows college students to work one-on-one with Posse students throughout the school year. This effort aims to build confidence and assist participants in understanding nature (DD07, \$20,000).
- *Big Cypress Basin Conservation Outreach*. The previous year's program will continue with service center staff providing assistance for such activities as water symposiums, creative displays, promoting awareness of the District, performing outreach, etc. (DD08, \$7,800).
- *Water Symposium – Big Cypress Basin*. Service center staff will be partnering with the Water Symposium of Florida, Inc. to hold outreach seminars on water supply/water conservation for homeowners associations and civic groups. Another SFWMD Xtreme Yard Makeover using Florida-friendly landscaping is anticipated for FY2010. The Xtreme Yard Makeover is part of the District's ongoing efforts to create a year-round water conservation ethic that can help protect the water supply from South Florida's weather extremes (DD08, \$2,082).

Estimated completion date: Ongoing.

Funding sources:

- WaterSIP Program: SFWMD, utilities, homeowners associations, and other project partners.
- MIL Program: SFWMD, Big Cypress Basin Board, and FDACS.
- Florida Automated Weather Network: SFWMD, UF/IFAS, FDACS, and other water management districts.
- Water Audit Leading by Example: SFWMD.
- FGCU Wings of Hope: SFWMD.
- Water Conservation Program. SFWMD.

- Big Cypress Basin Outreach: SFWMD.
- Conserve Florida Clearinghouse: SFWMD, FDEP, two other water management districts, and UF/IFAS.
- Orange County Conservation Study: SFWMD.
- The Great Water Odyssey: SFWMD.
- Panther Posse – LWC: SFWMD.
- Water Symposium: SFWMD and Big Cypress Basin Service Center.

Cost per thousand gallons amortized at 8 percent over expected product life:

- Showerhead retrofit, \$0.46 – 0.69/1,000 gallons; toilet retrofit, \$0.72 – 1.18/1,000 gallons; rain sensor installation, \$0.44/1,000 gallons.
- Low-volume spray valves in restaurants, \$0.21 – 1.14/1,000 gallons.
- Showerhead and faucet retrofit in hotels/motels, \$0.23 – 0.26/1,000 gallons.
- MILs programmatic cost for agriculture, \$0.38/1,000 gallons; programmatic cost for urban, \$2.38/1,000 gallons.

Total spent to date: FY2002–FY2009 — \$11,813,476 (includes the Conservation Program, \$2,821,702; WaterSIP Program, \$4,745,886; and MIL Program, \$4,245,888).

Total project cost: Ongoing.

Proposed expenditures: Comprehensive Water Conservation Program including WaterSIP, MIL, FAWN, Leading by Example, Wings of Hope, Water Conservation Program, and Big Cypress Basin Outreach.

Cost	FY2010	FY2011	FY2012	FY2013	FY2014	Total
Dollars (\$1,000)	580	801	1,022	1,243	1,464	5,110

ALTERNATIVE WATER SUPPLY (DE)

A full description of Alternative Water Supply-related projects and associated funding is contained in the District's Alternative Water Supply Annual Report, prepared pursuant to Section 373.1961(2), F.S. (see Chapter 5B of this volume).

RESOURCE EVALUATION (DF)

Drilling and Testing Program (Df01)

A District-wide Drilling and Testing Program is providing an improved understanding of the geology and hydrology of the aquifers in South Florida as new exploratory/test wells are constructed. This improved understanding has enabled more accurate results from groundwater models and better decisions regarding the issuance of new consumptive use permits. Full documentation of each well site (including location, well construction details, geophysical logging, and aquifer testing data) is provided in the SFWMD technical publications, and this information has been loaded into the District's hydrometeorologic database, DBHYDRO.

Implementing entity: SFWMD.

Estimate of quantity of water produced by project: Project is not designed to make water available.

Completed implementation activities:

- SE Polk County Well Construction. Polk County has completed four wells at the site: (1) a Lower Floridan test production well, (2) a dual-zone monitor well (Lower Floridan and composite Upper Floridan, APPZ and UF), (3) a Surficial monitor well, and (4) a well to monitor the upper zone of the Upper Floridan only. The background water-level data for the Aquifer Performance Test (APT) was submitted during September 2009 and showed strong evidence for confinement between the production zone and the Upper Floridan (~16 feet head difference between the two).
- Aquifer Performance Test Support. Conducted full-scale APTs at the Oak Island site (wells OSF-103 and OSF-108). Completed a draft report of the APT field work and subsequent analysis of aquifer parameters. This APT is within the East Central Floridan Transient Model (ECFT) modeling domain.
- Geophysical Log Analysis. Optical imaging logging was conducted at well OKF-105.
- Lithologic/Stratigraphic Description Manual. This is a multiyear purchase order with the first deliverable consisting of a draft geologic formation capsule that was received in September 2008. Though the District has not provided funds in the FY2010 budget for this project, multiagency funding will continue the production of future planned capsules.

Activities proposed for FY2010: There are no projects currently planned or budgeted for the Drilling and Testing Program in FY2010.

Estimated completion date: Ongoing.

Funding source: SFWMD.

Cost per thousand gallons: Project is not designed to make water available.

Total spent to date: FY2000–FY2009 — \$12,910,500.

Total project cost: Ongoing.

Proposed expenditures

Cost	FY2010	FY2011	FY2012	FY2013	FY2014	Total
Dollars (\$1,000)	0	0	0	0	0	0

Groundwater and Evapotranspiration Assessments (Df01)

A number of specialized hydrogeologic studies were completed by the USGS in cooperation with the SFWMD. The information provided from these studies is required to enhance the understanding of aquifers and evapotranspiration (ET) rates across the District. Typically, each project requires several years of focused effort by USGS professionals, giving a continuity and focus unique to the USGS. Some projects have the cooperation of other water management districts or other governmental agencies. The USGS reports, maps, and data are peer-reviewed and highly respected in the industry, making them valuable references for groundwater modeling and environmental assessments as well as policy and decision making.

Implementing entity: SFWMD and USGS.

Estimate of quantity of water produced by project: Project is not designed to make water available.

Completed implementation activities:

- *USGS - Hydrogeology and Groundwater Quality of Highlands County, Florida.* FY2009 was the third year of a four-year contract [the FY2009 *South Florida Environmental Report (SFER)* – Volume II, Chapter 5A incorrectly indicated it was a three-year contract]. Synthesis of data was finished in FY2009 and an initial draft report, titled *Hydrogeology and Groundwater Quality of Highlands County, Florida*, has been completed, reviewed, and comments are being incorporated into the report. This work will continue into FY2010.
- *USGS Evapotranspiration Study.* Continued with monthly site visits, which included such tasks as data downloading, cleaning instrumentation, measuring depth-to-water, and troubleshooting instrumentation. Incorporated raw data into spreadsheets, performed Quality Assurance/Quality Control (QA/QC) calculations, developed relations between ET and climatic variables, and used relations to fill missing data gaps in ET records. Approved data will be uploaded into the USGS ADAPS database upon completion of review. The USGS staff will present a summary of the project status and data to the SFWMD. Information gathered from this study has been published in several scientific journals, including an article on changes in heat-energy stored in wetland surface water in *Water Resources Research* in 2005, an article on ET correction (vegetation) coefficients in *Wetlands* in 2006, and an article examining

the impact of controlled errors in ET on a simple wetland hydrologic model in Wetlands in 2008.

Activities proposed for FY2010:

- USGS - Hydrogeology and Groundwater Quality of Highlands County, Florida. During the final year of this contract, the second draft of Hydrogeology and Groundwater Quality of Highlands County, Florida is presently under review. This draft has been submitted to colleague reviewers and cooperators. A revised draft will be submitted to the USGS publication group for review before the end of FY2010. It is anticipated the report will be approved and published in March 2010 (DF0500011890, \$35,000).
- USGS Evapotranspiration Study. During the final year of this four-year contract, monthly site visits will continue as well as tasks such as data downloading, cleaning instrumentation, measuring depth-to-water, and troubleshooting instrumentation. Work will start in FY2010 on the USGS Scientific Investigations Report with the final draft report to be completed by the end of FY2010 (DF0100021890, \$114,936).

Estimated completion date: Ongoing.

Funding sources: SFWMD and USGS.

Cost per thousand gallons: Project is not designed to make water available.

Total spent to date: FY2000–FY2009 — \$2,604,245.

Total project cost: Ongoing.

Proposed expenditures:

Cost	FY2010	FY2011	FY2012	FY2013	FY2014	Total
Dollars (\$1,000)	150	0	0	0	0	150

Groundwater and Wetland Monitoring (Df01)

Well construction and monitoring efforts provide information about geology, aquifer characteristics, and water-level conditions to aid the SFWMD in the development of groundwater models, assessing groundwater conditions, and management of this resource. The District maintains extensive groundwater monitoring networks and partners with the USGS to provide additional support and funding for ongoing monitoring. To better understand the hydrologic systems that support wetlands, the District maintains its network of groundwater and wetland monitoring sites. Data are archived in the District's DBHYDRO database. Data from sites monitored by the USGS are published annually by the USGS.

Implementing entity: SFWMD and USGS.

Estimate of quantity of water produced by project: Project is not designed to make water available.

Completed implementation activities:

- Conducted groundwater monitoring in the Surficial aquifer, Kissimmee Basin Floridan aquifer, and isolated wetlands as well as recorder maintenance at all locations. Data were collected, analyzed, quality-controlled, and archived in the District’s DBHYDRO database. All data are available to internal and external users through the District’s web site at www.sfwmd.gov/dbhydro.
- Continued water-level monitoring at select sites, including data collection, data analysis and validation, and archiving data in the database.
- Activities proposed for FY2010:
- *USGS Groundwater Monitoring-Fort Lauderdale.* Continue to collect groundwater level monitoring in the Surficial aquifer and Kissimmee Basin and continue recorder maintenance. The groundwater monitoring network has been reduced in FY2010 due to budgetary constraints (DF0100021841, \$327,040).
- *USGS Groundwater Monitoring-Orlando-Kissimmee Basin Floridan.* Continue water-level monitoring at select sites, including data collection, data analysis and validation, and archiving data in the database (DF0500021841, \$37,966).
- *USGS Groundwater Monitoring-ORL-Potentiometric Mapping Project.* Continue water-level monitoring at select sites, including data collection, data analysis and validation, and archiving data in the database. Regional wet and dry season Floridan water-level maps will be created from data collected (DF0500031841, \$16,058).

Estimated completion date: These projects, which monitor water levels and stages, are an ongoing effort in cooperation with the USGS.

Funding sources: SFWMD and USGS.

Total cost: Ongoing.

Cost per thousand gallons: Project is not designed to make water available.

Total spent to date: FY2000–FY2009 — \$6,957,486.

Proposed expenditures:

Cost	FY2010	FY2011	FY2012	FY2013	FY2014	Total
Dollars (\$1,000)	381	437	459	482	506	2,265

Modeling (Df02)

The Water Supply Program is currently undertaking three modeling efforts, which are described below. There are no monies designated in the FY2010 budget for these activities, and all work will be performed by District staff.

Lower West Coast Floridan Aquifer Model, Incorporation of Peer Review Comments

During FY2008, the District retained three independent groundwater modeling experts to conduct a technical review of its draft Lower West Coast Floridan Aquifer Model using the SEAWAT-2005 code. Independent peer reviews are conducted per policy direction to ensure that models are developed under established groundwater modeling procedures and meet industry standards. The peer-review panel completed its report in August 2008, and the District began the process of incorporating the panel's recommendations, which will extend into FY2010.

Implementing entity: SFWMD.

Estimate of quantity of water produced by project: Project is not designed to make water available, but to evaluate potential future sources of water and their impacts.

Activities completed for FY2009:

- Completed pre-development model, a first step in characterizing the groundwater flow system per the peer-review panel.

Activities proposed for FY2010:

- Use pre-development model to establish boundary conditions and develop revised Lower West Coast Floridan Model, including updated model domain, aquifer systems, and updated datasets for calibration purposes.

Funding source: SFWMD.

Cost per thousand gallons: Project is not designed to make water available.

Total spent to date: FY2006 — \$170,000 [Florida Atlantic University (FAU)]; FY2007 — \$150,000 (FAU); FY2008 — \$200,000 [full-time employees (FTEs) and includes \$80,000 for peer reviewers]; FY2009 — \$150,000 (FTEs and consultant).

Total project cost: \$670,000.

Proposed expenditures:

Cost	FY2010	FY2011	FY2012	FY2013	FY2014	Total
Dollars (\$1,000)	Staff Time	Staff Time	0	0	0	0

Lower East Coast Subregional (LECsR) Model, Model Calibration

The Lower East Coast Subregional (LECsR) Model was developed by SFWMD based on the USGS’s MODFLOW code to simulate groundwater flow in the SFWMD’s Lower East Coast region for planning and regulatory purposes. A peer review was conducted on the LECsR Model and a report prepared by the peer-review panel in June 2006. Since then, the model has been updated to reflect peer-review comments. The final peer-review comment to be addressed is calibration of the model for groundwater levels and canal flows. This effort is anticipated to be completed in FY2010, particularly the south Palm Beach County and northern Broward County areas, and release Version 1.0 of the LECsR Model to the public for use.

Implementing entity: SFWMD.

Estimate of quantity of water produced by project: Project is not designed to make water available, but to evaluate potential future sources of water and their impacts.

Activities completed for FY2009: None.

Activities proposed for FY2010:

- Finalize calibration, especially for canal flows in southern Palm Beach County and northern Broward County, and release Version 1.0 of the model to users.

Funding source: SFWMD.

Cost per thousand gallons: Project is not designed to make water available.

Total spent to date: FY2006 — \$300,000 (FTEs and peer-review panel); FY2007 —\$150,000 (FTEs); FY2008 — \$150,000 (FTEs).

Total project cost: \$600,000.

Proposed expenditures:

Cost	FY2010	FY2011	FY2012	FY2013	FY2014	Total
Dollars (\$1,000)	Staff Time	Staff Time	0	0	0	0

Central Florida Coordination Area/East Central Florida Transient Model Runs Peer Review

Predictive simulations (i.e., model runs) will be conducted in FY2010 that estimate water demands and the effects of these water withdrawals on wetlands, springs, lakes, saltwater intrusion, and existing legal users of water in the Central Florida Coordination Area. Six modeling scenarios are being developed and will be conducted in FY2010. In addition, once an estimate of groundwater availability is made, solutions development model runs will be conducted in FY2010 and FY2011 in an attempt to meet water demands in the CFCA. Peer review of these model runs will be conducted by staff from SWFWMD, SJRWMD, and experts retained by various water suppliers in the CFCA.

Implementing entity: SFWMD.

Estimate of quantity of water produced by project: Project is not designed to make water available, but to evaluate potential future sources of water.

Completed implementation activities:

- Completed calibration of ECFT Model, including incorporation of peer-review comments.
- Obtained access agreements and installed stage recorder in lake in northern portion of Upper Kissimmee Basin to provide additional surface water data per peer-review recommendation (this task is categorized under the East Central Florida Transient Model (ECFT) Lake Stages Project in the FY2009 SFER).

Activities proposed for FY2010:

- Complete six predictive scenarios and estimation of groundwater availability.

Estimated completion date: FY2012.

Funding source: SFWMD.

Cost per thousand gallons: Project is not designed to make water available.

Total spent to date: FY2006 — \$170,000 (consultant); FY2007 — \$150,000 (consultant); FY2008 — \$300,000 (FTEs and peer-review panel); FY2009 — \$200,000 (FTEs for model recalibration); \$35,000 for stage recorder installation.

Total project cost: \$855,000.

Proposed expenditures:

Cost	FY2010	FY2011	FY2012	FY2013	FY2014	Total
Dollars (\$1,000)	Staff Time	Staff Time	Staff Time	0	0	0

PROGRAM SUPPORT (DZ)

There is no District-wide water resource development efforts currently planned for the program support element.

REGIONAL WATER RESOURCE DEVELOPMENT PROJECTS

The following are project descriptions of region-specific water resource development efforts funded by the District’s Water Supply Program for FY2010. Additional information, such as the implementing entities, activities proposed for FY2010, estimated completion dates, and funding sources, is included in each project summary.

CENTRAL FLORIDA WATER SUPPLY PLANNING (KB PLANNING AREA)

STOPR Comprehensive Water Supply Plan Agreement

The intent of the STOPR Study is to complete a comprehensive water supply plan for those portions of Central Florida within the SFWMD and surrounding areas. The plan is the result of a settlement agreement between Orange County and the City of St. Cloud. The proposed plan will identify water supply projects and a strategy for developing and permitting these projects such that the needs of Orange County and the City of St. Cloud are timely met (DB0300011590, \$500,000).

Implementing entity: SFWMD.

Estimate of quantity of water produced by project: Project is not designed to produce water.

Completed implementation activities: None.

Activities proposed for FY2010: Identification of short- and long-term water supply projects.

Estimated completion date: FY2012.

Funding sources: SFWMD and cost share with local utilities.

Cost per thousand gallons: Project is not designed to make water directly available.

Total spent to date: \$0.

Total project cost: \$500,000.

Proposed expenditures:

Cost	FY2010	FY2011	FY2012	FY2013	FY2014	Total
Dollars (\$1,000)	500	0	0	0	0	500

CENTRAL FLORIDA COORDINATION AREA PROJECT FACILITATOR (KB PLANNING AREA)

The purpose of this Memorandum of Understanding (MOU) is to provide a facilitator to coordinate with the three water management districts (SFWMD, SJRWMD, and SWFWMD) and the FDEP to develop a regional water strategy that crosses all three water management district lines. The facilitator will provide the following services: schedule meetings, provide documentation of meetings, develop presentations, etc. (DA0300011580, \$25,000).

Implementing entity: SFWMD, SWFWMD, and SJRWMD.

Estimate of quantity of water produced by project: Project is not designed to make water directly available.

Completed implementation activities: Completion of the facilitator procurement process in FY2009.

Activities proposed for FY2010: Continue coordination of meetings between three water management districts and the FDEP.

Estimated completion date: FY2013.

Funding sources: SFWMD (other water management districts provide matching funds).

Cost per thousand gallons: Project is not designed to make water directly available.

Total spent to date: \$15,000.

Total project cost: \$105,000.

Proposed expenditures:

Cost	FY2010	FY2011	FY2012	FY2013	FY2014	Total
Dollars (\$1,000)	25	25	10	0	0	\$60

CENTRAL FLORIDA AQUIFER RECHARGE FEASIBILITY STUDY

Part of the effort in studying the Kissimmee Chain of Lakes (KCOL) supply availability is a feasibility assessment of how best to use the available water from the system. The availability of supply from the KCOL and Shingle, Boggy, and Reedy creeks is projected to be highly variable. As such, surface water from these systems may, in part, be a product of opportunity rather than a consistent daily alternative source. While this makes direct use more difficult, it offers opportunities to use surface water for aquifer recharge to offset some of the projected groundwater withdrawal impacts during periods of high availability. Because the western portions of Central Florida are high recharge areas to the Floridan aquifer, rapid infiltration basins may be a feasible means of using surface water from these sources for implementing aquifer recharge. Similar studies have been completed in Orange County for the use of reclaimed water for aquifer recharge. An effort is proposed to expand this study into parts of Osceola, Polk, and Lake counties to determine opportunities for aquifer recharge.

Implementing entity: SFWMD.

Estimate of quantity of water produced by project: Project is not designed to make water directly available.

Completed implementation activities:

In FY2009, as a result of a cooperative effort between the SFWMD and SWFMWD, a report with maps was generated that evaluated the benefits of reclaimed recharge along the Lake Wales Ridge. In addition, the District worked with Polk County to implement the recommendations from that report into an alternative water supply master plan.

Activities proposed for FY2010:

The priority of work tasks in the project plan for the Central Florida Recharge Project have been reorganized to allow for the determination of surface water availability in the KCOL and Kissimmee River. This determination of water availability is directly related to rule development efforts associated with the Kissimmee Basin Water Reservations. The Water Reservation rule development activities are ongoing and expected to be completed in 2010. The results of this evaluation will be used in the ECFT Model to determine the potential aquifer recovery for rapid infiltration basin recharge in areas near the Lake Wales Ridge. Also, the SFWMD and SWFWMD have joined in the effort as part of the CFCA coordination efforts and alternative water supply solution development. It is anticipated that the results of the recharge projects will be included in the development of a regional water supply strategy for the CFCA in FY2011. There are no monies designated in the FY2010 budget for these activities, and all work will be performed by District staff.

Estimated completion date: FY2012.

Funding sources: SFWMD, Tohopekaliga Water Authority, Orange County Utilities, Reedy Creek Improvement District, City of St. Cloud, and Polk County Utilities.

Cost per thousand gallons: Project is not designed to make water directly available.

Total spent to date: \$0.

Total project cost: \$100,000.

Proposed expenditures:

Cost	FY2010	FY2011	FY2012	FY2013	FY2014	Total
Dollars (\$1,000)	Staff Time	Staff Time	Staff Time	0	0	0

KISSIMMEE CHAIN OF LAKES LONG-TERM MANAGEMENT PLAN/KISSIMMEE BASIN MODELING AND OPERATIONS STUDY

A recommendation in the 2005 Kissimmee Basin Water Supply Plan (2005 KB Plan) directed water supply planning efforts to support work within the District to develop a plan for improving the health and sustainability of the Kissimmee Chain of Lakes (KCOL). The Kissimmee Basin Modeling and Operations Study (KB MOS), initiated as a spin-off from the KCOL Long-Term Management Plan (LTMP), is a District initiative to identify alternative water control structure

operating criteria for the Kissimmee Basin and its associated water resource projects. The KBMOS is independent of, but closely related to, the KCOL LTMP. The KBMOS will define the required water control structure operations needed to meet the hydrologic requirements of the Kissimmee River Restoration Project, while also achieving a more acceptable balance between water resource management objectives associated with flood control, water supply, aquatic plant management, and the natural resource requirements of the KCOL. A set of modeling tools, including an advanced hydrologic/hydraulic model, has been developed as part of the study. Model construction was completed in 2008. The study is constrained to evaluating operating criteria modifications of the existing water control infrastructure and lands; however, the performance metrics and tools developed for this purpose are being applied in the Kissimmee Basin Water Reservation rule development effort to identify water required for the protection of fish and wildlife and water in excess of that quantity that potentially could be made available for consumptive uses. This effort is being managed through the District's Kissimmee Division. This project supports and has a direct linkage to the KB Regional Water Supply Plan efforts to identify surface water within the basin.

Implementing entity: SFWMD with state and local government support.

Estimate of quantity of water produced by project: Project is not designed to make water available, but will address potential availability of supply for consumptive uses.

Completed implementation activities:

- Completed initial model calibration, verification, and base conditions in FY07.
- Completed public participation in the development of evaluation performance measures in FY2007.
- Completed public participation in the development of structure operating criteria in FY2008.
- Completed recalibration and base conditions simulations using improved evapotranspiration data.
- Completed screening of proposed operating criteria and initiated MIKE 11 hydraulic evaluations of top alternative plans.
- Applied recalibrated model and base condition to identify water required for the protection of fish and wildlife as part of the Kissimmee Basin Water Reservation rule development effort.

Activities proposed for FY2010:

- Complete refinement of top performing alternative plans. Produce content describing potential water availability under top performing alternative plans.
- Promote top alternative plans to final phase of evaluation and report on evaluation results.
- This work will continue through FY2011.
- There are no monies designated in the FY2010 budget for these activities, and all work will be performed by District staff.

Estimated completion date: FY2011.

Funding sources: SFWMD and USACE through Kissimmee River Restoration Project Cooperation Agreement.

Cost per thousand gallons: Project is not designed to make water directly available.

Total spent to date: FY2003–FY2008 — \$2,215,257.

Total project cost: \$0

Proposed expenditures:

Cost	FY2010	FY2011	FY2012	FY2013	FY2014	Total
Dollars (\$1,000)	Staff Time	Staff Time	0	0	0	0

CENTRAL FLORIDA WATER SUPPLY COORDINATION

Hydrologic groundwater basins do not follow water management district boundaries; therefore, coordination among the SFWMD, SJRWMD, and SWFWMD is critical to the water supply permitting and planning process. This is particularly true in the region of Orange, Osceola, Polk, and southern Lake counties. Efforts to continue and improve this coordination in the areas of planning, permitting, and assessment tool development are important to the consistent implementation of water resource projects across the three districts. These districts have reached agreement on a set of guiding principles to help direct these coordination efforts in the future and have committed to developing a work plan of tasks that will address inconsistencies in the areas of water supply planning, permitting, and assessment tool development. The effort includes coordination and joint funding of water supply alternatives needed for the region.

Implementing entity: SFWMD, SJRWMD, and SWFWMD.

Estimate of quantity of water produced by project: Project is not designed to make water directly available.

Completed implementation activities:

- Completed development of a revised Memorandum of Understanding/Memorandum of Agreement between the three districts, outlining planning and regulatory activities.
- Rules 40E-2 and 40E-20 amendments completed.
- Completed Central Florida Alternative Water Supply project list and estimates of total supply demands.
- Hired an independent project facilitator.

Activities proposed for FY2010:

- Continue to hold coordination meetings among the three districts and the FDEP.
- Complete updated assessment of groundwater availability within the CFCA.
- Continue facilitator contract.
- Initiate stakeholder workshops.

- Begin rule development workshops.
- There are no monies designated in the FY2010 budget for these activities, and all work will be performed by District staff.

Estimated completion date: FY2013.

Funding source: SFWMD.

Cost per thousand gallons: Project is not designed to make water directly available.

Total spent to date: \$0.

Total project cost: Staff time only (linkage to FY2010 planning, implementation, MFL, hydrogeology, and modeling projects).

Proposed expenditures:

Cost	FY2010	FY2011	FY2012	FY2013	FY2014	Total
Dollars (\$1,000)	Staff Time	Staff Time	Staff Time	Staff Time	0	0