

Regional Water Supply Plans: Are They Making a Difference?

*A Report by the Florida Department of Environmental Protection
September 2004*

Each year, the Department of Environmental Protection reports on the status of regional water supply planning (s. 373.0361(5), F.S.) and the Water Management Districts' Five-Year Water Resource Development Work Programs (s. 373.536(6)4, F.S.). This year's report summarizes important accomplishments that will help to meet Florida's future water supply demands:

- Steady progress implementing the first set of regional water supply plans, including the dedication of substantial financial resources to produce real results.
- Initiation of work for the first updates of the twenty-year regional water supply plans (completed in 2000 – 2001).
- Direction by the Legislature that DEP develop, in cooperation with the water management districts and other stakeholders, a comprehensive statewide water conservation program for public water supply (House Bill 293, 2004 Regular Session)

This report provides details about each regional water supply plan and the associated Five-Year Water Resource Development Work Programs (s. 373.536(6)4, F.S.). The water management districts are making good progress in planning to meet the 2025 regional water supply demands and are also committing substantial financial resources to that purpose. Under Florida's system of water management, which promotes regional solutions, there are differences in how the different districts approach water supply problems. Nonetheless, the following generalizations can be made:

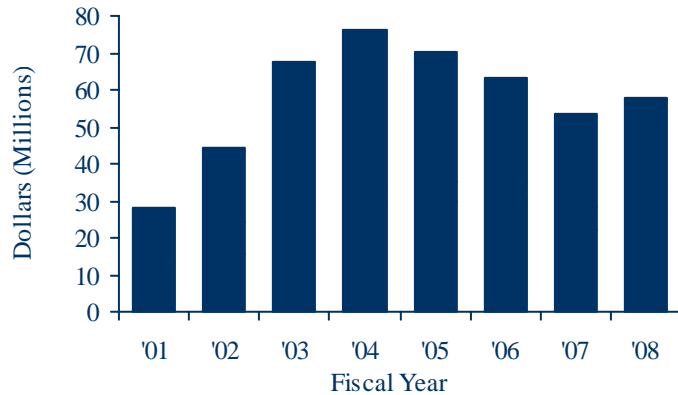
- All of the current regional water supply plans have identified sufficient sources of water to meet 2020 demands and it appears the same will be true of the plans now being updated to the 2025 planning horizon.



- Water demand projections for each planning area are being refined, resulting in higher projections in some areas and lower projections in others.

- Funding for water resource development has steadily increased over time (Figure 1). The projected decrease in future years is probably due to the difficulties with projecting costs out into the future and the completion of several projects. It is expected that funding levels will continue at the same or increased levels.

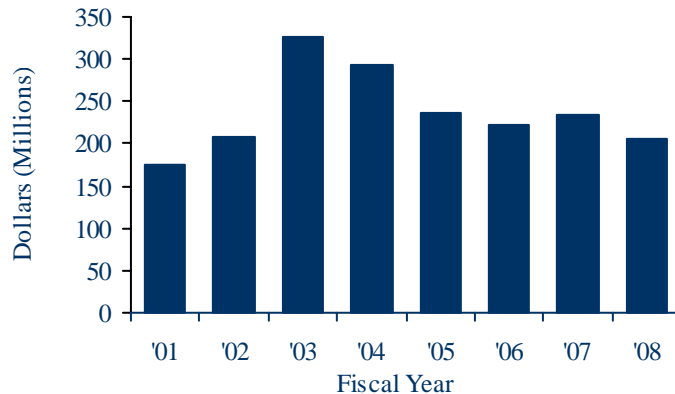
Figure 1. WMD Water Resource Development Funding Levels



- The Districts' Five-Year Water Resource Development Work Programs project expenditures of \$321 million for water resource development by 2008. (This figure does not include other water supply-related activities of the districts nor the funds devoted to the Comprehensive Everglades Restoration Program.)

- The SFWMD Five-Year Water Resource Development Work Program shows that approximately \$1.2 billion will be spent by 2008 in implementing CERP projects that are identified as water resource development projects in their regional water supply plans. CERP projects will continue to be a major component of the District's regional water supply plans (Figure 2).

Figure 2. CERP Water Resource Development Funding Levels



- The Department's evaluation of each district's Five-Year Water Resource Development Work Program concluded that the work programs are consistent with the Regional Water Supply Plans and that expenditures appear generally to be adequate.

Progress on Implementing Projects

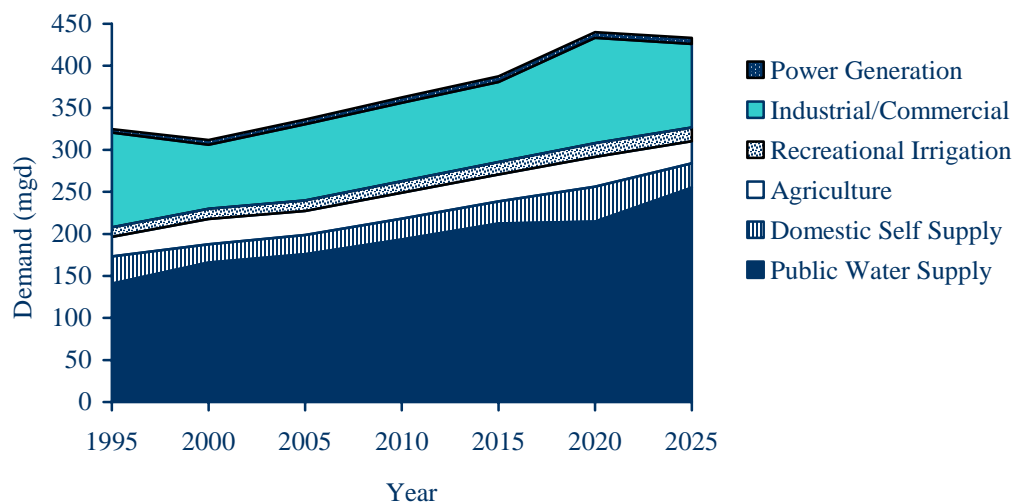
The District will continue to focus on quantifying the amount of water available from the Floridan and the Sand-and-Gravel aquifers and on funding the development of alternative water supply sources. The development of the Sand-and-Gravel Aquifer Flow model is expected to be completed this year. This District is also updating a map showing existing and potential areas for reuse.

The District has also provided water supply development assistance. Within water supply planning region II, the District obtained a \$3.1 million U.S. EPA grant to assist local utilities in developing the Farpoint wellfield. Outside of planning region II, the District expects to spend approximately \$150,000 to test wells for public water supply in Franklin County. The complete water resource development work program may be viewed at:

<http://www.dep.state.fl.us/water/waterpolicy/index.htm>.

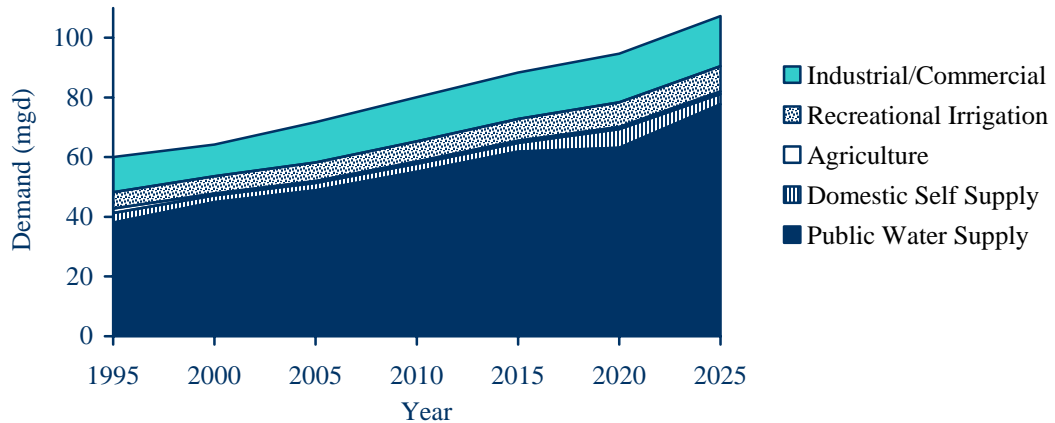
Last year, the District updated its *Districtwide Water Supply Assessment*. The assessment concluded that Region II (Santa Rosa, Okaloosa, and Walton Counties) is still the only region that needs a regional water supply plan. Figure 3 shows districtwide demands projected for 2000 through 2025. The data for the 1995 and 2020 demands are from the *Districtwide Water Supply Assessment* (1998) and the data for the 2000 - 2015 and 2025 demands are from the *Districtwide Water Supply Assessment* (2003). Demand projected for 2025 is actually slightly less than the demands predicted in 1998 for 2020. In Figure 3, the apparent declines in projected water demand from 2020 to 2025 are included only to show the changes in demand forecasts (the 2020 forecast was made in 1998 and the 2025 forecast was made in 2004). Between the year 2000 and 2025, the districtwide demands are expected to increase approximately 42% from 311.9 mgd to 443.3 mgd.

Figure 3. NWFWMD Districtwide Demand Projections



In planning region II (Figure 4), demands are expected to increase from 2000 to 2025 by approximately 67% from 64.3 mgd to 107.3 mgd. The District is scheduled to update the water supply plan for Region II by October 2005.

Figure 4. NFWWMD Planning Region II Demand Projections

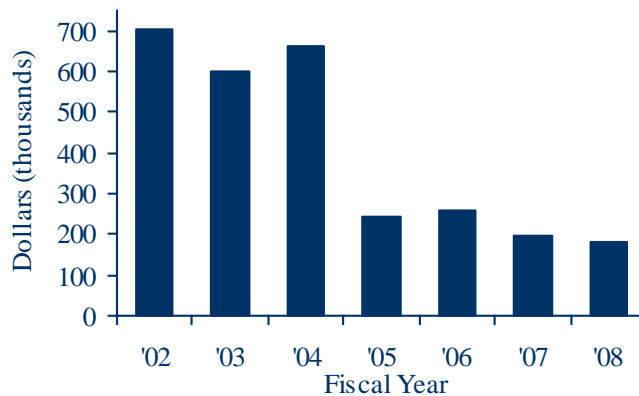


Funding

During fiscal year 2004, the Northwest Florida Water Management District will allocate approximately \$663,000 to implement the water resource development component of the regional water supply plan. During the next five years, the District expects to spend approximately \$1.5 million on implementation. In

NFWWMD, a large portion of the funds used to implement water resource development efforts comes from the Water Management Lands Trust Fund. Figure 5 shows the District's annual budget to implement the water resource development component of the regional water supply plans. As projects are completed, the projected funding declines significantly.

Figure 5. NFWWMD Funding for Water Resource Development



Water Made Available

In the Five-Year Water Resource Development Work Program, the District estimates that, by 2020, between 70.5 and 80.5 mgd of water could potentially be made available by the implementation of projects identified in the regional water supply plan. This compares favorably with the estimated 43 mgd increase in demand, expected to occur in Planning Region II between 1995 and 2025.

Progress on Implementing Projects

During the development of the 2000 District Water Supply Plan, it became apparent that the East-Central Florida region could face critical shortages in water supply as early as 2010 unless a regional solution was found. The East-Central Florida Water Supply Planning Initiative was developed as part of this solution. In February 2004, the District amended the water supply plan to include some of the Initiative's recommendations, while other components were deleted. Deletions from the plan included:

- The St. Johns River Water Supply Facility was deleted because the Initiative identified several more projects along the St. Johns River.
- The City of Apopka reuse component was deleted because it was completed.

The following water supply development projects were added to the water supply plan:

- Four potential water withdrawal sites at various points along the St. Johns River.
- Taylor Creek reservoir expansion project.
- Lower Ocklawaha River in Putnam County project.
- Three potential seawater demineralization projects co-located with power generation facilities (two on the Indian River Lagoon and one in New Smyrna Beach).
- Lake Apopka reuse augmentation project.

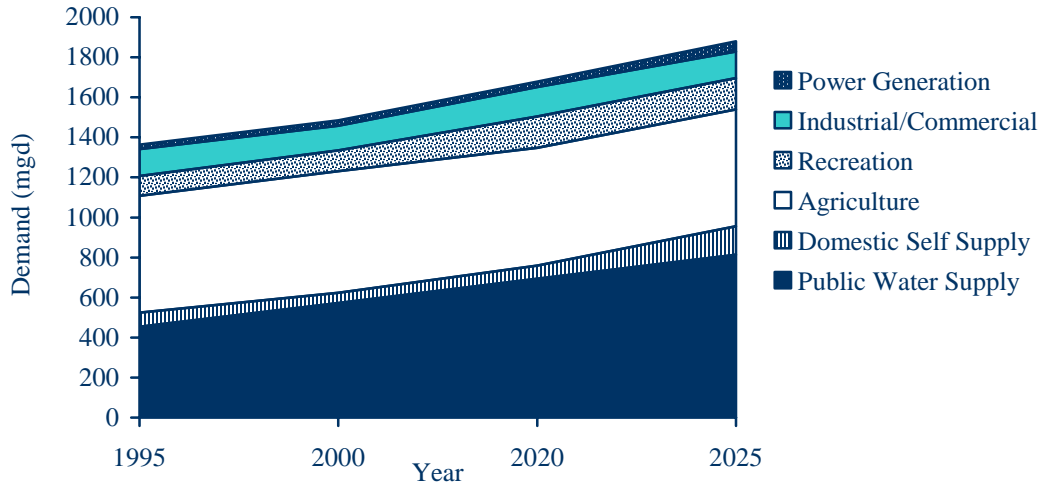
For more details on these projects please visit <http://sjr.state.fl.us/programs/index.html>. The District is scheduled to completely update the water supply plan by October 2005.

During the current fiscal year, the District expects to complete plan development for several projects including the adaptive management project, the recharge area protection portion of the aquifer protection program, the demineralization concentrate management plan, and the investigation of areas where domestic self supply wells are sensitive to water level fluctuations. Completion of these plans and investigations will allow the District to begin implementing the recommendations in the next few years. The District also plans to facilitate a water supply planning group in Flagler County similar to the efforts already undertaken in Central Florida. For more information on the progress of these water resource development projects, view the complete work program at <http://www.dep.state.fl.us/water/waterpolicy/index.htm>.

Last year, the District updated its District Water Supply Assessment. The assessment is still in draft form, but gives a preliminary expectation of the increases expected in demand. The District will use this information to update their regional water supply plan. Figure 6 shows demands projected for 1995, 2000, 2020, and 2025. The data for the water use in 1995 and 2020 are from the *District Water Supply Plan (2000)*, the data for demands in 2000 are from the *Water Withdrawals, Use, Discharge, and Trends in Florida, 2000* (USGS, draft), and the data for demands in 2025 are from the *Draft Districtwide Water Supply Assessment (2003)*. The figure shows that the increasing demands estimated in the *District Water Supply Plan (2000)* are expected to continue through 2025. Between the year 1995 and 2025, the districtwide demands

are expected to increase approximately 38% from 1364 mgd to 1880 mgd. The largest increases are expected in the public water supply sector.

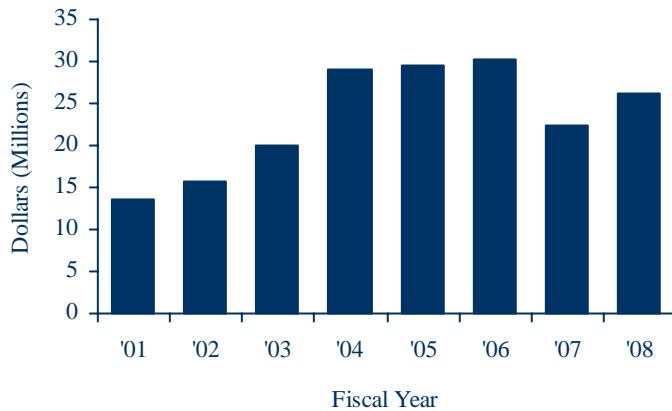
Figure 6. SJRWMD Demand Projections



Funding

During fiscal year 2004, the District will allocate approximately \$28.7 million to implement the water resource development component of the District's regional water supply plan. During the next five years, the District expects to spend approximately \$137 million on implementation. Figure 7 shows the District's annual budget to implement the water resource development component of the regional water supply plan. Over the long term, funding appears to be increasing from year to year. Beyond 2006, funding declines slightly, which is probably due to the completion of projects.

Figure 7. SJRWMD Funding for Water Resource Development



Water Made Available

The SJRWMD has estimated the amount of water that would be made available for implementing the water resource development component of the water supply plan. If all the proposed projects are implemented, the District estimates that they could potentially provide an additional 751 mgd of additional water by 2020. This compares favorably with the estimated 307 mgd increase in demand, expected to occur between 1995 and 2020.

Progress on Implementing Projects

Most of the District's efforts to implement the water resource development portion of their regional water supply plan are closely related to hydrologic data collection and analysis. In its Five-Year Water Resource Development work program, the District has also identified 19 water resource development projects. These projects include activities related to:

- Alternative water supply research and pilot projects.
- Agricultural water supply and environmental restoration projects.
- Restoration of minimum flows to the upper Peace River.
- Tampa Bay regional reclaimed water system projects.

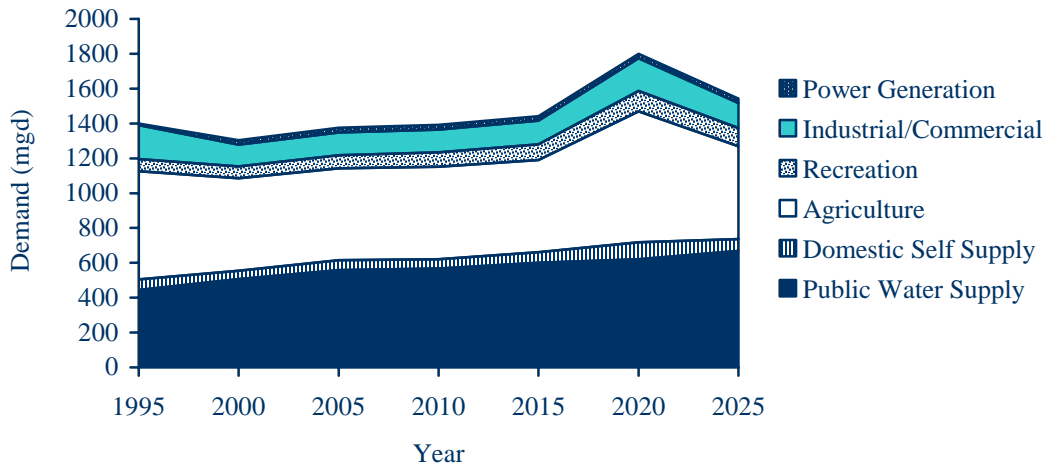
Many of the water resource development projects identified in the work program will be completed by fiscal year 2006. As these are completed, it is expected that new projects will be added that are consistent with the regional water supply plan. Last year the District completed two projects related to Agricultural Water Supply: the Upper Myakka-Flatford Swamp Alternative Supply Development and the Falkner-Flatford Swamp Surface Water Withdrawal Project. Two new projects related to the restoration of minimum flows to the Upper Peace River were added to this year's work program: Effect of Karst Development on Peace River Flow and Evaluation of Water Resource Development projects in the Upper Peace Basin. Additionally, several of the reclaimed water projects were combined into one large project that is now known as the Tampa Bay Regional Reclaimed Water and Downstream Augmentation Project. This new project has increased significantly in scope and the funding has increased by \$83 million for a total cost of \$213 million. For more information on the progress of these water resource development projects, view the complete work program at <http://www.dep.state.fl.us/water/waterpolicy/index.htm>.

The District also supports many water supply development projects throughout the region. During fiscal year 2004, the District plans to spend approximately \$54.8 million on water supply development. Approximately \$14.4 million of this money will be for reclaimed water projects; approximately \$1.5 million will be for conservation projects; and approximately \$38.9 million will be for potable water projects. Most of these projects are funded cooperatively with local governments, regional water supply authorities, and other local entities. Many projects also receive state and federal funding.

The District is beginning to update its regional water supply plan, which is scheduled for completion by December 2005. The updated plan will include new demand projections for five year intervals between now and 2025. The District has already prepared draft demand projections for the years 2000 through 2025. Figure 8 shows the demand projections from various District sources: the projections shown for 1995 and 2020 are from the *Districtwide Water Supply Assessment* (1998) and the *Regional Water Supply Plan* (2001); projections for 2000 - 2015 and 2025 were draft projections obtained from the District in June 2004. In Figures 8 and 9, the apparent declines in projected water demand from 2020 to 2025 are included only to

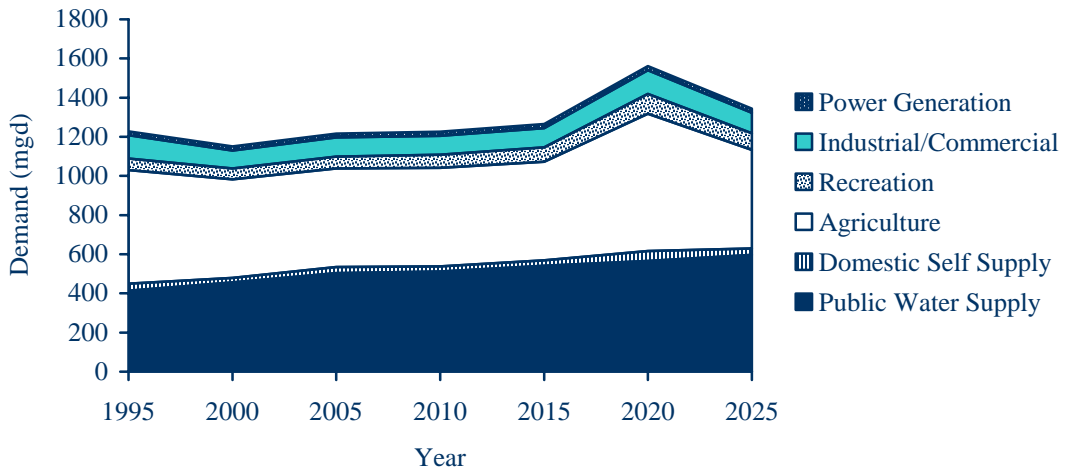
show the changes in demand forecasts (the 2020 forecast was made in 1998 and the 2025 forecast was made in 2004).

Figure 8. SWFWMD Districtwide Demand Projections



In SWFWMD, a regional water supply plan is needed only for the portion of the District that lies south of Hernando County. Figure 9 shows the demand projections for that portion of the District. Demands are expected to increase by approximately 19% from 1208 mgd to 1432 mgd.

Figure 9. SWFWMD Demand Projections for RWSP Planning Region

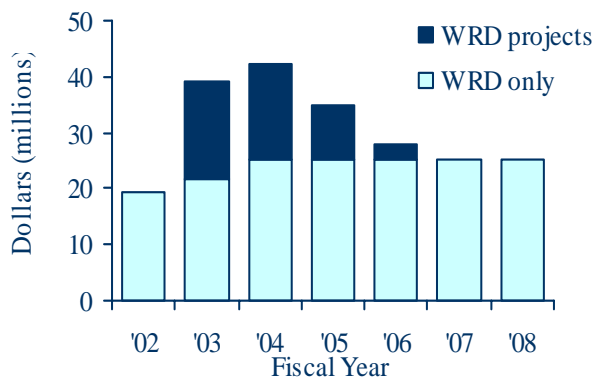


Funding

During fiscal year 2004, the District will allocate approximately \$25.2 million to implement the water resource development component of the District's regional water supply plan. During the next five years, the District expects to spend approximately \$126 million on implementation. In addition to funding the water resource development identified in the regional water supply plan, the District also funds several water resource development projects that are consistent with the goals and objectives of the regional water supply plan, but are not necessarily specifically identified in the plan.

During fiscal year 2004, the District expects to spend approximately \$16.9 million on water resource development projects and over the next five years, the District expects to spend approximately \$29.4 million. Figure 10 shows the funding for water resource development identified in the regional water supply plan (shown on Figure 10 as WRD only) and the water resource development projects identified in the work program that are consistent with the plan. Funds spent on these activities have been increasing throughout the years. In subsequent years, there is a projected decline in the funding of water resource development projects. This is because the current projects will be completed in a couple of years and new projects are only identified on annual basis.

Figure 10. SWFWMD Funding for Water Resource Development



Water Made Available

The SWFWMD has estimated the amount of water that would be made available for implementing the Water Resource Development component of the regional water supply plans. By the end of FY 2004, approximately 41.6 mgd of water will be made available through water resource development projects. To meet the future demands, the District expects that a combination of water resource development and water supply development projects from various sources could make approximately 678 mgd of water available by 2020. This compares favorably with the estimated 350 mgd increase in demand expected to occur in the planning region between 1995 and 2020.



*Original 1930 Cosme Well in Northwest Hillsborough County provided water for St. Petersburg
(Photos are from the Florida Photographic Collection in the Florida State Archives, Florida Department of State.)*

Progress on Implementing Projects

Districtwide Projects

The District developed four regional water supply plans, one completed in 1998 and the remaining three completed in 2000. There are several projects that are common to all planning regions. These projects include a water conservation program and all those activities associated with the Comprehensive Everglades Restoration Plan (CERP). The 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 the regional water supply plans. During the next five years, the District expects to spend approximately \$1.1 billion on implementing the CERP projects that have been identified as water resource development projects in the regional water supply plans. More information about the progress of implementing CERP can be found in the 2003 CERP Annual Report (available at www.sfwmd.gov). Details on specific projects may be found at www.evergladesplan.org.

The comprehensive water conservation program provides: technical assistance to utilities, funding for alternative water supply, cooperative funding to provide water conservation incentives, project management for water reuse, education about Xeriscape landscape principles, and management of urban and agricultural mobile irrigation labs. Some of last year's accomplishments include:

- Providing 34 alternative water supply grants for over \$4 million.
- Leveraging funds for capital improvement projects for \$102 million.
- Providing eight demand management grants to local governments totaling \$250,000.
- Expanding the mobile irrigation lab program to include a new urban lab in Broward County.

During the next five years the District expects to spend \$3.9 million implementing the conservation program. An additional \$3.0 million will be spent for the mobile irrigation labs.

Kissimmee Basin

During the last fiscal year, the District completed a surface water management model for the Kissimmee Upper Chain of Lakes, began development, with SJRWMD, on the East Central Florida Model to be used as a basis for future regional water supply in Orange, Osceola, and Polk Counties, continued development of an operational plan for the Southern Indian Prairie Basin, and began developing a management plan for the southern Lake Istokpoga–Indian Prairie Basin. During the next five years, the District expects to spend \$607,000 implementing the water resource development component of the water supply plan.

The District also began to update the Kissimmee Basin Regional Water Supply Plan, which is scheduled for completion in July 2005. The District held several meetings beginning in November 2003 and has distributed drafts of the first two chapters, several appendices, and the

Consolidated Water Supply Support Document. The support document describes the characteristics of the planning regions, documents the assumptions used in the planning process, and provides other background information relevant to water supply planning.

Upper East Coast

Except for long-term programs such as the Floridan Aquifer Monitoring program, the Ten Mile Creek Critical Restoration Project, and the Indian River Lagoon Project the District completed the 1998 plan's recommendations. During the past year, the District completed the draft project implementation report for Indian River Lagoon, and began construction on the Ten-Mile Creek Critical Restoration Project. Successful implementation of the plan that was completed in 1998 has resulted in the development of alternative sources in the region. Specifically, water users have: reduced their reliance on the surficial aquifer system, increased use of the brackish Floridan Aquifer (which most of the coastal utilities are now using), increased their use of reclaimed water, and converted from agricultural seepage irrigation to more efficient micro-irrigation systems. The continuation of the Floridan Aquifer Monitoring program was the only activity identified in the work program as requiring additional funding. Over the next five years, the District expects this funding to be \$634,000.

In June 2004, the District completed the update of the regional water supply plan. The District anticipates that 2025 demands for the region will be approximately 337 mgd, which is approximately 40% lower than the demand originally forecast for 2020. The decline was primarily due to the use of a different irrigation demand model and a decline in the estimated amount of acreage in agricultural production. The updated plan concluded that future demands could be met with continued diversification of sources. The plan identified various water sources that had the best potential to meet demands:

- Public water supply – continued use of surficial aquifer at current levels and continued development of the Florida Aquifer to meet future needs.
- Landscape irrigation – continued use of surficial aquifer at current levels and continued development of reclaimed water to meet future needs.
- Agricultural Irrigation – continued use of surface water with supplements from the Floridan aquifer. As the CERP projects are implemented, the construction of reservoirs in the region will reduce demand on the Floridan Aquifer

The plan's water resource development recommendations include: developing programs and providing funds to encourage more water conservation and reuse of reclaimed water; monitoring of the Floridan Aquifer; developing models to assist with evaluation of Floridan Aquifer sustainability; implementing the Northern Palm Beach County Comprehensive Water Management Plan and the CERP North Palm Beach County Project; completing the Ten Mile Creek Restoration; establishing reservations for the Loxahatchee River; and developing a restoration plan for the Loxahatchee River. Over the next five years, the District expects to spend approximately \$575.7 million to implement the water resource development component of the plan. A copy of the regional water supply plan can be found at: <http://www.sfwmd.gov/org/wsd/wsp/uecwsp.htm>.

Lower West Coast

During the past year, the District continued to develop a regional simulation model for the surficial and intermediate aquifer systems; initiated work to develop a Floridan Aquifer flow model; completed mapping potentiometric surface for the intermediate aquifer system; worked with Lee County Utilities to construct a reverse osmosis plant; began restoration of Southern Golden Gate Estates (which will raise groundwater levels in southern Collier County); funded two regional retention projects to aid in restoring groundwater levels; and continued a sub-regional study on the feasibility of a regional irrigation distribution system. In June 2004, the District began to update Lower West Coast Regional Water Supply Plan, which is scheduled for completion in October 2005. During the next five years the District expects to spend \$6.2 million implementing the water resource development component of this water supply plan.

Lower East Coast

During the past year, the District completed construction of the G-160 Loxahatchee Slough structure, completed a report on the minimum and maximum flow targets for the Lake Worth Lagoon; constructed manatee barriers and installed the S-9A pump station on the C-4; finalized the white paper *Water Resource Protection Strategies for the Implementation of CERP Under Federal and State Law*; and began development of six CERP Guidance Memoranda (one of which will describe methods used to quantify the water made available by CERP and the water reserved for the natural system). In June 2004, the District began to update the Lower East Coast Regional Water Supply Plan, which is scheduled for completion in December 2005. During the next five years, the District plans to spend approximately \$12.5 million to implement the regional water supply plan. These expenditures do not include any of the costs associated with CERP.

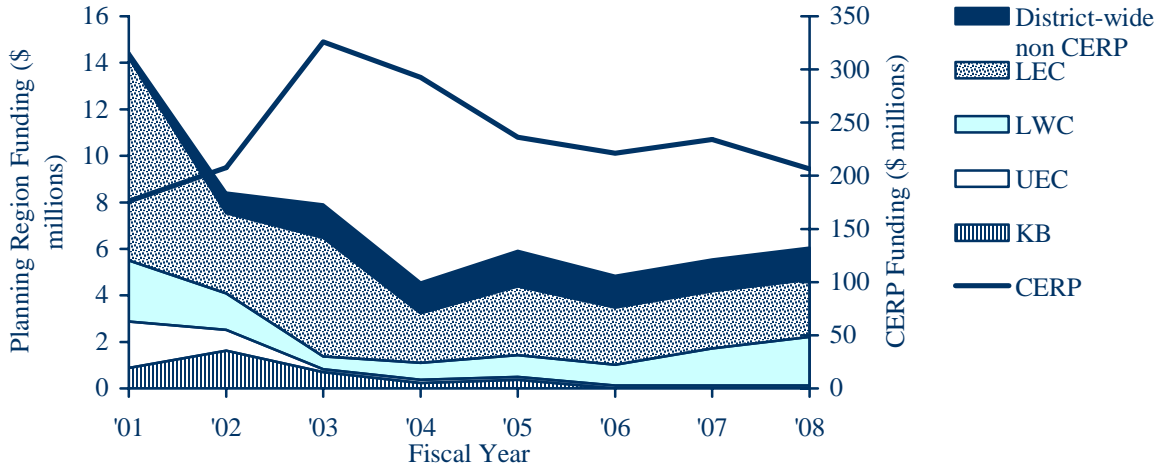
For more information on the progress of the SFWMD's water resource development projects, view the complete work program at: <http://www.dep.state.fl.us/water/waterpolicy/index.htm>.

Funding

During fiscal year 2004, the District plans to allocate approximately \$3.2 million to implement the water supply development component of their four regional water supply plans. Additionally, the District expects to allocate approximately \$1.4 million to implement a districtwide water conservation program and establish mobile irrigation labs. The District will also allocate \$292.5 million to implement projects associated with the Comprehensive Everglades Restoration Program (CERP).

Figure 11 shows the District's annual amount of money allocated or expected to be allocated to implement the water resource development component of the four regional water supply plans. During the first years after plan adoption, the amount of funding to implement the water resource development component was the highest. After 2001, funding for the non-CERP projects identified in the Lower East Coast Regional water supply plan declined, but this corresponds to an increase in funding for CERP projects. CERP is a critical component of the Lower East Coast Regional Water Supply Plan. In 2003, funding increased for the Districtwide non-CERP projects, which is primarily due to the development of a comprehensive conservation program.

Figure 11. SFWMD Funding for Water Resource Development



Water Made Available

The SFWMD has estimated the amount of water that would be made available for implementing the Water Resource Development component of the four regional water supply plans. By the end of FY 2004, approximately 33.5 mgd of water will be made available by developing these projects. By FY 2008, the District estimates that approximately 479 mgd of water will be made available by developing these projects.



Cypress Tanks Used to Ship Fresh Water to the Florida Keys (1910-1920 era)

Other Recent Developments

Recent legislative changes to Chapter 373, F.S., will further aid efforts to ensure future water needs are met. Among other things, House Bill 293, enacted by the Legislature, requires the development of landscape and irrigation design standards, directs the Department to establish a statewide water conservation program for public water supply, provides additional requirements for regional water supply plans, and provides additional reporting requirements for the Five-Year Water Resource Development Work Programs. The Department has already begun the efforts to establish the statewide conservation program. Key water supply partners in Florida have agreed to collaborate on measures to improve water use efficiency, which has been memorialized in a written agreement known as the “Joint Statement of Commitment for the Development and Implementation of a Statewide Comprehensive Water Conservation Program for Public Water Supply”. (A copy of the “Joint Statement of Commitment” may be obtained from the Florida Department of Environmental Protection Office of Water Policy at 850-245-8677 or at www.dep.state.fl.us/water/waterpolicy). The signatories are now developing a work plan with specific tasks, interim milestones, completion dates, estimates of costs, and assignment of responsibilities.

Conclusions

Since the Legislature directed, in 1997, the water management districts to prepare regional water supply plans, the first plans have been completed and are now in the process of being updated. However, more than plans have been prepared. The water management districts are actively assisting local water suppliers, through both funding and technical assistance, in developing their needed water supplies. The districts also have dedicated hundreds of millions of dollars in their budgets to help implement water resource development and have scheduled comparable amounts for the future. Full implementation of the regional water supply plans and other efforts will be challenging, but the work done to date indicates that meeting our future needs in an environmentally sound and cost-effective manner is within our grasp. Table 1 provides a summary of the progress that has been made. Water conservation and alternative supplies will become more important over time. Many projects will succeed only if local stakeholders can frame coordinated approaches to regional projects.



Agricultural Workers Watering Coconut Seedlings in Key Biscayne in 1928

Table 1. Demand and Funding Summary of Planning Regions

Planning Region	Dates for RWSPs		Current and Projected Water Demands (mgd)			Funding and Water Made Available	
	Completed	Update	2000 Demand	Previously Projected 2020 Demand	Current Projected 2025 Demand	WRD for Next 5 Years (\$ millions)	Additional Water to Be Made Available by WRD (mgd)
NFWWMD (Region II)	2001	Oct. 2005	64	95	107	1.5	81 by 2020
SJRWMD (Entire WMD)	2000	Oct. 2005	1485*	1679	1880	136.8	751 total potential
SWFWMD (Central and Southern part of WMD)	2001	Dec. 2005	1151	1562	1432	155.5	42 by 2004, 678 total potential
SFWMD							
Kissimmee Basin	2000	July 2005	264	663	398	0.61	71 by 2008
Upper East Coast	2000	June 2004	292	660	338	0.63	63 by 2008
Lower West Coast	2000	Oct. 2005	not available	1099	not available	6.2	190 by 2008
Lower East Coast	2000	Dec. 2005	not available	2521	not available	12.5	155 by 2008
Districtwide Projects						6.95	

* Source: USGS Water Use Data, 2000



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For more information about *Regional Water Supply Plans* please call or write:

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Northwest Florida Water Management District

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St. Johns River Water Management District

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