BEFORE THE

FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 950495 - WS

APPLICATION FOR A GENERAL RATE INCREASE

VOLUME I
BOOK 6 OF 22

MINIMUM FILING REQUIREMENTS
PREFILED DIRECT TESTIMONY

Containing

CARLYN HARPER KOWALSKY

DIRECT TESTIMONY OF CARLYN HARPER KOWALSKY

BEFORE THE

FLORIDA PUBLIC SERVICE COMMISSION

ON BEHALF OF SOUTHERN STATES UTILITIES, INC.

DOCKET NO. 950495-WS

Q. WHAT IS YOUR NAME AND BUSINESS ADDRESS?

A. My name is Carlyn H. Kowalsky and my business address is 1000 Color Place, Apopka, Florida 32703.

Q. WHAT IS YOUR POSITION WITH SOUTHERN STATES UTILITIES, INC.?

A. I am an Environmental Attorney with Southern States Utilities, Inc. For purposes of this testimony, Southern States Utilities, Inc., may be referred to as "SSU" or the "Company."

Q. WHAT IS YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE?

A. I received a J.D. from Florida State University College of Law in 1985. During my last year of law school I worked as an intern with the Florida Department of Environmental Regulation and following graduation, worked there as a law clerk. Upon admission to the bar, I took a position as Assistant General Counsel with the Southwest Florida Water Management District, which I held until 1990. During my tenure with the District I chaired a committee which developed major revisions to the District's water use rules set forth in Chapter 40D-2 Florida Administrative Code. I served as legal advisor to the District Governing Board at monthly public hearings concerning rules and policies on the regulation of water use, water well construction and surface water management. I also directed the development of the District's enforcement program. From January 1990

until April of 1993 I worked as an attorney with the law firm of Bogin, Munns & Munns in Orlando where I represented clients before local, state, and federal agencies and administrative hearing officers concerning a variety of environmental and land use matters. This practice focused on water use and wetlands issues for developments of regional impact and other large and small scale developments.

Q. WHAT ARE YOUR PRESENT DUTIES AS ENVIRONMENTAL ATTORNEY WITH SSU?

A. I am primarily responsible for providing legal services in all matters relating to environmental permitting and compliance with federal, state and local environmental laws and regulations. I work closely with SSU's engineering and environmental staff to coordinate SSU's reuse projects and I handle the drafting and negotiation of reuse agreements and other legal services regarding SSU's reuse projects. I supervise the administration of SSU's rules tracking system for over fifty chapters of environmental regulations applicable to water and wastewater utilities and I frequently participate in rulemaking proceedings that could have an impact on SSU's utility operations. In my representation of the company I have become familiar with the policies and practices of the Florida Department of Environmental Protection and the St. Johns, Southwest and South Florida Water Management Districts. This experience has given me the unique opportunity to keep abreast of developments and trends with regard to

water policy at the state level and in each water management district.

Q. WHAT ARE YOUR PROFESSIONAL AFFILIATIONS?

A. I am a member of the Environmental and Land Use Law Section of the Florida Bar. I am a member of and legal advisor for the Florida Water Wise Council, which was established to promote water conservation in Florida. I am currently the Secretary of the Florida Section of the American Water Resources Association which focuses on the management and development of water resources as well as education regarding water supply issues.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I will describe how SSU has responded to evolving environmental regulatory trends, particularly with regard to reuse and water conservation. I also will discuss SSU's successful efforts to obtain cooperative funding from the water management districts for reuse and other alternative supply projects and I will describe SSU's conservation program.

Q. WHAT HAS BEEN THE TREND IN FLORIDA WITH REGARD TO WATER SUPPLY ISSUES?

A. Because of our state's growing population and the increasing demands on water supplies, we are seeing an escalated concern regarding the impacts of additional withdrawals on the natural resources and on competing water users. Exhibit ____ (CHK-1) contains various newspaper articles which reflect this increasing concern. The topics include: possible pipelines

transferring water from the northern portion of the Southwest Florida Water Management District to counties to the south; a wellfield moratorium in Hernando County; saltwater intrusion into Weeki Wachee Springs; Water Resource Caution Areas designated by the St. Johns River Water Management District due to saltwater intrusion and predicted decreases in springs feeding the Wekiwa River; consideration of minimum aquifer levels in the Lower West Coast; and the investigations by the House Select Committee on Water Policy.

All of these articles demonstrate the concern being expressed all across the state that Florida's supply of fresh water may not be able to support existing and future demands. SSU operates facilities in many of the areas discussed in these articles. The Company is meeting the challenge to continue to provide adequate water supplies for its customers in the face of this increasing competition for the natural resource.

Q. WHAT SPECIFIC WATER SUPPLY REGULATIONS HAVE HAD AN IMPACT ON SSU'S OPERATIONS?

A. Florida's enviro...ental regulators have placed significant emphasis on water conservation and reuse through a variety of mechanisms. Part of this emphasis began in 1990 with the adoption of amendments to the State Water Policy set forth in Chapter 62-40, Florida Administrative Code, which required the water management districts to designate "critical water supply areas" where water supply problems have become critical or are

anticipated to become critical within the next 20 years. Recognizing that continually increasing demands are being placed on Florida's water resources, the State Water Policy directs the water management districts to require a reasonable amount of reuse within the critical water supply problem areas and also allows the districts to require reuse outside of the designated critical water supply problem areas if reclaimed water is readily available and the district adopts rules for reuse in those areas. Although both the DEP and the water management districts strongly encourage reuse and require permit applicants to investigate the feasibility of reuse, rules actually mandating reuse have not been adopted at this time.

Q. HAVE ANY OF THE DISTRICTS DESIGNATED A CRITICAL WATER SUPPLY PROBLEM AREA?

A. Yes, I can give you a few examples, but first I would like to clarify that in my testimony I may refer to these critical water supply areas by one or more of the various terms used in Florida Statutes and Florida Administrative Code rules. State Water Policy presently refers to these areas as "critical water supply problem areas." St. John's has used the term "Water Conservation Area," and SWFWMD has used the term "Water Use Caution Area." Because of this confusion, the DEP and the water management districts, through the reuse coordinating committee, have decided that going forward they will consistently use the term "water resource caution areas" to describe areas having water supply problems

that have become critical or are anticipated to become critical within the next 20 years. For purposes of my testimony in this case, any of these terms may be considered to indicate an area where additional water supply restrictions are imposed.

One example is the St. Johns River Water Management District, which has identified the entire district as a "Water Conservation Area" because all parts of the district have at some time been subject to a water shortage order. Although the St. Johns District used a different term to describe the area, the designation was intended to implement the State Water Policy requirement of identifying critical water supply problem areas. In making this determination, the Governing Board declared its specific intent to require all permit applicants to investigate the feasibility of reuse.

SSU's Deltona facility is one of the largest public water suppliers in Volusia County and has been subject to increasing scrutiny by the St. John's District in order to avoid what the District believes could become a water crisis in this area. After determining that some action should be taken to prevent long term adverse impacts to the water supply in Volusia County, the District suggested that SSU relocate some of its existing water supply wells away from the southwest region of the county. Witness Terrero has estimated that a wellfield relocation such as the one recommended by the District could have cost our customers about $23

million. Subsequently, SSU staff met with the SJRWMD to discuss their concern and SSU persuaded the District to forgo imposing the relocation. Instead, the parties determined that the best course of action would be for SSU and the District to jointly undertake a study to acquire and analyze additional aquifer information prior to finalizing a plan of action.

The Southwest Florida Water Management District recently proposed rules imposing restrictions on water withdrawals and uses in their "Southern Water Use Caution Area" ("SWUCA"). These rules would prohibit additional water withdrawals until certain minimum aquifer levels are achieved. The District's intent through these rules is to require users to institute water conserving practices to reduce existing withdrawals so that the overstressed aquifer can be restored. Some of the proposed restrictions include: limitations on the per capita allotments for each water supply utility, requirements for utilities to offset existing and future withdrawals with reclaimed water, and a prohibition on additional withdrawals until the established minimum aquifer levels are achieved in the SWUCA. SSU provides water to seven (7) communities located within SWUCA.

Q. HAS THIS INCREASED REGULATORY SCRUTINY BEEN LIMITED ONLY TO CRITICAL WATER SUPPLY AREAS?

A. No, we are seeing more and more water use restrictions through the routine permitting process. Attached as Exhibit ____ (CHK-2) is a copy

of a letter received by SSU from Mr. Steve DeSmith of the Southwest Florida Water Management District requesting that SSU provide both an aquifer level monitoring program and a wetlands monitoring plan in Hernando County. Prior to this recent permit application for our Spring Hill plant, SSU had not been requested to monitor aquifer levels or wetlands at this facility. In the past, the district typically requested this type of monitoring only if a specific problem was noted. The more recent trend is that the district is requesting permittees to gather and analyze detailed information about aquifer levels and wetlands to monitor the impacts of increased pumping. The district also has entered an agreement with Hernando County to co-fund a water supply study to determine water supplies available in Hernando County. This study was a direct result of the concerns of the district and Hernando County about the quantity of water available in Hernando County.

Q. HOW HAS THIS INCREASED REGULATORY SCRUTINY REGARDING WATER SUPPLIES AFFECTED SSU?

A. Each time SSU receives a request from an agency to perform additional testing or develop new methods for water supply or wastewater disposal it adds costs to our operation. Such requirements include environmental monitoring, aquifer level monitoring, further accounting of customer water usage, development and implementation of water conservation techniques, and preparation of reuse feasibility studies.

Q. WHAT IS SSU DOING TO RESPOND TO THE INCREASING RESTRICTIONS?

A. One of the things we have been doing to address these restrictions is to take an active role in the development of environmental rules and policies. We have established a rules tracking system whereby we actively track over 50 environmental regulations affecting our utility operations. The first step in developing this system was to identify the key regulations affecting our business. Because we face so many continually changing regulations, it would be nearly impossible for any one person in our company to keep track of the status of each proposed change. Therefore, we have established employee coordinators for each rule chapter to track the development of any proposed changes and to provide input to the agency regarding the proposals. SSU staff from the engineering, environmental, operations, and legal departments participate in this rules-tracking process. We also actively track and participate in the activities of water management district utility advisory committees and the water supply planning process.

Q. CAN YOU GIVE ANY EXAMPLES OF HOW SSU HAS PARTICIPATED IN THIS PROCESS?

A. An example of our involvement occurred in early 1994, when the South Florida Water Management District presented the Lower West Coast Water Supply Plan affecting SSU facilities in Lee and Collier Counties. Upon

review of the proposal, a number of issues presented a threat to SSU's operations in that area. SSU representatives worked with District staff and the SFWMD governing board to modify the proposed plan to address a number of concerns raised by SSU. The proposed plan suggested that the District adopt an aquifer zoning concept which could have required public water suppliers to relocate wells from the shallower aquifer zones to a deeper aquifer. SSU objected to this provision and demonstrated that the District did not have sufficient information regarding quantity of water in lower aquifers that would support this requirement. Based on SSU's comments, the District eliminated the language suggesting relocation of public water supply wells. The proposed plan also designated certain wetland areas as "Outstanding Natural Systems" ("ONS"). Under the proposed plan, several of SSU's water withdrawal sites were designated "ONS." SSU pointed out that this designation could be interpreted to mean that such areas could not be used for utility activities. Based on the concerns expressed by SSU, the District added language to clarify that lands designated as "ONSm" may be managed for multiple purposes, including water supply utilities. By becoming actively involved in the development of this water supply plan, SSU was able to deter potentially costly new requirements that could adversely impact SSU's customers.

In addition, through the process of SSU's involvement in the Southwest Florida Water Management District rulemaking proceedings for

the Southern Water Use Caution Area (SWUCA), SSU analyzed the per capita usage of the customers in each of its service territories. In doing so, we found that many of our customers have water usage below the proposed 110 per capita limits. We also identified certain communities with high water usage and we will be targeting those areas in our 1996 conservation plan which will include customer education campaigns and retrofit programs. I will discuss this plan in greater detail later in my testimony.

Q. HAS SSU MADE ANY EFFORTS WHICH WOULD DEMONSTRATE SSU'S COMMITMENT TO WASTEWATER REUSE AS A METHOD OF CONSERVING WATER SUPPLIES?

A. Yes, SSU has a long history of providing reclaimed water as an alternative water supply. Presently, SSU supplies reclaimed water treated to public access standards from seven wastewater facilities. Design of SSU's Spring Hill reuse facility is well underway and other plants are being investigated for their reuse potential. SSU has won awards for its reuse facilities including first place in the *1994 David W. York Reuse Competition* in the one to five MGD category for the Company's Marco Island facility. This award recognizes environmental quality management of facilities, permit compliance, innovative approaches to reuse, the effectiveness of water reuse systems and the level of public education associated with the reuse project. The *1995 David York Reuse Award* again in the one to five MGD

category was presented to the Venice Gardens plant in Sarasota County. This facility and its reuse program was established by SSU although it was sold in December, 1994 to Sarasota County.

Historically, the incentive for many reuse projects has been because reuse provides a preferred method for wastewater disposal. More recently, reuse is becoming a treasured source of water for users who may not otherwise be able to obtain a reliable supply.

Q. HAS SSU MADE ANY OTHER EFFORTS TO EXPAND REUSE IN FLORIDA?

A. Yes. The Legislature has declared that reuse of reclaimed water is a state objective and is in the public interest. During the 1994 legislative session, the Legislature investigated ways of providing further incentives to reuse providers and users so that more reuse projects could be implemented. As part of this effort, SSU presented the initial draft of legislation allowing the Commission to authorize rates to fund reuse projects upon approval of a reuse plan. Recognizing the benefits to water and wastewater customers as well as the reuse end user, the legislation, enacted as Section 367.081, Florida Statutes, permits the Commission to authorize utilities to collect rates from water, wastewater and reuse customers to fund reuse projects. This legislation should provide further encouragement to private utilities to convert their facilities to reuse.

During the 1995 legislative session, a bill was proposed regarding

alternative water supplies. This bill was intended to provide incentives for utilities and other water users to find creative ways of exploiting water sources other than traditional groundwater withdrawals. In the early stages of bill development, it was not well received by legislators. SSU worked with the legislative committee staff and legislators to revise the bill into its final form which is now codified as Section 373.1961 (2), Florida Statutes. During this process, SSU was successful in persuading the Legislature to add language that would clarify the Districts' authority to provide cost-share funds to investor-owned utilities for conservation and alternative water supply projects. SSU has been confronted with this question in some of our previous funding requests which I will discuss later. This clarification should resolve any remaining questions regarding the legality or propriety of Districts providing cost share funds to private utilities for such projects and should provide certainty that it is indeed in the public interest to do so. In fact, we have recently been informed that, as a result of this legislation, the South Florida Water Management District may revise and re-issue an outstanding request for proposals for conservation projects to allow investor-owned utilities, as well as government owned utilities, to apply for District funding. This is one of the ways SSU is working to minimize costs to our customers.

Q. HAS SSU APPLIED FOR OR RECEIVED ANY COOPERATIVE FUNDING FROM THE WATER MANAGEMENT DISTRICTS FOR

REUSE PROJECTS?

A. Yes. In fact, SSU has taken advantage of the Southwest Florida Water Management District's ("SWFWMD") cooperative funding program which was in place prior to the enactment of the 1995 legislation. SSU's project came about in 1993, when we began planning for the expansion of the Spring Hill wastewater facility to accommodate the future wastewater needs of that growing service area. Through that process, we determined that the preferred method of wastewater disposal would be to treat the wastewater to public access standards and provide it to the nearby Timber Pines community which includes multiple golf courses. Around that same time, we became aware that SWFWMD was accepting applications for cooperative funding for projects providing water conservation or reuse.

SSU's application, along with submittals by other applicants, was reviewed by the Coastal Rivers Basin Board and ranked based on criteria regarding the water resource benefits provided by each project. In the Fall of 1994, SWFWMD approved SSU's application for 1995 cooperative funding for a reuse transmission line that will transport reclaimed water from SSU's Spring Hill wastewater treatment plant to the Timber Pines community. SSU's Timber Pines Reuse Project renders multiple environmental benefits by providing an alternative means of wastewater disposal other than discharge to surface waters, reducing Timber Pines' withdrawal of fresh water from the aquifer, and providing recharge to the

aquifer thereby preserving and perhaps enhancing the ground water supplies in that area. The contract entered into by SSU and the District provides that the parties will share equally in the costs of design and construction of the transmission facilities up to a total project cost for the transmission line of approximately $634,000. To date, the District has agreed to fund up to $316,800. SSU has submitted another application for 1996 cooperative funding which requests funding for an additional portion of the Timber Pines reuse project. The 1996 funding application requests District funds for a pumping facility, a wet-weather storage pond, and a re-pump facility that would provide additional reclaimed water to SSU's reuse customers following periods of wet weather. SSU is requesting $304,500 in our 1996 cooperative funding application, which is presently under review and discussion among District staff, the Basin Board and SSU.

SSU has obtained a permit from DEP for the Spring Hill wastewater plant improvements, and for transport and distribution of reclaimed water on the golf courses. Design of the project began in April of 1995 and we expect to begin construction by early 1996.

Q. COULD YOU DESCRIBE THE COMPANY'S EFFORTS TO OBTAIN FUNDING FROM THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT (SFWMD) FOR THE AQUIFER STORAGE AND RECOVERY PROJECT IN COLLIER COUNTY?

A. Yes. Due to continued growth total water use on Marco Island has remained high since 1991. As a result, SSU has been continuously developing ways to provide additional water supplies to meet customer demands and has simultaneously launched a program to promote conservation by those customers, which I will discuss later. Because of Marco Island's remote, coastal location, fresh water supplies are scarce and are not conveniently located. To meet the increasing demands in a water sparse area, SSU has had to look toward creative, non-traditional means of providing water. Accordingly, in the fall of 1994, SSU submitted a proposal for cooperative funding to SFWMD's Big Cypress Basin Board to design, test, and construct an Aquifer Storage and Recovery (ASR) well near Henderson Creek on the mainland of Florida in Collier County. This ASR project is designed to capture surface water from Henderson Creek and then inject it into an underground storage "bubble" for later recovery and use by SSU's Marco Island customers. While the technology for this type of system is continually being developed and explored, a number of ASR systems have already been successfully employed in Florida. In this circumstance, SSU will be capturing surface water that would otherwise not be productively utilized and we will be storing it for use during high demand periods.

The source of this water is natural surface runoff from land through which an extensive drainage canal system was constructed years ago for

the purpose of draining Collier County's vast wetlands. At the time the drainage system was constructed, the primary objective was to remove the standing water so that the land could be used for farming and economic development of the area. The water that flows through the Henderson Creek would have, under natural circumstances, been retained in the area, but because of this major drainage project, the water is channeled and flows out directly to the ocean. Through this ASR project, SSU will be able to capture and utilize this otherwise wasted water supply to meet the increasing demands for water on Marco Island. If implemented, the project would provide an additional benefit of reducing adverse environmental impacts on downstream estuaries that have been damaged by the influx of excess freshwater since the installation of the drainage system.

Following SSU's presentations about the ASR project to the Big Cypress Basin Board, the Board consistently supported the merits of it in that it provided a creative means of supplying additional water to an area where the population is continually expanding and water supplies are scarce. However, SFWMD's legal counsel raised concerns about whether the SFWMD or the Basin Board should be contributing its funds to a privately-held utility. This was the first time the SFWMD had been confronted with a funding request from a private utility.

To address these concerns, we worked with SFMWD's counsel to

convince him and the Basin Board that it would be appropriate for the Board to enter into a cost-sharing agreement with a private utility. The board questioned whether SSU would increase its profits if they provided part of the money to fund this project. Through correspondence, memoranda and presentations to the Basin Board, we explained that any cost share funds provided by SFWMD would be used to benefit SSU's customers and would not increase the profits of our shareholders. We argued that if private utilities were restricted from participating in SFWMD's cost share program, our customers would be deprived of the benefits of funds they contribute to SFWMD through ad valorem tax assessments. We had months of discussion and debate over their counsel's concern that the SFWMD could be prohibited because of a potential constitutional restriction. Following review of SSU's legal memoranda on this issue, the SFWMD cautiously decided to enter into a contract with SSU for the ASR project in January, 1995 to fund up to $225,100. Because of the issues that were debated through the course of review of this project, I believe the ASR project will not only provide significant water resource benefits for the region, but also provides a significant step forward for customers of private utilities who have previously not been afforded the benefits of cooperative funding.

Q. HAS SSU APPLIED FOR WATER MANAGEMENT DISTRICT COOPERATIVE FUNDS FOR ANY OTHER PROJECTS?

A. Yes, in February, 1995, SFWMD, through their Government and Public Affairs department, issued a request for proposals (RFP) for cost share funding for conservation projects by utilities. The request indicated that only public entities such as government-owned utilities would be qualified to receive funding. Nevertheless, SSU responded to the RFP with a proposal for a conservation rebate program for rain sensors and low-flow toilets. In the cover letter we submitted with this proposal, we reminded SFWMD that there is no legal restriction preventing them from providing cost-share funds to private utilities and we requested that they consider our proposal. We are hopeful that because of our persistence, the support the industry has received from the Commission on this issue and recently approved legislation, SFWMD will consider and fund our proposal.

Also in February, 1995, SSU was contacted by the Lower West Coast Planning staff of SFWMD to see if SSU was interested in proposing a reuse project for cooperative funding. SSU has taken this opportunity to request cost-share funds for a reclaimed water transmission system to deliver reclaimed water to the Hideaway Beach community on Marco Island. District staff is presently reviewing our request along with other proposals they have received. This reuse project would serve to offset the use of potable water for the irrigation needs of the Hideaway Beach community and would be the first step toward an expanded reuse program for SSU's Marco Island customers.

Q. COULD YOU BRIEFLY DESCRIBE THE HISTORY OF SSU'S STATEWIDE WATER CONSERVATION PROGRAM?

A. SSU began its comprehensive water conservation program in 1991. The program has many facets including communications and public education as well as operational efforts regarding unaccounted for water and meter changeout program. SSU's conservation program handbook, which addresses each of these elements, was originally published in 1992 and is on file with each water management district. Since the inception of the program, SSU has conducted an extensive public information and education program on water conservation through a variety of methods. Recently, SSU has made some enhancements to its conservation program in the area of public education and involvement, which is the focus of my testimony. Attached as Exhibit ___ (CHK-3) is a comprehensive overview of these enhancements. This exhibit is divided into four parts. Part One describes SSU's ongoing efforts to educate the public and promote water conserving habits. Part Two describes our Marco Island Conservation Project which was implemented beginning in 1994. Part Three explains our 1996 proposal for six targeted communities including conservation retrofit devices. And, finally, Part Four sets forth the costs for all of these efforts. With that overview, I will now describe some of the highlights of our program.

The SSU Speaker's Bureau has been in place since 1991 and is

managed by our communications department and staffed by SSU employees across the state. The department maintains a portfolio of prepared speeches supported by slides, videos and literature. Each year SSU volunteer speakers are scheduled to present this information to school groups, homeowners' associations, civic organizations, garden clubs, and other groups. Over the past few years SSU employees have delivered more than 200 conservation presentations.

Customer newsletters have played a major role in SSU's program to communicate the water conservation message. To enhance this effort, in 1994, SSU initiated a newsletter dedicated exclusively to water-saving messages entitled *Conservation*. This publication is mailed about three times each year to all SSU customers, as well as to government officials, the media and SSU employees. Our communications department also maintains an extensive library of information about water conservation (indoor and outdoor), water resources, Xeriscape landscaping, pollution prevention and groundwater protection. This information is made available to customers free-of-charge upon request and is distributed as bill inserts, provided at open houses and other events, and disseminated at SSU customer service offices.

A very important part of our communications effort focuses on delivering the conservation message to children. Our conservation library contains extensive materials written especially for children. These

materials are provided to schools, libraries and youth organizations. Since 1991, SSU has sponsored the Small Change Original Theatre to provide free live theater water conservation presentations at schools located in SSU's service areas. The show "Captain Hydro and the Water Bandit" follows the adventures of Captain Hydro, the champion of water conservation, and his quest to keep the Water Bandit from wasting community water supplies. SSU publishes teacher information packets for distribution to all of the children in attendance. Through SSU's sponsorship, the program has reached nearly 30,000 children in 94 schools statewide with the conservation message.

SSU has received awards for our conservation program from a variety of agencies and professional organizations. Each of these awards is described in detail in Part One of the attached Exhibit ____ (CHK-3). One of the most prestigious awards we received was the 1993 ***Governor's Environmental Education Award*** sponsored by the Environmental Education Foundation of Florida. The award recognizes SSU's outstanding environmental education program. To be selected for this award contestants had to demonstrate that the program could be used as a model for use in other areas of the state. As documented in Exhibit ___ (CHK-4), SSU also has been recognized by the St. Johns River Water Management District for having a model water conservation program which they recommend to other utilities when starting up a new

conservation program.

To ensure that the Company's conservation efforts remain focused and effective, SSU established a Conservation Committee in 1994. The committee meets regularly to discuss conservation issues and future conservation initiatives. The committee is preparing to launch a comprehensive statewide conservation program in 1996 involving six targeted communities. Following implementation and review of the results of that program, it will serve as the Company's guide for future efforts.

Q. COULD YOU PLEASE DESCRIBE SSU'S WATER CONSERVATION PILOT PROJECT FOR MARCO ISLAND?

A. On December 20, 1994, SSU kicked off a pilot project on Marco Island designed to educate customers regarding the need for water conservation and to provide incentives to encourage voluntary conservation. Because Marco Island customers are among the highest average monthly users of all communities served by SSU, the Company determined that it would be reasonable and cost effective to select Marco Island for SSU's pilot project. Average monthly use per household during the years 1991 through 1994 was approximately 23,000 gallons; 26,000 gallons; 21,000 gallons and 18,000 gallons respectively. While the per customer consumption decreased in 1993 and 1994, we believe in part due to water rate increases, total consumption on the island has continued to increase, primarily due to population growth. Since limiting total consumption is

the key to avoiding further investment for additional plant capacity and preserving available water supplies, the conservation emphasis on Marco Island was imperative. The Marco Island Conservation Project is described in detail in Part Two of Exhibit ___ (CHK-3).

The education element of the Marco Island project included public workshops, open houses, newspaper advertising, feature article placements, a conservation newsletter, school programs, trolley signs, and stickers. The program also included a promotion for indoor conservation retrofit devices. Initially, the kits were made available at no cost to interested permanent Marco residents. The kits are now available for $6 each. Each kit contains a low flow shower head, kitchen and bathroom aerators, and a toilet tank bag.

We also provided water audits for high-volume residential and multi-family customers. The Company identified these high use customers and sent each of them an invitation to participate. SSU then employed a consultant to conduct high volume water audits from January through April 1995. The audits included an inspection of external water use areas, a review of existing in-ground sprinkling systems, and an analysis of indoor water use. In return, participants received a written report with recommendations on how to become more water efficient along with a list of local sources from which to obtain free conservation information and services. Attached as Exhibit ___ (CHK-5) is an example of a water audit

prepared for a customer on Marco Island.

In conjunction with the water audits, participants were offered $50 rebates toward an irrigation shut-off device. Beginning in the fall of 1995, SSU hopes to expand this rebate offer to a broader audience on Marco Island. It will include rebates for both low flow toilets and moisture sensing devices.

Q. WHAT HAVE BEEN THE RESULTS OF THE IMPLEMENTATION OF THE PILOT PROJECT ON MARCO ISLAND?

A. SSU is tracking the effectiveness of this program by comparing the water usage of customers before and after the conservation program was implemented. A final report analyzing the success of this program is presently being prepared which will identify specific savings before and after installation of the retrofit devices.

Q. DOES SSU HAVE ANY PLANS TO EXPAND ITS CONSERVATION EFFORTS?

A. Yes, SSU intends to expand its conservation program beginning in 1996, with particular emphasis on customers in six communities: Palisades Country Club, Silver Lake Estates/Western Shores, and Quail Ridge in Lake County; Dol Ray Manor in Seminole County; Sugar Mill Woods in Citrus County, and Valrico Hills in Hillsborough County. These communities were selected primarily because they had high average monthly consumption for the past four years. The Company also

considered whether the community was meeting per capita limits proposed by a water management district. The program is described in a report entitled *Water Conservation Proposal for Targeted Communities* which can be found in Part Three of Exhibit ___ (CHK-3).

This proposal includes an extensive public education effort, free indoor retrofit kits, water saving toilet rebates, rebates for irrigation shutoff devices, and a survey of the participants to assess the program's effectiveness. To recover the additional cost for the expanded conservation program, including conservation retrofit devices, Southern States has made a pro forma adjustment to our administration and general expenses for 1996 of roughly $321,000. A detailed description of the costs of the enhanced conservation program can be found in Part Four of Exhibit __ (CHK-3).

Q. HAVE YOU ESTIMATED THE WATER SAVINGS THAT CAN BE EXPECTED AS A RESULT OF THE CONSERVATION PROGRAM ENHANCEMENTS YOU HAVE DESCRIBED?

A. Yes, the estimated water savings are set forth in Table 3 of the *Water Conservation Proposal for Targeted Communities* which is located behind tab three of Exhibit ___ (CHK-3). The Company has estimated a total of 391,000 gallons per day, or 142,788,000 gallons per year, of reduced water consumption. We have adjusted 1996 consumption by this amount to reflect water conservation results from these enhancements. This estimate

is based on: (1) 50% participation in the retrofit device program in the targeted communities (as well as Marco Island) with an average water savings of 72 gallons per day per customer, and (2) 10% participation in both the rebates for low flow toilets and outdoor moisture sensors, with a resulting water savings of 37.5 gallons per day per customer for each device installed. The basis for these projections are provided in Exhibit ___ (CHK-3).

Q. DOES THAT CONCLUDE YOUR PREFILED DIRECT TESTIMONY?

A. Yes it does.

Water woes may find salty solution

■ Authorities nationwide agree: Desalination can be used cleanly and effectively to increase an area's water supply. Still, the cost of such a project may be a sticking point.

By JEAN HELLER
Times Staff Writer

The words in the newspaper story were ominous: Residents of West-Central Florida had begun to fear the region was running out of water. Wells and lakes in Pasco County were dry. Car washing was banned. Lawn sprinkling was limited, and there were criminal sanctions for violating the rules.

The story ran in *Times* editions of July 5.

1981.

In truth, water shortages in Tampa Bay go back even further than that. Aerial photographs from the 1960s and earlier show lakes and wetlands in Pasco and Hillsborough counties in much worse shape than they were last spring.

But the shortages used to be spotty and occasional. Now, because an expanding population has increased dramatically the demand for water, shortages have become widespread and chronic. One measure of their seriousness is that a water technology once considered too expensive and potentially too polluting to have any practical use here is capturing more and more imaginations as the ultimate solution to the region's water woes.

The technology is desalination. It can turn the salt water of the Gulf of Mexico or the brackish water that long ago overwhelmed the aquifer beneath Pinellas County into reliable sources of fresh drinking water.

At a price.

"It works. The Saudis have been producing fresh water for years this way," said Dr. Tom

Please see SOLUTION 7B

St Pete/Alernando Times
4/2/95

Solution from 1B

Jackson of the Southern States Research Institute in Birmingham, Ala. "It's not cheap. It becomes a matter of what people will pay for a cup of fresh water. Some won't pay anything. They're the ones who aren't thirsty."

Florida Progress, the parent company of Florida Power Corp., wants an opportunity to build a desalination plant locally. The Southern Co., which operates 20 power plants in the Southeast, also wants to take a look. There will be others.

But why now?

Has the technology of desalination changed so much that cost, pollution and waste disposal are no longer concerns? Or is the new interest a measure of the area's desperation for new water sources?

"My guess is that in your situation it's more a matter of motivation," Jackson said. "I'm not aware of any major breakthroughs in the technology."

Since issuing a cryptic, four-paragraph release announcing their interest in desalination, officials of Florida Progress have been reluctant to add details of how their plans would take shape. In part, this is because neither the region's largest water supplier nor its water regulator has issued a request for proposals, so no specifications or requirements yet exist. But it is also because such details are proprietary, and Florida Progress is not interested in sharing its plans with potential competitors.

But around the nation, experts on desalination and single-company control of multiple utilities say water and electricity have a synergy that makes them good partners under a single roof.

"Crossover like that isn't unusual; it's been around a long time without problems," said Bill Lowe of Florida's Public Service Commission. "There are more exotic combinations out there than electric power and water. There's a water company that owns a telephone company in Indiantown. And the largest investor-owned water utility in Florida (Southern States Utilities

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See Solution con

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Solution cont.

Inc.) is owned by Minnesota's largest investor-owned electric utility (Minnesota Power and Light of Duluth). And it works fine."

Investors like it, too.

"It's exactly the right thing to do," said Gary Hovis, an investment analyst with Argus Research in New York. "Florida Progress is a regulated utility. If they want to diversify, they should diversify into other regulated utilities, not go off into real estate and lumber, like they once did. Water is a perfect option."

Frank Cressman is the president of Florida Public Utilities of West Palm Beach, a three-in-one company that provides electric, gas and water service. He says combining utilities has advantages for the companies and their customers.

"Overall, it holds costs down," Cressman said. "We don't need three sets of meter readers. We don't have three sets of offices. People can go to one place and talk to representatives of all the utilities. You can dig one ditch and bury all pipelines and cable at the same time. And because they're regulated industries, the savings have to show up in rates.

"Going into desal is a natural. I've got generator capacity to meet peak-demand loads. Since I'm required to be prepared for emergencies, I have to keep my plants staffed during off-peak hours, too, so I might as well use them and generate power to operate a desal plant. If my parent company builds the plant, it's a guaranteed new load for me. Florida Progress isn't going to look beyond Florida Power for its energy needs."

The news isn't all good.

Using excess generating capacity to operate a desalination plant means using additional fossil fuels to drive the generators. It is not exactly a scenario that conservationists or administrators of clean-air laws would write.

"But from what I've heard of the environmental damage being done by pumping groundwater, I'd bet both those parties would sign off on a reasonable plan to mitigate damage to lakes and wetland," said Jackson of Southern States Research.

Another concern is how to safely dispose of the brine residue from the desalination process

"It wouldn't be as big a problem if you're talking about desalinating the brackish water from the aquifer under Pinellas," said Ed Geisheecker, vice president of sales for Ionics, a Watertown, Mass., marketer of desalination equipment. "But if you desalinate sea water, you can only recover about 50 percent of the water that runs through the plant. That leaves an equal amount of waste water with a saline content twice as high as the Gulf of Mexico. You can't just dump it on the ground or back into the Gulf

"They built a desal plant in Santa Barbara Calif., as a backup in event of drought, and then of course it started pouring rain, and they haven't had to turn it on. It's designed to inject brine into the city's wastewater treatment system. That dilutes it to the point that it's harmless and can be piped out to sea."

Dunedin operates a reverse-osmosis plant that turns brackish water from one city well into fresh water, and the brine is disposed of at the wastewater treatment plant. "It works fine," said production manager Lynn Bolin. "We haven't had any problems or complaints."

Jackson said disposal would be easier and cheaper at a facility that simply mixed the brine with sea water at a 100-to-1 ratio and returned it to the gulf.

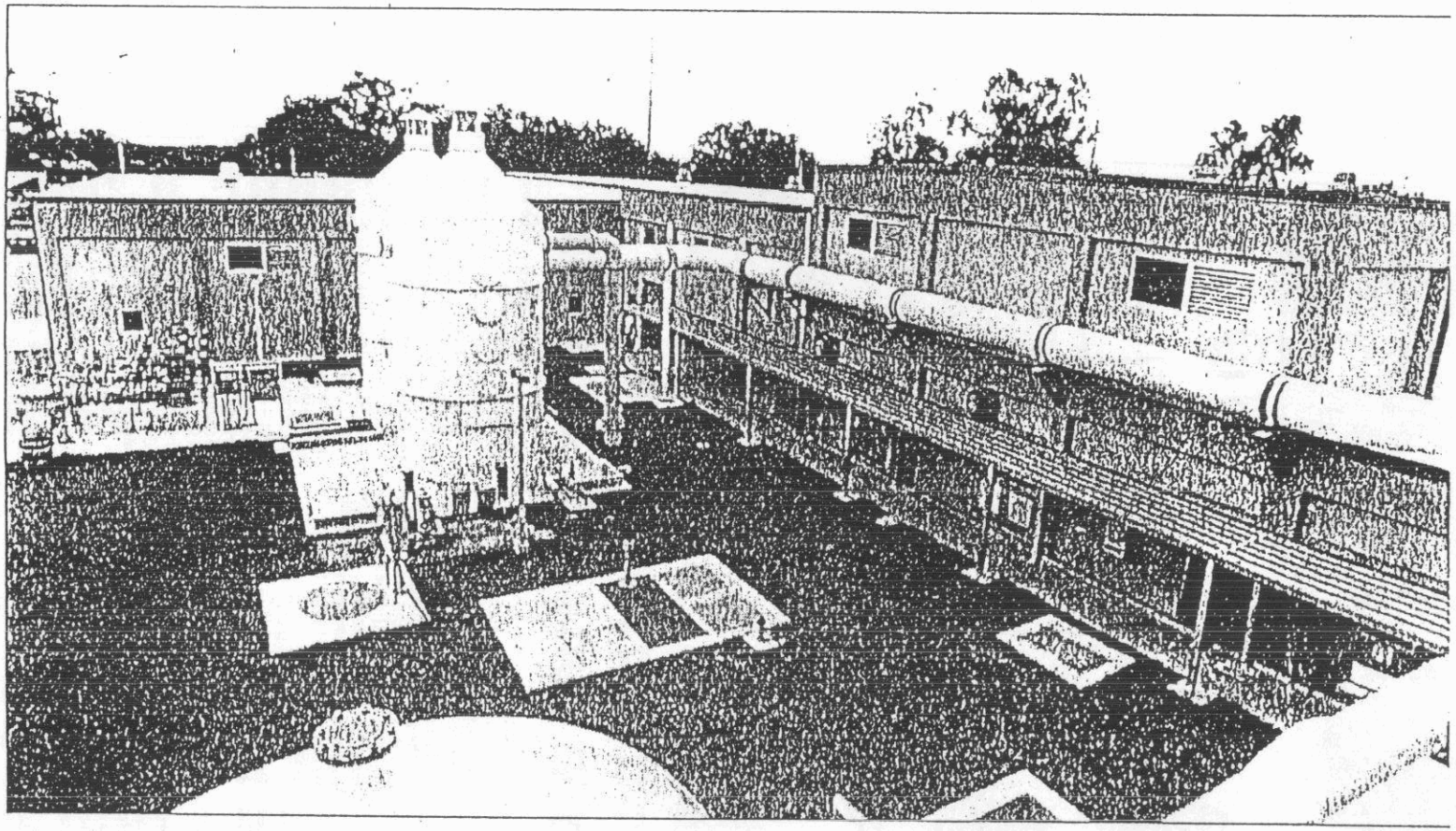
"If your plant produces 20-million gallons a day, and that's about as big a plant as is practical from a cost standpoint, you're talking about waste that in the overall scheme of the Gulf of Mexico is nothing," Jackson said. "An inch of rain over a few square miles would neutralize it. That's not even an acre of water 10 feet deep. The brine should never be a factor in deciding whether to go ahead with a desal project."

Everyone agrees that desalination raises water rates, however — a factor that could sway a business or industry looking for a place to relocate or expand.

"It's a supplemental water supply, and you'd have a blended rate, so consumers wouldn't see their bills go up geometrically," said Geisheecker. "But they will go up. They definitely will. It's a question of whether you're willing to pay for that next glass of water."

cont. (See photo Solution

Solution continued



Times file

Dunedin operates a reverse-osmosis plant that turns brackish water from one city well into fresh water.

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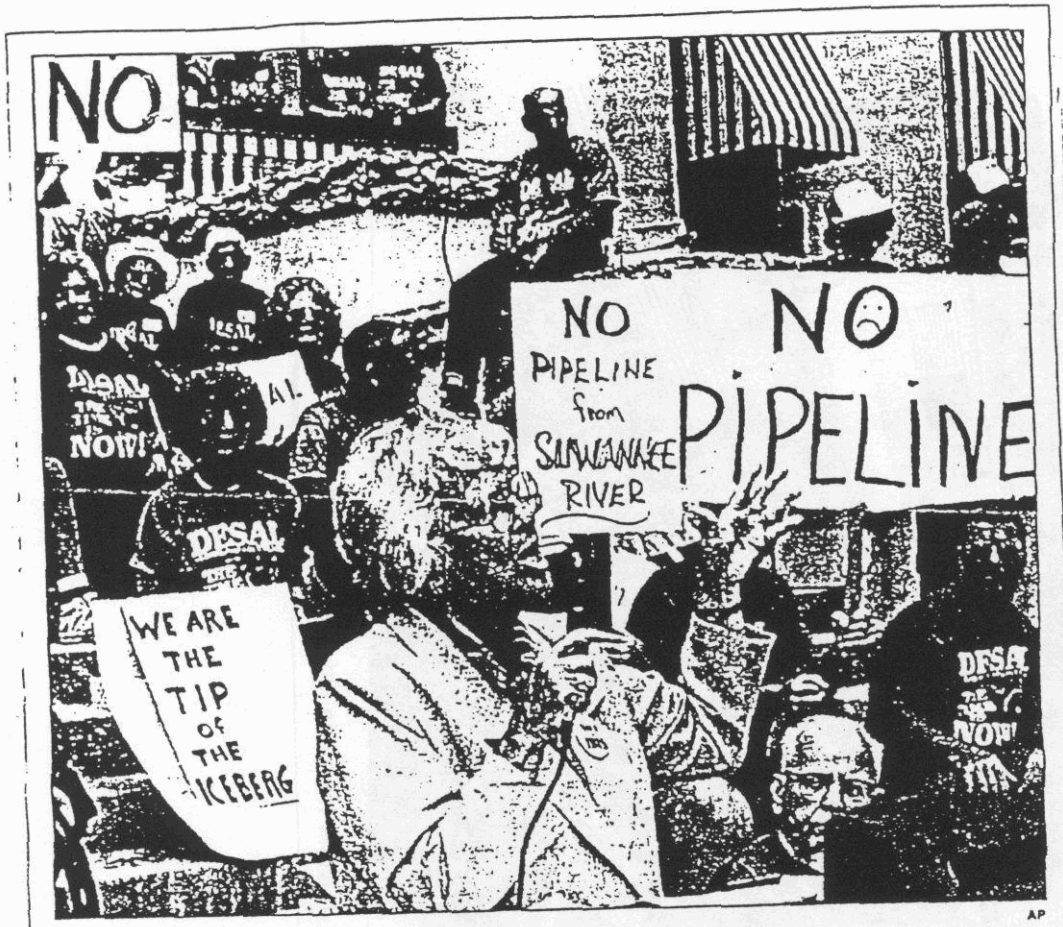
St. Pete Times/Hernando Today 5/5/95



AP

Rep. Helen Spivey of Crystal River talks to the people who made the trip to Tallahassee on Thursday. The group wants to protect the region's water from being pumped or piped to Pinellas County.

Water trip 'a successful failure'

■ About 600 people go to Tallahassee to lobby to protect the region's water. But few officials come out to hear them.

By LEANORA MINAI
Times Staff Writer

TALLAHASSEE — Rose Kundrith hopped off one of 10 chartered buses that had just rolled and honked their way to the steps of the Old Capitol.

Kundrith did not come to sightsee.

She was among nearly 600 residents of the North Suncoast and Marion and Sumter counties who traveled at dawn Thursday to send a message to the growing, water-starved Tampa Bay area, particularly Pinellas County.

"Let's get our voices heard today. Unite together!" Kundrith, a water rally organizer and Hernando County resident, shouted as she marched to the courtyard.

Within seconds, the once tranquil lawn, bordered by oak and magnolia trees, became a sea of people.

The water warriors were here to tell the governor and Legislature that they do not want their counties' water going to Pinellas. If Pinellas needs water so badly, they say, make the county convert seawater to drinkable water, an expensive process known as desalination.

"I'm from Citrus," said Bertha Podwys, a 72-year-old Inverness resident. "If they've got $20-million for baseball stadiums, they've got $20-million for desalination.

"We can live without baseball. We can't live without water."

Lt. Gov. Buddy MacKay talked to the crowd. So did state Rep. John Rayson, who heads a House select committee on water policy, and Hernando County Commissioner Pat Novy and Citrus County Commissioner Gary Bartell.

But few lawmakers broke away from their session Thursday, which frustrated some of the residents, who said they could have stayed home and preached to themselves.

"As far as I'm concerned, this was a successful failure," said Masaryktown's ceremonial mayor, John Kovacs. "We didn't get to speak to the people we would have liked to."

What brought all these people to the Capitol is fear that their environment will be ruined by pumping water to the Tampa Bay area, they say: The well fields that pump millions of gallons of water daily to residents in the Tampa Bay area are draining so much water from the Floridan Aquifer that drinking wells in places like Pasco, Hernando and Citrus counties are sucking air and spurting sand.

Lakes, where residents once fished and water-skied, sit dry with weeds sprouting from the middle.

What's more, a few months ago, to the surprise of many, news broke that Florida Power Corp. wanted to pipe water from Lake Rousseau at the northern edge of Citrus County, and possibly farther north from the Su-

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EXHIBIT (CHK-1)

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St. Pete Times/ Hernando Today 5/5/95

500 rally for water rights

(Editor's note: Reporter Lara Bradburn traveled with demonstrators on a bus to Tallahassee yesterday to cover Hernando County's part in the protest against the siphoning of water from areas north of Tampa. Following is her report.)

By Lara Bradburn
Staff Writer

TALLAHASSEE — They charged the state capitol, 500 strong, shouting war cries and demanding immediate action to protect water supplies along the Nature Coast.

"Save our water!" "De sal (desalination) now!," they shouted.

No longer were they willing to settle for a muffled voice in Tallahassee. The big boys in Pinellas County have been raiding the aquifer to the north far too long, they told officials.

"We the citizens of the Nature Coast want to control our own destiny," said Citrus County Commissioner Gary Bartel. "We do not want Pinellas County controlling us. All I can say is de sal now."

Each mention of desalination sent the crowd into a frezy, waving fluorescnet signs and chanting their mantra.

Eleven busloads of potential water famine victims shared their solidarity yesterday in what could be the largest water protection rally the capitol has ever seen.

Argenziano

"We probably could have filled up to 50 buses," said Nancy Argenziano, an activist and director of the Withlacoochee Basin Initiative. "So if they think our cities are going to lay down, they are wrong."

For two years, overpumping from the south has grown steadily to a point where supporters say their voice can no longer be muted. The environmental crisis is too great, they said.

Hundreds of wells in Pasco, southern Hernando and northern Hillsborough counties have gone dry. Some lakes now stand bleak, bone-dry and cracking.

State water regulators place most of the blame on West Coast Regional Water Supply Authority -- water broker for 1.2 million peopole in metropolitan Tampa Bay.

West Coast is now working to build a water pipeline through Hernando County to Citrus and the idea has been met with great alarm.

Planted firmly on the steps of the Old Capitol Building, water demonstrators demanded that lawmakers force West Coast to embrace new technologies such as salt water

See WATER, page A-2

WATER

From page A-1

desalination.

"We've been telling them for years, but they haven't listened," said Hernando County Commissioner Pat Novy. "No more overpumping. No water basin transfers. No state water board. De sal is the only viable rock-proof measure."

To the crowd's delight, the pleas for state intervention did not go unanswered. Lieutenant Governor Buddy Mackay said metropolitan areas such as Pinellas County must accept responsibility for their own problems.

"I know what's happening in Hernando County. I know what's happening in Pasco County," Mackay said. "The resources in that part of the state must remain in that area."

"We believe the time for de sal is now," said MacKay. "Water ought to be managed in its natural water basin."

Standing obscurely in the crowd, Pete Hubbell, director of the Southwest Florida Water Management District (Swiftmud), said his agency is convinced desalination is the best available alternative to fresh water pumping. A major water pipeline, he said, would be a last-ditch measure.

Besides West Coast, time and money are the biggest obstacles blocking desalination. Ralliers were looking at lawmakers to tighten up rules on intra-basin transfers and force metro areas to implement new technologies.

In turn, those changes would open up new markets, industry sources have said.

Mackay said state leaders took notice of water watchers' cries for intervention. The demonstrators said the sounds of solidarity are just beginning to be heard.

"This may be our first trip," Novy said, "but it's not our last."

The Tampa Tribune
Tuesday, July 12, 19

State Reps. R.Z. Safley, above, and Brian Rush, below, plan to file a bill to create a statewide water policy.

Lawmaker hopeful drought whets appetite for water policy

By CARLOS MONCADA
Tribune Staff Writer

CLEARWATER — Viewing the prolonged dry spell as a long-range opportunity, a Clearwater legislator plans to reintroduce what his colleagues and the public rejected three years ago: a comprehensive plan to focus Florida's water needs.

State Rep. R.Z. "Sandy" Safley, R-Clearwater, thinks the increased attention being paid to Tampa Bay's water shortage may break the political logjam that has sunk previous water policy efforts.

"Potentially, this is a wake-up call for other parts of Florida," Safley said. "We ought to start preparing ourselves for managing the resources we have and developing alternatives in a proper and sound way."

Safley and state Rep. Brian Rush, D-Tampa, intend to file a bill during the 1995 legislative session to establish a long-term statewide water policy as well as a state water authority to bring about increased water supplies.

"I guess the public wasn't ready to do that in 1991, but I think the public is now very supportive of a more comprehensive water policy," Rush said.

State Rep. Jim Davis, D-Tampa, said he's seen increased concern over water in the Legislature in recent years.

"I think what's happened in Tampa Bay and the west coast of Florida is either happening in other parts of the state or will happen and perhaps can be prevented," Davis said.

What's happened in Tampa Bay is state water regulators have ordered the region's largest water wholesaler to cut consumption because excessive wellfield pumping and a five-year drought have depleted lakes and wetlands — prompting a legal fight over the unprecedented restrictions.

It also has prompted a handful of other developments:

■ Pasco County Commissioner Ed Collins has proposed a July 28 summit on water, while Hillsborough Commissioner Ed Turanchik has called for similar peace talks between feuding Bay area politicians in mid-August.

■ Pinellas County Commission Chairman Bruce Tyndall has asked elected officials from the tri-county area to appoint representatives to a new water coordinating council that would act as a peacemaker in Bay area water disputes.

■ Gov. Lawton Chiles is estab-

See LAWMAKERS, Page 7

Lawmakers seek long-term solutions for state's water problems

■ From Page 1

lishing later this month a 21-member statewide commission, charged with reviewing water issues and Florida's five regional water management districts.

And the concern has trickled down from government agencies to residents.

Ken Jones, a Republican state House candidate for the District 46 seat, said his door-to-door campaigning has found that, next to crime, water is a major issue at the grass-roots level.

"I think people are frustrated because every time they pick up a newspaper or turn on the news, they're being restricted as far as their water use is concerned," he said. "The water restrictions are becoming very confusing and complex, and I think that frustrates people."

But for all the talk of finding long-term solutions to the state's water needs, the bottom line is Chiles needs to take a leadership role to bring about any significant reforms, said Pinellas County Commissioner Charles Rainey, a veteran of two decades of Tampa Bay water wars.

"I think the most interesting thing of this whole episode is no gubernatorial candidate, to my knowledge, has addressed the water problem statewide," he said. "It has to be an issue at the gubernatorial level."

Estus Whitfield, the governor's environmental adviser, said while Chiles favors a comprehensive statewide water policy, "the issue of a water board is a different matter."

Chiles isn't likely to support legislation that would radically alter the operations of the water management districts, which regulate water use, Whitfield said.

"The governor supports the water management districts as being a good institution, and to the degree the water management districts might be disorganized, I think that becomes cause for concern," he said.

The water policy Safley and Rush plan to propose would stress continued conservation, wider use of reclaimed sewage water and construction of more desalination plants in coastal areas.

CONTINUED

FLORIDA BUSINESS NETWORK
a division of
ASSOCIATED INDUSTRIES OF FLORIDA SERVICE CORPORATION

DAILY NEWS ARTICLES

Tuesday, April 18, 1995

WATER MANAGEMENT DISTRICTS

"Parched Tampa Area Looks North For Water"

The Miami Herald - Associated Press

Water management officials say about 35,000 acres of lakes, swamps, streams and marshes in Pasco, Hillsborough and Pinellas counties have dried up since 1989 because the Tampa Bay area is too thirsty.

Area officials deny overpumping the wetlands. Nevertheless, the West Coast Regional Water Supply Authority is looking farther north to Citrus and Hernando counties to meet water needs.

About two million people live in Hillsborough, Pasco and Pinellas counties, and the population is expected to grow rapidly. To satisfy expanding drinking needs, West Coast has reviewed more than 150 options for increasing water supply and developed a list of 40 potential sources.

Among them is pumping water from Lake Rousseau, a 4,000-acre reservoir in Citrus County, and Weeki Wachee Spring in Hernando County.

Business leaders fear water shortages would hurt economic development, said Rita Bott of the Chamber of Commerce in Pinellas Park. "Our main concern is that a water shortage would cause a building moratorium."

Some residents to the north, organized as the coalition of Lake Associations, want Tampa Bay to build a plant to convert, or desalinate, Gulf of Mexico saltwater into drinking water.

They plan a bus motorcade to the state Capitol on May 4 to encourage lawmakers to support desalinization.

"They are coming after our water unless we give them an alternative," said Frank Robinson of Floral City.

"Our only alternative is desal".

West Coast officials are considering such a plant, but some Tampa Bay area officials and business leaders doubt it would be affordable.

Water woes in other parts of Florida will come under the spotlight this week. Pumping water to thirsty South Florida takes on a high profile at a water conference and state task force meeting.

U.S. Sen. Bob Graham, D-Fla., and Department of Environmental Protection Secretary Virginia Wetherell are among the speakers today at a North Florida Water Conference in Lake City.

And a Water Management District Review Commission meets Thursday and Friday in Live Oak to discuss the possible role of the five water management districts in moving water around the state.

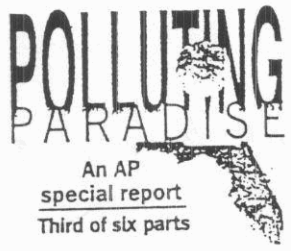
Florida water policy generally prohibits transfer of water across water management lines, but that could be changed by a Legislature dominated by South Florida lawmakers.

"What we've got here now looks like pasture," Len Bartos of the Southwest Florida Water Management District has said, looking across a bone-dry lake bed.

Naples Daily News
August 23, 1994

Some fear Sunshine State drying up

For the past three months, a team of Associated Press reporters has taken an in-depth look at Florida's environmental problems and what the state's leaders — particularly its candidates for governor — are planning to do about them.



Associated Press

LAND O'LAKES — Catherine Monsees retired to a house on a lake once stocked with fish and teeming with wildlife.

That's all gone now.

What she has left is a dry lake bed choked with weeds and a tarnished dream for the golden years.

"We've been cheated out of our retirement," Monsees says. "It's more than upsetting. My husband wanted to kick back and fish, but we'll never see water in that lake."

The fish are long gone from Patriot Lake. It's the same story with Crews Lake, now a 500-acre muddy crater. Likewise with Big Fish Lake, so-named for the good-sized bass it once gave up. Now, the docks at Big Fish Lake wind over a river of scorched grass.

In a state surrounded by water and built on water, problems caused by a dwindling supply of fresh water are being felt from the Everglades to Jacksonville and Fort Myers to Pensacola.

Thousands of acres of lakes and

See WATER, Page 15A

Water: Some fear Sunshine State drying up

Continued from 1A

wetlands are drying up as the demand for water increases for Florida's growing population. Other lakes are polluted from pesticide runoff and factory chemicals.

The culprits for Florida's growing water woes are varied: pumping too much water from natural underground reservoirs, persistent drought, rapid growth and virtually no thought for water conservation.

But many homeowners and environmentalists believe the state's five powerful water management districts are partly to blame. They believe Florida's next governor must direct an overhaul of the system and create a unified statewide water policy.

"Providing adequate amounts of clean water to Florida citizens is the environmental priority for Florida's next governor," says Republican gubernatorial candidate Tom Gallagher. "We've got to take the politics out of water and enhance our ecosystem management."

Some homeowners put it more bluntly.

"A lack of alternative water sources caused the crisis we're in today," says Judy Williams, a member of a coalition of lakefront property owners challenging the Southwest Florida Water Management District's policies. "It's time to pay the piper. We're facing an environmental catastrophe. Let's not wait until we turn on the spigot and nothing comes out."

■ ■ ■

From the air, the toll of heavy water usage on Florida's lakes, wetlands and swamps is vivid — especially near a Central Florida wellfield where 30 million gallons of water is pumped daily. Lake beds range from wet patches to lava-like fields of earth, parched and cracked under the blistering sun.

An estimated 17,000 acres of wetlands are damaged. Marshes are arid. Cypress trees are dead. Ducks, cranes, turtles and alligators are gone.

Many of the state's large inland lakes have been damaged by rapid, unplanned development, pesticide pollution from farms and construction of dams and canals.

In Lake Apopka, the state's third-largest lake, pesticide contamination and a chemical spill have resulted in alarming reproductive problems for alligators and largemouth bass, according to University of Florida scientists.

They have documented a 90-percent drop in the number of alligators in Apopka and dramatic declines in the lake's bass population. Five other lakes are showing signs of the same problems.

Florida always has had water problems — either too much or too little.

Dating to the last century, land was sold off to those who promised to drain it, dredge it, develop it and drive away the water.

"Water historically has been viewed as a problem in the state of Florida, not a resource," says Richard Hamann, a University of Florida water specialist.

Today, the pendulum has swung the other way.

Police patrol neighborhoods trying to catch and fine lawbreakers who illegally sprinkle their lawns, wasting water. And Florida's water supply is governed and protected by five powerful regional management districts, which have the power to levy taxes and impose rationing to conserve supplies.

"Cheap water is gone," says Mark Farrell, assistant executive director for the southwest water district, which regulates water use in a 16-county area on the Gulf Coast in Central Florida. "We have issued too many permits for water."

But the water districts' work has drawn criticism from homeowners, environmentalists and politicians running for governor.

"I do not believe Florida has a water policy," says Republican gubernatorial candidate Jeb Bush, the front-runner headed into the Sept. 8 GOP primary. "It has a number of water empires and would-be emperors, but no comprehensive policy. The long-term answer is a statewide water supply grid like the statewide power supply grid that would match supply with demand."

Gov. Lawton Chiles defends the water boards' work, but has appointed a 21-member statewide commission to examine Florida's water shortages and the five management districts.

"As Florida's population increases, the demands on water will continue to increase," Chiles says. "There is no easy answer to this question and beware of anyone who has an easy answer."

■ ■ ■

Water is the lifeblood of the Florida economy. It's the engine that drives the biggest industries — tourism and farming.

It lures vacationers by the thousands to posh hotels, sprawling attractions and sandy beaches. It produces bountiful harvests of oranges, grapefruit, berries and a medley of winter vegetables.

It's a magnet to developers who cash in on dreams of waterfront living and bring newcomers in droves to Florida's 1,100 miles of coastline.

Generally, North Florida is considered water-rich. It has most of the state's 1,700 streams and a plentiful amount of the 7,000-plus freshwater lakes that serve as groundwater reservoirs.

The southern half of the state, on the other hand, is heavily dependent on rainfall. It has one-third of Florida's supply of fresh water, but 75 percent of the state's more than 13 million residents.

Although Florida is among the wettest states in the country with an average 54 inches of rain a year, that isn't enough to put back what the state's businesses and residents take out of the fragile system. Besides, about 40 inches of rain is lost to evaporation and runoff.

Making matters worse, the state is in the clutches of a five-year drought. Water experts say the drought has created an overall water reserve deficit of up to 60 inches that would take years to replace.

Aquifers are Florida's rain barrel. An underground system of porous limestone and sandstone formations, these aquifers stretch beneath the peninsula. Like giant sponges, they soak up and store drinking water until it's time to yield it to wells and springs that eventually feed water taps throughout Florida.

But water is consumed from the aquifers faster than it can be replaced. Until recently, there was no big push to reduce water use or develop alternative sources.

Now the warning signs of a water crisis abound.

In northeast Florida, people who bought lakefront homes near Jacksonville have found themselves high and dry.

On Central Florida's Gulf Coast, thousands of acres of lakes and wetlands have been depleted in Pasco and northern Hillsborough counties. Private wells have gone dry. And 95 lakes have been damaged or threatened.

Now, water regulators are getting an earful from residents.

■ ■ ■

TOMORROW: The lessons of Perdido Bay.

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SARASOTA HERALD 11-13-94

SOUTHWEST FLORIDA

Swiftmud vote set on water use cuts

After two years of talk, Southwest Florida water managers finally plan to vote Tuesday on their sweeping proposal to cut well pumping in Sarasota to conserve ground-water supplies.

The meeting will begin at 9 a.m. Tuesday at the headquarters of the Southwest Florida Water Management District, 2379 Broad St. (U.S. 41) in Brooksville.

The proposed rules would phase in restrictions over the next decade to reduce water use by farms, mines, the utilities that provide drinking water, and others. It would all but ban new well permits within an eight-county region that includes Sarasota, Manatee, DeSoto and part of Charlotte, while providing incentives to switch to other sources such as rivers or treated waste water.

The plan has already provoked legal challenges from a coalition of farmers, business groups and county governments, which say the rules are too strict and would ruin the economy.

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FLORIDA TODAY
DAILY - - 114,000
MELBOURNE
DEC 29 1994

Rain eases drought, doesn't solve problems

Associated Press

TAMPA — Torrential summer rains helped ease the effects of Florida's five-year drought. Dry lakes filled. The aquifer got a much-needed drink. And scorched lawns turned green.

But water managers say the few months of steady rains were a quick fix and won't solve the state's water woes.

Actually, rainfall this year — most of it during the June-to-September rainy season — didn't produce much more than average.

It amounted to just 5 inches more than the average annual 40 inches across the 16-county central Gulf Coast area covered by the Southwest Florida Water Management District.

"One good year is not enough to make up the deficit. Five years may not be enough," said Honey Rand, spokeswoman for the Southwest Florida district.

"Right now we are dependent on rainfall. But the fastest, best, cheapest way to make sure there is enough water is to conserve and to plan alternate sources for the future."

Conservation critical

... had a positive effect on ... resources, said Steven ...lagg, another district spokesman. "But it has not brought long-term relief to the environment. Conservation is still critical."

In fact, "Give it a rest. Irrigate less," is the theme of a February conservation campaign planned by the district to urge homeowners to curtail lawn sprinkling. The message is that lawns don't need a daily soaking; watering once a week or every 10 days is enough this time of year.

On the other side of the state, in the St. Johns River Water Management District, Lake Brooklyn has gone from being a series of small connected ponds to a real lake again.

The lake, on the edge of Keystone Heights, was 88.4 feet above sea level in April. By November, the water level had risen 14.3 feet to 102.7 feet.

"The rainfall has certainly helped," said Robert Peek, a district spokesman. Years of less than average rainfall had caused the lake to almost vanish.

Rand said that in January the situation was as bad as it's ever been. Water levels were the lowest ever measured. Surface water and underground levels were depleted.

...r ...em areas

In Hillsborough, Pasco and Pinellas — core area of the central part of the district — the situation was aggravated by pumping. In the northern part, traditionally thought to be the water-rich area, sinkholes were forming in lake bottoms because of the drought, she said.

In the southern area, from Sarasota through the Fort Myers-Port Charlotte area, drought and pumping created problems with salt water intrusion from the Gulf of Mexico that put the drinking water supply in jeopardy.

May was the driest May in a century. Yet groundwater pumping continued to increase — from 110 million gallons daily at the start of the year to 135 million gallons a day by May in the three Gulf Coast counties.

"There were catastrophic well failures. Some wellfield systems were getting dangerously low," Rand said.

In May the district took action under an emergency order and put a ceiling on pumping by the West Coast Regional Water Authority, which operates wellfields that supply water to the heavily-populated central basin.

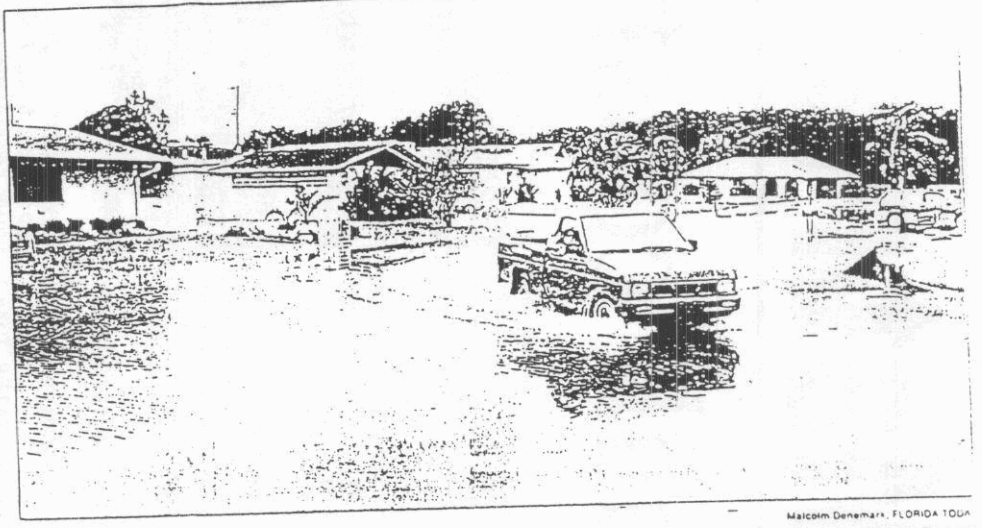
West Coast was told to cut back to an average 110 million gallons a day. The amount could vary to meet demand, as long as the average at the end of the year was met. The cutback was estimated to be about 4 percent.

"Then we got lucky and the rains started," Rand said. From July through November the area got plenty of rain. The West Coast was under its amount through the summer and only exceeded the limit this month.

"We've done all we can do without going to more stringent measures," said Pete Hubbell, executive director of Southwest Florida Water Management District.

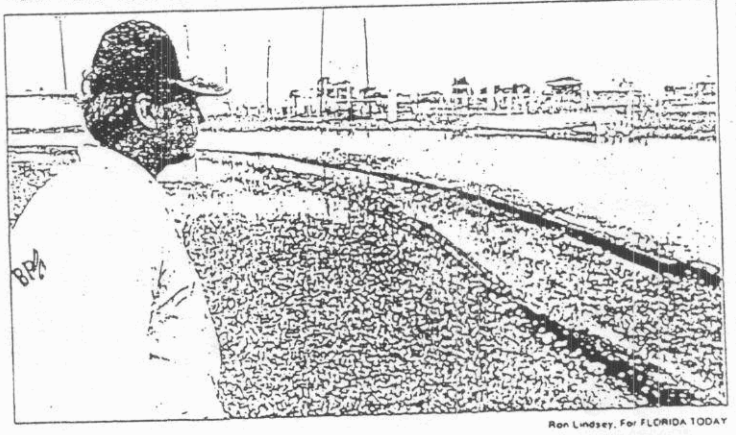
He said about 50 million gallons of water could be saved daily through higher water rates, xeriscaping techniques and landscape ordinances.

"There's always been cheap water and plenty of it," Rand said. "That's a thing of the past. Conservation is the cheapest and fastest way to go. We're going to have to go deeper, pipe farther and develop new sources, and all of that takes money."



Malcolm Denemark, FLORIDA TODAY

TRUCK MAKES WAVES while driving in November through Marlin Manor subdivision in Rockledge after Tropical Storm Gordon dumped rain on already saturated parts of Brevard County, making many roads undrivable.



Ron Lindsey, For FLORIDA TODAY

CARETAKER FOR Sand Point Park in Titusville looks over a flooded area in mid-November after Tropical Storm Gordon hit. Several trees were damaged by strong wind.

BREVARD ANGLE

Despite receiving almost 70 inches of rain this year — about 25 inches more than normal — Brevard County will continue restrictions on water useage. The St. Johns River Water Management District prohibits watering lawns between 10 a.m. and 4 p.m. year-round. Violations carry a $50 fine.

Florida/Metro

Tuesday, February 28, 1995

Pinellas may halt construction

By CARLOS MONCADA
Tribune Staff Writer

CLEARWATER — With time running out, emotions are flaring as Pinellas County faces the increasing likelihood of halting construction because of a lack of water.

Pinellas officials say by limiting the water pumped from Tampa Bay area wellfields, regional water managers have eliminated the cushion the county was reserving for growth.

That lack of additional capacity threatens to put Pinellas in violation of its own growth management laws as early as June, said county Commissioner Bruce Tyndall.

"Not only will there be a possibility of no building permits, we'll probably have restrictions above and beyond what we have now on watering," Tyndall said.

Pinellas is continuing to issue building permits based on 145 million gallons of water pumped a day. But the Southwest Florida Water Management District in July limited pumping from seven regional wellfields to 116 million gallons.

Water district officials say the talk about construction moratoriums is a lie and a scare tactic. They say the county can do more to conserve water even though its residents have reduced consumption by 7 million gallons a day since 1989.

The issue has reached a boiling point and has rolled longtime animosity between Pinellas and the water district as they prepare for a legal showdown.

Pinellas has asked a state hearing officer to review the matter, and a hearing is expected in April. The county must comply with the water district's order, which is being phased in over a year, by the end of June.

"What we're trying to do is have it overturned," Tyndall said. "But what I really think the public ought to be aware of is, what happens if that doesn't happen? I think we better be prepared for that."

Some of the potential implications:

- A construction moratorium

See WATER, Page 3

JOHN R. STANMEYER/Tribune photo

Wayne Coxen, right, owner of B-Line Tile Loaders, and his supervisor, Mike Franzen, stack tile on the roof of a home under construction in Largo on Monday.

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Water limits may force halt in construction

■ From Page 1

could send ripples through the county's economy and spark a recession, officials said.

"It's going to affect everybody from the strongest bank to the laborer who buys his liquor at the grocery store," warned Pinellas Commissioner Charles Rainey, a veteran of two decades of Tampa Bay water wars.

■ Water will cost more as bills begin to reflect the high cost of developing new supplies.

■ Residents may have to endure more restrictions on lawn watering, car washing and other uses.

In recent weeks, the relationship between Pinellas and water district officials has turned nastier than usual as each attempts to damage the other's credibility by dropping rumors or accusations.

Pinellas claimed some water district board members violated the state's open meetings law in October when they delayed a vote on water-use rules for the southern part of the water district. Florida Attorney General Bob Butterworth's office declined to investigate.

About the same time, water district spokeswoman Honey Rand told reporters that farming sources claim Pinellas has authorized up to $3 million in legal fees to fight the water district. Pinellas officials vehemently deny that contention, which Rainey called "another Swiftmud lie."

A provision of Florida's 1985 Growth Management Act called concurrency prohibits the county from approving new development until adequate public facilities, including potable water, are in place.

"My estimation is in June, we will not be able to meet concurrency," Tyndall said.

That worries builders, landscapers and nursery growers who depend on a steady flow of water.

"We think it would be fairly devastating to the economy," said Rodney S. Fischer, director of the 190-member Contractors & Builders Association of Pinellas County. "When you take that to its extreme, you have people who can't make car payments or house payments or quit going to the grocery store or the movie theaters."

The water district's emergency order requires Pinellas and, to a lesser extent, Pasco and Hillsborough to reduce pumping at wellfields operated by the West Coast Regional Water Supply Authority.

Whether the region meets Southwest's 116 million gallon limit is "too close to call," said Bruce Kennedy, the authority's interim general manager.

Since July, the region has averaged 110 million gallons a day, Kennedy said. But demand is expected to increase over the coming months because of the dry season and tourists, he said.

The order is aimed at protecting lakes and wetlands near the wellfields in south Pasco and northwest Hillsborough that have been drained by overpumping and five years of drought.

Even 145 million gallons eventually won't satisfy the region's needs, Pinellas officials say. Other options include a water pipeline to Citrus or Hernando counties and desalination of Gulf of Mexico water. Also contemplated are additional wellfields in Pasco and Hillsborough, and desalination of brackish water from Lithia Springs in Hillsborough.

But Pinellas officials complain that planning is difficult because Southwest keeps changing its rules.

"There's no standardization," Rainey said. "You almost want to file a civil rights action against them for unequal treatment. Why should people suffer when strawberries aren't?"

Pinellas says the district has imposed regulations more strict and costly than those it places on other water users, such as agriculture, which uses almost half the water in the West Central Florida district.

But water district officials say environmental problems in the Tampa Bay area are more severe than in other parts of the district. They say uniform regulations would not provide flexibility needed for varying water supplies throughout the district.

"Our objective is to protect the water resource, like we're supposed to do, but at the same time not to cause some sort of economic hardship," Rand said. "This is a double thing."

Staff writer Kathleen Beeman contributed to this report.

A run on water

Population growth for Pinellas, Hillsborough and Pasco counties over the next 35 years will mean a 25 to 44 percent increase in water consumption, depending on conservation efforts, water officials predict. That means the three-county region will need at least an additional 66 million gallons per day (MGD) of drinking water. Here is a breakdown of some options under consideration to get more water:

Source	MGD	Cost per 1,000 gallons
Pipeline from Lake Rousseau in Citrus County	50	$2.09
Pipeline from Weeki Wachee Springs in Hernando County	15	$1.94
Gulf water desalination	50	$4.56
Cleaned wastewater from Tampa's Hooker Point plant	32	$2.27
A wellfield in eastern Pasco County	40	$0.68
A wellfield in northeast Hillsborough County	30	$0.75
Alafia River water, for agricultural use	15	$0.67
The Tampa Bypass Canal	13	$0.70
Conservation	12	$0.54
Brackish water desalination at Lithia Springs in Hillsborough	5	$1.19

Source: West Coast Regional Water Supply Authority

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ST. PETERSBURG TIMES
DAILY - - 500,000
FEB 24 1995

Hernando curbs well fields serving other counties

■ The two-year ban may be the first such effort by a county.

By JUSTIN BLUM
Times Staff Writer

BROOKSVILLE — Trying to conserve Hernando County's water supply, county commissioners have agreed to block the development of large well fields that would pump water to other counties.

The ban was approved after a public hearing Tuesday evening and will be in effect for two years, or until a study is completed to determine how much water the county has left.

The measure is seen as a way to stop water providers from siphoning Hernando's water to other counties. It is believed to be the first such attempt by a Florida county.

Commissioners moved to block well field development after learning last year of a West Coast Regional Water Supply Authority report that suggested the development of a well field north of Pasco County. The water authority supplies residents in Pinellas, Hillsborough and Pasco counties.

In a concession to Southern States Utilities, which provides water and sewer service to much of Spring Hill, commissioners said the moratorium would not affect the construction or expansion of well fields designed to serve Hernando County's population. Originally, the moratorium would have blocked all large well fields, even if they supplied county residents.

Arguing on behalf of the utility company, attorney Joe Mason had said that without the exemption his client would be unable to expand to meet county residents' water needs. The utility has said it wants to build six wells during the next six years.

"It was important for SSU to have that written into the ordinance because of the growth and the potential of new customers coming on line," said Commissioner Ray Lossing. "This allows them to service those new customers."

The moratorium does not regulate well fields, but bans zoning approval for fields that would pump more than 1-million gallons or more per day to destinations outside Hernando County.

Authority for regulating large-scale well fields generally lies with the Southwest Florida Water Management District. But county commissioners said the measure they approved does not usurp the district's power because the ordinance regulates zoning of land.

Swiftmud officials declined to comment Wednesday on the commissioners' action and officials at the West Coast Regional Water Supply Authority were unavailable for comment.

Also Tuesday evening, commissioners approved a measure requiring rain sensors to be installed on sprinkler systems for new houses. The sensors shut off sprinklers when it rains.

Sprinklers already in the ground are exempt.

Supporters of the devices maintain they will save millions of gallons of water annually.

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Hearings on curbs for well drilling to begin

State Sen. Ginny Brown-Waite thinks the proposed moratorium would embroil Hernando in expensive lawsuits.

Commissioner Nancy Robinson says a moratorium is needed to protect Hernando's water supply from counties to the south.

St. Petersburg Times, 1/10/95

■ County officials say a moratorium on high-volume water wells is needed until a study is complete. But a state senator doubts the rule would be legal.

By LEANORA MINAI
Times Staff Writer

BROOKSVILLE — Hernando County wants to conserve its water supply by prohibiting the development of large public well fields in the county for two years.

At 5 p.m. today, commissioners will begin listening to public opinion on a proposed well field moratorium ordinance that would freeze the construction of wells that pump 1-million or more gallons of water per day until a study of the county's water supply is finished.

"We don't know how much water we can safely pull out of the ground," said Richard Radacky, the county's utilities director. "How can you manage water if you don't know how much is there?"

The measure is considered a roadblock to water providers such as the West Coast Regional Water Supply Authority, which supplies water to Pinellas, Hillsborough and Pasco counties. However, at least one state senator questions whether the moratorium would be effective, saying it could end up costing Hernando taxpayers in legal fees.

"Some people think that it's something that will protect the water supply, and others just feel it is not worth the paper that it would be written on because it does go into an area that the state has reserved for water management districts," said state Sen. Ginny Brown-Waite, a Spring Hill Republican.

The ordinance, which may be the first of its kind in the state, would remain in effect until the Water Resources Assessment Project is completed by the Southwest Florida Water Management District, commonly known as Swiftmud.

The Swiftmud project involves a total look at the county's water supply. Among other things, the study will tell county officials where wells can go and how much water can be withdrawn without damaging the environment.

"This ordinance is an attempt to use a little restraint until we've become more aware of the quantities of water available for usage," said Jerry Greif, the county's chief planner. "Excessive pumpage would adversely affect the county's resource."

The regulation, which, for example, would prohibit wells large enough to serve 4,000 homes, is intended to protect Hernando from the overpumping and overdevelopment that have occurred in counties to the south. It also would apply to the county's utilities department, which manages four well fields and was considering a new well field in east Hernando.

Commissioner Nancy Robinson proposed the moratorium in September, after West Coast released a 700-page report that referred to the "development of a well field north of Pasco County." In the report, West Coast said it needed an additional 40-million gallons of water each day within five years.

Some commissioners feared the supplier was targeting Hernando County for a well field that would pump 30-million gallons of water per day to Pinellas, Hillsborough and Pasco customers. Robinson now says the moratorium would prevent Hernando from losing its lakes and private drinking

Please see WATER Page 3

Water

from Page 1

wells to overpumping.

"We don't want to look like Pasco County, an environmental catastrophe," said Robinson, who lauded the moratorium as a necessary tool to protect residents.

"It's a barrier of protection for Hernando County," she said. "We need to have our neighbors to the south not look at us as a water resource."

But Brown-Waite said the moratorium would throw the county into a legal battle.

Brown-Waite said she contacted Peter G. Hubbell, Swiftmud's executive director, in December about the proposed moratorium and discovered that Swiftmud has jurisdiction, according to state law, to accept, evaluate and issue permits for water withdrawals.

"While recognizing that the county has authority over land use, the ordinance as drafted appears to leave the land-use regulation arena and encroach on the water-use regulation responsibilities and authorities allowed by law to be exercised only by the water management districts," Hubbell wrote to Brown-Waite on Jan. 5.

Brown-Waite said she does not want residents to have false hopes that water supply problems will disappear if the moratorium is enacted.

"I don't want to see people's hopes being raised with an ordinance which has no validity in law," she said.

County Attorney Bruce Snow could not be reached for comment Monday. However, Snow has said previously that he is aware of case law that gives counties the power to challenge the development of a well field if it would harm the county's water supply.

Commissioners are expected to vote on the moratorium after a second public hearing at 5 p.m. Jan. 24.

Both today's and Jan. 24's hearings will be in the County Commission chambers at the Hernando County Government Center in Brooksville.

To: FRANK SANDERSON
BRIAN ARMSTRONG
DONNA HEALY
FROM Jo Mock

St. Petersburg Times
Hernando Times
TERSBURG, FLA.
SUNDAY, MARCH 12, 1995

Water fight boils into border war

■ Although some dismiss it as mere chest-thumping, Hernando County talks tough in its effort to keep control of the water beneath it.

By LEANORA MIHAI
Times Staff Writer

Last summer, when wells south of Brooksville stopped pumping water and started spurting air, some residents were forced to get their water through a 350-foot garden hose fastened to a neighbor's well.

The situation was similar in nearby Masaryktown, where sand jetted from homeowners' shower heads and choked washing machine filters and hot-water heaters.

The damage from piping too much water to the Tampa Bay area from underneath Pasco County had hit Hernando.

"That's what woke us up," says Kay Adams, Hernando County's assistant utilities director.

From that point, Hernando officials started taking a bulldog stance on water, challenging long-held views in Florida about who can control the coveted resource. The West Coast Regional Water Supply Authority, the Tampa Bay area's largest wholesale supplier, has targeted Hernando for a potential well field, so officials are on the defensive, as are their counterparts in Pasco and Citrus counties.

"I think Hernando County has taken the lead, and I think the reason is because they're under the most threat," said Jack Sullivan, executive director of the Withlacoochee Regional Water Supply Authority, of which Hernando and Citrus are members.

Hernando commissioners say they stand ready to fight in court should West Coast attempt to tap Hernando for customers in Pinellas, Hillsborough and Pasco counties.

"I'm prepared to form a militia — an armed militia," Commissioner Ray Lossing recently proclaimed.

But will state legislators and other county officials to the south take Hernando County seriously? Do Hernando's recent measures, which include a moratorium on new well fields, make a difference? Or are the moves nothing more than political posturing?

"You know, you can't really blame those people," Pinellas County Commissioner Charles Rainey said of Hernando officials. "It makes for good political rhetoric."

Not so, say Hernando officials, who have been plotting for the last year to stay in control of the water beneath the county.

Last year, some Hernando commissioners seriously pondered building a well field with the Withlachoochee Regional Water Supply Authority to meet Hernando's needs and to possibly sell water to the Tampa Bay area. The move, although controversial, was supposed to block West Coast from draining Hernando.

Last month, commissioners passed a law that is meant to freeze the development of well fields in the county for two years. The ordinance, which may be the first of its kind in the state, has been criticized as ineffective and unconstitutional.

And a few weeks ago, commissioners adopted positions on land and water issues. The most important, they say, is that water underneath Hernando should stay in Hernando.

The positions will be mailed to "everybody we can think of," Adams said.

"At least this is an attempt to be heard," she added. "It lets everybody know there's a county called Hernando, anyway."

The position statements come at a ripe time, especially since another player entered the water scramble last week.

Florida Power Corp. is considering supplying water to the Tampa Bay area by developing well fields in Hernando and Citrus counties and tapping Lake Rousseau in northern Citrus County.

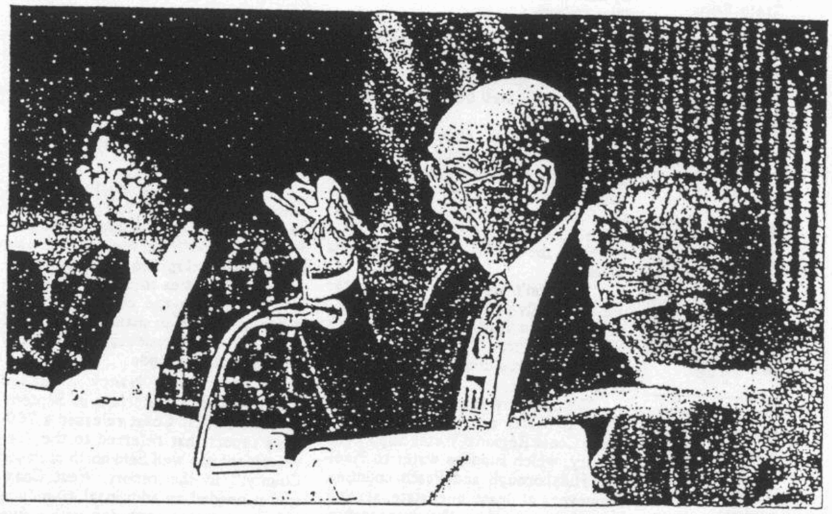
"I think the southern boundary of Hernando County is known as the forward edge of the battle area," said Richard Radacky, Hernando's utilities director. "We're on the front line. We have to get the message all the way to Georgia.

"When you get the crackers to the north of us riled, then they can be a very influential group. They don't give up easy."

Tightening the spigot

When it comes to water, Hernando County wants control.

Please see WATER Page 3



Times photo — ROBERT ROGERS

Executive Director Jack Sullivan, center, listens during Thursday's meeting of the Withlachoochee Regional Water Supply Authority. At left is Hernando Commissioner Nancy Robinson.

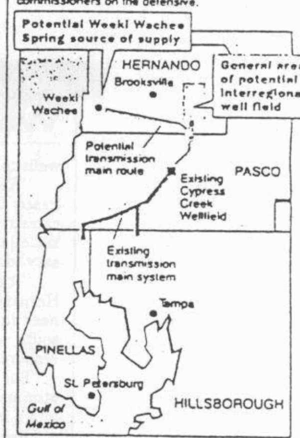
The commission's positions

In addition to Hernando's well field moratorium, county commissioners have adopted eight positions on water and land issues. Their positions will be mailed to every county in the state to muster support. The stances:

- Groundwater and surface water should be used within respective natural water basins and not exported across water basin divides.
- State money should be granted to help local governments maximize their water resources.
- The state should expedite and pay for studies to determine the safety of reusing wastewater to replenish the Floridan Aquifer.
- Water used from a well field should not exceed rainfall recharge to that well field.
- Local development must depend solely on local water resources.
- When local water is totally committed, a "zero growth policy" must be implemented.
- Alternative water sources such as that obtained from desalination, reverse osmosis, conservation and stormwater must be developed to replace imported water.
- Water withdrawals from the Cross Bar Ranch well field in Pasco County must be reduced to a level that does not result in environmental impact to Hernando and Pasco counties.

Water supply proposals

Last summer, a study done for the West Coast Regional Water Supply Authority proposed developing a well field to deliver 30-million gallons of water daily from Hernando County to the Tampa Bay area. The plan also suggested tapping Weeki Wachee Spring, owned by the city of St. Petersburg, to supply southern counties. West Coast officials say the proposals are "pie in the sky," but they have placed Hernando commissioners on the defensive.



Source: LAW Engineering and Environmental Services/West Coast Regional Water Supply Authority

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Water from Page 1

Commissioners have seen the environmental damage in Pasco County, and they don't want the same devastation in Hernando.

Since the early 1970s, the West Coast Regional Water Supply Authority has developed six well fields in Pasco to serve Pinellas, Hillsborough and Pasco counties.

Over time, too much pumping, coupled with five years of below-average rainfall, sucked dry many of Pasco's lakes, wetlands and drinking wells.

Here in Hernando last summer, residents who live south of Brooksville saw their lakes shrink and wells suck air.

"Pasco County lost control of its water supply and that's resulted in significant environmental damage," said Hernando County Attorney Bruce Snow. "To give up your ability to control your water to another area is very dangerous."

Pasco now wants to tighten its spigot.

The county is considering revising its comprehensive growth plan and requiring local approval of water permits to control how much water is pumped south. Pasco officials also are talking about hiring an attorney who specializes in water use.

"Hernando County is no different than any other county," said Pasco Commissioner Ann Hildebrand. "They want to control their own destiny."

Hernando commissioners are talking tough, even though the state Supreme Court says water in Florida is like a huge underground river, a public asset that can be used by anyone with a permit from a water district.

Commissioner Pat Novy has a threat for the counties to the south:

"We have people who come to Hernando County who want white sand beaches," said Novy, excitedly jabbing her finger in the air. "I'm going down there with a scow and picking up their bloomin' beaches. They're a natural resource like water."

'We're dying of thirst'

Hernando commissioners have reason to worry that some governments south of them may look into the county's water supply.

Recently, the *Times* called Pinellas Commissioner Rainey for an interview about water issues. A reporter was put on hold. A few seconds later, Rainey's secretary, Kathy Justus, announced: "He said he doesn't talk to anybody from Hernando unless they send water."

Justus was kidding.

Rainey, who also sits on the West Coast board, got on the phone.

"We're dying of thirst down here," he moaned in a hoarse voice.

Rainey's joke isn't so funny to Hernando commissioners, who complain Rainey is the guy who wants to "take, take, take."

Rainey said he didn't know anything about a West Coast water resources development plan prepared by a consultant last summer. A map shows a potential regional well field that would pump 30-million gallons of water daily out of Hernando to the Tampa Bay area.

Another map shows a pipe running from Weeki Wachee Spring, which is owned by the city of St. Petersburg.

The plan is considered a road map for 2030. By that time, West Coast expects it will need an additional 140-million gallons of water daily.

The authority also has an urgent need. Within five years, West Coast will need an additional 40-million gallons of water daily.

"That's a consultant's report," Rainey explained. "Nobody told that consultant, 'Consultant, look north of Pasco County.' "

"Right now, it's a pie in the sky."

Bruce Kennedy, West Coast's acting general manager, says the authority has "no firm commitment" to come into Hernando. He downplayed the maps but added that West Coast will not ignore its option to look north for water.

"It is only a very conceptual map to conceptually present that option," Kennedy said. "We haven't made any firm decision to move forward."

But Adams, Hernando's assistant utilities director, is skeptical.

"Every time I see them at any of the meetings, they say they want Hernando's water," she said.

Meanwhile, committees are soaking the water issue.

State Rep. John Rayson, a Democrat who heads a House select committee on water policy, said the situation is much bigger than Hernando County.

"I'll tell you this," said Rayson, who is from Pompano Beach. "We're not going to dangle the city of Tampa on a string when there's water around that can support them.

"There's no way a major urban center is going to be denied water on the basis of, 'It's mine and I don't want to give it to you.' "

Rayson's committee, which is holding public hearings throughout the state, is expected to recommend a plan to overhaul the state's water policy, which has not been revised since 1972, he said.

A race to the tap

Last year, Hernando County and the Withlacoochee supply authority seriously considered sharing water under Hernando with the Tampa Bay area.

For a price.

The thinking on the Withlacoochee region's side was to block the West Coast Regional Water Supply Authority from developing its own well field in Hernando.

If Hernando County, in conjunction with the Withlacoochee authority, developed a well field, West Coast would have a tough time justifying a permit from the Southwest Florida Water Management District, commonly known as Swiftmud, for its own well. Withlacoochee could argue that a well field that is controlled already meets the needs of Tampa Bay.

"The only way West Coast could get the water is through a contract with us," said Sullivan, Withlacoochee's executive director. "If environmental problems existed, we would be in a position to cut back on the water."

Withlacoochee is considering the same strategy should Florida Power attempt to serve Tampa Bay by piping from Lake Rousseau or developing well fields in Hernando or Citrus counties.

Last summer's plan for the Withlacoochee/Hernando well field changed when Swiftmud said communities should exhaust local water supplies before venturing outside their own boundaries for water.

Once Withlacoochee board members heard that, they backed off.

"I couldn't say that a well field is out of the question, but I think the feeling of the board is they don't want to put in a well field that would make it much easier for the Tampa Bay area to just go north as opposed to trying to live within their means," Sullivan said.

Hernando commissioners Nancy Robinson, June Ester and John Richardson serve on the authority.

State Sen. Ginny Brown-Waite, a Republican from Spring Hill who represents Pasco, Hernando, Sumter and Polk counties, tells a different story.

Commissioners backed off the well field because they realized it was not the right time, politically, to discuss selling water to Tampa Bay, she said. An election was coming up, and residents in Hernando were complaining about draw-down from well fields already supplying that region, she said.

"I think there's a lot of political posturing going on," Brown-Waite said.

Radacky now contends the only way Withlacoochee or the county would supply the Tampa Bay area is if it is "forced" to do so.

However, Commissioner Ester favors selling water to the Tampa Bay area.

"I think it's a protect-your-resources thing, and I'm still willing to sell water to Tampa Bay, but they could buy Perrier cheaper," Ester said.

Brown-Waite said Hernando commissioners and other Withlacoochee members would have "established a target for West Coast to raid."

"I think there's some butt-covering going on," she said. "When they got caught at it, they then said, 'We'll change that focus real quick. We'll work on a moratorium.' "

Commissioner Robinson, proposed the freeze on well fields, disagreed. The moratorium, she said, was to safeguard constituents.

"They want to know they're safe for the future," Robinson said. "When people perceive their safety is threatened, they want to know from their government officials that we'll protect them."

'Feel-good' legislation

Brown-Waite has criticized the moratorium from the get-go. She contends the move encroaches on Swiftmud's duty, which is to regulate water consumption — a responsibility given to the district by the Legislature.

In the end, she says, the law will end up costing Hernando taxpayers in legal fees.

Brown-Waite says the well field moratorium, passed last month, has no teeth, that it will not stop water-hungry governments from invading Hernando. "It's a feel-good piece of legislation," she said.

The law, which went through a few drafts, is a land-use measure, county officials said. It will not allow zoning approval to develop a well for two years, or until the county's comprehensive plan is amended to include results from a study of the county's water supply.

However, if a developer can tie a need for a well field with population demands in Hernando County, then that developer may be exempt from the rule and allowed to proceed.

Snow, Hernando's attorney, said the law is defensible. If challenged, it would stand because it regulates the use of land, not water, he said.

"The moratorium is more than pontification," Snow said. "The moratorium is a direct manifestation of the county's intent to actively be involved in water issues."

Two environmental lawyers — one from St. Petersburg, the other from Tampa — say the moratorium is an astute move by the county to gain time. However, they say it has a good chance for defeat because counties cannot undermine Swiftmud, which grants permits to wholesale water suppliers, among other users.

St. Petersburg attorney Thomas Reese, who represented environmental groups on state well head protection rules, said the Hernando law is "almost a restraint on interstate commerce."

"I don't think it's a very important document," he said. "I think it's more puffery. They're beating on their chest."

Doug Manson, a water lawyer from Tampa who challenged Swiftmud's position to not grant new permits south of State Road 60 and Interstate 4,

was gentler, saying the law could be an effective tool, but that it would probably be struck down.

"It's basically, to me, drawing that line in the sand and taking a position," he said. "To me, that's a good sign. I think Hernando needed to get on board and make a clear stand."

Gary Maidhof, Citrus County's environmental planner, said the moratorium is a smart approach that will cost a potential developer.

"You're telling them they're going to have to beat you in court, and that could take years," he said. "So, you've accomplished the purpose. You've kept them out while you've prepared other safety mechanisms."

Citrus is considering amending its comprehensive plan to say that no water can leave its boundaries, unless a developer can prove that a transfer would not hurt the environment.

"I think (Hernando) is in line with the rest of us," Maidhof said. "We've taken a different approach, but the intent is the same. We want to make it difficult and distasteful to develop a well field in Citrus County."

Ed Helvenston, a Swiftmud attorney, said the district will continue to review permits for well fields in Hernando, even with the county's moratorium in place. If a developer meets Swiftmud's rules, the district will issue a permit, regardless of the moratorium, he said.

Once the permit is issued, the matter likely would go to court. Helvenston, who said he did not feel comfortable discussing the validity of Hernando's ordinance, said Swiftmud probably would not get involved after the issue hit court.

Radacky, the county's utilities director, says the moratorium will work.

"We got a lot of people saying, 'You can't do it. It won't fly,' " he said. "But we're going to try and dig in wherever we can to protect Hernando County and our people."

Hernando toughens stance

A few weeks ago, Hernando commissioners struck again.

They approved a document called the "Hernando County Official Position on Land and Water Use Issues."

The positions run the gamut, from the belief that local development must depend solely on local water resources to the view that water from Gulf of Mexico should be explored as an alternative source.

The most important position, commissioners say, is that water should not be transported across basins. For example, water should not leave Hernando for the Tampa Bay area.

Once water goes, the aquifer under Hernando isn't replenished, Radacky said.

During a commission meeting on water issues, Commissioner Ester questioned the effectiveness of some of the county's stances. She pinpointed a position that says when an area's water supply is committed, growth there should cease.

"They're not going to pay attention to this anyway," Ester told the board. "They're going to say this is just that little county telling us what to do."

Radacky has more strategies for Hernando to maintain control of its spigot.

"We've got some more tricks in the hat, but we're not going to reveal them yet," he said. "When you're at war, you don't tell the enemy what you're going to do."

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Signs of river in trouble mounting

ST. PETERSBURG TIMES
DAILY - - 500,000

MAY 14 1996

■ A rising saline level and lower flow in the Weeki Wachee River could have a profound impact on marine life, studies conclude.

By DAN DeWITT
Times Staff Writer

WEEKI WACHEE — Leonard Shanks, at the wheel of his motorboat, pointed to the spot on the canal off the Weeki Wachee River where he saw an adult bottlenose dolphin and an immature one chasing a school of mullet.

"They went right to the dead end, and the mama and child cornered them there, and it was happy feeding time," said Shanks, who has owned a house on the canal for eight years.

What makes this something other than a memorable view of nature at work is that bottlenose dolphins are a saltwater species. The Weeki Wachee River, as most people know, is fed by a massive freshwater spring.

Until recently, evidence that the river was increasingly saline consisted only of inconclusive anecdotes like Shanks'. But in the last 14 months, the Southwest Florida Water Management District has gathered scientific data that confirms it.

The recent series of tests, conducted by Swiftmud scientist Quincy Wylupek each month during high tide, showed the lower stretch of the river to be an average of 5 parts per thousand more saline than it was 10 years ago.

"For it to be happening as often as it is happening now is definitely unusual," Wylupek said of the consistently higher results.

He said the lowest significant measure of salinity in fresh water is 0.5 parts of salt per thousand parts of water and that the upriver limit of saline intrusion at high tides is usually referred to as the wedge.

In a test done from January 1984 to March 1986 for Swiftmud by Mote Marine Laboratories in Sarasota, the wedge never reached beyond the river bridge at Shoal Line Boulevard.

In tests that began in March of last year and are continuing, the wedge has been measured as far as a mile above the bridge. And the highest reading at the bridge has been 12 parts per thousand, or 24 times what scientists consider significant.

According to the Mote report, that is also about half the average salinity four miles from the mouth of the river in the Gulf of Mexico.

"It's definitely significant," Wylupek said of the results.

To residents along the river, the effects of increased salinity are most obvious in the channel itself. But the implications for the gulf and its marine life may ultimately be more alarming.

If high tides are reaching farther up the river, it means less fresh water is flowing into the gulf. That causes shrinkage of the fan-shaped estuary around the mouth of the river, the brackish water that is the foundation of gulf's food chain.

"Over 85 percent of the commercial fish and shellfish harvested in South Florida consist of estuarine-dependent species," the Mote report says.

"Altering the range, timing, quality or quantity of freshwater flows, by altering the characteristics of the estuary itself, could have profound effects on both the biota and human populations."

Is low rainfall or high pumping lowering flow?

Residents and Swiftmud scientists agree on the cause of the increased salinity in the river channel: reduced flow from Weeki Wachee Spring. With less of a current down river, the tides intrude farther upriver.

The question of why there is less water in the river, however, draws the same responses as just about every other water issue in the area.

Swiftmud says more testing is needed to determine conclusively whether pumping of groundwater has contributed to the low flow, or whether it is simply a function of a long-term trend of low rainfall.

Concerned residents say that if the pumping of water from beneath Hernando County and at the Cross Bar Ranch Well Field in northern Pasco is not the root of the problem, it has certainly made the situation worse. And the residents on the river and its canals, many of whom are members of a group called the Hernando Environmental Land Protectors, are particularly concerned.

"Everyone has a great interest in this river. It's a great natural resource," said Don Fish, a HELP member who lives about a half-mile above the bridge.

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(CONT.)

River from Page 1

"I really think the pumping of water has affected it."

Fish and other HELP members have noticed many changes in the river, none of them definitive by themselves. Bottlenose dolphins, though they prefer saltwater and cannot survive long without it, have been known to occasionally chase mullet several miles into freshwater rivers, according to Dr. Randy Wells of Mote Laboratories.

But several incidents of that nature combine to create what HELP members say is an unmistakable feeling that the river is far different from the one that first attracted them five, 10 or 15 years ago.

Without the huge volume of spring water, the channel is more stagnant and inundated with water from the gulf. Simple observation tells them it is murkier and far more saline.

"We see a lot more sheepshead, and they are a crustacean feeder," Fish said, which may indicate that they are attracted by the barnacles that most people say are also increasingly common on the river.

"The tide is affecting this more than it ever did. When you are swimming, you can taste the saltwater more than you ever did. . . . Hospital Hole used to be clear," Fish said of the spring-fed cavern on the river that is more than 100 feet deep. "You could go over there and look at the depths, and it would just fascinate you."

"Sheepshead have not been strangers to the canals, but they didn't seem to stay up here and live like they do now," said Shirley Butler.

"The long ribbon grass that used to grow in here made excellent shelter for the minnows and the shiners," Shanks said. "That made great feed for the bass that used to be in here in abundance."

Shanks ran a rake on the bottom of the canal by his dock and brought up a mat of vegetation that had no trace of the grass, a wispy vegetation that grows from the bottom of spring-fed rivers.

Its scientific name is *vallis neria*, said Sid Flannery, an environmental scientist with Swiftmud.

"It's beautiful stuff. It ought to be the state grass of Florida," he said.

The fact that it has largely disappeared in the river channel and the canals below the bridge could be an indication of increasing salinity, he said. So could most of the other changes noticed by residents on the river.

"The district is very concerned about the salinity in the Weeki Wachee," Flannery said, which is why it sponsored the series of tests.

But, he said, "whether that's a permanent thing or whether it's a rainfall thing, that's the question."

Lower flow of river may be part of natural cycle

Flannery and Mark Barcelo, a Swiftmud environmental scientist who specializes in hydrology, said there is some evidence that the current low flow, and the resulting tidal encroachment, may be just a low point in a natural flux in the spring's volume.

The historical average flow of the Weeki Wachee is about 176 cubic feet per second. The lowest recorded flow in the past six years — which, according to Swiftmud, has been a period of cumulative low rainfall — was 105 cubic feet per second in 1991. That was matched once in 1932, and surpassed, with a reading of 101 cubic feet per second, in 1956.

If he had measured salinity levels during those periods, Wylupek said, he would have probably found tides surging at least as far upriver as he is now.

But he also pointed to a map of the underwater basin that feeds the Weeki Wachee. The basin includes Cross Bar in northern Pasco, from which about 25-million gallons are pumped daily. It also includes all of Hernando County, where Swiftmud permits the pumping of 45.5-million gallons of water per day. The local pumpage is considered somewhat less damaging because much of it eventually returns to aquifer.

Barcelo said Swiftmud has initiated another study of the basin and the effect of the pumping, partly because of last summer's uproar over Cross Bar.

"There is a lot of work in progress and a lot of work that is going to be in progress about these questions," Barcelo said.

But residents consider the evidence of the harm that pumping does to already be plentiful and convincing.

The river flow fell to near-record lows again last summer, about 108 cubic feet per second. After rising some late last summer and fall during a normal wet season, it has fallen again recently, to 128 cubic feet per second on May 1.

The increasing salt levels caused by the low rate of flows are not devastating in the simple and direct way that some pollutants are. The effects, such as the shrinkage of the estuary, are more subtle. But the Weeki Wachee is a valued natural resource primarily because of its great volume of clear water.

That can be learned two ways: by reading an extensive report that Wylupek completed last year on the river's water quality, or simply by taking a ride on the Weeki Wachee.

Weeki Wachee Spring is classified as a first-magnitude spring, one of 77 in the United States and one of 23 in Florida, according to Wylupek's report, which begins: "The Weeki Wachee River, which was named by the Seminole Indians, and means 'winding waters,' is a beautiful spring-fed river."

Up north of the bridge, ribbon grass still flutters, and schools of mullet still swim in the clear channel. The homes are built close to the bank, but enough trees have been left to shade the cool river.

"I still love living here," Shanks said.

Water from 1A

diversify the corporation, Raihill said. Florida Power likes the idea of a sister utility that would help guarantee a source of water to cool the electric utility's power plants.

For both, a guaranteed water source would carry the added benefit of encouraging economic development in a utility service area stretching from Tampa Bay through central Florida to Tallahassee.

Raihill described the July study as one in a series of exploratory reports.

"We have looked to see if a water utility would be a good fit and feasible, with appropriate profit margins," she said. "We have looked at other opportunities, too."

Citrus County officials are not putting out the welcome mat.

"I'm insulted and shocked," County Commissioner Gary Bartell said. "They're going to be needing one hell of a lot of good public relations in the next 24 hours."

The consultant's report assumes Florida Power would pump water south from Citrus County by using its existing transmission lines as pipeline corridors. The water would be delivered to the existing distribution system of the West Coast Regional Water Supply Authority, the wholesale supplier to Tampa Bay utilities.

Bruce Kennedy, West Coast's interim general manager, said Florida Power had not discussed this possibility with him.

But "it makes sense. Lake Rousseau is right up the street from their Crystal River generating station," he said. "If someone asked me what would be a logical corridor to follow, that's it."

The report offered Florida Power a range of options, from supplying enough water to accommodate growth in three Tampa Bay area counties to delivering the water required for residential, agricultural and industrial purposes in a nine-county area.

It also mentions as possible water sources the excavated portion of the Cross Florida Barge Canal, wellfields in Citrus and Hernando counties, and buying the Cross Bar wellfield in Pasco County.

The technical feasibility of this plan is not in question. Immense quantities of water flow into both Rousseau, a lake formed by a dam on the Withlacoochee River, and the Suwannee River.

Using water management district reports, Florida Power's consultant figured that a system pumping less than 10 percent of this water supply could yield 50-million gallons daily from the lake, and up to 380-million gallons from the river.

By comparison, West Coast pumps about 110-million gallons a day to Tampa Bay customers.

The cost of pipelines is not prohibitive. A West Coast plan estimates that water supplied from Rousseau would cost more than that delivered from existing wellfields, but less than alternatives such as desalinating Gulf of Mexico water.

The primary barriers would be political.

The Suwannee lies outside Swiftmud boundaries, and Florida law makes it difficult to transfer water from one regional district to another.

Lake Rousseau lies at the northern edge of the district, but any proposal to pipe its water is likely to encounter fierce local opposition.

Environmentalists dislike the idea of piping more water to an area that has already overtaxed natural resources by pumping lakes and wetlands dry.

"The answer for Tampa Bay is not necessarily, let's go to the next place where water's available," said Peter Belmont, an environmental lawyer in St. Petersburg. "Maybe the answer is growth management and conservation practices."

Swiftmud also considers pipelines to distant counties a last resort. It defines Pinellas, Hillsborough and

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FLORIDA BUSINESS NETWORK
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DAILY NEWS ARTICLES

Sunday, April 2, 1995

WATER MANAGEMENT DISTRICT

"Water Wars Loom On Florida's Horizon"

Tallahassee Democrat - by Savannah Blackwell

Sarasota County is salivating for the waters of the Peace River in neighboring De Soto County. The Tampa Bay area is eyeing lakes and groundwater in counties to the north and the Suwannee River as possible fonts to quench its residents' thirst.

What these areas are talking about is moving water from one area to another to solve the latter's chronic shortage.

No one has knocked on the door of Leon County, known for its abundant fresh water. But county commissioners are concerned that someone will soon. Some sound like they're readying for a showdown.

"There will be a future move against North Florida water, I'm convinced," said County Commissioner Bruce Host. "It's supply and demand. And we've got an enormous amount of water in this part of the state.

"We need to start loading our guns and do whatever it takes. When it becomes economically feasible to transport from Leon County, you can bet your boots there will be somebody up here drilling."

One official from Pinellas County, which along with neighboring areas has had its water use restricted by the Southwest Florida Water Management District, says some Florida rivers emptying into the Gulf of Mexico have more water than they need. The Apalachicola River might be one of those, Pinellas County Commissioner Charles Rainey said.

"To me, this is nothing more than a spring belching and saying, "I've got all the water I can stand on here, so I'm giving it up.'" Rainey said. "If it can be done in the Peace River, why not the Apalachicola?"

To underscore their desire that Leon County waters remain in Leon County, commissioners passed a resolution declaring that water resources should be obtained locally. Areas where they're dwin-

dling should resort to conservation, reusing sewage water, removing salt from seawater and putting the brakes on growth.

Host said commissioners were inspired by similar resolutions passed recently by Hernando and Citrus counties, where officials are worried about a study by West Coast Regional Water Supply Authority -- the largest supplier to Pinellas, Hillsborough and Pasco counties -- that examines their areas as possible water sources.

The first choice on list should be conservation

The water war in Southwest Florida has been ugly in recent weeks, with officials threatening to put together militias and go after each other's resources. A power company's decision to put aside a proposal to pump water from a Citrus County lake may have calmed some nerves, but the rancor runs deep. According to officials from the affected areas, the West Coast's pumping for water has dried up some lakes and wetlands in Pasco and Hernando, and has lowered well levels in Hernando.

"We're experiencing the negative side out here.... One gentleman got up one morning and a lake was gone," said Hernando County Commissioner Hannah Robinson. "We've been very concerned. There are potential decisions elsewhere that affect other populations, suggested by people that have no relation to the area. Their interests may not be our interests."

According to Honey Rand, a spokeswoman for the Southwest Florida water district, the season ahead looks dry, and the Tampa Bay area is heading toward violating the emergency restriction order placed last year on its use of water. But it is stepping up efforts to conserve and look for options other than transport, she said.

Southwest Florida's water shortage and battles have made neighboring county commissioners and legislators nervous. Leon County officials are nervous as well.

Host said commissioners have asked County Attorney Herb Thiele to look into whether Leon County has special "rights" to water found within its boundaries.

State law says all Florida waters belong to the public, and the transport of water between basins is legal, said Pam McVety, executive coordinator of ecosystem management for the state Department of Environmental Protection. But McVety said Leon County need not worry.

People in West Coast Regional are "pushing north to get water," McVety said. "But our laws and rules are very strict. Water would never come out of Leon County if it was going to cause a problem."

Citrus is expected to grow by a least 68 percent, to 194,072 people, by 2020; Hernando's population is expected to reach 2.5 million people, and water demand will be between 323 million and 370.5 million gallons per day, up from 257 million gallons now, according to West Coast's projections.

Developing more local wellfields and intensifying efforts to recycle wastewater won't be enough.

The simplest way to fill the gap, West Coast officials say, would be through a pipeline agreement with Withlacoochee authorities. But Withlacoochee is resisting.

West Coast officials may try to sweeten the prospect by offering to build the pipeline and the pumping system and then turn over control to Withlacoochee. West Coast would be the major water purchaser, but Withlacoochee also could pump water for its own use.

Withlacoochee authority chairwoman Hannah "Nancy" Robinson said she would consider discussions with West Coast only if it had exhausted all local water sources, such as desalination.

"If we solve their problem for them, why would they solve the problem for themselves, internally?" asked Robinson, vice chairwoman of the Hernando County Commission.

The other way a pipeline could evolve is if the Florida Legislature creates a statewide water board to oversee water distribution.

Water is everyone's

Under state law, water belongs to everyone, not to property owners. That means a statewide board could force the Withlacoochee authority to sell water to West Coast.

A House Select committee and a 21-member commission appointed by the Governor and Legislature are examining the need for such a board, among other issues. Both groups will meet through this year and issue recommendations.

Some say chances are slim the groups will recommend a statewide water board because the issue is politically explosive, and the Tampa Bay area's problems are not mirrored around the state.

But in case a statewide board does try to force a pipeline, the northern counties are developing backup plans.

Withlacoochee officials say they would consider building their own wellfield if a state board is created so they could retain control over the region's water.

State legislators from those three counties outnumber their northern counterparts. And their governments combined have million-dollar legal budgets to protect and expand water supplies.

For the short term, five years or so, they hope to increase the water supply by drawing more underground water in Hillsborough and Pasco and from the Hillsborough River. They also plan to increase conservation efforts and use of recycled water.

But for the long term -- 10 to 20 years -- they expect a pipeline to provide part of the water. It would take at least a decade to negotiate and build a pipeline, officials say, so the stage is being set now.

Last summer, officials with the region's largest water wholesaler, the West Coast Regional Water Supply Authority, released a report saying a pipeline to Hernando or Citrus would produce water at less than half the cost of desalination, the most frequently touted alternative.

West Coast provides water to 1.8 million people through its member governments, Pinellas, Hillsborough and Pasco counties and the cities of Tampa and St. Petersburg.

Desalination would take huge amounts of energy and the burning of fossil fuels could cause air pollution, West Coast officials say. The expense makes desalination unlikely and a pipeline inevitable, they say.

Extending a 60-mile pipeline from Lake Rosseau to Cypress Creek Wellfield in Pasco is the primary scenario because the Southwest Florida Water Management District, although it favors desalination, has said 50 million gallons of water a day could be taken from the lake safely. Argenziano and Citrus officials disagree, arguing such pumping would harm the region's environment.

Cost estimates

A Lake Rosseau pumping facility and pipeline would cost $232 million to build, and $19.5 million a year to operate. That compares to $250 million to build a desalination plant, and $63 million a year to operate it, according to West Coast.

The Tampa Bay Water Coordinating Council, a committee of area water and government officials, wants West Coast to discuss the pipeline with other agencies, such as its northern counterpart, the Withlacoochee Regional Water Supply Authority.

The Withlacoochee authority's member governments -- Citrus, Hernando and Sumter counties, and the cities of Ocala and Brooksville -- say they aren't interested in solving West Coast's problems.

The Hernando County Commission is studying how much water can be taken safely from the county. Robinson is pushing an ordinance that would prohibit any new wellfields within the county for at least two years.

Homeowners and civic associations in the Withlacoochee area last month sent dozens of water jugs to the statewide commission with messages demanding a local hearing.

They caught the commission's attention, and got their hearing this month. Now they are seeking a similar hearing before the House Select committee.

Argenziano says they won't stop there. She has a message for Tampa Bay policy-makers: "Tell them to accumulate a lot of money for attorney's fees, because we're gearing up."

Peter Hubbell, right, of Swiftmud talks to members of a House committee looking at Florida's water problems as they tour the Barthle family ranch in Pasco County. The Barthles blame a well field for draining their land.

Times photo — TOM HOWLAND

Water panel visits sore spots

By DAVID OLINGER
Times Correspondent

TAMPA — The chairman of a special House committee created to examine Florida's water problems said Friday thattransporting water greater distances is one solution.

While an emergency water shortage order prevails in Tampa Bay, the Suwannee River area has more water than it can use, and a flooded South Florida is "drowning deer in the Everglades," Rep. John Rayson said.

"We need to move water around so that everyone has a fair share — a better and more equitable distribution of the resources."

He also said Florida needs "to discuss the viability of continuing to pump groundwater" and to expand its use of recycled water.

That expansion could be accomplished by requiring new developments and large individual consumers such as golf courses to install reclaimed water lines, he said, and in municipal systems where repairs are being made.

Rowan heads a Select Committee on Water Policy created by Florida House Speaker Peter Wallace. The committee plans to spend the next year on a fact-finding mission and to make legislative recommendations in 1996.

His comments followed a hearing in Tampa on Friday at which many speakers from counties north of Tampa Bay implored the committee *not* to consider long-distance pipelines as a remedy for water shortages.

People from Hernando and Citrus counties told the committee they have seen what groundwater pumping to metropolitan Tampa Bay did to Pasco County, and they fear they're next.

"All eyes and ears and guns and pipes are trained on Citrus County," said Frank Robinson, president of a local citizens' group.

Hernando County commissioners told the committee that groundwater pumping from the Cross Bar well field, at the north end of Pasco County, already has caused extensive damage across the county border.

"We have experienced a high number of well failures," Commissioner Nancy Robinson said. "I would hope we would learn from that experience."

Commissioner Pat Novy said the 1,500 or so private wells that went dry near well fields last year included the Masaryktown community well, the water source for a volunteer fire department.

The West Coast Regional Water Supply Authority, which pipes water to the Tampa Bay area, hopes to relieve demands on the Cross Bar well field by connecting its pipeline system to the Hillsborough River and two new well fields.

Before the hearing, the committee toured the Barthle family ranch south of the Cross Bar well field.

The Barthles blame the same well field for draining a large lake on their land and drying out cypress wetlands once used by their cattle as drinking water ponds.

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CONDENSED NEWS CLIPS

Tuesday, January 10, 1995

WATER MANAGEMENT DISTRICTS

"Water Authority Prepares For Fight"

The Tampa Tribune - by Kathleen Beeman

Eighteen years ago, residents of Citrus, Sumter and Hernando counties helped create the Withlacoochee Regional Water Supply Authority to keep Tampa Bay area politicians from siphoning their water.

On Monday its executive director, Jack Sullivan, warned a steering committee of Bay area officials that people in the Withlacoochee region are, more than ever, ready to fight any attempts to take their water.

Some members of the committee, created to find more water for Pinellas, Hillsborough and Pasco counties, have been talking about building a pipeline to the Withlacoochee area, or farther north in Florida.

The debate may be a preview of water brawls to come.

If the Tampa Bay group tries to move north unilaterally, "We'd better both bolster our legal budgets because the lawyers are going to have a field day," Sullivan told the steering committee.

The committee, called the Tampa Bay Water Coordinating Council, formed in October to mediate between the region's water regulator and its largest water supplier.

The group which includes Tampa Mayor Freedman and St. Petersburg Mayor David Fischer, plans to make some recommendations next month.

Pinellas County Commission Chairman Bruce Tyndall wants the Florida Legislature to establish a state water board that would facilitate water transfers among Florida water authorities.

"It's other people's water also," Tyndall said.

But, echoing the committee's consensus, he said Tampa Bay governments first must explore local options such as recycling wastewater.

Still, developing a pipeline is a viable long-term solution, he said, and Bay area officials should begin negotiating to achieve it.

John Betz, a retired University of South Florida biology professor, agreed.

"If we try to develop more of our available water for human use, we will transform South Florida, Southwest Florida, in fact the entirety of Florida into a wretched desert," said Betz, hired by the Hillsborough County Commission as a consultant on water issues.

Ideally, Bay area officials should develop a water pipeline to rivers north of Marion County, he said. But lines to Weeki Wachee Springs in Hernando, and Lake Rousseau in Citrus would be effective interim measures.

Eventually, the Tampa Bay region should import 2.5 billion gallons a day from such rivers as the Apalachicola, the Choctawatchee, Chipola, St. Mark's and Suwannee, he said.

A pipeline to Weeki Wachee, Rousseau or rivers farther north might damage the environment because it would withdraw too much fresh water, said David Moore, deputy executive director of permitting for the Southwest Florida Water Management District.

Hillsborough and Pasco residents who live next to dried or shrinking lakes criticized the pipeline plan. They said a pipeline could similarly damage North Florida lakes and wetlands.

"A statewide water board frightens me," said Judy Williams, an organizer of the Coalition of Lakes Association.

"I don't know how much input an individual can have on a state water board."

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Water proposal calls for sacrifices

■ Environmentalists and developers will have to compromise for the proposed law to work.

By LEANORA MINAI
Times Staff Writer

BROOKSVILLE — Hernando County could soon make a sacrifice.

Within weeks, county commissioners will decide whether to adopt a law that would limit development in the county but protect our most precious resource: water.

"It's going to be a controversial issue," said Alan Holbach, the county's public works director who served on the groundwater ordinance task force. "We have on one hand businesses and developers who say they shouldn't be restricted, and on the other hand we have environmentalists."

The proposed law is called the Groundwater Protection and Siting Ordinance, and it took three years and $100,000 to draft. The 32-page regulation would prohibit certain developments that generate, store or use hazardous substances from being built near the county's 74 public water wells.

Land owners who plan to construct a golf course, a subdivision or a dairy farm would possibly have to choose another site. Gas stations, mining pits and landfills would be prohibited in various areas.

The law also calls for the formation of a county emergency response team, whose members would clean up chemical spills. And the order would ask homeowners to share responsibility by reporting spills, even if they dump motor oil down their sinks.

"Everybody's going to have to do something they don't want to do," said Hal Robinson, executive director of the Greater Hernando County Chamber of Commerce. "Everybody's going to have to make some sacrifices."

Two hearings have been

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scheduled for county commissioners to listen to comments from the public. The first is at 5 p.m. Tuesday; the other, at the same time June 7.

Only sand between us

Citrus County is the only community along the North Suncoast with a groundwater protection ordinance similar to Hernando's proposed measure. Pasco County does not have one.

"We need a groundwater protection ordinance. We're very fortunate in Hernando County. We have some of the best water you'd find anywhere," said Laura Beagles, the county's emergency management officer. "Water supports life, and we have to make sure that activities being conducted in wellhead protection areas are not polluting water supplies."

During what has been a tightrope walk, a delicate balancing act between environmental and business interests, the county's Planning Department mapped a zone around every public water well.

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Each zone is divided into two sections, which have been named "wellhead protection areas." The areas are spread throughout the county with a concentration in the Spring Hill and Weeki Wachee areas.

The area closest to the well, known as Wellhead Protection Area 1, is more restrictive on what can go there because a hazardous substance takes two years to travel from the outer limit of the area to the well.

Area 2, which is farther from the well, is less rigid in its land-use requirements because a hazardous substance would take 10 years to percolate to the well.

Land uses that would not be allowed under the rules but exist now in the areas can remain. However, the existing use cannot be expanded, said Larry Jennings, director of the Planning Department.

The ordinance, which essentially is a zoning measure because it determines how land can be utilized, is meant to protect and maintain the quality of Hernando County's water supply.

The Southwest Florida Water Management District, commonly known as Swiftmud, split the $100,000 cost for the ordinance with the county. Among other things, the money paid HydroGeoLogic of Herndon, Va., to run a computer program that calculated how fast water moves in the aquifer and in what direction.

Because water travels to the Floridan Aquifer fairly fast in Hernando, the county's water supply is vulnerable to contamination.

Since sand hills cover much of the county, harmful chemicals can seep into the aquifer more quickly. The sand does not serve as an adequate filter to keep substances from entering the aquifer, which is a huge underground river from which we get our water.

"We have nothing but sand between us and the groundwater," Holbach said. "Whatever we put in the ground eventually makes it down in the aquifer."

The ordinance sets time frames for action.

If, for instance, a gas tanker crashes, spilling fuel over roadways, the county has two to 10 years, depending on the wellhead area, to implement cleanup measures before the fuel pollutes a well.

Residents and business owners should not think they can slip away from following the regulations. If someone violates the new ordinance, the person will pay $500 for each offense or spend up to 60 days in jail. Or both.

Although details are sketchy on who will enforce the law, the planning and commercial development departments will study each land-use request during normal Development Review Committee meetings.

"They will be looking at the zoning map to determine whether or not a use would be prohibited," said Jennings, who added that applicants will pay a fee for the review.

The fee, which will be decided by county commissioners, has not been set. The fees and fines will go into a Pollution Recovery Trust Fund that will help pay to clean up spills and retain staff for the response team.

Anyone who disagrees with a development committee decision

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can appeal to the county commissioners. Applicants who get no satisfaction out of the commission can fight the case in court.

Possible legal battles

Legal battles are possible, especially by people who bought their land years ago with dreams of developing it in the future.

Mark Alexander, owner of Alexander Homes, which has built 1,000 homes in the county, said property values within wellhead areas could drop. The county should consider buying land from the residents who, because of the ordinance, cannot use the land as they had planned, he said.

"People will need to be compensated for that somehow or they're going to have a lot of lawsuits," Alexander said.

The ordinance will make it more expensive for developers to build homes, which means buyers could pay $5,000 to $6,000 more for their homes, he said.

Depending on the area, a central sewer facility and treatment plant must be built for a new residential subdivision with a density of more than one house per acre. Instead of waste flowing into a septic tank on the property, it would flow to a facility outside the subdivision for treatment.

"It would leave us with less potential to develop later on and it would make land more expensive and development more expensive," Alexander said.

Spring Hill, where much of the county's growth is happening, could be affected most because it has the most wellhead protection areas.

Robinson, of the chamber of commerce, said State Road 50 on the west side of the county would be less commercial than originally planned under the law.

"The flexibility will be reduced," he said. "There will be constraints, and where there are constraints you'll always find investors and property owners who are going to be upset."

But there's a positive side. Hernando will protect itself from overdevelopment in southern counties like Pasco, Pinellas and Hillsborough, and at the same time guard against "rip and run" developments, Robinson said.

Robinson talked of how communities in Florida have torn down natural resources, such as forests, or wiped out wetlands to build strip malls and subdivisions. While growth is necessary, he said, a community should not pillage its natural resources, which attract people to an area.

CONTINUED

St. Petersburg Times
May 22, 1994

"No industry in the 1990s really wants to move into a community that has not resolved basic environmental questions," Robinson said. "Your most progressive companies want to go into a stable situation. They want to know what the rules are, and the water ordinance is part of that."

Regardless of whether Hernando adopts the ordinance, the state Department of Environmental Protection is working on a statewide groundwater protection plan that all communities would have to follow.

"The idea of the ordinance is not to limit growth," said Mark Barcelo, a Swiftmud project manager, who worked on Hernando's plan. "These people can still do other things with their land. You're not telling them they cannot make a living with their land."

But Don Kelly, president of the Hernando County Mining Association, disagreed. He said the ordinance will curtail mining. He wanted the county to perform a study to show what kind of impact the ordinance would have on economic growth, but the county has not done such an analysis.

"Those things should really be considered before adoption of an ordinance because it'll put current and future restrictions on land use," Kelly said.

Kelly, like some dairy farmers in the county, wants each business to be treated the same. But mining companies have been unfairly singled out, he said.

Under the ordinance, mining and borrow pits would be banned from areas closest to wells.

"We just want a fair ordinance," said Kelly, who said he wanted to study the final draft of the ordinance before discussing the regulations in detail.

Holbach said the limerock mining restrictions do not mean mining companies pollute the water system when they excavate the earth. "The mines strongly believe that since they're not polluting, you shouldn't be regulating and saying they can't do an activity," Holbach said.

The potential for danger comes when mining is complete and the protective layers of the earth have been stripped away.

"When that land goes to be reclaimed, it's more vulnerable and it could allow pollutants to enter the aquifer at a greater rate," Holbach said. "Their argument is that the restrictions should be placed on the future land use of those areas."

Ordinance rules for all

While the ordinance curtails certain development in the county, it sets up rules for everyone to follow regardless of where they live or work.

For example:

- No new wells can be drilled within 200 feet of new or existing sinkholes.
- The installation of wells to drain liquid from property will be prohibited. Those who have drainage wells must cap them within a year of the ordinance.
- Anyone who uses, handles, produces, stores or disposes of more than 25 gallons of liquid toxic substances or more than 220 pounds of solid hazardous substances must register the material with the county.
- New landfills, regardless of the location within the county, must give the county a detailed monitoring plan that shows how much leachate, referred to as garbage juice, is leaking into the groundwater.

The ordinance will draw its share of criticism and praise from Hernando County. That may be why Jennings, of the county's Planning Department, assures that "there could be changes to this ordinance as it goes through the adoption process."

In the long run, the ordinance could boost Hernando's economy if it treats developers fairly. But "everyone starts the speech the same way: 'Nobody's concerned more about the environment than I am, but, . . . ' " Holbach said.

There's no doubt that if the ordinance is passed, there will be those left unhappy, said County Commissioner Tony Mosca Jr.

"You're trying to find a middle of the road," he said.

"I don't want to restrict farmers from being able to develop their crops, and I don't want to stop houses and developments from being built," he said.

But for an effective ordinance, environmentalists and developers will have to make some trade-offs.

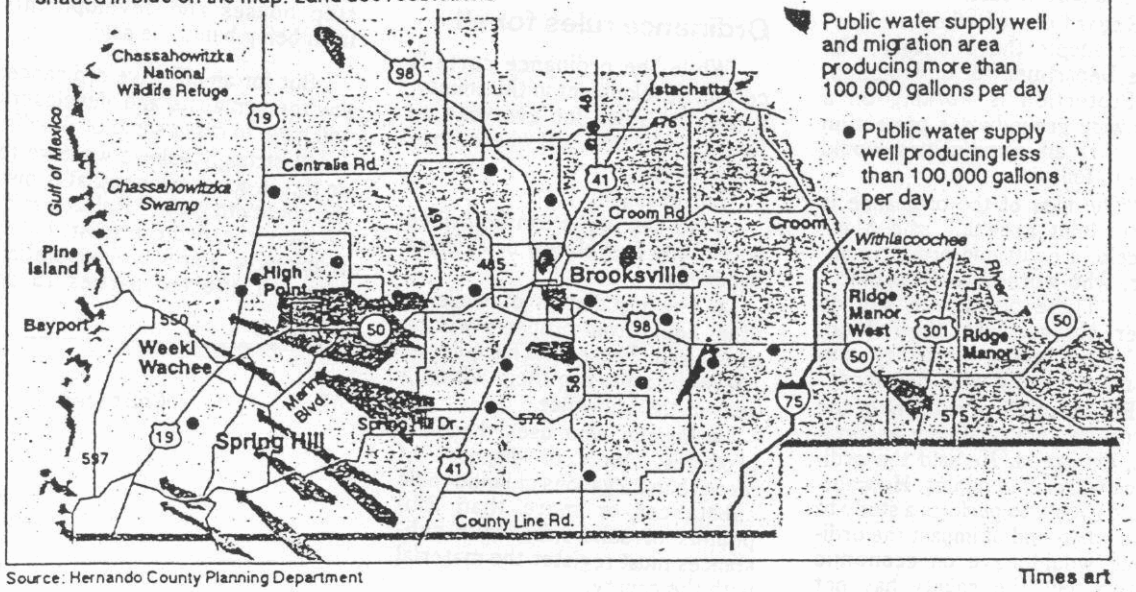
"I strongly believe we have to do this in some manner that allows the county to grow," Holbach said. "I think the two can exist, but it requires a spirit of cooperation from all affected parties to do that."

Continued

St. Petersburg Times
May 22, 1994

Protecting Hernando's groundwater supply

Under Hernando County' s groundwater protection ordinance, certain forms of development would be prohibited near public water wells. Among the prohibited land uses, new landfills, gas stations, golf courses, salvage yards, mining pits, dairies and hazardous waste treatment centers would not be allowed in wellhead protection areas, which are shaded in blue on the map. Land use restrictions increase and decrease depending on how far the proposed land use facility sits from a well. The closer to a well a facility is proposed, the more restrictive the rules for what would be allowed in the wellhead area. The red circles on the map represent smaller public water wells, and development would be restricted within a 500-foot radius of those wells.



Source: Hernando County Planning Department

Times art

HIGHLIGHTS

Here are highlights of the county's proposed groundwater protection ordinance:

- The commercial development and planning departments will review applications for developing property and determine whether the proposed building sits in a wellhead protection area and whether such a structure is prohibited there.
- Property owners wanting to fight a ruling by the planning and commercial departments can take their pleas to the County Commission. If they remain unsatisfied, they can take their fight to court.
- Applicants will pay a fee, which has not been set, to review whether the proposed building falls in a wellhead protection area. The money could pay for employees to enforce the ordinance and to respond to hazardous spills.
- The ordinance could lead to the formation of a Response Team, whose members would clean up hazardous spills. The team would fall under the jurisdiction of the county's emergency management department.
- Property owners with unused wells may be required to cap them at their own expense, according to guidelines set by the Southwest Florida Water Management District.
- Those who violate the ordinance will pay a $500 fine for each offense and/or serve 60 days in jail.
- Hernando County has worked on the ordinance since 1991 with the guidance of Swiftmud, which split with the county the $100,000 cost of planning the ordinance.
- Two public hearings on the ordinance are scheduled. The first will be at 5 p.m. Tuesday in the County Government Center in Brooksville. The second is set for 5 p.m. June 7.

4A NAPLES DAILY NEWS Sun., Sept. 18, 1994

Water management district seeks input on water rules

Daily News staff

The South Florida Water Management District will conduct a public workshop at the Lee County Extension Service in Fort Myers beginning at 10:30 a.m. Tuesday.

Another workshop will be held at 10:30 a.m. Wednesday at The Conservancy, 1450 Merrihue Drive in Naples.

The district is seeking comment on proposed changes to water-use rules.

Among the changes scheduled to go into effect in May 1995 will be the establishment of a minimum water level for the aquifers, updated criteria for saltwater intrusion, criteria for wetlands mitigation, new water well construction criteria to safeguard aquifers, an update on water shortage rules, and criteria for artificial water-recharge wells when water is pumped into the ground for future use.

The South Florida Water Management District is the largest of five water management districts in the state, with boundaries extending from the Upper Chain of Lakes in Orlando to the Florida Keys.

The Extension Office is located at 3406 Palm Beach Boulevard in Fort Myers.

Future looks muddy for Bugg Springs

Local growth draining water flow from aquifer

By Henry A. Stephens
Daily Commercial Staff Writer 12-27-94

OKAHUMPKA

For the past 35 years, U.S. Navy scientists have calibrated America's sonar systems based on standards set at Bugg Springs.

But the near-perfect natural laboratory may be jeopardized over the next 16 years, losing up to 15 percent of its flow from the Floridan Aquifer.

Central Florida's growing population is forcing increasing amounts of drinking water from underground layers, scientists say.

"That will turn this place into a sinkhole, and Leesburg will just be drinking lake water," says Dale Pautz, civilian head of the Navy's Bugg Springs facility.

In its Sept. 13 draft Water Supply Needs and Sources Assessment, the St. Johns River Water Management District projects various springs in Central Florida will lose pressure as population grows.

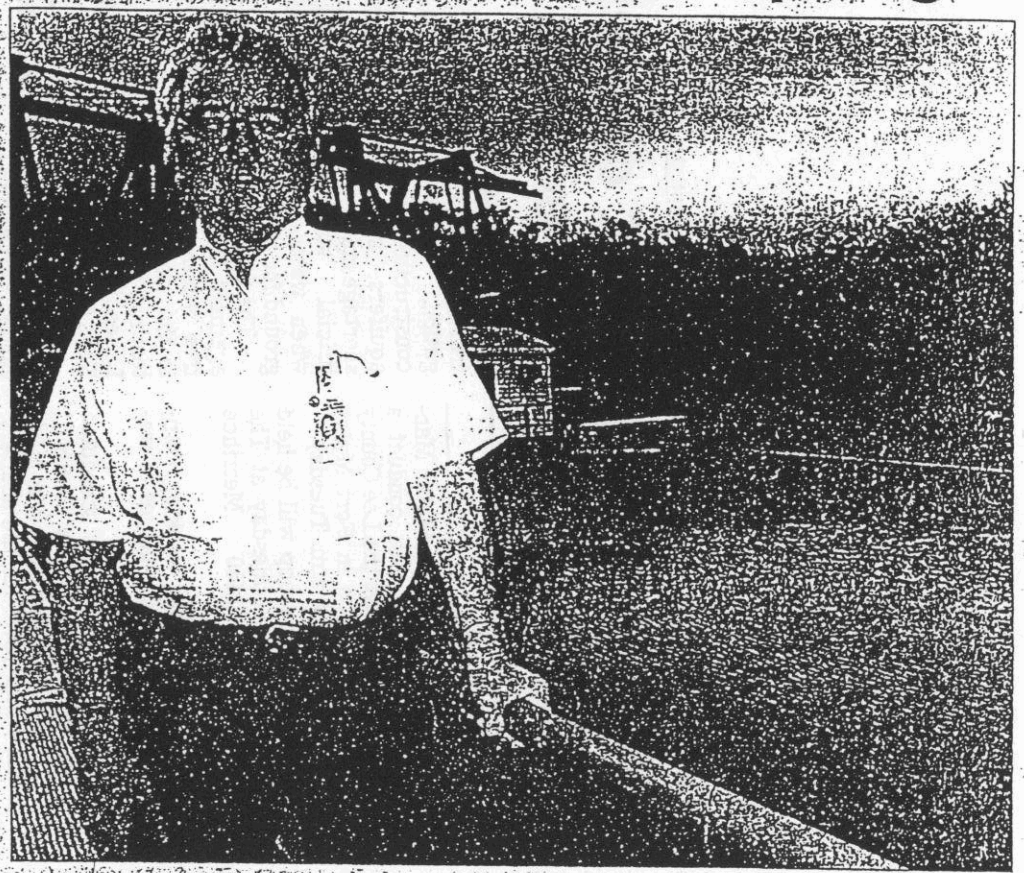
The Naval Research Laboratory's Underwater Sound Reference Division pays six employees a combined $250,000 a year to test the lines of sonar arrays which are towed behind naval vessels to listen for enemy submarines. Apart from an occasional commercial client, it's mostly Navy work, Pautz said.

It's passive equipment, because it doesn't emit its own pulses to bounce off underwater objects. The staff wraps lines of sonar arrays on huge spools with sonar transmitters at the center.

The spools are then lowered from the lab's barge to about 40 feet below the surface, where the arrays on the lines pick up pulses from the transmitters.

What makes Bugg Springs unique among U.S. water bodies, and ideal for Navy sonar testing, is its slow but steady flow of some 10

Please see SPRINGS, A2



Staff photo by Rami Maalouf

Dr. Joseph Blue, the superintendant of the U.S. Naval Research Labratory at Bugg Springs in Okahumpka is seeking to protect the future of Lake County's water supply by limiting use of the spring.

EXHIBIT CCNE-1
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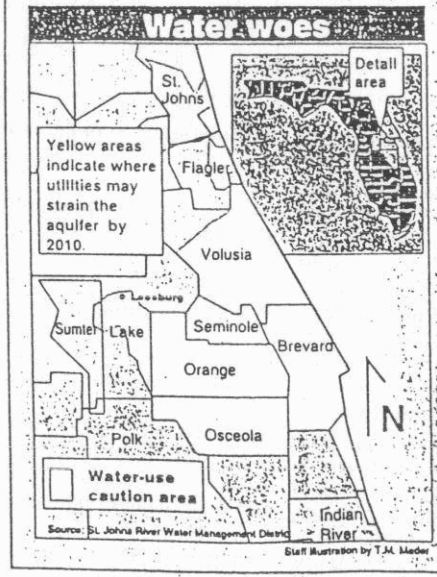

Orlando taps Lake County for projected water usage

By Henry A. Stephens
Daily Commercial Staff Writer

While Sumter County residents often cast a wary eye toward thirsty Tampa-St. Petersburg water utilities, the city of Orlando has already sunk 12 water wells in South Lake County and plans to drill more.

"Orlando is peacefully coming in our back door without a whole lot of fanfare," says Will Davis, executive director of the Lake County Water Authority.

But while state law allows counties to pump water from each other, Orlando isn't pumping Lake County water to its residents, a city official there said last week.

"Orlando is sitting atop the most productive part of the Floridan Aquifer. We won't be going to Lake County for our water," said Elizabeth Skene, assistant chief of the Orlando Waste Water Bureau.

State law allows counties to pump water from each other.

Orlando has applied for a St. Johns River Water Management District permit to withdraw 1.6 million gallons a day from South Lake County to augment the Conserv II project, Skene said Thursday.

The Conserv II project sends treated urban sewage from Orlando and Orange County to citrus growers in Lake and Orange counties. That rids the metropolis of its effluent and irrigates the rural crops.

But in addition to irrigation, the growers have also contracted for more water on cold nights to protect against freezes.

"When growers have a freeze, and there's not enough reclaimed water, we're pulling water out of the ground to save their butts," she said. "This is not for people in the city."

Skene said her bureau probably won't need all 1.6 million gallons of ground water. And at any rate, she said, Conserv II pumps an average of 25 million gallons of reclaimed water into the groves.

Skene said she will move Jan. 9 to a new job as Orlando field office manager for the Water Management District, replacing Pat Frost who's being transferred to Palatka.

CONTACTS FOR ADDITIONAL INFORMATION:

Gene Caputo, Inter-Gov Coordinator 904/329-4437
Stewart Dary, Water Resource Planner III 904/329-4438

EXHIBIT CCAR-11
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SPRINGS

Continued from A1

million gallons a day, lab Superintendant Joseph Blue said.

The water comes up slow enough, and without any central boil, to avoid sounds of rushing waters that would interfere with sonar tests, he said.

But it's also fast enough to keep the same 68-degree Fahrenheit temperature for most of its 176-foot depth, Blue said. That way tests don't have to be adjusted for temperature differences.

The district is predicting spring-flow problems by 2010. But Blue said tough times for spring users will come sooner.

"They're telling me one million gallons a day (withdrawal) will reduce our flow by 3 to 5 percent. So at the rate we're going, we'll be out of the spring business between now and the year 2000," Blue said.

The mappers

"There's always going to be water, but the question is: Will it be available at an affordable cost?"

That's what geologist Barbara Vergara, director of the district's Division of Needs and Sources, is asking.

Her staff worked since 1989 on a $4 million study determining the need for water and where to get it. One district map shows Leesburg enveloped in the massive Water Resource Caution Area — a region focusing on Orange and Seminole counties, but also stretching eastward to parts of coastal Brevard, Volusia and St. Johns counties and westward into Lake County.

The only existing scarcities are in Putnam and St. Johns counties, where potato farmers exert seasonal demands from the aquifer, Vergara said.

The rest of the caution area is based on future trends, including:

- The Orlando Utilities Commission, the district's largest utility, increasing from 79 million gallons of ground water a day in 1990 to 128 million by 2010.
- Deltona Utilities, from 9 million in 1990 to 25 million in 2010.
- Leesburg, from 4 million in 1990 to 12 million in 2010.
- Lake Mary, increasing from more than 1 million in 1990 to about 5.5 million in 2010.

Lake County's Blue Springs, Holiday Springs and Bugg Springs will be affected primarily by Leesburg's water use, Vargara said. In addition to Bugg Springs losing 1.5 million gallons of flow a day, her staff has estimated Blue and Holiday Springs will each lose about a cubic foot per second.

The study has its critics. Joe Branham, who leases Bugg Springs to the Navy at $32,000 a year, has questioned its predictions. And Leesburg resident Joe Hill, a member of the district's Governing Board, said the worst-case scenarios probably won't happen.

And Vergara is quick to point out the spring declines are best guesses, not certainties. But there will be some problems getting and paying for water, she said, is a sure thing unless cities and other utilities work better to conserve water, like more recycling of water, use of surface water and spreading wells across larger areas.

Without conservation, she said, the cities will be competing for future applications.

Will Davis, executive director of the Lake County Water Authority, said Vergara's study provides a "snapshot" with a lot of assumptions.

"Some are good, some are bad and some are witchcraft," Davis said. "But what this is is a red light. And we darn sure better look at other alternatives."

While the district issues permit large-scale water users, she said, it doesn't track the cumulative effect of regional water withdrawals.

"We need to get to the point where we do a better job looking at regional water uses," she said. "This is so the users can develop (conservation) plans. And Leesburg, Sanford, Orlando and the rest can't do that without talking to each other."

Davis said his agency has approached the U.S. Geological Survey about doing a study measuring Lake County withdrawals against its ability to recharge the Floridan Aquifer.

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EXHIBIT (CHR-1)

PAGE 37 OF 49

The Orlando Sentinel, Tuesday, January 3, 1995

Experts: Area's glass half empty

Water guardians warn it's time for get-tough policy

By Craig Quintana and Kevin Spear

OF THE SENTINEL STAFF

Central Florida is running dry.

Hard to believe when there's standing water in nearly every gully and low spot.

And true, the next time you turn on the tap, water still will come out. But a new forecast by the region's water guardians warns that some of our drinking water could turn overly salty, some springs could slow to a trickle and some wetlands could die of thirst — all within the next 15 years.

To head off such crises, the water guardians argue that it's time for a get-tough policy for protecting the water supply from overuse. That could mean raising water rates, using highly treated sewage as drinking water, tightening water-conservation measures and — in a worst-case scenario — clamping down on growth in the region.

Otherwise, people need only look west for a glimpse of the area's future.

"We've raised the red flag and we're trying to avoid what's happening in Tampa," said Patricia Harden, chairwoman of the St. Johns River Water Management District, which regulates water use from Lake County, Orlando and Melbourne to Jacksonville.

"We're not trying to yell 'Chicken Little,' and we're not trying to say nobody can move here anymore and use the water.

"What we're trying to say is we have a problem here, folks."

With a few exceptions — drinking wells in east Orange County are getting saltier, water flow in the Wekiva River is fragile — the dire consequences exist only on paper and in calculations produced by a few desk-

Please see WATER, A-4

Water conservation and usage rules

WATER from A-1

top computers at water district headquarters in Palatka.

But the predictions have forced water managers to mull a bevy of water conservation and usage rules that would prevent the forecast from coming true. All would have a cost — ultimately to be borne by the consumer.

"Water is going to become a scarce commodity," said Bob Mandell, a board member of Sanlando Utilities, which provides water for 10,000 Seminole County homeowners. "It's going to require people to pay more for it."

The water district has dubbed most of Lake, Orange, Seminole, Volusia and Brevard counties a "Water Resource Caution Area."

That means district hydrologists and engineers estimate that there will not be enough water available during the next 20 years to satisfy the region's growing thirst and maintain a healthy environment.

The region's primary source of water — the Floridan aquifer — is a rocky sponge that extends for thousands of feet into the earth.

Rainwater trickles through surface layers of sand and rock to saturate much of the sponge, a process called "recharge." Homes, businesses and farms pump fresh water out of the sponge. Built-up pressure in the sponge also squirts water to the surface through springs.

But pumping too much water out of the Floridan aquifer through wells could have two effects.

If pumping were to outpace the recharge, salt water deeper down in the aquifer eventually could rise up and contaminate wells.

Pumping up fresh water also reduces pressure in the aquifer, weakening the flow of water that surfaces through springs.

By identifying the region as a critical area, the district lays a legal foundation for drafting increasingly stiff regulations for water use.

If saltwater intrusion and reduced spring flow were to become likely, the designation would give water managers the footing to deny new well permits for new water withdrawals — as has been done in the most water-thirsty areas around Tampa Bay.

"It's been a hollow threat until this point," said Reid Hughes, a St. Johns board member.

Hughes, Harden and other district officials say it is unlikely the district would ever try to cut off the spigot. But many of the less drastic solutions the district will consider could force consumers to pay more for less water.

Utility officials say they agree with the general direction of the St. Johns study. Their major complaints revolve around the district's attempt to use its highly sophisticated, newly created computer model to predict specific problems within the next 20 years.

They also complain that the report overstates the environmental impacts, especially given the largely unproven credibility of the district's model.

"When you read the report, you get the impression that the sky is falling," said Rick Coleman, manager of planning and program management for the Orlando Utilities Commission, the region's largest water supplier.

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EXHIBIT (HR-1)

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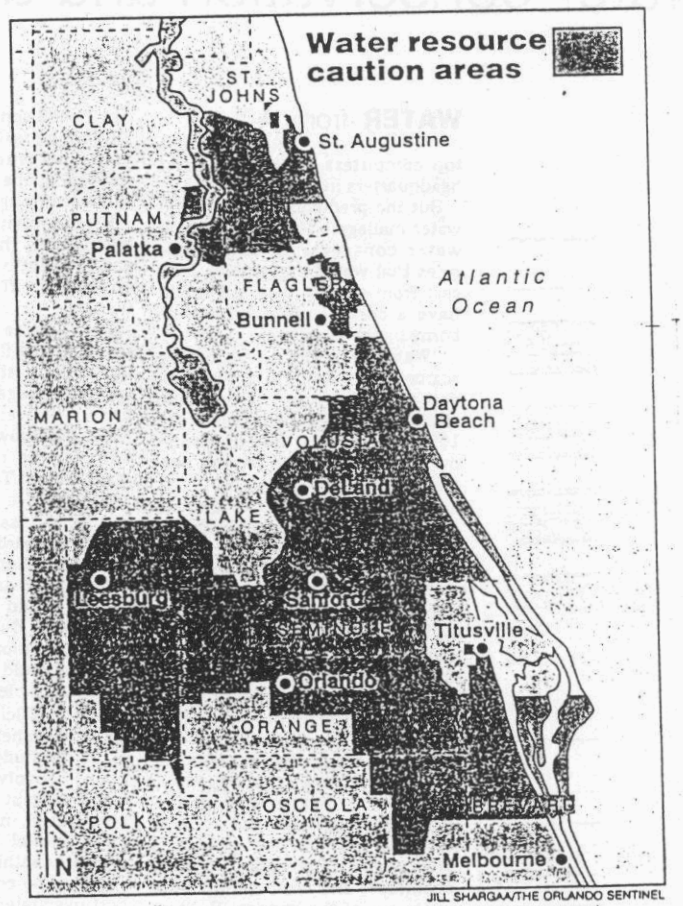


"That's the type of thing that makes companies, people and business not want to move into an area," he said. "We want to react just enough, not overreact and scare somebody away."

The term "caution area" is the result of a 4-year-old, $4 million effort by the district to produce the first inventory of the region's underground water resources.

The conclusions:

■ Municipal wells in east Orange and Volusia counties will begin to yield water exceeding the recommended levels for salt content within the next 20 years.

Already, wells in east Orange operated by Econ Utilities Inc. and Cocoa Beach have seen steady increases in salt content, prompting Cocoa Beach to abandon some production wells and to shift pumping away from others considered imperiled.

Large wells operated by Orange County, OUC and other users are located in places where overly salty water is projected to invade in coming decades.

Well fields near the coast in Volusia County "will be unable to deliver adequate quantities of water of suitable quality to meet the projected demand in 2010," according to the district's forecast.

Salty water may also become a problem in the Deltona area within the next 20 years, district hydrologists say.

■ Although hard to see with the untrained eye, several major springs and related waterways will be affected by Central Florida's thirst.

If the district's predictions were to come true, the Wekiva River would suffer a 16 percent drop in the amount of water flowing below State Road 46.

The missing water — 26 million gallons a day — results from a fall-off from the river's feeder springs, including Wekiwa (13 percent), Rock (19 percent), Sanlando (43 percent) and Starbuck (49 percent).

Similarly, a number of springs in Volusia, Lake and Seminole counties also would experience significant declines in flow, including Blue Spring — where a large population of endangered manatees spends the winter in the 72-degree spring run.

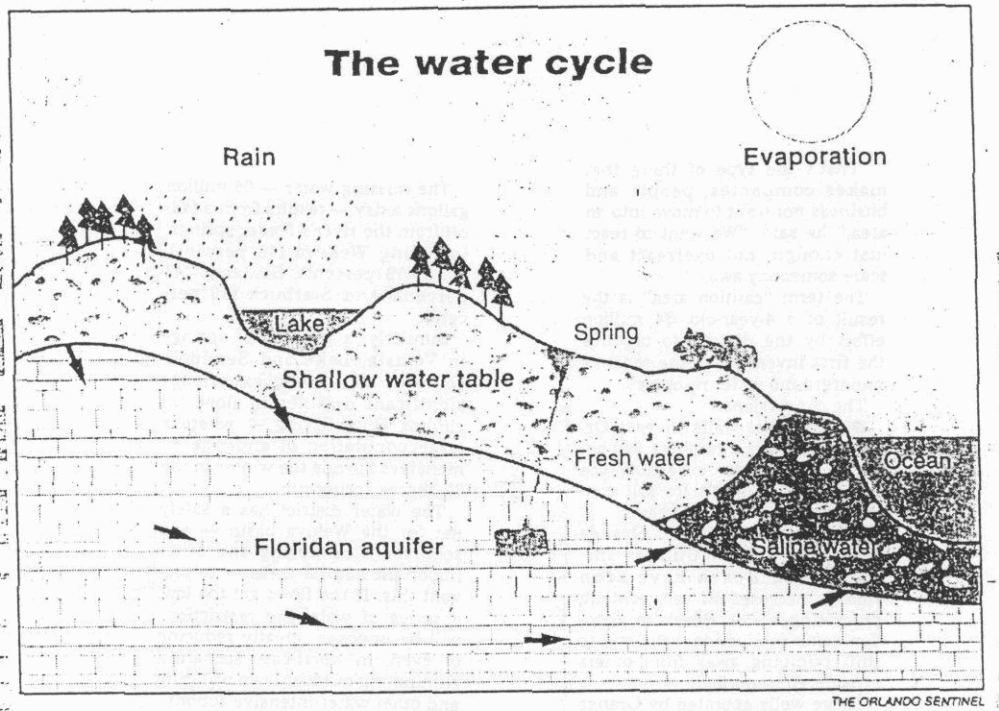
The water district has a safety net for the Wekiva basin — and soon for Blue Spring and other important natural areas — to prevent this. If the flows get too low, a series of water-use restrictions will be imposed, greatly reducing or even, in worst-case scenarios, eliminating outdoor lawn watering and other water-intensive actions.

The same deep underground reservoir that fuels the springs also plays a key part in keeping wetlands wet. The district has developed predictions on what will happen to individual wetlands as the pumping of ground water increases.

Although the district lacks the ability to predict the impact, water managers say area lakes would also remain low, as the total amount of water in the aquifer diminishes.

Some of the utility directors question whether the district can

have a cost — to the consumer



The Floridan aquifer, which provides most of our drinking water, is continuously refilled by rain.

Less than a quarter of all the rain that falls on Central Florida seeps down through the ground, creating a shallow water table underneath the region's sandy topsoil.

Some of that water penetrates farther down to the porous rock of the Floridan aquifer, a process called "recharge."

This steady filling of the aquifer causes some fresh water to leak upward from the ground through springs. It also allows people to pump drinking water from wells without emptying the aquifer.

It is evaporation – from spring-fed rivers, from treated waste water, from the ocean and from other water bodies – that helps form the clouds that bring more rain.

force such sweeping changes to Central Florida's future on the basis of unproven models.

"They don't really have this as pinned down generally as they say they do," said OUC's Coleman, echoing his counterparts in Leesburg and Palm Coast. "These models are not infallible."

Coleman and others are concerned that the district will use the models to make decisions on whether to grant new consumptive use permits (CUPs) for water withdrawals. OUC's permit comes up for renewal in 1999.

"That's affecting me, you and the people who want to move to this area, and it better be based on good information," Coleman said.

St. Johns district officials largely dismiss the criticism. Their models — considered among the most sophisticated in the state — are essentially the only game in town. While they concede their predictions likely aren't 100 percent accurate, no one can do better.

"We realize we certainly haven't approached perfection," said Barbara Vergara, who spearheaded the research. But "we have to use the best data available."

The models will be refined and become more detailed with each new study conducted for each new permit, she said.

For the moment, the district won't use the models to reject any new permits. But in coming years — district officials are somewhat vague on the date — the models could become the basis for saying "no" to new wells.

"It's doubtful that the first few through the door are going to trip any thresholds," Vergara said.

But during a talk to Volusia officials last year, she cautioned elected officials that the district would not hesitate to deny permits whenever the predictions are proved by changes in actual water conditions.

"If there truly are problems, through our CUP process, they won't be allowed to happen," she said.

St. Johns board member Hughes is just as blunt.

"The ultimate growth management tool is going to be the permitting of water," he said. "We're on the edge, if not right in the middle, of looking at a moratorium on permitting for certain areas.

But just saying "no" remains the district's last resort. The district already has begun to meet regularly with major water suppliers to work up options to decrease the strain on the underground supply.

The district will begin studies on these and other options in January and work with water suppliers and municipalities to implement the best ones in 1996.

"I would think after two years, we'd be ready to make some decisions on these alternatives," Vergara said.

Although the options are varied, a common thread remains: Each is more expensive than simply pulling more water from the ground.

Central Florida currently enjoys some of the cheapest water in the state and in the nation.

Ultimately, cost really isn't a factor when the question is drinking water, said Charles Lee, senior vice president of the Florida Audubon Society. Because water is vital, politicians, utility directors and customers will always be willing to pay, he said.

But the models are telling the district it soon is going to have to start making unpopular decisions that change the way we use water.

Any doom-and-gloom warning will be meaningless unless the district is willing to outlaw new water withdrawals, Lee said. Such a step would mean crossing some of the most powerful interests behind the region's growth engine.

"Do our public officials have the stamina to make the tough decisions that mean somebody wins and somebody loses? Some of these questions come down to changes that have to be made in human practices and behavior."

But district officials say they are serious about clamping down on consumption. Up to now, they've never had the justification to force the changes.

That has changed.

"Most people say, 'They've cried wolf at the door' in the past and there's never been a wolf," Hughes said. "Well, the wolf is here now."

EXHIBIT (CHR-1)

PAGE 44 OF 49

Monday, September 26, 1994 THE NEWS-JOURNAL

Water conservation needed

EDITORIALS

Unless Volusia County residents, farmers and businessmen use much less water in coming years than experts predict, the county could exceed the daily limits of its natural fresh water supply by 2010.

Trees and other vegetation, particularly in the middle of the county, could begin to change as the ground below was sucked dry by well pumps. West Volusia's beautiful springs might spew dramatically less water, depriving downstream wildlife and shoreline plants of the life-sustaining resource. Drinking-water wells on both sides of the county could become contaminated with salt water as utility managers futilely tried to meet customers' seemingly insatiable demands.

Findings such as these are part of the St. Johns River Water Management District's preliminary report on future needs for, and potential sources of, water in Volusia County. The report, drafted over the past few years, calls for most of the county to be designated as a "water resource caution area."

THE LABEL WOULD bring the county increased attention from the water district. The district has promised to intensify efforts to promote water conservation, wastewater reuse and better well-field planning in the designated areas. Such measures would be welcome in Volusia County.

Designation as a caution area also would send to Volusians the much-needed message that the county's water supply problems are too serious to be ignored or left to be solved solely by government agencies and utility operators.

According to district projections, population growth will be responsible for the greatest increase in water use in Volusia County. As more and more households and businesses are added to city water systems, daily withdrawals from the aquifer by public water suppliers will more than double between 1990 and 2010 if Volusians don't begin using water more wisely.

Much of the responsibility for reducing the impact of new residents and businesses on the water supply lies with building regulators. For example, municipal governments should help slow the growth in water demand by adding to building codes requirements for low-flow indoor plumbing fixtures and outdoor hookups to reclaimed water systems.

However, increased water conservation by established residents and businesses also is vital. Everyone should seek to use the smallest possible amount of water for every task, from brushing teeth to watering lawns.

As Volusia County's impending designation as a "water supply caution area" suggests, the continued availability of drinking water, and the health of both the environment and the economy depends on increased conservation.

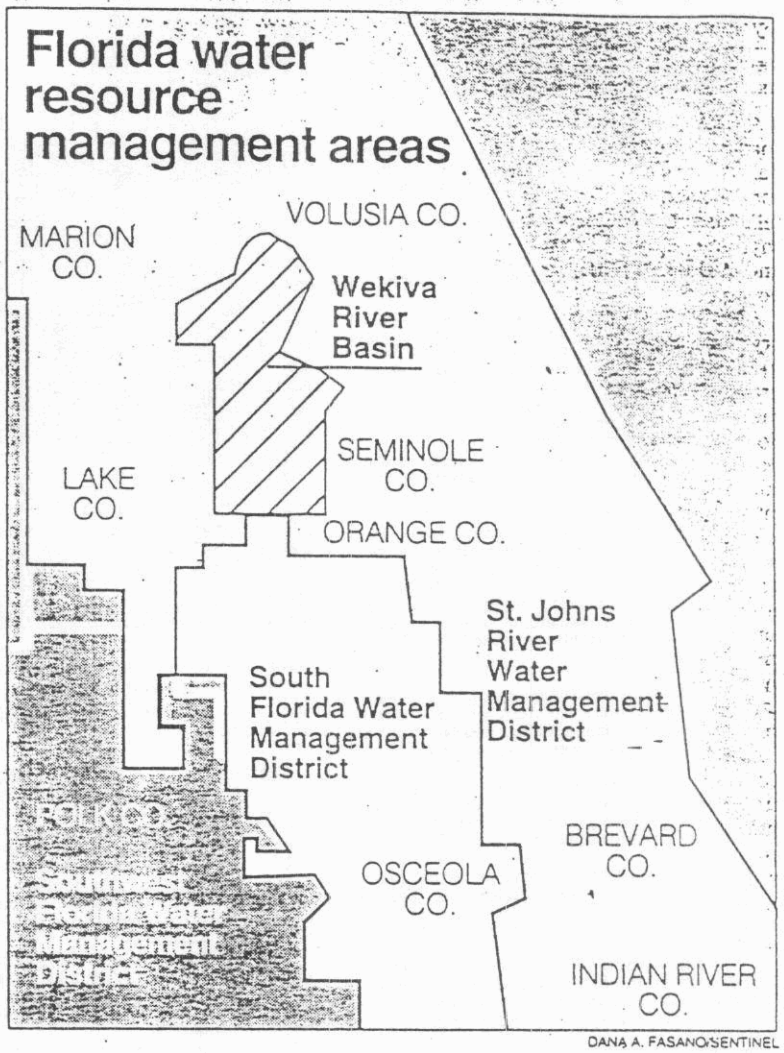
EXHIBIT (CHR-1)

Rules on water depend on where you live

Water conservation rules are in effect year-round for most of Central Florida. Those rules are enforced by three water management districts. However, local county and city governments within those districts may enforce stricter rules. When necessary, districts may tighten conservation measures.

Residents who do not follow the rules may be fined from $50 to $500, depending on the number of offenses. However, the districts are more interested in educating people about the rules than in handing out fines, officials say.

There are five districts statewide. The map (right) shows the boundaries of the three districts in Central Florida. Here's a look at the water conservation rules in those three districts and the areas within those boundaries that have imposed their own rules. Exceptions to these rules may be made for situations such as the installation of new sod. Call your district for details.



DANA A. FASANO/SENTINEL

■ **St. Johns River Water Management District:** This district covers 19 counties, including Seminole, Volusia and Brevard, most of Lake and parts of Orange and Osceola. Watering is not allowed between 10 a.m. and 4 p.m. daily. However, watering is allowed anytime if residents are using reclaimed water or low-volume irrigation methods. Car-washing is allowed anytime if a hand-held hose with an automatic shutoff nozzle is used.

The St. Johns district also includes the Wekiva River Basin, an area of 376 square miles. The basin is bordered by the St. Johns River and Interstate 4 to the east, State Road 50 to the south, County Roads 439 and 437 to the west and State Road 42 to the north. Rules for this area are the same as for the St. Johns district. However, the district may enforce stricter rules if the water level of the Wekiva River drops to 7 feet above sea level. Stricter rules most recently were in effect from June 1993 to July 12, 1994.

Details: (800) 232-0904, St. Johns district; (407) 897-4300, Wekiva River Basin.

Volusia County is part of the St. Johns district, but it has its own rules: Residents with automatic timers on their irrigation systems and with odd-numbered addresses can water from 4 to 8 a.m. Mondays, Wednesdays or Saturdays. Those with even-numbered addresses can water during those hours on Tuesdays, Thursdays or Sundays.

Residents without automatic timers can water from 4 to 8 a.m. and from 5 to 9 p.m., on their appointed days. Watering and car-washing are not allowed on Fridays.

Details: in DeLand, (904) 736-5998; in Daytona Beach, (904) 254-4490; and in New Smyrna Beach, (904) 423-3359.

Melbourne also has its own rules: Residents cannot water between 10 a.m. and 6 p.m. daily. Details: (407) 722-6026.

■ **Southwest Florida Water Management District:** This district covers 16 counties, including southwest Lake and most of Polk. Lawns may be watered only two days each week. Residents with even-numbered addresses may water on Tuesdays and Saturdays. Those with odd-numbered addresses may water on Wednesdays and Sundays. No watering is allowed between 10 a.m. and 4 p.m. or on Mondays, Thursdays or Fridays. Vehicles may be washed anytime if a hose with a shutoff nozzle is used.

Details: (800) 848-0499.

■ **South Florida Water Management District:** This district covers 16 counties, including most of Osceola, part of Polk and about half of Orange. Watering is not allowed between 9 a.m. and 5 p.m. daily.

Orange County, though, has its own rules: Watering is not allowed between 10 a.m. and 4 p.m. daily. In Osceola County, there are no restrictions, but conservation is encouraged.

Details: (800) 432-2045.

EXHIBIT (CHK-1)

PAGE 46 OF 49

Volusia, Flagler have a lot riding on water conservation efforts

By KRYS FLUKER
From Our West Volusia Bureau

Water officials in Volusia and Flagler counties are struggling to wring every drop of use from the water being pumped out of the Floridan Aquifer.

Efforts range from the St. Johns River Water Management District's experiments with cutting-edge conservation techniques, to cities that urge their residents to simply turn off the tap.

It's a high-stakes game.

According to recent projections by the water management district, Volusia County — which has its own, almost completely self-contained water supply — is in danger of seeing water levels drop considerably in the next 15 years if growth continues at its expected rate.

The only remedy, district, county and city officials agree, is to reduce the amount of water used per resident.

"We need to seriously look at our water consumption," said Stephen Kintner, Volusia County's environmental management director. "The key issue is this: There is no water shortage in Florida . . . what we have is a cheap water shortage.

"There are relatively painless ways that we can conserve water. If we implement those, we'll drastically reduce our water consumption."

In fact, Volusia and several municipalities are already trying some measures to reduce water consumption.

One of the biggest areas is wastewater reuse.

"We've got to stop using water one time and throwing it away," said Don Feaster, executive director for the Volusia City-County Water Cooperative.

When water goes down the drain or is flushed, most people don't give it a second thought — except perhaps when they see their sewer bill, or have to fix a faulty septic tank. But for residents hooked up to a sewer system, there's a good chance their used water is being reincarnated.

In such cases, the wastewater goes from the home to a treatment plant where it is cleaned to near drinking-water standards — sometimes it's cleaner than water pumped from a well. From there, the water is piped out and used for irrigation.

Richard Dembinsky, water-wastewater engineer for the city of Daytona Beach, estimates the city reuses an average of 2.5 million gallons a day, which is used on golf courses, city properties and median strips for irrigation.

Some cities, such as New Smyrna Beach, DeLand, Holly Hill, Ormond Beach, Edgewater and Port Orange, take reuse one step further. Some residents in those cities have treated water pumped directly to their houses for use in irrigation.

New Smyrna Beach has coined the name "brightwater" to describe the new service, and Port Orange is spending $4.5 million to hook up more than 1,000 residents with the dual water systems, officials for those cities said.

Southern States Utilities, which serves most of the Deltona area, sends its treated water to two area golf courses. Palm Coast Utilities, which serves two-thirds of Flagler County's residents, has a thriving reuse program as well, says Flagler County planner Ken Koch.

Some residents regard the recycled water with suspicion, officials say.

Darryl Crossland, Edgewater's assistant utility director, said the city advises residents not to let children or pets play in the water while it's spraying, but adds that it isn't dangerous, especially after 10 or 15 minutes of sunlight.

One problem, of course, is that residents — if they're environmentally conscious — don't irrigate much when it's raining. That leaves the city with a lot of treated water and nowhere to store it, said Fred Griffith, public utilities engineer for Port Orange.

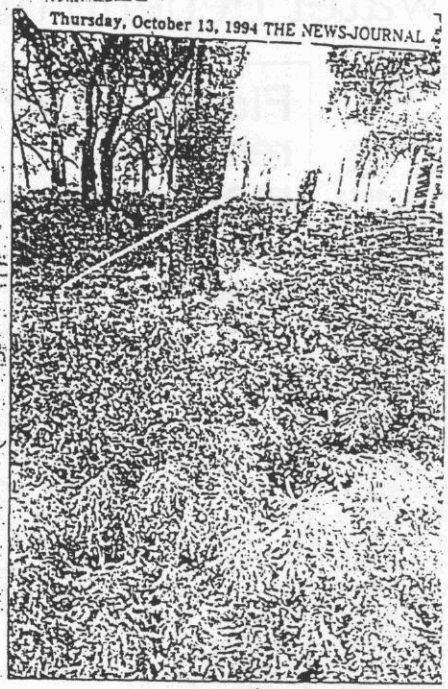
New Smyrna Beach has come up with a solution to that problem in a joint project with the water management district.

The city will be digging a 900-foot well, but instead of taking water out, it will put it in — storing it in a deep, otherwise salty part of the aquifer. The treated water is supposed to form a bubble reservoir that can be tapped when rainfalls are down, said Tom May of the city's water utility.

"We have a possibility of putting 90 million gallons" of treated water into aquifer storage, May said.

Tom Carey, who heads Volusia County's groundwater program, sees three benefits to wastewater reuse.

The lawns, golf courses and other areas aren't being irrigated with drinking-quality water, reducing withdrawals from the aquifer; the water used for irrigation has a good chance of recharging into the aquifer, being cleaned along the way — and cities aren't dumping as much treated wastewater into rivers and lakes.



Thursday, October 13, 1994 THE NEWS-JOURNAL

News-Journal photo by Peter Bauer

Sprinklers spray water that later freezes to form a protective covering for tree fern during a cold snap Feb. 3 on the Carol Murphy property north of DeLand.

Right now, much of the wastewater treated on the east side of the county ends up in the Halifax River.

Eventually, the water cooperative plans to get involved in coordinating water re-use efforts among its members, most of which are on the east coast.

Reusing water is a way to cut down on the amount people need to pull from the aquifer — such an important method that the water management district has created a position to monitor programs, said Barbara Vergara of the district.

Many utilities are also working on methods to convince consumers to reduce their usage. Some cities provide information on conservation in water bills; others are considering offering incentives to install water-saving devices.

Volusia County is considering incentives, and Carey is particularly keen on a gauge that automatically prevents timed water sprinklers from spraying if rainfall has been sufficient for irrigation.

Daytona Beach has been so successful in its attempts to conserve water that the city's water demands haven't increased for 10 years, Dembinsky said. The city's not resting on its laurels, however — it plans to send out 22,500 mailers urging residents to greater conservation efforts.

The water-management district offers several plans that target specific industries.

Thousands of restaurants have been provided with table tents explaining that water will only be served by the glass, and the district has targeted hotels and motels with a campaign that encourages them to install water-conserving shower heads and toilets.

The district has also devoted a major educational push to xeriscaping, a landscaping technique that replaces traditionally thirsty plants with native, low water-use vegetation.

And by now, every homeowner is familiar with the district's watering and car-washing restrictions. Those will likely be in place forever, officials agree.

Of course, the greatest motivator is the almighty dollar. Some cities have adopted graduated rate schedules that charge residents more per gallon as their usage goes up.

"That really discourages the big users," Ms. Vergara said.

The bottom line is this: If people don't stop using water like, well, water, they're going to end up paying much more for it, Volusia County's Kintner said.

"This is not a crisis. We're not going to run out of water tomorrow," he said. "But if we don't do something, we will have a crisis in 15 or 20 years."

EXHIBIT (CHK-1)

PAGE 47 OF 49

Program to address water-food connection

DAYTONA BEACH — The growing competition for freshwater resources and its possible effect on world food supply will be the theme of the 11th annual World Food Day teleconference this week at Bethune-Cookman College.

The three-hour program originating from George Washington University in Washington, D.C., will be broadcast from noon to 3 p.m. Friday in Room 231 of B-CC's Fine Arts Building.

Organized by the U.S. National Committee for World Food Day, a coalition of 450 private voluntary groups, the annual teleconference also is supported by the U.N. Food and Agriculture Organization and the federal government.

The water-food theme of this year's program reflects a widespread concern among development experts that both the quantity and quality of water available for human use are increasingly at risk as agriculture, industry and urban sanitation systems compete for shares of a finite water supply.

B-CC is one of more than 1,000 sites worldwide that will participate in the teleconference. During the third hour of the program, an international panel of experts will field questions.

The teleconference is open to the public.

For more information, contact Dr. Leonard Lempel, associate professor of social science at 255-1401, ext. 344 or 237.

EXHIBIT (CHR-1)

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Area motels checking out methods for saving water

New shower heads among recommended equipment

By THOMAS S. BROWN
News-Journal Business Editor

DAYTONA BEACH — Tourism, the biggest industry on the eastern edge of the St. Johns watershed, is also its thirstiest.

The typical tourist who checks into a Daytona Beach-area motel will cool and cleanse himself with anywhere from 60 to 180 gallons of water each day, according to measurements taken by the St. Johns River Water Management District.

That adds up to almost 2 million gallons of water daily to entertain and pamper Volusia's motel guests.

"In general, the bigger the hotel the more waste there is," said Yaping Wang, a district economist who earlier this year collected data on water use in 37 Volusia hotels and motels.

"The chain hotels want to make sure every guest is satisfied. Water use is usually the last thing they're thinking about. But a small mom-and-pop motel watches its bottom line very closely," Wang said.

Water isn't cheap. Wang estimates most motels in East Volusia pay about $5 to $6 for each 1,000 gallons they draw from municipal water systems and send back to sewage treatment plants.

To help conserve the region's underground water supplies, the water management district has been trying since February to persuade area motels to install various water-saving devices in guest rooms.

The recommended equipment includes:

- Shower heads that reduce water flow from 5 gallons to 2.5 gallons per minute.
- Aerators for sink faucets to reduce flow from 4 gallons to 1.5 gallons per minute.
- Rubber dams to be placed inside toilet tanks, reducing the water needed for each flush from 7 gallons to less than 4.

District officials said it would cost only about $16 to install all three items in each guest room. To make the investment more attractive, the district has offered to reimburse the motel owners for half of the expense.

However, Wang said the conservation program has been slow in attracting support. Of Volusia County's 337 lodging properties, only 32 so far have signed up for the program.

"A lot of hotels have told me they haven't heard about the program, but we sent each one of them a letter about it," Wang said. The program also has been promoted by the Motel-Hotel Association of the Daytona Beach Resort Area.

Fourteen motels in other areas, mostly in St. Augustine and Brevard County, also have agreed to buy the water-saving devices.

The response, though limited, has used all of the $50,000 the water management district set aside for the project in its budget year that ended Sept. 30.

This year, Wang said district officials have decided to concentrate conservation aid on low-income housing projects but will still offer motels technical assistance. Interested hotel and motel managers can call Wang at (904) 329-4402.

Wang has visited 65 motels since February, checking a sample of 10 to 15 rooms at each site and measuring the water flow in the plumbing of each room. He then added up his figures and presented a report to the motel owner, showing the current volume of water use and how much could be saved through conservation.

"We tell them a motel can reasonably achieve a 20 percent reduction in their indoor water use by using these devices," Wang said.

Follow-up research is planned in coming months after participating motels finish installing the devices. District officials will check the water usage and room occupancy levels at the motels to see if the projected water savings was actually achieved.

One of the first hotels to sign up for the program was El Caribe Resort in Daytona Beach Shores.

The hotel already had installed low-flow shower heads and faucet restrictors in its 56 newest rooms, which were built three years ago. Now, it will add the same equipment to its 100 other older rooms.

"We've had no complaints from the guests," said resort spokesman Kay Ward. "There's no appreciable difference in the water pressure."

According to Wang, small motels generally use about 80 gallons of water per occupied room per day, while larger properties have consumption in the 200- to 280-gallon range.

Several factors account for the difference, he said.

Larger motels tend to have bars, restaurants and laundry rooms on the premises, increasing their per-capita water use. Larger motels also usually have a higher ratio of service workers per room; those staff members also use water, often taking a shower when they finish a shift.

Here is a list of properties that have agreed to install the water-saving devices. They will receive reimbursements ranging from $96 to $2,380 depending on the number of rooms to be retrofitted:

- Daytona Beach: Ocean Sands, Holiday Inn-Oceanfront, Best Western-La Playa, Daytona Beach Marriott, Breakers Beach, Holiday Inn-Speedway, Holiday Inn-Oceanside, Howard Johnson Plaza-Hotel, Beachcomer Inn, Tropicana, Quality Inn on the Beach, Casa del Mar, Skyway Motel, and Mayan Inn.
- Daytona Beach Shores: Dream Inn, El Caribe Resort, Palm Plaza, Comfort Inn Oceanfront, Holiday Shore Beach Club, Acapulco Inn, Colonial Palms, Treasure Island, Days Inn Oceanfront South, Ramada Inn Surfside, Sea Club IV, Atlantic Waves, and Perry's Ocean Edge.

EDITORIAL PAGE

Conserving water could stave off predicted crisis

EDITORIALS

Many Volusia and Flagler County residents came out of the 1980s, a decade in which varying levels of drought gripped the area, with new attitudes about water.

People started talking about the limits of the fresh water supply. Conservation became the water buzzword for the '90s. Largely because of public demand, water managers began to focus more on the future.

The St. Johns River Water Management District, for example, launched a massive study of whether the 19-county area's water sources could stand up to growing demands between 1990 and 2010. The district's study, released recently, produced little good news for Volusia and Flagler counties. In a series of reports this week, The News-Journal looked at what is being done and what more needs to be done to prevent the district's dire predictions from coming true.

Unless homes, farms and businesses use much less water in coming years than experts predict, demand in much of the two-county area could exceed the water supply early in the 21st century. Trees and other vegetation, particularly in the center of Volusia County and north of Palm Coast in Flagler County, could begin to change as the aquifers below are sucked dry.

West Volusia's springs, which supply water vital to wildlife and plants, could slow drastically. Drinking water wells could be contaminated with salt. Water bills could soar if utility operators are forced to transport water long distances or use costly, energy-greedy equipment to desalinate water.

THE NEWS-JOURNAL series showed that the drought of the 1980s prompted many people to do more than talk about water problems. Commendable progress has been made in some areas of water conservation, particularly in recycling water from sewage treatment plants.

Only a few years ago, all the water treated at Volusia and Flagler County sewage plants was dumped into waterways. Public and private utilities in both counties since have invested millions in reclaimed water treatment and delivery systems. Some reclaimed water systems, including Daytona Beach's, serve only golf courses and other large tracts of public land. In cities that have made gray water available to homes, it has become a coveted resource.

Members of the Volusia City-County Water Supply Cooperative reclaimed about 5.5 million gallons of water a day in September. That means more than 20 percent of the water that would have been dumped into East Volusia waterways was reused instead.

Concern about water also has resulted in research into ways of cutting water used by farms, hotels and other businesses. Much more needs to be done if the predicted water crisis is to be averted. For instance, utility operators should greatly expand reclaimed water systems. That would require investments of millions more dollars and solutions to a few tough engineering problems. The end to dumping of waste water into natural waterways, which harms the environment as well as wastes water, would be well

worth the money. And the technical problems, such as a lack of ways to store reclaimed water during wet weather when no one wants to irrigate, are not insurmountable.

Water utilities also should adopt rate structures that encourage conservation. "Inverted block" rates, in which the price per thousand gallons of water increases as consumption increases, are a good option. Discounts for customers who steadily cut water use are another promising approach.

City and county governments should mandate low-flow plumbing fixtures in all new construction and major renovations. The water district and city and county governments should aggressively enforce all lawn watering and car washing regulations and consider making such rules more stringent.

THE AREA'S WATER problems are too serious, though, to be solved solely by government agencies and water utility operators. Individuals should tell government and utility decision-makers they support spending public money on water conservation. They should push for necessary changes in building codes.

People also can make a difference by installing low-flow plumbing fixtures in their homes voluntarily, and by striving to minimize water use.

The availability of affordable drinking water through 2010 and beyond will be crucial both to the quality of life and the economic prosperity of Volusia and Flagler counties. Limits on how much water is taken from the ground, how fast it is taken and from where it is taken also will be vital to the health of our environment.

Unless the water conservation movement continues to gather momentum, the area's future could go down the drain.

EXHIBIT (CAK-1)
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EXHIBIT (CHR-2)

PAGE 1 OF 3

Southwest Florida Water Management District

2379 Broad Street • Brooksville, Florida 34609-6899 • 1-800-423-1476 (Florida Only) or (904) 796-7211 • SUNCOM 628-4150 • T.D.D. Number Only (Florida Only): 1-800-231-6103

7601 Highway 301 North, Tampa, Florida 33637-6759, (813) 985-7481 SUNCOM 578-2070
170 Century Boulevard, Bartow, Florida 33830-7700, (813) 533-1428 SUNCOM 572-6200
111 Corporation Way, Venice, Florida 34292-3524, (813) 483-5970 SUNCOM 549-5970
2303 Highway 44 West, Inverness, Florida 34453-3809, (904) 637-1360

December 13, 1994

COPY

Christine Arcand, Environmental & Permitting Specialist
Southern States Utilities, Inc.
1000 Color Place
Apopka, FL 32703

Subject: THIRD CLARIFICATION OF RECEIVED INFORMATION
Applicant: Southern States Utilities, Inc. (Spring Hill Service Area)
Water Use Permit Appl. No. 204842.07
County: Hernando

Reference: Chapter 40D-2.101, Florida Administrative Code
Chapter 40D-1.603(6), Florida Administrative Code

Dear Ms. Arcand:

Thank you for responding to our prior requests for clarification of received information. However, the information received on November 7 and 15, 1994, did not address all our concerns. Therefore, the permit application is still lacking important information necessary for us to complete our review. The needed item(s) and information are indicated below.

As we discussed by telephone on December 6, 1994, my review of the 24 monthly FDEP pumpage reports (December 1991 through November 1993) found that the discrepancies between District monthly pumpage quantities and SHU's monthly quantities were due to: 1) District staff clerical error in transferring SHU data to our computerized database; and/or 2) SHU staff computational error in summing the per well daily withdrawal quantity into a "total monthly" withdrawal quantity. These errors have been corrected in the revised Water Use Summary and Pumpage Analysis (see Exhibit CLR3-1).

1. Please review Exhibit CLR3-1 for accuracy and provide any corrections, as appropriate.

The aforementioned Water Use Summary and Pumpage Analysis indicates an estimated 1993 per capita use rate of 148 gpd/person (gpdp). This rate calculates to a projected six-year annual average day withdrawal quantity of about 14.0 MGD. A projected six-year peak month day withdrawal quantity of 20.0 MGD was calculated using the ratio of 1.4 (annual average day quantity to peak month day quantity). These quantities are somewhat less than your requested six-year annual average day and peak month day quantities of 16.6 MGD and 36.2 MGD, respectively.

2. Please provide additional information (e.g. revised pumpage data, population projections, etc.) to support your indicated per capita use rate of 184 gpdp and your requested six-year annual average day and peak month day quantities of 16.6 MGD and 36.2 MGD, respectively; or provide revised figures in-line with the District pumpage analysis. Please be sure to refer to the Water Use Summary and associated pumpage analyses when justifying or recalculating the projected quantities.

The proposed water-level monitoring program indicated in the ViroGroup impact analysis report, wherein an existing public-supply production well is to be simultaneously used to measure Floridan Aquifer water-levels, is unacceptable. District staff have determined that a single-use "dedicated" Floridan Aquifer water-level monitor well must be used to measure water-levels in the Floridan Aquifer. The monitor well should be constructed into the Floridan Aquifer zone open to the depths used by SHU production wells. Additionally, appropriate equipment should be installed on the well so as to monitor water-levels on a continuous hourly basis, with the maximum and minimum of the 24-hour values for each day calculated and reported to the District monthly. If significant adverse impacts are observed during the term of the water use permit, similar monitoring at additional wellsites may be required.

3. Please submit a revised Floridan Aquifer water-level monitoring plan consistent with the above indicated recommendations. The plan should specify the proposed date of installation, the (proposed) construction characteristics of the monitor well (e.g. casing diameter, cased and total depth, etc.), type of water-level monitoring equipment (e.g. digital tape, analog-graphical, etc.) to be installed, and the frequency of water-level measurements (continuous, hourly, etc.). Also, please include a scaled map showing the (proposed) location of the monitor well.

The ViroGroup impact analysis report appears to indicate that Wetland C is the only wetland within the one foot drawdown contour in the surficial aquifer during the "16 MGD for 90 days" analysis. Although there is potential for other wetlands in this area to be effected by the requested pumpage increases, the District proposes that only Wetland C and a "reference" wetland be monitored. The "reference" wetland should consist of a wetland that is similar to, and located within the general vicinity of, Wetland C. The proposed monitoring may not provide adequate information for District staffs' future evaluation of the effects the wellfield is having on these wetlands. Moreover, if adverse impacts are observed in Wetland C during the term of the water use permit, monitoring in additional wetlands may be required.

4. Please submit a revised monitoring plan which incorporates the following:

   A. Baseline qualitative and quantitative vegetative assessment for Wetland C and the "reference" wetland which would be performed prior to increased pumping within Wells 12, 22, 26 and 34;

B. Monthly water-level monitoring within Wetland C and the reference wetland;

C. A provision which requires an analysis of significant changes in Wetland C's water-levels relative to the water-level changes within the reference wetland;

D. A provision requiring additional vegetative assessment if water-level monitoring shows significant ongoing reduced levels within Wetland C relative to the reference wetland;

E. A provision requiring compensation for any wetland impacts which occur as a result of wellfield pumping.

Please contact David S. Sauskojus, Environmental Scientist, Brooksville Permitting Department, at extension 4370, regarding this issue.

To expedite the processing of your application, please furnish us with all requested information within 30 days from the date of this request. If the requested information cannot be provided within 30 days an extension may be requested for a reasonable period of time, provided acceptable justification is given for the extension. Your request for extension must be received within 30 days from the date of this letter.

If I can be of further assistance, please contact me at extension 4324 at either (904) 796-0515, 796-7290, or 796-7291. If you are calling from a rotary dial telephone, please call 904-796-7211.

Sincerely,

Steven W. DeSmith

Steven W. DeSmith
Staff Hydrologist
Brooksville Permitting Department
Resource Regulation

SWD:mjs847
Enclosure
cc: File of Record
John W. Parker, P.G., Water Use Manager
David S. Sauskojus, Environmental Scientist

EXHIBIT _____ (CAE-5)

PAGE 1 OF 74

Proposed Enhancements To SSU Conservation Program

SSU
Southern States Utilities

Water For Florida's Future

Proposed Enhancements To SSU Conservation Program

I. Water Conservation Public Education Program

II. Marco Island Water Conservation Plan

III. Water Conservation Proposal For Targeted Communities

IV. Conservation Program Costs

EXHIBIT (CHR-3)

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SSU
Southern States Utilities

Water Conservation

Public Education Program

EXHIBIT (CHL-3)

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I. SSU'S COMMITMENT TO FLORIDA'S WATER POLICY

Southern States Utilities (SSU) is Florida's largest investor-owned water, wastewater and reuse utility, serving 112 communities in 25 Florida counties. With almost 500 employees, SSU serves nearly half a million people from as far north as the Panhandle to as far south as Marco Island. Communities served range in size from more than 60,000 people to as few as five people.

The influx of an estimated 900 people each day moving to Florida represents growth to SSU as well as new challenges. The arrival of new residents means new homes and additional demands placed on Florida's fragile aquifer system. Much of Florida's natural systems and a large portion of its economy are dependent on an adequate supply of high-quality fresh water.

SSU supports Florida's policy of water conservation and reuse of reclaimed water to preserve and protect this precious resource. The company provides a variety of programs and information to encourage and support water conserving techniques. In the last several years, the company's award-winning conservation programs have reached millions of Floridians, well beyond SSU's own customer base.

Since 1991, SSU has conducted an extensive public information and educational program on water conservation with the following objectives:

- To increase customer awareness of the value of potable water and the importance of water conservation;
- To educate customers about how to eliminate unnecessary use of water and maximize efficiency of water use;
- To help customers identify inefficient water uses and employ methods to reduce actual water use (water audits, plumbing retrofit devices, outdoor moisture sensors);
- To affect public policy to provide meaningful water conservation and environmental protection; and,
- To engage in partnerships with public agencies and environmental organizations.

SSU has focused its efforts on public education through a variety of means ranging from youth programs to direct mail campaigns. Over the years, key elements have continued to be modified and expanded. The most recent efforts include a rebate program for low-flow toilets and moisture sensors, as well as financial sponsorship of public programs in cooperation with environmental organizations.

To ensure that the company's conservation efforts remain focused and effective, SSU established a Conservation Committee in May 1994. The committee, in addition to reviewing existing programs, is preparing to launch a comprehensive statewide conservation program in 1996, targeting six communities for evaluation. This program will serve as a guide for future efforts by SSU.

II. PROFESSIONAL INVOLVEMENT

SSU's vision is to be the preferred supplier of water and wastewater services in Florida. Our pledge is to achieve industry leadership in customer service, product quality, safety, technical ability, and environmental stewardship.

SSU employees have published articles on water preservation and conservation that have appeared in local publications and professional water journals. In addition, staff experts have prepared comprehensive essays on important subjects, including one on the future of water resources on Marco Island and another on water reclamation that advocates innovative uses of reclaimed water. In addition, SSU employees engaged in water conservation communication are members or officers of industry organizations. These organizations serve as important forums for the discussion of issues related to the preservation of the environment and vital ecological systems in Florida.

American Water Resources Association -- Carlyn Kowalsky, SSU environmental attorney, is Secretary of Florida Section. The organization, whose members include representatives of the Florida Department of Environmental Protection and other environmental agencies, is devoted to the conservation, development, management, and utilization of fresh and marine waters and related resources together with their environmental aspects.

Florida Water Works Association -- Karla Olson Teasley, Vice President of Customer Services, is President of the FWWA, a section of the National Association of Water Companies. This is her second term in that capacity.

National Association of Water Companies -- Karla Olson Teasley, Vice President of Customer Services, is on the national board of directors of this organization.

American Water Works Association -- Among SSU's members in the Florida Section of AWWA are Ralph Terrero, Manager, Environmental Services; Christine M. Romeo, Senior Planning Engineering and conservation coordinator; and Tracy Smith, Manager of Government Relations. Mr. Terrero is on the reuse committee and on the water supply committee of the Florida Section. The AWWA is a national organization comprised of many different professional disciplines. It is recognized for its leadership in water conservation promotion , in particular the Water Wise clearinghouse of research, technical and general information materials on water conservation promotion and programs. The organization also publishes numerous documents for public distribution by member utilities.

Water Environment Federation -- Ralph Terrero, Manager, Environmental Services, and Christine M. Romeo, Senior Planning Engineer and conservation coordinator, are members. Mr. Terrero is on the reuse committee of the Florida section. The WEF membership is comprised of engineering, technical and scientific disciplines. Members monitor federal, state and regional wastewater and reuse policies and new technological advancements in the industry.

III. HONORS AND AWARDS

A. Water Conservation

- In 1993, the company received the *Governor's Environmental Education Award* in the Corporations and Businesses category. Sponsored by the Environmental Education Foundation of Florida, the award recognizes outstanding contributions and achievements of the individuals, educators, organizations, agencies and businesses that have established effective environmental education programs in Florida. All entries had to demonstrate how the program could be used as a model or duplicated in other areas of the state. (See certificate in attachment)

- In 1993, SSU earned first place for the Best Education Program Category in the *Innovative Water Conservation Competition.* Sponsored by the Florida section of the American Water Works Association, the award recognizes individuals, utilities and industries that develop successful methods for efficient use of water. Each entry required a description of the program; information related to planning, implementation and evaluation of the program; objectives, strategies, techniques, and resources (including budgets); and results in terms of how success was measured, conformance to budget, and extent to which objectives were met. The awards were presented at the 1993 Florida Water Resources Conference. (See certificate in attachment)

- In 1993, SSU earned second place in the Best Water Conservation Plan, Small Utility Category in the *Innovative Water Conservation Competition.* Sponsored by the Florida section of the American Water Works Association, the award recognizes individuals, utilities and industries that develop successful methods for efficient use of water. Each entry required a description of the program; information related to planning, implementation and evaluation of the program; objectives, strategies, techniques, and resources (including budgets); and results in terms of how success was measured, conformance to budget, and extent to which objectives were met. The awards were presented at the 1993 Florida Water Resources Conference. (See certificate in attachment)

- In 1992, the company received first place in the Education Category of the *First Annual Florida Xeriscape Awards Program* sponsored by the Southwest Florida, South Florida, and St. Johns River Water Management Districts and the American Society of Landscape Architects. The award recognized SSU's 4-H Xeriscape/water conservation education project. (See certificate in attachment)

- In 1992, SSU earned an Award of Distinction in the Institutional Program Category of the *Central Florida Image Awards* sponsored by the Central Florida Chapter of the Florida Public Relations Association. FPRA is a professional statewide association of public relations practitioners. The annual competition, which is the largest and most prestigious of its kind in

Florida, acknowledges and awards meritorious public relations campaigns. Entries are judged by a panel of public relations experts throughout the U.S. (See certificate in attachment)

- In 1992, SSU won an Image Award in the Public Service Category of the *Central Florida Image Awards*. The award was sponsored by the Central Florida Chapter of the Florida Public Relations Association, a professional statewide association of public relations practitioners. The annual competition, which is the largest and most prestigious of its kind in Florida, acknowledges and awards meritorious public relations campaigns. Entries are judged by a panel of public relations experts throughout the U.S. (See award certificate in attachment)

- In 1991, the company earned second place in the Programs Category in the *Innovative Water Conservation Competition*. Sponsored by the Florida Section of the American Water Works Association, the award recognizes individuals, utilities and industries who develop successful methods for efficient use of water. The FS/AWWA recognizes individuals, utilities and industries that develop successful methods for efficient use of water. Each entry required a description of the program; information related to planning, implementation and evaluation of the program; objectives, strategies, techniques, and resources (including budgets); and results in terms of how success was measured, conformance to budget, and extent to which objectives were met. (See award certificate in attachment)

B. Reuse

- In 1994, SSU won the prestigious *David W. York Reuse Award* in the 1-5 mgd category for its Marco Island Wastewater Treatment facility in Collier County. Sponsored by the Florida Water Environment Association, the award recognizes three utilities annually for their commitment to and accomplishments in developing and maintaining exemplary reuse programs. The award specifically recognizes environmental quality management of facilities, permit compliance, innovative approaches to reuse, the effectiveness of water reuse systems, and the level of public education included with the reuse project. From June 1993 to June 1994, the Marco facility, with a 3.5 mgd treatment capacity, pumped 1.4 million gallons of reclaimed water to Marco Island and Marco Shores golf courses as spray irrigation and for use in irrigation median strips in those communities. Plans include expansion of reuse to the Tommie Barfield Elementary School site and along portions of Collier Blvd.

- In 1995, the *David W. York Reuse Award* competition was earned by the Venice Gardens Wastewater Treatment facility in Sarasota County. (SSU sold the facility in December 1994 to Sarasota County) Sponsored by the Florida Water Environment Association, the award recognizes three utilities annually for their commitment to and accomplishments in developing and maintaining exemplary reuse programs. The award specifically recognizes environmental quality management of facilities, permit compliance, innovative approaches to reuse, the effectiveness of water reuse systems, and the level of public education included with the reuse project. The Venice Gardens plant, with a treatment capacity of 1.4 mgd, pumped 100% of its reclaimed water for use as spray irrigation at the Jacaranda Golf Course, Venice Gardens Golf Course and Country Club, and Pelican Pointe Golf Course.

IV. RESEARCH AND SURVEYS

A. Customer Opinion

SSU has contracted with Cambridge Reports of Massachusetts to survey customers regarding water service, quality and availability. The following are survey results that led to the design and implementation of SSU's present conservation initiatives:

- A December 1990 survey featured a sample size of 600 customers out of approximately 100,000 customer accounts. Based on the responses, 81% felt it was important/very important that SSU offer programs and services, such as information and advice, to help customers control water use. Some 86% of respondents felt water conservation was critical/very critical in their area.

- Another survey compiled in January 1994 from a sample size of 700 customers from approximately 160,000 customer accounts, indicated 51% would participate in a water conservation program to ensure Florida has enough water for the future and to help the environment. Approximately 90 percent of those who responded indicated they practiced some form of water conservation. Some 87% felt water conservation was critical/very critical in their areas. Finally, 83% felt it was important/very important that SSU offer programs and services, such as information and advice, to help customers control water use.

Based on the 1990 and 1994 surveys, combined with other research, SSU determined that a proactive conservation program should be designed to reach all service areas. Moreover, the program should become an integral part of SSU's ongoing customer relations efforts.

B. Marco Island Conservation Practices Survey

At the end of 1994, SSU launched a pilot water conservation program on Marco Island. Prior to initiation of the program, SSU conducted a benchmark survey to determine the conservation practices of Marco Island's permanent resident community. The results of the survey are being tabulated and compared against actual use of conservation devices and historical consumption practices. The information is being sorted and merged to provide a more comprehensive reflection of conservation practices and issues of concern to Islanders. The results will be used to further tailor programs on the Island; and to communicate results to customers, legislators, regulatory officials, media and civic leaders; and to refine other targeted programs planned by SSU in other communities. (See questionnaire in attachment)

V. CUSTOMER OUTREACH

A. Customer Publications

SSU emphasizes water conservation in a variety of printed materials. Since 1991, SSU has issued its *WaterWorks* newsletter (formerly Service Lines) to customers approximately three times a year which regularly includes tips and information regarding water conservation. This document is also mailed to legislators, county commissioners, administrators, and area newspapers. (See newsletter in attachment)

In 1994, to accelerate the conservation message, SSU initiated *Conservation*, a newsletter dedicated to water-saving messages. This publication is sent periodically to all SSU customers, as well as to government officials, the media and SSU employees. (See newsletter in attachment).

Most recently, the company published a special water conservation newsletter for residents of Marco Island in conjunction with the water conservation program being conducted in that community. The publication is called the *Marco Resource* and informs residents on how they can participate in this program (See newsletter in attachment)

SSU has also published the SSU handbook, a general information piece containing a section on conservation and SSU's commitment to that effort. (See handbook in attachment) The publication is offered to all new customers and at open houses.

New information items produced by SSU include a two-page conservation flyer (See flyer in exhibit), as well as a general conservation brochure (See brochure in attachment). Both publications feature conservation information specific to Florida and SSU and are designed for use at open houses, mailed, and disseminated in customer service offices.

B. Speakers Bureau

SSU's Speakers Bureau is coordinated with the efforts of employee volunteer speakers from throughout the state. To assist with presentations, the Communications Department retains a portfolio of prepared speeches illustrated with slides. Prepared presentations include 1) an overview of water conservation and 2) Xeriscape landscaping. (See scripts in attachment) These presentations are continually updated. Speaking engagements are coordinated by the Communications Department. Customer requests are generated by telephone, mail, referral and using direct mail solicitations from SSU. (See solicitation brochure in attachment). In the past several years, SSU employees have delivered more than 200 conservation presentations. More than 50 presentations were conducted during 1994. A dozen have already been presented or scheduled in 1995. During this same period, the company has hosted two dozen customer open houses at which water conservation was an important theme. (See tally of engagements by year in attachment).

C. Public Information Events/Support

SSU regularly carries the conservation message to constituencies beyond its customer base at public events and through support of community-based conservation efforts. At local events, SSU features its conservation exhibit "Every Little Drop Counts." (See photos of exhibit in attachment) These public events include assorted workshops, the Volusia County Fair, Water Week celebrations, etc. SSU has also featured a float in the annual Marco Island Holiday Parade decorated in a conservation theme. (See photos in attachment). SSU also lends financial support to community conservation efforts. Examples include Xeriscape projects in Citrus Springs in Citrus County and Keystone Heights in Clay County. (See tearsheet in attachment)

D. Informational Videos

SSU maintains an extensive library of videos with topics ranging from Xeriscape to preventing water pollution. (See list of videos in attachment) The videos are available on loan to customers or organizations who request them.

Among SSU's most popular videos is one the company developed in 1992 called "Water for Florida's Future." It is a 30-minute video that discusses Florida's future water supply, the regulations designed to protect that supply, how water utilities meet those regulatory requirements, and how utilities file for rate relief. The video features Lou Kavoras, conservation planner with the Southwest Florida Water Management District and State Representative R. Z. Safley. It was initially distributed to homeowners associations, chambers of commerce, libraries and schools, commissioners, administrators, and newspapers within SSU's service area. (See video in attachment)

E. Conservation Literature

SSU maintains an extensive library of conservation and Xeriscape literature published by the American Water Works Association (AWWA), Florida Water Management Districts, and other private and public organizations on timely topics of interest to customers. The selections are continually being researched, developed, and purchased. They are made available to customers free-of-charge upon request and are also distributed as bill inserts, used at events, provided at open houses and disseminated at SSU customer service offices. (See examples of literature in attachment)

F. Media Information

SSU maintains educational press packets containing information on Florida water issues. In 1994, the packets were sent to legislators, county commissioners, administrators, and new media within SSU's service area. (See backgrounders in attachment) In addition, the company submits feature materials to local media for publication. This was successfully accomplished most recently in Marco Island in conjunction with the water conservation program in that community. (See news release list and tearsheets in attachment)

VI. YOUTH EDUCATION

A. "Save Our Water" Video

In 1993, SSU sponsored the production of an educational music video called "Save Our Water," featuring fifth and sixth graders talking about the importance of natural water systems. Through words and song, the children increase the audience's understanding and awareness about Florida's aquifers, rivers, lakes and wetlands. The video introduces students to various water resources and helps them identify ways to reduce pollution while motivating them to use water wisely. This video was distributed at no charge to several hundred schools (elementary, middle and high schools), libraries and chambers of commerce throughout SSU's service area, as well as to legislators, county commissioners, newspapers and administrators. The video remains very popular and continues to be frequently requested. (See video in attachment)

B The Small Change Theatre

Since 1991, the company has sponsored the nationally renowned Small Change Original Theatre to provide free live theater water conservation presentations at schools within SSU's service area. Complete with costumed characters and classroom-size sets, the play follows the adventures of Captain Hydro, the champion of water conservation, and his quest to keep the fiendish Water Bandit from wasting the community's water supply. The unique water conservation program, Captain Hydro and the Water Bandit, is endorsed by the American Water Works Association and other industry organizations, as well as the U.S. Department of Energy.

The appearances are scheduled by The Small Change Original Theatre. Once confirmed, the performances are publicized by SSU in each of the communities scheduled. (See news release/tearsheets in attachment) In addition, SSU issues a letter to all participating schools and provides quantities of comprehensive teacher workbooks to the school coordinators. These information packages are sent in advance of the performances for duplication and distribution to all of the children in attendance. They are designed to augment the in-school promotion of water conservation and to involve student families outside of the classroom. (See teacher workbook in attachment)

Altogether, the program has reached nearly 30,000 children in 94 schools with the conservation message. The 1995 tour, held in the months of March and May, included 15 schools in Lake, Putnam, and Marion Counties. The 34 performances reached nearly 10,000 children. In 1994, the group visited 30 schools in Volusia, Hernando and Citrus counties, offering 54 performances that reached more than 13,500 children. In 1991, the troupe toured 10 schools, performing 21 shows that reached some 5,900 elementary students. (SSU did not schedule the group in 1992 or 1993). At the end of the round of performances, The Small Change Theatre collects surveys from the participating schools, providing SSU with a summary of the results. On a scale of 7, the rating from the 1994 program was 6.7, indicating the schools gave the program top marks for educational value (See 1994 summary in attachment)

C. Children's Conservation Materials

SSU maintains a library of information especially for children. The literature includes comic books, workbooks, and coloring books with special appeal to younger audiences. The Communications Department continually updates this library from sources including the AWWA (American Water Works Association), Florida Water Management Districts, and other private and public organizations. The materials are distributed free-of-charge to schools, libraries, youth clubs, at open houses and SSU customer service offices. (See sample materials in attachment)

D. School-Oriented Speakers Bureau

The SSU Speakers Bureau is a program managed by the Communications Department. Among the presentation available is a slide presentation on water conservation written specifically for young audiences. (See script in attachment) The presentation provides information at the elementary to middle school level and is supported by literature and visuals geared to that age group. Engagements for speakers are elicited by informational customer mailings and referrals. The speakers are scheduled from among a pool of qualified SSU volunteer speakers. While not formal members of SSU's Speakers Bureau, SSU volunteer parents are among the most active communicators when it comes to pre-school youngsters, frequently serving as guest speakers at homeroom activities or at day care/Head Start programs.

E. Special Youth Programs

1. Poster Contest/Home Evaluation -- SSU has reached school children in a variety of ways. Most recently, SSU conducted a water conservation poster contest at the Tommie Barfield Elementary School on Marco Island as part of their curriculum on the environment. Following presentations to 100 third grade students by an SSU representative, the children were challenged to complete a home water conservation survey with their family. (See survey in attachment). The children were also challenged to design an original poster reflecting methods of water conservation for judging. The winners received cash prizes, all participants earned certificates, and the teachers received plaques. In addition, a local news release publicized the winners and all the entries were featured at SSU's Marco Island water plant during an open house. (See award photos, sample posters, and news release in attachment)

2. Plant Tours -- The Marco Island water conservation tour at the company's reverse osmosis facility was attended by hundreds of local citizens, as well as county and other local officials. The science curriculum administrator from Collier County schools was on hand to compliment the school children whose water conservation posters were featured at the event. SSU underwrote the cost of transporting more than 300 children from Collier County, including the Barfield school, to the facility for the water conservation tour. (See photos on display at the R.O. plant in attachment)

3. Earth Day -- In observance of Earth Day this year, SSU distributed hundreds of Earth Saver calendars to schools in SSU's service area. The teachers who responded to SSU's

offer also requested and received additional water conservation literature pieces at no charge, as well as copies of the "Save Our Water" video. (See calendar in attachment)

4. Xeriscape Project -- SSU also sponsors youth conservation projects. One examples is the Future Farmers of America (FFA) Xeriscape project at Deltona High School. In addition to funding for materials, SSU plant operator Dan DeBaca has been named an honorary member of FFA for his volunteer activities with the organization. (See photos in attachment) Mr. DeBaca most recently assisted Future Farmer Dorian Smith with research on a water conservation presentation entitled "Florida Agriculture: Twenty Year Plan." The presentation won a first place award in the sub-district and tri-county district competitions making the student eligible for the state and national FFA competitions.

VII. ENVIRONMENTAL PARTNERSHIPS

A. SSU/4H Environmental Landscape Management Program

From 1990-1993, SSU initiated and funded the SSU/4H Environmental Landscape Management Program. The program, underwritten with a grant of $10,000, was designed to give 4H youths and volunteers the opportunity to develop and implement a drought-resistant landscape within their community. The program created a unique opportunity for Florida youth to be hands-on researchers, planters, maintenance landscapers, evaluators, and presenters. They created a thinking gardener's landscape based on Xeriscape principles. Approximately ten 4H clubs received grants and employed Environmental Landscape management techniques around their schools, libraries, and agencies. (See attachment).

B. The Nature Conservancy

Southern States Utilities has been a corporate charter member of The Nature Conservancy since 1994. Last year, the Florida chapter of the organization presented a sponsorship opportunity to SSU involving the organization's Blowing Rocks Preserve in Florida. The preserve is located in Martin County in an area that stretches for one mile along the shore of Jupiter Island. Some 2,000 SSU customers and employees live within close proximity of this unique preserve.

A $700,000 education center and maintenance facility are being constructed on that site to maximize the preserve's education potential and to ensure the lasting impact of its native plant restoration program. Dedication of the new facility is planned for November 1995 and will include a classroom for conservation education, an exhibit area, reference library and workshop, plus an outdoor boardwalk and garden. The area is to be professionally administered and has wide corporate and local support.

An important part of the center is a nursery area for the cultivation and preservation of native plant species. The site will be used to educate people about native plants, ecological restoration and Xeriscape landscaping, goals consistent with SSU's statewide water conservation objectives. Following meetings with representatives of The Nature Conservancy and a physical site tour of the Blowing Rocks Preserve, it was determined that this area would be appropriate for SSU to underwrite. As a result, the company agreed to sponsor the rainfall collection cistern and irrigation system at a cost of $10,000.

SSU is pleased to be part of this unique complex and to share in the many benefits it will impart to visitors from Florida and other parts of the country. In the very near future, the Blowing Rocks Preserve will provide expanded opportunities for volunteer and community relations activities that already attract more than 150,000 visitors annually to this remarkable area. (See artist's rendering in attachment)

VIII. ADVERTISING AND PROMOTION

A. Advertising

In an effort to educate customers about the importance of water, water conservation, water quality and other related topics, SSU launched a monthly advertising campaign in May 1994 targeting communities in SSU service areas. The campaign ran through the end of the year and is slated to begin again in the latter half of 1995. Each advertisement offers a different focus on environmental protection and water conservation, providing valuable information to customers about their participation in these areas. (See ads in attachment) The notices offered a toll-free number for customers requesting additional information or literature. In those cases, SSU's customer service office fielded the calls and forwarded printed materials to interested customers.

Newspapers targeted included the Fernandina Beach *News Leader*, Marco Island *Eagle*, Venice *Gondolier*, Sebring *News-Sun*, Stuart *News*, Ocala *Star Banner*, Citrus County *Chronicle*, Hernando *Today*, Sanford *Herald*, Lehigh *News-Star*, *The New Volusian*, Kissimmee *News-Gazette*, Washington County *News*, Charlotte *Sun-Herald*, Clermont *News-Leader*, and Pasco *News*. Topics addressed include:

- *What Goes Into The Ground Comes Around* -- cautioned customers against dumping hazardous waste materials and chemicals down the drain.
- *At SSU, We Emphasize the You* -- stressed SSU's dedication to providing the highest quality water and wastewater service
- *Tighten Up* -- described things customers can do to conserve water, reduce waste and prevent leaks
- *This Isn't Just Another Drop In The bucket* -- explained backflow prevention through installation of hose bibb vacuum breakers
- *Water: Simple Times, Simple Solutions -- Complex Times, Complex Solutions* -- informed customers about water treatment technology and quality regulations
- *Reuse: Reuse It ... Or Lose It* -- identified the advantages of reclaimed water and reuse where available

The company also sponsors conservation-related ads in printed programs published in conjunction with community events (See samples in attachment).

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B. Promotional Items

SSU has used promotional items in conjunction with the conservation program. Many of these items have been distributed at open houses, speakers bureau engagements, fairs, public events, at schools and on other occasions where SSU has had a major presence, such as community athletic rallies, charity paint-a-thons, etc. Promotional items include magnets, pencils, stickers, drip detectors, leak tablets, rain gauges, and T-shirts. SSU has also promoted various Water Management District efforts such as "Turn It Off" and the AWWA's "Blue Thumb" campaign with their promotional elements. These items help emphasize SSU's conservation message and provide continual reminders to the public to be conservation conscious. (See samples in attachment)

IX. CONSERVATION DEVICES AND REBATES

A. Statewide Direct Mail Promotion

Water conservation in the home continues to be an important topic of interest to customers. In November 1993 SSU offered water-saving retrofit kits to customers throughout the state through an extensive direct mail campaign that continued through the last quarter of 1994. (See direct mail brochure in attachment) The kits could be purchased through the mail at a discounted price of $9.99 Each kit included a low-flow showerhead, a kitchen faucet aerator, a bathroom faucet aerator, a toilet tank water dam, a leak detecting dye tablet, and a water saving booklet. Sample kits were made available to SSU customer service offices to encourage local examination and to help publicize the program. To date, customers have purchased more than 2,700 kits.

B. Marco Island Complimentary Retrofit Kits

In late 1993 and early 1994, water-saving retrofit kits were made available free-of-charge as part of a special program on Marco Island. Each kit contained a low-flow shower head, kitchen and bathroom aerators, and a toilet tank bank. The offer for one free kit per household was mailed to all permanent residents of Marco Island. Kits were individually mailed to customers mailing in a response card. Special bulk distributions were made to Marco Island condominium complexes (See offer letter and response in attachment). Approximately 3,000 kits were distributed, 645 to single family homes and the remainder to the condominium complexes

C. Marco Island Discount Retrofit Kits

With the initiation of the 1995 pilot program on Marco Island, water saving retrofit kits have been made available for $6 to customers at SSU's Marco Island office. A $15 retail value, the kits include a low-flow showerhead, a toilet tank water displacement bag, and a faucet aerator. (See sample kit in attachment) All elements are manufactured in the U.S. and feature a 10-year warranty. The availability of the kits was publicized in both papers serving the Island and featured in the *Marco Resource* newsletter that went to all Marco Island customers. (See news release/tearsheet/newsletter in attachment)

When installed, the retrofit devices should significantly reduce water consumption in certain household applications, approximately 72 gallons per day per customer. Depending on household population and use patterns, the kits are designed to pay for themselves in one to two months. Most toilets installed before 1980 use five to seven gallons per flush. The tank bag can reduce the amount of water flushed by about a half gallon. Based on five flushes a day, a two-person family could save five gallons daily per person or 150 gallons per month. Showerheads, while more efficient than baths, can flow at a rate from five to eight gallons per minute (gpm). The special showerhead can reduce the flow to 2.2 gallons per minute. Based on a 7 1/2 minute shower per day per person, a two-person family can save from 1200 to 2600 gallons a month. The aerator can reduce flow to 2.5 gpm compared to a normal flow of three to four gallons per minute. Use of a sink eight minutes a day with an installed aerator can save more than 240 gallons a month.

D. Irrigation Sensor Rebate Program

Irrigation often represents more than 50 percent of total water consumption by each customer. Recognizing this fact, SSU will be launching a conservation rebate program focused on outdoor water use. The rebate program will be limited to 50 moisture detection devices in 1995 and an additional 50 moisture detection devices in 1996 (budget permitting). The maximum value of each moisture detection device rebate will be $50.

Starting in October 1995, SSU will identify high-volume residential/multi-family users on Marco Island based on historic billing records. To qualify for the program, customers must have recorded monthly use in excess of 100,000 gallons. The offer will be in two parts. A letter will be issued to those high-volume customers who participated in a complimentary water audit program conducted by SSU earlier in the year. Once those customers have had an opportunity to respond, the remaining list of high-volume customers will be contacted by letter.

The "rebate" will be in the form of a conservation certificate that will be credited to a customer's account once redeemed. In order to obtain a certificate, a customer must offer proof of installation (a sales receipt from a landscaping or irrigation company). Once approved, the customer will receive a certificate which they then enclose with their next payment. Their account is credited for that amount once processed by SSU's billing department.

SSU recommends the use of moisture sensing devices that shut off automatic sprinkler systems to prevent over-watering and waste. Moisture detection devices override the sprinkler activation mechanism during periods of increased rainfall. Depending on rainfall amounts and watering patterns, a savings of 5 to 25 percent of the total irrigation demand for each installation can be expected. The estimated savings per household per day from the use of such devices is about 37.5 gallons per day.

E. Marco Island Low-Flow Toilet Rebate Program

Research shows that 70 percent of indoor consumption occurs in the bathroom. In 1995, SSU will offer low-flow toilet rebates as part of the Marco Island program. Once again, the program will initially be directed at high-volume customers, those who participated in the water audit program and then offered those who did not participate. In 1995, SSU has budgeted 50 rebates at $100 apiece for customers who provide proof of installation of a low-flow toilet (a sales receipt from an installer). The credit will be applied once the certificate is returned with a bill. One hundred rebates will be offered in 1996 (budget permitting).

The installation of low-flow toilets can assist in reducing household water consumption, especially when other conservation measures are also practiced. Older model toilets flush between 5-7 gallons of water. The low-flow models flush about 1.5 gallons to 3 gallons water per use. SSU estimates the savings per household at 37.5 gallons per day. In conjunction with this element, participants were offered $50 rebates toward a moisture sensing device. Beginning in the fall of 1995 SSU hopes to expand this rebate offer to a broader audience. It will include rebates for both low-flow toilets and moisture sensing devices.

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Marco Island
Water Conservation Plan

Proposed by
Southern States Utilities, Inc.

December 1994

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I. OVERVIEW

A. SSU's Commitment to Florida's Water Policy

Florida's State Water Policy encourages utilities to "champion and develop sound water conservation practices and public information programs" and "to advocate and direct the reuse of reclaimed water as an integral part of water management programs, rules, and plans consistent with protection of the public health and surface and ground water quality."

Southern States Utilities (SSU) is committed to a stewardship role in supporting the State's water policy by developing and implementing environmentally and ecologically responsible water management programs throughout its service area. SSU presently operates in 26 Florida counties, providing water and wastewater services to more than 160,000 customers.

A consistent proponent of water management measures, the Company formalized its efforts in 1994 by developing a comprehensive program designed to convince customers to embrace water conservation practices as permanent lifestyle measures. A key element of this statewide effort is a customized program developed specifically for Marco Island.

B. The Aquifer System

The Floridan aquifer system of underground reservoirs supplies 80 percent of the State's fresh water. The aquifer depends on rainfall and runoff water as a means to recharge or replenish the water table. In recent years, however, this level has dropped to a point that water management officials feel is unacceptable for several reasons.

- Florida is bordered by salt water and there is a major concern that intrusion could cause the aquifer to become brackish especially in coastal areas.
- Long-term projections suggest that the aquifer may not be able to meet increasing demands created by future development, tourism, industry and agriculture.
- The aquifer is part of a delicate ecological system, the balance of which could become seriously destabilized if consumption is not reduced.

The water table problem is already resulting in shortages in many parts of the State where the reservoirs are being drawn upon at a rate much greater than in any other part of Florida. One such area is Marco Island in Collier County.

II. BACKGROUND

A. Water and Marco Island

Southern States Utilities has provided water service to Marco Island since 1989 and in early 1994, provided quality potable water to approximately 10,900 permanent residents and a total of 32,700 people during the peak season. The Company owns and operates two water treatment facilities located at separate sites on the Island. The facilities include a five million gallon per day lime softening water treatment plant (WTP) and a four million gallon per day reverse osmosis water treatment plant. SSU also operates a 3.5 mgd wastewater treatment plant (WWTP) that provides reclaimed water for reuse. Potable water is used for household applications as well as for general irrigation with only a few exceptions. The Island's reclaimed water applications are presently limited to two golf courses and medians.

A recent analysis by SSU of water use patterns revealed higher per capita consumption on Marco Island compared to Collier County and water management district standards. The per capita consumption for Marco Island for the year ending 1994 based on a seasonally adjusted population of 22,200 people is 288 gallons per capita per day (gpcd). Since 1990, the per capita consumption has fluctuated between 269 and 291 gallons per capita per day.

- At present, Marco Island consumption exceeds the Collier County minimum level of service standard for Marco Island. In accordance with the 1992 Collier County Growth Management Plan, the level of service standard for potable water for Marco Island is 200 gpcd.

- The water management districts are currently implementing legislation to reduce per capita water consumption throughout the state. Marco Island's water supply is regulated by the South Florida Water Management District (SFWMD). The current rules of the SFWMD limit per capita water use to 200 gallons a day, on an average, seasonally adjusted population basis. The SFWMD has had a number of conservation requirements in place since January, 1993.

Marco Island residents should be encouraged to reduce consumption levels through voluntary conservation measures. To illustrate the point, if per capita consumption were at a level of 200 gpcd, current consumption could be reduced by more than 1.9 million gallons per day. The following statistics indicate that the bulk of the high volume consumption is occurring in irrigation.

- In accordance with SSU's year-to-date 1994 customer consumption data and assuming 100 gallons per person per day typical household use, residential irrigation is estimated to account for 45 to 72 percent of total residential consumption depending on the time of year. Residential demand peaked in May and was at its lowest level in July. On an average

annual basis, residential irrigation is estimated to account for approximately 63 percent of the total residential consumption.

- Irrigation for commercial and multi-family dwellings accounted for 35 to 45 percent of the total commercial and multi-family consumption depending on the time of year during 1994. The commercial/multi-family demand peaked in March and was at its lowest level in September. On an average annual basis, commercial/multi-family irrigation demand accounted for approximately 42 percent of the total commercial/multi-family demand.

- In total, for 1994, irrigation is estimated to account for approximately 53 percent of the total average annual demand.

B. The Capacity Issue

The total capacity of SSU's water plants on Marco Island is 9 million gallons per day (mgd). Average demand on the plant was 6.3 mgd year to date for 1994. However, in March 1994, water demand reached a peak maximum daily level of 10.3 mgd. The plant was able to augment capacity by tapping into available storage.

If peak demand is not reduced, however, it has the potential to exceed the capacity of the SSU water supply system, resulting in shortages and inconvenience to residents and visitors in the form of reduced water pressure. In the short term, the Company will pursue irrigation demand management alternatives. The real reduction must come from the total population of consumers on Marco Island through a concerted water conservation effort.

C. The Long-Term Outlook

Having an adequate water supply will be crucial to the Island's growth and economic potential. The Island has been designated by the South Florida Water Management District as a "Critical Water Supply Problem Area." This means it is likely to experience critical water supply problems in the next 20 years unless permanent conservation measures are adopted. Irrigation is a major contributor to this situation.

Recent development projections indicate that by 2020, when the Island is expected to be built to capacity, there will be approximately 21,455 housing units on Marco Island compared to some 14,852 as of May 1994. The growth will be primarily in single-family residences with some increase in condominium/multi-family units. No additional hotel or timeshare units are projected.

This added development has the potential to create a severe demand not only on the aquifer, but also on the capacity of the water system serving the Island. Moderating irrigation requirements that draw on potable water resources will be central to the successful development of the Island in the years ahead.

III. THE PLAN

The intent of the Marco Island Water Conservation Plan is to expand previous efforts in concert with the stated goals of the SFWMD, the Collier County Growth Management Plan, and the Marco Island Vision Planning Committee. The proposed SSU program is comprehensive and voluntary. It is designed to result in permanent water conservation practices that will afford long-term benefits versus temporary impact.

At the core of the program will be Demand Management which is defined as "reducing the demand for water through activities that alter water use practices, improve efficiency in water use, reduce losses of water, reduce waste of water, alter land management practices, and/or alter land uses."

The program designed for Marco Island focuses on two categories of water consumers: (1) The General Population and (2) High Volume Users. General Population refers to seasonal and permanent residents, as well as visitors to the Island. High Volume Users refer to those customers with monthly consumption rates that exceed 100,000 gallons.

The channels used to reach consumers in the General Population and High Volume User categories include Conservation Education, Economic Incentives and Enforcement Opportunities with Education comprising the major thrust of the effort.

A. General Population

The general population effort will include four of six water consumption classifications used by SSU. The four classifications are Residential, General Service, Multi-Family and Irrigation. Raw water and Fire Protection classifications will not be monitored due to their specialized user groups.

In 1994, the Residential classification accounted for 50 percent of total consumption on Marco Island. General Service followed next with 14 percent, Multi-Family with 15 percent and Irrigation with 21 percent. Other uses accounted for the remaining two percent.

By definition:

- Residential includes both single-family homes and those multi-unit complexes which meter each unit individually rather than having a master meter for the complex.
- General Service includes commercial establishments including hotels.

- Multi-Family includes high-rise condominiums which have one or a number of master meters that meter the entire complex rather than individually metered units.

- Irrigation includes most condominiums and apartment complexes having irrigation meters separate from their potable water meters used for in-home water needs.

1. Conservation Education

Through a comprehensive education program, SSU hopes to instill a greater understanding of conservation measures and methods. The goal is for consumers to embrace conservation as a life style practice. Additionally, through education, it is hoped that consumers will willingly install low-volume conservation devices, systems or fixtures that permanently reduce internal household water use and external irrigation requirements.

Open Houses – SSU will host open houses at its water treatment facility in an effort to educate target groups about the technology and challenges associated with water management.

Speakers Bureau – Since 1991 more than 50 water related presentations have been made within Collier County. SSU will modify existing conservation, reuse and xeriscape presentations to reflect specific issues on Marco Island. Selected mailings will invite key organizations and groups to provide forums for SSU speakers.

Trolley Signage -- The trolley, which is highly visible to the general public, will be used by SSU to communicate key messages from January through June to support conservation efforts.

Conservation Seminars -- SSU will host at least two general conservation seminars to introduce target groups to conservation methods and measures. These will be coordinated with the South Florida Water Management District, the Collier Soil and Water Conservation District, the USDA, and the Collier County Extension Service.

Xeriscape Workshops -- Xeriscape is a landscaping method that maximizes the conservation of water by the use of site-appropriate plants and an efficient watering system. In cooperation with water management district programs and the Collier County Extension Service, and certified/licensed irrigation professionals, the Company will also sponsor one hands-on workshop featuring xeriscape landscaping practices and plants. It will include the use of moisture sensing devices. In 1992 SSU hosted a workshop on Marco Island on how to develop and implement a conservation landscape. The program created a unique opportunity for hands-on researchers, planters, maintenance landscapers, evaluators, and presenters. Such programs were designed to give volunteers the opportunity to experiment and examine the best methods to create a drought-resistant landscape in and for their community, around schools, libraries, etc.

- Newspaper Advertising -- Newspaper advertising will be used to continuously reach Marco Island audiences about the critical need to protect and manage water resources.

Customer Bulletins -- Since 1991 a customer newsletter has been mailed quarterly to approximately 7,000 Marco Island customers as well as government officials and Florida newspapers. The WaterWorks bulletins will continue to emphasize conservation and water-related issues. Two bulletins will be developed to address issues specific to Marco Island. These will be mailed to Marco Island customers and made available to the general public.

Conservation Newsletter – In 1994, SSU began issuing "Conservation," a special customer newsletter focused on conservation. The newsletter will continue to be mailed on a regular basis to Marco Island customers.

Education Materials -- Materials, brochures, booklets, videos, etc. on conservation and Florida's water supplies are continually being researched, developed, purchased and requested. Materials will be provided to Marco Island residents through the customer service office, through mail-outs, and as handouts at open houses and presentations. They also will be made available through public sources, libraries and schools.

Feature Articles -- SSU will provide feature stories and photography to local newspapers. The articles will feature examples of water management efforts or will illustrate trend/use patterns with the intent to encourage the adoption of water management practices.

Educational Videos -- Educational videos will continue to be made available free of charge to key organizations, schools and associations. These will include the following, as well as others available through the water management district.

- "Save Our Water" -- An educational music video for children, features Florida fifth and sixth graders talking about the importance of natural water systems. Through words and music, they increase their understanding of Florida's aquifers, rivers, lakes and wetlands. The video introduces students to various water resources and helps them identify ways to reduce pollution while motivating them to use water wisely.

- "Water For Florida's Future" -- A 30-minute video directed at adult audiences, discusses Florida's future water supply, increasing regulations designed to protect that supply, how water utilities meet those regulatory requirements, and how utilities file for rate relief. Water experts featured in the video include Lou Kavoras, Southwest Florida Water Management District and State Representative R.Z. Safley.

Bill Inserts -- In addition, as needed, bill inserts will be used to alert all Marco Island customers to local water restrictions, new regulations, and new conservation literature.

Recognition Program -- SSU will develop a "Partners in Conservation" program with the local Chamber of Commerce in order to recognize special conservation efforts by individuals, hotels, and condo associations and management companies.

Media Backgrounders -- SSU will develop educational media materials consisting of information on Florida's water issues. This packet will include Marco Island materials and statistics and will be made available to media serving the Marco Island community.

Stickers -- SSU will develop stickers encouraging water conservation that can be applied to vehicles, windows, on kiosks and handed to public.

Publications -- SSU will develop a general water management brochure for the general public that will include tips and information on water conservation, reuse and xeriscape. This brochure will be made available to all customers and offered through other public outlets.

Exhibit -- An exhibit of conservation materials will be placed in the Marco Island office for public viewing by residents.

Special Events -- SSU will underwrite special programs that focus on conservation. These public forums are designed to increase general awareness of SSU's efforts. An existing example is the annual holiday float.

School Programs -- SSU will promote water management education in local schools through contests, speakers, videos and other channels that will also encourage involvement by parents and the local community. In addition, the Company will sponsor field trips to educate children about conservation practices.

2. Economic Incentives

The economic benefits of conservation will be stressed in publications, news items and at public forums. Water- and cost-saving retrofit devices will continue to be promoted to the general population and will be made available through SSU's Marco Island office at cost to customers. Information relating to the use and installation of such devices will be included as part of the communications campaign. Retrofit devices are already in place at some locations.

Condominiums: In March 1994, SSU implemented a pilot retrofit program on Marco Island for permanent residents. By August, four condominiums consisting of 884 units received an SSU retrofit kit free of charge. Each kit contained a low-flow shower head, kitchen and bathroom aerators and a toilet tank bank. Southseas West also requested retrofit kits for its 431 units. Those should be shipped by year-end 1994.

A summary of the installations and requests for the condominiums on Marco is as follows:

Condominium Name	Number of Units	Number of Kits	Date Received
Sandcastle I	94	188	3/94
Sandcastle II	94	188	3/94
Southseas NW	431	862	8/94
Gulfview	265	530	3/94
Subtotal	**884**	**1,768**	
Southseas West	431	862	On order

The total number of kits after fulfilling Southseas West will bring the figure to 2,630 installed in 1994 in 1,315 housing units.

Permanent Residents: Earlier in the year, SSU also offered free units to all permanent residents of Marco Island. As a result of a special mailing of complimentary devices, approximately 645 single-family homes received retrofit devices. SSU is in the process of compiling lists from those two distribution campaigns and will follow up with subscribers to determine the impact of the devices on their water use and on their overall conservation efforts.

The estimated savings from these devices is based on the following assumptions:

ESTIMATED SAVINGS

- Estimated water savings per device:
  - Showerhead: 3 gpm
  - Bathroom Aerator: 1 gpm
  - Toilet Bag: 0.5 gallons/flush
- For a typical household assume:
  - Single-family house - 2.5 people/household
  - Multi-family/hotel units - 2 people/household
- Assume average usage per person per day:
  - Toilet - 5 flushes/day
  - Bathroom faucet - 4 minutes/day
  - Shower - 7.5 minutes/day

The estimated water savings per home is provided as Table 1.

Table 1
Estimated Water Savings from Retrofit Devices Per Household Per Day

Single-family	
Toilet	6 gpd
Faucet	10 gpd
Shower	56 gpd
Total	72 gpd/home

Multi-family	
Toilet	5 gpd
Faucet	8 gpd
Shower	45 gpd
Total	58 gpd/unit

Assuming that 60% of the homes that received retrofit kits in 1994 are using them, an estimated water savings of 59,000 gpd may be realized by year end 1994.

The retrofit program will continue to be offered for interested customers. The Marco Office will have an available supply of kits that will be sold at the company's cost of $6 each.

Assuming that 1,000 kits are purchased each year in order to retrofit 500 housing units each year and that 60% of those that purchase the devices continue to use them, the following annual water savings are estimated:

	Savings (gpd)
150 single-family homes	11,000
150 multi-family/hotel units	9,000
Total	20,000

In future years, approximately 250 housing units per year are assumed to be retrofitted. Reference Table 2 of Section IV for the estimated water savings.

3. Enforcement Opportunities

Related to the education program will be an effort to educate consumers regarding existing and pending legislation or regulations that address or promote conservation. Every effort will be made to encourage compliance as a matter of good citizenship, community spirit, and environmental responsibility.

An area that offers significant water conservation potential is irrigation. Voluntary water demand management schedules will be promoted for homeowners seeking to modify their lawn watering practices. This voluntary promotion will be used until more permanent measures can be implemented.

The plan is that SSU, in cooperation with Collier County and the South Florida Water Management District, will implement temporary water restrictions on Marco Island beginning in January, 1995. SSU will request the same restrictions imposed on Marco from April, 1989 through August, 1992 in accordance with County Ordinance No. 89-80.

The restrictions allowed lawn irrigation on different times and days of the week depending on both address location and even/odd numbering. The Island was segregated into three areas, each of which may water on the days specified at the time specified (either 10:00 pm to 2:00 am or 2:00 am or 6:00 am).

These water restrictions should assist in driving down consumption during the periods of greatest demand on the system.

(See Attachment A - Zone Watering Plan)

In terms of other codes or ordinances, SSU will seek avenues to promote conservation through plumbing, construction, permitting, Xericape or landscape management ordinances. These are longer-term goals that will require cooperation from state agencies, professional organizations, manufacturers, and acceptance by developers and other related groups.

B. High Volume Users

High volume users will be a major focus of the conservation plan. As stated earlier, high-volume users, both multi-family and residential, are those who consume in excess of 100,000 gallons per month.

In 1994, when the peak maximum daily demand occurred in March, a review of customer usage showed that 100 irrigation customers, and 46 residential customers, recorded demands in excess of 100,000 gallons per month. In addition, 478 residential customers recorded demands in excess of 50,000 gallons per month. In July, 1994, when the monthly demand was at its lowest level, 60 irrigation customers and 18 residential customers recorded demands in excess of 100,000 gallons per month.

Elements of the High Volume User program will include a literature and information program, consumption audits, and promotion of rain sensor installations.

1. Conservation Education

Brochures -- SSU will develop a brochure designed to address the High Volume Water User on Marco Island. This piece will be mailed or hand-delivered to this target group.

Workshops -- The Company also will conduct high volume water user workshops in cooperation with state, local and regional agencies to address questions and concerns about irrigation, water management techniques, xeriscape, etc.

Conservation Devices -- As indicated earlier, some 78 customers during July, 1994 had monthly consumption levels of 100,000 gallons or greater. In March, 1994 -- at peak demand time -- 146 customers had monthly consumption levels of 100,000 gallons or greater. SSU will aggressively promote the use of rain/moisture detecting devices and low flow toilets among high volume water users such as hotels, condo associations and private residences.

The Marriott hotel recently installed nine moisture sensing devices on their irrigation system. In addition, SSU has contacted a local supplier of the Mini-Clik II rain sensor to get the locations of residences who have installed the devices. SSU will track irrigation use for these customers in order to estimate the water savings on Marco using these devices.

Assuming that 50 high volume users participate in the moisture detection device rebate program and 50 high volume users participate in the low flow toilet rebate program in 1995, the expected savings beginning in the year 1996 is calculated as follows:

	Total No. High Volume Users Participating	No. High Volume Users Participating in Each Rebate Program	Total Irrigation Demand (Gal./Day)	Moisture Device Savings @ 15% (Gal./Day)	Low Flow Toilet Savings @ 37.5 gpd/Customer (Gal/Day)
Residential	30	15	55,000	8,300	600
Multi-family/ Commercial Irrigation	70	35	400,000	60,000	1,300
			Total	68,300	1,900

Only one low-flow toilet and one moisture detection device rebate will be offered per customer. For the high volume multi-family complexes with multiple irrigation clocks, it is assumed that the customer will purchase the additional moisture detection devices required to effect the entire irrigation system.

2. Economic Incentives

Water conservation specialists, operating out of SSU's Marco Island office, will coordinate and promote a free audit program to those consumers qualifying as High Volume Users. Based on a list provided by SSU, they will send a letter to targeted high volume consumers inviting them to schedule an appointment for a comprehensive water management audit.

Each audit will evaluate use patterns, landscaping and irrigation practices, etc. Through an analysis of the results, the SSU representative will recommend improvements that will include recommended conservation practices, recalibration of existing irrigation systems, as well as installation of conservation devices if indicated.

These representatives will provide high volume customers with a list of approved landscaping and lawn management specialists who are licensed installers of sensor devices and who are also able to provide additional assistance with irrigation system calibration and Xeriscape.

It is assumed that if the high volume user audits are conducted beginning in January, 1995, that 25% of the total savings may be realized in time for the peak demand expected in March, 1995. Assuming an additional 50 high volume customers install moisture detection devices in 1996,

and an additional 100 high volume customers installed low flow toilets in 1996, an additional 72,050 gallons per day may be saved by early 1997.

As an incentive to participate, high volume users who are among the first to schedule audits and implement recommendations will receive certificates for special rebates. SSU will also investigate future billing programs that can accommodate installment payments for such devices.

3. Enforcement Opportunities

Moisture detection devices are required to be installed on all automatic sprinkler systems for new residential, commercial, and industrial developments in accordance with the Collier County Land Development Code; however, enforcement of this ordinance is not certain. The moisture detection devices override the sprinkler activation mechanism during periods of increased rainfall. Depending on rainfall amounts and watering patterns, a savings of 5 to 25 percent of the total irrigation demand for each installation can be expected.

Of the current 1994 average customer demand of 6.3 mgd stated earlier, approximately 3.3 mgd is expected to result from irrigation. In 1995, the average demand is expected to be 6.9 mgd, of which irrigation is expected to be approximately 3.6 mgd. The expected increase in irrigation demand from 1994 to 1995 of 0.3 mgd may be curtailed by the installation of moisture sensing devices. In 1996, the average demand is expected to be 7.1 mgd, of which irrigation is expected to be approximately 3.8 mgd.

Assuming that 50 percent of all new construction has moisture detection devices, the water savings would equate to a range of 7,500 to 37,500 gallons per day for 1995. For 1996, the savings would range from 12,500 to 62,500. An average savings of 15 percent was used to estimate water savings for moisture detecting devices. It is assumed that 25% of the 1995 savings may be realized in time for the peak demand expected in March, 1995.

Note: For general consumers who are not among the existing or potential high volume user targets, local publicity and workshops will address the advisability of water sensor installation.

C. Reuse Applications

SSU has delivered reclaimed water for irrigation since 1972 and presently has seven reclaimed water systems in operation across the state. The Marco Island reclaimed water system is one of the Company's largest systems.

1. Existing Reuse on Marco Island

SSU provides reuse on Marco Island by irrigating golf courses and medians using reclaimed water from the 3.5 mgd Marco Island wastewater treatment plant (WWTP).

- The Marco Island Country Club accepts reclaimed water on an as-needed basis. In the event that less reclaimed water is generated by the WWTP than required by the golf course, SSU can supplement the supply with raw water.

- The Marco Shores Golf Course accepts reclaimed water to the golf course on an as-needed basis.

- SSU also provides reclaimed water to R&B Lawn Services on an as-needed basis. The reclaimed water is used to irrigate roadway medians along Collier Boulevard and South Barfield Drive.

On a yearly average, existing reclaimed water usage to the golf courses and for median irrigation accounts for approximately 22 percent of the total flow leaving the plant. During the late Spring, however, this usage may rise to nearly 50 percent of the total. The 1993 total annual reuse for the Marco Island WWTP via golf courses and median irrigation was approximately 142 million gallons.

2. Proposed Reuse on Marco Island

SSU is also assessing implementation and feasibility of future reclaimed water projects.

- SSU is presently negotiating a contract with the local school board to provide reclaimed water for irrigation of the Barfield School property. The reclaimed water will enter the school grounds through a buried pipeline and will be distributed throughout the site by the school's re-pump station which consists of pumps, a wet well and other controls. The pumping facility will be owned and maintained by the school board. It is estimated that the school site will use approximately 20,000 gpd of reclaimed water.

- SSU is also assessing implementation of a reclaimed water main extending south from the WWTP along Collier Boulevard and west to Hideaway Beach. The analysis indicates that there exists a demand of approximately 1 mgd of reclaimed water for irrigation use at the hotels and condominiums along the entire length of Collier Boulevard and near Hideaway Beach. A customer survey has been completed to confirm the needed reclaimed water irrigation quantities. A survey of the main route (along Collier Boulevard) was also conducted to determine the construction feasibility (space availability) for the proposed main. The results indicate that construction of the entire main will be expensive due to the constraints imposed by the existing utilities and building densities adjacent to the route. In all likelihood, the first phase of the reuse main would serve Hideaway Beach and Collier Boulevard down to the Marriott hotel. The annual average demand expected for this portion of the reuse main is 620,000

gallons per day with an anticipated maximum daily demand of 853,000 gallons per day. If a detailed financial and rate analysis of this phase of the main proves cost-effective for the Marco Island customers, the main may be implemented in future years and will help to reduce demands above and beyond those indicated by conservation efforts.

IV. OBJECTIVES AND RESULTS

As stated earlier in the presentation, four consumption classifications will be targeted, as well as high volume water users consuming in excess of 100,000 gallons per month. By encouraging use of conservation measures, more efficient irrigation practices, and added reuse, SSU hopes to reduce overall consumption and to improve water conservation practices throughout the Marco Island community.

A. The Goals

In summary, through the programs described herein, SSU expects to reduce overall demand on the system by approximately 500,000 gallons per day by the beginning of 1997. This will cause the daily average per capita consumption to drop from a projected 312 gpcd in 1997 to 288 gpcd in 1997. If the Collier Boulevard reuse main is implemented in later years, per capita consumption may drop to a projected 275 gpcd.

Ultimately, SSU would hope to encourage Marco Island residents and visitors to reduce consumption to a level comparable to other service areas in Florida and to a point that falls within the guidelines established by the South Florida Water Management District and the Collier County Growth Management Plan (200 gpcd). Future phases of the program will be structured toward achieving this goal. Water savings have been estimated for each element of the plan for the next three years. Table 2 summarizes the estimated water savings.

B. Monitoring and Measuring

Results of the conservation efforts will be tracked through meter readings that compare month to month, year to year consumption before and after the conservation program is launched. Usage among key consumption classifications will be monitored on a monthly basis and compared to historical use patterns.

In addition, a survey will taken among Marco Island customers to determine if their overall conservation practices have changed. An initial conservation practices survey was conducted in August 1994, the results of which will be compared to the follow up survey.

C. Progress Reports

A quarterly progress report will be issued to detail the actions taken and the results of the program's implementation. The report will be shared with SSU Management and key local organizations on Marco Island.

Table 2
Estimated Average Water Savings
Gallons per Day (gpd)

Year End	Moisture Detection Devices[a]	Retrofit Devices	High Volume Water Reduction	Barfield School Beneficial Reuse	Irrigation Demand Management	Total[b]
1994	5,500	59,000	0	0	0	64,500
1995	21,700	94,000	17,500	20,000	250,000	403,200
1996	32,300	114,000	70,200	20,000	250,000	486,500
1997	42,900	123,000	142,300	20,000	250,000	578,200

[a] Installed on new construction per Collier County ordinance.

[b] Does not include Collier reuse main.

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V. COST/BENEFIT ANALYSIS

A. Cost Analysis

The following costs are estimated for the 1994 and 1995 program as outlined previously. The 1996 program will be based on the details on the results of the 1995 program. The cost of the 1996 program is expected to be comparable to the 1995 program. The costs are summarized in Table 3 and explained below.

Table 3
Estimated Program Costs

	1994	1995	Total
1) Communication Elements	$23,000	$43,000	$66,000
2) High Volume-User Audit Program	0	30,000	30,000
3) Moisture Detection Device Certificates	0	2,500	2,500
4) 5,000 Retrofit Device Kits	27,000	0	27,000
5) Retrofit Survey	0	8,000	8,000
6) Low Flow Toilet Rebate	0	5,000	5,000
7) Outside Services	11,570	12,200	23,770
Subtotal Expenses	$66,830	$100,700	$167,530
8) Labor	8,300	28,840	37,140
Grand Total	$75,130	$129,540	$204,670

1) Communication Elements -- Based on the plan as outlined, the communications elements will cost approximately $66,000 to implement starting in November 1994 and continuing through June 1995. Approximately 35 percent of the costs will be applied in 1994.

2) Audit Program -- If a consultant were hired to coordinate the High Volume Water Audit program, the expected fee including expenses to conduct 150 audits is $30,000.

3) Moisture Detection Devices -- In order to encourage the installation of moisture detection devices, SSU will provide $50 gift certificates to the first 50 customers who provide proof of installation of a device.

4) Retrofit Devices -- 2,000 retrofit kits were recently ordered at a cost of $6.00. SSU is also providing 832 kits free of charge to the Southseas West Condominium as they were ordered during our free give-away program in the spring. 3,000 retrofit kits were purchased for the free give-away program. The 2,000 kits, which have been upgraded, will be available at the Marco Island Customer Services Office at cost, $6 each.

5) Retrofit Survey -- If a follow-up report and second survey are initiated in conjunction with the retrofit program, the anticipated cost would be $8,000 for processing and preparing the analysis.

6) Low Flow Toilet Rebate -- In order to encourage the installation of low flow toilets, SSU will provide $100 rebates to the first 50 customers who provide proof of the toilet type an installation.

7) Outside Services -- SSU maintains a temporary employee on staff to assist with implementation of the Marco Island Conservation Plan.

8) Labor -- Several full-time SSU employees assist part-time with implementation of the Marco Island Conservation Plan.

B. Benefit Analysis

The benefits to SSU include:

- Reduced pressure on the system's capacity during peak periods.
- Reduced overall demand.
- Postponement of capacity-related capital project requests for two years.
- Improved relationships with water monitoring agencies.
- Public recognition as a conservation- and consumer-oriented company.

The disadvantages to SSU include:

- Extended revenue loss due to permanent conservation measures (retrofit devices and rain sensors) .
- Initial public perception that SSU is not equipped to service demand (this will be countered by education and communication).

The benefits to the community include:

- Continued water service without interruption.
- No fines or long-term restrictions.
- Improved environmental responsibility and stewardship.
- No excessive rate increases near term.

The disadvantages to the community include:

- Some minor irritation to consumers who are not conservation-minded.
- Some irritation if water restrictions are implemented.
- Some irritation to consumers or tourists who do not perceive the problem.

VI. IMPLEMENTATION TIMETABLE

The proposed timing of the conservation activities during the 1994/1995 peak season is presented as Table 4.

Table 4
Marco Island Conservation Activity
Implementation Timetable

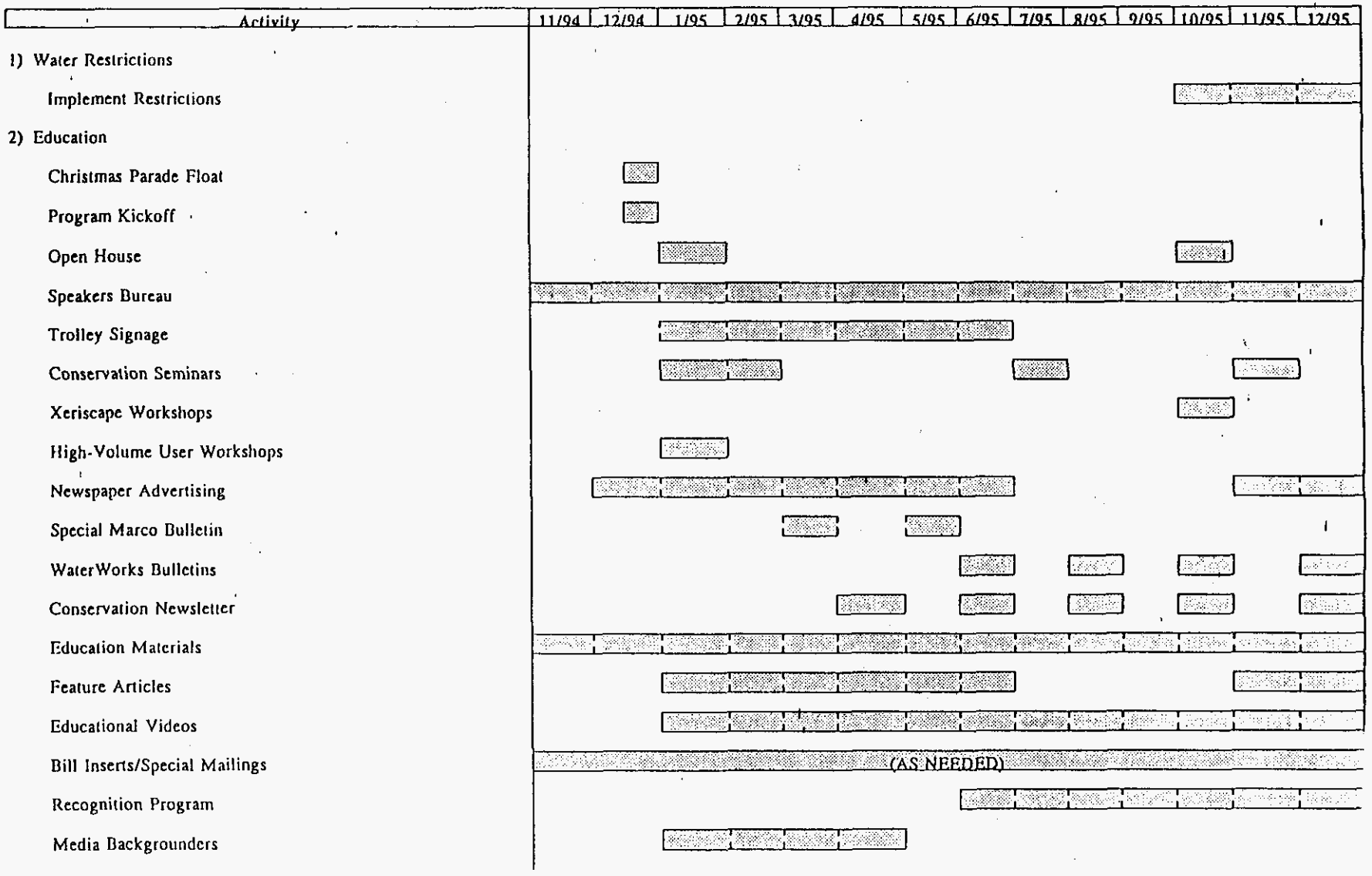

EXHIBIT _____

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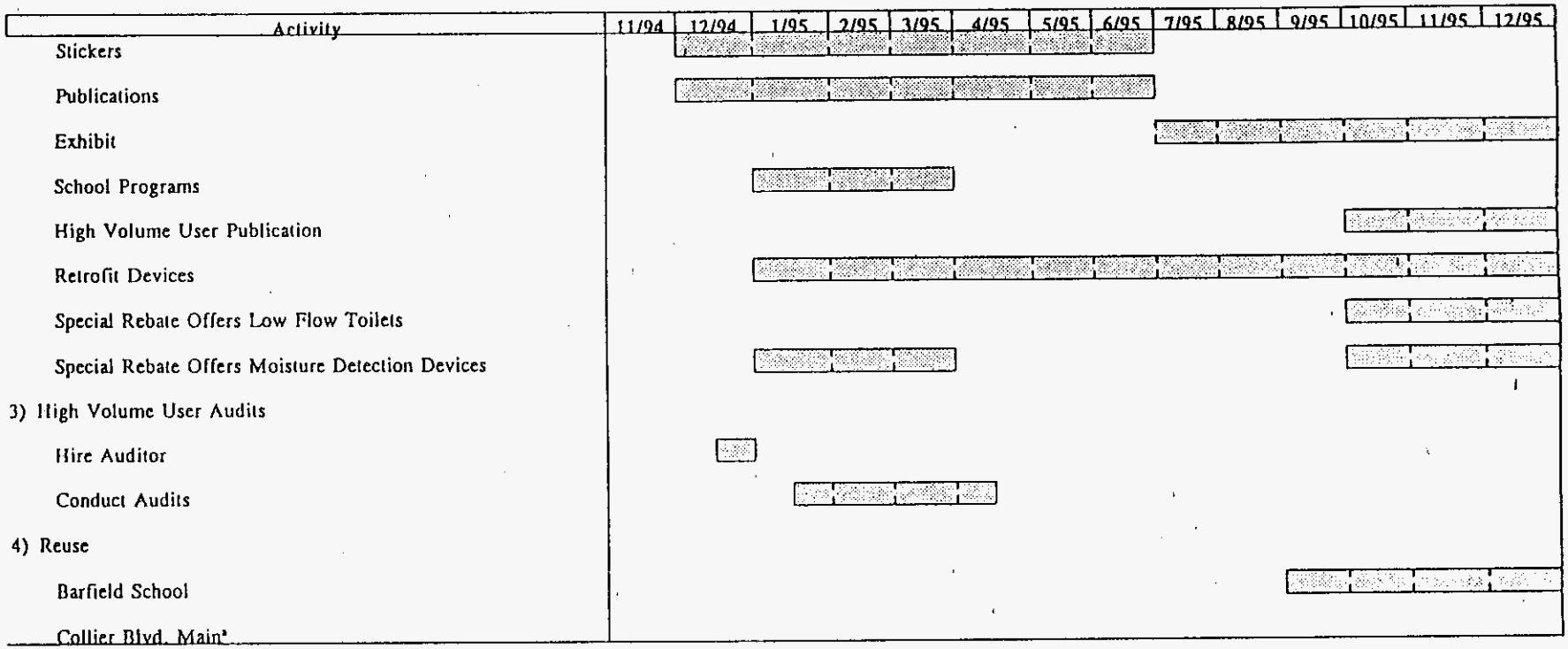
Marco Island Conservation Activity Implementation Timetable



* Implementation pending studies.

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Attachment A

Zone Watering Plan

ATTACHMENT A - ZONE WATERING PLAN
Marco Island Restrictions

RESIDENTIAL WATERING SCHEDULES - *UNDER 5 ACRES**			
Zone One	Runs from Collier Boulevard North to the bridge, West to the Gulf of Mexico and South to the end of Collier Court.		
	Watering Days	Mondays	Thursdays
	Odd house numbers Even house numbers	2am to 6am 10pm to 2am	2am to 6am 10pm to 2am
Zone Two	Is sandwiched between Collier Boulevard to the North and West and SR 92 to the South.		
	Watering Days	Tuesdays	Fridays
	Odd house numbers Even house numbers	2am to 6am 10pm to 2am	2am to 6am 10pm to 2am
Zone Three	Covers everything South of SR 92, West to Collier Boulevard and East to Barfield Bay.		
	Watering Days	Wednesdays	Saturdays
	Odd house numbers Even house numbers	2am to 6am 10pm to 2am	2am to 6am 10pm to 2am

*Acreage limits refer to irrigated areas and not buildings, driveways or structure.

For land requiring irrigation over five (5) acres*, separate restrictions apply:

Odd street numbers may water on Wednesday and Saturday from 12:01am to 8am.

Even street number properties may water on Thursday and Sunday from 12:01am to 8am.

[redacted]

Water Conservation Proposal For Targeted Communities

Proposed by
Southern States Utilities, Inc.

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A. CONSERVATION EMPLOYEE JOB DESCRIPTIONS

B. CONSERVATION LITERATURE CITED

I. CORPORATE OVERVIEW

Southern States Utilities (SSU) is Florida's largest investor-owned water and wastewater utility. Headquartered in Apopka, the company began in 1961 as a combination of six small Central Florida water companies. SSU has grown steadily by acquiring developer owned systems and operating them as part of a professional statewide utility dedicated solely to providing high quality water and wastewater service. In 1989, through the acquisition of the Deltona Corporation's utility systems, SSU nearly doubled in size. Today the company serves more than 160,000 customers in 25 counties.

The company supplies water to customers in 109 communities. Raw water is drawn primarily from groundwater sources and treated using chlorination/aeration, lime softening, or reverse osmosis. SSU also provides wastewater service in 48 communities. The effluent from the wastewater treatment plants is distributed for reuse on public access areas, in groundwater reclamation systems, or to replenish surface water systems.

II. FLORIDA'S WATER POLICY

SSU supports Florida's policy of water conservation and reuse of reclaimed water to preserve the dwindling fresh water supply. In 1994, water users in the State of Florida withdrew approximately 700 billion gallons per year of groundwater for public supply -- of which SSU withdrew two percent or 13 billion gallons. Total consumption by the communities served by SSU is growing at a rate of approximately three percent per year. These increasing water demands suggest that an aggressive conservation program would be highly beneficial to SSU's customers. Through conservation, customers can reduce their water and energy bills and enable the company to reduce operating expenses and defer capacity related expenditures.

III. HISTORY OF SSU'S WATER CONSERVATION PROGRAM

In 1991 SSU initiated a statewide conservation program. The program primarily focused on public education and measurement and control of unaccounted-for water. The following year, it was expanded to include meter testing and replacement. A handbook describing the program was compiled and distributed to all of the water management districts and remains in use today.

Since 1991, SSU has employed a variety of methods of public education, ranging from community outreach activities to direct mail campaigns. Over the years, the key elements of the program have continued to be modified and expanded and today include many effective communication channels. These programs are described in the document entitled, *Water Conservation Public Education Program.*

In May 1994, SSU established a Conservation Committee with representatives of several departments to help focus the company's conservation efforts. The committee meets regularly to discuss conservation issues and future conservation initiatives. One of the first recommendations of the Conservation Committee was to hire additional staff to manage and expand the company's conservation efforts.

IV. MARCO PILOT PROJECT

Marco Island has one of the highest per capita consumption records out of all of SSU's service areas. Peak seasonal demands during the winter tourist season further intensify this normally high usage. In response to these increasing demands, beginning in 1994 SSU's Conservation Committee developed and implemented a conservation plan for Marco Island. SSU contracted outside services with specific expertise in water conservation to assist with various aspects of the program.

Program Timetable -- The Marco program was officially kicked-off in a public meeting open to all Marco Island residents on December 20, 1994. A concentrated effort continued on Marco Island through the tourist season. The program is expected to continue in future years. Individual elements of the program may be changed based on preliminary results of customer participation and effectiveness. The results of the program are being closely monitored and will help to guide SSU's conservation efforts statewide.

Plan Elements -- The primary focus of the Marco Island plan is to encourage voluntary conservation through public education and involvement. Elements include a comprehensive education program, a retrofit device promotion, a retrofit device tracking system, an audit program of high-volume users, and rebates for low-flow toilets and irrigation shutoff devices. The education program includes public workshops, open houses, newspaper advertising, a conservation newsletter, school programs, trolley signage, and stickers.

Retrofit Devices -- As part of SSU's ongoing conservation program, SSU offered free retrofit kits to interested Marco Island customers during 1994. During 1995 and 1996, retrofit kits will be available at the Marco Island Customer Service Office for $6 each. Each kit contains a low-flow shower head, kitchen and bathroom aerators, and a toilet tank bag. During 1995, contract services will assist with development of a database for tracking the effectiveness of the retrofit

kits provided to customers to date and will tabulate the results of the conservation survey sent to all Marco residents in the summer of 1994. This database is necessary to quantify both customer participation and water savings.

Water Audits -- As a portion of the Marco Island project, SSU utilized contract services to carry out the high volume water audit program. The water audits were conducted for high-volume residential and multi-family customers from January through April 1995. The audits included an inspection of external water use areas, a review of existing in-ground sprinkling systems, and an analysis of indoor water use. In return, participants received a written report with recommendations on how to become more water efficient along with a list of local sources with free conservation information and services.

Rebate Offers -- In order to encourage the installation of irrigation shutoff devices, SSU will provide a $50 gift certificate to the first 50 customers who provide proof of installation of a device. The rebate will be provided as a credit on the customer's water bill. SSU will also offer a low-flow toilet rebate program to Marco Island customers in the fall of 1995. To encourage installation of the toilets, SSU will provide $100 gift certificates to the first 50 customers who provide proof of installation. The rebate will be provided as a credit on the customer's water bill. This rebate amount is consistent with both the renowned Tampa Water Conservation Program and the Hillsborough County Aggressive Water Conservation Plan.

Program Results -- Trends in water consumption must be evaluated along with other relevant factors such as rainfall, temperature, and tourism. Because the Marco program is only in its fifth month, it is too early to draw final conclusions about its effectiveness, however; if only a 1% reduction is achieved from all Marco Island customers, some 600,000 gallons of water per day can be saved.

V. FUTURE CONSERVATION EFFORTS

A. CONSERVATION PROPOSAL

In order to effectively implement an interactive conservation program, it is imperative for SSU to hire two new employees during 1996 to work full-time on the company's conservation program. One employee will be a Conservation Administrator and the other will be a Conservation Coordinator. Together, these employees will develop, implement and evaluate all of SSU's statewide conservation efforts. Job Descriptions for these positions are provided in Attachment A. The employees will expand SSU's program to targeted communities where consumption is above average. The following tasks are proposed to be conducted beginning in 1996 by the new employees:

Handbook Revision -- The company intends to revise the Water Conservation Program Handbook which is currently on file with the Water Management Districts. Revisions will include updating the status of the unaccounted-for water efforts, meter testing and changeout, and public education programs. Additional sections may be added to the handbook reflecting the company's focus on environmental protection, reuse, retrofit devices, and conservation rates.

Market Research and Analyses -- The Conservation Administrator, with the assistance of contract services, will conduct a nationwide literature search of existing conservation programs to obtain information on water savings, capital costs, labor requirements, community type, size, etc. The collected information will then be used to help guide future conservation initiatives for SSU communities including retrofit kits, residential water audits, commercial water audits, low-flow toilet rebates, irrigation shutoff devices, xeriscape incentives, etc.

Conservation Goals -- Both statewide and plant-specific conservation goals will be established primarily by the two new employees. The criteria that will be used to assess conservation needs for particular communities will include water management district per capita limitations, unaccounted-for water standards, meter changeout status, reuse availability, and growth potential.

Tracking and Measurement -- A comprehensive spreadsheet will also be compiled which will house all SSU data for each community which is pertinent to conservation, including: historical per capita consumption, growth potential, community characteristics, indoor vs. outdoor usage, unaccounted-for water, small meter changeout status, large meter testing status, water use caution areas, reuse availability, and other pertinent information.

Conservation Procedures -- Working with SSU's Billing and Customer Services departments, procedures will be established to provide customer credits on monthly water bills for authorized conservation rebates. Rebates for low-flow toilets, retrofit kits, water audits, and irrigation shutoff devices may be included. In addition, a procedure will be established by SSU to work with developers to offer them information concerning conservation and current regulations on new development for low-flow toilets and fixtures and the installation of irrigation shutoff devices.

Target Communities -- The company has selected six (6) communities for the 1996 conservation program. Consumption information for these communities is presented in Table 1. To accurately evaluate average consumption, we analyzed the monthly residential water bills from 1991 to 1994. In this manner, we attempted to normalize any weather-related anomalies that may have affected consumption. Five out of the six communities selected have historically had the highest residential consumption of all of SSU's communities. Although some of the communities have small percentages of commercial and multi-family accounts, they are primarily residential communities. The group represents different geographical areas and each community

has uniquely challenging elements ideal for continued refinement of the statewide program. Four of the communities are greater than 50 percent built to capacity. These communities should readily lend themselves to retrofit and rebate programs as opposed to newer communities in which low-flow toilets and irrigation shutoff devices are mandated for new construction.

Table 1
Targeted Residential Communities

Name	Average Monthly Consumption (Gallons/Bill)[1] 1991 - 1994	Average Number of Customers[2] 1994	Estimated Daily per Capita Consumption[3]	Water Management District
Marco Island[4]	21,920	5,005	292	SF
Palisades Country Club	22,447	30	299	SJR
Silver Lake Estates/Western Shores	19,538	1,345	261	SJR
Dol Ray Manor	16,981	59	226	SJR
Quail Ridge	14,173	15	189	SJR
Sugar Mill Woods	14,540	2,206	194	SWF
Valrico Hills[5]	9,093	354	121	SWF

1 The average of the total consumption per service area per year divided by the total number of bills for year, for the years 1991 through 1994.

2 Based on total bills for 1994 (average customers = total 1994 bills/12 bills per month).

3 Based on 2.5 people/household.
Average monthly consumption/bill (1991 - 1994) ÷ 30 ÷ 2.5.

4 The Marco Island Conservation Program began in 1994 and is on-going.

5 It should be noted that although the community of Valrico Hills was not among the communities with the highest monthly residential usage, it was selected as a target community because it is located in the Southern Water Use Caution Area (SWUCA). Of the seven SSU communities located in SWUCA, Valrico Hills had consumption in excess of the 110 gallons per capita per day goal established for SWUCA by SWFWMD. A usage of 110 gallons per capita per day equates to approximately 7,000 gallons per month per ERC (household).

B. PROGRAM ELEMENTS AND COSTS

Conservation efforts planned for each community include public education, a free retrofit kit offer, rebates for low-flow toilets and irrigation shutoff devices, and a survey of 5% of the customers in each community to assess the program effectiveness. The public education element includes public workshops, mailers, advertising and promotion, and special events and sponsorships. An outside service located in each community will assist with the programs, particularly the advertising aspects of the program. Retrofit kits will be offered, free of charge, to up to 50 percent of the customers in each community via a bill stuffer campaign. Rebates for low-flow toilets and for irrigation shutoff devices will be provided on a first come, first served basis to 10 percent of the customers in each community. Rebates of $100 for each low-flow toilet and $50 for each irrigation shutoff device will be provided as a credit on a customer's water bill after proof of installation is submitted. The rebate program is consistent with the City of Tampa and Hillsborough County water conservation programs. Estimated costs for each program element are provided in Table 2.

Based on the results of the conservation efforts for the Marco Island program, the six focus communities, the literature search, and the updated spreadsheet of plant data, SSU plans to expand its conservation efforts in future years to target additional high water use communities and communities in which water supply may be limited.

Table 2
Estimated 1996 Conservation Costs

Item	Expense $							
	Palisades Country Club	Silver Lakes/Western Shores	Dol Ray Manor	Quail Ridge	Sugar Mill Woods	Valrico Hills	Marco Island	Total
Public Education								
a) Public Workshops (2)	$ 500	$3,000	$ 500	$ 500	$ 3,000	$ 500	$2,500	$10,500
b) Mailers (3)	90	4,040	180	50	6,620	1,060	11,500	23,540
c) Special Mailings	60	0	120	30	0	710	0	920
d) Advertising and Promotion	0	3,600	0	0	4,000	0	17,000	24,600
e) Special Events/Sponsorships	1,000	3,500	1,000	500	4,000	1,000	2,000	13,000
f) Outside Services	1,000	8,000	1,000	500	8,000	1,000	12,000	31,500
Free Retrofit Kit Offer (50% kits @ $30 each)	450	20,190	900	240	33,090	5,310	0	60,180
Toilet Rebate Program (10% rebates @ $100 each)	300	13,500	600	200	22,100	3,600	10,000	50,300
Irrigation Shutoff Device Rebates (10% rebates @ $50 each)	150	6,750	300	100	11,050	0*	2,500	20,850
Surveys of Control Group (5% of Community @ $50/Person)	100	3,350	150	50	5,500	900	10,000	20,050
Residential Water Audits	0	0	0	0	0	0	20,000	20,000
Total Community	$3,650	$65,930	$4,750	$2,170	$97,360	$14,080	$87,500	$275,440

* Irrigation shutoff device rebates available through Hillsborough County's Conservation Program to Valrico Hills customers.

EXHIBIT (CAK-3)
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C. ESTIMATED WATER SAVINGS

Following implementation of the conservation program, SSU expects an estimated water savings of 63,765,500 gallons per year for the six targeted communities. The Marco Island Conservation Program is expected to generate a savings of approximately 79,022,500 gallons per year. The total water savings, company wide is projected to be 142,788,000 gallons per year. Table 3 presents the estimated water savings expected for each community after one year of use of the retrofit kits, low-flow toilets and irrigation shutoff devices. The numbers used to project these savings are explained below.

Retrofit Kits

Each retrofit kit includes a low-flow shower head, two faucet aerators, and a 1/2 gallon toilet tank bag. Table 4 presents SSU's estimated water savings per device along with references to the nationally published conservation literature we reviewed to develop the estimates. Assumptions for typical household size and average usage per person per day for toilets, faucets, and showers were obtained from the document, "Evaluating Urban Water Conservation Programs" (AWWA, 1993). Retrofit kit manufacturers suggest that 50% of utility customers who are offered free kits will participate in the conservation effort. Since SSU will actively encourage customer participation through public workshops and advertising promotions, we estimated that 50% participation could be expected. The assumptions used to estimate water savings for each conservation device offered in the retrofit kit are explained in the pages following Table 4.

Table 3
Estimated Water Savings
(Gallons/Day)

	Retrofit Kits[b]	Low Flow Toilet Rebate[c]	Irrigation Shutoff Device Rebate[c]	Total (Gallons/Day)	Total (Gallons/Year)
Marco Island[a]	114,000	1,900	100,600	216,500	79,022,500
Palisades Country Club	1,100	100	100	1,300	474,500
Silver Lake Estates/Western Shores	48,500	5,100	5,100	58,700	21,425,500
Dol Ray Manor	2,200	200	200	2,600	949,000
Quail Ridge	600	100	100	800	292,000
Sugar Mill Woods	79,400	8,300	8,300	96,000	35,040,000
Valrico Hills	12,700	1,300	1,300	15,300	5,584,500
Total	144,500	15,100	15,100	391,200 Gallons/Day	142,788,000 Gallons/Year

[a] For details about Marco Island savings and assumptions, refer to Marco Island Conservation Plan.

[b] Assumes 50 percent participation in free retrofit kit offer. A water savings of 72 GPD/customer is estimated based on conservation literature and manufacturers estimates.

[c] Assumes 10 percent participation in $100 low-flow toilet rebate program and 10 percent participation in $50 irrigation shutoff device rebate program. A water savings of 37.5 GPD/customer is estimated for each low-flow toilet and irrigation shutoff device installed. These rebate offers and estimated water savings are consistent with the City of Tampa and Hillsborough County conservation programs.

Showerheads – According to the American Water Works Association in the document entitled "Evaluating Urban Water Conservation Programs" (AWWA, 1993), the average person takes one 5 - 15 minute shower per day. Niagara Conservation Corporation of New Jersey, a manufacturer of retrofit kits estimates that the average shower time is 7.5 minutes. SSU adopted the 7.5 minute average shower estimate since it is well within the range suggested by the AWWA.

Retrofit kit manufactures including Niagara Conservation Corporation of New Jersey and Energy Technology Laboratories of California estimate a savings of 2 to 5 gallons per minute using a low-flow showerhead. The Southwest Florida Water Management District states that while water from a standard showerhead flows at a rate of 6 to 9 gallons per minute, a water saving showerhead will allow no more than 2.4 gallons of flow per minute, resulting in a savings between 3.6 and 6.6 gallons per minute. According to the AWWA document "Water Conservation" (Maddaus, 1987), an ordinary showerhead in the fully open position may discharge 5 to 8 gpm while a low-flow showerhead allows between 2.5 and 3.0 gallons per minute. Thus, a savings in the range of 2 to 5 gallons per minute can be expected. To predict the results of this conservation proposal, SSU estimated a savings of 3 gallons per minute for each showerhead, which is on the conservative side of the published information.

Faucet Aerators -- SSU assumed a usage of 4 minutes per person per day for faucet aerators based on manufacturer information. According to the document "Evaluating Urban Water Conservation Programs" (AWWA, 1993), the average person uses water from the bathroom faucet approximately 1/2 a minute to 3 minutes each day, and from the kitchen faucet approximately 1/2 a minute to 5 minutes each day. SSU's assumed usage is within the AWWA range.

The savings for faucet aerators based on the manufacturers literature is approximately 1 gallon per minute. According to an article published in the AWWA Journal (Vickers, 1991), the flow

rates for standard faucets range from 2.75 to 7 gallons per minute while faucets with water saving aerators have a maximum flow rate of 2 gallons per minute. Thus, a savings of between .75 to 5 gallons per minute can be expected. SSU used a conservative estimate within this range of 1 gallon per minute since the average usage in minutes per day estimated by SSU was at the higher end of the AWWA range.

Toilet Bags -- SSU estimated that the average frequency of toilet flushing is 5 times per day per person. This is within the AWWA estimated range of 4 to 6 times per day per person. Each retrofit kit contains a plastic bag which may be filled with water and placed in the bottom of the toilet tank to displace about one half a gallon of water. This will result in a one half gallon savings per flush.

Cumulative Savings from Retrofit Devices -- As shown in Table 4, SSU estimated a total savings per person of 29 gallons per day following installation of the retrofit kits. Assuming that 2.5 people reside in each single family dwelling, a water savings of about 72 gallons per day per household can be realized. For multi-family units, with about 2.0 people per unit, a savings of 58 gallons per day can be expected. Since the six targeted communities chosen by SSU for participation in this program consist predominantly of single family homes, we incorporated the 72 gallons in our projected savings estimate.

Table 4
ESTIMATED WATER SAVINGS
FROM RETROFIT KITS

Device	Water Savings per Device	Typical Use per Person/Day	Daily savings per Person
Low-Flow Showerhead	3 gpm	7.5 minutes	22.5 gpd
Faucet Aerator	1 gpm	4 minutes	4.0 gpd
Toilet Bag	0.5 gal/flush	5 flushes/day	2.5 gpd
Total savings per kit			29 gpd
Total savings @ 2.5 persons per household			72 gpd

gpm = gallons per minute
gpd = gallons per day

Sources:

The estimated water savings per device are within the range of savings provided in *Water Conservation* (Maddaus, 1987). Conservation device manufacturers including Niagara Conservation Corp. in Cedar Knolls, New Jersey and Energy Technology Laboratories, in Modesto, California also predict water savings consistent with these estimates.

The estimated average use per person per day are within the range of uses provided in *Evaluating Urban Water Conservation Programs: A Procedures Manual* (AWWA, 1993).

Low-Flow Toilets

SSU estimated a savings of 37.5 gallons per customer per day for the low-flow toilets based on 5 flushes per day per person, 2.5 people per household, and a savings of 3 gallons per flush. A savings of 2 - 4 gallons per flush is cited in a manual published by the St. John's River Water Management District (SJRWMD, 1994). According to an article published in the *AWWA Journal* (Vickers, 1991), standard toilets consume 3.5 to 7.0 gallons per flush while low-flow toilets have a maximum water use of 1.6 gallons per flush. Thus, a savings of 1.9 to 5.4 gallons per flush is possible. SSU assumed a savings of 3 gallons per flush as a conservative estimate.

The total estimated savings is consistent with the 38 gallons per customer per day estimated for the Tampa Water Conservation Program and the Hillsborough County Aggressive Water Conservation Plan. The AWWA document "Water Conservation" (Maddaus, 1987), estimates a water savings from between 8 and 16 gallons per person per day. Using these numbers with 2.5 people per household, provides a range of 20 to 40 gallons per day per household. SSU's estimate is within this range.

Irrigation Shutoff Devices

To develop an estimate for water savings resulting from irrigation shutoff devices, SSU first determined that the average customer located within the six target communities uses approximately 15,000 gallons of water per month. According to the Southwest Florida Water Management District, 50% of a customer's water use is used for outdoor irrigation. This means that the average customer uses about 7,500 gallons per month for watering their lawns and shrubs. Manufacturers claim that use of the shutoff devices can result in a water savings of 5 to 25 percent of the total irrigation demand depending on rainfall amounts and watering patterns. SSU estimated a 15% reduction following installation of an irrigation shutoff device, resulting in an average monthly reduction of 1,125 gallons per water bill. This monthly savings,

when divided by 30 days represents about 37.5 gallons per day. Hillsborough County estimated a similar savings of 44.5 gallons per customer with the use of an irrigation shutoff device rebate offer as part of their conservation program.

Attachment A
Conservation Employee Job Descriptions

CONTROL NO.
EFFECTIVE 5/95

SSU JOB DESCRIPTION

JOB TITLE: CONSERVATION ADMINISTRATOR

DEPARTMENT:

IMMEDIATE SUPERVISOR:

ELIGIBLE FOR OVERTIME: No

EEO JOB CODE: 2 - Professional

GENERAL PURPOSE

Under limited direction and with the assistance of a Coordinator and the Communications Administrator, enhance and administer SSU's Statewide Conservation Program; evaluate results; and continuously refine program.

DUTIES

Responsibilities involve the following:

1. Implement and evaluate all existing conservation related programs and develop, implement and evaluate all future conservation programs.

2. Develop, implement, and evaluate comprehensive public education programs including public workshops, open houses, special events and sponsorships, award programs for customers practicing conservation, mailers, advertising and promotion, etc.

3. Develop, market, and evaluate conservation programs including, but not limited to, retrofit kit offers, low-flow toilet rebates, irrigation shut-off device, xeriscape incentives, water audit programs, etc.

4. Interact with various departments within SSU including Operations, Engineering, Rates, Environmental Services, and Corporate Development to maintain updated knowledge about all aspects of conservation including meter changeout program, unaccounted-for water, leak detection, reuse projects, conservation rates, water use permit renewals, and conservation related plan review issues.

5. Manage internal and external dissemination of conservation literature, videos, and other supporting materials. Establish and maintain a conservation library. Maintain and update SSU's conservation exhibit.

6. Develop a standard package of information to be sent to developers requesting capacity from SSU and prior to the plan review process to inform them about statewide conservation requirements for the construction industry including low-flow toilet and faucet requirements and irrigation shut-off device requirements. Coordinate with the Developer Relations group to schedule release of packages to contractors.

7. Prepare and administer capital and operating expense budgets for conservation. Develop budget tracking of expenditures and provide monthly variance reports.

8. Prepare and provide testimony for rate case hearings.

9. Organize and conduct surveys to determine the effectiveness of each type of device in each pilot community. Track customer usage for customers receiving devices.

10. Tabulate and evaluate SSU consumption records for each community for which water service is provided. Determine future conservation initiatives for each community based on level of consumption and regulatory requirements (CUP renewals).

11. Update SSU's Water Conservation Plan program handbook and SSU's Statewide Water Conservation Plan annually. Produce SSU's Conservation Newsletter periodically.

12. Maintain up-to-date knowledge about conservation initiatives and leaders on a local and national level by actively participating in AWWA Water Conservation Committee, conservation related seminars and workshops, and regulatory sessions.

13. Prepare and perform conservation presentations in an attractive, interesting and informative manner. Lead SSU's Speaker Bureau which provides customers with a variety of conservation presentations. Assist with government correspondence, contracts and legislative issues relating to conservation.

14. Supervise and monitor conservation interns.

15. Perform other duties or special projects as requested and related to conservation.

16. Duties performed generally requires work beyond normal working hours and extensive travel throughout Florida.

KNOWLEDGE AND SKILLS

Comprehensive knowledge and high level of proficiency required in the following areas:

- Water Conservation
- Research and Development
- Leadership
- Marketing
- Interpersonal Communication
- Human Relations
- Public Speaking
- All Facets of Communications
- Technical Writing
- Analysis and Problem Solving
- Creativity
- Budgeting, scheduling, and cost control
- Computer skills - especially Word, Excel, relational databases

CONTACTS

INTERNAL: All levels of employees and management.

EXTERNAL: Customers and general public, media representatives, governmental agencies.

HIRING STANDARDS

EDUCATION: Bachelor's Degree or equivalent in environmental science, engineering, or related areas.

EXPERIENCE: A minimum of eight years experience in environmental science, engineering, or conservation; with exposure to communications; public relations; written communications; speech preparation and presentation; media relations and use of computers. Previous experience in water conservation and utility field preferred.

SSU JOB DESCRIPTION

JOB TITLE: CONSERVATION COORDINATOR

DEPARTMENT:

IMMEDIATE SUPERVISOR: Conservation Administrator

ELIGIBLE FOR OVERTIME: No

EEO JOB CODE: 3 - Technician

GENERAL PURPOSE

The general purpose of the Conservation Coordinator is to assist the Conservation Administrator in carrying forth SSU's Statewide Conservation Program. The Conservation Coordinator will report to the Conservation Administrator.

DUTIES

Responsibilities involve the following:

1. Assist Conservation Administrator with all conservation duties including the following:

   - Collect data and conduct research.
   - Prepare reports.
   - Organize and conduct customer telephone and field surveys to obtain information about conservation devices and their effectiveness.
   - Collect and organize large volumes of survey data into a database for tracking of program effectiveness.
   - Prepare for meetings and presentations, prepare AV equipment.
   - Organize workshops, open houses, and special events.
   - Conduct site visits to various communities throughout Florida.
   - Attend/conduct conservation meetings, seminars, etc.
   - Establish and manage cost, scheduling, and budget controls.

2. Communicate effectively with various SSU department personnel to collect required data. Communicate effectively and tactfully with SSU customers, general public and regulatory agencies.

3. Duties performed generally require work beyond normal working hours. Extensive travel throughout Florida is required.

KNOWLEDGE AND SKILLS

Comprehensive knowledge and proficiency of the following:

- Computer Skills - Especially Excel, Word, Access and Database
- Research and Development
- Creativity
- Problem Solving
- Interpersonal Communication

- Technical Writing
- Human Relations
- Presentation Skills

CONTACTS

Regular and frequent contact with employees and customers requiring good interpersonal skills.

HIRING STANDARDS

EDUCATION: Associates Degree in environmental technology, science or related area.

EXPERIENCE: A minimum of one year experience in environmental technology, science, or related area. Previous utility and/or conservation work preferred.

Attachment B

Conservation Literature

American Water Works Association, 1993. "Evaluating Urban Water Conservation Programs: A Procedures Manual", page 40.

Energy Technology Laboratories, 2351 Tenaya Drive, Modesto, CA 95354. Literature on water savings for retrofit devices.

Maddaus, William O. 1987. American Water Works Association. "Water Conservation", pages 36, 47.

Niagara Conservation Corporation, 45 Horse Hill Road, Cedar Knolls, NJ 07927. Literature on water savings for retrofit devices.

St. John's River Water Management District. 1994. "How to Develop Water Conservation Plans That Work."

Southwest Florida Water Management District. Pamphlet entitled "50 Ways to Save a Drop."

Vickers, Amy. October 1991. Journal AWWA. "The Emerging Demand-Side Era in Water Management", page 38.

Southern States Utilities, Inc.
1995/1996 Conservation Program Costs

The chart on the following page outlines the costs, according to the NARUC accounting system, for the water conservation program described in this document. The 1995 conservation program includes only two components: the statewide public education program and the Marco Island Pilot Project. Total program costs for 1995 as indicated on the chart are $199,250.

The column labeled "Budgeted 1996" provides the cost to carry out a program identical to the 1995 program in 1996. This cost was calculated using the 1995 budget adjusted by 1.95% inflation to equal $203,135.

SSU believes it is necessary to expand the conservation program in 1996 beyond what was undertaken in 1995 to include the Conservation Plan for Targeted Communities (described in Part III of this document) as well as some additions to the statewide public education program and the Marco Island Project. The cost for the 1996 enhancements is $321,290 as shown in the column labeled "Proforma 1996 Adjustment." If the program enhancements are approved, the total cost for 1996 will be $524,425.

The approximate cost for each component of the program, existing and as enhanced, are as follows:

Component	Budgeted 1996	Enhancements	Total 1996
Public Education	$115,968	$37,452	$153,420
Marco Island	$87,167	$333	$87,500
Six Targeted Communities	$0	$187,940	$187,940
Additional labor & benefits	$0	$95,565	$95,565
Total	$203,135	$321,290	$524,425

SOUTHERN STATES UTILITIES, INC.

ANALYSIS OF CONSERVATION COSTS

ACCOUNT DESCRIPTION	ACCOUNT NUMBER	CEC	1995 BUDGET	ESCALATION FACTOR	BUDGETED 1996	PROFORMA 1996* ADJUSTMENT	TOTAL 1996
M&S-Office Printing	6208.0000	135	$ 34,150	1.95%	$ 34,816	$ 19,991	$ 54,807
M&S-Office Supplies	6208.0000	140	$ 2,350	1.95%	$ 2,396	$ 4,880	$ 7,276
Contract Services-Other*	6358.0000	150	$ 16,200	1.95%	$ 16,516	$ 83,550	$ 100,066
Rental Equipment	6428.0000	155	$ 1,000	1.95%	$ 1,020	$ 640	$ 1,660
Transportation	6508.0000	160	$ 600	1.95%	$ 612	$ -	$ 612
Advertising	6608.0000	166	$ 14,500	1.95%	$ 14,783	$ 24,600	$ 39,383
Misc Exp-Telephone	6758.0000	175	$ 1,500	1.95%	$ 1,529	$ 1,512	$ 3,041
Misc Exp-Postage	6758.0000	185	$ 3,500	1.95%	$ 3,568	$ 7,349	$ 10,917
Misc Exp-Dues & Subscription	6758.0000	190	$ 800	1.95%	$ 816	$ -	$ 816
Misc Exp-Travel	6758.0000	195	$ 400	1.95%	$ 408	$ 2,736	$ 3,144
Misc Exp-Food	6758.0000	200	$ 1,800	1.95%	$ 1,835	$ 3,300	$ 5,135
Misc Exp-Employee Training	6758.0000	205	$ 200	1.95%	$ 204	$ -	$ 204
Misc Exp-Office Cleaning	6758.0000	210	$ 150	1.95%	$ 153	$ -	$ 153
Misc Exp-Employee Recognition	6758.0000	235	$ 6,600	1.95%	$ 6,729	$ -	$ 6,729
Misc Exp-Temporary Help	6758.0000	245	$ 3,000	1.95%	$ 3,059	$ -	$ 3,059
Misc Exp-Other	6758.0000	250	$ 112,500	1.95%	$ 114,694	$ 77,163	$ 191,857
Labor			$ -		$ -	$ 76,461	$ 76,461
Fringe Benefits**			$ -		$ -	$ 19,108	$ 19,108
Total			$ 199,250		$ 203,135	$ 321,290	$ 524,425

* The proforma 1996 adjustment for contract services includes a reclassification of $35,683 for contract services for the Marco Island Water Conservation Program which was classified as Misc Exp-Other (CEO 250) in the 1995 budget ($35,000 in 1995 budget). The proforma adjustment for printing, supplies, advertising, postage, and food also include a reclassification of $43,839 for public education and special events for the Marco Island Water Conservation Program which was classified as Misc Exp-Other (CEO 250) in the 1995 budget ($43,000 in 1995 budget).

** 1996 fringe benefit rate @ 24.99%.

EXHIBIT (CWK-3)
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EXHIBIT (CHK-4)

PAGE 1 OF 1

VOLUSIA CITY-COUNTY WATER SUPPLY COOPERATIVE
135 EAST INTERNATIONAL SPEEDWAY BLVD., SUITE 22
DAYTONA BEACH, FLORIDA 32118 · 904/254-4676 • FAX 904/254-4617

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November 1, 1993

Lisa Spinazzola Irven
Communications Coordinator
Southern States Utilities
1000 Color Place
Apopka, FL 32703

Dear Lisa:

Thanks for attending and making a presentation to the Water Supply Cooperative Board on October 20. Your comments were clearly and concisely made and well-received by the Board.

Lisa, when you and I were speaking a few of weeks ago, you may recall a brief discussion about Southern States Utilities' Conservation Plan (as opposed to your Water Conservation Program). I intend to put together a water conservation plan for this Cooperative that will ultimately become a common plan for all seven members. During a conversation with staff of the St. Johns River Water Management District, the District representative said that SSU had done this for their various utilities and that SSU's plan was "one of the best that they had seen."

You stated that SSU's plan was currently being rewritten. When it is complete, I would certainly appreciate receiving a copy to use as a reference and possibly "steal" any parts that might be appropriate for this Cooperative. In fact, if you are comfortable turning it loose, I would appreciate having any draft information that might be available.

Again, Lisa, thanks for your presentation to our Board and for the information you have provided.

Sincerely,

Don

Donald R. Feaster, P.E.
Water Resource Manager

DRF/jr

cc: Bert Phillips, SSU President

EXHIBIT (CHK-5)

PAGE 1 OF 4

MULTI-FAMILY/COMMERCIAL WATER AUDIT REPORT # 037 86M

NAME: AUDIT DATE: 3/21/95

ADDRESS: SSU ACCOUNT NO.: 786170

INDOOR WATER: There are 146 dwelling units in the complex. All units have one bathroom. An estimated 30 units have been retrofitted with water conservation devices.

ESTIMATED POTENTIAL INDOOR WATER SAVINGS AT YOUR PROPERTY:

Estimated water savings per device:

Showerhead:	3 gpm
Aerator:	1 gpm
Toilet Bag:	0.5 gpm

Assume typical 2 people per household

Assume average usage per person per day:

Shower:	7.5 min/day
Bathroom faucet:	4 min/day
Toilet:	5 flushes/day

(Based on retrofitting 1 bathroom and above assumptions)

DEVICE	SAVINGS PER DAY	X 30 DAYS PER MONTH	X DWELLING UNITS	= TOTAL GAL PER MONTH
Toilet	5 gpd	30	146	21,900
Faucet	8 gpd	30	146	35,040
Shower	45 gpd	30	146	197,100
		SAVINGS	GRAND TOTAL	254,040

WATER USE HISTORY: From 1/14/93 to 1/10/95, consumption measured at the irrigation meter ranged from 93,740 to 298,190 gallons per month.

IRRIGATION AND LANDSCAPE FEATURES: The irrigation system is operated by 2 TORO CUSTOM II controllers with 12 zones each. A hydraulic valve with 20 individual water hoses permits skipping individual zones as needed. A rain sensor is not installed on the controllers. They are manually turned off when rain is expected. The system is on from 12:30 AM to 7:30 AM. When in operation, the schedule is two days per week, maximum. Zones are set at 35 and 45 minutes. Sprinkler heads include rotor and fixed spray heads. There are a few unmatched heads on the same zone. There are low volume emitters in use in various shrub beds. Turf and shrubs which have different water requirements are on the same zone. There are narrow turf strips which could be replaced with mulch or low water demand ground cover.

RECOMMENDATIONS:

*Check nozzle pressures to see whether design limits are exceeded (promotes drift). Spray heads have lower limits than rotor heads.

*Match all heads by zone to insure uniform output. A half circle should supply half the GPM as a full circle on the same zone. Impact and mist heads on same zone may have different GPM rating.

*Add or reposition heads to improve uniformity of coverage and minimize overwatering to compensate for "dry areas" if needed. Head to head overlap is the usual design guideline. Note: some zones may not supply sufficient water to produce head to head coverage when adding more spray heads.

*Install rain sensors and position out of "rain shadow" for best response to total rainfall. Periodicly inspect for debris in sensor opening and verify that the bypass switch (if present) isn't on. Consider setting at 1/2 inch.

*Consider isolating high water demanding vegetation like turf and flower beds on a separate zone from trees and shrubs which require less water once established. Different watering times can be set if these plants are on different zones. This could be achieved by gradually replacing flowers with flowering plants that have water requirements similar to the existing shrubs, or when replacing or upgrading portions of the system.

*Proper mulching and fertilizing can reduce water demand by trees, shrubs and grass. A balance between potassium and nitrogen in fertilizer increases plants stress tolerance.

*Consider replacing narrow strips of grass with low water demand ground cover or mulch, rock, etc. These areas are more likely to waste water by overspray onto asphalt or other non-porous surfaces. They are often located next to mature shrubs that don't require as much water as the grass. To satisfy the grass's water requirement, the shrubs receive more water than they need.

*Consider capping spray heads in mature shrubs that are on the same zone with turf. Again, more water is been supplied to the shrubs than is necessary because of the turf's water demand. During the drier months, these heads can be replaced if needed to water the shrubs. Rainfall may satisfy the entire shrub water requirement during some months.

*Irrigation schedules should promote deep root growth which conditions plants, turf especially, to tolerate dry weather. Vegetation will take longer to wilt since the roots can draw water from a larger volume of soil. On sandy Florida soils, between 1/2 inch to 1 inch per application is recommended. Generally, this would result in fewer applications per week than is often practiced. Frequent lighter applications per week promotes

shallow rooting and quicker wilting or drought stress in plants. This process is a gradual one and could begin in cooler weather to allow longer roots to grow prior to hotter weather.

*Potential evapotranspiration (ETP) is an estimate of how much water turf uses due to metabolic activity and weather conditions. It ranges from a low of 2.56 inches (February) in your area to a high of 9.61 inches (August). Monthly rainfall satisfies some or all of this ETP requirement. Irrigation supplies the rest.

***Calculations of your sprinkler head output are estimates.** Actual sprinkler rates (nozzle output in gallons per minute and inches per hour) can be obtained by a simple catch test or more comprehensive tests that would include nozzle pressure readings. Nozzle output ratings can be obtained from your irrigation supplier. Also, your sprinkler overlap may vary from the recommended head to head design.

EXAMPLES: Based on head to head overlap, average nozzle output and an example controller schedule - 8 days per month and 35 minutes per turf zone.

1) A 15H half circle spray head - output 1.9 GPM or 1.6 in/hr. at 15 ft. spacing (15 F full circle has more GPM, but same in/hr).
   1.6 in/hr X 35 min. X 8 days = 7.5 inches per month.
   7.5 inches divided by 8 days = 0.94 inches per day.
   1.9 GPM X 35 min. = 66.5 gallons per head per day.

2) Pop-up rotor gear or impact head - output 3 GPM or 1.3 in/hr. at 15 X 15 ft. spacing (full circle).
   1.3 in/hr X 35 min. X 8 days = 6.1 inches per month.
   6.1 inches divided by 8 days = 0.76 inches per day.
   3 GPM X 35 min. = 105 gallons per head per day.

COST: Schedule changes - no costs. Capping heads and eliminating narrow grass strips - labor and 1 time costs for caps and installation of ground cover or mulch.

Rain sensor approximately $40.00 (not including installation).

SAVINGS:

Schedule Change: Applies to turf. Established shrubs require less water than turf. Based on 0.5 inch (or greater) per application and approximately 2.2 to 5.2 inches per month. **NOTE:** if your heads have higher or lower GPM output than these examples, cycle duration and gallons of water used will differ significantly from the examples.

1) Turf zones with 1.9 GPM spray heads - change interval to 1 25 min. cycle per week during cooler weather. Increase to two days during hot, dry weather. Water use ranges from saving 342 to 152 gallons per head per month (compared with example schedule).

2) Turf zones with 3 GPM heads at 15 X 15 spacing - change watering to 1 time per week for 30 min. during cooler weather. Increase to 2 days for 30 min. in hot, dry weather. Water use ranges from saving 480 to 120 gallons per head per month (compared with example schedule).

Eliminating Heads: Capping unneeded 15H shrub heads and eliminating 15H heads by replacing narrow grass strips - Water use reduced by 532 gallons per head per month (compared with example schedule).

Reduced watering schedule by zone: Savings determined by number of heads per zone and total reduction in watering time per month per zone.

Rain sensors: Savings determined by amount of rainfall necessary to activate sensor, controller schedule and how quickly sensor "dries out" after rain.

RESOURCES:

1 Questions about various plant water requirements, xeriscaping concepts, irrigation calibration, etc. - Collier County Extension Service, Mr. John Begeman, 353-4244 or 657-3306.

2 Questions about irrigation design, equipment and system testing - USDA Natural Resources Conservation Service, Mr. Tony Polizos, 455-4100.

3 Questions about irrigation design, selecting irrigation contractors, and etc. - Florida Irrigation Society, (800) 441-5341.