

School Water Conserving Garden Grant Program

Linda Seashore Larsen



Wanting to expand its conservation education program in local schools, Sarasota County Utilities designed a grant program in 1995. Schools could apply for up to \$500 towards a garden incorporating water conservation principles into a hands-on learning environment for students, teachers, and parents.

Grant guidelines, requiring an innovative program involving a reasonable number of students, were distributed. Schools were notified and all sites were visited to discuss the project and evaluate effectiveness.

Four schools selected in January, 1996 submitted plans tailored to their unique needs and resources.

The gardens, improving the landscape at the schools, also serve as a source of enjoyment and education for students and teachers. The gardens are being used for art classes, science study, writing projects, and award ceremonies. In some schools the students are raising vegetables for distribution to the All-Faiths Food Bank.

Estimating each garden has a life span of five years, over 14,000 students will be exposed to water conservation concepts from this \$2000 grant, or a cost of about fifteen cents per student.

This program, easily duplicated with a minimum budget, could be an effective educational tool for any size utility.

This innovative program takes water conservation principles into the school yard. Reducing the administration burden by not

requiring a contract, it allows teachers to concentrate on designing an effective project without spending hours on paperwork. Funds were distributed only with submission of the final report with attached itemized receipts.

Education about water conservation needs to be an integral part of school curriculum. Creating a hands-on learning environment enhances interest and serves as a practical laboratory to reinforce concepts.



Kindergarten students from Taylor Ranch Elementary School examine lettuce grown in their water conserving garden.

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The Groundwater Guardian Program

Educating and Motivating People to Care About and for Groundwater



Irma M. Reinpoldt

Of the various agencies and organizations available to guide conservation issues, one organization that helps the process by providing education and opportunities for involvement stands out in the pack—The Groundwater Foundation in Lincoln, Nebraska. Promoting public awareness about groundwater issues since 1984, it is one of the most successful private organizations in the country. Like many of Florida's local utility conservation programs, the Groundwater Foundation is dedicated to the creation of an informed citizenry caring about and for groundwater.

To foster and encourage water awareness, conservation, and protection strategies, the Foundation created an outstanding program with which every conservation person should become aware—Groundwater Guardians. The Groundwater Guardian Program supports, recognizes, and connects communities protecting groundwater. It is designed to empower government entities, utilities, local citizens, and communities to take voluntary steps toward protecting groundwater resources. Participation in the program can be a catalyst for groundwater protection programs, such as conservation, local watershed protection or source water protection program. Not a regulatory program, it relies on voluntary steps at the community level to enhance water conservation and protection strategies.

Groundwater Guardians believe that the creative, interactive community-centered conservation and pollution prevention activities are important tools to perpetuate public interest in and activity on behalf of groundwater protection. Two Florida governments, Pinellas County and the city of Tallahassee, in cooperation with NFWFMD, have answered the call.

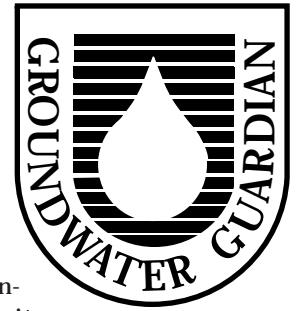
The Groundwater Guardian program can help a community or utility by:

- Raising awareness through educational materials and activities about the importance of groundwater and how to protect and/or reduce sources of its contamination
- Providing information and resources as a clearinghouse for information and technical assistance
- Inspiring communities to develop, sustain, and expand local groundwater protection activities
- Helping communities develop solutions that move toward more comprehensive and coordinated activities to protect groundwater
- Supporting regional and national networks of communities that facilitate communication and collaboration between local, state and national organizations to protect groundwater.
- Providing recognition for groundwater protection achievements of communities through a combination of local and national ceremonies sponsored by The Groundwater Foundation.

“Every great journey begins with a single step” reads the Community Guide to Groundwater Guardian. Many local conservation efforts throughout Florida have taken not only “the first step” but the lead in bringing groundwater issues before our communities.

Groundwater protection and conservation is an incremental process. Seldom are there fast solutions but, rather, a progressive series of “smaller steps” that lead to strong and lasting results. One step a community can take to facilitate all the other future steps is to explore this exciting conservation avenue. Despite a growth in water conservation awareness and activity, groundwater guardians are still needed.

You can be assured that you will develop clearer goals, plans, and timetables, engaging and exciting activities, a strong foundation for success, and subsequent recognition for your community. And don't be surprised if other communities look to you for guidance and leadership, too. Your utilities experiences may provide the missing pieces to another community's conservation success. The city of Tallahassee, NFWFMD, and Pinellas County invite you to join a growing network of communities taking active steps to conserve and protect groundwater. and welcome you to join our ranks. There is no entry fee. We encourage you to join this worthwhile pursuit by contacting The Groundwater Foundation at P.O. Box 22558, Lincoln, Nebraska 68542 (800-858-4844) or by checking its Web site at www.groundwater.org.



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Return to School

Thomas T. Jones



On April 11 I walked into the new and exciting world of secondary public education. I taught six middle school science classes at Temple Heights Christian School all about the intricacies of wastewater treatment, why it is important, and how it works. The effort was the result of my volunteering to “adopt-a-school” for FWEA as part of their public education effort. The purpose of the adopt-a-school program is to educate the general public, particularly middle school students, about the importance of water and how it is supplied and treated in our society. The material used in the classroom was supplied through WEF and included an 11-minute video, a student manual for each student, and a teacher’s manual on wastewater treatment.

To enhance the presentation and pique the students’ interest, the day before the class I collected samples of raw influent, activated sludge mixed liquor, secondary effluent, and filtered effluent from the Hillsborough County Falkenburg Road Water Reclamation Facility. Few if any of the students had ever seen wastewater in any form, and they were particularly fascinated with the influent and mixed liquor samples (“Yucky”). They were also impressed by the quality of the filtered effluent—in every class I asked for a volunteer to take a sip, and in every class I always got at least one volunteer. (Of course, I didn’t let them follow through, although I told them it was “probably safe to drink.”) Most of the kids seemed very interested in learning about the process, and in most classes I got a number of

insightful and challenging questions.

I found the day to be rewarding but also tiring. I would introduce myself and lecture for a few minutes, then show the video, then discuss the wastewater process in more detail using the student manual, and finally field questions.

I came away with a new respect for public and private school teachers and for the effort they put in for the pay they receive. I did not have any problems with discipline, probably because I was a new and unknown face and the teacher stayed in the classroom the whole time.

I believe the students came away with a new appreciation of what can be accomplished with wastewater treatment and what is involved in providing the infrastructure to supply, treat, and dispose of water. As they enter the public debate on water supply, use of reclaimed water, water pollution, etc., they should have at least a basic grasp of some of the terms and technology involved.

Thomas T. Jones, P.E., is with Parsons Engineering Science

The Adopt-A-School program is being sponsored by the FWEA Public Education Committee to encourage members to interact with the schools in their area and provide them with a contact person who can assist them in enhancing their knowledge on environmental matters, give tours of treatment facilities as well as a supplying the school with a complete set of the WEF video curriculum series. The series includes units on wastewater treatment, surface water, ground water and water conservation. If you would like more information on Adopting-A-School, contact Julie Karleskint with the Public Education Committee at 941-925-3088.



The author shows students treated effluent.

Toilet Retrofit Issues —A Look Down the Line Stuart Feinglas and Norman Davis



The National Energy Policy Act (NEPA) heralded in an ambitious retooling in the vitreous china industry. Manufacturers and importers of toilets and other water-using fixtures and appliances immediately had to meet higher water-use efficiencies. This article examines the design modifications manufacturers use to achieve 1.6 gallons per flush (GPF) and looks at other issues as the ultra-low flow (ULF) toilet floods the marketplace.

Prior to the NEPA, toilet manufacturers had been creating lower flow toilets to meet an increasing demand in drought-stricken regions. While those local and federal efforts were laudable, little thought was initially given to quality factors in the manufacturing industry. To meet the requirements of the existing laws, a manufacturer’s product merely had to pass a set of fluid exchange tests with the lowest acceptable score. As for

measuring performance, the tests were marginal at best, especially when evaluating the load carrying of solids. Inevitably, low volume toilets earned a bad reputation for performance.

By the late 1980s, manufacturers had designed 3.5-GPF tanks and bowls that worked as well as the older, higher flush volume models. To comply with the new NEPA requirements for ULF toilets, most manufacturers started out with a standard 3.5 GPF toilet and retrofitted it for 1.6 GPF.

Ultra low flow toilets now save water through the use of several techniques: modified flappers, variations on the toilet dams, and limited tank size. These features combine with a redesigned bowl and trapway to produce a quality flush. At issue is the ability of the customer to override the limiting device and inadvertently revert to a 3.5-gallon toilet. Of course, given a resourceful customer, any device can be overridden, but some manufacturers' designs lend themselves to being easily disabled by the customer by mistake. It should be noted that few evaluations have revealed a significant or wide spread problem.

The Flap Over Flappers

Toilet flappers are of two types: floating and sinking. The traditional standard is the floating flapper where, once the flapper is raised by the flush arm, the flapper floats upright until the water level reaches the bottom of the tank. Then the flapper lowers by gravity and seals against the valve seat. Once sealed, the pressure of the water in the tank keeps the flapper closed until the flush arm is again raised. Each time the toilet flushes, the majority of the water drains from the tank.

Some manufacturers use the early closure sinking flapper to achieve a 1.6-gallon flush. With a full 3.5-gallon tank, the flush arm raises the sinking flapper releasing water with the head pressure achieved with the full 3.5 gallons. The flapper begins to close early in the flush cycle and reaches the bottom after 1.6 gallons of water have been released. These flappers operate with either a floating device (foam block, etc.) on the flapper chain above the flapper or a time released air bladder built into the flapper to control the flush.

The problem with early sinking flappers is that they could usually be replaced by a floating flapper (the most widely available type) by an unknowing customer when the flapper developed a leak,

and that immediately retroverts the ULF toilet into a 3.5-gallon toilet. The toilet will appear to flush normally, though much more water is used. Most customers don't realize they have lost all future water savings.

Floridians are especially vulnerable because of high mineral content in water. The natural response to mineral staining is to use more and stronger toilet cleansers. Many customers like the convenience of an automatic cleaner containing harsh chemicals. Higher-than-normal levels of chlorine or ammo-

nia can lead to premature flapper failure. Seasonal customers may experience the worst problem as chemical crystals continue to dissolve in the tank during their vacancy. In such an environment a new flapper can fail within weeks; if the ULF flapper is replaced with a traditional flapper, all savings are lost.

Possible solutions include excluding early-closure flappers from rebate programs or requiring early-closure flappers to mount onto the tank in a different manner than standard flappers. At the very least, manufacturers should clearly

stamp a flapper style code into the body of the flapper and the tank with a message "use only type 'A' flapper in this toilet," for example.

Water Over The Dam

Toilet dams are another method to reduce flush volume. These toilets use standard 3.5-gallon tank and standard floating flappers, but they incorporate a toilet dam or tank in a tank. The top of the dam is below the fill line of the tank so that as the flush cycle begins the full head pressure is available. As the water drops below the dam, the tank water is held back, and the water between the dam and the sides of the tank is retained. Unable to flow through the flush valve the toilet then uses only 1.6 gallons of water per flush.

Toilet dams can be easily disabled, although it takes intent and is not likely to be done unknowingly. To decrease the likelihood of tampering with toilet dams they could be cast as an integral part of the tank. This would all but eliminate retroverting the ULF toilet to a 3.5 gallon model.

Tanks A Lot

The most foolproof way to reduce toilet consumption is to reduce the tank size so only 2 gallons can be held. Some manufacturers are planning to use this option, but it requires a tall, narrow tank that does not fit in many existing locations.

No Tanks

Some toilets use the tank as a holder for a pressurized flush system. These units are self-contained and generally not adjustable by the customer. They are reliable, expensive, and often at the top of the performance curve.

Commercial facilities often use flush valve systems that eliminate the need for a tank and provide instant availability for the next user. These systems are adjustable and often are adjusted above 1.6 gallons due to the abuse they must withstand. Lower flush volumes combined with paper seat covers have been known to create line problems in commercial toilets.

If The Shoe Fits

Toilet bases vary in size from manufacturer to manufacturer. Most flooring installers do not remove the toilet when installing flooring. When an old toilet is replaced with a new model, there is often a visible gap in the flooring. Customers are not often told about the gap before installation and are usually unhappy with the results.

Some manufacturers are aware of the problem and oversize the base of their toilets. There is also a product called the toilet shoe which covers the area with a white plastic base.

What To Do

Toilet manufacturers are looking into ways to modify existing designs, but retooling is expensive. Professional groups, such as the AWWA Conservation Division, fund research and open dialogues with all parties involved to explore the issues. Ultimately, new standards and guidelines should be drawn up to address these issues. Prescriptive standards have the effect of mandating specific hardware modifications to reach a desired end, while performance standards set the end result while allowing more creativity to reach those ends within the industry.

Agencies and water departments that use retrofit programs to generate water savings must be aware of potential problems and modify criteria to meet their needs. Effort should be put into ensuring the availability of proper replacement parts at local stores. Every new technology goes through a development process. When problems exist, be sure to relay your experience to manufacturers and trade organizations so they can be aware of them and consider your needs in their future plans.

Of course, as toilet rebate programs have been rolled out across the country, technology has continued to develop. Most rebate programs today experience at least a 97% satisfaction rating. Toilet retrofit programs are proving to be a valuable tool in the effort to keep top quality water from needlessly going down the drain.

Stuart Feinglas is a program manager for VOLT VIEWtech,

Water Wise Awards: Incentives and Savings

David Bracciano and Nanette Holland

 Reinforcing the message that "conservation begins at home," the state's largest wholesale water supplier this year launched an innovative initiative targeted at a segment often overlooked in traditional incentive-based conservation programs: building contractors.

The West Coast Regional Water Supply Authority's Water Wise Awards Program recognizes and rewards homebuilders in the Tampa Bay region who incorporate water-saving features both in and outside their model homes. The program serves the dual purpose of demonstrating to builders the marketing value of designing water-thrifty homes and landscapes, and educating potential homebuyers about the need for conservation and the financial savings that result from using less water.

Conservation is an increasingly important tool for meeting the water supply needs of the rapidly growing Tampa Bay region of Hillsborough, Pasco, and Pinellas counties. The authority recently completed a Comprehensive Regional Water Demand Management Plan that identifies how water is used by the public currently and through the year 2030. Without any

conservation proposed in the plan, regional water use for single and multi-family usage could increase as much as 78 million gallons per day by the year 2030. Approximately 30 to 35 percent of this water may be used for irrigation.

The Water Wise Awards program puts into practice the principles promoted in the Demand Management Plan by enlisting the support of the building industry in achieving demand reduction goals and spreading the conservation message to new residents who often are unaware of the water supply challenges confronting the Tampa Bay region.

Although 1997 marks the inaugural year of the awards program, its seeds were actually sown in 1996 when the authority, the University of Florida's Cooperative Extension Service, and the Builders Association of Greater Tampa (BAGT) collaborated on a Showcase Home that featured a water-thrifty, environmentally friendly "Florida Yard." The landscape of the Showcase Home blended drought-tolerant, low-maintenance plants with existing native habitats. The popularity of the Showcase Home with visitors during the 1996 Hillsborough Parade of Homes highlighted the growing public interest in water conservation and illustrated the

potential for an ongoing partnership with the building industry to promote conservation concepts.

In early 1997, the authority and its Conservation Coordination Consortium (CCC)—composed of conservation experts from the authority and its member governments (the Southwest Florida Water Management District and the Natural Resources Conservation Service)—began to develop the Water Wise Awards with assistance from a consultant hired by the authority. CCC members developed criteria for evaluating homes entered in the program, and several of the members agreed to serve as judges.

Nominations for the awards were limited to model homes entered in each county's Parade of Homes. This helped make the program manageable from an administrative standpoint, enabled the program to capitalize on the publicity associated with the various Parades of Homes, and, to some extent, ensured the cooperation and participation of the respective building associations, for whom the annual Parade tours are a premier event and the focal point of their marketing efforts.

To make homebuilders aware of the Water Wise Awards, information and nomination packets were sent to each builder entered in each Parade of Homes and followed up extensively by telephone and fax to answer questions and urge their participation. Local newspapers also published press releases about the program.

The region's builder associations assisted in promoting the program by publishing articles about the awards program in their newsletters and allowing the project consultant to speak about the awards program at monthly meetings. Builders interested in being considered for an award were asked to

submit floor and landscape plans of their models for the judges to use as references. Custom-designed brochures about water conservation and special "snipe" signs promoting the nominated model homes were delivered to entries prior to the start of each county's Parade of Homes. These materials provided a marketing tool with which nominated builders could promote their homes, and allowed the project team to educate prospective homebuyers visiting the models about the benefits of water conservation.

The actual awards judging consisted of a site visit to each nominated home to inspect indoor plumbing fixtures and appliances, review landscape designs and test irrigation system for proper design and operation. Builders were not awarded points for water-saving features required by code, such as low-flow toilets or rain sensors, but points were deducted if they did not have those features.

Because most of the homes were fairly equal in the indoor conservation component of the review, the judges paid particular attention to landscape and irrigation design. Among the elements that earned nominees high scores were use of appropriately programmed irrigation controllers, installation of separate irrigation zones for turf and planting beds, appropriate selection of plants for the site, clustering of plants with similar cultural requirements, preservation of existing trees or native vegetation, directing of downspouts onto planted areas, and use of permeable paving materials.

Winners were selected on the basis of their overall scores as determined by each judging team. Although three categories were offered based on home sale price, not all categories produced a winner if the judges decided that none of the entries met

the minimum qualifications. However, each county produced at least one overall category winner. Additionally, several Awards of Merit were given to nominees that the judges deemed worthy of some recognition for their conservation efforts.

Plaques were awarded to the winning builders at each county's formal Parade of Homes banquet, followed by another round of publicity in local newspapers and trade publications such as *Builder/Architect* magazine. Each builder who participated in the program received a personal letter thanking them for their participation. The letters described the positive features of their home noted by the judges, as well as areas where they could enhance water savings, and provided information on local programs that offer guidance in water-thrifty home and landscape design.

The Water Wise Awards have done more than just lay the foundation for a positive and productive partnership with the homebuilding industry—one that we hope will continue for many years. Equally important are the lessons the project team learned from the endeavor—namely, that as conservation advocates we need to do a better job of educating homebuilders,

landscape designers, and irrigation system installers about water conservation and how they can help us reach our common goals. The authority's CCC members now are discussing how to improve our communication and outreach with the building industry in coming months, so that next year's Water Wise Awards will be an even greater success.

David Bracciano is with the West Coast Regional Water Supply Authority and is the project manager for the Water Wise Awards program. Nanette Holland of Enviroscript provided consulting services to the project.

Addressing Privatization: Past, Present and Future

Phil Gilden



For the last thirty years in Florida, governments have been buying water and wastewater utility systems from private utility owners. For the next thirty years, it appears that many governments will be considering returning those same utility systems to the private sector in one manner or another.

Privatization has been the buzz word in the water and wastewater industry in the 1990s, and it is likely to continue to be a major focus of government utility owners into the twenty-first century. What is really going on, and how can government utility owners address the privatization phenomenon?

To begin with, privatization has probably been present in government owned utilities since the beginning of the utility industry, except we didn't call it privatization. Government utilities have always outsourced various aspects of utility operations. What utility in the state has not historically privatized their engineering design functions and construction management services? The same can be said for a variety of functions, such as building maintenance, rate making, landscape maintenance, billing and collection services, and even legal services.

What is new to the privatization scene, however, is the total privatization of government utilities. This can range from

privatizing operations and maintenance functions to transferring ownership of all or part of the utility (taking different forms, such as outright sales, long term leases, and part sale/part lease).

Major national and international private utility operations companies have entered the playing field with aggressive marketing efforts. The pressure on local government utility owners to privatize is becoming more and more intense as the financial stakes increase for both the governments and the privatizers. Government utility owners are being confronted by a myriad of questions and issues regarding privatization.

In the right circumstances, privatization can provide substantial benefits. It is not, however, a panacea for all governments. What circumstances favor privatization and when it should be done are important issues. In any event, the potential benefits from privatization demand a close look by every government utility.

In FWEA's continuing role of providing education on today's issues, its Privatization Committee is presenting a seminar entitled "Addressing Privatization" at the Adams Mark Hotel on Thursday, September 18, 1997. Nationally known and respected experts on privatization, as well as esteemed professionals from across Florida, will share experiences and expertise related to trends in privatization,

historical perspectives, long-term ramifications, why and when to privatize, managed competition, competitive assessments, and implementation.

The speakers include Frederick Perrenot from the city of Houston, Barry Gullet from the Charlotte/Mecklenberg Utilities, Alan Manning, chief executive officer of EMA, Mary Carole Cooney, Atlanta's deputy city attorney, Alan Ispass, director of the Orange County Public Utilities, John Pine, from United Water Florida, and Bob Hagel, director of the SCRWWTP in Delray Beach. In addition, the seminar will feature displays by industry participants.

The registration cost for the seminar is \$125. The Adams Mark Hotel, located on the Atlantic Ocean in Daytona Beach, offers a special seminar rate of \$82 per night, double occupancy, plus tax. On Friday, a golf tournament will be held on the championship 28-hole golf course at the Indigo Lakes Golf Club in Daytona Beach.

For additional information, call Wendy Mundell at 561-641-3481.

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