

The President's Corner

by Bill Graham

Summer is about here and it is generally not a rainy season. That's why so many of the articles in this Sentinel are dedicated to water quantity and conservation. Each year at this time we also have an article on DNR and their work on Boating Safety.

Among the other important articles is the notice that revised Septic System regulations will be published on May 26th in the State Register and they call for a 75' setback from waterbodies. This is a significant step forward from the current 50' and it is based on a scientific study conducted in the Low Country. We have worked closely with DHEC in supporting this change and look forward to a similar Septic System study being conducted around Lake Keowee so that we can be assured that the Low Country findings translate well to the soils of the Upstate.

Please take the time to attend the important FOLKS Forum on June 12th at 6:00pm at the Duke World of Energy – the subject will be the recently completed Recreation Use and Needs Study (RUNS) of Lake Keowee. Duke will be filing the report to the FERC on or about June 1 and there will be a public comment period (usually 30-45 days). This study will become the basis for Recreation Management Plan (RMP) that will soon get underway. FOLKS will be a study team member for this work as we were for the RUNS. We are leaving plenty of time for this Forum as there is a tremendous amount of information.

Other exciting things are happening: The update from Bob Swank on the 319 Grant is indicating that we may have some new effective tools to use in determining the "source" of fecal coliform contamination; The continuation of Liz Wagner's articles on Native Plants is a critical part of our focus on lakeside buffers and drought resistant natives; and the article by Christa Jordan and Erin Cooke on the "Green Roof" for our new-to-be-built equipment storage building should spark your interest. Also, we are coming down the homestretch to installing the pervious paving parking element of the LID project.

Our Annual Meeting was a huge success. All of the 150+ members enjoyed a Low Country Boil and we thank Joe Crosby and "The Coach's Low Country Brands" for underwriting it as a donation to FOLKS. Three new Board members were elected at the Annual meeting to replace retiring board members. The new members are: Carl Dunn, Dot Jackson and Matt Huddleston. We will highlight them in the next Sentinel. We thanked the retiring Board members for their years of dedicated service: Tom Berenz, Bob Swank, Dick Millward and EH Harris.

Stellar Service Awards were also presented to: Don & Leona Brewer and Paul Marschewski for their untiring efforts; EH and Pat Harris for their work on Fundraisers; Dave and Claire Lasier and Bart & Stephanie Schmidt for the years they have organized the Annual Meetings; Dick and Cuddle Millward for their years of running the Annual Golf Outing and everything else they were called upon to help with; and the Cane Creek 319 Team for the excellent work they are doing: Matt Huddleston, Heather Stephens, Bob Swank and Morris Warner.

Please enjoy your summer on the lake and make sure that the Captain of your boat is "the designated driver" – DNR is serious about BUI ("Boating Under the Influence").

Bill Graham

The Hunt for Bacterial Threats to Lake Keowee

by Bob Swank

While awaiting DHEC approval to sample the Cane Creek watershed under our recently amended 319 TMDL Grant to apply and test 3 source identification (SID) techniques for Fecal Coliform (FC) contamination at the 10 “hot spots” identified there last summer, FOLKS samplers have used this lull to do some recon sampling of other potential FC threats to the lake.

Specifically, we decided to take a look at a cove of the lake itself where ducks and geese were reported to us as having been routinely fed over a long time by a homeowner on the cove. As we prepared to sample, we noticed numerous ducks coming into the cove down near the home of the feeder, so we took some samples in that area while the ducks were present. One deeper water sample showed almost zero counts, but another sample nearer the surface, under a slime scum, showed counts in excess of 360 (the SC standard is 200 counts). The lesson here is **DON'T FEED THE GEESE AND DUCKS!**

We also responded to a call from a concerned resident living above a small, multi-spring- fed wooded stream that flows from his property across a lake-side residential development into Lake Keowee. The caller had become concerned after he noticed intermittent “white foam” on a pond in the stream on his property. We sampled upstream of his pond, just below where 3 spring-fed branches meet, and in his pond under the “white foam” present that day. Given the overall stream water clarity and the fact that only a relatively few residences, all on septic systems, are adjacent to the upstream 3 branches and combined stream; we did not anticipate high counts at either site. However, these came back 1400 and 2800 counts, respectively. We are applying SID techniques to see if the problem is human (septic system failure) or wildlife.

Finally, we also did some sampling relative to one “hot spot” in Big Cane Creek. Specifically, we sampled a spring-fed, wooded drainage ditch running adjacent to an arm of the Walhalla sewer line just above where that ditch enters Big Cane. The counts came back well above the SC standard in the ditch just downstream of a short row of residences along it and the sewer line, indicating the possibility of broken service lines or sewer leakage in that area. Preliminary SID results indicated the source was human. These results were reported to the Walhalla Utility office for follow-up investigation and remediation.

In all 3 cases above, we will follow-up with more detailed SID sampling later this spring and summer. We also plan to conduct other SID recon all around the Lake, so stay tuned for more information down the road!

Oconee County 4-H2O PONTOON CLASSROOM: July 7-11, 2008

by Jason Caudill, County Extension Agent

4-H2O PONTOON CLASSROOM - In partnership with the Friends of Lake Keowee Society (FOLKS), the Extension office in Oconee County offers this water resources program to youth ages 9-13. The week-long program will be offered from 8:30 am to 12:30 pm on July 7-11 at High Falls County Park. They are looking for volunteer Pontoon Boat Captains. Please contact Jason directly at 638-5889. Pontoon boats will serve as transportation as we take an in-depth look at Lake Keowee, which acts as the 'classroom' for this program. The purpose of this event is to educate youth about water quality, conservation, and stewardship through a mixture of hands-on activities. The cost for this program is \$50 per participant, which includes a notebook, t-shirt, materials, snacks, and a hot dog lunch on the final day. For more information or to obtain registration information, contact Jason Caudill at the Oconee Extension Office at 638-5889 Ext. 116.

Clemson University Cooperative Extension Service offers its programs people of all ages, regardless of race, color, gender, religion, national origin, disability, political beliefs, sexual orientation, marital or family status and is an equal opportunity employer.

Should you require special accommodations due to a disability, please notify our office at least ten days prior to the event.

Contact: Jason Caudill; County Extension Agent; Oconee County Extension; 638-5889

Pickens County 4-H20 PONTOON CLASSROOM: June 16-18th

by Marguerite Porter, Pickens County 4H Agent

4-H20 PONTOON CLASSROOM – FOLKS has been asked to assist the Extension office in Pickens County for their 4-H20 Pontoon Classroom. The week-long program, for children 8-12, will be offered from 8:00 am to 12:30 pm on June 16-18 at the Mile Creek Boat Landing. Pontoon boats will serve as transportation as we take an in-depth look at Lake Keowee, which acts as the 'classroom' for this program. They will require 4 pontoon boats for June 16th and 17th. Please contact Marguerite directly to volunteer. The purpose of this event is to educate youth about water quality, conservation, and stewardship through a mixture of hands-on activities. The cost for this program is \$25 per participant, which includes a certificate of completion, t-shirt, program supplies, snacks, and a hot dog lunch on the final day. For more information or to obtain registration information, contact Marguerite Porter at the Pickens Extension Office at 878-1394.

Clemson University Cooperative Extension Service offers its programs people of all ages, regardless of race, color, gender, religion, national origin, disability, political beliefs, sexual orientation, marital or family status and is an equal opportunity employer.

Should you require special accommodations due to a disability, please notify our office at least ten days prior to the event.

Contact: Marguerite Porter; Pickens County 4H Agent: 878-1394
marguer@clemson.edu

Adventures in Lake Sweeping

by Crewman Harry Wertheimer

Captain's kits were obtained, and our assignment was the Little River, section E-5, the south side (see map inset), and E-6, the same channel north bank. This narrow channel runs generally west from the Stamp Creek Landing basin to the bridge on Burnt Tanyard Road. Alas, you can't even go to the bridge in a kayak, let alone a power boat. Still, we resolved to do our best. We had planned to go out on a Sunday, but the weather proved to be windy and quite cool. There being no masochists among us, we postponed.



Thursday dawned clear and otherwise propitious. Captain Joe Mihelick readied his 22 foot pontoon boat, and as recommended by FOLKS, we equipped ourselves with some long handled fish landing nets

and binoculars. These proved indispensable.

Starting up the Little River, it appeared we'd have little to collect since the north shore of the channel is part of the Riverstone development and is private property. Alas, as soon as we passed the last dock, we spotted a beach just littered with detritus. As Captain Joe skillfully eased the boat to the beach, crew members nimbly jumped ashore with nets in hand. Soon it became apparent that the large plastic bags from the kits would be needed to hold all the wondrous items thoughtful picnickers had chosen to leave behind. As we motored slowly around the cove, other littered beaches came into view. At first they would seem clean, but then the binoculars would reveal a flash of green or a non-natural sparkle and close observation led us to another trash rich landing. This process was repeated numerous times. Some landings proved treacherous in that they involved wash down of tree limbs that looked like good footing but yielded wet feet. Typically, if a beach was accessible by road, you could expect to find litter. Are picnickers who come by boat neater?

At one point the Little River forks. The north fork, leading to the aforementioned bridge proved to be way too shallow for our boat. We were able to navigate a short distance up the south fork and were rewarded with more fertile pickings.

Among the many treasures we acquired, were 6 shoes (none matching), countless beer cans, plastic beverage bottles of every size, some empty and others with suspicious liquid contents, motor oil containers, and some small round black boxes that were either for fishing bait or perhaps smokeless tobacco. Additionally there were bobbers, garments, and a saturated Styrofoam paddleboard. A large decrepit green plastic piece of furniture was seen on a

point, too high up and too large for us to capture. Our reporting this item should lead to its collection by Duke Energy.

After about four (4) hours, we finished covering our designated shoreline to the extent possible. We then headed for Stamp Creek Landing and utilized the trash receptacles there. See photos. As lovers of Lake Keowee, we all felt that our efforts were totally worthwhile and the result of a pleasantly active morning.

Jim Urove and Captain Joe Mihelick



Right Jim Urove places loaded bags in receptacle



Opinion Tuesday, Apr 29, 2008

Set limits on river usage, to preserve limited resource

THE CATAWBA RIVER is designated the most endangered river system in the nation by an environmental watchdog group.

South Carolina is heading into another parching summer without any extra rainfall predicted and every single county still officially in a state of drought — in a dozen cases, severe drought. Population growth both in South Carolina and in the North Carolina counties that get first dip into our rivers is increasing the demand by industry and individuals for cheap, readily accessible, clean water.

Our part of the world is changing, and we haven't quite wrapped our minds around it yet. We've always taken water for granted — a free, unlimited resource, much like the air we breathe. But like other areas, the South is being forced to realize that water — at least water where we want it, when we want it, at the price we want — is a finite resource, that everyone who uses fresh, clean water reduces the amount available for others. And unless the scientists are all out of their minds, the pressure on this limited resource will only grow as droughts lengthen and deepen and populations swell. (Think Atlanta, summer of 2007.)

Attorney General Henry McMaster has responded to this new norm by taking North Carolina to court over its plan to divert some water away from the population centers of South Carolina.

The Legislature has not been so forward-thinking. With time running out in this session, it has reached an impasse on a plan to require permits and state oversight for new or expanding industries that want to draw large volumes of river water. (Current use would be grandfathered in.) This would bolster Mr. McMaster's arguments before the U.S. Supreme Court, make it easier for our state to strike water-sharing agreements with other states and, most importantly, start us on the path of dividing up this limited resource in a fairer way.

The problem is that about the only time the Legislature does anything that pits two powerful groups against each other is when those groups reach a compromise, and in this case the two groups — environmentalists and industry — haven't managed to do that. Utilities and other industries that use huge quantities of water have a legitimate fear that limits could stymie growth. And we're not convinced the public's right to river flow adequate for kayaking should trump a power company's right to generate additional electricity.

But environmentalists have the upper hand here: Without adequate water, life cannot exist; if people can't get the water they need to survive, and survive comfortably, they're liable to pack up and leave South Carolina. If aquatic life suffocates, if forests die off and wetlands dry up because rivers don't flood as they're supposed to, if sewer plants downstream can't afford to treat the wastewater because plants upstream depleted the river flow too much, then it doesn't matter how prosperous an individual business is.

The clock is ticking — on this legislative session, and on the era of abundant water. It might be unpleasant, but lawmakers need to act. There are lots of important details, but at its heart the impasse is over how much water companies must leave in the rivers. Given the consequences of setting those levels too low, and the reality of our Legislature, it's far better to

err on the side of too much water in the rivers than too little. You can always loosen the limits later if it turns out that they are too conservative. But with this Legislature, the opposite will not be so easy.

DNR to have Increased Presence on Lake Keowee this summer

by Bill Palmer

Capt. Larry Holbrooks with the South Carolina Department of Natural Resources presented our Oconee County Legislative Delegation with a shopping list last Feb. He was successful and we will see three patrol boats on Lake Keowee this season.

There will be a saturation weekend in June. There will be a special patrol boat to give free inspections. Watch for a DNR public notice or go to FOLKS website <http://www.keoweefolks.org/links.htm> click on DNR - Department of Natural Resources to find out the exact location you can have your boat and equipment checked for the boating season. DNR does this inspection free of charge.

At select areas patrolmen will be handing out free t-shirts with a graphic which reads “**I Got Caught Wearing My Life Jacket**” to children observed to be wearing their life jackets while boating on the water. *Major tip... this is a South Carolina law*

One quick way a boat owner will lose \$450 is to have any boat passengers tipping their feet over the bow of the operating boat. Capt. Holbrooks has some graphic photos showing the consequences of allowing this boating practice. *Major tip... this is South Carolina law and you will be ticketed*

Capt. Holbrooks and his personnel want to see an accident free summer on Lake Keowee. He regretted to say spring has already had accidents. He reported a fisherman had run into an island the night before this interview. To make boating safe on Lake Keowee his patrols will be out 24/7. They will conduct equipment checks. Each boat must have a sound device, approved life jackets for each person onboard, rescue throwing devices, a fire extinguisher, working navigation lights, up to date boat registration and a “sober skipper.” South Carolina Laws, SECTION 50-21-112

http://www.keoweefolks.org:80/youcando/boating_safety_regs.htm contains the penalty of \$200 and 6 month suspension for the first BUI conviction.

Boats from out-of-state must be in full compliance with these laws as well. Please do not tell a patrol officer that your state does not require the above items. All states have adopted a common code of safe boating laws. *(Major tip... these are South Carolina laws and you will be ticketed if in violation)*

Who do you call when there is a problem on the Lake? Put this number in your cell phone **888.481.0125**. DNR mans this number at all times and will respond to your problem. Capt. Holbrooks and his trained personnel are good people and are there to help you have a safe boating experience.

Let's all have safe boating experiences this summer!

FOLKS Forum June 12, 2008
Duke Energy Recreation Use and Needs Study (RUNS)
by Bill Graham

The recently completed RUNS study will be the topic of discussion at the June 12 FOLKS Forum to be held at the World of Energy starting at 6:00p.m. This study was conducted by the Louis Berger Group and facilitated by Bill Ambrose of Heron Cove Partners. It was initiated in the summer of 2006, is in the final stages of completion and will be filed with the Federal Energy Regulatory Commission (FERC) on or before June 1.

Chuck Smith represented FOLKS on the RUNS Study Team which was comprised of: Duke Energy, US Fish & Wildlife, SC Department of Parks, Tourism, and Recreation, US Army Corps of Engineers, SC Department of Natural Resources, FOLKS, North Carolina Department of Parks and Recreation, Oconee County Parks and Recreation, Pickens County Parks and Recreation, and the Clemson University Parks, Recreation and Tourism Department.

The study involved weekly on site visits to each of the Lake Keowee public access areas to interview retreaters; questionnaires sent to lake side homeowners as well as off-lake homeowners and "extended local area" homeowners; photographic fly-over's on three Holiday weekends and several summer weekdays as well as pre season and post season.

We expect that there will be either a public comment period following the FERC publication of the RUNS on or shortly after June 1st. This forum as well as the availability of the extensive study data will allow the public ample time to comment on the study to the FERC.

The next step is the development of a Recreation Management Plan (RMP) which will be the management basis of the public recreation areas on Lake Keowee until the relicensing of Lake Keowee in 2016. FOLKS will again be a member of the study team.

Bill Graham 638-0927

Greenery on the Roof

Christa Jordan & Erin Cooke – Clemson Horticulture Graduate School

FOLKS is working to reduce stormwater runoff. Stormwater runoff is one of the primary threats to the water quality of Lake Keowee. Stormwater runoff carries pollution from our streets and yards, such as oils from our cars and lawnmowers, pesticides and fertilizers from our gardens, silt and sediment caused by erosion, and even poop from our family dogs and cats, directly into the lake.

Stormwater runoff is most effectively managed by increasing the amount of rain that is absorbed where it falls. FOLKS has been working to demonstrate stormwater management techniques with the planning and installation of rain gardens, rain barrels, and permeable parking at their office in Seneca. Most recently, they have been partnering with Clemson University and Saul's Nursery in Atlanta, GA to introduce a new stormwater management option to the Lake Keowee area – Green Roofs!

The FOLKS green roof will be installed on top of their new 10x20' equipment shed instead of a traditional metal or shingle roof. It will be made of a system of modular plastic trays that hold about 4 inches of an expanded shale planting medium. The trays will more or less serve as flower pots for a mix of *Sedum* and *Delosperma* that will cover the roof with red and green foliage, and small pink, white, red, and yellow flowers. It is estimated that this green roof will absorb up to 70% of a one inch rain, a category that includes most of the rain events that occur in Upstate SC. The building itself will serve as a testing and monitoring facility to gauge the amount, temperature, and pollution levels of the rain water flowing from the green roof.

This project began early in 2008 as a class project for two landscape architecture graduate students in Professor Mary Haque's horticulture class, Erin Cooke and Christa Jordan. With the help of another Clemson professor, Dr. Jeff Adelberg, Saul Nursery was soon brought into the project with the donation of about a dozen stock plants, planting medium, and trays – everything the project would need to get underway. Dr. Adelberg and his plant propagation class worked through the semester to propagate the dozen or so small stock plants into the hundreds needed to cover the 10x20' roof.

The plants for a green roof must be adapted to withstand extreme heat and drought. Although many plants may be used depending on the type of green roof being installed, the hardiest and easiest plants for a green roof are *sedum*, followed closely by *delosperma*. These succulent plants can go up to 90 days without water, and will not require supplemental irrigation.

Construction of the FOLKS green roof is slated to begin in the fall. This green roof will serve as a test and demonstration of the applicability of green roofs to the Lake Keowee area.

Green roofs offer many benefits over traditional roofs. They mitigate stormwater runoff, insulate against temperature and sound, and reduce the urban heat island effect. They are nice to look at, and can range from low-growing crops of sedum to full gardens with trees, paths, and gazebos. Green roofs are eligible for LEED Green Building credits (Leadership in Energy and Environmental Design).

While new to the Lake Keowee area, green roofs have been used for many years, especially in Germany. They are seeing a surge in popularity in the United States in recent years

SC DHEC Revises Septic System Regulations

by Bill Graham

Septic System Regulation 1354 has not been updated since the mid 1980's. Newly revised and updated regulations will be published in the SC State Register on May 26, 2008. Among the major changes in this revision are: a 75' setback for any part of the septic system from a lake (currently 50') and the set aside of an additional 50% of the drainfield area for possible repairs (currently 100% required for commercial drainfields but none for residential).

The basis for the change to 75' was work contracted by SC DHEC three years ago in the Low Country where it was found that Nitrates appeared in the ground soil down slope of some drainfields up to 65' from the edge of the field. This meant that with the current 50' setback, it was possible for nutrients to enter a waterbody like Lake Keowee.

FOLKS supported these regulation revisions by presenting a supporting document and met with the SC DHEC Board to present our supporting position. We also gave testimony at an Information Meeting in Columbia.

FOLKS has been working closely with SC DHEC to have them do a similar study around Lake Keowee. The process in the sandy soils of the low country was to "punch" test holes at various intervals from the edge of the field. That isn't possible in the Upstate due to different soil compositions. SC DHEC has agreed to contract for such a study and is currently developing the scope of work.

We congratulate SC DHEC on this important move and have gone on record that the next revision we would like to see is something dealing with "Septic System Maintenance". Everyone agrees that this is a significant missing element of the regulations. It is widely understood that for septic systems to work effectively and prevent deterioration of surface water quality, they must be designed properly, sited properly, installed properly, and maintained properly.

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A one-two punch of booming development and historically low rainfall is threatening to alter both the landscape and the way of life in the Southeast. Previously, an abundance of cheap water and land fueled rapid development and population growth. But the record-breaking drought that we're in now is drying up lakes and rivers, shriveling lawns and pastures, and generating legal battles over water rights among the states.

More folks, less water

Population growth, development and water use in the Southeast are all outpacing the national average. *Business Week* (Oct. 18, 2007) noted that water consumption in the Southeast grew 15 percent from 1990 to 2000, compared with just 2 percent nationwide. The population rose by 20 percent vs. 13 percent for the nation, with the region adding 4.4 million people since 2000 and more moving in each year.

"The drought is a serious short-term issue, but it has opened our eyes to the water problems we have and to the fact they won't be going away," says Jeff Allen, director of the S.C. Water Resources Center at Clemson. A study he completed in January showed that land development in the I-85 corridor of Upstate South Carolina outpaced population growth by a ratio of 5-to-1 from 1990 to 2000. A study conducted for coastal counties found a similar relationship between the development and population growth. "This rate of development will continue unabated unless regional development policies change," says Allen.

Gene Eidson, director of the S.C. Center for Watershed Excellence, says, "Water may become the next determinant for economic development. Without it, hydropower plants cannot generate electricity, industries cannot function, and municipalities cannot support new commercial and residential developments."

The center is part of Clemson's Restoration Institute. Designated by the U.S. Environmental Protection Agency, the Center for Watershed Excellence is charged with supporting research and education programs that foster development and implementation of cost-effective watershed management throughout the state.

To address these and other issues, the S.C. Water Resources Conference will be held in North Charleston in October 2008. The conference will provide a forum to discuss current water policies, research projects and water management throughout the state. It will complement a similar conference held in Georgia on alternate years, encouraging collaboration rather than conflict between the states.

Participants will come from universities, regulatory personnel from the local to federal levels, industry, environmental managers, environmental consultants and engineers, nonprofit watershed groups, environmental attorneys, public policy decision makers, municipal and regional water authorities, economic development organizations, land managers and interested public stakeholders.

Eidson also leads an annual forum, called Savannah River at Risk, which focuses on issues in the Savannah River basin. It brings together scientists, environmental regulatory agencies and economic developers from Georgia and South Carolina to discuss issues such as sharing water supplies and waste load allocations, as well as managing dissolved oxygen rates and chemical contaminants that can threaten the river's viability for commercial and recreational usage.

Meanwhile, back on the farm

Water issues affect rural areas as well as urban. **Clemson scientists and Extension agents have held regional drought management meetings for more than 300 livestock producers.** They've shared forage management strategies, herd-culling priorities, byproducts feeding strategies, and equine body condition scoring and nutrition guidelines.

Animal scientist John Irwin recommends feeding baled corn stalks and soybean straw when hay is scarce. Forage specialist John Andrae recommends planting rye, ryegrass and oats to extend the grazing season and minimize hay needs during the drought. The online Home and Garden Information Center provides fact sheets on plant selection, mulching and watering (hgic.clemson.edu).

Water quality is as important as quantity. Oconee County Extension agent Morris Warner works with farms to reduce pollution caused by faulty septic tanks and by cattle entering rural streams. Scientists at the Baruch Institute of Coastal Ecology and Forest Science in Georgetown are using remote data sensors and transmitters to provide real-time data on water quality before, during and after development of property in the Bannockburn Plantation. A plan is in development to extend the remote data collection system to all watersheds in South Carolina through an interdisciplinary team that includes Gene Eidson, Steve Klaine, Chris Post and other scientists.

Sustaining the environment

Baruch stormwater engineer Anand Jayakaran is studying ways to mitigate stormwater runoff caused by urban development, which prevents rainwater from being absorbed by the land. Hydrologist William Conner is measuring the effects of global climate change on freshwater tidal forest wetlands as sea levels rise and push salt water into coastal rivers and marshes. Biosystems engineer Dan Hitchcock is evaluating sustainable solutions to environmental impacts caused by converting forests to urban areas, which can increase runoff and pollutants in rivers, lakes and marshes.

A statewide team of Extension agents led by Cal Sawyer is working with local officials, engineers, contractors and private citizens to reduce pollution caused by stormwater runoff and erosion. Regional consortia have been created for the S.C. coast and midlands, with more in development. Public education programs inform citizens how they can minimize their impact on water quality. And lakes and streams are protected from sediment at construction sites across the state through the Certified Erosion Prevention and Sediment Control Inspector program.

Additional information can be found at the Baruch Institute (www.clemson.edu/baruch), the Restoration Institute (www.clemson.edu/restoration/ecology) and the S.C. Water Resources Center (www.strom.clemson.edu/teams/water_resources).

**The Reserve Raises Funds for Pickens County Meals on Wheels
And the OMC Hospice of the Foothills
Atlanta Homes and Lifestyles 2008 Designer Showhouse**

Volunteers from the Pickens County Meals on Wheels Program and the Oconee Medical Center Hospice of the Foothills will guide visitors through the Atlanta Homes and Lifestyles 2008 Designer Showhouse on the grounds of The Reserve. Tours will be held each Thursday-Sunday between July 10th and 27th between 10:00AM and 5:00PM with the last tour starting at 4:30PM and 100% of the \$12.50 ticket receipts will go to the benefit of these two fine Oconee/Pickens County Programs.

For more information:

www.thereserveshowhouse.com

<http://www.oconeemed.org>

www.pcmow.org

Try these plants in your landscape!

Lisa Wagner, Director of Education, South Carolina Botanical Garden

Over the last year or so, I selected many favorite plants to feature as Plant Notebooks in the Friday garden page for the Anderson Independent-Mail. I choose these on the basis of being low-maintenance, drought-tolerant, and landscape worthy, with a special interest in their wildlife benefits. I also tried to feature plants that are reasonably available to local home gardeners, or easily ordered online and through mail order. I'd like to share a few of these picks with you, as plants that I'd want to include in any landscape.

Oakleaf hydrangea

Hydrangea quercifolia

Hydrangea family (Hydrangeaceae)

Shade to partial sun

Acid, rich soil

Moist to dry

Native to the Southeastern U.S.

- large shrub 6 to 8 ft., deciduous, but often with persistent leaves through winter
- spectacular clusters of flowers with showy white bracts in late spring, turning to pink with age
- large, leathery oak-shaped leaves that turn maroon in fall
- attractive rusty brown peeling bark provides winter interest
- good landscape plant for understory show

Photo: Jim Fanning

Witch alder

Fothergilla major

Witch Hazel family (Hamamelidaceae)

Partial shade

Acid, rich soil

Moist to dry

Native to the Southeastern U.S.

- large, densely branched colonial shrub 6 to 12 ft. (try Dwarf Fothergilla, *F. gardenii*, for a smaller plant or the hybrid of the two, *Fothergilla* 'Mt. Airy')
- fragrant male and female flowers, in terminal spikes; male flowers have showy yellow stamens
- great fall color ranging from red, orange, or yellow, to maroon
- named after Dr. John Fothergill, a English gardening enthusiast who financed William Bartram's travels in North America
- good plant for borders, woodland understory, or as accent plant

Photo: Lisa Wagner

Coral Honeysuckle

Lonicera sempervirens

Honeysuckle family (Caprifoliaceae)

Partial to full sun

Acid to neutral soil (rich in organic matter)

Drought-tolerant

Native to the Eastern U.S.

- twining woody vine that is evergreen or tardily deciduous in mild winters
- beautiful clusters of trumpet-shaped red flowers in late March and April and intermittently through the fall
- prune back in the winter for increased flowering; don't overfertilize
- flowers attract hummingbirds and butterflies
- fruits attractive to songbirds
- easy to grow on a fence, trellis, or in a container; non-invasive
- many cultivars available

Photos: Lisa Wagner (on stone wall)
Tim Spira (flowers close-up)

Crossvine

Bignonia capreolata

Bignonia family (Bignoniaceae)

Sun to partial shade

Average soil

Drought-tolerant

Native to the Southeast

- evergreen woody vine with small glossy leaves
- attractive fragrant trumpet-shaped yellow flowers from late winter to early spring
- compact and dense growth in sun, twining in shade
- easy to grow on a fence, trellis, or in a container; non-invasive
- cultivars available; very drought-tolerant

Photo: Lisa Wagner

Water Conservation “Water Efficiency” by Ben Turetzky

As we have stated many times, water conservation must become a way of life. The frequency and duration of droughts have dramatic effects up and down the Savannah River Basin. Residents around Lake Keowee who do not venture down towards Lake Hartwell or further down to Lake Thurmond, are not as acutely aware of how dramatic the current drought still is. If we consider the period since January 1, 2007, various reports state that the Upstate still has a cumulative rainfall deficit of over 20". The most recent Official DNR drought report cites:

“Lakes such as Hartwell and Jocassee are still well below normal heading into the summer months. In addition, while we have observed some improvement in groundwater levels the recovery is slow.” The committee (State Drought Committee) will meet again in June to determine the drought status going into hotter summer months when rainfall is expected to decrease.

In recent Sentinel articles we have: compared water usage around the world; discussed and gave references for conservation measures that you can take in the home, and in your yards; and discussed water saving devices for the kitchen and bathroom. In this article we'll touch on another aspect of water conservation: the price versus value of water and “water efficiency”.

In some undeveloped areas of the world the use of bottled water is necessary but here in the United States we think nothing of paying upwards of \$10.00/gallon for bottled water, that many sources agree is no better than the tap water in most parts of the country. (Putting aside the current scientific discussion about harmful plastic plasticizers leaching into the bottled water and the recycling issues.) We have a different view of the water that we pay for coming out of our faucets. We constantly read of the uproar if a municipality raises the price of water and the price of that water is about 0.2¢/gallon – while bottled water is 5000 times as costly! – a testament to the amazing power of marketing.

In a number of areas of the country, water billing has gone to a tiered system where the more you use, the higher the cost per gallon. As an example, the Central Florida's Orlando Utilities Commission water bill is based on a tier system: the first 3000 gallons/month are billed at \$.63/1000 gallons while if you use 30,000 gallons/month it is billed at \$5.00/1000 gallons. Their average monthly usage is 12,000 gallons. Where ever we live, if we follow some of the simple suggestion already presented like not running the water while brushing your teeth or shaving; filling the dishwasher completely before running it; fixing leaks when you first see them ... each of us can conserve water. It isn't always necessary to use a tiered system to instill the habit of conserving water but the likelihood of water rate increases is high. One of the reasons for future increases is that across the country we have installed water and wastewater distribution and collection systems and some have thought they would last forever. Old water pipes wear out and give out as do old sanitary wastewater pipes, as we have recently

seen to be the case in Walhalla. To the extent that this situation exists in the Upstate, we will be paying for repairing and/or reinstalling new pipes. The other issue mentioned in the beginning of this article was "water efficiency". Water Industry organizations estimate that there is about 15% of "unaccounted for water". This figure was based on a 1995 USGS survey which stated that, of the 40 billion gallons of water withdrawn each day by water utilities, only 34 billion gallons made it to the end-user customers. Unaccounted for water is a combination of leakage in the distribution system and inaccurate metering of usage. As an example, the Greenville Water System currently pumps about 30-40 million gallons/day (mgd) of treated water from Lake Keowee and we estimate that they are pumping a similar amount from each of their other two reservoirs, if that 15% unaccounted for number is applicable, they could be treating but not being paid for up to 15 mgd! Part of the solution to this issue is to find and repair distribution system line leaks and a second part of the solution is to replace older meters with new electronic metering devices. A second example is in this article from the Atlanta Journal Constitution dated April 9th:

City's leaky pipes make big splash

Atlanta has been a national poster child for sprawl, the too-big-for-its-britches Sunbelt region trapped in traffic. Now it's reached a new low-water mark, so to speak. In the May edition of Popular Mechanics, Atlanta's water system makes a list of the "10 pieces of U.S. infrastructure we must fix now." Noting we're in the midst of a drought, the magazine's Web site says Atlanta's plumbing is leaking as much as 18 percent of the city's water. It's not that bad: The percentage is based on 2003 regional data and includes water to flush pipes and test fire hydrants. The city now estimates unaccounted-for water at 14 percent, about average in the business. Still, the point is made. Crews recently have worked on pipes downtown and in Buckhead dating from 1897 and 1917. But the fix is well under way, as evidenced by the city's torn-up streets. Higher water rates and a penny sales tax are paying for a \$1 billion water system overhaul during the next decade. "It is a challenge to get our arms around the problems inherent in a system as large and as old as Atlanta's, but it is one *that* we are determined to meet," said Janet Ward, spokeswoman for the Atlanta Department of Watershed Management.

The bottom line is that the cost of household and industrial water will not be going down but one way we can all help is by getting knowledgeable about these issues and each doing our part to instill water conservation in our everyday lives.