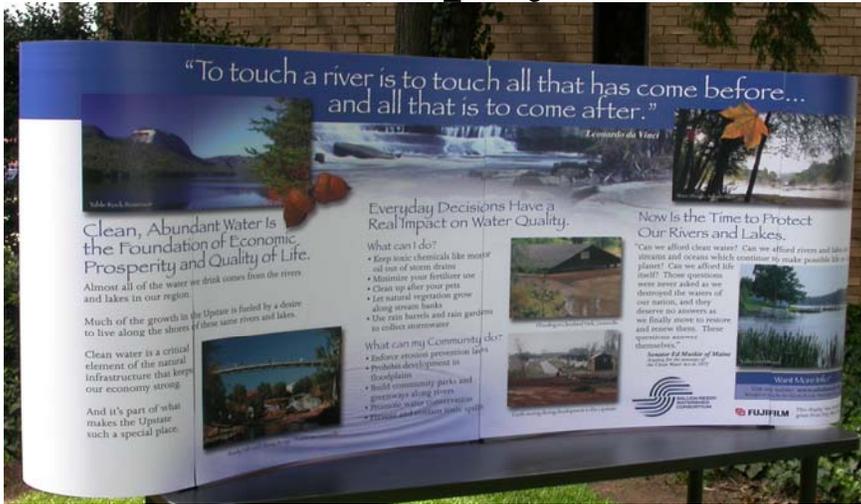


The Saluda-Reedy

WATERSHED NEWS

PARTNERS FOR WATERSHED AWARENESS:

SRWC and Envision Complete Educational Display for Public



Look for this full-color display encouraging watershed awareness at upcoming events and festivals throughout the Saluda-Reedy Watershed

A new display is making the rounds at festivals and events throughout the Saluda-Reedy watershed this fall. The newest installment of the Saluda-Reedy Watershed Consortium's public outreach and education campaign is a full-color educational display about how local actions can help protect our rivers and lakes.

At its debut on August 11, 2005 at Furman University's *Music by the Lake* series, the display offered an educational introduction to watershed issues, as well as inspiration to become more involved.

But that's not all. While viewing the display, festival attendees can pick up magnets, bookmarks, stickers and other types of watershed information, as well. These take-home materials provide website addresses, telephone numbers, and contact information for how to participate in a river cleanup, report a

pollution violation, or schedule an educational presentation. At the events, a volunteer or member of the consortium will be available to answer questions about the display or other water issues that concern the public. In addition to the display and materials, a Speakers Bureau of qualified presenters is ready to go to meetings and gatherings to speak with interested groups.

So if you are interested in learning more about our watershed, scheduling a speaker for a presentation to your garden club, or just want to see an eye-catching display, contact Rebekah Guss, Reedy River Watershed Education Coordinator at rguss@strom.clemson.edu or 864/656-7136 or Jennifer Rennicks, Watershed Project Coordinator at jrennicks@upstateforever.org or 864/250-0500.



WELCOME TO THE SALUDA-REEDY WATERSHED NEWS!

The purpose of this newsletter is to keep citizens and leaders throughout the Upstate up to date on the progress of the Saluda-Reedy Watershed Consortium's efforts to ensure clean, healthy, and abundant water for all.

Each issue includes updates on a variety of Consortium projects, as well as information on upcoming events of interest to watershed professionals, local officials, and concerned citizens.

WHAT IS THE SALUDA-REEDY CONSORTIUM?

The Saluda-Reedy Watershed Consortium is a collaborative effort by organizations and individuals concerned about the impacts of changing land use on the purity and abundance of water in the rivers and lakes of the Saluda-Reedy watershed.

As our region grows, the shift from rural to urban land use has the potential to do lasting damage to rivers, lakes, and streams – unless we develop with care.

The goal of this project is to provide local leaders and the public as a whole with the tools and information they need to take good care of our rivers and lakes.

AQUATIC EXCHANGES:

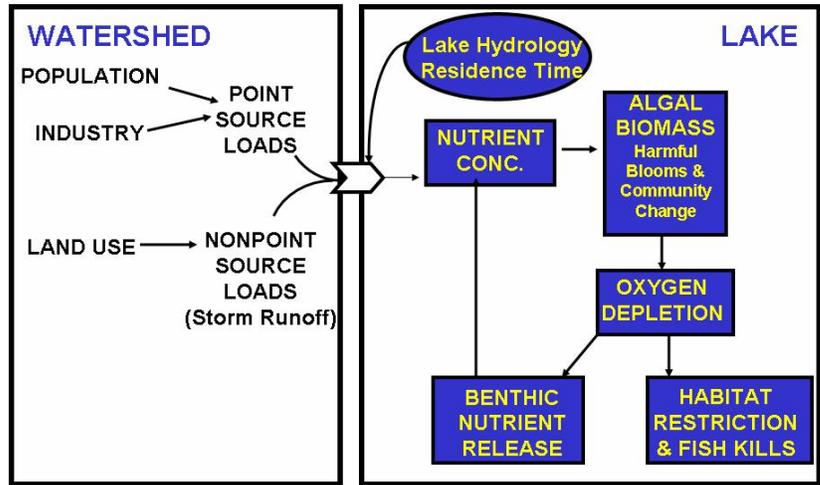
Water Quality Studies Reveal Links Between Rivers and Lake

The latest round of Saluda Reedy Watershed Consortium-funded research projects has concluded and two reports have focused on water quality issues in Lake Greenwood, located at the bottom of the watershed.

The first study, conducted by researchers from Clemson University's Environmental Toxicology Institute, monitored sampling stations on the Saluda and Reedy Rivers just before the rivers enter Lake Greenwood. The stations measured a range of contaminants in the rivers including nitrogen, chloride, iron, aluminum and others.

Concentrations of all contaminants (except total suspended solids [TSS]) were higher in the Reedy River, likely due a higher number of point-source discharges in that basin. TSS amounts in the

Modeling Nutrient Loads and Lake Eutrophication



Flow chart depicting point and nonpoint source loads in the Saluda-Reedy Watershed and nutrient interactions in Lake Greenwood. Image courtesy of Hank McKellar. SC DNR © 2005

Saluda basin were higher than those in the Reedy Basin, most likely due to its larger size (almost twice the area) and greater amounts of agricultural lands.

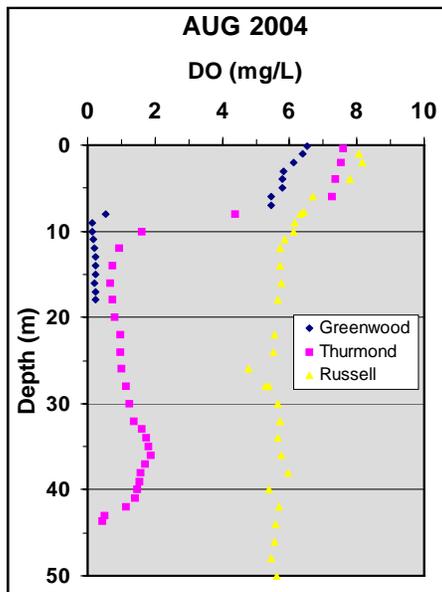
Sampling also measured the rivers' flow rates and concluded that the Saluda River's flow rate is approximately three times greater than the Reedy River. The study concluded that, with the exception of total suspended solids, both rivers contribute similar contaminant loadings to Lake Greenwood. The suspended sediment loadings into Lake Greenwood from the Saluda River were significantly higher than from the Reedy River. These findings will help managers and policymakers better manage natural resources within the watershed.

A second study, conducted by the Department of Natural Resources, focused on Lake Greenwood itself by gathering water samples from the lake to develop a future water quality model. This project will model the nutrient-algae-oxygen interactions that occur in the lake and sometimes cause algal blooms and oxygen depletion. The samples, taken throughout 2004, indicated fairly typical readings for the first half of the year: high phosphorus concentrations in the surface waters of the upper half of

the lake settling into the sediment layers further downstream. Dissolved oxygen in the bottom waters of the lower end of the lake declined rapidly from well-mixed conditions in March (8-10 mg/L) to low-oxygen conditions (less than 2 mg/L) by mid-May. This rate of oxygen depletion (greater than 4 mg/L/month) culminated in bottom-water DO concentrations in the forebay of less than 0.2 mg/L from May through October.

Results gathered in late summer and early fall were influenced by the excessive rains caused by storm events. While the heavy rains generated higher levels of phosphorus in both the Saluda and Reedy River inputs to the lake, the rains may have also caused the lake to flush more rapidly than normal in September, perhaps stimulating an autumn algae bloom in the mid-section of the lake.

Future projects funded by the Consortium will build upon the results from these projects by establishing a new sampling station below Lake Greenwood, taking additional samples from the rivers above the lake and creating a water quality model for Lake Greenwood.



Seasonal oxygen depletion in Lake Greenwood is evident as compared to oxygen levels in nearby lakes. Image courtesy of Hank McKellar, SC DNR © 2005



AN OUTREACH (R)EVOLUTION:

Watershed Workshops Lay Groundwork for Future Watershed Leaders' Forums

If you saw them on your way to work or during your lunch break, you may have wondered what a busload of businessmen were doing surveying the new Falls Park Bridge in Greenville, poking around Lake Conestee, or convening at Ware Shoals.

Over the past six months, the Saluda-Reedy Watershed Consortium has hosted nearly 30 government and business leaders from across the Upstate for three day-long field trips to a variety of sites within the Saluda-Reedy Watershed. As a complement to these immensely successful Watershed Workshops, the Consortium is preparing to launch a new series of interactive information sessions in the coming months, dubbed the Watershed Leaders' Forum.

More than 1,000 community leaders from across the watershed will receive invitations to attend these quarterly Forums starting this fall.



Photo courtesy of John Sitton © 2005

Attendees of the June 2005 watershed workshop

Where these forums differ from the workshops is in structure. Unlike the workshops, which last all day and deal broadly with many different watershed/water quality issues in informal lectures, the forums will last a half-day, cover only one topic, and rely on more formal presentations.

Each Watershed Leaders' Forum will cover a specific topic in an information-rich format. Likely topics include:

- **Streams on the cheap:** Low-cost stream restoration techniques for developers and municipalities
- **Twenty-first century sewers:** Developing an action plan for prioritizing and financing sewer line upgrades

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Watershed Insights Report No. 1

Sedimentation in the Upper Reaches of Lake Greenwood

Pinnacle Consulting Group

NRCS National Technical Service

Lake Greenwood was constructed in 1940 on the Saluda River near the town of Greenwood, SC. The lake has a surface area of approximately 11,400 acres and receives runoff from a watershed of 1,165 square miles (745,900 acres) situated in the Upper Piedmont.

The report summarizes a study of sedimentation in the upper reaches of Lake Greenwood. Conducted under the direction of the Saluda-Reedy Watershed Consortium (SRWC), this work documents significant sedimentation that has impacted the lake since its construction. Historic land uses in the rural areas of the watershed have included extensive row crop agriculture during the 40's and 50's, giving way since the 60's to a landscape dominated by mixed forest cover. In the upper portion of the watershed, particularly in the Reedy River subwatershed, the rural landscape has been rapidly converted to urban and suburban land uses. In both rural and urban areas, poor conservation practices have resulted in sediment being delivered to area streams and lakes at an accelerated rate. Much of this sediment ends up in Lake Greenwood or other impoundments in the watershed. The Buzzard's Roost Dam at Lake Greenwood is an operating hydroelectric facility; the lake is a significant recreational resource for west-central South Carolina. Lake Greenwood is the sole drinking water supply source for the City of Greenwood and much of Greenwood County. Therefore, water quality is of great concern to local residents and officials.

This SRWC study was conducted in the upper reaches of Lake Greenwood, in the area where the major tributary streams enter the lake. This area comprises about seven percent of the lake. The study was performed in two phases:

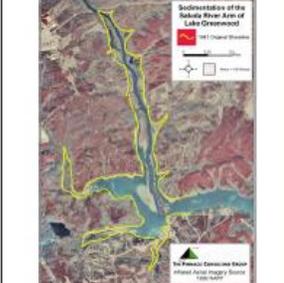
- The Natural Resource Conservation Service (NRCS) conducted a survey via boat to assess how much sediment had accreted below waterline (elevation 439 feet) and
- Pinnacle Consulting Group, an SRWC member, used GIS techniques to measure areas not accessible by boat, including areas where sediment had accreted above the waterline.

This study has shown that in the upper seven percent of Lake Greenwood, approximately 307 acres of water area has disappeared due to sediment accretion. Equally important, roughly 6200 acre-feet of water storage capacity has been lost in just this small portion of the lake. Including the sediment volume accreted above waterline, the total volume of sediment delivered to the upper portion of the lake is 11 million cubic feet. As the sediment from upstream has accumulated, these headwater of acres

This project was sponsored by the Saluda-Reedy Watershed Consortium and has received technical review by Pinnacle Consulting Group and the NRCS. The collaboration of the Pinnacle Consulting Group and the NRCS National Technical Service is also appreciated. Watershed Insights Report No. 1, submitted for review by SRWC on 10 April 2004. Key Contact: Dr. Dana Smith, Pinnacle Consulting Group, Inc. 703-810-8100.

The SRWC is a broad-based group of universities, public agencies, private contractors, and non-profit organizations focused on ensuring "Clean, Healthy and Abundant Water for a Sustainable Economy and Environment Throughout the Saluda-Reedy Watershed."

of accreted sediment have now become vegetated land surface, although regularly flooded. In adjacent areas of the lake, accumulating sediment has made the water progressively more shallow. The map below shows sedimentation in the Saluda River area of Lake Greenwood (one of several such areas of the lake).



- The sedimentation equates to:
- 307 acres of lake surface area transformed to vegetated bottomlands, not including exposed mud-flats.
 - An average of 16.6 cubic yards of sediment delivered to the lake for every acre of land in the applicable portion of the watershed, or about 11.2 tons of soil trapped in Lake Greenwood for every acre of the watershed, or 2.4 dump trucks of soil per acre of the watershed.
 - Over two billion gallons of water storage volume lost due to sedimentation, which equates with about 3000 gallons of storage lost for every acre in this portion of the watershed.

While some accumulation of sediment into near-shore impoundments such as Lake Greenwood is natural, the SRWC believes that rates of sediment yield in the Saluda-Reedy watershed have been significantly accelerated compared to natural conditions. The SRWC views it as contrary to study historical land cover and other factors affecting rates of sediment yield.

- In addition to the loss of water supply capacity, the rapid accumulation of sediment negatively affects Lake Greenwood in several other ways, including:
- Loss of waterfowl land to accreted sediment, which in turn restricts lake access from homeowners' properties, and may cause a loss of property value.
 - Deposition of sediment causes the lake to become shallower, degrading habitat and raising water temperatures that can contribute to more frequent and various algal blooms.
 - Sediment input from upstream sources can carry pollutants that can harm both humans and wildlife.
 - Increased turbidity not only degrades water quality and habitat, but also results in increased water treatment costs for consumers, and
 - Shallower water leads to decreased boating and recreational access from the lake and therefore lost recreational capacity and reduced recreational revenues.

A sample watershed insight report currently featured on www.saludareedy.org courtesy of Pinnacle Consulting Group

SHEDDING LIGHT ON THE WATERSHED: Upcoming Watershed Insight Reports To Provide In-Depth Look at SRW

Over the past year, the Consortium has been hard at work gathering, analyzing, and publishing data about every aspect of the Saluda-Reedy watershed. By early fall, we will put twelve new one-page Watershed Insights Reports on a variety of topics (listed below) on our website to share our work with the public. We'll send an e-mail to all interested parties with a link to the documents. For more information, contact Jennifer Rennicks at (864) 250-0500 or go to www.saludareedy.org.

Reports will include:

- Domestic, industrial, and commercial water use trends
- History, impacts, and intensity of flood dynamics
- Causes and impacts of droughts
- Water quality report card
- Extent and conditions of trout streams
- Inputs and discharges to and withdrawals from the watershed
- Lake Greenwood water quality trends
- Sources and dynamics of nutrient loading into Lake Greenwood from upstream
- Land use change analysis and predictions
- Economic valuation of pollution impacts
- Public knowledge and attitudes regarding water quality and watershed conservation
- Introduction to watershed history



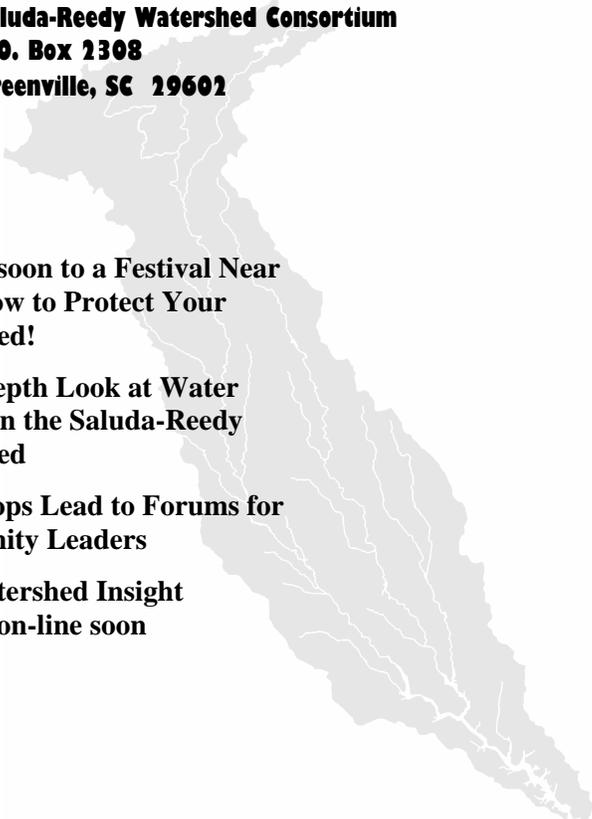


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INSIDE...

- Coming soon to a Festival Near You: **How to Protect Your Watershed!**
- **An In-Depth Look at Water Quality in the Saluda-Reedy Watershed**
- **Workshops Lead to Forums for Community Leaders**
- **New Watershed Insight Reports on-line soon**



WANT MORE INFO ABOUT THE PROJECT?

Contact: Jennifer Rennicks,
 Saluda-Reedy Project Coordinator at
 Upstate Forever (864)250-0500 or
jrennicks@upstateforever.org

OUTREACH (R)EVOLUTION:

continued from page 3

- **A legacy of waste:** Containing, managing, and cleaning up abandoned floodplain industrial sites
- **Moving water between rivers:** The legalities, practicalities, and ecology of interbasin transfers
- **Take it to the bank:** The benefits of stream mitigation banking for communities, developers, and the environment

At the end of the day, participants will take home a 10- to 15-page summary of the topic covered at the forum. Summaries of past topics will be available to new participants at later forums.

The goal of the forums is to reach a broader constituency than the workshops, while providing participants with the information and encouragement they need to become watershed advocates. Networking with other leaders will promote links between different parties interested in watershed protection and stimulate shared community action.

All of those who receive this newsletter are on the invitation list to participate, so watch for an invitation in the coming months to take part in this exciting opportunity!



Interested in attending one of our field-based Watershed Workshops this Fall?

Land Use & Water Quality

Redevelopment & Rivers

Contact Dan Trout
 Friends of the Reedy River
 (864) 255-8946