

TVA River Neighbors

Putting the Water to Work An Integrated Approach to Managing the Tennessee River



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While heavy rains fell on many parts of the Valley during April, the Clinch Watershed was hit particularly hard. Norris Dam experienced the highest rate of discharge and reached higher elevations than any time in the last 61 years.

From its design to the way it operates, the TVA reservoir system is unique. While other dams in the U.S. are operated independently for specific purposes, TVA dams work as part of an integrated system to maximize benefits to the public and the environment. As a result, Valley citizens get more out of their river. This April's heavy rainfall illustrates just how this "integrated resource management" concept works.

"Let's put it this way--" observes Randy Kerr, "I'm glad we didn't have to deal with another inch of rainfall." As a River Forecasting Specialist in TVA's River System Operations (RSO), Kerr's job is

to handle that rainfall. He and his colleagues in RSO's Forecasting Center found their specialized skills tested to the limits during the heavy rains of April.

Excerpts from the lead engineer's notes--sort of an event "diary" kept during these times of critical decision-making--shed light on the complex process of moving great amounts of water through the system. The following abbreviated entries were made April 16-22. "Several tornadoes reported and rain is increasing... There will be large pick-ups on the main river if this rain occurs as forecasted... Melton Hill headwater still going up... Manned the routing room and ran the inflow model through 11 p.m..."

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An Integrated Approach *continued*

As the situation worsens, the sense of urgency increases: *“Need to issue a flood watch for Eastman Chemical... Asked power supply to have someone available throughout the night for data retrieval..."*

Watching the radar to determine when to shut off South Holston and Watauga...

Asked Weather Services for an update throughout the night...

Called about the Chattanooga gauge.

With us predicting near flood stage elevations tomorrow, we need it fixed first thing in the morning..."

Days of watching the forecast (and watching the rain) begin to take their toll: *“The office was staffed all night... At elevation 558 they must close the flood gates and begin sandbagging... Called Weather Services for an updated forecast at 4:15 a.m... Chattanooga crested this morning at flood stage... They asked me how certain it was the reservoir was going above 360, and I told them to count on it happening..."*

Finally, this resigned observation: *“Already the wettest April of record above Chattanooga, and more rain forecasted.”*

While these notes impart a sense of what it was like to manage the floodwaters, it's only when you read between the lines that you begin to get an idea of the intricate links between the various aspects of the river system. One thing's for certain: when lives and property are threatened by rising waters, every other function of the river system takes a back seat to flood control.

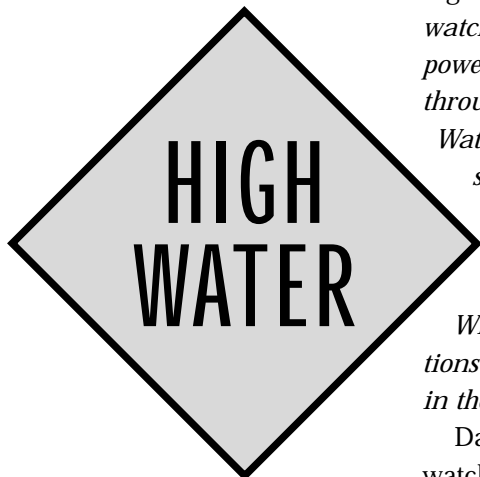
Take navigation, for example. A “safety zone” was established on a 10-mile stretch of the river below Chattanooga, suspending all barge traffic during this critical period. TVA's George Conner explains: “The current had become too swift for barge tows to safely navigate. With the lock at Chickamauga closed, this caused some real problems for shippers. We would never ask our customers to absorb these costly delays without a compelling reason, and we had one this past April.”

The rising waters also affected campgrounds and water-use facilities. As a facilitator at TVA's Melton Hill Land Management Office, one of Woody Farrell's responsibilities during extreme flood events is to notify the operators of commercial boat docks and marinas. “When we get the call from the folks in RSO, we immediately contact those individual operators whose facilities are faced with an imminent threat.”

A note of thanks from Sandy Podbielski, owner of a marina on Watts Bar Lake, reflects the value of this interaction: “Planning and making decisions during such a time can be particularly onerous, but your accurate water level forecasts and timely notification got us through with minimal damage.”

Power production is also affected during times of potential flooding. Adjustments to generation schedules, planned outages, and off-system power sales must often be made under extreme time pressure. But TVA Power Supply Specialist John Alford and his team of schedulers know their role: “During times of floods, RSO has total control over what we do and when we do it. Our job is to respond by managing the power system as best we can under those conditions.”

Meanwhile, the waters have receded. The system proved its worth once again, preventing \$450 million in estimated damages at Chattanooga and another \$50 million at Clinton. As the July 4th holiday approaches, Valley residents are still enjoying the benefits of the April rains. Lake levels are up and the extra water is being put to good use—as fuel to spin turbines and coolant for power plants; as habitat for fish and flotation for boats and barges; as a source of water for drinking, industry, and irrigation. And TVA's Water Managers are breathing a little easier—at least for now.



Sign Up For \$\$\$\$\$

Thinking about restoring or establishing a riparian buffer along a stream, wetland, or pond on your farm? Don't let the cost stop you. Funds are available through the Conservation Reserve Program (CRP) if the area is row-cropped or grazed by livestock. The voluntary program offers rental payments and cost-share assistance to establish long-term resource-conserving covers on highly erodible land. CRP funds are also available to restore cropped wetlands and implement other high-priority conservation practices. You can sign up anytime at your local USDA Service Center.

Now Available: Help for Local Watershed Initiatives

Community groups interested in watershed protection and improvement can tap into a new resource specifically designed to ensure their success.

The Southeast Watershed Forum is an information clearinghouse serving nine states, explains TVA's Wayne Poppe. "The goal is to provide the information, tools, and training people need to make a difference in the watersheds where they live. The Forum will help community groups find financial and technical assistance; learn what's worked—and what hasn't worked—for other groups; and access local, state, and national watershed information."

The idea for the Forum grew out of a conference held in Chattanooga last year on "Building Watershed Partnerships in the Southeast." In a follow-up evaluation, participants cited a need for a clearinghouse and expressed a desire for regional conferences, a regional newsletter, and a regional web site—all planned as part of the new Forum.

The Forum newsletter already is a reality. The first issue was published in May with assistance from an 11-member planning committee, representing a variety of agencies and non-profit organizations. It includes updates on state watershed programs and local initiatives, including the Fleming Creek Watershed Project in Kentucky, the Paint Rock River Initiative in Alabama, and others in Florida, Georgia, Mississippi, North Carolina, South Carolina, Tennessee and Virginia.

The Forum will host a roundtable in August to give local watershed groups a chance to discuss the implementation of President Clinton's Clean Water Action Plan with state and federal agencies. A Southeast Watershed Conference, regional training workshops, and an Internet community bulletin board also are planned as funding permits.

River Network and Know Your Watershed—two national organizations devoted to watershed education and management—are working with TVA to establish the Southeast Watershed Forum. For more information about the Forum, for a free copy of the newsletter, or if you have a watershed initiative which should be highlighted in a future issue, call TVA at 423-751-7328.

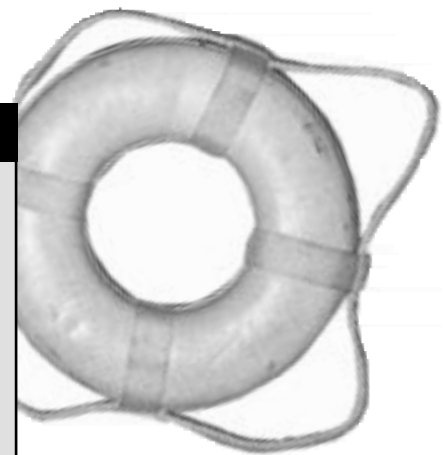
Watershed Course Set For September

A new watershed training course, called "Working at a Watershed Level," will be offered September 14-18 in Lexington, Kentucky. Designed for agency staff and interested citizens, the course will cover stream ecology, assessment and planning, restoration techniques, and public involvement strategies. The cost is \$290; \$350 after August 1. For more information, call 606-244-8228 or check out the course outline at <http://www.epa.gov/OWOW/watershed/wacademy/interfed/shedcours.html>.

W A T E R S A F E T Y T I P S

To be sure your summer is a safe one, follow these rules when enjoying recreation on TVA lakes:

- When boating, tell someone where you're going and when you expect to return.
- Avoid excessive speed and watch your wake.
- Exercise special caution when boating immediately above and below dams; water levels can change rapidly and without warning.
- Avoid alcohol and drugs—they are involved in 90 percent of all boating-related drownings.
- Always wear a personal flotation device, even if you're a strong swimmer.
- When pulling water-skiers, have an observer and allow enough clearance on turns for the boat and skier.
- If someone's in trouble in the water, throw something that will float or extend something to the victim rather than entering the water yourself.
- Swim in designated swimming areas, and never swim alone.
- Beware of wading on slippery boat ramps.



Corporate River Neighbor Wins Wildlife Habitat Award

It's a great way to demonstrate to the public that industry and nature can co-exist." That's how Danny Wallace describes his company's involvement in an innovative wildlife habitat program. Wallace is plant manager for Amoco's Decatur facility, a chemical manufacturing operation located on the south bank of the Tennessee River in Morgan County, Alabama.

In recognition of the company's efforts to "manage unused land in an ecologically

sensitive manner for the benefit of wildlife," the Wildlife Habitat Council designated the Decatur plant as the winner of its 1997 Corporate Habitat of the Year Award. Most of the facility's 1,000 acres are managed for this purpose—in a voluntary effort by management, employees, community members, conservation groups, and government agencies.

The forests, open fields, and wetlands are home to barred owls, wood ducks, deer, bluebirds, osprey, foxes, turtles, bald eagles, hawks, herons, and other wildlife. The habitat features a 1.3-mile walking/nature trail; butterfly and wildflower gardens; nest boxes for wood ducks, purple martins, and bluebirds; several aquatic plant species; and a wide variety of native trees, shrubs, grasses, annuals, and perennials.

Wallace is quick to point out that the achievement is a result of a community-wide effort. "Lots of volunteers worked shoulder-to-shoulder with our employees to make it happen," he says. "Local Boy Scout troops built osprey platforms and a cut-through trail, while Girl Scouts built a hummingbird/butterfly garden. Family members pitched in, too. I think everybody that worked on this project takes a great deal of pride in what we've accomplished."

For corporations that may be interested in participating in the Corporate Wildlife Habitat program, Wallace says that his company's involvement has been extremely rewarding. "This project has had a very positive impact on our relationship with the people of Decatur. We've had a chance to give back to the community, and local residents have had the opportunity to see what we're all about. A project like this serves as a great illustration of our commitment to this area."

For more information about the Wildlife Habitat Council's Corporate Habitat program, call Jana Goldman at 301-588-8994.



Girl Scouts from Troop 1180 planted a butterfly and hummingbird garden along the nature trail which is part of the award-winning wildlife habitat developed by Amoco's Decatur chemical plant.

TVA Lake Levels¹

Tributary Lakes	Observed June 15 Levels		August 1 Expected Levels ²	
	feet	meters	feet	meters
Blue Ridge	1687.6	514.4	1682	512.7
Boone	1381.4	421.1	1382	421.2
Chatuge	1926.2	587.1	1923	586.1
Cherokee	1071.5	326.6	1060	323.1
Douglas	994.3	303.1	990	301.8
Fontana	1704.0	519.4	1693	516.0
Hiwassee	1522.5	464.1	1515	461.8
Normandy	875.0	266.7	873	266.1
Norris	1021.1	311.2	1013	308.8
Nottely	1777.5	541.8	1770	539.5
South Holston	1730.3	527.4	1721	524.6
Tims Ford	888.2	270.7	886	270.1
Watauga	1959.6	597.3	1949	594.1
Main River Lakes				
Chickamauga	681.1	207.6	682	207.9
Fort Loudoun/Tellico	812.6	247.7	812.5	247.7
Guntersville	594.4	181.2	594.5	181.2
Kentucky	360.1	109.8	359	109.4
Nickajack	632.4	192.8	633	192.9
Pickwick	414.0	126.2	413.5	126.0
Watts Bar	741.2	225.9	740	225.6
Wheeler	555.0	169.2	555.5	169.3
Wilson	506.7	154.4	507	154.5

¹ Elevations above mean sea level.

² Elevations are based on normal weather conditions and may be lower or higher depending upon actual conditions.

Lake Operations Update

Blue Ridge Drawdown — Lake Blue Ridge will be lowered to elevation 1620 by October 31 for a formal dam safety inspection (required every five years). TVA will start the drawdown on August 1, so it will not impact the

agency's commitment to maintaining minimum summer lake levels under the 1991 Lake Improvement Plan. The work should be completed by mid-November, and the lake will be allowed to fill to normal levels next spring.

1998 Ocoee River Release Schedule — Water releases below Ocoee No. 2 Dam for commercial and private recreational boating began March 21 and will continue through November 1. Releases are scheduled five days a week through August and on weekends in September and October. Additional releases are planned in October for special events at the Ocoee Whitewater Center and for maintenance work at Ocoee Dam.

Tennessee River Lock Closures — Nickajack Lock, closed June 30 for routine inspection and maintenance, will reopen July 13. Kentucky Lock will be closed July 29 through August 10 to complete installation of a floating mooring bitt. Kentucky and Chickamauga Locks will be closed for two to three weeks in November. Crews will work on the lock gates at Kentucky and on the lock walls at Chickamauga. Watch the next issue of *Neighbors* for exact dates.

Navigation Aids — To report missing or damaged buoys, hazard markers, or dayboards on recreational channels, call TVA at 423-632-4678. To report missing or damaged navigation aids marking the commercial river channel, contact the U.S. Coast Guard. From Paducah, Kentucky, to Pickwick Lock, call 901-642-4457. Above Pickwick Lock to Knoxville, call 423-622-2101.

Check Web Site For Lake Level Information

TVA has established a site on the Internet to provide current and predicted lake level and stream flow information to the public.

The site contains the same information that has been available for many years through a voice-activated telephone system, which receives about a million inquiries a year and provides daily rainfall data from more than 250 stations across the Tennessee Valley. "The web site gives people another avenue to access current data on TVA lakes, and the technology allows us to update the information easily," says Janet Herrin, TVA's Vice President of Water Management. The site also has a mechanism for users to provide suggestions or comments to TVA. The web site address is www.lakeinfo.tva.gov.

Water Quality Update

TVA checked conditions in 17 lakes in 1997, and the results can be summed up in a word: *stable*. Overall health ratings stayed the same on all but two lakes. Conditions in Wheeler rated good (compared to fair in 1995), and conditions in Fort Patrick Henry rated poor (just a few points lower than in 1996, but enough to drop it below the “cut-off point” for fair). As in previous years, about a third of the lakes sampled in 1997 fell into each category: six rated good, six rated fair, and five rated poor.

pretty good picture of lake conditions.”

Comparing the 1997 results to those from previous years, Dycus and his colleagues observed several trends:

- Dissolved oxygen ratings stayed the same or improved in all 17 reservoirs monitored.
- Sediment quality was the same or better in 16 reservoirs.
- Bottom life held steady or improved in 15 reservoirs.
- Fish assemblages (types and numbers) stayed the same or improved in 13 reservoirs.
- Ratings for chlorophyll were poorer in eight reservoirs because algae levels were higher than desirable.

The overall picture is generally good, especially with regard to dissolved oxygen (an extremely important indicator of lake health). But the trend toward higher chlorophyll levels bears watching, says Dycus. “We’re seeing an uncomfortable direction in our data with regard to the amount of algae in our lakes.”

Last year’s weather is partly to blame. Heavy rains in March and June washed large amounts of phosphorus and other nutrients into Valley streams and reservoirs, “feeding” the growth of algae. Chlorophyll levels for parts of several lakes were the highest documented since monitoring began in 1990.

According to Dycus, significant differences among lakes in the same ecoregion, or environmental setting, can help in deciding where to target improvement efforts and where to focus on resource protection. “That’s really the whole point of our monitoring program,” he says. “It’s not enough to simply know what’s going on. We want to collect data that will support our efforts to take action in locations where improvements are needed and also to put protective measures in place to see that good ecological conditions are maintained.”

1997 Ecological Health Summary ¹						
		■-Good	■-Fair	□-Poor		
Lake	Overall Rating ²	Algae	Oxygen	Fish	Bottom Life	Sediment
Run-of-River Reservoirs						
Kentucky	□	■	□	■	□	□
Wheeler	□	■	■	■	■	□
Nickajack	□	□	□	■	□	■
Chickamauga	□	□	□	■	□	□
Ft. Loudoun	■	■	□	■	■	■
Tellico	■	■	□	□	■	□
Ridge and Valley Ecoregion Reservoirs						
Norris	■	□	■	■	■	■
Douglas	■	■	■	□	■	□
Ft. Patrick Henry	■	■	□	■	■	■
Boone	■	■	□	■	■	■
Blue Ridge Ecoregion Reservoirs						
Apalachia	□	□	■	■	■	□
Blue Ridge	□	□	■	■	□	□
Parksville	■	□	□	■	■	■
Nottely	■	■	■	■	■	□
Interior Plateau Ecoregion Reservoirs						
Bear	■	■	■	□	■	□
Little Bear	■	□	■	□	■	□
Cedar	■	□	■	□	■	□

¹ TVA monitors lakes on a rotational basis, sampling about half each year. If your lake isn’t listed here, it will be sampled next year.

² Overall ratings are not simple averages of ratings for individual indicators, which may carry either more or less weight—depending on the amount of information collected.

These overall health ratings are based on five “ecological indicators,” explains TVA Aquatic Biologist Don Dycus. “TVA collects data on dissolved oxygen, sediment quality, bottom life, fish assemblages, and chlorophyll at sampling sites located in different parts of the lake. When the results are evaluated in relationship to one another—and in the context of weather, river flow, temperature, and pollution from point and nonpoint sources—we’re able to get a

GOOD IDEAS FOR MARINA OPERATORS

Remember...clean water is necessary for good boating and therefore impacts your bottom line. Follow these tips to protect the environment and keep your marina "green."

Sanding and painting

- Encourage hull work indoors or under cover when possible; discourage dockside sanding and painting over the water.
- If work must take place over the water, have boaters stretch a tarp between the side of the boat and the dock to catch sanding dust, debris, and paint drops.
- Use dustless sanders and avoid the use of solvents.
- Install automatic shut-off systems on fuel nozzles.
- Provide absorbent pads to contain overspill and excess fuels.
- Display information on safe and clean fueling at each pump.

Waste management

- Provide your customers with a valuable service that benefits the environment—install pump-out facilities for houseboats.
- Provide plenty of well-marked trash receptacles, including those for waste to be recycled.

Fueling

- Create an emergency spill response plan for containment and cleanup.

On the Cutting Edge of Environmental Technology

In an on-going effort to find low-cost ways to address the problem of water pollution, TVA's Environmental Research Center (ERC) is experimenting with a way to use nature's tools—such as wetland plants and microbes—to break down pollutants and restore water quality.

The process is known as constructed wetlands technology, and the ERC operates one of the world's largest programs of research, development, and application of the innovative technology. ERC scientists have developed and refined a patent-pending process that allows wetlands to be designed with alternating environments—one where oxygen is present, and another where it's absent. This combination of environments is a breakthrough method for treating municipal and industrial wastewater as well as acid-mine drainage and toxic chemicals in surface and groundwater.

Research is conducted from a four-acre complex in Muscle Shoals, Alabama, that includes 32 outdoor wetland cells, a large greenhouse, and laboratories.

Celebrate Clean Boating Week on TVA Lakes

July 11-19 is National Clean Boating Week, and celebrations are planned across the Tennessee Valley to promote environmentally-friendly practices by boating families, marina operators, boat dealers, and manufacturers. Here are just a couple of events taking place on TVA lakes:

Kentucky Lake—Marinas, bass clubs, and area businesses will be encouraged to assume responsibility for keeping litter picked up from a one-mile stretch of lake shoreline. TVA's Clean Water Initiative will provide signs indicating which group is "adopting" each area, hand out brochures to houseboaters encouraging the use of marina pump-out facilities, and sponsor a dockside trash pickup for several lakefront subdivisions.

Chickamauga Lake—Team Coast Guard, the Tennessee Aquarium, the Tennessee Wildlife Resources Agency and TVA's Clean Water Initiative will sponsor the first annual Lake Chickamauga Clean Boating Celebration. Activities begin at 10 a.m. on July 11 at Lakeshore and Pine Harbor Marinas and on July 18 at Chickamauga and Island Cove Marinas. Boaters can learn about the impacts of pollution on recreational activities and receive free samples of environmentally-friendly boating products. Free t-shirts, pump-out coupons, and educational materials will be provided.

For more information on Clean Boating activities near you, call TVA's Linda Harris at 423-751-6453.



You're Invited: Take Part in Summer at LBL

The Homeplace-1850 Special Events

Independence Day-1850!
Saturday, July 4

Gospel Sing
Sunday, July 12

Old Time Fiddle Music
with the Dixie Volunteers
Sunday, August 2

4th Annual Children's
Heritage Festival
Saturday, August 8

Watermelon Social
Saturday, August 15

TVA's Land Between The Lakes National Recreation Area brings to life the history and customs of river settlers at The Homeplace-1850 living history farm. Many special summer events will be held at the Homeplace, which features 16 restored and historic home and farm buildings worked by interpreters in period clothing.

The Nature Station at LBL also offers plenty of summertime adventures. On Wednesday, July 8, you can visit the prairie in the evening—a time when it's normally closed to the public—and look for native elk, deer, and bison. On Friday, August 7, you can search for wildlife beginning their nightly routines as you paddle your canoe by the light of a full moon. These events require a reservation and program fee.

The Kentucky Drag Boat Association's summer race series will be held at LBL's



Pisgah Bay on July 11-12 and August 1-2. Time trials will be held on Saturdays, races on Sundays. For a \$4 fee, spectators are invited to bring lawn chairs or blankets and watch blown-alcohol, hydro, jet and flat-bottom boats racing at speeds of over 150 mph. For more information, call 1-800-LBL-7077, or visit the LBL web site at www.lbl.org.

TVA River Neighbors

Tennessee Valley Authority
Water Management, Clean Water Initiative
400 West Summit Hill Drive, WT 10-D
Knoxville, Tennessee 37902-1499