



UPPER LITTLE TALLAPOOSA RIVER WATERSHED

**SOURCE WATER STEWARDSHIP
EXCHANGE TEAM REPORT**

APRIL 30, 2003

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INTRODUCTION

THE STEWARDSHIP EXCHANGE WEEK & TEAM MEMBERS

The Trust for Public Land (TPL), in partnership with the University of Massachusetts and the USDA Forest Service, is conducting Source Water Stewardship Projects in four pilot watersheds throughout the United States to demonstrate land use conservation and forest management practices for source water protection. This project is designed to integrate and build-upon work underway, such as state source water assessments and other local planning efforts. Although the partners have been funded to provide technical project support, the Source Water Stewardship Project in each watershed is locally led and driven.

The Source Water Stewardship Project consists of three phases:

- ❑ Phase I: Analysis/ Assessment
- ❑ Phase II: Stewardship Exchange
- ❑ Phase III: Implementation.

During Phase II of the Source Water Stewardship Project, a team of five experts with the backgrounds requested by the Local Committee participated in a one-week Stewardship Exchange in the Upper Little Tallapoosa Watershed. (A complete list of the Local Committee is included in Appendix IV.) The Exchange Team consisted of *Michael Hines*, a waste water treatment consultant; *Ed Hoxsie*, Executive Director, Dutchess County, NY Soil and Water Conservation District; *Gary Lamont*, Project Coordinator, New York City Watershed Agricultural Program, NRCS; *Barry Tanning*, Associate Director, Tetra Tech, Inc., and; *Matt Zieper*, Research Director, The Trust for Public Land's Conservation Finance Program. (Biographies for each of the Exchange Team Members are included in Appendix V.)

The local committee coordinated roundtables and meetings during the week that exposed the team members to extensive information on source water issues affecting the watershed. Throughout the week, local committee members worked closely with the Exchange Team to use the data collected in Phase I to develop potential management alternatives for protecting source water. The Exchange Team's Recommendations will be the basis for Phase III, the implementation of the recommended strategies.

THE WATERSHED

The Upper Little Tallapoosa River (ULTR) – the primary drinking water source for the City of Carrollton – encompasses 95 square miles and lies almost entirely within Carroll County, Georgia, in the Piedmont region of the southern Appalachians. Interstate 20 bisects the northern half of the ULTR watershed (i.e., the section above Lake Buckhorn), and the city of Carrollton marks the lower boundary. The river is currently used for drinking water, recreation, and wildlife habitat, and receives treated wastewater discharges from the cities of Villa Rica and Temple.

Land uses in the watershed – traditionally farming, forestry, and low-density housing – are steadily changing due to people moving from Birmingham to the West and Atlanta to the East and settling along Interstate 20. Rapid residential/commercial development and onsite wastewater impacts in the northern half of the watershed, urban runoff from Villa Rica and Temple, loss of riparian vegetation along the main channel and tributaries, and fragmentation of forest habitat have caused concerns that water quality in the ULTR may be degraded. The Source Water Stewardship Exchange Team (Team) conducted an assessment of the watershed during the week of January 20, 2003 to:

- Collect data regarding water quality/quantity, land use changes, and other impacts
- Identify actual and potential impacts to water quality/quantity, and
- Develop suggested strategies and actions to address existing and possible future impacts.

PROJECT GOAL AND BACKGROUND

The goal of the Upper Little Tallapoosa River Source Water Stewardship Exchange was to conduct a broad-based assessment of the watershed, clarify key issues, and develop suggested strategies for protecting the river for drinking water and, concurrently, recreation and wildlife habitat.

The team reviewed a number of studies, reports, and other documents and was briefed by a wide range of local officials and other stakeholders in developing its preliminary assessment. It should be noted that the team was impressed with the level of cooperation, support, openness, and leadership from Carroll County residents associated with the Source Water Stewardship Exchange, and appreciated the level of preparation and involvement demonstrated prior to and during the week of study. The team especially notes the contributions of Carroll County Commissioner Chair Robert Barr and staff member Amy Goolsby in assisting the team with scheduling, logistics, document acquisition, and general support. A summary list of the information provided to the team included:

- State of Georgia Environmental Protection Division Report on Water Quality in Georgia under Section 305(b) of the Clean Water Act
- Upper Little Tallapoosa River Watershed Source Water Issues Report, prepared by the Trust for Public Land, the University of Massachusetts, and the USDA Forest Service
- The Upper Little Tallapoosa Water Quality Monitoring Report, prepared by the State University of West Georgia Geosciences Department
- Data from the West Georgia Watershed Assessment
- The draft Carroll County Needs, Issues, and Opportunities Report (Comprehensive Plan Update), prepared by Freilich, Leitner, & Carlisle and Planning Works LLC
- The Zoning Ordinance of Carroll County, adopted July 14, 1998
- The Subdivision Regulations of Carroll County (undated)
- The Soil Erosion and Sedimentation Ordinance of Carroll County, adopted January 9, 2001
- Various maps and land use/cover overlays developed by Planning Works LLC, The State of Georgia, and the University of Massachusetts
- Interviews with focus groups and individuals representing viewpoints from elected officials, Carroll Tomorrow, the State University of West Georgia, GA Forestry Commission, USDA NRCS, the agricultural community, developers, real estate brokers, lenders, the county public health agency, water supply and wastewater treatment facilities, septic system service providers, and the public.

FINDINGS

In general, the team found that the watershed – while impaired in some specific locations and threatened in others – is in relatively fair condition overall. However, development pressures, the proliferation of unmanaged onsite wastewater treatment systems – including discharges into Lake Buckhorn, urban runoff, cattle access to streams, the loss of streamside vegetation (especially along small feeder streams), and weak erosion/sedimentation controls have caused increased loadings of bacteria, sediment, and nutrients throughout many subwatersheds.

It should be noted that the team reviewed some information on agricultural waste and cattle management and interviewed a few individuals, but did not conduct focused studies on poultry litter management/application practices or cattle management activities in the county. These practices and activities are likely contributing to nutrient, sediment, and bacteria loadings, but may not be the most significant sources of pollutants in the ULTR. However, further study of these issues, including litter application rates/timing, cattle pasture/watering management, and continuation/expansion of current nutrient management practices is recommended. It is also strongly recommended that in-stream dry and wet-weather monitoring be expanded and testing of Lake Buckhorn be initiated in order to target pollutant sources more accurately.

Despite current impairments and threats of possible future impairment, there is considerable justification for optimism regarding the health of the ULTR. Elected officials, members of the business community, citizens and local media are obviously concerned about the river and are taking actions to address impairments and threats. Among these positive actions are:

- Awareness-building activities by the Carroll County Commission, Carroll County Water Authority, Carroll Tomorrow, the County Historical Society, USDA NRCS, the Rural Farmland Preservation Alliance, and other organizations/individuals
- Protection of some vegetated riparian buffers by farmers, landowners, public agencies, and private organizations
- Significant news media attention to issues regarding watershed health and source water quality
- Water quality monitoring conducted by the State University of West Georgia Geosciences Department as a part of the West Georgia Watershed Assessment
- Concerns expressed by developers, real estate brokers, and some septic system service providers, planners and other county officials regarding viable, responsible options for onsite wastewater treatment
- Appropriate erosion and sediment controls at some – but by no means all – construction sites

These actions and expressions of concern and support provide a significant foundation on which to build a comprehensive, watershed-wide conservation program capable of protecting the ULTR for drinking water, recreation, and wildlife habitat. Degradation of the river – which began with the clearing of frontier forests and continued through the straightening and dredging of the channel during the 1950s and 1960s – did not occur overnight and will not be reversed in a year or two. However, a focused, aggressive program to expand upon the positive actions noted above can help to improve water quality and water quantity, which may ultimately be threatened by loss of infiltration and groundwater (i.e., stream baseflow) recharge.

Failure to pursue such a strategy will result in further degradation of the river and increased public reluctance to rely upon it as a source of drinking water and other quality-of-life amenities.

The clustering of Carroll County homes around the scenic vistas of the river and its tributaries attests to the public's affinity for this beautiful and valuable resource. It is indeed fortunate that Carroll County has chosen this time to step back and evaluate its options regarding protection of the Upper Little Tallapoosa Watershed. For although the resource is impaired and, in some areas, threatened, the current trend toward further degradation is by no means irreversible. Time, however – along with aggressive and focused action – is of the essence.

KEY QUESTIONS

From its evaluations, the team identified the following overarching questions facing local decision makers. These questions raise issues that must be addressed concurrent with or, in some cases, before subsequent recommendations by the team in this report.

- ❑ **Where do the citizens want residential growth?** Current zoning regulations allow residential growth essentially anywhere in the county. Further, the development of managed, decentralized sewage systems in the county would open even more of the watershed for development. Although densities vary, ultimately the entire county could be covered with residential developments. Do the citizens wish to create separate residential, agricultural and natural lands zoning districts?
- ❑ **Is the quantity and quality of available potable water sufficient to support future growth?** The City of Carrollton's ability to provide an adequate supply is limited by the widely varying quantity and quality of the raw water flow to the city's treatment plant. Based on population projections, the current supply from the cities and county combined will not be sufficient to meet demand through 2050.¹ Even today, supply is barely adequate as a source for the City of Carrollton during prolonged drought. What are the long-term implications of current water supply for growth management and for maintaining the quality of the ULTR watershed?
- ❑ **How will the local and county governments manage potable water and wastewater related to current and projected populations?** Currently, multiple entities treat and distribute drinking water, but no entity adequately manages the proliferation of on-site wastewater systems across jurisdictions. Will Carroll County support creation of a regulatory wastewater management program that ensures safe and effective sewage treatment and dispersal services to all citizens?

¹ *Needs Analysis Assessment*, prepared by Keck & Wood, Inc, on behalf of the City of Carrollton, January 2001. Georgia Environmental Protection Division concurred with this finding.

TEAM RECOMMENDATIONS

The team organized its recommendations into three sections: (1) Wastewater, (2) Land Protection and (3) Restoration and Land Management. Each section represents what the team considers to be high priority strategies for drinking water protection. In each section, the team outlines the key challenges and their top recommendations. The recommendations include organizational and watershed-wide strategies, in addition to place-based strategies, in which the team identifies locations in the watershed to focus implementation or where further assessment is needed. The goal was to make each recommendation both important *and* implementable and to give the community as much information as possible about where to focus their efforts on the ground.

Maps, prepared by the University of Massachusetts for the stewardship exchange, are included in Appendix III. These maps identify priority areas for land protection and restoration in the ULT watershed. The darkest hues on the maps have the greatest potential importance for source water pollution prevention or mitigation. These maps were created based on publicly available data layers and modeling results. As is always the case with mapping and modeling efforts, the results must be ground-truthed, meaning that identified parcels must be physically inspected to ascertain their value. The highlighted priority areas (A, B, C, D and E) are intended to focus on-the-ground efforts in specific areas in the watershed with the greatest potential importance for source water.

WASTEWATER

❖ *Challenges*

There are three primary challenges regarding wastewater in the ULT watershed:

1. There is no public sewer in much of the county, where rapid growth is leading to the proliferation of individual, on-site sewerage systems,
2. There is insufficient regulation and oversight of the design, installation and management of individual, on-site systems.
3. Many of the existing on-site systems were installed before modern design and implementation standards were adopted and are failing current public health and environmental standards.

As a result, there are inadequate and failing septic systems throughout the county, which are polluting the lakes and tributaries of the ULT with inadequately treated sewage. This sewage, coupled with runoff from pasture land, is creating high levels of fecal coliform and other organics in the raw water at the treatment plant, which may require plant operators to increase disinfectants and could lead to high disinfection by-product (DBP) levels in the finished water. DBP's, such as Trihalomethane and Haloacetic Acids are suspected to cause reproductive disorders and bladder and rectal cancers. The City of Carrollton's drinking water exceeded federal DBP standards in 2002 prompting modifications to the water plant chemical feed strategy.

Public wastewater systems serve only the municipalities of Villa Rica, Temple and Carrollton. One residential development is served by a public sewer system owned by the Carroll County Water Authority. The Villa Rica and Temple sewerage systems are situated in the headwaters of the City of Carrollton's water supply. Currently, the northeast portion of the watershed is experiencing rapid residential growth, and pressure for additional housing units in that area will

only increase. It is likely that both the existing Villa Rica sewerage system and the planned expansion of the Temple system will reach design capacity within a few years. Residential developments in the remainder of the county are served almost exclusively by conventional septic systems on individual lots.

The most significant wastewater issue affecting the watershed is sewage disposal from current and projected residential development in the unincorporated areas of the county. Residences along the shoreline of Lake Buckhorn do not, in many locations, have sufficient yard area for acceptable on-site septic systems. Evidence indicates that many residences on Lake Buckhorn may have little to no sewage treatment with discharge to the lake. Additionally, residences along Lake Buckhorn and other waterways do not meet state setback requirements for septic systems. These requirements do not appear to be enforced throughout the watershed. The water quality impact of on-site septic systems to Lake Buckhorn is unclear, because in-lake water quality tests (dye-testing, infrared photography or bacteria surveys) have not been conducted.

Existing wastewater regulatory programs and standards are not adequate to protect water supply recharge areas and fail to ensure adequate protection levels of public and environmental health. The regulation of design, installation, and management of on-site systems is handled exclusively by the Georgia Department of Public Health through the local Carroll Environmental Health office. This office is understaffed to handle the current workload and cannot provide owner training, operations oversight, or system performance evaluation. Current licensure and certification requirements for on-site system installers do not ensure the competency of the individuals installing and maintaining the systems.

❖ *Recommended Strategies*

Establish a county-wide sewerage management authority to own and operate decentralized sewerage systems to serve future developments in areas not served by existing public sewerage utilities.

Such systems could include single home systems, cluster systems serving multiple homes or entire subdivisions, or regional systems serving multiple developments. The managing authority could also be given regulatory control over existing on-site systems requiring repair or replacement. The existing Carroll County Water Authority is the logical, existing entity to serve as the sewer authority. Services by this authority should be paid for entirely through customer billing rates. Critical to the success of such an authority is:

- o The Authority must have autonomy in decisions as to allowable sewerage systems and technologies that will be owned and operated by the authority,
- o Consistent with state public service commission requirements, the Authority must have statutory designation to establish customer billing rates sufficient to cover all life cycle costs of the sewerage systems, and
- o Any sewerage systems owned and operated by the Authority must be designed, constructed, and operated to be absolutely water tight through the life of the system.

Establish a county department of environmental health under the County Commission with authority to develop and implement an integrated environmental health program county-wide.

Such a department must operate in accord with existing Georgia law with respect to existing state codes and standards for on-site systems. Fees charged for permitting and inspection could be used to partially or totally fund such a program. The department would:

- Establish standards for on-site sewerage systems,
- License and certify on-site system installers and septic tank pumpers,
- Approve and inspect site evaluations and installation of on-site sewerage systems,
- Enforce operational and maintenance requirements for on-site systems to ensure against or mitigate system failures, and
- Conduct such other environmental health programs (i.e., food sanitation, etc.) as the Commission may desire.

Work with state environmental officials or utilize local code enforcement resources to institute systematic inspection of all sewage disposal systems serving residences located on the shoreline of Lake Buckhorn.

Identify disposal field areas and determine adequacy of tanks and fields to ensure safety of the lake waters for recreational and water supply use. Use dye testing, infrared photography during cold weather, and bacteria surveys to locate discharges of partially- or un-treated sewage to the lake. Utilize existing state or local statutory authority to require repair or replacement of inadequate systems or cause the abandonment of the associated residences. It is likely that these areas will require clustered, decentralized sewerage systems.

Design and conduct an in-depth baseline water quality assessment of Lake Buckhorn and potentially other key water bodies in the watershed, such as Lake Carroll and Sharps Creek Reservoir.

Sampling should include sufficient (randomly located) sample points and protocols to assess impact of flows from upstream watersheds, shoreline developments, and recreational uses. Wet weather and dry weather conditions should be evaluated.

Evaluate the potential impact on ULTR water quality of wastewater disposal areas projected to serve Carrollton, Villa Rica, and Temple into the future.

As these areas grow rapidly over the next twenty years, the cumulative impacts of point or non-point source discharges from municipal wastewater treatment systems could become substantial. Baseline data from the West Georgia Watershed Assessment can be helpful in on-going monitoring efforts.

LAND PROTECTION

❖ *Challenges*

There are two primary challenges regarding land protection in the ULT watershed:

1. Rapid unmanaged growth in the watershed has resulted in the increasing loss and fragmentation of forestland and wetlands in recent decades. There is almost no publicly protected forestland in the watershed – most is owned by private landowners or forest product companies, and there is minimal protection of wetlands. These lands are highly vulnerable to forest clearing and sale for new development.
2. Carroll County does not have a designated local funding source for land protection. Since 1990, forestland cover has decreased in the ULT watershed from 66 to 53%, while developed land increased by seven percentage points. Forests, and the wetlands and small stream networks that run through them, are critical for protecting water resources. Forested land, particularly wetlands, absorbs rain, traps and filters pollutants, refills underground aquifers, slows storm runoff, sustains late season flows and maintains watershed stability and resilience. The percent of forested land in a watershed is the greatest indicator of water

quality, and increases in developed land can be directly linked to increased treatment costs. According to extensive research on the role of forests in maintaining water quality and quantity, water quality begins to decline measurably when the percent of forested land decreases below 75%.

Forested lands and wetlands in the ULT watershed are often cleared for new development. Many of the large tracts of forested land in the watershed are owned by private landowners or forest product companies and are particularly vulnerable to sale for development. In particular, Temple Inland, a forest product company, owns 25,000 acres in the Tallapoosa and Chattahoochee watersheds. The potential sale and development of these lands could have serious implications for the city and county's water supplies. With very few regulatory protections for forests or wetlands, communities in the ULT watershed will need to use voluntary land protection strategies to protect critical remaining forest tracts.

Well-managed farmland, particularly pastureland, also contributes greatly to water quality and quantity by allowing infiltration and filtering pollutants. (Poorly managed farmland can contribute to fecal coliform and nitrate problems.) Although farmland is not being lost at the same rate as forestland, it is also highly vulnerable to development and should be protected through voluntary acquisitions and easements, implemented in conjunction with best management practices. Over the past decade, Carroll County has lost an estimated 10,000 acres of farmland, with the forthcoming Census of Agriculture likely to reveal substantial additional conversion.

❖ *Recommended Strategies*

Identify top priorities for voluntary purchase or conservation easements in the Upper Little Tallapoosa Watershed.

All parts of the watershed are not created equal in terms of providing water quality protection. Figure 3 on page 19 is a map that shows the highest priority areas for conservation of forests and wetlands in the ULT watershed. The darkest hues have the greatest potential importance for source water pollution prevention or mitigations. Protecting large, contiguous parcels of forest land and sensitive wetlands can play a critical role in preserving water quality and quantity; on the flip side, development of these parcels can lead to substantial degradation of water quality and a loss of groundwater recharge. By using these maps and conducting on-the-ground assessments, priority areas for protection can be identified. Prioritizing protection areas should be a collaborative effort of the Carrollton Greenspace Committee, the Carroll County Greenspace Committee (when appointed), and county/municipal planning officials.

Establish a substantial, reliable local funding source for land protection.

In their Community Greenspace Plan, Carroll County along with five municipalities, pledged to work towards permanently protecting 20% of the county's land as greenspace, with water quality protection a primary goal over the next 10 years. With roughly 320,000 acres in the County, a total of 64,000 acres would need to be protected to meet their greenspace goal. The most reliable form of funding to achieve conservation objectives over the long-term is local funding. Due to the competition for state, federal and private funding, as well as the uncertain status of those funds, those sources must be viewed as supplements or incentives, but not as the primary funding source for a program. The combination of rapid growth and soaring land prices (\$5,000 per acre plus) makes it essential that Carroll County establish a

reliable, significant, long-term funding source. The team recommends exploring two potential funding sources: (1) 2003 SPLOST and (2) stormwater utility fee or water bill surcharge.

1. **Pursue land protection funding in the 2003 SPLOST renewal.** The 1% infrastructure SPLOST is due to expire in March 2004, with an election slated for November 2003. The County has used the \$40 million (of the total \$65m collected) it has received from the current SPLOST primarily for a new jail, an industrial park, fire protection and roads. The SPLOST renewal is anticipated to provide Carroll County with an estimated \$40 to \$45 million over a five-year period. In recent years, several Georgia counties have used the SPLOST to pay for land protection including Douglas, Paulding, Gwinnett and Athens-Clarke Counties. Douglas County's 2002 SPLOST will yield an estimated \$20 million for land protection over five years. In addition to using the SPLOST for land protection, the funding can also be used as a match for EPA 319 grants for non-point source pollution prevention.

In order for the County to determine whether land protection should be included in the 2003 SPLOST (and for how much money), there are several steps it should consider taking.

- Conduct feasibility research to examine fiscal options, including spending tolerance; legal issues such as ballot language requirements; election timing, and other competing spending priorities.
- Conduct a public opinion survey, based on the feasibility research, to determine voter priorities/benefits, test potential ballot language, assess messages and test competing arguments.
- Develop a ballot measure, based on the survey results, that incorporates the most compelling benefits of conservation in a given community (water quality protection, farmland preservation, etc.) at a price voters are willing to pay.

Public education and outreach are central to building support for using the SPLOST for land protection. Successful education and outreach efforts in support of land protection ballot measures start with a broad-based coalition of supporters who reflect the diversity of the whole community. This should include political leaders, supporters of greenspace and conservation, the business community, owners of farm and forestland, heads of civic and religious groups and others. Land protection efforts that are driven by a narrow group of supporters often fail to garner the necessary public support. With the right coalition behind it, there is a range of education activities that can be successful. The most effective form of public education is direct mail. For example, organizers of a 1999 land protection ballot question in Mecklenburg County, North Carolina used a series of 3 direct mail pieces spaced over a year-long period to successively provide basic background information on the watershed, present public opinion survey results and then include information on the election. In addition, this effort used a speakers' bureau, meetings with local newspapers, letters to the editor, and phone banks.

2. **Create a storm water utility fee or a water bill surcharge.** Although the SPLOST represents the best alternative to raise significant funds for land protection, a storm water utility fee or water bill surcharge might be considered. A storm water utility would levy a fee based on impervious cover (pavement, roofs). The City of Griffin, Georgia has a storm water utility which charges each residence \$2.95 per month, with non-residential properties levied \$2.95 monthly per 2200 square feet of impervious cover. The utilities initial revenues are raising roughly \$1.2 million per

year. While the Griffin storm water utility has not been used for land protection, there is a stormwater utility in Lenexa, Kansas that uses their utility fee for land protection. A water bill surcharge would provide the means for water suppliers to acquire land to ensure their water supply. For example, Salt Lake City includes a surcharge of 50 cents on each monthly bill to acquire watershed supply land; the city has been able to acquire 1,400 acres of land using this fund. This funding option may not be feasible if surcharges will also be needed to fund infrastructure expansion and the move to a sewer system.

Seek expansion of the Georgia Forest Legacy Program to include Carroll County

The Forest Legacy program is specifically designed to help states obtain conservation easements on working forests to protect them from conversion to non-forest uses. Georgia was recently approved into the Forest Legacy Program, although the state's Assessment of Need (AON) did not designate Carroll County part of its Mountain Forest Legacy Area (FLA). The AON stopped at neighboring Haralson and Paulding counties. The specific goals and threats for the Mountain FLA apply to the situation in Carroll County. The threats include fragmentation/development, degradation of water quality and declining water supply; goals include protection and improvement of water supply and quality and reducing or limiting residential development. Inclusion of Carroll County in the Forest Legacy Program would be a significant tool to help protect some of these forestlands from development. County officials, along with their legislative delegation should explore how Carroll County can be included in the Forest Legacy Program.

RESTORATION AND LAND MANAGEMENT

There are both agriculture and development-related land management challenges in the ULTR watershed. The recommendations in this section have been organized by these categories.

❖ Development Challenges

The primary development-related land management challenges are:

1. Standards and ordinances that should regulate the impact of new development by regulating stormwater design features are limited.
2. There is inadequate inspection or oversight of new development, and construction sites are not always complying with construction standards designed to limit erosion.

Developed areas – towns and subdivisions – are characterized by greater land coverage with impervious surfaces, such as roads, roofs, parking lots, sidewalks, and turf areas. All of these surfaces prevent infiltration of precipitation into the soil and promote the mobilization and transport of pollutants such as oil, grease, sediment, and other contaminants into streams. When precipitation does not infiltrate the ground, groundwater levels decline, causing surface water levels to decline during dry seasons.

When new development is constructed, natural lands are cleared of vegetation and soils are exposed. Construction standards are required to ensure minimal impacts on streams. Because there is inadequate inspection and enforcement of construction standards in the ULTR watershed, new development is creating heavy stormwater flows and stream bank erosion, causing high sediment levels in the streams. Sediment, which consists of small particles of soil and silt, does not in itself present a major public health concern; however, it is of great concern to suppliers, because it can interfere with the detection, monitoring and treatment of other

contaminants. High sediment levels mask the amount of pathogens in the water and prevent them from being adequately treated. In addition to construction sites, other sources of sediment that may need to be addressed include dirt roads, cut banks along roads and runoff from farmland.

❖ *Recommended Strategies*

Create mechanism for inspection and enforcement of construction site activities.

Although state and federal legislation and a county ordinance are in place to address construction site activities, after the initial plan review there is little or no inspection or enforcement once construction begins. A Soil and Water Technician position needs to be created at the West Georgia Soil and Water District dedicated to inspection and enforcement.

Apply “smart” stormwater design features to new development by altering construction standards in order to reduce stormwater runoff and increase infiltration.

Smart stormwater design features need to be mandated for all new development. These features could include: narrow, crowned roads lying between curbless grassed swales designed to slow down stormwater flows and promote infiltration; roof gutters diverted to landscaped areas, parking lot runoff directed to infiltration sites; total impervious surfaces limits, clearing/grading minimized during construction; and new development designed to fit the lay of the land, preserve existing trees, and ensure adequate greenspace buffers. Many of these stormwater designs can reduce costs for developers while protecting receiving waters.

❖ *Agricultural Challenges*

The primary challenge regarding restoration and land management in the ULTR watershed is:

- Federal farm bill programs are not being implemented. As a result, landowners throughout the watershed are missing out on millions of dollars in technical and financial assistance for implementing best management practices, such as cattle fencing, that protect water quality while improving the farmer’s bottom line. Farm bill programs are some of the few federal programs in which appropriations are increasing, and Carroll County landowners are missing out on this tremendous resource.

Farm Bill programs are not being implemented because the local Soil and Water Conservation District is insufficiently staffed to address the needs of such a large territory and, as a result, Natural Resources Conservation Service (NRCS) staff are being used to address local agricultural issues instead of addressing their primary mandated priority – implementing farm bill programs. Local program staff and landowners also lack a way to coordinate and prioritize potential projects and raise public and private funds as local match for federal dollars.

There are a number of land management problems in the watershed that could be addressed through implementation of farm bill programs, including cattle fencing.

In a number of locations in the watershed, animal waste, particularly from cows, is entering streams without any filtration from riparian buffers. This waste causes an increase in nutrient and sediment loading at the Carrollton drinking water treatment plant, potentially leading to increased disinfection. Treating animal waste by increasing disinfection creates the same problem that raw human waste creates – a potential increase in disinfection by-products in the finished drinking water. Heavy sediment loads from cattle trampling the streams further complicate

treatment by carrying with it pathogens, pesticides and other contaminants, making it more difficult to detect contaminants and safely treat them.

Figure 2 on page 20 shows areas in the watershed of highest priority for restoration of agricultural land in the ULT watershed. The darkest hues have the greatest potential importance for source water pollution prevention or mitigation.

❖ *Recommended Strategies*

Create a Soil and Water District Technician position at the West Georgia Soil and Water Conservation District (SWCD) that focuses solely on Carroll County, or establish a Soil and Water Conservation District that serves only Carroll County.

Hiring a new District Technician would create a staff position focused on conducting landowner outreach and education, reviewing erosion and sediment control plans and providing other technical assistance functions to the citizens and agencies of Carroll County that are currently being contracted out. At the same time, this position would free up the Natural Resource Conservation Service staff to implement farm bill programs to bring federal resources to the community, assist farmers with implementing strategies to keep cows out of streams and reforest stream buffers, and assess land management throughout the watershed to identify areas for improvement.

This position could be at least partially funded through subdivision stormwater management review fees. According to the Department of Public Health, approximately 1500 to 2000 lots are approved annually, at a fee of \$25 per lot. The \$50,000 this fee raises could be applied to the salary of a District Technician.

Another option would be to fund an additional NRCS staff person through the PL-566 program, which funds technical assistance and implementation of best management practices if a River Basin Study has been completed. NRCS could seek funding for a USDA sponsored River Basin Study for the Upper Little Tallapoosa River Watershed and, upon completion of the River Basin Study, application could be made for funding through the PL-566 program for technical assistance (a District Conservationist with NRCS). The River Basin Study could be used to inventory the resources in the basin, analyze the data to establish priorities, and support the development of a watershed plan to address the identified concerns. It can also be used to analyze availability of water to meet future demands.

This position could address both urban and rural land management issues, such as (1) landowner outreach and education, (2) erosion and sediment control, (3) evaluating adequacy of soils for new septic systems and (4) designing and implementing best management practices.

1. **Landowner outreach and education** - Farmers need to be educated about best management practices, such as cattle fencing, and conservation options, such as easements, that will benefit water quality and improve the farmer's bottom line. They also need to be made aware of federal programs and funding sources, such as the Conservation Reserve Program, that will support them in becoming better stewards of their land. Outreach and education can take place through individual or group meetings, training or informational sessions, or by identifying positive efforts being made by landowners and promoting them as best practices in local news. These activities can be implemented by a District Technician in cooperation with other organizations in the watershed, such as Rolling Hills RC&D, NRCS, University of Georgia, Cooperative Extension Program and local garden clubs.

2. **Erosion and sediment control** – The West Georgia SWCD is mandated by local ordinance to review plans, but because of insufficient staff, NRCS is currently conducting these reviews. By hiring a District Technician focused on Carroll County at West Georgia SWCD, plan review, inspection and enforcement could be handled by this person. As development increases in the watershed, the time required to review, inspect and enforce erosion and sediment control ordinances will also increase, making this position even more important.
3. **Evaluating adequacy of new septic systems** –The District Technician could provide technical assistance on soil identification, classification and potentially mapping to the septic system permitting office to help determine the adequacy of soils for proposed septic systems.
4. **Inventory farms and design and implement BMPs** -- In order to identify areas in the watershed most in need of restoration and best management practices to improve water quality, such as cattle fencing, a District Technician is needed to inventory and assess current land management practices. *(See Appendix II for more information on the Agricultural Environmental Management Program, which can be used to evaluate and prioritize farms and woodlands for technical and financial assistance.)*

Fence cattle out of streams and restore riparian buffers

In many parts of the watershed streams lack riparian buffers and are exposed to agricultural and residential runoff and trampling from cows. As a result, some streams in the watershed are degraded from high sediment and nutrient loads, increasing water temperatures and decreasing oxygen levels. Alternative watering facilities, fences and riparian buffers are needed to keep cattle out of streams and filter pollutants from runoff. In addition, conservation practices may be needed on agricultural lands to insure that the buffers are not overloaded with pollutants. Buffers are only as effective as the land treatment above them.

Figure 2 in Appendix III shows areas in the watershed where streams are most likely impacted by agriculture. These areas should be reviewed by a District Technician through on-the-ground inspections to identify where fences and alternative watering facilities need to be constructed and where riparian buffers need to be restored. The AEM inventory process outlined in Appendix II could be used for these on-the-ground assessments.

A District Technician could work with NRCS staff to raise implementation funds from federal farm bill programs. The Conservation Reserve Program, Forest land Enhancement Program and the Urban & Community Forest Program are all potential funding sources. USDA's Conservation Reserve Program (CRP) is the best source of funding for cattle fencing and creating buffers. CRP will pay for a portion of the expense needed to install fencing, develop the watering facility and plant trees, and will pay an annual rental fee for up to 15 years for land dedicated to a riparian forest buffer.

In cooperation with Georgia Environmental Protection Division staff and NRCS, evaluate adequacy of waste handling facilities and practices at existing poultry producing operations in the watershed.

Poultry production operations are increasing in the watershed. Although current waste management practices in the poultry industry seem to be sufficiently protective of water resources, a future expansion of this industry could lead to heavy nutrient loads to the waterways from poultry waste.

Local NRCS staff and soil and water technicians need to determine the potential carrying capacity for similar waste operations sited in the watershed in the foreseeable future and plan accordingly. If necessary, work with EPD and poultry producers to enhance waste handling and/or limit additional operations. Phosphorous-based nutrient management plans could be conducted as part of an Agricultural Environmental Management Program (AEM). The federal Environmental Quality Incentives Program could be used for implementing nutrient management plans with farmers in the poultry industry.

Create a public-private partnership to prioritize and fund restoration and best management practices, to slow farm and forest conversion and to help secure restoration and conservation funding (an Agricultural and Woodland Owner’s Council).

Establishing a collaborative partnership – a Council – including farmers and forest owners, local officials, federal conservation officials and the Georgia Forestry Commission, would provide a structure for coordinating and prioritizing improved land management practices and raising funds to pay for them.

By organizing as a nonprofit corporation, the Council could become a mechanism to raise both private and public funds to supplement current USDA cost share programs for implementation of best management practices and farmland protection. Council members would set priorities and guidance for federal and state agriculture and forestland incentive programs. They would identify and prioritize natural resource concerns in the watershed through an assessment program similar to New York State’s Agricultural Environmental Management Program (AEM).

The Council would give local landowners an opportunity to identify priority projects, receive technical assistance from local agencies, and access federal funds more easily. As a locally-led and voluntary effort, landowners are more likely to take ownership of the process and implement their identified priorities than if the practices were mandated by another authority.

This is a long-term recommendation that will take time to coordinate and implement. The initial leadership could come from the Rolling Hills RC&D, which has already taken significant steps to enroll local farms in the expanded Farmland Preservation Program. Although funding isn’t needed to implement this recommendation, it would be helpful to have the new staff already in place at the West Georgia Soil and Water Conservation District.

For more information on structuring the partnership, including who needs to be involved in the council and its advisory board, see Appendix I – Agricultural and Woodlot Owners Council.

APPENDIX I: AGRICULTURAL AND WOODLAND COUNCIL

An Agricultural and Woodland Council would be responsible for outreach, education and public participation efforts, securing funding for both environment planning and implementation. The Council would consist of farm and forest landowners, all of whom have privilege to vote on high priority projects for funding.

An Advisory Board would be created, consisting of technical staff from NRCS, Soil and Water Conservation District, Rolling Hills RC&D, USDA Farm Services Agency staff, Georgia Forestry Commission and other local technical staff. The Advisory Board would review plans for technical accuracy and give advice to the council on best management practices and priority setting, but would not be voting members.

Farmers and Forest landowners provide the majority of representation on the council, which is responsible for program direction, prioritizing funding applications and recruiting farmers to participate in the AEM program.

County Commissioner and city representatives would be responsible for assisting with funding of the Watershed Council, developing local legislation to protect and enhance the agricultural and forest land within their communities and advocating on behalf of their community's water resource needs.

Existing agencies in the watershed would work as a Project Team to provide the following assistance:

- Soil and water district staff could provide leadership by assuring coordination and collection of on-farm data (AEM Tier 1), assessments (AEM Tier 2) and administering grant funds for AEM planning and implementation.
- USDA Natural Resources Conservation Service would provide technical standards for implementation of Best Management Practices; provide leadership in farm environmental planning process based on NRCS eco-based farm planning process and implement federal cost-share programs.
- USDA Farm Services Agency staff would administer federal cost-share program funds locally and assist with administration of state and local cost-share programs.
- Georgia Cooperative Extension Service could take the leadership for integrating farm business considerations into whole farm plans and develop and deliver AEM outreach, education and public participation materials and programs
- Resource Conservation and Development could assist in grant applications for the council to address program needs. Assistance could be provided in education, outreach and guidance for farmland protection efforts, coordinated with the local Greenspace Commission.

APPENDIX II: AGRICULTURAL ENVIRONMENTAL MANAGEMENT PROGRAM

The AEM program is a watershed planning process designed to target technical and financial resources to farms within the watershed with the greatest potential for impacting the environment. By working in partnership with landowners, forest and farm operations in the watershed are inventoried, and interested landowners are invited to participate in a voluntary assessment of their land management practices. The goal is to create a plan for each landowner that contributes to their economic viability while benefiting water quality. In the ULTR watershed, a Technician from the Soil and Water Conservation District would provide staffing with the guidance and assistance of an Agricultural and Woodlot Owners Council.

The Agricultural Environmental Management Program is:

- Voluntary. Farmers and municipalities choose to participate or not.
- Holistic and watershed based. The AEM process looks at all natural resources on the farm and the way they interact with one another and the farm business objectives. The AEM approach should be carried out within the context of a holistic watershed planning effort whenever possible
- Realistic. Environmental planning and protection measures are carried out within the context of a holistic watershed planning effort whenever possible.
- Cost-effective. AEM targets program, human, and financial resources to farms with the greatest potential for impacting the environment.
- Locally-directed. The NY AEM initiative grew from counties and local watershed groups adopting and refining the planning and implementation process used in AEM. There are many ways to adapt materials and procedures to suit local needs.
- Tested and Science-based. The AEM planning process is based on tested, existing, environmental planning processes. Environmental protection measures are based on scientific principals and research. Procedures are also provided to use and develop new innovative approaches where appropriate.

AEM is a five tiered planning process.

Tier 1: Farmer completes a questionnaire to collect information about their farm and farm practices.

Tier 2: The farmer completes worksheets that assess the farm's impact and potential impact on the environment based on the farmer's business objectives and his answers to the questionnaire.

Tier 3: A plan is developed to provide economically viable solutions to specific environmental problems and concerns identified in Tiers 1 and 2. A "Whole Farm Plan" is developed, which coordinates farm business objectives with environmental protection.

Tier 4: Plans are implemented. Best management practices recommended in the plan may involve engineering and construction measures, or changes in farm practices and methods. The Project Team helps the farmer access and coordinate local, state, and federal cost-sharing and incentive programs to help in carrying out environmental protection measures.

Tier 5: Both of the local AEM initiative as a whole and the environmental outcomes on individual farms are evaluated. This includes measuring both participation in and effectiveness of the AEM initiative at the individual farm level and at the larger area or watershed level.

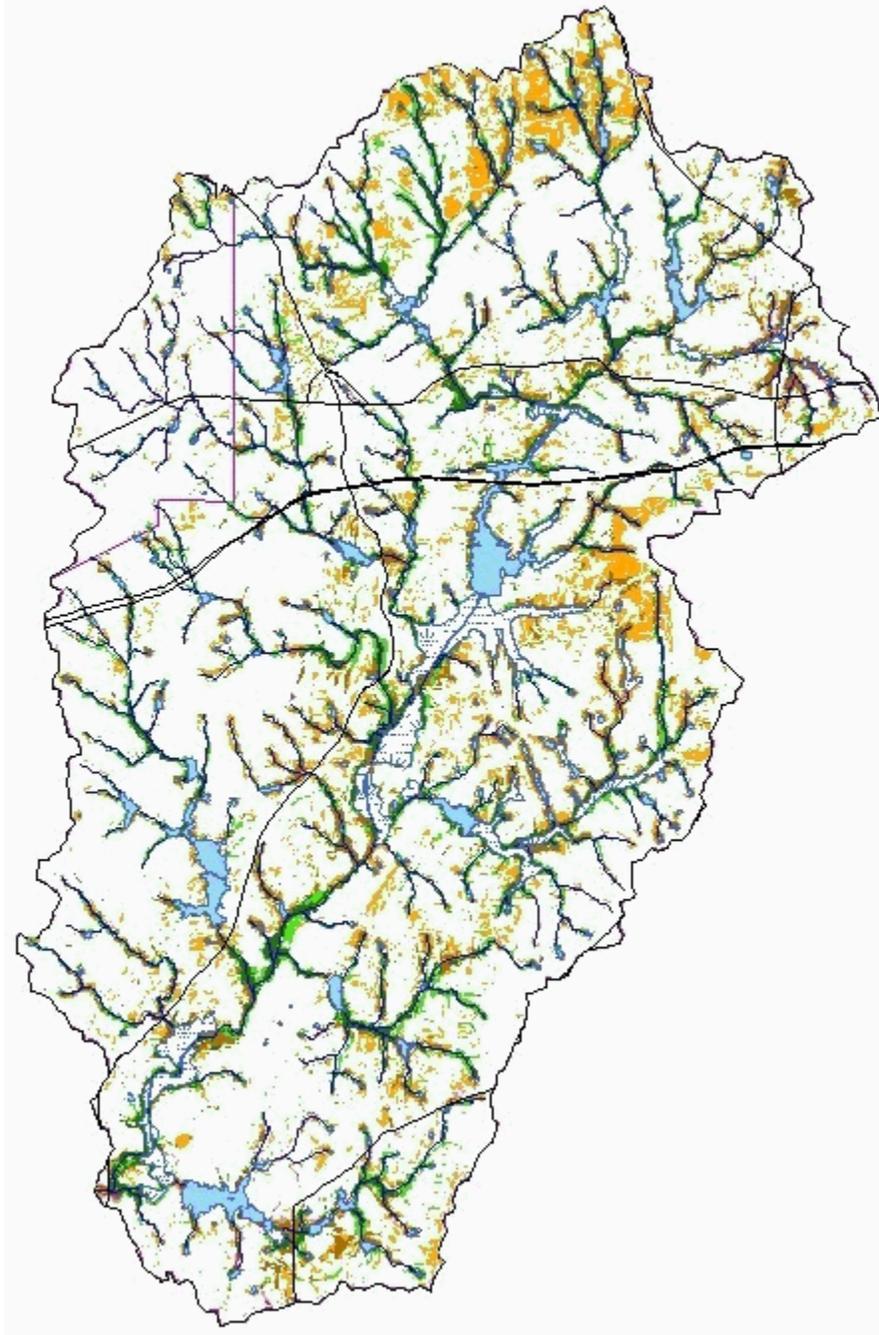


Figure 1 – Conservation, Restoration, and Stormwater Management Priority Indices (green, orange, and red, respectively) in the ≥ 80 th or ≥ 90 th percentile (light hues and dark hues, respectively) for the upper Little Tallapoosa River, Georgia. Also shown are streams, lakes, ponds, and wetlands.

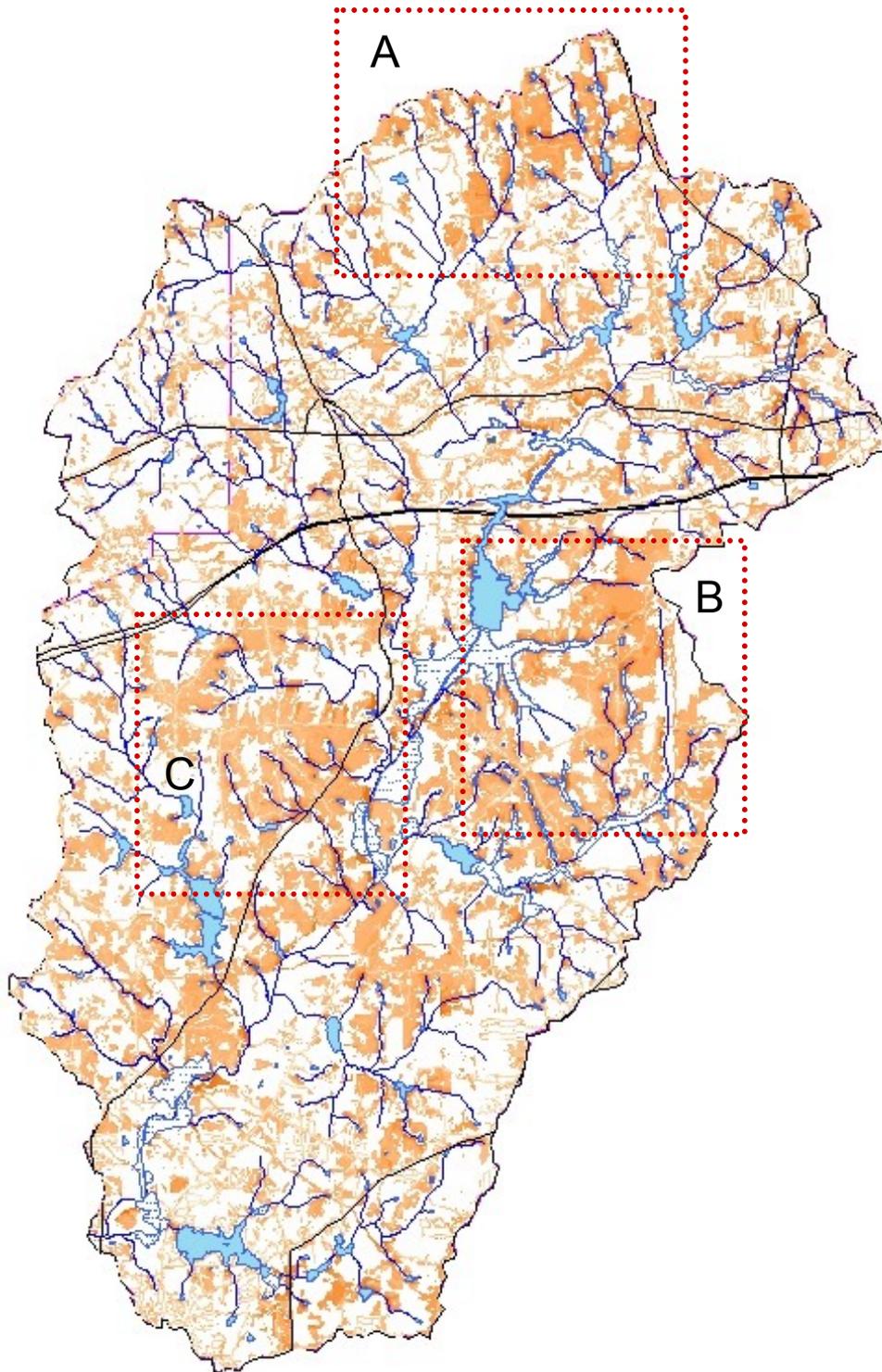


Figure 2 – Restoration Priority Index for agricultural land in the upper Little Tallapoosa River watershed, Georgia. The darkest hues have the greatest potential importance for source water pollution prevention or mitigation. Enlarged areas (A, B, and C) are shown in Figure 4.



Figure 3 – Conservation Priority Index (CPI) for forests and wetlands in the upper Little Tallapoosa River watershed, Georgia. The darkest hues have the greatest potential importance for source water pollution prevention or mitigation. Enlarged areas (D and E) are shown in Figure 5.

APPENDIX IV: THE LOCAL COMMITTEE

Robert Barr, Chairman, Carroll County Board of Commissioners
Slater Barr, President & CEO, Carroll Tomorrow
Jim Baxley, Director, Carroll County Water Authority
Amy Goolsby, Planner, Carroll County
Curtis Hollabaugh, University of West Georgia, Upper Tallapoosa Watershed Group
Lewis Mason, Superintendent, City of Carrollton Water Authority
Carlianne Patrick, Carroll Tomorrow
David Kuechenmeister Atlanta Field Office, Trust for Public Land
Angie Stober, Farmland and Rural Preservation Partnership
Bill Fullilove, NRCS (Retired)
Bill Hodge, County Extension
Bobby McMillam, R & R Enterprises
Bob Morgan, Gold Kist Poultry
Brenda Strauss, ReMAX Finest
Brian Hager, Sierra Club
Cindy Haygood, Rolling Hills RC & D
Clint Ozier, Georgia Forestry
Douglas Mabry, Historical Society
Heather Nicols, UWG Department of Geosciences
Jan Ruskell, Historical Society
Jeff Matthews, Sunrise Construction
Jeff Sibley, Georgia Forestry
Joel Dix, Southwire Company
Keith Higgs, American Water Services, Inc.
Lisa Nicholas, Chattahoochee-Flint RDC
Marc LaFountain, UWG Sociology/Environment
Marilyn Hubbard, Master Gardeners
Paul Soudi, City of Villa Rica
Randa Harris, UWG Department of Geosciences, Upper Tallapoosa Watershed Group
Rob Gordy, Citizens Bank & Trust, Farmland and Rural Preservation Partnership
Rupert Dobbin, UWG Department of Geosciences
Sam Sharpe, USDA
Steve Farish, Century 21
Tracy Dickerson, Temple-Inland
Tracy Dunnavant, City of Carrollton
Tracy Stallings
Wendell Holmes, Retired
Wendy Crager, Environmental Consultant, Farmland and Rural Preservation Partnership
Nolton Johnson, Georgia Environmental Protection Division
Chris Thomas, USEPA, Region 4 Water Division
Sue Grunwald, Georgia Division of Natural Resources

APPENDIX V: SOURCE WATER STEWARDSHIP EXCHANGE TEAM MEMBERS

Michael Hines— Wastewater Treatment Consultant. Mike began his career in 1966 with the Illinois Department of Public Health as a Stream Pollution Control Engineer. Advancing through the management levels of the agency, he left in 1980 after serving four years as the Assistant State Sanitary Engineer. From 1980 through 1994, Mr. Hines served as Manager of Environmental Compliance for the Tennessee Valley Authority where he managed all corporate level environmental compliance programs. He took early retirement from TVA in late 1994. Since leaving TVA, Mike Hines has been designing, building, owning, and operating sewage collection, treatment, and reuse capacity serving subdivisions, commercial developments, and communities. He is active in the National Onsite Wastewater Recycling Association and serves on its National Model Performance Code Committee, helping to develop a performance based code for regulating and managing decentralized sewerage systems. He obtained a B.S. in Engineering from Southern Illinois University and a M.S. in Environmental Health Engineering from Kansas University

Ed Hoxsie—Executive Director, Dutchess County Soil and Water Conservation District, Millbrook, NY. Ed has more than 20 years of experience in water quality issues. Under his leadership the district piloted the New York State (NYS) Agricultural Environmental Management Program in the Wappinger Creek watershed. Ed is currently project leader to develop the Department of Environmental Conservation's Community Environmental Program, which is designed to assess a community's capacity to address nonpoint source pollution at the local or watershed level. He currently serves on the Community Leadership Alliance Steering Committee for PACE University and Glynwood Center and has provided guidance on the curriculum used to train municipal officials for resource protection. He is technical advisor to the Dutchess County Farmland Protection Board, member of the state Agricultural Management Steering Committee, member of the Nonpoint Source Coordinating Committee of the NYS Department of Environmental Conservation, and technical advisor to the Wappinger Creek Watershed Planning Committee and Intermunicipal Council.

Gary Lamont—Project Coordinator, New York City Watershed Agricultural Program, NRCS. Gary has worked for the Natural Resources Conservation Service for the past twenty-eight years, eighteen of which were spent in field offices in New York State. In 1992, Gary conducted the inventory of agricultural operations within the New York City watershed utilizing a global positioning system technology. The inventory data was converted to into GIS to assist in mapping and setting work priorities to support the water supply system for 9,000,000 New York City residents. Gary currently oversees the NRCS staff of resource conservationists and engineers and represents the agency in the New York City Watershed Agricultural Program. His leadership has been responsible for enhancing available watershed funding, notably, authorization of 4.4 million dollars for expenditure in the NYC watershed and a plan for utilizing the Conservation Reserve Enhancement Program that committed USDA money to pay for 50% of the BMP implementation costs.

Barry Toning--Associate Director, Tetra Tech, Inc. Barry specializes in watershed planning and management, risk communication, and onsite wastewater treatment system programs and policies. Barry was a senior staff member of the Council of State Government's Environmental Policy Group and staffed the Multi-State Working Group on Environmental Management Systems, the US EPA Ecosystems Project, CSG's watershed training programs, and Ecos Magazine. He has worked as a laboratory technician, VISTA volunteer, newspaper reporter, economic development planner, solid waste and recycling coordinator, environmental educator, and consultant on various health, education and environmental protection projects. He has co-authored numerous guidance documents including the Onsite Wastewater Treatment Systems Manual; Getting in Step: A Guide to Effective Outreach in Your Watershed; and Sound Science: A Guide for State Officials. Barry Toning served as Nonpoint Source Pollution Program Director for a five-county health district in Kentucky in the early 1990s. Toning has served on statewide boards dealing with farm runoff, comparative risk, and other issues, and has conducted presentations nationwide on strategies for improving watershed planning, public outreach, stakeholder involvement, and working with the news media.

Matthew Zieper--Research Director for Trust for Public Land's Conservation Finance Program. Matt directs the team of researchers whose intelligence-gathering work underpins TPL's ability to pass ballot measures, shape legislation and influence public policy. He has been a lead participant in a number of TPL efforts to help communities pay to implement their conservation visions. Matt has also led TPL's efforts to publish Land Vote, an annual comprehensive review of conservation ballot measures, and Keeping Our Commitment, a report outlining policies to protect 1 million acres in the Chesapeake Bay Watershed. Prior to joining TPL, Matt Zieper was a legislative aide in the Massachusetts Senate and a fiscal and economic policy consultant. A graduate of the University of Massachusetts at Amherst and Harvard University's Kennedy School of Government, Matt lives in Norwell, Massachusetts with his wife Debra and baby daughter Ellie.