



Southeast Watershed Forum; Building Partnerships for Land & Water Protection



TVA Regional Resource Stewardship Council

Southeast Watershed Forum



To build the capacity of communities and organizations to better protect their land and water resources through education, training & regional dialogue.

A Regional Center for Building Watershed Leadership

- 11 years in evolution...
- 9 state Board of Directors
- Offices in Nashville & DC
- Serve an ever-expanding region
- 1st regional NGO awarded EPA's Targeted Watershed Capacity Building Grant

Education and Training

*Community Quality Growth Training

*Watershed Leadership Academy

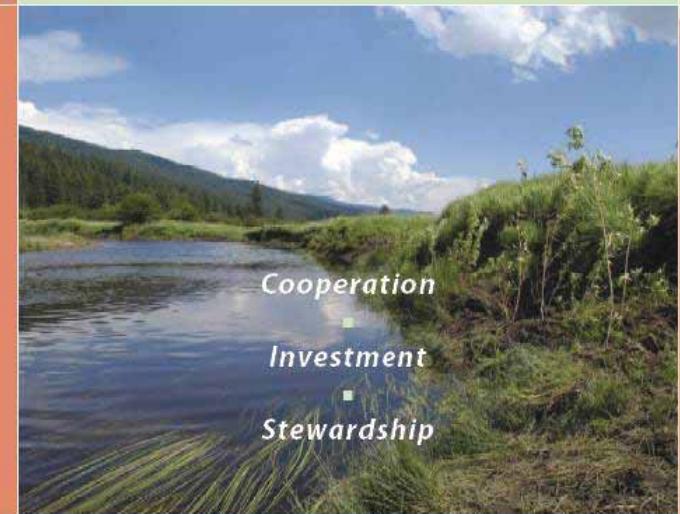


Enhancing Regional Dialogue

- *State & Regional Roundtables
- *Building Strategic Partnerships



National Fish Habitat
Action Plan



Local Roundtable Spin Offs

Five State Roundtables

- Alabama
- Kentucky
- Mississippi
- North Carolina
- Tennessee

Four Basin Roundtables

- Mississippi Gulf
- North Mississippi
- Northwest Georgia
- Bear Creek Watershed, KY



Creating an Online Resource Center

www.watershed-assistance.net

www.watershed-assistance.net/mapper

The image shows a Microsoft Internet Explorer window displaying two applications side-by-side.

Left Application (Southeast Watershed Assistance Network):

- Title:** SOUTHEAST WATERSHED ASSISTANCE NETWORK
- Menu Bar:** File, Edit, View, Favorites, Tools, Help
- Toolbar:** Back, Forward, Stop, Refresh, Search, Favorites, E-mail, Links, etc.
- Address Bar:** http://jswan.southeastwaterforum.org/resources/categories.asp
- Content Area:**
 - Header:** Resources
 - Left Sidebar:** Home, Resources (highlighted), Search, Watershed Management, Library, SE Organizations, Funding, Organization Development, Community Outreach, Growth Readiness, Watershed Management, Library, SE Organizations, Funding.
 - Main Content:** Welcome to the SWAN resource page, here you will find up to date information on smart growth and watershed protection issues. If you need specific information use our keyword search to locate web resources, reports and case studies. If you are after information on a general topic explore the categories below.
 - Search:** Keyword Search: Go
 - Categories:**
 - Growth Readiness: Organization Development
 - Watershed Management: Community Outreach
 - Library: Sustainable Building
 - SE Organizations: Consensus Building
 - Funding: Data Resources

Right Application (Community Resource Mapper):

- Title:** Community Resource Mapper
- Toolbar:** Find Place, Editing, Submit
- Address Bar:** Results
- Content Area:**
 - Results: davidson county, tn (1) Davidson County, Tennessee, United States
 - Map Contents:
 - HUC
 - State/County boundaries
 - Impaired Streams
 - Hydrography
 - Soils - Prime Farmland
 - Land Trusts
 - Protected Lands
 - Protected Land Edits
 - GA CWCS
 - KY CWCS
 - TN CWCS
 - VA CWCS
 - NLCD
 - Wetlands
 - Imagery
 - Background
 - Navigation
 - Overview

The map displays a satellite view of the southeastern United States, specifically focusing on the states of Georgia, South Carolina, North Carolina, Virginia, and Tennessee. Various data layers are overlaid on the map, including county boundaries, impaired streams, protected lands, and land trusts. A legend in the top right corner identifies these layers.

Biggest regional environmental threat in next 10 years:

“Biggest issues in the next 10 years in the Southeast are urban sprawl, land fragmentation, rural area development, population growth, ...and the impact these land uses would have on water resources...”

Southeast Watershed Roundtable

Knoxville, TN 1999

Facts of Concern

- The South has lost more forests, farms and open space to sprawl than any other region of the country
- Populations are projected to grow by 73% in the South Atlantic region and 46% in the Gulf states
- 34% of all NA fish species listed as endangered, threatened or special concern are found in the SE



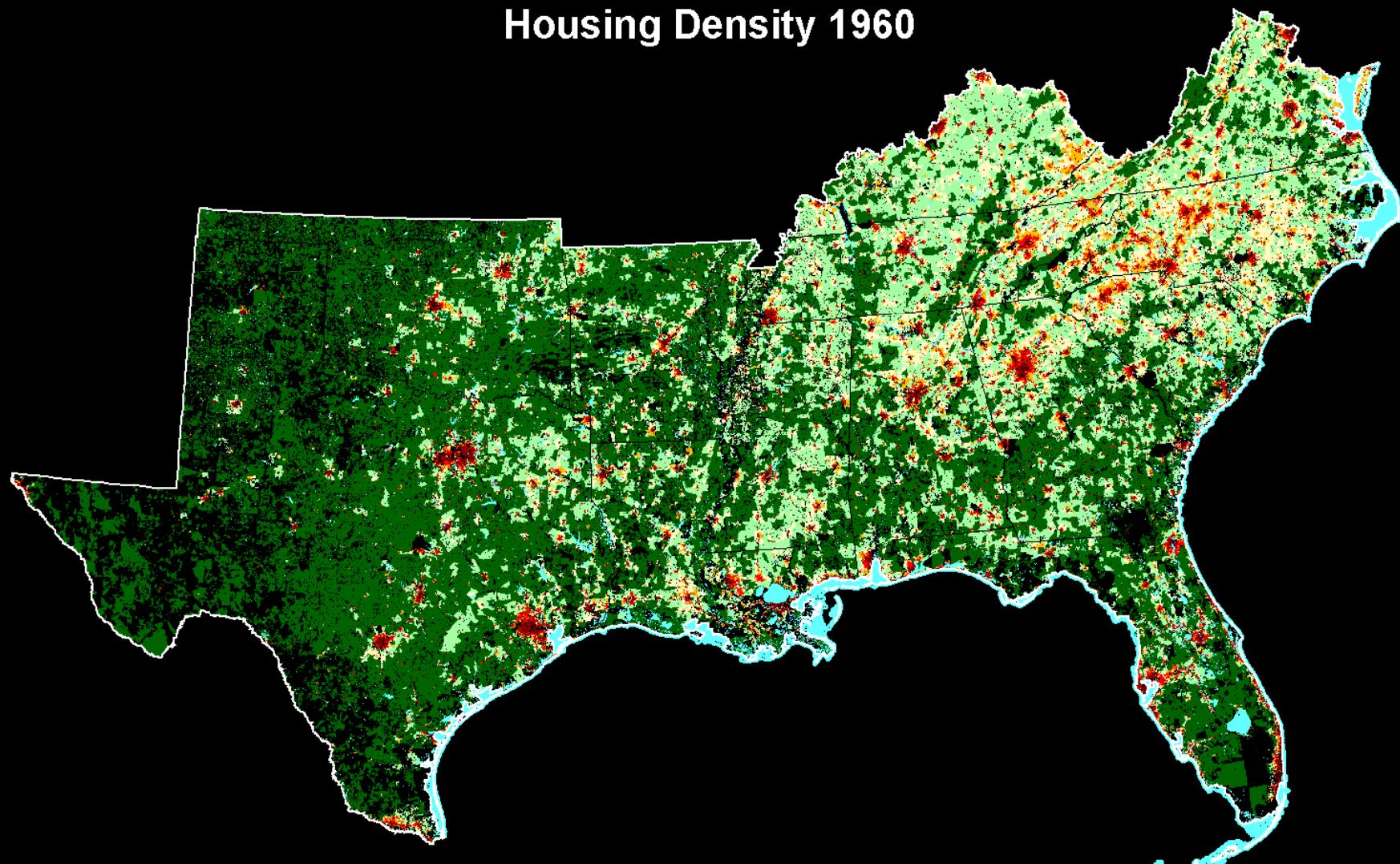
EPA



USFWS

Southern Region

Housing Density 1960

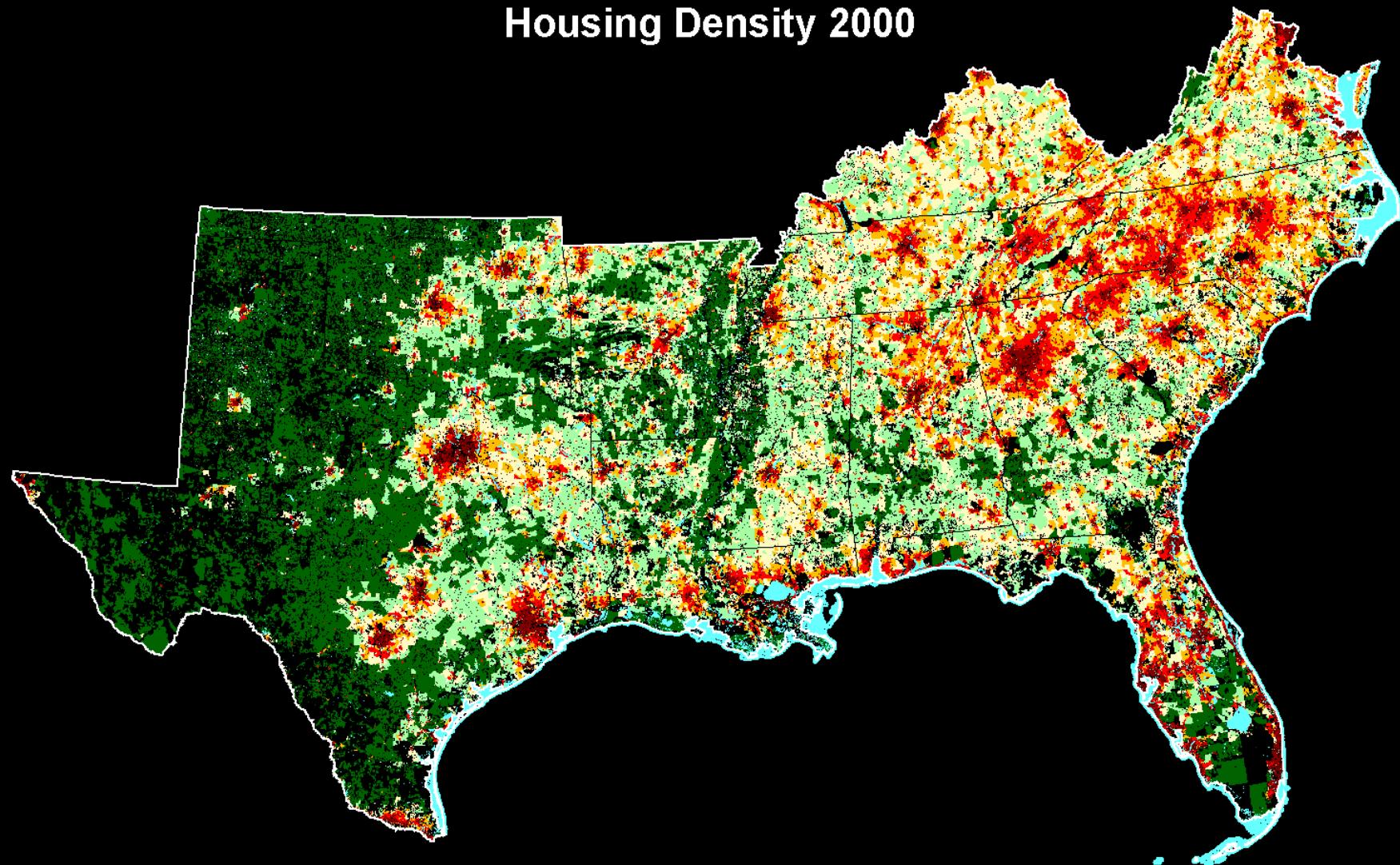


Housing Units per Km²



Southern Region

Housing Density 2000



Housing Units per Km²

0

2 - 4

8 - 16

>128

0 - 2

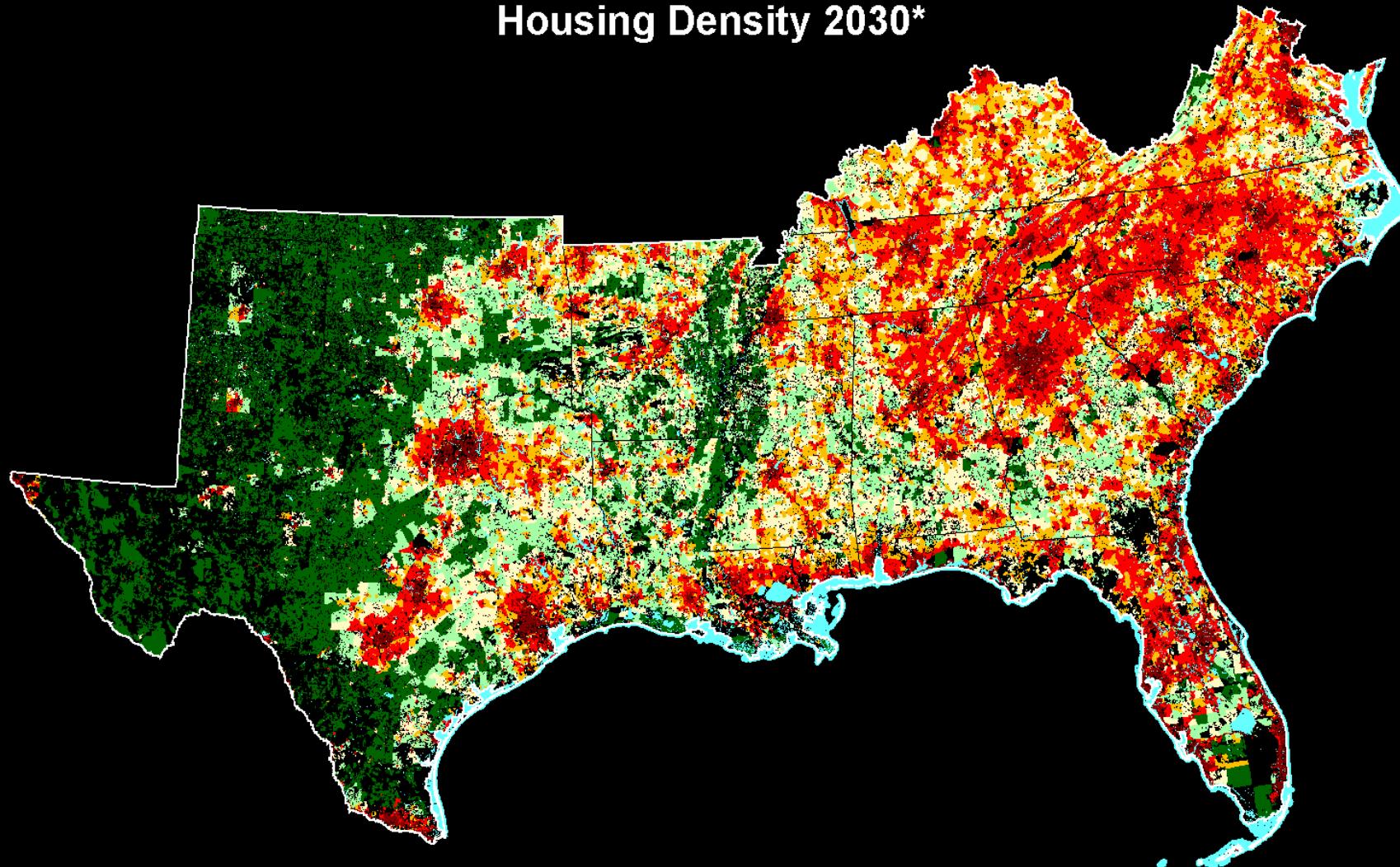
4 - 8

16 - 128

Water

Southern Region

Housing Density 2030*



Housing Units per Km²



0

2 - 4

8 - 16

>128



0 - 2

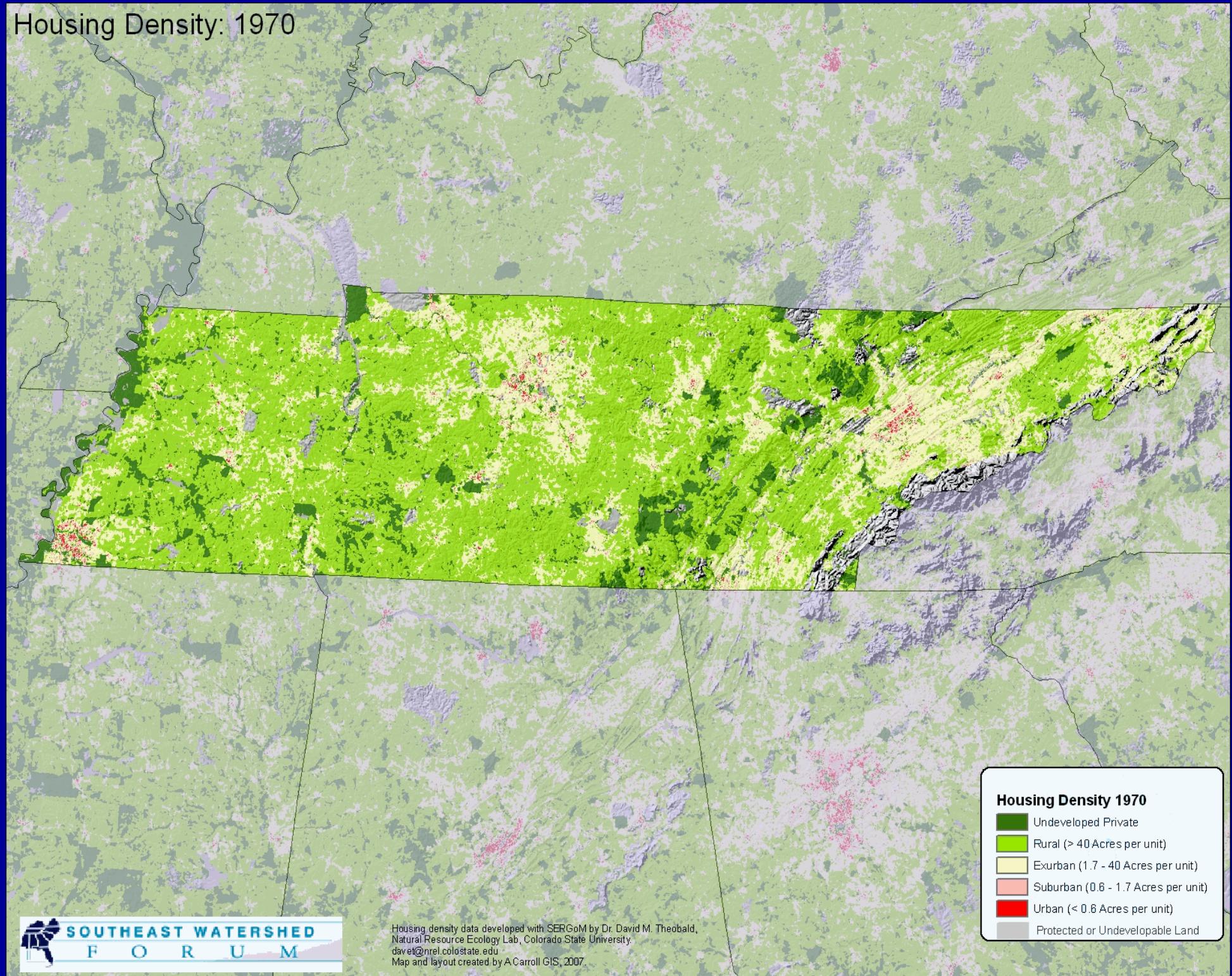
4 - 8

16 - 128

Water

*Linear projection of 1990s growth

Housing Density: 1970



Housing density data developed with SERGoM by Dr. David M. Theobald,
Natural Resource Ecology Lab, Colorado State University.
davet@nrel.colostate.edu
Map and layout created by A Carroll GIS, 2007.

Housing Density 1970: Meigs & McMinn Counties, TN



Housing Density 1970

- Undeveloped Private
- Rural (> 40 Acres per unit)
- Exurban (1.7 - 40 Acres per unit)
- Suburban (0.6 - 1.7 Acres per unit)
- Urban (< 0.6 Acres per unit)

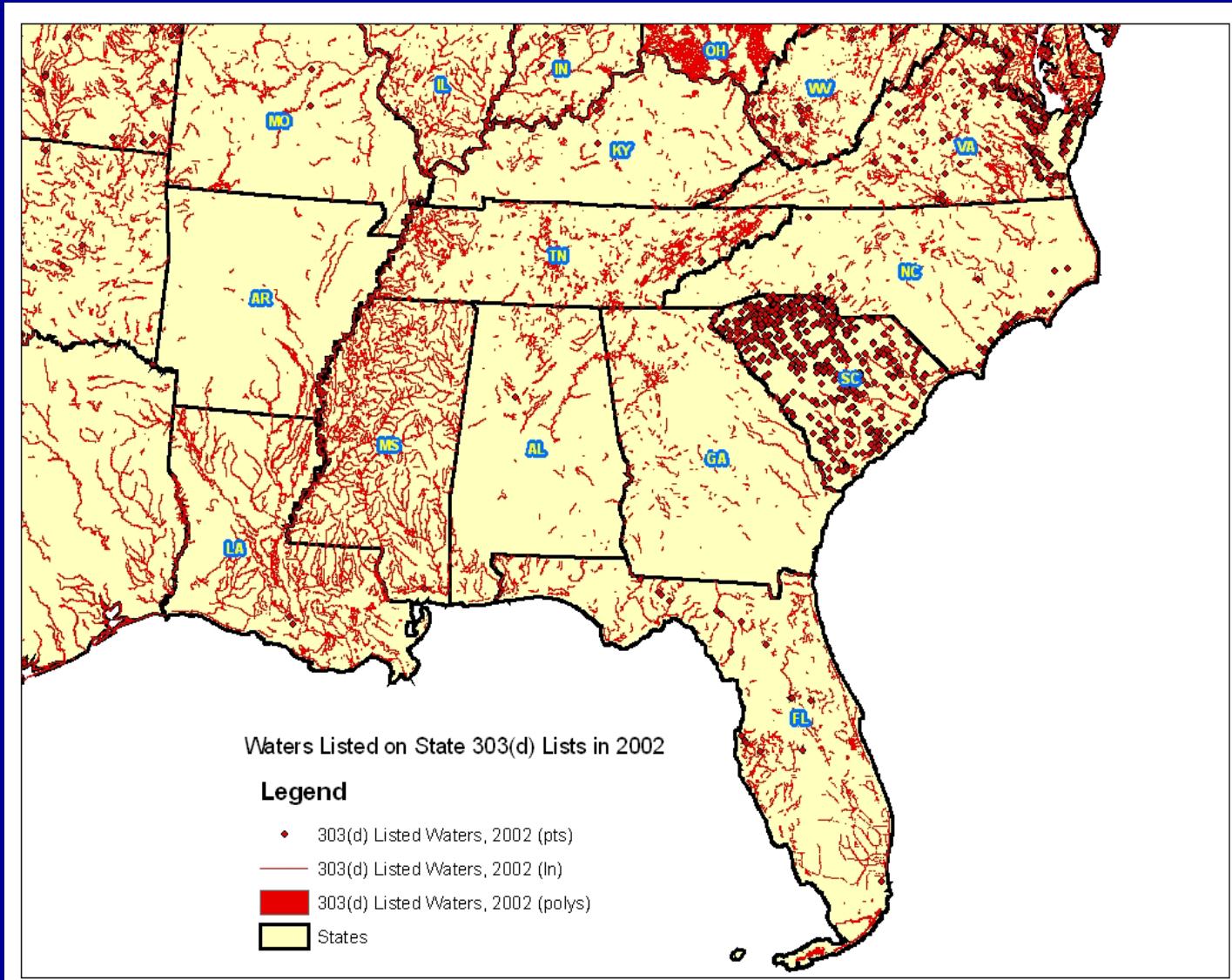
* Gray areas represent protected or undevelopable areas

Image created using SERGoM housing density model.
Theobald, D. 2005. Landscape patterns of exurban growth in the USA from 1980 to 2020. Ecology and Society 10(1): 32. [online] URL: <http://www.ecologyandsociety.org/vol10/iss1/art32/>

A Carroll GIS



EPA Map of Impaired Waters in Region 4 (Southeast US)



Major Regional Issues and Needs in the Next Decade



- Land use effects on water quality
- Land use effects on water supplies
- Resistance to land use change
- All intensified by Climate Change
- Need for local technical assistance
- Need expanded partnerships
- New forums for addressing water issues before they become a crisis



Building community capacity for watershed-friendly growth & development...



- Motivate change
- Integrate land use, water resource planning
- Use consensus to implement changes

Working in partnership with TVA

- Growth Readiness/Site Planning
- Land Use Planning for Water Quality
- Community Quality Growth

Growth Readiness

- Self-assessment of current ordinances based on their impact on imperviousness
- Agree to review & revise
- Build consensus through revision process
- Small-group technical workgroups
- Reconvene in site planning roundtable

Land Use Planning for Water Quality

Communities identify which resources to protect – first, and shape development away from sensitive areas that can provide multiple resource values.

- Develop a land use plan that incorporates **green infrastructure** into the county comprehensive plan.
- Demonstrate **economic incentives** and **benefits** to motivate changes in behavior & build consensus

Quality Growth Training

- Aligning smart growth principles with watershed protection objectives
- Focus is on community character and sustainability

State of Tennessee Local Planning Assistance Offices

- Participate in Growth Readiness Training
- Use COW to score communities (2003 and 2008)
- Collaborate to host Workshop Series
 - 3 Star Community Requirements Strengthened
- Creating model subdivision ordinance
- Using Better Site Design principles in areas where they help communities establish new regulations

Northeast Georgia

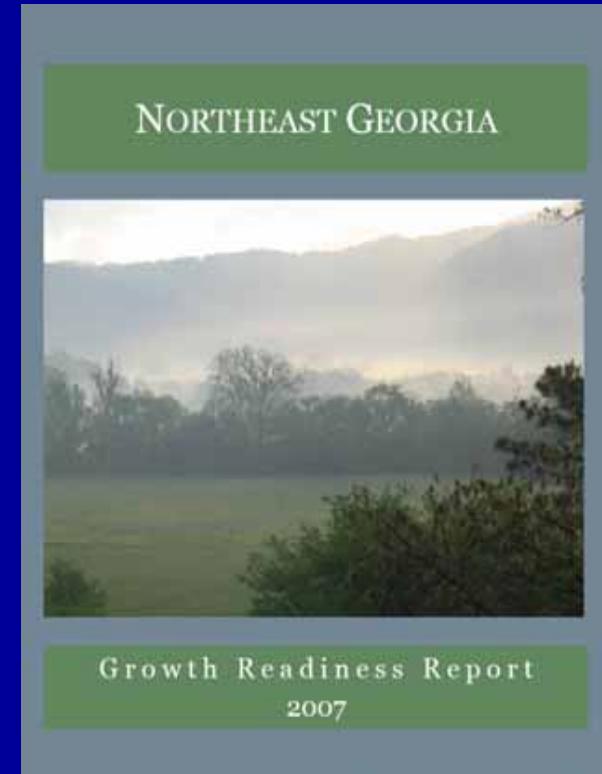
Workshop Series Pilot: 2006

Led by GA DCA, TVA, SEWF

- 39 Participants, 4 County Area

Implementation Approach:

- Demonstration Projects
 - Experimental county road design, permeable road surface (Union County, GA)
- Voluntary Incentive Program:
Appalachian Conservation Community Program (Towns County, GA)
 - Recognition and financial incentives
 - Requires conservation of native vegetation, open space, clearing and grading specification, aquatic preservation.



Duck River Watershed, TN

Workshop Series: 2005-2006

TNC, Duck River Dev Agency, SEWF, TVA,
60 Participants, 4 County Area

Current Results

- City of Columbia: Zoning Ordinance now includes: landscaping, tree preservation, screening, open space requirements and Smart Growth techniques/amenities
- Maury County: Kicking off Comprehensive Land Use Plan Process – plan to incorporate recommendations.
- Marshall County: revising Zoning Resolution and Subdivision Regulations to incorporate Better Site Design recommendations.



Bedford County Cluster Development

Tazewell County, VA

Workshop Series, 2005

- 5 Workshops
- 36 Participants representing 5 communities

Implementation Approach:

- 2007: Process helped communities win Virginia Water Quality Improvement funds (250K) for storm water site design projects (6 rain gardens)
- Tazewell Zoning Ordinance changes: planned stormwater ordinance and reviewing other ordinances
- State of Virginia working to build a statewide Growth Readiness approach



Tazewell Rain Garden and Educational Sign

Haywood County, NC

Workshop Series, 2007

Led by NC State/WECO and Haywood Waterways Association with support from TVA and SEWF.

- 37 + Participants from 5 Communities
- Recommended Steep Slopes / Landslide risk

Implementation Approach:

- Education and outreach to elected officials, public and landowners, realtors and builders.
- LID project field tour for elected officials; workshops and seminars for builders, developers, consultants; local gov't prioritize which GR recommendations to pursue



Haywood County Growth Readiness Workshop

Greene County, TN

Workshop Series 2006-2007

Led by Middle Nolichucky Watershed Alliance,
SEWF and TVA

- 65 Participants representing 5 communities

Current Results

- Proposed Greeneville Stormwater Ordinance
- Presenting results to Tusculum and Greenville Planning Commissions in 2008
- Developing LID Training and Certification for contractors and landscapers
- Participating in Greeneville Comp. Planning



*Richland Creek,
Downtown Greeneville*

Results from Land Use Planning for Water Quality

- Darien, GA – Comprehensive Water Resources Protection & Conservation Subdivision ordinance
- Coastal AL - Strengthening floodplain and wetland protection ordinances
- Moss Point, MS – Sustainable development/Ecotourism
- Apalachicola, FL – Wetlands & Stormwater ordinances

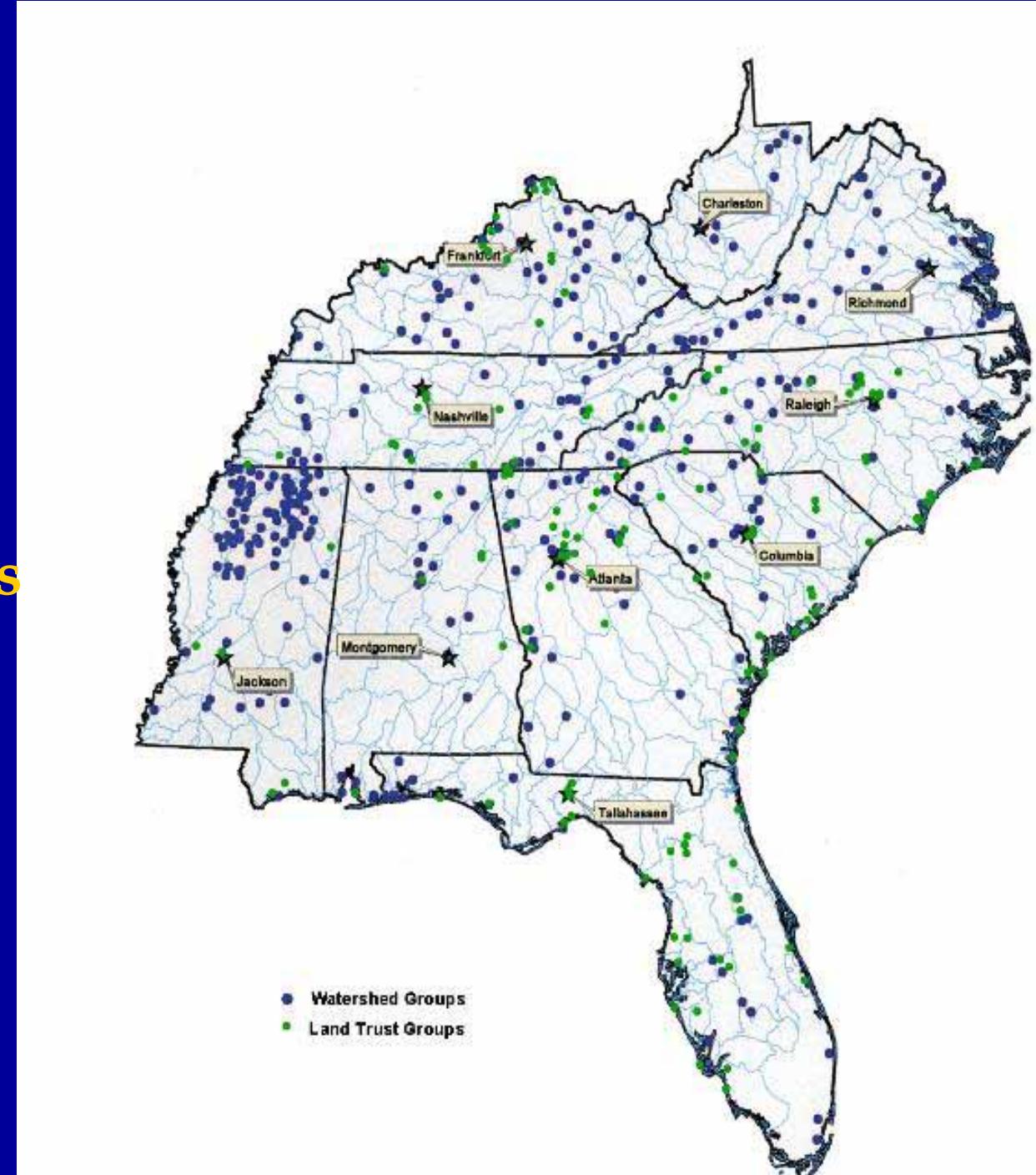
Benefits of Land Conservation

- Protects drinking water supplies & quality
- Saves on infrastructure & liability costs
- Enhances property values and tax revenues
- Attracts business and boosts tourism
- Improves air quality and controls erosion
- Provides recreational opportunities & income
- Preserves community character

Land Trusts

Watershed Groups

Resource Agencies



Partnership for Land & Water Protection

Partnership for Land & Water Protection

GOALS:

- To encourage more habitat protection & preservation of public & private lands by coordinating activities among groups
- To encourage communities to protect habitat as part of comprehensive planning process
- To build support for habitat protection & the regional and National Fish Habitat Initiative

Partnership for Land & Water Protection

GOALS:

- Build a web-based map and database identifying protected land & habitat
- To provide a one-stop, source of land/habitat protection data as a regional model.
- To provide a baseline to measure growth or reduction in protected lands over time.

Partnership for Land & Water Protection

- Southeast Watershed Forum
- SE Land Trust Alliance
- SE Assoc. of Fish & Wildlife Agencies
- SE Aquatic Resources Partnership
- Tennessee Valley Authority
- NBII, So. Appalachian Information Node
- U.S. Fish & Wildlife Service
- World Wildlife Fund

Privately-Protected Lands Survey

To map privately-protected lands in relation to:

- Threatened or priority habitat & resource areas
- Water Quality
- Open space - habitat corridors
- Farmland preservation
- Growth and development patterns
- Gap analysis – identify areas of no land protection

Survey Methodology

- Sent 175 surveys to land trusts (mail & email)
- Hosted survey on SurveyMonkey.com

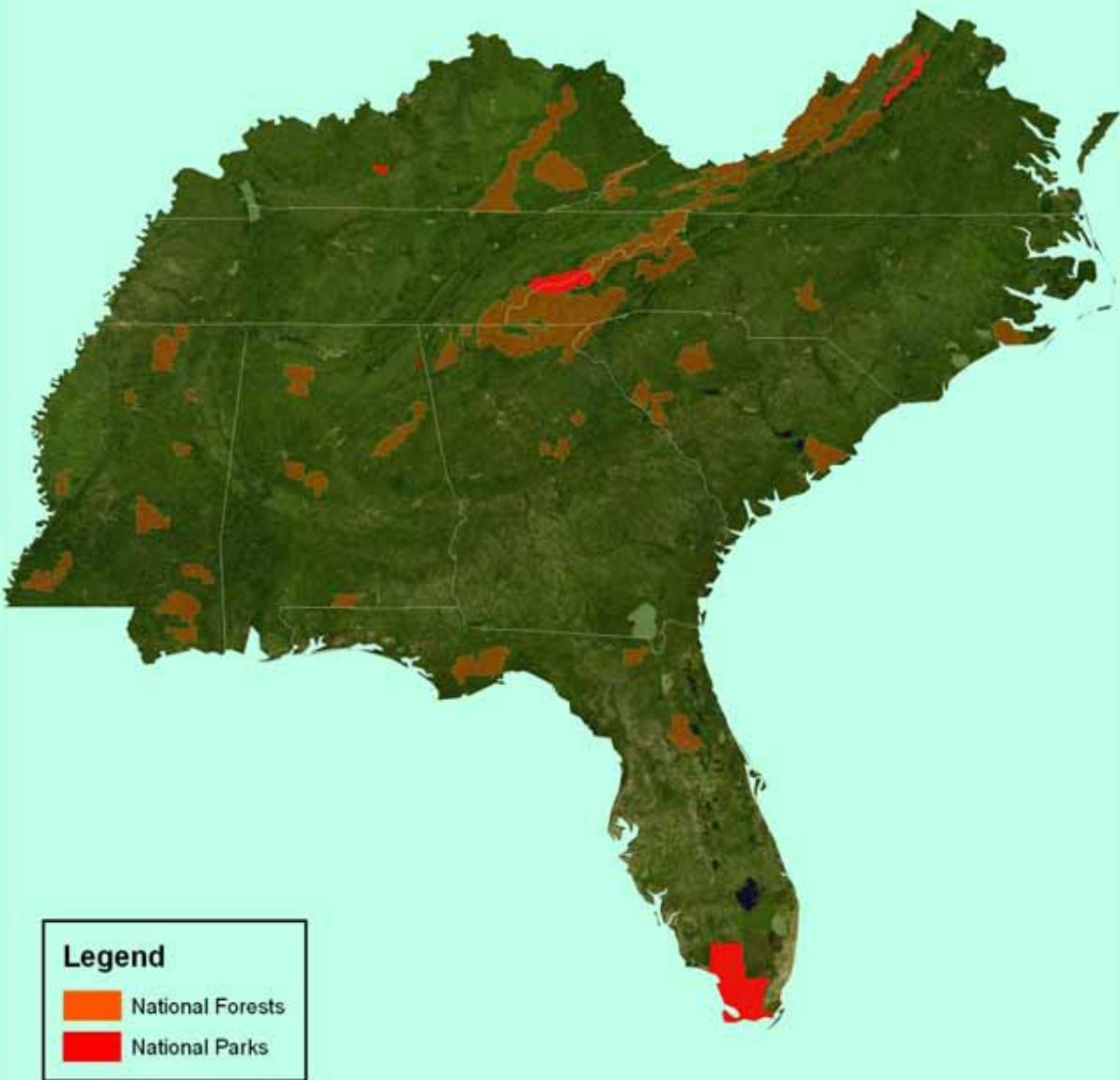
Requested:

1. GPS coordinates or latitude/longitude
2. Tax ID number of protected area
3. County & State or watershed HUC

Survey Results to Date

- 87 land trusts in eight states and 36 watershed groups in nine states.
- 232,385 acres of protected lands identified
- 2,499,582 acres of privately-protected land overall
- 39,332,062 acres of publicly protected lands
- 42,064,029 acres – total protected lands
- 726 stream miles protected/restored

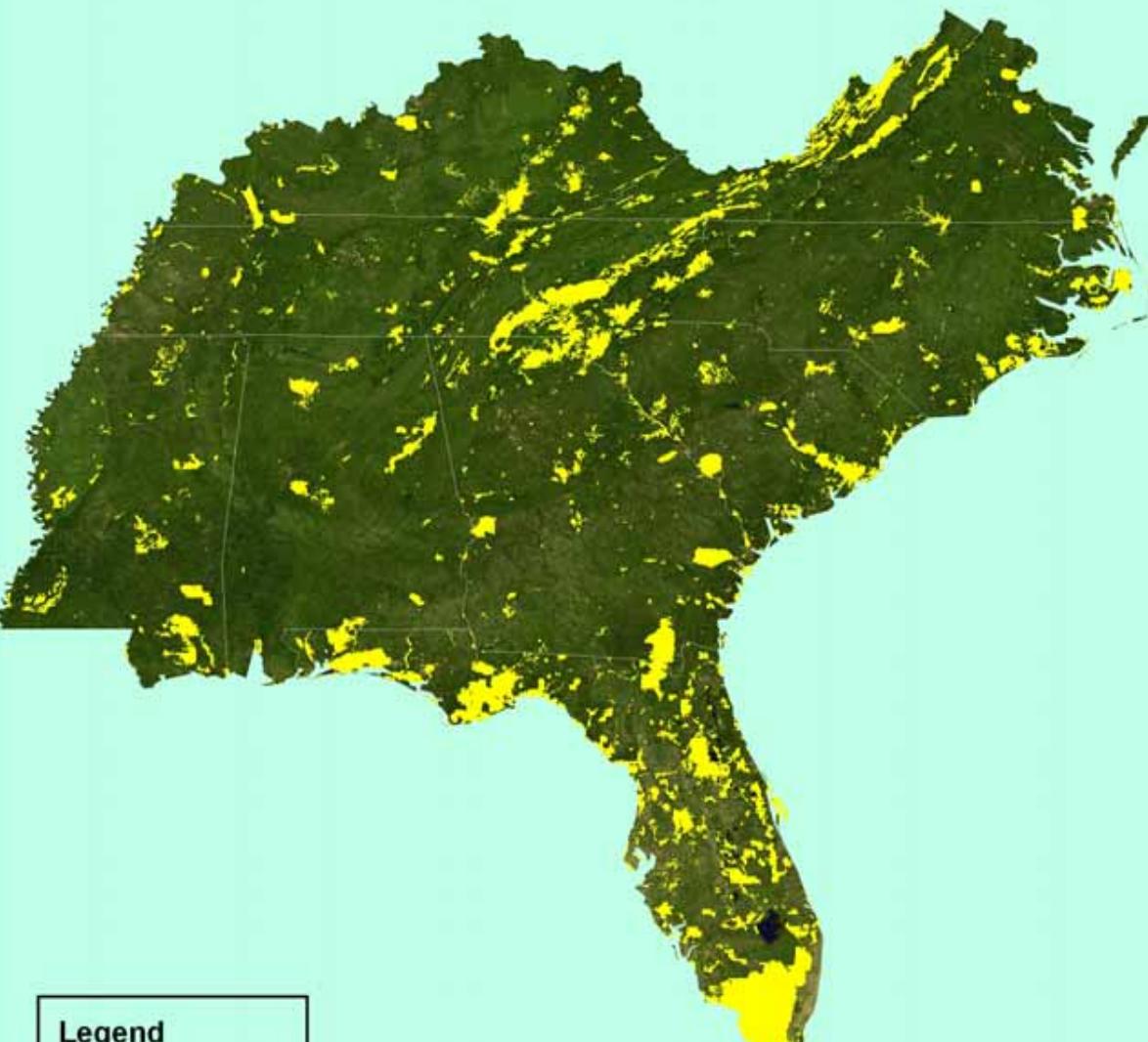
**Southeast Watershed Forum:
Initial Protected Land File from
ESRI**



0 45 90 180 270 360 Miles



**Southeast Watershed Forum:
Protected Areas File Created from
Compilation of Public and Private Datasets**



Legend

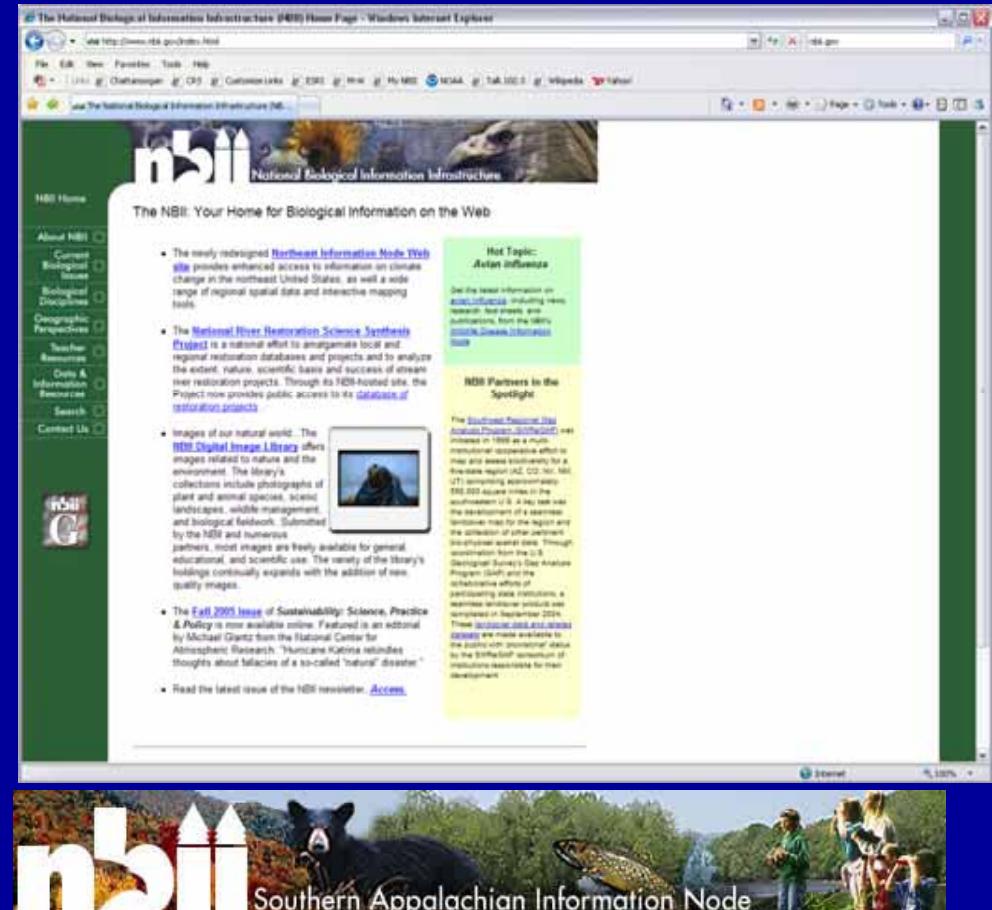
Yellow: Protected Areas

0 45 90 180 270 360 Miles



National Biological Information Infrastructure (NBII - SAIN)

- Provides access to data and information on biological resources
- Links databases, information products, and analytical tools
- Integrate data standards, tools, and technologies



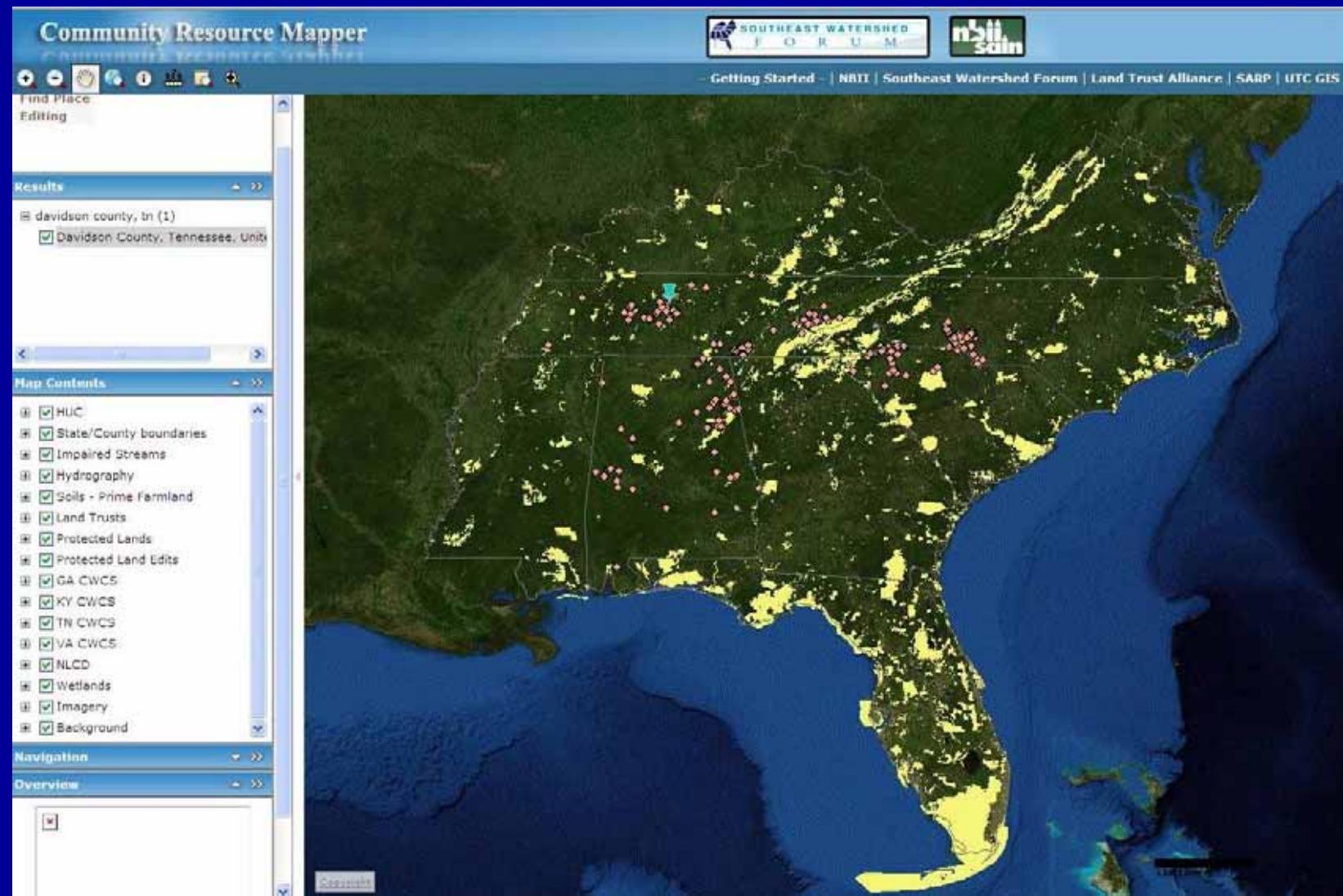
Partnership with SEWF

- NBII-SAIN provides:
 - Geospatial design services
 - Compiled geo-database of survey results
 - Updated existing protected area files
 - Created a web mapping application



The Online Community Resource Mapper will allow thousands of communities to map their resources for better land use planning

www.watershed-assistance.net/mapper

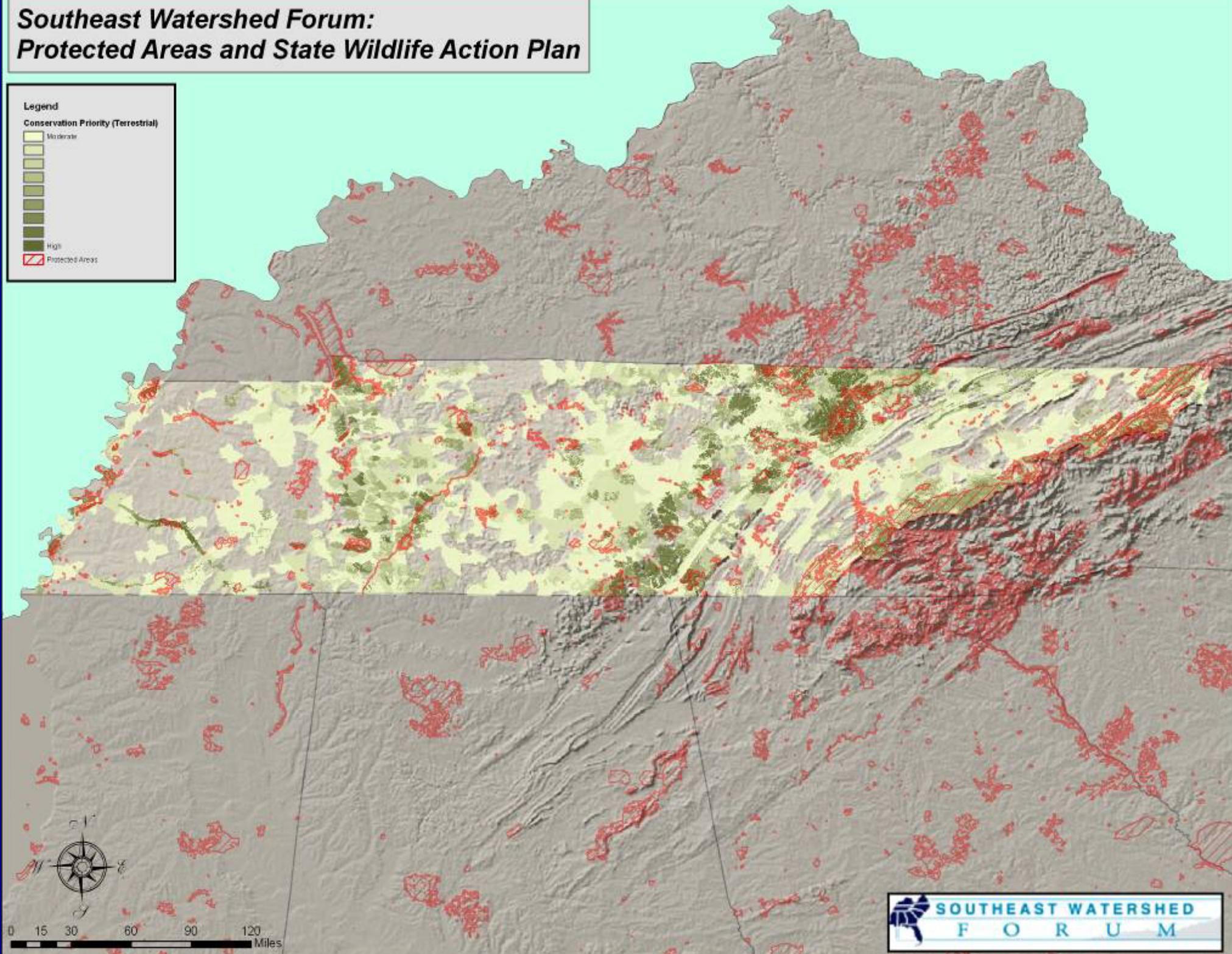


State Wildlife Action Plan

- In applying the Tennessee SWAP overlay on the Tennessee protected lands map, we can see how helpful such information would be to county comprehensive planning efforts, in identifying areas for land trust acquisition and in identifying future partners for state agencies in their habitat protection efforts.

Southeast Watershed Forum: Protected Areas and State Wildlife Action Plan

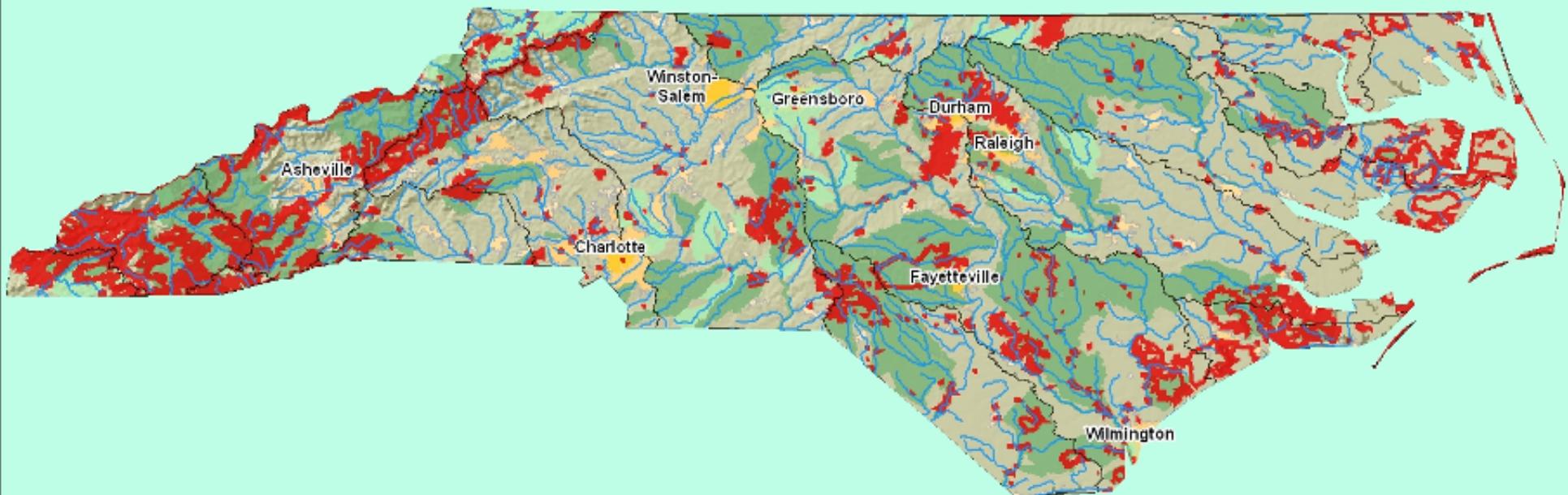
Legend
Conservation Priority (Terrestrial)
Moderate
High
Protected Areas



Southeast Watershed Forum Protected Land and Water Survey: North Carolina State Wildlife Action Plan Priority Conservation Watersheds

Legend

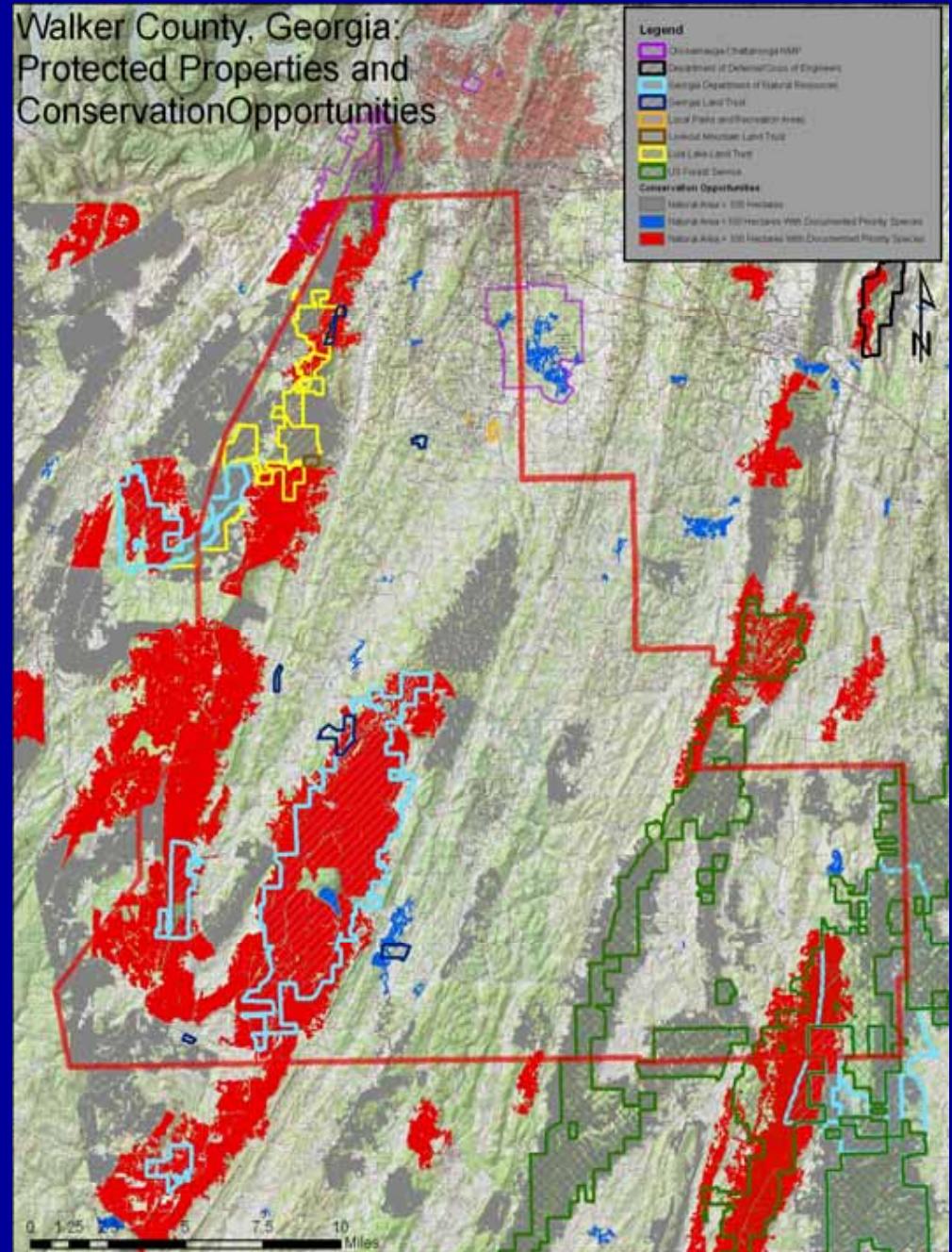
- Rivers and Streams
- Protected Areas: SEWF Survey and Existing Data
- The Nature Conservancy Priority Watersheds
- North Carolina Wildlife Resources Commission: Additional Priority Watersheds



0 15 30 45 60 75 90 105 Miles

Comprehensive Planning Tool

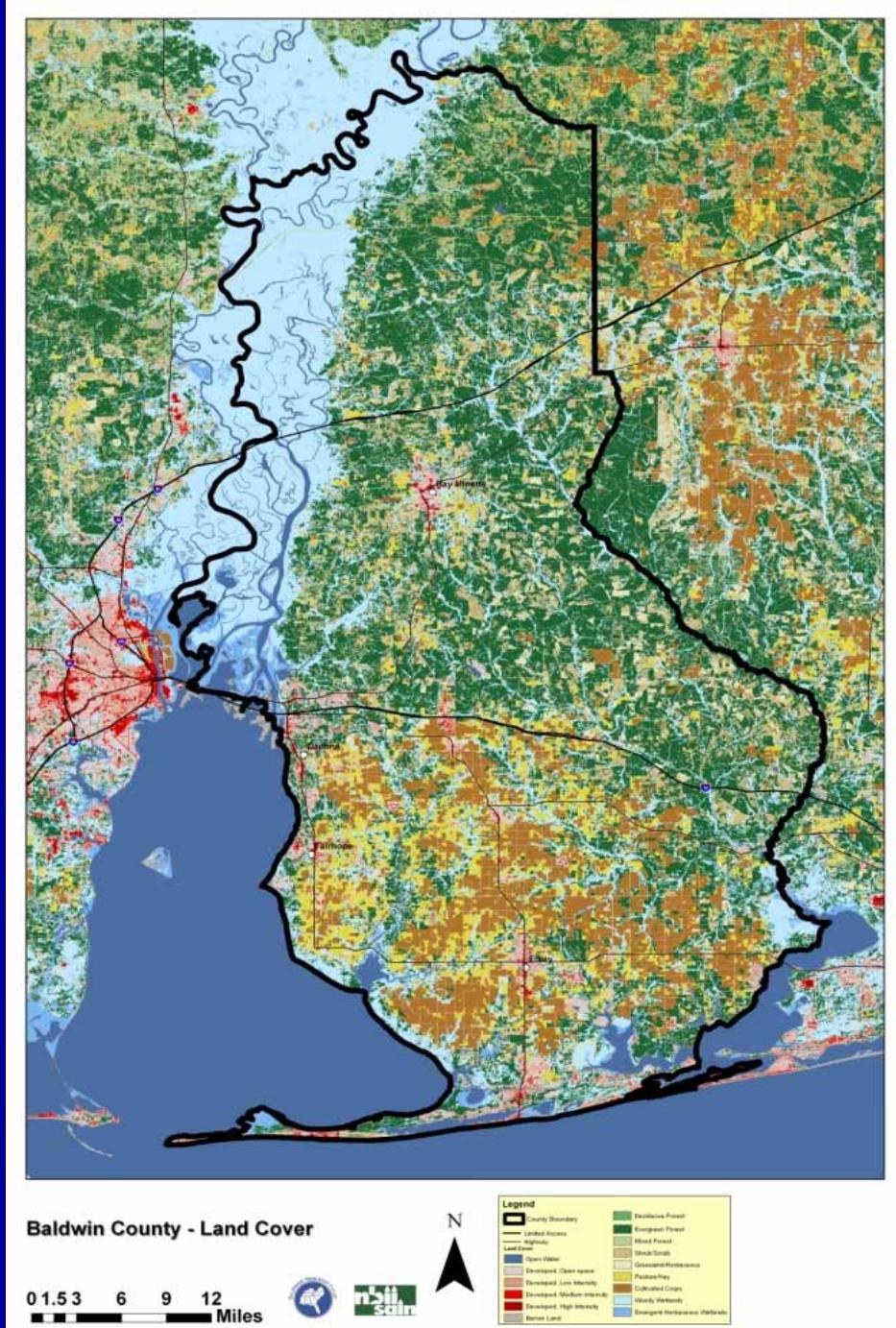
Ability to view different protected lands (public-private) in relation to county-wide land use planning



Land Cover

- 2001 National Land Cover Data (NLCD)
- NLCD is 30m resolution (1 pixel = 900 square meters).
- 73-77% Accuracy.

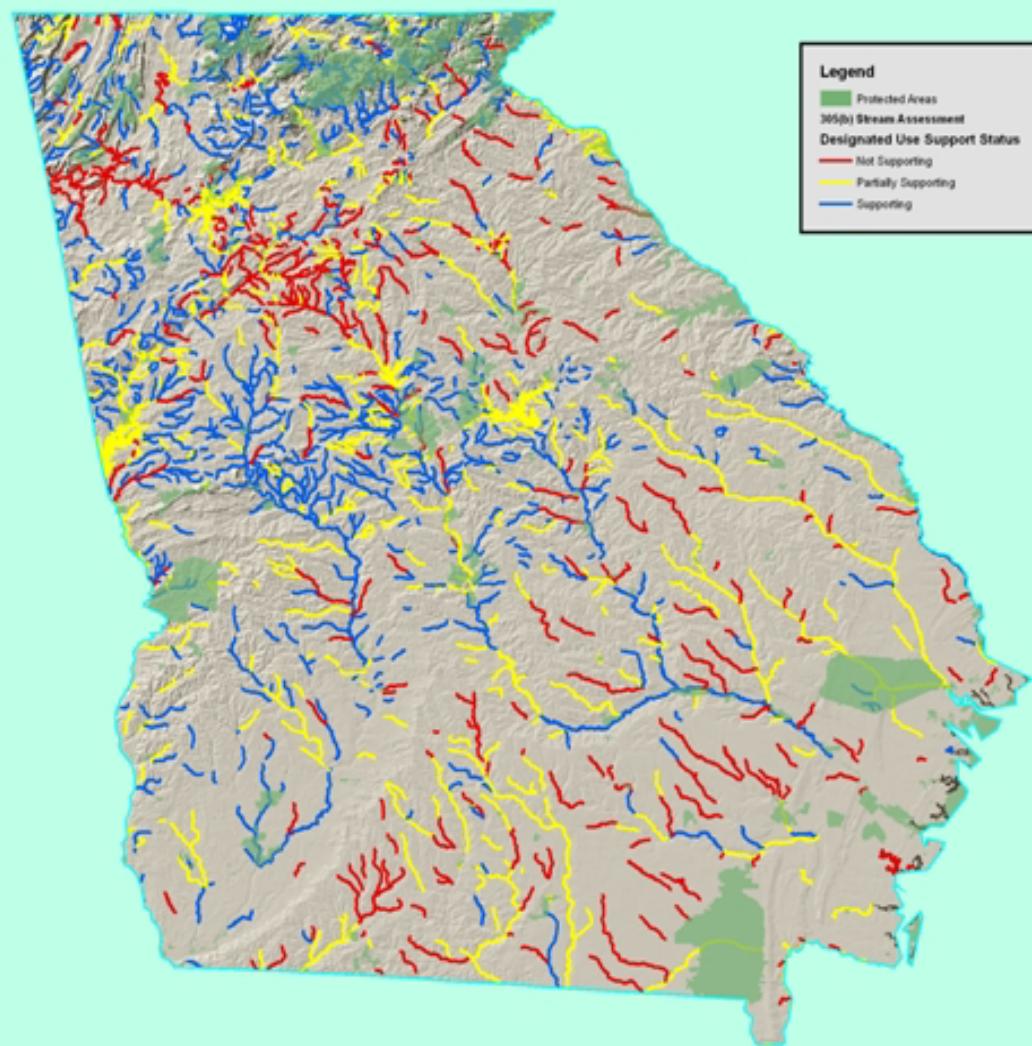
Legend



State Impaired Waters

- Section 303(d) of the Clean Water Act (CWA) requires states to list waters not meeting water quality standards or their designated uses.
- The overlay of impaired streams on the Georgia map shows the value of viewing protected lands through the lens of water quality. There is a strong correlation between protected lands and high quality streams.

**Southeast Watershed Forum Survey Results:
Stream Assessment and Protected Areas**



0 12.5 25 50 75 100 Miles

Healthy Watersheds Produce:

- Improved water quality
- Sustainable water supply
- Continued Biodiversity
- Healthy Economies
- Improved Quality of Life



Expanded Partnerships will encourage greater collaboration and leveraging of resources to expand protection of our natural resources.



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www.southeastwaterforum.org



866-902-7300

TVA

Sample Partners



LAND TRUST ALLIANCE



THE UNIVERSITY of TENNESSEE 
CHATTANOOGA



Current & Future Suggested Needs

- Quality growth is related to water supply
- TVA's Resource Stewardship Teams are valuable partners in quality growth efforts
- Need integrated resource management
- Integrate TVA land use & watershed practices

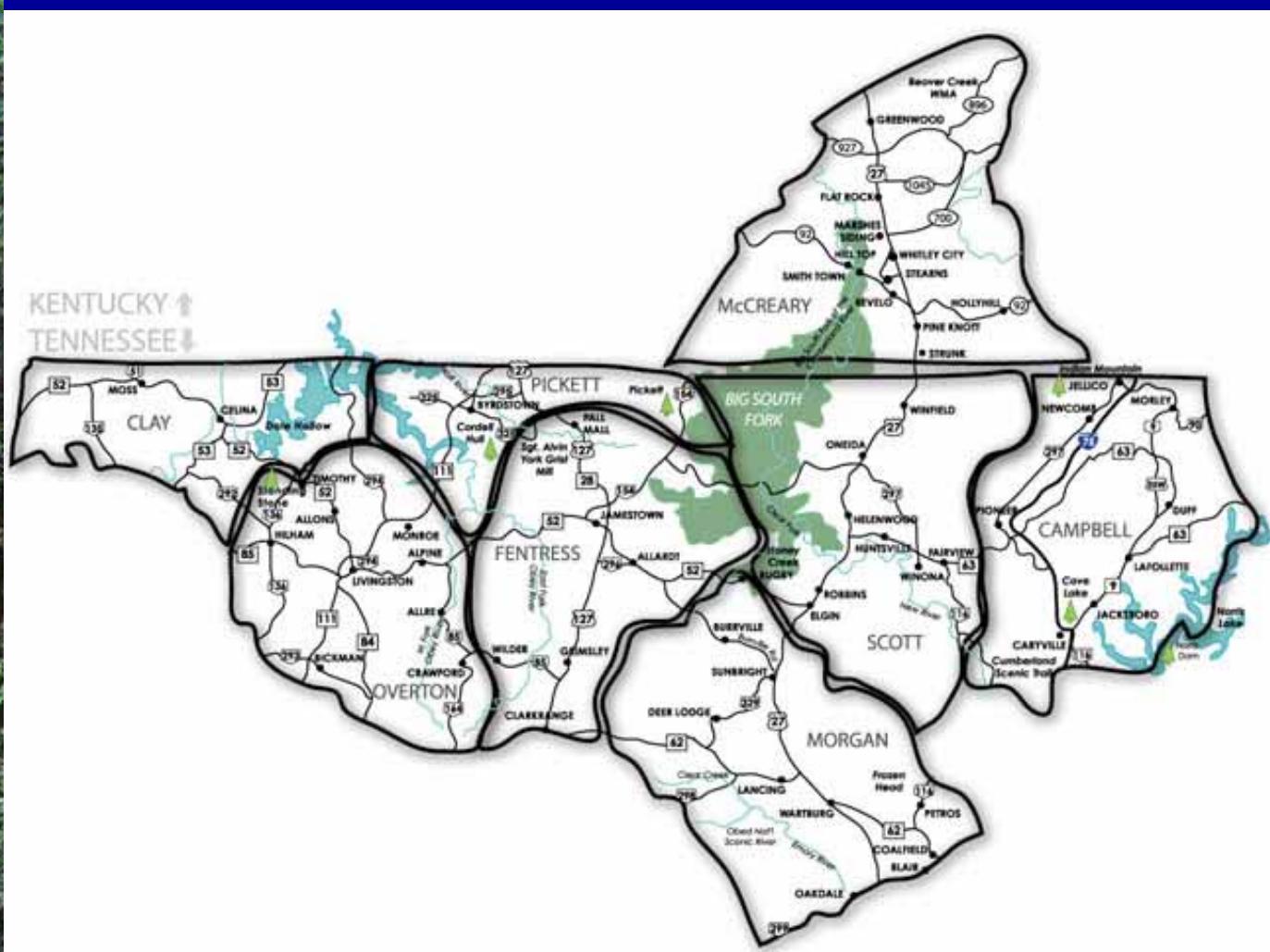
Other Initiatives

- Cumberland Plateau National Heritage Corridor
- Falls Lake Initiative
- Cumberland River Compact - BOB

Cumberland Plateau Heritage Corridor

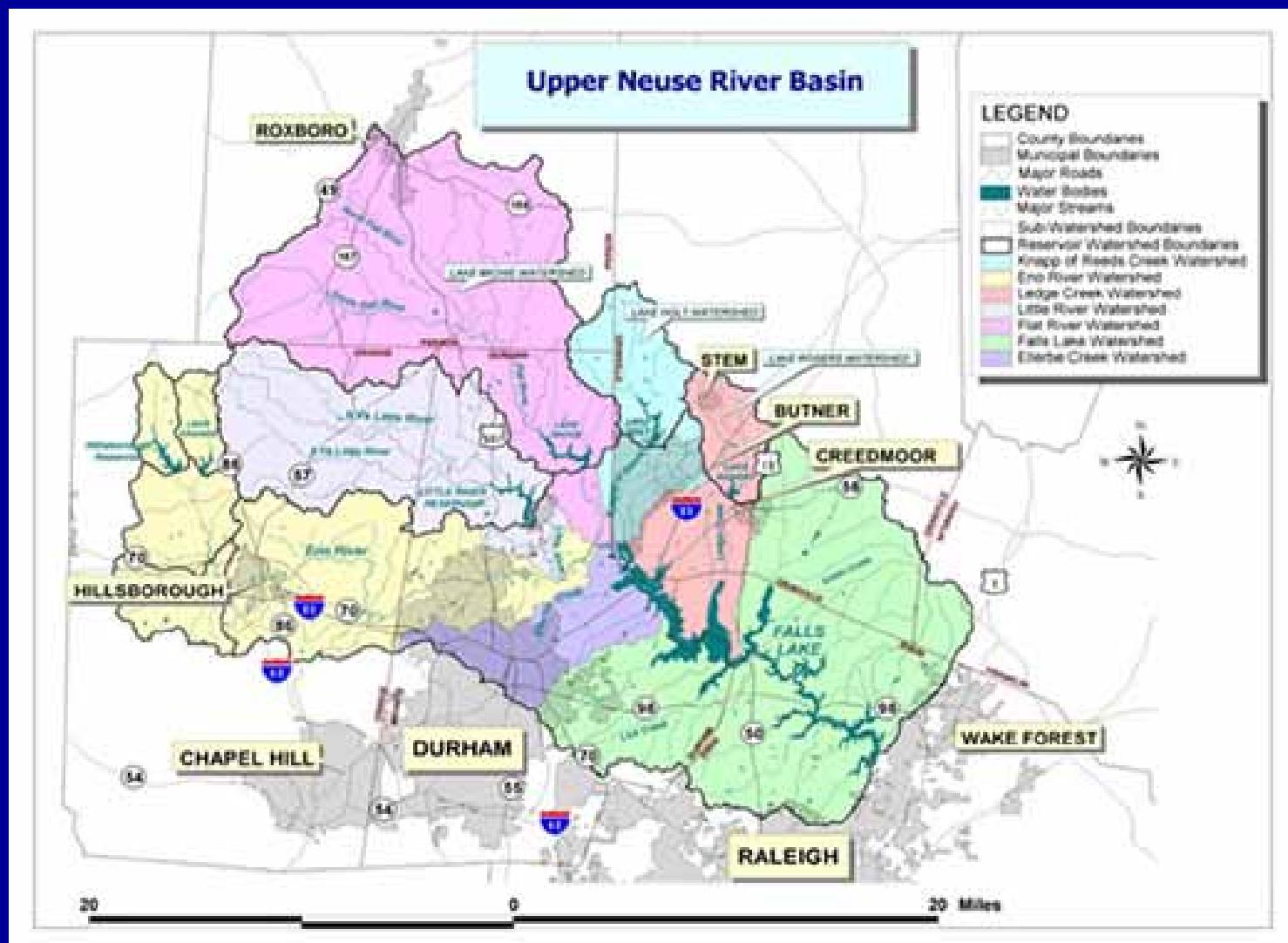
Alliance for the Cumberland Mountains

8 county, natural corridor, eco-tourism site



Upper Neuse River Basin

Source: Chris Dreps – Triangle J Council of Governments



Raleigh's Major Water Supply

CHALLENGES

- A 50 % increase in population is projected for the Falls Lake Basin by 2025
- Growth will likely lead to development of 50,000 acres of land, consuming 76 percent of the remaining undeveloped land

SOLUTION – (Triangle Greenprint – a regional vision)

- Land protection must double from 8 % to 15 % in 25 years or opportunities will be lost

Falls Lake Initiative - Purpose

To prioritize & through voluntary action, protect those lands most critical for the long term safety and health of all drinking water supplies for the communities in the Upper Neuse River Basin.

#1 -

Ask Community leaders for their priorities

- Use their priorities to explain need for watershed protection – all land activity effects water
- Build on local concerns and you build a program the community will support
- Everyone cares about their local quality of life

Darien, Georgia



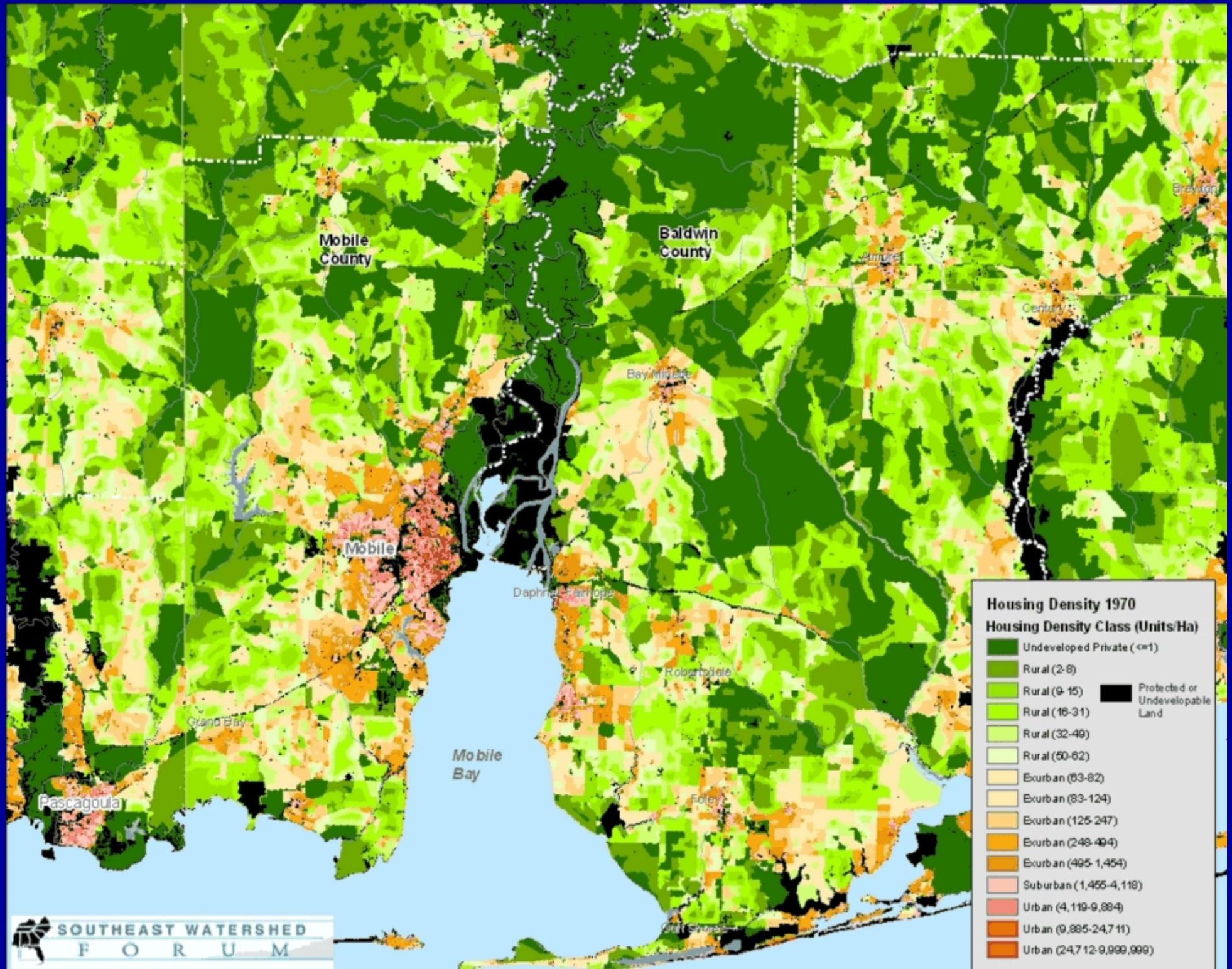
#2

Find a local champion

- Cities and counties are fiefdoms. You need a gatekeeper to enter
- Local leadership is key to a successful outcomes
- Gatekeepers will keep the process moving to implementation

#3 Use strong visual media to communicate environmental concepts

- Local officials understand and believe images more than data tables
- GIS and other resources communicate complex principles simply
- You can't protect what you don't see



#4 Use economics to demonstrate the value of watershed protection

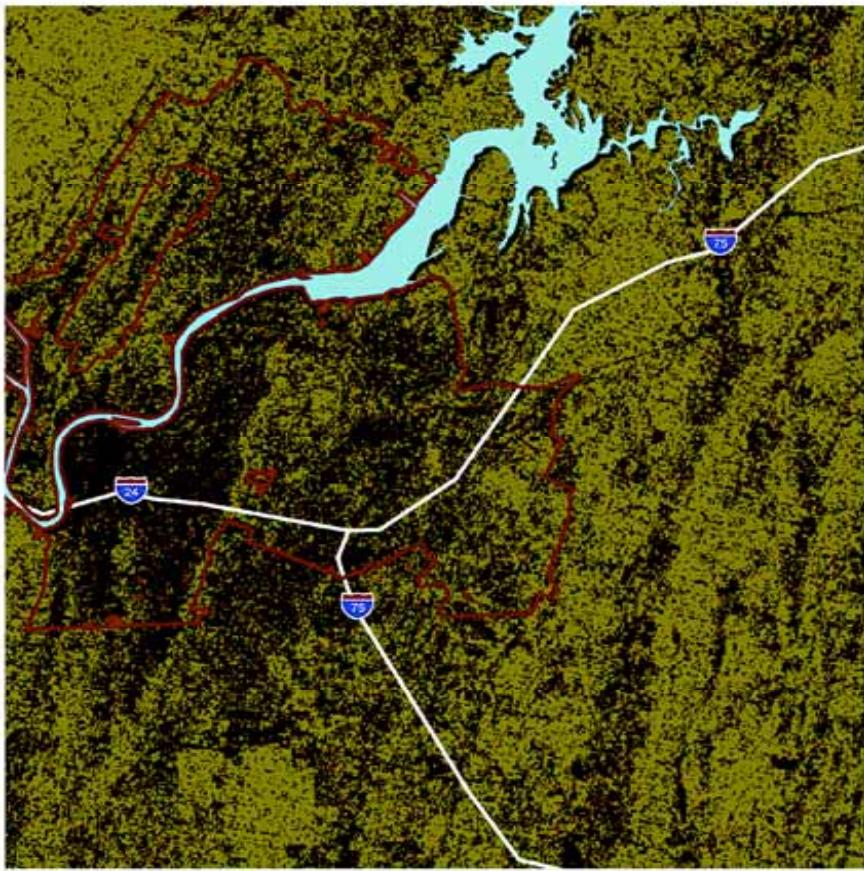
- Economics is the language of local government - Learn to speak it!
- Show watersheds have economic value

More forest cover lowers the costs of treatment.

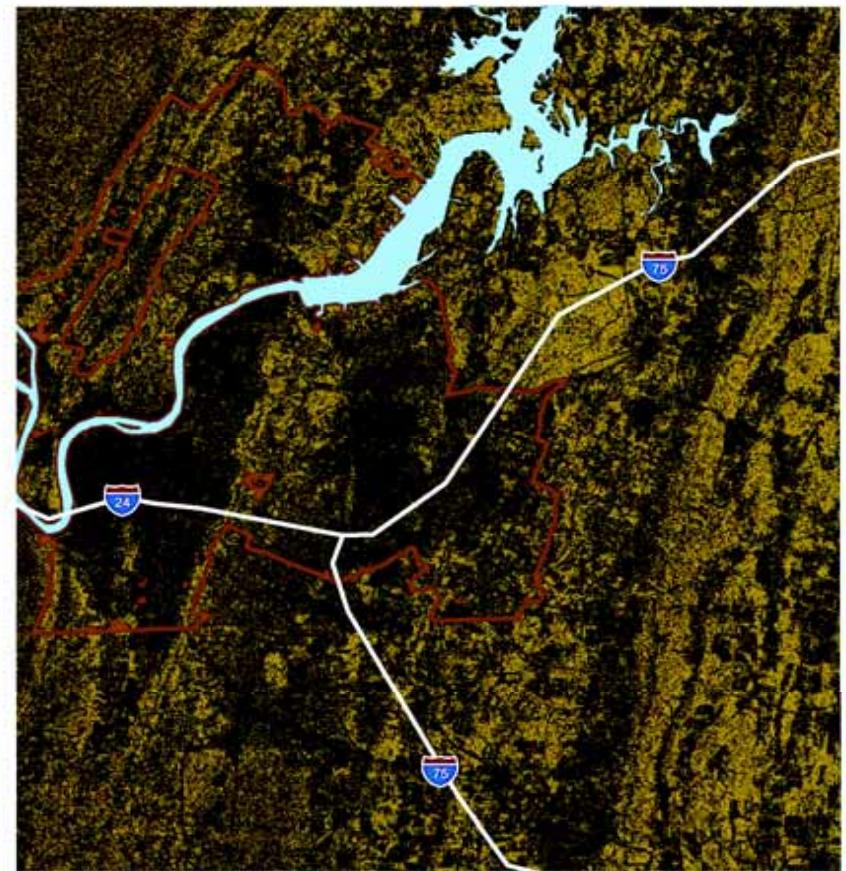
Forested Watershed	Treatment costs /mg	Avg. treatment costs/year
10%	\$115	\$923,450
20%	\$93	\$746,790
30%	\$73	\$586,190
40%	\$58	\$465,740
50%	\$46	\$369,380
60%	\$37	\$297,110

(Source: Trust for Public Land and American Water Works Association, 2002 survey of 27 water suppliers)

Loss of Urban Canopy -Chattanooga TN



1970's



1990's

- ◆ 50% tree cover decline
- ◆ 17% increase in stormwater runoff
- ◆ \$279 million in stormwater costs (139.5 million cubic feet)

#5 Celebrate case studies of communities using best practices

- People learn from real-world examples
- People are motivated to use best practices when they see others succeed using them

#6 Facilitate consensus for change

Build a team with people that others follow

Build a team with people who influence the decision-makers

If you know and like everyone at the table,
you don't have the right people there

What do you need from the SE Forum?

- 75% Be a clearinghouse of watershed-based information (particularly case studies)
- 73% Promote watershed education
- 62% Provide watershed training
- 56% Improve coordination of regional water issues

